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AUDIO ED 2007

The Annual Schools Directory
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Exploring Game Sound Programs

The Inside Track

BUILDING
BIG PIANO
SOUNDS
▶ IN THE MIX

Living Large

MAIN
STUDIO
MONITOR
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ARCTIC MONKEYS LIVE



Full Sail Real World Education
Winter Park, FL

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Graham Nash
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Maroon 5
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Sting



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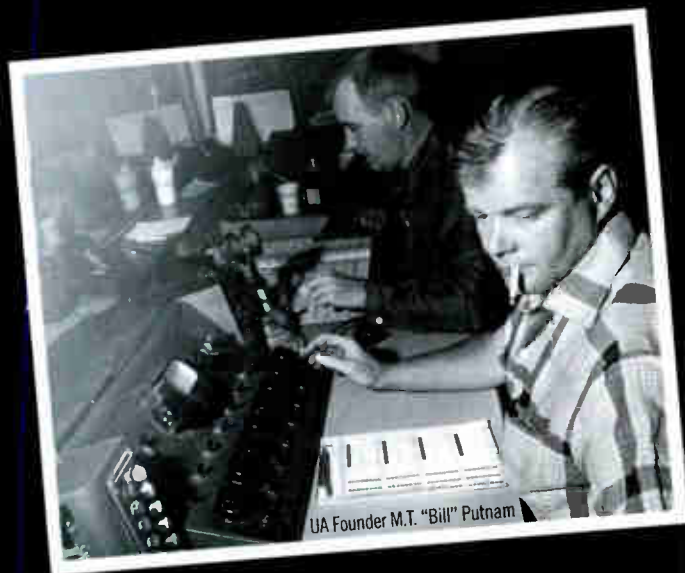
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World Radio History

The Art of Analog



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On the Cover: The new Dubbing Stage at Full Sail Real World Education houses a Harrison MPC3-D console, 35mm and high-def video projection, multiple Pro Tools HD systems and a JBL surround system. **Photo:** Chip Simons. **Inset:** Steve Jennings



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Thanks to its longevity, versatility, and wide dynamic and tonal range, the piano is one of the most-recorded instruments. But the complex qualities that give the piano its great potential for creative expression can also complicate the mix engineer's job. As part of our "Inside Track" series, *Mix* technical editor Kevin Becka offers tips for shaping piano sounds in a mix.

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Near-field monitors may be essential mixing tools, but if you work in a high-SPL environment, there's no substitute for a well-designed main speaker system for achieving power, accuracy and stereo imaging. *Mix* surveys a range of large speaker systems, at every price point.

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We walk the floor so you don't have to. The *Mix* editors share their product picks from AES 2007, which was held at New York City's Jacob Javits Convention Center, October 5-8, and reveal the names of the winners of this year's TEC Awards.



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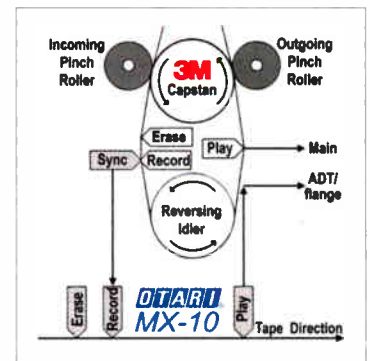
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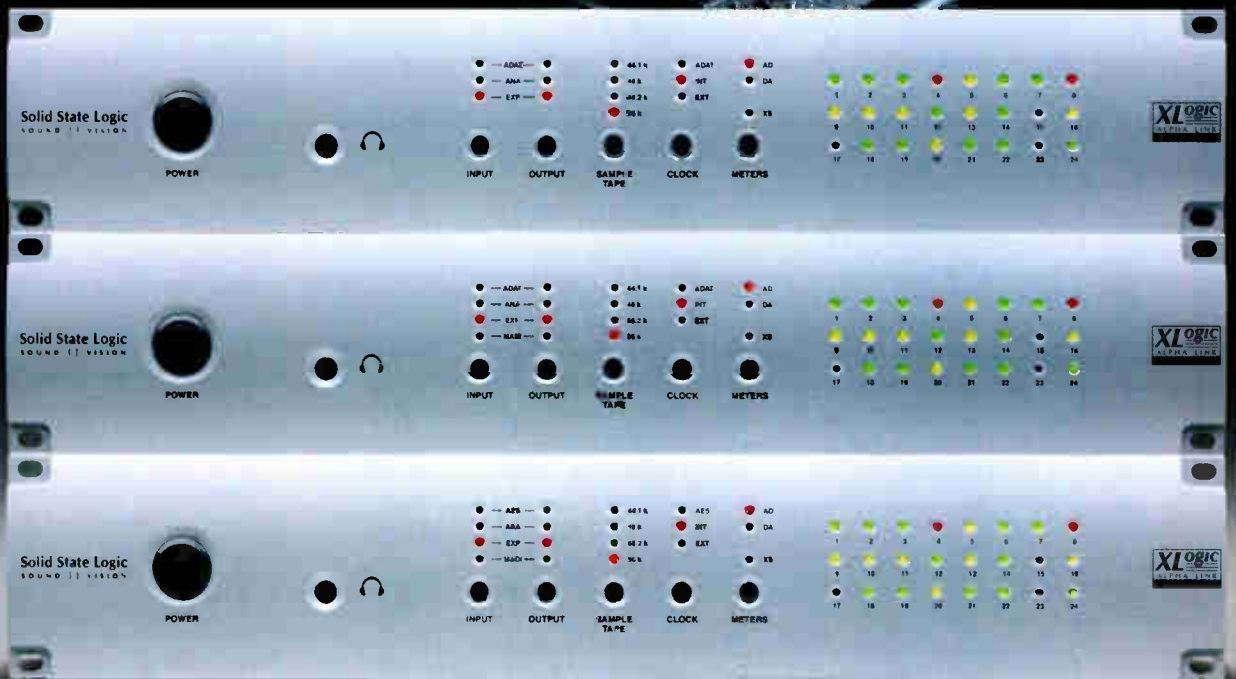


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• Alpha-Link AX (top): ADAT ↔ Analogue • Alpha-Link MADI AX (centre): MADI ↔ ADAT ↔ Analogue • Alpha-Link MADI SX (bottom): MADI ↔ AES/EBU ↔ Analogue

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The New Face of Education

In that "once upon a time" three decades ago, when *Mix* began, someone who was a motivated self-starter could visit a local studio, sign on as a janitor/go-fer and learn the ropes from the inside, eventually becoming an assistant engineer and later a staff engineer/producer. As gear became too complex to simply learn on the fly, such apprenticeships faded and the number of audio education programs rose significantly.

Today, the world is an entirely different place. The recording studio industry is hardly what it was even 10 years ago, and the post-graduation activities of the class of 2007 is far more likely to involve new media than getting that entry-level gig at some big music studio. And many of these new grads were in their teens when the Internet first became a major force. This new generation of "digital natives" may have never experienced the dubious pleasures of analog recorder alignment. Nor should they be expected to.

For many, their concept of a studio centers on the computer—and with good reason. There are few tasks that the well-equipped laptop can't handle. In a world dominated by entertainment media in all its forms—interactive games, point-of-purchase audio, digital signage, new media, audio books, Web animation, podcasts, v-logs and, yes, even music downloads—the need for audio production is perhaps greater than ever. Even YouTube—everybody's favorite Web free-for-all for silly videos—has emerged as a major source of disseminating marketing messages of every sort: commercial, religious, political or otherwise.

However—aside from a few large game publishers—most growth is in these developing areas, where much of the available work comes from independent contractors and small companies. Sure, there are still jobs in traditional recording/broadcast/production, but these hardly represent the majority. Here is where that grad with some good business savvy and an entrepreneurial spirit can build a small company to feed these markets. Sometimes the best job you'll ever have is the one you create for yourself, and the successful candidate in these cases is the individual with just the right blend of creative and cognitive/technical energies.

Mindful of the situation, some schools have developed courses or entire programs in entertainment media. This month in his "AudioNext" column, our own Alexander Brandon discovered a rising trend in schools offering training in game production. Certainly in games, the audio doesn't live in a vacuum: Tracks are constantly changing in terms of amplitude, ambience and pitch to match the screen action, and learning this discipline, along with file management and understanding how the audio dovetails with each game's programming is essential—certainly far more complex than miking a kick drum on a rock session.

Audio education has evolved into a big business, and media education—in its many forms—is an increasingly important part of the curriculum. Students need to leave the school as a Jack or Jill of all trades and be prepared for the brave new production world of the present and the future.

George Petersen
Executive Editor

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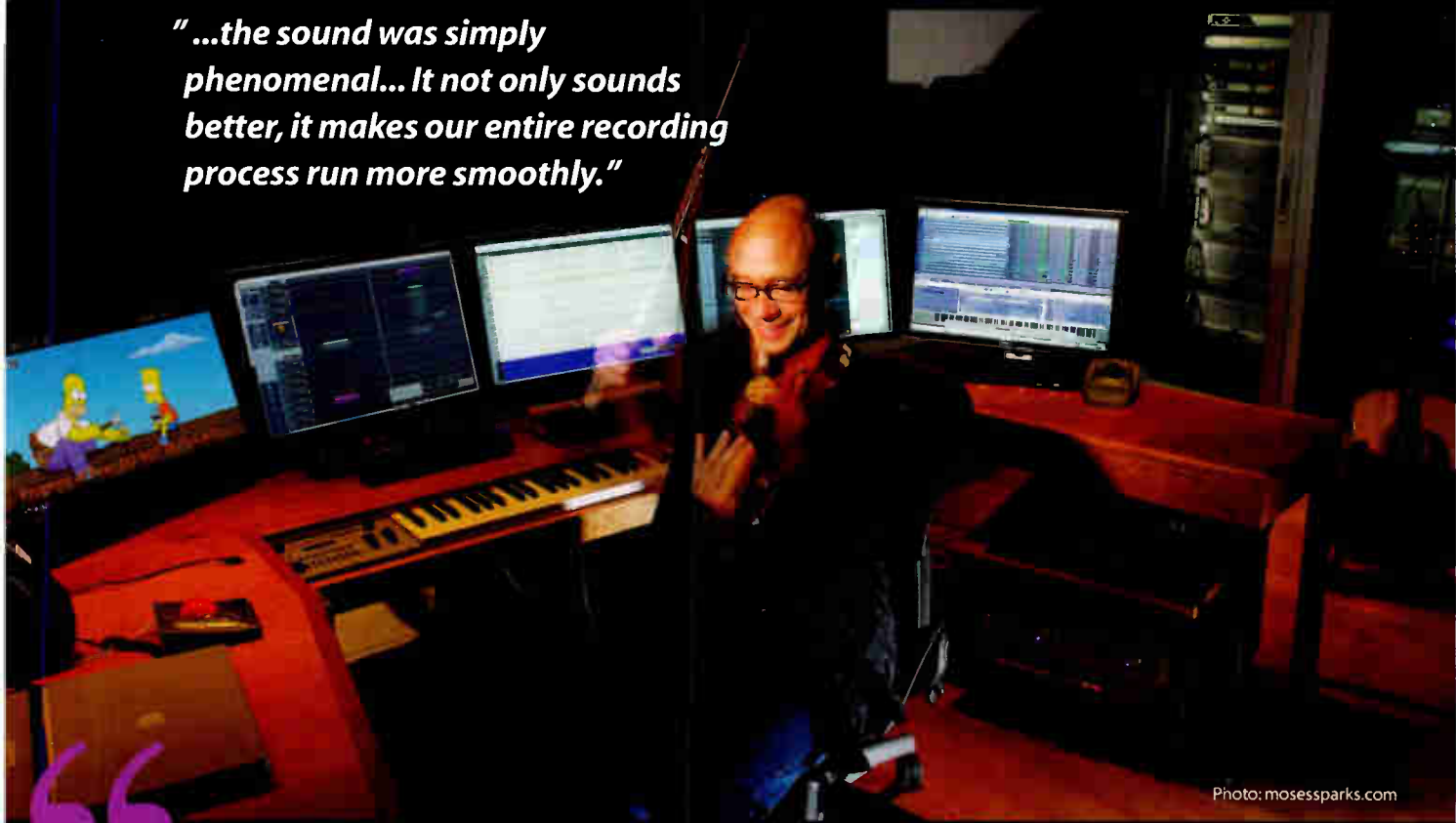


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Michael Levine

Film and Television Composer

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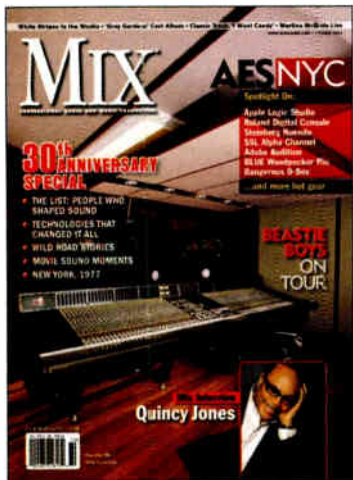
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World Radio History

Letters to Mix



THE ONE WHO STARTED IT ALL

In your article "30 People Who Shaped Sound" (October 2007), you forgot the Number One guy. Without him, there wouldn't be another 29 people to write about: Les Paul.

Dan Gallagher
Adventure Crossing

NOT TO BE OVERLOOKED

Great October 2007 issue! I loved the "30 People Who Shaped Sound." Two additions to your list (in your 32nd-anniversary issue) might be Les Paul, who invented the multitrack recorder, and Tom Dowd, who was the father of the modern recording console.

Jay Petach
Sound Images Inc.

WHERE CREDIT IS DUE

I'm one of the many who worked in New York City in the late '70s and early '80s, and they were indeed fertile times. One error [in "New York '77," October 2007] is that Jacques Morali was the producer of the Village People, not Jacques Morales. I worked on a bunch of their stuff at Sigma Sound, as well as all the other stuff that passed through our doors. Yep, we did the best kick drum imaginable.

Matthew Weiner
Manager, Systems Engineering
East Region

THAT'S SO PUNK ROCK

Thanks for remembering me with the Dead Boys ("New York '77," October 2007). So many people called me to tell me about it. Two things I thought you should know: I hired Dave Wittman for basics and then switched to Harvey Goldberg for overdubs, then to Bob

Clearmountain when it came to mixing. I knew what I wanted this record to sound like and went through three engineers to get it.

And here's something no one knows: Bob Clearmountain played the bass on the whole *Young, Loud and Snotty* LP because the Dead Boys had no bass player. I knew Clearmountain was a frustrated bass player at the time; as a matter of fact, he and Harvey Goldberg and Godfrey Diamond (the baby engineers at Mediasound) started a midnight band called The Bats and just jammed during nights when Mediasound was empty and quiet.

Genya Ravan
www.genyaravan.com

CLEARMOUNTAIN: IT'S ALL TRUE

Bob Clearmountain recalls his brief career as a bass player (and mixer) for the Dead Boys.

It's all true, except that after mixing the entire album, [producer Genya Ravan] fired me and remixed it with Harvey [Goldberg]. We had a big fight over one of the mixes. I've always wanted to thank her for teaching me that it's just stupid to argue with the producer. The producer and/or the artist should always have the final say, not the (idiot) mixer.

Also, I remember standing on 8th Street outside Electric Lady Studios (where the album was recorded and mixed) with the Dead Boys asking me to join the band. I had to explain to them that, as much as I liked hanging out and recording with them, I didn't think it was the ultimate career choice for me.

Oh, and Michael Barbiero and (sometimes) Ron St. Germain were also in "The Bats" at Mediasound; that was later turned into a bar/restaurant ironically called "Le Bar Bat."

Bob Clearmountain

MEMORY LAPSE

I enjoyed reading about how each track was recorded on Paul McCartney's new CD, *Memory Almost Full* ["Recording Notes," October 2007]. I agree with [producer] David Kahne that this is McCartney's best one in years.

There was one thing wrong. The medley on *Red Rose Speedway* was "Hold Me Tight," "Lazy Dynamite," "Hands of Love" and "Power Cut," "Little Lamb Dragonfly" was the fifth complete song on the album. I don't fault Kahne too much because I have the "special edition" of *Memory Almost Full*, and in McCartney's interview about the songs he thinks that the last time he did a medley was on The Beatles' *Abbey Road*.

Jeffrey Lynn Reid
JLR Productions

FOLLOWING IN BEATLES' FOOTSTEPS

Eddie Ciletti's "Tech's Files" article "Learning From a Classic" (September 2007) was the most refreshing column I have read in *Mix* in quite some time. This is a classic case of giving back to the community and teaching the next group of up-and-comers not just about equipment usage, but about how recordings that are engaging to the listener are made. Thanks, Eddie.

Mike Spitz
ATR Services Inc.

ANALOG VS. DIGITAL: THE DEBATE CONTINUES

As for emulator plug-ins, there is a section [in "Virtual Reality," August 2007] on the beloved 1176 compressor. I worked in one room where we had three old blackface 1176s. One was dedicated to vocals, one for guitars and one for bass. Why? Because they all sounded different and they all behaved differently. This is what we call a "happy accident," another thing that you will find more often in analog than in digital. I have found that accidents in the digital domain are rarely happy.

Also, concerning compressor plug-ins, much of the advantage of the compressor is lost if you do not use it prior to the A/D converter. If nothing else, a compressor is used to control dynamics and this is a great advantage when trying to get more signal through the A/D converter without digital distortion.

I'm not going to get into all the other advantages of analog over digital (or the disadvantages). I know that this is not a black-and-white world in which we live. There are some things that digital emulation excels in and others that do not seem as useful to me. I love the reverbs and delays, the de-essers and the time expanders.

Case in point: The engineer at Happy Ending Studio in Silver Lake, Calif., is a total Digihead. My cousin comes in with a Langevin PEQ2 and the engineer tells him that they have some great EQ plug-ins and that he should sell it and get some more mics and stuff that he figures the studio needs. A couple weeks later, he finally uses the Langevin, and says, "Whatever you do, Norm, do not sell the Lang!"

Jeff Sherman

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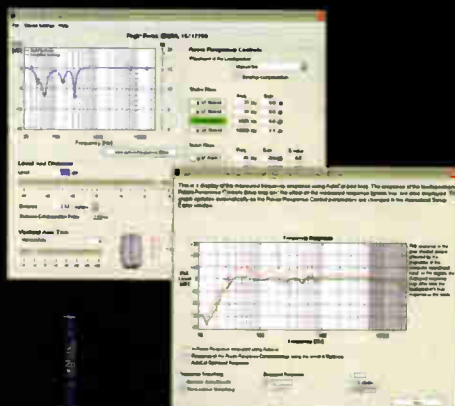
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PETE'S PLACE LAUNCHES



David Pearlman of Pearlman microphones; recording engineer Dylan Dresdow; Gator of A-Designs Audio; recording engineer Ronan Chris Murphy; Lisa Montessi, president of Pete's Place; recording engineer Tony Shepperd; pro audio designer Jon Erickson; and Jule Potter of Jule Amps

The Airtel Plaza hotel in Van Nuys, Calif., hosted the official introduction of Pete's Place, a new division of A-Designs Audio. Pete's Place is a consortium of boutique gear manufacturers, designers, respected sound engineers and professional artists who collaborate in the development of esoteric and handcrafted audio equipment.

By fostering an innovative spirit and the free exchange of ideas, president Lisa Montessi hopes that Pete's Place can "help create a path to the pro audio marketplace by eliminating the many obstacles—such as insufficient financial backing and lack of manufacturing experience—modern gear designers face in the fulfillment of their creative vision."

New products in the Pete's Place line so far include the TM-LE large-diaphragm tube microphone, RCM-2R tube dual-spring reverb, B-REDDI tube bass amplifier and the Mark VIII mixer, which accepts 500 Series-compatible modules.

—Barry Rudolph

NEKO SYSTEM ON DISPLAY

audioMIDI.com hosted an event on August 18th, 2007, featuring the Neko Music Production System by Open Labs. Film composer Nick O'Toole showcased Neko by composing a complete score to picture without using any equipment or plug-ins outside the Neko system.



Nick O'Toole (right) and M-Audio's Ralph Goldheim

PYRAMIND EXPANDS

Pyramid: The Institute for Advanced Digital Audio Training has expanded to include a 36,000-square-foot building in San Francisco close to its headquarters. The new space will offer two new classrooms: a large 20-student classroom with 21 workstations that will also be used for recording bands, guest lectures, and public and sponsored events; and a planned second HD surround mix classroom with space for 10 students. The HD surround room will feature audio and video production capabilities. The new building also offers a student lounge and admissions office. The school also announced a new weekend study program and certificate: Music and Audio Production Weekend Certificate (MAP).



615 MUSIC BUYS METRO MUSIC



Production music company 615 Music has purchased music library company Metro Music; owner/composer Mitch Coodley (pictured) will continue to write and produce original music for Metro, and the Metro Music brand name will still be marketed.

Coodley says, "I'm a composer and producer first and foremost. This deal will allow me to spend even more time on the creative side of producing the Metro catalog. I know the library is in good hands and that 615 Music will serve us both well in terms of expanding our client base and keeping our long-term clients happy."

The combined 615 Music and Metro Music libraries comprise the 615 Gold and Platinum Collections, 615 Song Library, AMP, Kingsize NYC, Metro Music, Music Shop, Music Gallery, Promo Accelerator, Scoring Stage Film & TV, and ZEN.

CORRECTIONS

In "Bombastic Bass" (July 2005), in the sidebar "The Story Behind the Sound," Klaus Voorman was inadvertently described as "the late Klaus Voorman." Voorman is alive and kicking.

Students in the group photo in "Tech's Files," November 2007, were abbreviated as "ST," which was translated as "strings" when it should have read student.

Mix regrets the errors.

PAD CELEBRATES 15 YEARS

Celebrating its 15th anniversary this year, Professional Audio Design completed its 75th custom-monitoring system with an install at Robert Clivillés' (C+C Music Factory) new Paradise Garage studio in Irvington, N.Y.; John Storyk designed the facility. A free-standing Augspurger system, Clivillés' active three-way setup comprises a single 15-inch horn combination supported by a single 18-inch sub powered by Bryston and Chord amps, all controlled by Lake Countor speaker-management DSP.



From left: Dirk Noy, WSDG; Robert Clivillés; Dave Malekpour, PAD; John Storyk, WSDG

ON THE MOVE

Who: Brian Dozoretz, Ithaca College School of Music's manager of music recording technical support

Previous Lives:

2001-2007, Bennett Studios engineer, technician, studio management

The one profession that I would like to try would be...lawyer.

If I could be a part of any recording session, if would have been...Parliament/Funkadelic as a drummer

The one object in my office most like my personality is...MacBookPro—multitask, multitask, multitask!

Currently in my CD changer: everything—on "shuffle"!

When I'm not in the office, you can find me...playing bass; windsurfing; or with my wife, son and dog.

PHOTO: ALEX PERALAS



NEW ENGLAND INSTITUTE HOSTS STUDENT SUMMIT

An estimated 400 students from across the Northeast Region came to see 30 presenters (including Grammy Award-winning engineer Jim Anderson) and vendors (pre-amp shootout with Mercenary Audio and product demos) at this year's regional AES all-day event held at The New England Institute of Art in Brookline, Mass., on September 15, 2007.

Audio guru Dave Moulton of Beo-Lab speaker fame and Grammy Award-winning mastering engineer Jay Frigoletto, along with studio maintenance gurus Dave Thibodeau and Alex Case of University of Mass/Lowell also ran workshops.

Adam Brass of Mercenary Audio demonstrates some unorthodox miking techniques.



INDUSTRY NEWS

New York City-based **PostWorks** adds **Rocky Tortorella** as director of sound services and veteran Sony sound designer/mixer **Paul Furedi**...



Rocky Tortorella

New face at **Syntonic Design Group** (NYC) is **Stuart Schwartz**, general manager of East Coast operations...**Tom Frericks** is the new president of the NSCA's (Cedar Rapids, IA) Education Foundation; other new officers include VP **Mitch Nollman** and secretary/treasurer **Maureen Pajerski**...**Stardraw.com** (NYC) appoints **Paul Clark** to the software developer and designer position...New VP of marketing at **Revolabs** (Maynard, MA) is **Susan Zaney**...**Bill**

Woods takes on sales and marketing director responsibilities for **MC² Audio**, **XTA** and **Qusted Monitoring** (Devon, England)...**Klotz Digital** (Munich) taps **Jim Bakker** as sales director for Europe, Middle East and Africa...**Dynacord's** (Burnsville, MN) new national sales manager is **Gary Pace**; filling the same role at **Danley Sound Labs** (Gainesville, GA) is **Joel Moak**...Distribution deals: **Martin Audio** (Waterloo, Ontario) appointed **Reflex Marketing** (Hempstead, N.Y.) for the New York Metro and Northern New Jersey regions; **Kevin Sanford** (NYC) has signed up as a dealer for **IntraCom Systems LLC** (L.A.); **DiGiCo** (Surrey, UK) appointed Hong Kong-based **Eastern Acoustic Development** for that region; and **Aviom** (West Chester, PA) named **SF Marketing Inc.** (Quebec) to cover the Canadian market.

SPARS SOUNDBITES

GET READY FOR ANOTHER ACTION-PACKED YEAR

BY LESLIE ANN JONES

It is my pleasure to serve for another year as SPARS' president. I want to thank our current board members for a great year of volunteer service: Jeff Greenberg, The Village, L.A.; Karen Brinton, Remote Recording, New York City; Zoe Thrall, Studio at The Palms, Las Vegas; Scott Phillips, Blackbird Studios, Nashville; Eric Johnson, Blazing Music and Sound, Raleigh, N.C.; Andrew Kautz, Love Shack Studios, Nashville; Maureen Dronney, The Recording Academy, Santa Monica, Calif.; Mark McKenna, Allaire, Skokan, N.Y.; Lee Foster, Electric Lady Studios, New York City; and Kevin Dillon, Miami.

We have been working on several things this past year including the re-design of our Website, www.spars.com. It is our intention to have a site that not only represents our members in the best possible fashion, but also serves as a resource for the audio recording service community at large. This remains an ambitious project, one that Marcia Vaught-Kautz, our executive director, has been working on for months. We are in talks with a major sponsor and hope to get this revamp under way in the next few months.

We have also received excellent response from our hosted networking social events held in partnership with The Producers and Engineers Wing of The Recording Academy. Their executive director, Maureen Dronney, also sits on the SPARS board, and as a result we have had the opportunity to put together several joint events at AES San Francisco 2006 and NAB 2007 (a first for both of us), and we will do so again at AES N.Y. 2007 along with APRS.

Our monthly lunches in New York City have continued under the guidance of past president Karen Brinton. We recently held a lunch to introduce our newest member benefit, a working relationship with Shure Inc. to set up an inventory of gear available to members to "check out" for a time to see if they have any interest. Shure lunches are also planned in Nashville and L.A.

Marcia has been holding quarterly events in Nashville with NAPRS (Nashville Association of Professional Recording Studios). We continue to participate in the annual AES Audio Masters Golf Tournament and the annual block party for the Nashville recording community held each August.

We have also started our Los Angeles lunches again, the most recent one hosted by Don Griffin and West LA Music. We had a wonderful turnout, and it is clear that studio folks like getting together not only to network with each other, but also to get the latest information about new products and innovations in a more relaxed atmosphere.

SPARS board members have also worked to build the organization's relationship with audio recording educators. Board members have traveled to several member schools, including Full Sail in Orlando, Fla. and the Conservatory of Recording Arts and Sciences in Tempe, Ariz., to participate in facility tours, curriculum reviews, student mentoring sessions and student panels. We hope to reach out to other member schools in this same manner. If you are an educator and have interest in this program, then please contact our National Office for more information. SPARS members also actively help intern-placement offices in acquiring internships for both current students and recent graduates of recording programs. In addition, the AES Travel Grant program is a benefit for educators and students alike that has proven an invaluable gateway for students to experience one of the biggest events in our industry, the annual AES Convention. SPARS wants to show its support for the future of our industry, and what better way than to build a relationship with new eager professionals and recent graduates of these schools.

Last, Board Elections are upon us and I look forward to working with several new board members in the coming year. Membership in SPARS, The Society of Professional Audio Recording Services, is open to studio owners, producers, engineers and anyone else involved in professional recording. For more information, contact the organization at 800/771-7727, or visit www.spars.com.

Leslie Ann Jones, Skywalker Sound and SPARS board president



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Get everything you've ever wanted to know about audio education in our MixGuides Education, at www.mixguides.com/education.

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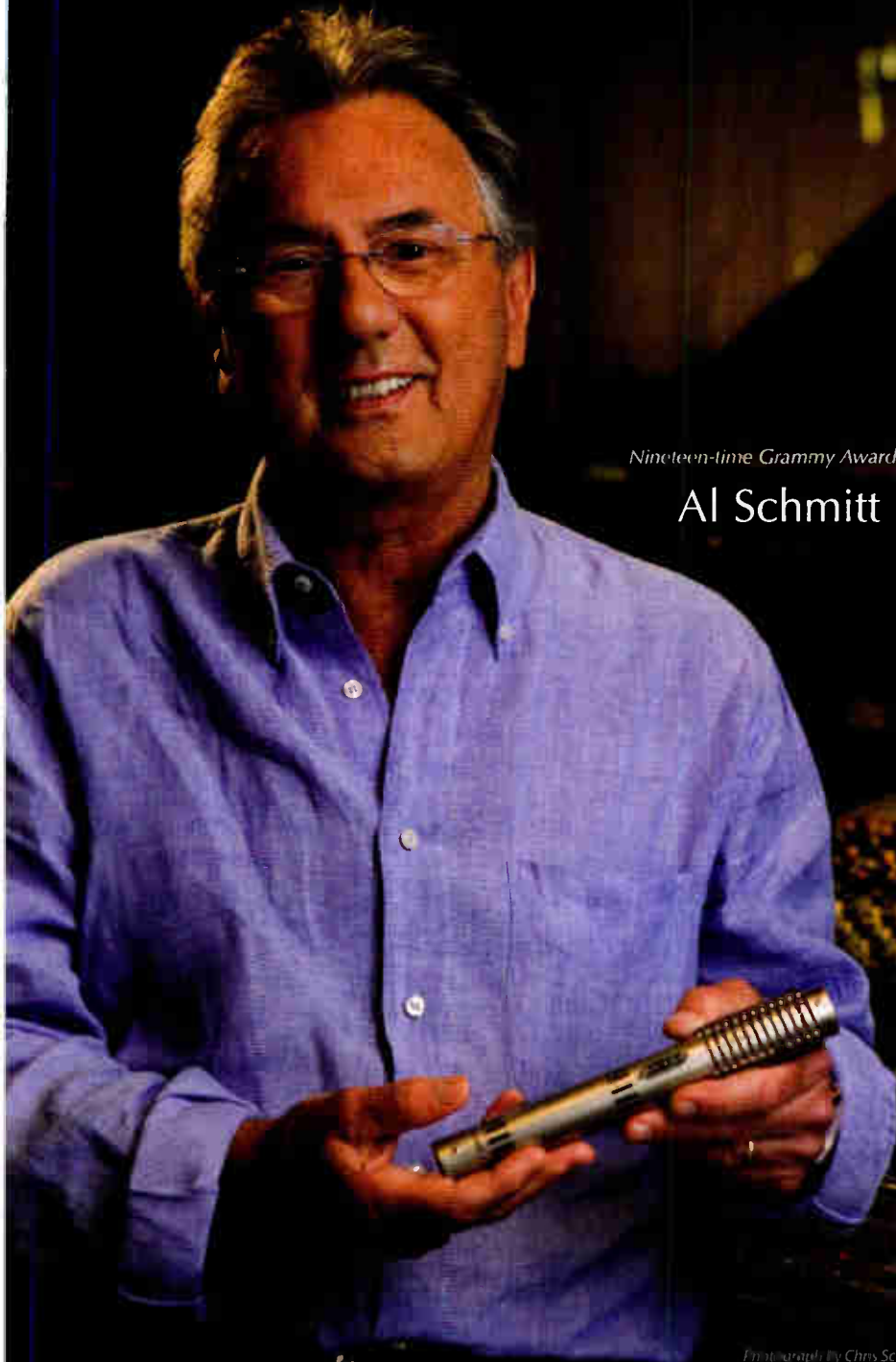


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Full Sail Real World Education

By Tom Kenny

Twenty-eight years ago, when a recording education was primarily the province of conservatories and four-year degree programs—and still viewed with skepticism by the industry at large—a small team began teaching recording out of a mobile unit in Altamonte Springs, Fla., adopting the name Full Sail. It was a simpler time in audio, to be sure, with digital technology still on the horizon and a signal chain and workflow that was largely self-contained.

During the intervening years, driven largely by feedback from graduates and employers, Full Sail has evolved, diversified and expanded to encompass 178 acres on the Winter Park, Fla., campus, with 13 degree programs (with plans to reach 18), including Recording Arts, Show Production and Touring, Film, Game Development, Web Development and Music Business. Over the past two years alone, three new degrees have been added, including master's programs in a new online initiative that includes degrees in Entertainment Business and Education Media Design & Technology. And with the implementation of a new five-year plan, Full Sail has embarked on its most ambitious expansion of facilities and curricula in its history.

"It used to be that media, entertainment and communications were three discrete industries," says Garry Jones, the first employee, now president. "Today, all three of those industries are being combined because of two powerful forces: popular culture and technology. Our mission is to make sure we are training our students to address that evolution."

"Convergence is a word that's been around awhile, but it's now more significant than ever," adds Isis Jones, chief information officer. "The lines are blurring in the media arts, so we are training the whole-brain student—the left-brain techie and the right-brain creative. Students who come to us now have been on computers since three years old, and there needs to be a digital infusion of technology into the classroom to stay current. Students need to be engaged and

entertained—a podcast, interactive snippets, an archive of guest lectures, animations—and be able to access the info via multiple formats so they can watch it on their iPod, their iPhone, or their laptop no matter where they are. It's all meant to enhance, not to replace the teacher. We understand that technology should not take the place of an inspiring teacher."

The Apple reference is not casual. As of March 1, each incoming student (including online students with the program launched last month) started receiving a MacBook Pro custom-loaded with software to suit their individual program. For Recording Arts students, that meant Logic Pro, Final Cut Pro and the iLife suite (GarageBand, iPod, iDVD and iMovie). These tools are used in conjunction with on-campus studio access to Digidesign, Amek, Neve, SSL and Sony consoles along with Pro Tools, Nuendo, Cubase, Sonar, Sound Forge and more.

The Harrison MPC3-D-equipped Dubbing Stage, pictured on this month's cover, typifies the merging of media, while reinforcing that Recording Arts remains the bedrock of the school.

Bill Smith, one of the early Full Sail students, today heads the Recording Arts program. "We still have our console jockeys," he says. "But they're surrounded by this whole generation of digital natives, artists who use technology as a compositional tool. It's no longer just the studio. They're looking at videogames, post, the Internet."

Smith's counterpart in Show Production and Touring, Dana Roun, has also witnessed a recent boom; a new building for club sound was added this year and



PHOTO: ED McDONALD

President Garry Jones and chief information officer Isis Jones enjoy time with Full Sail students.

a 500-seat venue is under construction. "Today's students already have an idea of what they want to do when they arrive," he says. "We designed the program to give them the building blocks, and we emphasize the reality of working as a crew."

With 5,300 students and 1,100 employees in Florida, and with recent expanded relationships with the L.A. Film School and the L.A. Recording School, during the past five years Full Sail has averaged a 74-percent placement rate across all programs, and its graduates work on Grammy and Oscar-winning projects and invent new jobs on their own. "We've really seen a rise in the entrepreneur, both when entering school and embarking on their careers," says Tammy Gilbert, VP of career development. "Each student will have their own definition of success when they leave here on their journey."

"You hear that the music industry is on the wane, that it will never be the same," concludes Jones. "Well, it's not the same—it's evolving into a new and exciting hybrid. Hit records are emerging from game soundtracks, retail chains unrelated to the traditional music business are bolstering songs on *Billboard's* Top 100, and ad agencies are now simultaneously launching new products and new recording artists. It's exciting—I can feel it when I walk through the halls." ■



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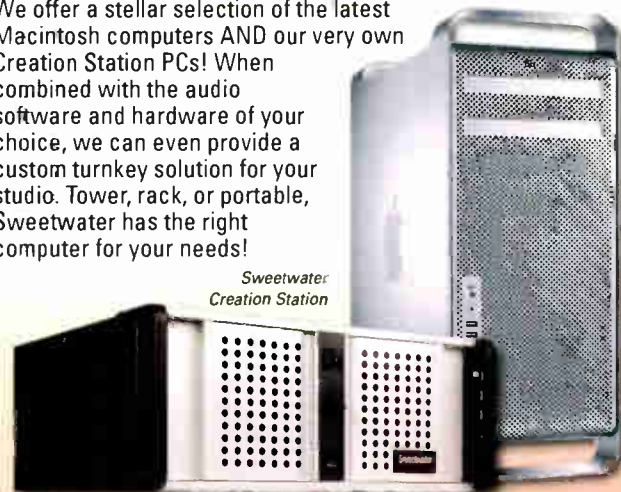


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Mixing piano

BUILDING AN INSTRUMENT SOUNDSTAGE

BY KEVIN BECKA

FROM THE SIMPLICITY OF FRANK MILLS' "MUSIC BOX DANCER" TO THE FURY OF ELTON JOHN'S "BURN DOWN THE MISSION," PIANO SOUNDS RANGE FROM CLEAN AND PERCUSSIVE TO BOMBASTIC AND ANTHEMIC. A PIANO PART MAY SPAN THE ENTIRE RANGE OF AN ORCHESTRA; IT CAN ROCK THE HOUSE OR TRANSPORT US WITH JUST A FEW NOTES. CONSIDER THE INTRICATE AND LUSH TONES OF GERSHWIN'S "RHAPSODY IN BLUE," JERRY LEE LEWIS' ACROBATIC "GREAT BALLS OF FIRE" AND BEETHOVEN'S INSPIRING "MOONLIGHT SONATA."

Mixing piano, no matter the genre, calls for your creativity as a mixer and the input of the production team as a guide. Creative discussions can center on the size of the instrument image in relation to the other parts. Is this a piano-centric production, or is the instrument a backdrop for other players? How do you want to treat the instrument when it comes to reverb, mood and panning? Is there an established style—retro or otherwise—that you want to emulate, or are you establishing a new stylistic beachhead? After you form ideas, it's time to dig in. In this feature, I'll talk about EQ scenarios along with tips on panning, automation, reverb, compression and dealing with instrument mechanics.

PANNING FOR PLATINUM

Because of the piano's wide note range, panning is a good first step toward crafting the track, and your reference should always be the other instruments. The wideness of the image can be determined by a few guidelines. The number one question to ask is, "What else is going on in the track?" Is the piano the star or does it offer a supportive role? The ideal solution might be panning it more to the center for a more dominant image or dynamically panning it throughout the song to keep your listeners' focus from straying when the player chooses to play outside of center. (For an in-depth discussion on automated panning, see "Power Tip" on page 26.)

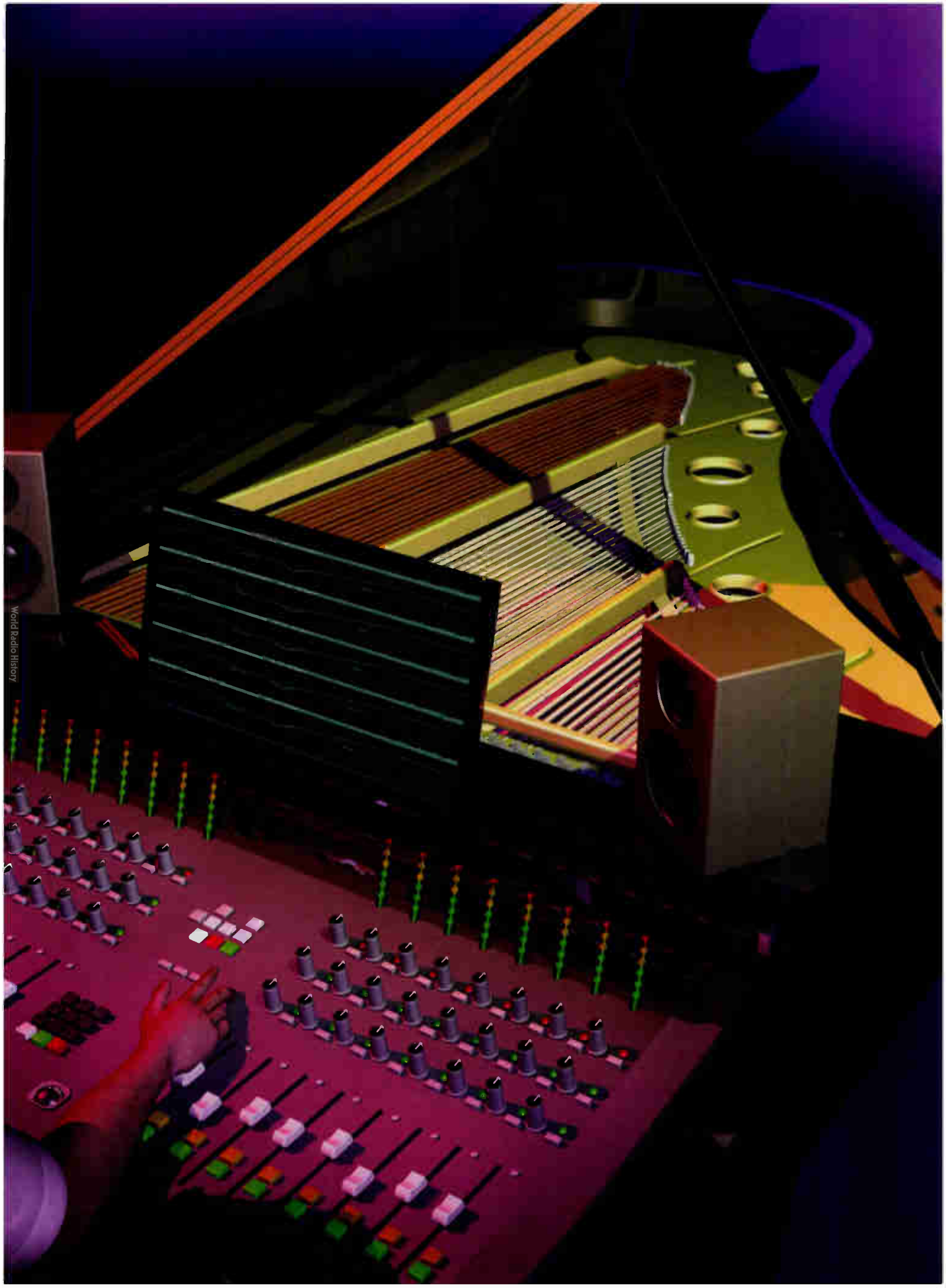
On the other hand, if the piano is supporting oth-

er instruments (for example, comping chords behind the melody), wider panning can offer a tonal "doughnut," leaving a space in the center of your image for a vocal or another melodic instrument to shine. Keep in mind that panning hard-left and -right is extreme and can distract the listener, so take the time to get an accurate picture of how your panning impacts the ear by switching between near- and midfield speakers for focus, even referencing on headphones. Imaging that seems subtle over speakers can jump out when you put on a set of cans.

TONE IS KING

Because of its range and polyphonic nature, piano can take up a lot of room in a mix, which may or may not be a good thing, depending on its role. For instance, a bright piano layered with a vocalist can steal the thunder from the featured player. In this section, I'm going to address "appropriate" EQ, and by that I mean one that supports the timbre and overall feel of the mix. For example, some piano music needs to be "dark": You may not necessarily want to hear a lot of sparkle on a moodier track. If darkness is the goal, then you'd bring down the "air," meaning the overtones in the 20kHz range. One way to tone down the high end is to choose a high-shelf EQ at 17 to 20 kHz and lower the gain to match the track's mood. Conversely, if the piano has "room" in a sparse mix or needs to speak more in the upper range because the track is already *too* dark, then use the same shelf

ILLUSTRATION: CHUCK DAHMER



EQ to add more overtones. Adding these particular frequencies can make the instrument shine in the mix without sounding harsh, especially if you add harmonics that are not in the "meat" of the piano's range, between 275 and 4,186 Hz.

A good guide for your ear when you're trying to add sparkle is to boost the 17 to 20kHz band with a shelf EQ until you can hear the "fuf-fuf-fuf" sound made when the felt dampers rise and lower off the strings as the player uses the sustain pedal. Keep in mind, though, that not all pianos are created equal: Some have dampers that are already quite loud, and bringing them out with EQ can detract from the performance. Once you've added some top, reference the piano in the overall mix and adjust accordingly.

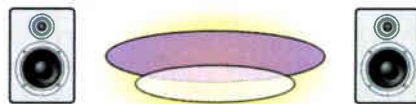
In addition to the dampers' mechanical sounds, pianos from various manufacturers differ in brightness because of the material used in the hammers and the types of strings used. There are even after-market tweaks that can change the tone and that will alter your EQ game plan. For instance, a brighter-sounding piano, perhaps one that has had the hammers lacquered to bring out the top end, would work great for a pop track, but not as well on a jazz recording. If you have an instrument that is very bright sounding, then shelf down some of the high frequencies as mentioned above, or bring out some of the bottom end by adding 100 to 250 Hz on a Q of 7 to 10 to balance the bottom end with the extended top of the instrument. When

POWER TIP

ADD FOCUS WITH DYNAMIC PANNING

Because of the sheer size and range of the piano, the image can shift dramatically from one side or the other as the player moves around the keyboard. This can cause a distracting shift of the listener's attention from left to right, especially if the piano is panned wide. This see-saw panning effect is dependent on how the instrument was recorded. For instance, on a track that has been recorded with a spaced pair of microphones positioned right over the hammers, the image can be less centered than a track that was recorded with an X/Y pair pulled back four feet from the instrument. So recording engineer, beware: Even though you're getting an intimate picture of the instrument with mics placed up close and personal, you're also getting an exaggerated stereo picture. Nobody listens to a piano with their ear five inches off the hammer, yet that's the way a lot of instruments are recorded.

With that in mind, when the player is shifting ranges radically and you feel your lack of center becoming a sonic distraction, momentarily rein in the drifting part by automating the panner in your DAW. For example, let's say that the solo is played mostly in the middle section of the instrument but the player reaches out to



CHUCK DAMMER

To keep the piano image stable, try narrowing panning when the player reaches for extreme high and low notes.

the left for the occasional low accent note. This is where automated panning can lessen the sensation that the instrument is unnaturally large in the mix.

For starters, find the position where the stereo image sounds good overall and write that throughout the track as a foundation. Then with the left and right panner in auto-touch—meaning if you let go, it will revert to the previously written foundation pass—go through the tune and pull in the image when it gets too far afield. Your panning alteration could be just one side if it sticks out, or both if the player goes wide with both hands. Remember that if you're too emphatic in your moves, it will sound distracting. By writing the panning in this way, you will give yourself the best possible balance for your instrument in the mix: The image will be wider when the part is more centered, and centered when the part is leaning more to the left or right.

—Kevin Becka

boosting low frequencies, one caveat is that the dampers mentioned above have a low-end component to them and adding too much bottom will add a pronounced "thump" to your track every time the player uses the sustain pedal.

COMPRESSION, ANYONE?

When the piano is uneven in volume, compression can be used to tame the peaks and dips. When choosing a compressor, keep in mind that the type you pick will determine the sonic outcome. An opto-compressor

BEFORE YOU MIX

MINIMIZING LEAKAGE IN THE TRACKING ROOM

When recording piano, bass and drums in a minimal space or when the band insists on being in the same room for the best lines of sight and optimal live/studio performance, leakage is a major concern. For the engineer who is recording piano, it's a fight between tone and isolation, especially with drums. Luckily, there are numerous techniques to help you win this battle.

One solution to keep drums out of the piano mics, and vice versa, is to "bag" the piano—shutting the lid and covering it with blankets or the piano's own cover. However, now you'll have to set up your mics in the tiny space inside the piano, which doesn't give the instrument a very "open" sound because your mics are stuck inside a small wooden box with a lot of sonically competitive reflected energy. Sometimes recording this way is unavoidable for aesthetic reasons; for instance, if you're recording during a video

shoot. If you need to record with the piano closed, then try products made for this purpose, such as DPA's 3521 compact cardioid stereo kit, Earthworks PianoMic or the Schoeps CCM 4 compact microphone with the MK4 cardioid capsule.

One trick that will get you some degree of isolation but a more open sound is to face the open lid of the piano away from the other instruments. Placing the lid between instruments lets you use it as an acoustic barrier between your players. And a group of gobos placed between the drums and piano can help reduce crosstalk.

Although it sounds counterintuitive, put as little space between the players as possible to



CHUCK DAMMER

To increase isolation, face the piano's open lid away from other instruments; add gobos for additional separation.

minimize leakage delay: Leakage from afar creates a slapback effect, as opposed to the shorter, more usable decay that resembles room ambience and occurs when instruments are closer together.

—Kevin Becka

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will have a lazier attack and release—the perfect thing for a sparsely played part without a lot of peaks, such as comped chords. If the track is busy and played with a more percussive touch, then use a FET-based compressor that has the ability to respond more quickly to transients. This will have the effect of biting down harder on the transient, keeping it from jumping out of the track because the compressor is grabbing the peak quickly and then releasing it quickly enough to grab the next peak.

Start by setting an easy compression ratio of 2:1 and set your attack and release based on the song tempo and density of the mix. An attack of 17 to 20 ms and a release of 75 to 150 ms will clamp down harder on the attack than an attack of 30 to 60 ms with a release of 200 to 350 ms or higher. For the best results, use your ear and set the attack and release so that the compressor won't pump, but will instead act as a dynamic traffic cop, keeping your part from popping out and covering other mix ingredients. You can also use compression boldly as an effect. For instance, the piano in "Lady Madonna" is heavily compressed but it is a featured instrument, so the song can afford to carry a heavy-handed approach.

TROUBLESHOOTER

HEY! NO PEAKING

During our "Inside Track" series, we've talked a lot about the concept of automated EQ. When mixing piano, this versatile tool gives you ultimate control over the extreme tonal range of this complex instrument. The problem you're trying to solve is this: As an arrangement develops in power throughout a track, the EQ settings, or lack thereof, that worked at the front of the tune may rip your face off at the end as the player hits the instrument harder. This is where automation is a powerful tool to help keep these peaks in check.

For instance, sometimes a player will groove in the track and then come down and hit a hard low note for an accent. In this case, if you've added 300 Hz to bring up the warmth of the overall track, it will stick out, sending a peak of sonic energy across your mix. To coun-

ter this buildup, automate the gain setting at 300 Hz and dip it to match the player's move. This may be something done in stereo across the left and right side of the piano, or as a multi-mono plug-in where you just dip the left side (players mix perspective).

Reverb can also get out of control in the low end or need a boost at the extreme high end of the spectrum as the track develops. In this case, automate your send, setting a foundation where the reverb works across most of the track and then make a pass and pull it back when low energy builds up and hits the reverb too hard or give it a boost when it thins out at the top. By dynamically controlling your reverb send, you'll maintain an overall smoothness to the ambient treatment of your piano track.

—Kevin Becka

AMBIENT CHOICES

When making reverb decisions, the musical style and arrangement shape your choices. If there are a lot of other sustained instruments such as strings, sustained guitars and background vocals, then there will be less room for a piano with a lot of reverb. If the mix is sparse, then there will

be an abundance of open sonic space to fill with trailing reverb tails.

As for your approach, a brighter reverb might not be the best choice in a moody jazz track, but would be perfect for a densely layered pop track where you need your part to cut through the masses. Your choice is sometimes right in

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your face: If the piano is supporting the melody and comping chords, add just a touch of the same reverb you're using on your vocal or lead instrument track. Using a lighter effect keeps the piano's added ambience below the other players, making it less dominating.

On the other hand, if you're selecting a reverb for a solo piano track or the piano is playing a central role, then use the "best" ambient partner in your arsenal—that is, one with a low noise floor, and a lush and detailed reverb tail with lots of control over parameters, such as early reflections, pre-delay and high-frequency cut. A good starting point is a preset with a description that matches your sonic goal, such as Dark Plate or Bright Room.

Next adjust your room size and pre-delay to match your song's tempo. A tempo of 100 bpm or more cannot support a longer tail with a lot of pre-delay, while a ballad with a legato melody can support

When making reverb decisions, the musical style and arrangement shape your choices. If there are a lot of other sustained instruments, then there will be less room for a piano with a lot of reverb. If the mix is sparse, then there will be an abundance of open sonic space to fill with trailing reverb tails. Your choice is sometimes right in your face.

a verb with a long hang-time of 1.5 seconds or more with a pre-delay of, say, 120 ms. RT60 parameters can show up as decay time in seconds or in the actual size of your virtual space in feet or meters. Start with a 1-second or 25-meter-room setting and listen to the effect in your track. Remember that pre-delay makes your reverb more dominant in the track by leaving a "dry" space before the reflections kick in.

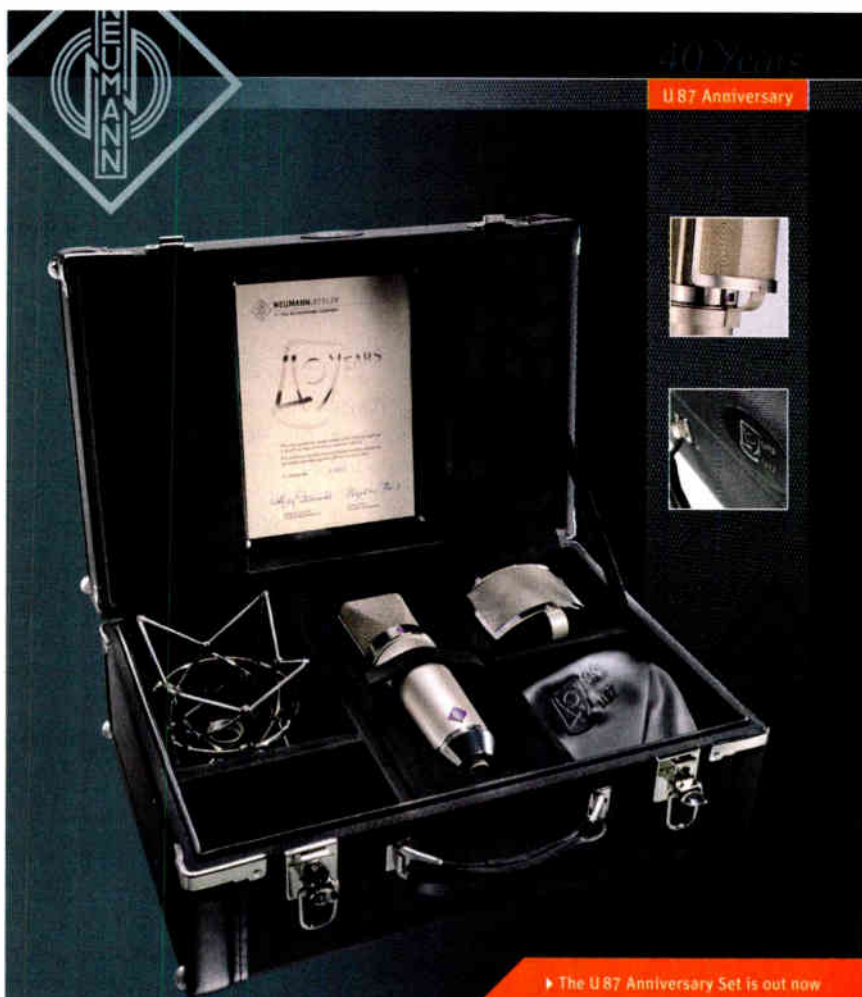
This parameter works especially well with piano because of the percussive nature of the instrument, giving it a unique and dramatic soundstage. Keep your tempo in mind when setting it up: The faster the tempo, the shorter the pre-delay. For a ballad or slower tempo, start at 120 ms and work back from there, shortening the delay if the song is faster.

The darkness or brightness of your reverb is represented by high-decay cut parameters. The most natural effect is when you roll off your reverb starting at 5 kHz, where it happens due to the laws of physics in a natural ambient space. Make your

reverb brighter by extending this parameter up to 8 kHz or beyond. Another way of brightening your reverb is to put an EQ across the send. Use a shelf EQ starting at 5 to 7 kHz to achieve the same effect as boosting your high-decay parameter.

Fine-tuning your piano track with the techniques described here will help you craft an ideal mix, no matter what style of music you're working on. Make reverb, panning and EQ choices in the context of the rest of your mix to perfect that piano sound. ■

Kevin Becka is Mix's technical editor.



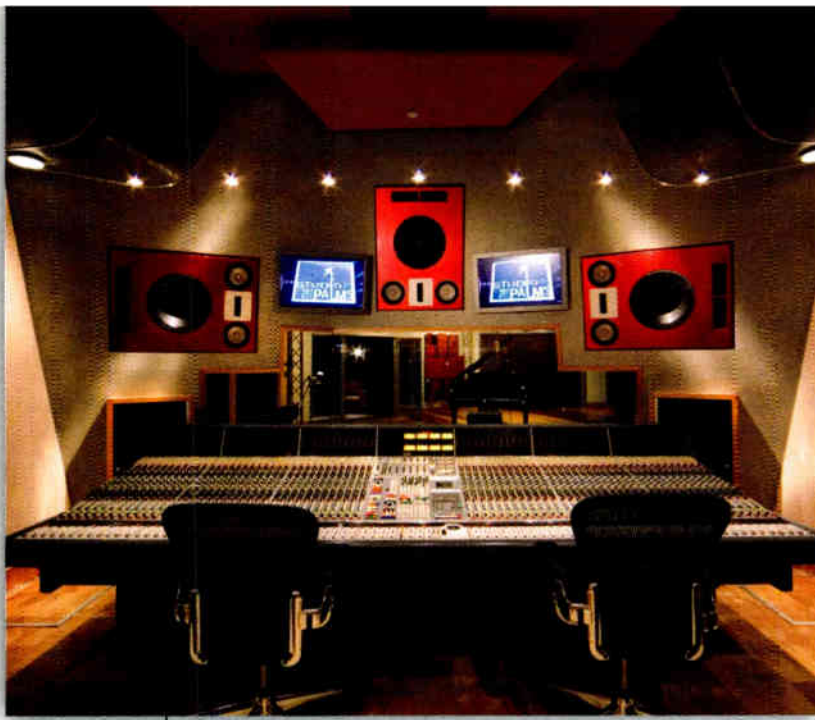
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By George Petersen



MAIN STUDIO MONITORING SYSTEMS

Livin' Large

Forty years ago, Ed Long of Calibration Standard Instruments introduced the then-revolutionary concept of the Near-Field Monitor™ with his MDM-4 speakers, and the recording studio hasn't been the same since. There are numerous advantages to monitoring in the near-field, such as a reduction (but *not* elimination) of the effects of room acoustics on the listening space. Large midfield and far-field monitors are hardly suited to smaller studio environments, so along with the rise of the project studio came the popularity of near-fields.

THE ISSUE

In any studio, the room itself is part of the listening experience. Even in the largest rooms, near-field speakers can be an essential component to successful mixing, either as secondary references to the visiting engineer who may be unfamiliar with the main monitors, or simply as a “real-world” indication of how mixes sound on smaller systems. But no matter what size the room, close-in listening definitely has its drawbacks, especially in high-SPL situations where the near-field concept doesn't work. Once large amounts of low frequencies (from the monitors and/or accompanying subwoofers) begin building up in an untreated control room, the near-field concept of reducing the acoustical interaction between the speakers and nearby walls, ceilings, floors and gear/furniture/console surfaces becomes meaningless.

The other drawback of speakers designed for close listening is the width of the sweet spot, which may be fine for the mixing engineer, but may not offer adequate dispersion with accurate stereo imaging for multiple persons (producer/artists/clients/director/etc.) within the room. A well-designed main speaker system—either freestanding or soffit-mounted—in a properly treated space can provide the ideal combination of accuracy, soundstage/stereo imaging and high-volume playback in such cases.

There are numerous considerations in seeking the right monitoring solution for your situation. Most important of these is realizing that the room and the monitors need to work together to meet the goal, and factors such as room volume, existing (or planned) acoustical treatments and even AC power sources, heating/cooling systems and mounting systems all combine to be just as important as the selection of the monitors themselves.

SURVEY SAYS

For the purposes of this article, we defined main monitors as systems with 12-inch or double-10-inch woofers or larger offered as stock designs from various pro audio suppliers. And if your favorite high-end audiophile system was left out of this survey, sorry, but we focused on pro audio gear. We also did not include fully custom systems, such as those from George Augspurger and others, which

don't necessarily lend themselves to a chart format.

That said, many of the systems included on the charts on pages 32 and 34 offer numerous custom options. These range from various amplification possibilities—some with several crossover and/or I/O selections from which to choose—or different flavors or bi/tri/quad/penta-amping or cabinet finishes. We've always been partial to basic black, but if you want zebrawood trim or candy apple-red lacquer, most companies will oblige—for a price. Some manufacturers will even tailor their cabinet dimensions—some-what—to fit them into existing soffits or offer low-profile versions for center-channel installs. We also encountered so many subwoofer options that listing them all would entail an article longer than this one, but suffice to say, if you need more bass than these monsters supply, adding one sub (or a couple) should remedy that problem.

What did surprise us was the range of systems available, with more than 60 models listed, ranging from \$2,500 to nearly \$70,000 each. As many readers may be looking at multichannel systems, the list prices in the chart refer to a single-speaker pricing, even if some of the monitors are normally sold in pairs. So if you're in the market for a system that puts the “loud” into loudspeakers, you should be able to find what you need in the pages to follow. Happy hunting!

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Large Studio Monitors

PRODUCT/ WEBSITE	LF. TYPE	MF. TYPE	HF. TYPE	AMPLIFIERS (WATTS RMS)	MAX SPL (dB)	RESPONSE (Hz)	WEIGHT (POUNDS)	SIZE HXWXD (INCHES)	PRICE (USD) EACH	NOTES
ADAM Audio S7A MkII www.adam-audio.com	2x15-inch, 2x9-inch	two ART MF ribbons	ART HF ribbon	(6) 2,000 total	130	20-50k	375	42x36x27	\$22,000	Four-way design uses proprietary ADAM ART folded-ribbon drivers for MF and HF
ADAM Audio S6A MkII	2x12-inch, 7-inch	two ART MF ribbons	ART HF ribbon	500+500+150+150+150	123	23-35k	227	37x23x20	\$15,000	Four-way design with ADAM ART folded-ribbon drivers
ADAM Audio S5A MkII	2x11-inch, 5-inch	two ART MF ribbons	ART HF ribbon	500+150+150+150	118	26-35k	106	33x17x16	\$7,500	Four-way design with ADAM ART folded-ribbon drivers
ADAM Audio S5VA MkII	12-inch, 8-inch	ART MF ribbons	ART HF ribbon	500+150+150+150	118	23-35k	115	16x32x18	\$6,000	Four-way design with ADAM ART folded-ribbon drivers
ADAM Audio S4VA MkII	12-inch	5-inch cone	ART HF ribbon	500+150	115	28-35k	75	16x30x17	\$4,125	ADAM ART folded-ribbon driver
ATC SCM300ASL Pro www.atc.gb.net	2x15-inch	3-inch dome	1.5-inch dome	275+275+200+100	121	25-20k	308	35x36x18	\$22,875	Same as SCM200ASL Pro, but with dual 15-inch woofers and larger enclosures
ATC SCM200ASL Pro	2x12-inch	3-inch dome	1.5-inch dome	275+275+200+100	118	32-20k	255	33x29x17	\$20,250	Double-12-inch version of flagship SCM300ASL Pro
ATC SCM150ASL Pro	15-inch	3-inch dome	1-inch dome	200+100+50	117	25-20k	165	35x20x22	\$9,750	Active FET overload protection and thermal tweeter protection
ATC SCM100ASL Pro	12-inch	3-inch dome	1-inch dome	200+100+50	115	32-20k	143	32x16x23	\$8,375	Active FET overload protection and thermal tweeter protection
Blue Sky SAT 12 www.abluesky.com	12-inch	4-inch inverted dome	1-inch twin concentric	200+200+100	114	45-30k	92	28x15x16	\$2,500	Rotatable HF/MF plate for horizontal/vertical use
Dynaudio M3 Passive www.dynaudioacoustics.com	2x12-inch	two 5.7-inch	1.1-inch soft-dome	unpowered	129	30-20k	165	30x22x20	\$5,923	Passive crossover (250-600W amp recommended); also offered without crossover at \$4,473/each
Dynaudio M3F	2x12-inch	two 6-inch	1.1-inch dome	unpowered	123	35-20k	N/A	51x20x16	\$3,233	Film mixing model; digital/analog crossover option; THX approved
Dynaudio M4S	4x12-inch	two 6-inch	1-inch dome	unpowered	126	35-20k	N/A	36x31x28	\$5,149	Andy Munro design; digital/analog crossover option
Dynaudio M4U	4x12-inch	two 6-inch	1-inch, 2- inch dome	unpowered	130	35-20k	N/A	36x31x28	\$5,113	Andy Munro design; digital/analog crossover option
Dynaudio M4+	4x12-inch	two 6-inch	1-inch, 2- inch dome	unpowered	133	35-20k	N/A	37x42x27	\$5,345	Andy Munro design; digital/analog crossover option
Equator Audio Q12 www.equatoraudio.com	12-inch coaxial	N/A	1.5-inch comp. driver	500+200	117	34-22k	65	17x17x17	\$2,500	Coaxial design; onboard CPU and Digitally Controlled Transducers™ correct room acoustics
Equator Audio Q15	15-inch coaxial	N/A	1.5-inch comp. driver	1,000+200	121	29-22k	92	21x21x21	\$3,000	Coaxial design; onboard CPU and Digitally Controlled Transducers™ correct room acoustics
Genelec 1036A www.genelec.com	2x18-inch	two 5-inch cones	1-inch comp. driver	1,100+1,100 LF; 600+300	136	21-20k	401	38x47x26	\$32,000	Weight does not include 71-pound amplifier rack
Genelec 1035A	2x15-inch	two 5-inch cones	1-inch comp. driver	1,100+1,100 LF; 600+300	136	30-20k	313	33x43x31	\$30,000	Weight does not include 71-pound amplifier rack
Genelec 1039A	2x15-inch	5-inch cone	1-inch dome	400+400 LF; 350+120	126	31-20k	253	33x42x22	\$12,900	Weight does not include 66-pound amplifier rack
Genelec 1034BC	2x12-inch	5-inch cone	1-inch dome	400+350+120	125	33-20k	185	19x48x16	\$11,650	Low-profile, center-channel design, 66-pound amp rack
Genelec 1034B	2x12-inch	5-inch cone	1-inch dome	400+400 LF; 350+120	125	33-20k	161	28x35x16	\$11,000	Weight does not include 66-pound amplifier rack
Genelec 1038BCPM	2x10-inch	5-inch cone	1-inch dome	400+120+120	124	35-20k	130	14x38x18	\$7,950	Low-profile, horizontal center-channel design; mag-shielded
Genelec 1038B	15-inch	5-inch cone	1-inch dome	400+120+120	124	35-20k	130	32x19x17	\$7,500	MF and HF drivers mounted on DCM waveguide
Genelec 1037C	12-inch	5-inch cone	1-inch dome	180+120+120	126	37-21k	82	27x16x15	\$5,100	MF and HF drivers mounted on DCM waveguide
Griffin G1 Mastering www.griffinaudio.com	18-inch	two 8.7-inch cone	ribbon HF	1,000+500+500 optional	N/A	20-30k	705	64x31x29	\$19,500 and up	Offered with analog or DSP crossovers; customer specifies wood/finishes
Griffin G1 In Wall	18-inch	two 8.7-inch	ribbon HF	1,000+500+500	N/A	20-30k	409	36x30x22	\$16,250	Amplifiers optional; customer specifies wood/finishes
Griffin G1 Active	15-inch	two 9-inch	ribbon HF	500+250+250	N/A	30-25k	205	29x20x25	\$9,950	Amps included
Kinoshita Infrasonic www.reyaudio.com	4x15-inch	N/A	comp. driver	unpowered	130	9-20k	660	43x51x39	\$23,100	Capable of 105 dB at 9 Hz; actual LF response depends on crossover frequency selected
Kinoshita RM-7VC	2x15-inch	N/A	comp. driver	unpowered	130	20-20k	550	43x51x28	\$23,100	Also available with trapezoidal cabinet; add 7 inches to depth for horn protrusion
Kinoshita RM-7VC Mesa	2x15-inch	N/A	comp. driver	unpowered	130	20-20k	550	41x51x32	\$23,760	Trapezoidal cabinet version of RM-7VC; add 7 inches to depth for horn protrusion
Kinoshita RM-6VC	2x15-inch	N/A	comp. driver	unpowered	130	24-20k	440	34x47x25	\$19,660	Add 7 inches to depth for horn protrusion
Kinoshita RM-8VC	2x15-inch	N/A	comp. driver	unpowered	130	30-20k	330	29x47x24	\$18,120	Add 7 inches to depth for horn protrusion
Kinoshita RM-4BC	2x15-inch	N/A	comp. driver	unpowered	130	30-20k	319	44x32x24	\$17,775	Add 7 inches to depth for horn protrusion
Kinoshita RM-5BC	15-inch	N/A	comp. driver	unpowered	124	24-20k	264	44x30x20	\$14,700	Horizontal profile; add 7 inches to depth for horn protrusion
Kinoshita RM-5LC	15-inch	N/A	comp. driver	unpowered	124	24-20k	264	30x38x31	\$14,700	Vertical profile; add 7 inches to depth for horn protrusion
Kinoshita RM-11BC	15-inch	N/A	comp. driver	unpowered	124	32-20k	231	29x32x19	\$14,360	Add 7 inches to depth for horn protrusion
Kinoshita Warp 1	4x15-inch	N/A	comp. driver	unpowered	123	30-20k	242	32x32x24	\$17,100	"W"-shaped front baffle; trapezoidal sides; add 7 inches to depth for horn protrusion

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- **Rob Cavallo**

(Green Day, Kid Rock, My Chemical Romance)

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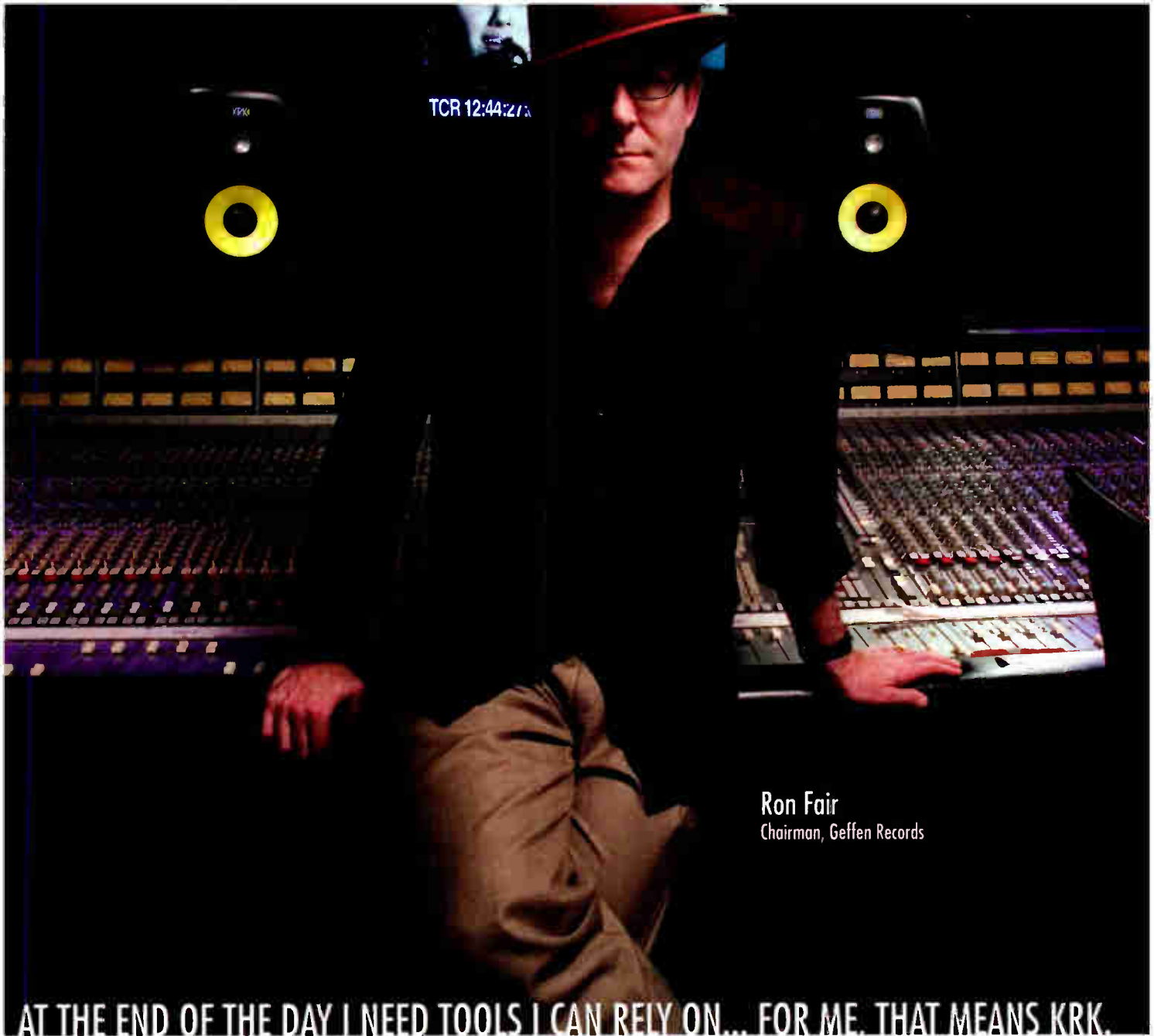
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Large Studio Monitors

PRODUCT/ WEBSITE	LF. TYPE	MF. TYPE	HF. TYPE	AMPLIFIERS (WATTS RMS)	MAX SPL DB	RESPONSE (HZ)	WEIGHT (POUNDS)	SIZE HxWxD (INCHES)	PRICE (USD) EACH	NOTES
Kinoshita Warp 5	4x15-inch	N/A	comp. driver	unpowered	130	26-20k	440	39x43x24	\$22,225	"W"-shaped front baffle; trapezoidal sides; add 7 inches to depth for horn protrusion
Kinoshita Warp 7	4x15-inch	N/A	comp. driver	unpowered	130	20-20k	550	47x43x24	\$24,800	"W"-shaped front baffle; trapezoidal sides; add 7 inches to depth for horn protrusion
Klein+Hummel D 500 C www.klein-hummel.com	12-inch	3-inch dome	1-inch dome	400+230+290	123	27-20k	65	30x16x18	\$14,995	Analog and digital (AES, S/PDIF) inputs
KRK M2-18 www.krksys.com	2x18-inch, 2x10-inch	1-inch comp. driver	1-inch ring radiator	2,375+1,145+360+360	129	19-20k	400	54x47x24	\$30,000	Includes digital 96kHz crossover; Crown reference amps
KS Digital ADM 0 www.ksdigital.de	4x10-inch	two 8-inch cones	1-inch dome	1,200+600+600	130	20-22k	132	32x32x26	\$34,500	Analog and digital (AES) inputs; onboard DSP, FIR crossover
KS Digital ADM 1	2x10-inch	8-inch cone	1-inch dome	400+200+100	128	25-22k	84	24x24x19	\$5,450	Analog and digital (AES) inputs; onboard DSP; FIR crossover
Meyer Sound X-10 www.meyersound.com	15-inch	N/A	4-inch comp. driver	1,200+620	136	18-20k	187	30x31x22	\$23,620	Pressure-Sensing Active Control of woofer cone motion
Ocean Way OWA-415B www.oceanwayaudio.com	2x15-inch	N/A	2-inch comp. driver	2,000+400	N/A	25-18k	N/A	see note below	\$26,500	Bi-amped soffit mount or stand-alone with dual 28-band EQs
Ocean Way DWA-415TS	18-inch, 2x15-inch	comp. driver	2-inch dome	1,000+400+400	N/A	25-18k	N/A	see note below	\$31,000	Tri-amped soffit mount with dual 28-band EQs
Ocean Way DWA-415T	2x18-inch	2x15-inch	2-inch comp. driver	2,000+1,000+400	N/A	25-18k	N/A	see note below	\$32,000	Tri-amped freestanding mount with dual 28-band EQs
Ocean Way DWA-1215Q	4x15-inch	2x15-inch, comp. driver	2-inch dome	2,000+1,000+400+400	N/A	25-18k	N/A	see note below	\$50,000	Quad-amped soffit mount or stand-alone with dual 28-band EQs
Ocean Way DWA-1615Q	4x15-inch	4x15-inch, two comp. drivers	2-inch dome	2,000+1,000+400+400	N/A	25-18k	N/A	see note below	\$60,000	Quad-amped stand-alone with dual 28-band EQs
Ocean Way HR 2A	18-inch	15-inch	1-inch comp. driver	1,000+50+150	N/A	20-18k	N/A	44x36x27	\$17,000	Tri-amp new model at AES; sub in separate 28x36x27 cab
Ocean Way HR 2B	18-inch	15-inch	1-inch comp. driver	1,000+150	N/A	20-18k	N/A	44x36x27	\$14,250	Bi-amp new model at AES
Ocean Way HR 2C	15-inch	N/A	1-inch comp. driver	600	N/A	30-18k	N/A	44x36x27	\$10,000	Passive new model at AES; sub in separate 28x36x27 cab
Pelonis Acoustics 215A pelonissound.com	15-inch	15-inch co-ax	co-ax comp. driver	1,000+400+400	130	18-25k	300	36x31x23	\$17,500	Tannoy Dual-Concentric 15-inch coaxial with digital crossover; neodymium sub-bass 15-inch
Pelonis Acoustics 215AW	15-inch	15-inch co-ax	co-ax comp. driver and TAD tweeter	1,000+400+400+400	130	18-40k	300	37x31x23	\$20,000	Tannoy Dual-Concentric 15-inch coaxial with digital crossover; neodymium sub-bass 15-inch; TAD SuperTweeter
PMC MB2S-A www.pmc-speakers.com	2x12-inch	3-inch dome	1-inch dome	unpowered	124	20-25k	216	34x15x22	\$32,700	Active, tri-amped version (MB2s-XBD-A) and center-channel versions also available
PMC BB5-A	15-inch	3-inch dome	1-inch dome	900+300+150	124	17-25k	161	41x17x31	\$30,250	Passive and center-channel version available
PMC MB2S-A	12-inch	3-inch dome	1-inch dome	325+120+120	124	20-25k	107	34x15x21	\$21,800	Passive and center-channel version available
Quested HM415 www.quested.com	4x15-inch	8-inch cone	2-inch dome, 1.25-inch dome	450+450+450	130	25-20k	506	42x49x22	\$69,500	Amp/electronics in remote 19-inch rack
Quested HM412	4x12-inch	8-inch cone	2-inch dome, 1.25-inch dome	450+450+450	128	25-20k	440	35x37x27	\$62,500	Amp/electronics in remote 19-inch rack
Quested Q412d	4x12-inch	3-inch dome	1.25-inch dome	770+770+450+450	125	40-18k	286	35x37x27	\$37,500	Amp/electronics in remote 19-inch rack; rotatable MF/HF section
Quested Q412d	2x12-inch	3-inch dome	1.25-inch dome	450+450+450+450	121	40-18k	176	28x28x25	\$29,500	Amp/electronics in remote 19-inch rack; rotatable MF/HF section.
Quested Q412dN	2x12-inch	3-inch dome	1.25-inch dome	450+450+450+450	121	40-18k	176	18x43x25	\$29,500	Wide/narrow version of Q212d; rotatable MF/HF section; amp/electronics in remote 19-inch rack
Quested Q210C	2x10-inch	3-inch dome	1.25-inch dome	770+450+450	118	40-18k	154	24x34x14	\$22,500	Rotatable MF/HF section; amp/electronics in remote 19-inch rack; also offered in passive HQ210 version
Westlake BBSM-10 www.westlakeaudio.com	2x10-inch	6.5-inch cone	1.25-inch dome	unpowered	118	45-20k	150	16x30x22	\$4,893	Internal passive crossover; matching subwoofer available
Westlake BBSM-12	2x12-inch	6.5-inch cone	1.25-inch dome	unpowered	122	45-20k	220	19x34x23	\$6,250	Internal passive crossover
Westlake BBSM-15	2x15-inch	10-inch cone	1-inch comp. driver	unpowered	126	38-20k	375	27x41x25	\$11,079	Internal passive crossover
Westlake TM-3	2x15-inch	2-inch comp. driver	1-inch comp. driver	unpowered	126	34-20k	389	30x44x20	\$22,000	Internal passive crossover; optional bi-amping
Westlake HR-1	2x15-inch	10-inch cone, 2-inch comp. driver	1-inch comp. driver	unpowered	128	34-20k	415	30x44x20	\$30,000	Options include bi-amp, passive tri/quad-amplification or active quad-amping
Westlake SM-1	2x18-inch	10-inch cone, 2-inch comp. driver	1-inch comp. driver, 1/2-inch comp. tweeter	unpowered	130	20-20k	550	39x49x32	\$44,500	Five-way system with options up to penta-amping.

Notes: *For comparisons, pricing refers to the cost of a single unit, even if speakers are only sold in pairs. Also, pricing is approximate and may vary due to exchange-rate fluctuations, etc.
 **The larger Ocean Way Audio systems comprise several individual enclosures containing the LF/MF/HF sections; therefore, no dimensions are listed here. See Ocean Way Audio's Website (www.oceanwayaudio.com) for details.



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A PROPERLY
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Sweet Sounds From the Stage

By Steve La Cerra

For many engineers, the most difficult aspect of a live mix is the drum sound. In most situations, miking the drum kit requires patience, a gaggle of mics and cables, and attention to the style of music. Well, fear not intrepid engineers—drum miking isn't rocket science. But you will need to think about how the kit plays into the rest of the onstage sound. I've compiled a slew of tips and techniques on properly miking the kit to take the guesswork out of placement and keep your focus on the mix.

ACHIEVING A BIG BOTTOM

My favorite kick drum mic is the Audix D6 placed just inside the hole, pointing at the beater. (See Fig. 1.) I might move the mic a bit farther inside, but this is a great starting point. As the mic is moved closer to the beater, you typically get more "smack," but less "woof." Some engineers will use an outside mic such as the D6, a Shure Beta 52 or a Beyerdynamic M88, with a second mic placed inside the drum, such as a Shure Beta 91. The outside mic captures the low end, and the inside mic captures the smack of the beater. A bit of Velcro on the back of a 91 keeps it from moving around after you've placed it atop a pillow or small blanket.

If you like this idea, then check out the Audio-Technica AE2500, which employs dy-

namic and condenser elements placed side by side under a single head grille for maximum phase coherence. When adding a second mic on a kick (or any instrument for that matter), check the phase or polarity between the two. If you find that the kick is too boomy, then lay a bath towel or small pillow inside the drum so that it is just touching both heads, or you can purchase one of a zillion products designed to do this. But don't stuff the kick drum full of padding because you'll kill the tone.

The next most important element of the kit is the snare drum, and it's tough to go wrong with a Shure SM57 or another recent popular choice, the Audix i5. These are cardioid mics, so place them with the rear of the mic (where the cable enters the body of the mic) facing the hi-hat for maximum rejection of the hat. (See Fig. 2.) If your tastes steer you toward a mic with a hypercardioid pattern, place it so that the two null points face the hat and the rack tom.

Adding a second mic for the bottom of the snare is a highly debatable subject. On the one hand, a bottom snare mic captures the sizzle of the snares and adds presence to a dull-sounding drum. However, if the drum sounds great to begin with, you may not need a bottom mic. Because the bottom snare mic is typically out of phase with the top mic, it can create more phase problems than some engineers feel it's worth.



CLOSE-UP PHOTOS: STEVE LA CERRA

Figure 1: An Audix D6 placed inside the hole, pointing at the kick's beater



Figure 2: proper position for a cardioid mic on a snare

Contoured for natural sweet spot enhancement.

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Even if I don't always need that bottom mic, I'm paranoid and want it there in case the top mic fails (which has never happened).

Personally, I'm not too picky about a mic for snare bottom, but some engineers prefer a cardioid condenser placed a few inches from the bottom head, either directly pointed at it or at a slight angle to the bottom head. In either case, always check the phase between the bottom and top mics. If you use a condenser on the bottom, switch on the pad to prevent overloading the mic's electronics and use the highpass filter to reduce leakage from the kick.

THE TOM TOM CLUB

Most drum kits have only one snare drum but several toms, and you don't want one of the toms to have a different timbre, so use the same brand and model of mic on all toms, or at least the rack toms. Likely suspects for tom mics include the Audix D2, Shure Beta 98, Sennheiser e604 and MD-421, Beyerdynamic M201 and Electro-Voice N/D468. Keep the mics out of the drummer's path so that the drummer can get around the kit easily and the mics don't get damaged. For floor toms, you can go with one of the

previously mentioned mics or—if you're looking for a bit more bottom—try an Audix D4 or AKG D-112.

Placing a mic on a floor tom is tricky when the drummer's ride cymbal sits directly above the tom. Try to aim the null point of the mic's pickup pattern at the ride cymbal to reduce leakage. Be aware of the angle of the tom mic to the drum head; some engineers will place the mic extremely close (within an inch) and point the mic so that the diaphragm is parallel to the drumhead. The low-end response suffers because the mic is not capturing the entire surface of the head. Instead, point the mic so that the diaphragm is at an angle of roughly 40 degrees and aimed at the center of the head. Placing the mic within two to three inches of the head will reduce leakage because getting closer to the source enables you to reduce gain on the console, effectively making unwanted sounds softer. It also takes advantage of the proximity effect exhibited by most directional microphones. When possible, face the tom mics in the same direction so that sound in a tom's main mic is in phase with the leakage reaching another mic.

A CYMBAL OF MY AFFECTION

There are two approaches to overhead mics on a drum kit. The first employs the mics for picking up the cymbals. The second uses the overheads to capture the entire kit while the remaining mics function as "spot" mics. In either case, placement is similar and the difference comes in the mix, where you roll the low end out of "cymbal" mics but keep it in "overhead" mics.

Typical placement for directional (cardioid or hypercardioid) overhead mics is one over each side of the kit, approximately six feet high, pointing either straight down to the floor or angled toward the center of the kit. In some instances, it may make sense to angle the overheads slightly toward the audience to increase rejection of the drum monitors. The higher up you place the overhead mics, the better the blend of all the cymbals. On a large stage with a high ceiling, try seven to 10 feet. Be cautious of creating hot spots in hypercardioid overheads, especially when pointing them straight down to the floor. Most drummers place their "effect" cymbals on the extreme sides of the kit, and, because they tend to be really loud, it's better if these cymbals



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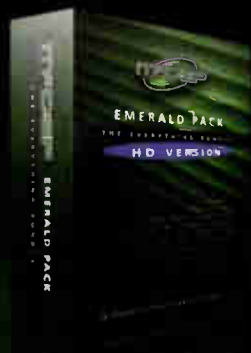
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are off-axis to the overhead mics.

On a really large kit, a third mic directly in front of the drummer helps prevent a "hole in the middle." Adding a spot mic on the ride cymbal is a good way to make sure that the "ping" of the ride cuts through the mix. This mic can be placed on top or underneath; I prefer the latter because it makes it less likely to pick up other elements of the kit and keeps it unobtrusive. It's a good idea to switch on the mic's most severe highpass filter or dump the low end out at the channel.

OMNI IS NOT A FOUR-LETTER WORD

One approach you can take if you have the mics, stands and console channels is to place a mic underneath every crash cymbal. Omnidirectionals are probably best in such applications as you'll be very close to the cymbal and a directional mic will sound "swishy." Although the cardioid pattern has traditionally been the choice in onstage miking, omnis can be placed much closer to a source without creating a hot spot or proximity effect. For example, a pair of Earthworks TC30Ks can be set to a lower height while

maintaining smooth response, capturing all of the kit without creating much leakage.

Favorite overheads include the Earthworks TC30K, Shure SM81 and KSM32, AKG C-414 and C-451, Audix SCX-one-c, Audio-Technica AT4050, Neumann KM184 (KM84 if you're lucky enough to have a pair) and Beyer M160 ribbons. Because none of these mics likes to be beaten with a stick, take extra care to keep them out of harm's way. During soundcheck, check phase between overhead, kick, snare and tom mics. Even if I'm going to dump the low end out of the overheads, I'll start with them full range, add in the kick mic and flip the phase of the kick in and out while listening for a change in the low end. Ditto for the snare drum and toms. Sometimes the overheads have to be phase-reversed.

A FEW NOTES ON THE HI-HAT

It boggles my mind that some people will mike a hi-hat from the bottom. This produces a clunky sound, doesn't capture any attack from the stick and, in most cases, is a far cry from what the drummer is hearing. Any of the condenser mics mentioned for overheads will work equally well for hi-hat, placed three to four inches above the top hi-hat cymbal, at an angle of about 60 degrees. Keep the mic toward the middle of the cymbal; placing it near the edge will capture a lot of wind noise when the hat is closed and opened. Use the mic's most severe low-frequency roll-off; you don't need any bottom end on a hi-hat mic. Be mindful of the mic's pickup pattern.

BEYOND ROCK 'N' ROLL

For a jazz kit, a simpler setup is often sufficient. Typically, I'll put up a pair of cardioid condensers in X/Y stereo about six feet in the air, centered over the snare drum or directly above the player's head. In this case, don't roll the low end off of the overheads as they'll serve to capture the toms and cymbals. Add spot mics for the kick and snare, and you're done. In this case, the kick mic can be backed a few inches away from the front bass drum head. I've also had tremendous luck using a pair of Earthworks TC25Ks (omni), one pointing straight down between the snare and hi-hat, the other pointed between the floor tom and ride cymbal, about six feet in the air. Add to these a kick mic for a little boot in the bottom, and the drum sound is finished. ■

In addition to being Mix's sound reinforcement editor, Steve La Cerra mixes front of house for Blue Öyster Cult.

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APPALACHIAN STATE UNIVERSITY: Boone, NC; www.music.appstate.edu/recording. Hayes School of Music 4-year B.S. in music industry studies. Other concentrations prepare for careers in arts management, promotions, music merchandising/manufacturing. The 24-track facility offers digital mixing, editing workstations and peripherals. The Broyhill Music Center includes two performance halls, opera studio, MIDI studio, computer labs, rehearsal halls and practice rooms. Off-campus internships.

A.R.T.I. ORLANDO: Orlando, FL; www.audiocareer.com. 45-week Audio Engineering diploma. Students prepare for employment in the audio production industry, including music production and sequencing, sound editing for film and TV, sound effects design and mastering, film post in a THX pm3-certified mixing theater. Studios include ProControl and SSL digital. Placement assistance provided; financial aid available. An accredited member of ACCSCT.

AUDIO MAGIC RECORDING STUDIOS: Buffalo, NY; www.recordingstudio.com. 12-week certificate programs in audio basics, Pro Tools and advanced mixing techniques. Full-time commercial studio with multiple rooms and workstations. Instruction covers sonic principles, consoles, mics and effects to digital editing and advanced techniques in mixing and mastering on Pro Tools HD. Hands-on approach with private lab time.

BARTON COLLEGE: Wilson, NC; www.barton.edu. B.S. in Mass Communication, concentration in Audio Recording. Hands-on training in a 32-track recording studio. Very low student/teacher ratio. Curriculum includes studio recording, Pro Tools recording/editing/mixing, audio for film/video and an internship program. Facilities include a Soundcraft Sapphyre Lc analog console and Pro Tools suites

BELMONT UNIVERSITY: Nashville, www.belmont.edu. The Mike Curb College of Entertainment and Music Business offers a Bachelor of Business Administration with an emphasis in music business. We own three renowned recording facilities: Ocean Way Nashville, RCA Studio B and the Center for Music Business. Eight state-of-the-art recording studios and a full range of digital and analog recording equipment.

BERKLEEMUSIC: Boston, www.berkleemusic.com. Master/Professional/Specialist Certificate programs. Online continuing education division of Berklee College of Music. Study online with Berklee's renowned faculty on your own time from anywhere in the world. More than 100 online courses and certificate programs are now enrolling in Guitar,

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BERKLEE COLLEGE OF MUSIC: Boston, www.berklee.edu. 4-year B.M. or equivalent professional diploma. The college offers 12 majors, more than 270 ensembles, six recital halls, 300 practice rooms, 12 professional recording studios and a Media Center.

BETHUNE-COOKMAN COLLEGE: Daytona Beach, FL; www.bethune.cookman.edu. B.S. in music technology, 4-year degree program, Pro Tools certification. Students are admitted with the same standard as all undergraduate programs in music and take the full musicianship sequence. Students also take classes in analog and digital audio, advanced computer applications, marketing, management, recording productions and techniques.

BLOOMFIELD COLLEGE: Bloomfield, NJ; www.bloomfield.edu/cat/musicmajor.asp. 4-year B.A. in music technology, State-of-the-art, Mac-based computer music lab and campus Pro Tools studio. Dept. chair professor Chris White brings years of music industry experience, having worked with such notables as Dizzy Gillespie and Nina Simone.

CAYUGA COMMUNITY COLLEGE: Auburn, NY; www.cayuga-cc.edu. 2-year A.A.S. degrees in audio production, radio/TV broadcasting and telecommunications technology with concentrations in video production, digital and interactive media, broadcast journalism and electronic publishing. 32-track studio, FM radio station, TV studio, remote truck and digital media lab. Industry internships are required. Cayuga is a unit of the State University of New York.

CENTRAL CAROLINA COMMUNITY COLLEGE: Sanford, NC; www.cccc.edu. 1-year diplomas in radio production and TV production; 2-year Associate degree in Applied Science in Broadcast Production Technology. Radio production students study analog and digital audio recording, mic techniques and multitrack production. Students operate the college's 3,000W FM station. Television students study digital nonlinear editing on Avid and Final Cut Pro systems using standard and HD formats.

CITY COLLEGE OF NEW YORK: New York City, sonic.arts.cuny.cuny.edu. The Sonic Arts Center offers 4-year B.F.A. in music with a concentration in Audio Technology, emphasizing real-world skills with a project-based approach. Students pursue studies in music theory, performance and musicianship.

CLIVE DAVIS DEPARTMENT OF RECORDED MUSIC: New York City, clivedavisdept.tisch.nyu.edu. B.F.A. that is designed to educate students in all aspects of contemporary recorded music, with a special focus on the art of producing music, identifying and cultivating musical talent, and developing creative material within the complex range of recorded music technologies. Students examine business and legal enterprise in a variety of courses.

THE COLLEGE OF SAINT ROSE: Albany, NY; www.strose.edu. 4-year B.S. in Music, with music industry emphasis (and part-time M.A. in music technology) covers technology, music business and commercial music. The technology area includes required courses in engineering, record production, Pro Tools and MIDI. Music business courses include survey, artist management and entertainment law. Commercial music offerings include songwriting, arranging and conducting. Two on-campus

studios equipped with Pro Tools, analog 24-track and a MIDI lab with 15 Pro Tools LE Mac-based DAWs.

COMMUNITY COLLEGE OF BALTIMORE COUNTY: Baltimore, MD; www.cbcbcmd.edu. 30-credit certificate in music production and audio recording technology, 2-year program.

COUNTY COLLEGE OF MORRIS: Randolph, NJ; www.ccm.edu. 2-year A.S. degree in music recording or electronic music. Two recording studios feature Soundcraft Ghost consoles, Alesis ADATs, Pro Tools MIXPlus 24 TDM systems, and a host of mics and outboard gear. Electronic music lab boasts 15 workstations running Pro Tools LE and Logic Pro 7.

DUQUESNE UNIVERSITY: Pittsburgh, www.music.duq.edu. The Mary Pappert School of Music offers 4-year B.M. degrees in sound recording technology/technology performance/technology composition; a Master of Music Technology; and summer recording seminars. Campus facilities include two 24-track automated digital studios, mastering lab, digital music tech lab and workstation lab.

EASTERN SUFFOLK BOCES: Bellport, NY; www.esbores.org. 2-year program. Multiple workstations covering various digital platforms, including Pro Tools, Cubase and Tascam. Industry-standard equipment gives an overview of multitrack recording and sound design. College introductory courses taught at high school level.

EMERSON COLLEGE: Boston, www.emerson.edu. B.A., B.F.A. Three classroom studios and nine production suites, Digidesign Pro Tools workstations and Mac G5, offering a professional high-definition setting for all working needs. The college's radio station, WERS, features a live performance studio, an acoustically tuned 13x19-foot room with a 9-foot ceiling. The space is used for live and pre-recorded performances. Equipment includes a PM5D console, Pro Tools 7.3 HD2 system and much more.

FANSHAWE COLLEGE: London, Ontario; www.musicindustryarts.com. 2-year education providing myriad career options, with 24/7 access to two state-of-the-art recording studios with Pro Tools and 2-inch machines. Our studios and 10-station MIDI facility are equipped with dual-processor G5s and the latest software.

FINGER LAKES COMMUNITY COLLEGE: Canandaigua, NY; www.fingerlakes.edu. 2-year A.S. music recording technology degree. Recording facility with two recording rooms and a spacious control room (Mackie D8B console, 24 tracks of Tascam DA-88s). Editing and mastering via MOTU 2408 using Samplitude Studio.

FIREDOG STUDIOS MUSIC TECH CENTER: Spotswood, NJ; www.firedogstudios.com/training.html. Certificate of Completion. Three-part audio training program provides know-how and hands-on experience about recording, mixing, mic placement and more in a Pro Tools environment. Instructor-led classroom experience with live sessions in a working facility. Learn on various workstations, from a mobile recording rig to a Pro Tools HD production studio.

FITS & STARTS PRODUCTIONS: Eatontown, NJ; www.fitsandstarts.com. The multichannel audio seminars tour each year to 30 cities in five regions, and features industry experts Mike Sokol and Hector La Torre. Colleges, private recording schools and studios should call to host

When using this directory, please note that only North American programs have been included. All of the information presented here was supplied by the schools. Specific programs may change, so contact the school/program for up-to-date information.

the seminar. A certificate of achievement for completing the seminar is offered.

FIVE TOWNS COLLEGE: Dix Hills, NY; www.fivetowns.edu. B.M. with concentrations in performance, composition/songwriting, musical theater, recording technology and music business. 16/32/64/72-channel SSL 9000 J audio recording studios and MIDI labs. The Dix Hills Center for the Performing Arts has been described as "acoustically perfect."

FULL SAIL REAL WORLD EDUCATION: Winter Park, FL; www.fullsail.com. A.S. in Graphic Design, Recording Arts, and Show Production and Touring. B.S. in Computer Animation, Digital Arts and Design, Film, Game Development and Music Business. M.S. in Entertainment Business. With more than 25,000 alumni, graduate credits include work on Oscar, Emmy and Grammy-winning projects; best-selling videogames; and the Number One-grossing U.S. concert tour seven out of the past seven years. Students experience a "real-world" education with a professional class structure of eight to 12 hours per day and a 24-hour around-the-clock schedule.

FUTURE MEDIA CONCEPTS: New York City, www.FMCtraining.com. Complete range of manufacturer-authorized training in digital media, including Pro Tools Operator and Pro Tools Expert certifications, nonlinear editing, sound design, Web design and programming, video streaming, DVD authoring, 3-D animation, compositing and desktop publishing.

GEORGIA STATE UNIVERSITY: Atlanta, www.music.gsu.edu. 4-year B.M. degree in music technology and Pro Tools training program. Six recording and post-production studios.

GREEN STREET ARTS CENTER: Middletown, CT; www.greenstreetartscenter.org. Classes in sound recording with Pro Tools, which meet once a week for a 3-hour hands-on lecture/lab. During the first 10-week course, students learn the basics in a Pro Tools HD studio by recording small musical projects. The second course involves larger projects with more advanced recording techniques.

GUILFORD TECHNICAL COMMUNITY COLLEGE: High Point, NC; www.gtcc.edu/programs/et/faq.html. 2-year A.S. in entertainment technology offers fields of study in recording engineering, concert lighting/live sound production, artist management and live performance. Three recording studios, two Pro Tools music labs, a large concert staging auditorium, an outdoor amphitheater and a smaller indoor auditorium/staging area.

HAMPTON UNIVERSITY MUSIC DEPARTMENT: Hampton, VA; www.hamptonu.edu/academics/schools/libarts/music. 4-year B.S. in music with a music engineering technology emphasis, including multitrack audio production, stereo recording and psychoacoustics, electronic music, DAWs, music theory, music performance, electrical engineering, computer science and music business.

HARRIS INSTITUTE FOR THE ARTS: Toronto, Ontario; www.harrisinstitute.com. 1-year diploma programs in recording arts management and producing/engineering. The 16,000-square-foot facility includes Pro Tools in the audio post suite, Logic Audio in the MIDI/multitrack suite and 24-track digital multitrack in the music recording control room.

HARTFORD CONSERVATORY: Hartford, CT; www.hartfordconservatory.org. 2-year accredited diploma; B.A. or B.S. degree with Charter Oak State College. Concepts and techniques of the industry using Conservatory's digital production studios and MIDI lab, and outside commercial recording studio. Course sequence combines studio activity with the necessary musical training required for success in

the competitive world of audio and video production. All Recording Arts students are required to have a moderate level of proficiency in music to enter this major.

HOW-TO SOUND WORKSHOPS: Eatontown, NJ; www.howtosound.com. The HOW-TO Sound Workshops offer the HOW-TO Church Sound Workshops and HOW-TO Surround Sound Workshop tours. We presently travel to 40 cities each year to train church sound volunteers in the art and technology of sound system operation. We also produce mobile workshop tours for all industries. Fits & Starts Productions is the parent company.

HOWARD UNIVERSITY: Washington, D.C.; www.howard.edu. The Department of Radio, TV & Film offers 4-year B.A. degrees in audio production, television production, film production, telecommunications management and a 2-year M.F.A. in film. The department has six Pro Tools-equipped audio studios, including state-of-the-art post-production facility.

HUMBER COLLEGE: Toronto, Ontario; www.humber.ca. Bachelor of Applied Music (contemporary music). Performance Music degree with an optional major in production in years three and four. State-of-the-art 5.1 music studio with 1,000-square-foot studio.

INSTITUTE OF AUDIO RESEARCH: New York City, www.audioschool.com. 9-month diploma program in audio recording features digital audio production, analog/digital recording and mixing, signal processing technologies, post, MIDI, music business and DAW operations. 18,000-square-foot facility. Pro studio internships and graduate-placement assistance. Licensed by NYS Education Department, approved for veterans training, accredited by ACCSCT. Financial aid.

IN YOUR EAR: Richmond, VA; www.lobe.com/computermusiccourse.html. Program on advanced use of computers in music production. Concentrates on basics of acoustics and mic use, digital interfaces, outboard gear and computer equipment, including software configuration.

ITHACA COLLEGE SCHOOL OF MUSIC: Ithaca, NY; www.ithaca.edu/music. 4-year program (B.M. in sound recording technology) features 24-track SSL/Pro Tools HD recording studios, Yamaha 02R/Pro Tools production studio and three electroacoustic music studios. Program includes music theory, history, performance, liberal arts and coursework in recording/editing, electroacoustic music, repair and calibration, and recording workshops. All recording majors are hired as work-study engineers in the School of Music for four years.

JACKSONVILLE UNIVERSITY: Jacksonville, FL; arts.ju.edu/music/index.htm. B.S. in Music Business.

LEBANON VALLEY COLLEGE: Annville, PA; www.lvc.edu/music/musicTech.aspx. B.M. in Music Recording Technology, B.A. in Music Business. The MRT program is a liberal arts degree focusing on music and recording technology. Coursework involves music theory, history, performance, studio production, mastering, studio design, electronic music, business and internship. We operate four studios featuring acoustic design by Walters-Stork Design Group: two multitrack, one mastering and one pre-production. Equipment roster includes Trident Vector and Toft consoles, analog and RADAR 24 multitracks, Pro Tools, mastering tools, and a large variety of signal processors, mics and software. Audition required.

MCGILL UNIVERSITY: Montreal, Quebec; www.music.mcgill.ca/sr/build/. The M.M. program in sound recording has provided Tonmeister education since 1979, combining practical and theoretical training in studio techniques, mic selection, digital sound processing and technical ear training.

The Ph.D. program focuses on research related to the evaluation and improvement of sound recording practices and technology.

MERCY COLLEGE: White Plains, NY; www.mercy.edu/cda. 4-year Mercy College Music Industry and Technology program (B.S.) and partner Music Conservatory of Westchester. Four computer labs, three recording studios and a theater. Demonstration tape or audition required.

METALWORKS INSTITUTE: Mississauga, Ontario; www.metalworksinstitute.com. 12-month diploma programs in audio production and engineering, and entertainment business. Digidesign Pro school. Extension of Metalworks Studios. State-of-the-art campus facilities.

MIAMI-DADE COMMUNITY COLLEGE: Miami, www.mdc.edu. The School of Film and Video offers A.S. degrees in radio, television, broadcast programming and film production; a certificate in television production; and an A.A. degree in mass communication. The program stresses hands-on equipment, and students have access to high-end cameras, editing suites and video graphics animation facilities.

MIDDLE TENNESSEE STATE UNIVERSITY: Murfreesboro, www.mtsu.edu/~record. B.S. with concentrations in production and technology, and music business; M.F.A. in recording arts and technology. Five studios with SSL, Sony and Studer consoles; Pro Tools; RADAR and SADIE DAWs; 5.1-channel mixing; MIDI and digital audio labs; mastering, post-production and listening laboratories. AES and SMPTE chapters.

MIDLANDS AUDIO INSTITUTE: Columbia, SC; midlandsaudioinstitute.com. Certificate program through Midlands Technical College. Located within the complex of The Jam Room, a first-class commercial studio, the facility offers Pro Tools labs and active participation for students in the recording process.

MUSITECHNIC EDUCATIONAL SERVICES: Montreal, Quebec; www.musitechnic.com. A thorough exploration of the technical and artistic facets of current hardware and software. Musitechnic offers a spacious, comfortable and professional environment. Respected industry professionals teach the program.

NASHVILLE STATE COMMUNITY COLLEGE: www.nsc.edu. 1-year technical certificates, 2-year A.A.S. degrees. Studio recording/mixing/mastering with offerings such as music publishing, songwriting and maintenance. Facilities include a new 32-track studio and mix room and 12 Pro Tools/MIDI workstations, with limited class size.

NASSAU COMMUNITY COLLEGE: Garden City, NY; www.ncc.edu. Three-semester program provides a broad perspective of the music industry and acquaints students with musical structures (intellectually and aurally). Technical skills and internship training acquired in an off-campus recording studio.

NEW ENGLAND INSTITUTE OF ART: Brookline, MA; www.artinstitutes.edu/boston. B.S. in Audio & Media Technology, Associate in Science/Audio Production. In the B.S. degree program, you'll get a solid grounding in critical listening, computer music and the physics of sound, as well as real-world experience working with the college's student-run record/CD label, Naked Ear Records. In the Associate in Science program, you'll learn the basics and put them to work in various audio applications. Courses require the student to produce projects that demonstrate their creative and technical abilities.

NEW ENGLAND SCHOOL OF COMMUNICATIONS: Bangor, ME; www.nescom.edu. Associate,

pro engineers with decades of experience and hundreds of Gold/Platinum albums and 12 Grammy Awards.

QUEENSBOROUGH COMMUNITY COLLEGE: Brooklyn, NY; www.qcc.cuny.edu. Music electronic technology degree.

RADFORD UNIVERSITY: Radford, VA; www.radford.edu. 4-year B.M. in music and technology, 2-year M.A. in computer music. Housed in the Center for Music Technology, facilities include MIDI/audio studio, A/V surround sound studio and 13-station lab. Focus on composition, performance, mixing, software development and production techniques.

RECORDING ARTS CANADA, TORONTO/QUEBEC: www.recordingarts.com. RAC has a one-student-per-workstation ratio. Digital sound and music facilities include more than 40 studios, workstations and labs. Digital media studios feature the latest in computer and software technologies. Our "Dolby-certified Surround Mixing" theaters and Foley studio have hosted acclaimed film clients.

RECORDING ENGINEERS INSTITUTE: Islandia, NY; www.audiotraining.com. Certificate offered for graduates of 8-month, 170-hour program. Classes limited to five students during the hands-on portion. Experience on 24-track digital equipment, including 5.1 mixing course with Mac G4 computers. Qualifying graduates secure their first job at the school as members of the Recording Engineers Association.

SAE INSTITUTE OF TECHNOLOGY, NEW YORK CITY/NASHVILLE/NORTH MIAMI BEACH/LOS ANGELES: www.sae.edu. 900-hour diploma program in audio technology, featuring industry-standard equipment and innovative teaching techniques from accomplished professionals. Career development assistance. More than 40 locations worldwide.

SAVANNAH COLLEGE OF ART AND DESIGN: Savannah, GA; www.scad.edu/dept/snds. B.F.A., M.A. and M.F.A. degrees in Sound Design. These programs focus on the development of techniques and aesthetics relating to audio for media. Students develop soundtracks for original films, animations and videogames. They are also provided opportunities to explore recording and sound arts. The college is a DigiDesign-certified training location featuring 50 Pro Tools LE stations, 11 HD systems, two surround mix suites and six MIDI suites. Extensive field recording equipment is available for use in the development of sound effects libraries and to provide location sound for film shoots.

SELECT SOUND STUDIOS: Kenmore, NY; www.selectsound.com. Six New York State-accredited recording technologies programs, each is 12 weeks and three credits. Four production rooms at students work in 24-track analog studios, Pro Tools TDM studios, a MIDI suite and a mastering suite. Topics include the history of recording, physics of sound, studio acoustics, mic techniques, tape recorders, mixing consoles, and Pro Tools native and TDM systems.

THE SHEFFIELD INSTITUTE FOR THE RECORDING ARTS: Phoenix, MD; www.sheffielddav.com. 6-month full-time, 1-year part-time certificates. Quality instruction and hands-on training on the latest equipment. Instructors have extensive real-world experience. Graduates are prepared to enter a variety of fields, including studio recording, live recording, sound reinforcement engineering, audio for video, remixing, nonlinear digital audio editor, equipment sales and more.

SHENANDOAH UNIVERSITY: Winchester, VA; www.su.edu. B.M. Music Production and Recording Technology, Classical or Jazz Emphasis. The Ruebush Hall Recording

Studio is equipped with state-of-the-art analog and digital equipment. The main studio features SSL 4000 G+ recording console with Pro Tools HD24 DAW, 24 tracks of digital and analog, plus many high-end microphones and preamplifiers. Our Post-Production Room is equipped with 5.1 mixing, Pro Tools HD workstation and a MIDI workstation, and 16 tracks of digital and analog. MIDI Lab is equipped with multiple MIDI stations and Macintosh computers, and outfitted with hard disk audio and various sequencing software.

SIGMA SOUNDZ: Holland, PA; www.SigmaSoundZ.com. Former chief engineer and president of Sigma Sound and SPARS, Michael Tarsia has designed a 16-course recording program where the focus is on the art. Pro Tools is the platform the students will be taught on. Deconstructing and re-creating a mix is the final exam.

STARFIELDS PRODUCTIONS RECORDING STUDIOS: New York City, www.starfieldsproductions.com. 10-week primer with concentration on recording. Workshop II focuses on use of Pro Tools and overall DAW integration with current audio and MIDI gear, as well as use of classic analog outboard gear.

SUNY, FREDONIA: www.fredonia.edu/som/srt. 4-year B.S. in Music with an emphasis on sound recording technology. Modeled after European Tonmeister training, competence in playing a musical instrument and in sciences must be demonstrated through scheduled audition. Five studios, SSL console, 24-track analog and digital recording, MIDI/sampling labs. Students receive a minimum of 650 hours in-studio experience. Accredited by NASM.

SUNY, ONEONTA: www.oneonta.edu/academics/music. B.A. program prepares students for work in the music/entertainment industry. The curriculum includes entertainment industry business affairs, intellectual property law, music products, music theory, performance and history/literature. The minor in audio production focuses in the technical and artistic components of audio recording and offers Pro Tools 101 certificate.

SUNY, OSWEGO: www.oswego.edu/music. B.A. program prepares students for work in the recording industry through classroom instruction, hands-on experience with modern digital recording equipment and internship opportunities at recording studios and music production facilities. Accredited by NASM.

SURROUNDED: Miami, www.mssurrounded.com. Grammy-winning engineer provides one-on-one or small-group training to select individuals. Custom course(s) per individual basis. Topics include basic and advanced engineering, mixing, DAWs, critical listening, production techniques, surround sound.

TEMPLE UNIVERSITY: Philadelphia, www.temple.edu/sct/btmm. B.A., M.A. In the Recording Industry study, courses are offered in music production and business, including local, national and international internship opportunities. The flexible curriculum allows students to explore their own path while having access to all of the resources of a large, urban university. Seven studios include both vintage analog and digital technologies.

TOP HAT PRODUCTIONS: Lake Worth, FL; www.tophatproductions.net. One-day workshop is taught by seasoned radio, TV and voice-over pros from an award-winning audio production company. Learn script interpretation, diction and inflection, creating your demo, studio etiquette, finding work, marketing, launching your career.

TORONTO FILM SCHOOL: Toronto, Ontario; www.torontofilmschool.com. 15-month, full-time sound technology program: music production, post-production audio, live sound reinforcement. Taught in state-of-the-art

facilities, with SSL, Soundtracs and Artek consoles.

TREBAS INSTITUTE: Toronto, Ontario; www.trebas.com. 3-year B.A. in sound technology, 1-year diploma programs. Authorized training center for Cubase and Macromedia. Established in 1979 to train students in music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Lifetime national job-search assistance.

TROD NOSSEL PRODUCTIONS & RECORDING STUDIOS: Wallingford, CT; www.trodnossel.com. Modern Recording Techniques 1 (MRT1) is a weekly class on the basics of multitrack recording, with seven weeks of theory and five weeks of hands-on training. MRT2 is a 15-week hands-on extension of MRT1.

TROY UNIVERSITY: Troy, AL; www.troy.edu. B.A./B.S. in music with specialized degree tracks. A post-secondary Master of Science with a concentration in music industry is under development with implementation in the fall of 2007. Areas of concentration include writing and production, music business and a flexible general music industry track. DigiDesign-sponsored institution, with production/teaching facilities including Studio A, Studio B, digital audio lab and a music technology lab.

UNITY GAIN RECORDING INSTITUTE: Fort Myers, FL; www.unitygain.com. The Audio Recording Comprehensive, program and Advanced Techniques in Audio Recording are two 48-week programs that provide more than 250 hours of hands-on recording. Class size is limited; two state-of-the-art recording studios. Students record 20 musical acts on analog and digital formats.

UNIVERSITY OF HARTFORD, THE HARTT SCHOOL: West Hartford, CT; www.hartford.edu/hartt. B.M. in music production and technology. A strong academic background and music audition are required. Training includes record engineering and production, electronic music, acoustics, electronics, music management, music theory, ear training and liberal arts. Facilities include several studios, computer lab and disk-based remote recording system.

UNIVERSITY OF HARTFORD, WARD COLLEGE: West Hartford, CT; uhaweb.hartford.edu/FULLER. 4-year B.S. in audio engineering technology. Covers applied audio electronics, audio studio engineering, acoustics and computer programming. Electives allow students to take additional coursework.

UNIVERSITY OF MAINE, AUGUSTA: www.uma.maine.edu. UMA has the only music program in Maine with a state-of-the-art recording studio. Internships from B.M. in jazz and contemporary music (audio concentration).

UNIVERSITY OF MARYLAND, BALTIMORE: www.umbcrecordingstudios.org. 4-year B.A. in music with an emphasis in recording. Focuses on audio engineering, including acoustics, mic techniques, digital signal processing, mastering, plug-in applications, Pro Tools and surround sound recording. Three-studio facility with Pro Tools HD systems, Genelec and Event monitoring.

UNIVERSITY OF MASSACHUSETTS LOWELL: www.uml.edu. B.M. in Sound Recording Technology, M.M. in SRT; Minors in SRT for Electrical Engineering and for Computer Science majors. Eight studios and control rooms, including critical-listening and surround recording studio, high-end multitrack room with API Vision console, MIDI/synthesis studio, DAW/surround room, intermediate-level control room, video post-production suite, maintenance/repair laboratory, entry-level room. Masters' degree program prepares graduates with advanced production skills and thorough understanding of technology. Bachelor degree

prepares students for production-related careers through studies in recording, music, EE, physics, math and computer science. SRT minors prepare people for technology and product development-related careers.

UNIVERSITY OF MEMPHIS: music.memphis.edu. B.M. with concentrations in sound recording technology and music business. Fully accredited by NASM. Contemporary on-campus production facilities include a comprehensive multitrack recording studio outfitted with 7.1 high-resolution recording and mixing technologies, electronic music labs and a multichannel high-resolution mixing suite. Students work in digital art, writing and publishing studios.

UNIVERSITY OF MIAMI, FROST SCHOOL OF MUSIC: Coral Gables, FL; www.music.miami.edu. The Music Engineering (B.M.) program accepts undergraduate musicians who desire careers in music recording, audio engineering, audio equipment hardware and software design, sound reinforcement and broadcasting. M.S.E.E. graduate students engage in research in audio DSP programming, psychoacoustics and synthesis.

UNIVERSITY OF NEW HAVEN: West Haven, CT; www.newhaven.edu. Bachelor's degree in music and sound recording, music industry programs. The sound recording courses include multitrack recording, digital audio and computers in the studio. The music industry courses cover record companies, contracts, recording studio management, copyright law and music publishing.

UNIVERSITY OF NORTH CAROLINA, ASHEVILLE: www.unca.edu/music. Bachelor's program. Recording facilities include two multitrack studios with a variety of consoles, microphones, signal processors, Pro Tools. The electronic music laboratory houses analog and digital synthesizers, samplers, etc.

UNIVERSITY OF SOUTH CAROLINA, COLUMBIA: School of Music; www.music.sc.edu/recording. B.M. Curriculum includes more than 10 classes in sound recording (popular and classical recording, mixing techniques, workstation editing and audio for video) and music technology (synthesis, signal processing, sequencing and computer music). Large recording studio with a 64-input digital console, 24-track digital recorder and Pro Tools HD2 workstation. 18-station computer music lab and two electronic music/MIDI studios equipped with 24-input consoles, 8-track digital recorders and Pro Tools.

VALENCIA COMMUNITY COLLEGE: Orlando, www.valenciacollege.edu. 2-year audio engineering degree. Program develops recording skills through ear training for quality of sound, principles of psychoacoustics and basic studio techniques. Digidesign Pro Tools 101 is covered as part of the regular curriculum.

YALE SCHOOL OF DRAMA: New Haven, CT; drama.yale.edu. 3-year M.F.A., 1-year certificate, 2-year engineering internship. Sound Design program teaches the theory and practice of sound design, including script interpretation, compositional elements of design, fundamentals of sound and music technology, advanced problem-solving, sound delivery systems and a design master class.

YORK UNIVERSITY: Toronto, Ontario; www.yorku.ca. B.A., B.F.A., M.A., Ph.D. comprehensive music program with digital audio and computer composition streams. Courses include sonic architecture, composing for film, notation, alternate tunings, MIDI, digital and electronic media, etc.

CENTRAL

ALEXANDER MAGAZINE: Warren, MI; www.alexandermagazine.com. Online certification program study with lessons, reference materials, audio demonstrations

and interactive quizzes. Free CD-ROM for high-speed study (U.S.-only). Study for Recording Institute of Detroit and other recording programs. Recording Institute of Detroit completions for production courses; RID Theory certification on basic audio, mixing and music business.

AUDIO ENGINEERING INSTITUTE: San Antonio, TX; www.audio-eng.com. 10-week basic and advanced engineering classes. Study is part hands-on/part lecture. Basic class covers theory, mics, consoles, recorders, live recording and mixing. Advanced class covers signal processors, hard disk recording, MIDI, synths and samplers, drum machines and sequencers, audio-for-video, real-time analysis and equipment maintenance.

BALL STATE UNIVERSITY: Muncie, IN; www.bsu.edu/musictech. 4-year B.M., minor options in Applied Physics, Computer Science and Digital Media. Music Technology is an undergraduate degree program featuring a curriculum focused on four main areas: theoretical and historical

aspects of sound and music, computer music, recording and composition. In 2004, the program moved into the new Music Instruction Building. The 11 Music Technology studios encompass nearly 9,800 square feet of the second floor.

BROWN MACKIE COLLEGE: Cincinnati, www.socaec.com. 2-year associate's degree in audio/video production. All-digital A/V production techniques and hands-on training. Digital music recording studio with Mac-based Pro Tools and Alesis HD24. Location sound techniques and sound for video and film.

BUTLER UNIVERSITY: Indianapolis, www.butler.edu/mediarts. B.A. Recording Industry Studies. Three on-campus studios and control rooms feature Pro Tools HD/LE; Waves Platinum plug-ins; 16 mBox systems; MIDI keyboards; extensive microphone collection, including vintage and modern Neumann, AKG, Shure and others; vintage and modern outboard gear; Control24; and Audient



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ACS 8024, Soundcraft Ghost and Mackie 24x8 consoles. Active MEISA chapter and 770 Vinyl, a student-run record label, with which students have opportunities to practice their craft while still in school.

CENTRAL MICHIGAN UNIVERSITY, MOUNT PLEASANT: www.bca.cmich.edu. B.A.A., B.S., B.F.A. CMU's School of Broadcast and Cinematic Arts offers one of the largest electronic media programs in the country. Our audio program uses Adobe Audition and Pro Tools HD to teach a wide range of audio production applications from radio production to commercial production to music production to audio post-production.

CLEVELAND INSTITUTE OF MUSIC: cim.edu. B.M. in Audio Recording as a four-year degree or a double-major with an instrument. Based at one of the nation's leading conservatories of music, students record performances of the highly talented institute faculty and students. Courses cover classical and popular music studio techniques, microphone selection and placement, surround sound, digital sound processing, acoustics and studio maintenance. Brand-new state-of-the-art facility features ATC 5.1 monitoring, Neotek Elan console, Nuendo. Professional faculty features multiple-Grammy-winner Jack Renner, Dr. Peter D'Antonio, Bruce Egge (Azica Records).

COLLIN COUNTY COMMUNITY COLLEGE: www.ccccd.edu. Plano, TX; 2-year A.A.S. in commercial music, 1-year certificate in audio engineering. Studio features Pro Tools MIXPlus, Control24, Genelec 1030A monitors, a wide array of mics and six Mac G4s with Digi 001s. The MIDI/synth studio has 16 Mac G4 workstations.

COLUMBIA COLLEGE CHICAGO: www.colum.edu. 4-year B.A. in audio arts and acoustics. Courses in electronics, acoustics, math and audio systems theory, with electives in music, arts management, film/video and interactive multimedia. Three audio studios, digital audio and sound-for-picture suites, and labs for sound contracting and acoustics.

CUYAHOGA COMMUNITY COLLEGE: www.tri-c.edu/rat. Cleveland, OH. A.A.S. in recording arts and technology, certificate in live sound reinforcement, certified Pro Tools training center. Students train under professional producer/instructors and record regional music groups, cable TV programs, in-house label artists and manage regional stage at 5,000-seat Live Nation venue. Courses include concert production, tour management, concert technical production and sound for worship. Semester-length student-designed capstone recording project and internships.

DALLAS SOUND LAB: www.dallassoundlab.com. Irving, TX; diplomas in audio engineering and studio techniques. Courses provide extensive hands-on training on SSL, API, Neve, Focusrite, Yamaha and Mackie consoles. Lab sessions are held in the school's 12,000-square-foot multistudio facility.

DB RECORDING & SOUND DESIGN: www.dbsounddesign.com. Cincinnati, OH; individual novice to advanced Pro Tools training, with elements of MIDI and recording techniques. Instruction is offered in our studio, dB Recording & Sound Design.

DEL MAR COLLEGE/RADIO & TELEVISION: www.celmar.edu/comm/rtv/RTVHome1.html. Radio and Television, 2-year A.A. degree. Three-camera television studio with permanent interview and news sets. Control room includes switcher, character generator and audio board. Students learn linear editing; advanced students do nonlinear projects. Two audio sound rooms, one set up to produce commercials.

DEPAUL UNIVERSITY: depaul.edu. Chicago, IL. B.S. in music with elective studies in electrical engineering degree.

DePaul SRT students take the full musicianship sequence and applied music, large ensemble, conducting and music electives. SRT students take classes in analog and digital microelectronics, computer science and calculus.

EASTERN MICHIGAN UNIVERSITY, YPSILANTI: www.emich.edu. 4-year B.S. in electronic media and film, and broadcasting. Program emphasizes production, history, theory and criticism.

ELECTRIC LOUNGE PRO SCHOOL: www.electricleague.tv. Schaumburg, IL; Pro Tools Certified Music Operator, Pro Tools Certified Post Operator, Pro Tools Certified Music Expert, Pro Tools Certified Post Expert, Pro Tools Certified Icon Mixing Expert. State-of-the-art boutique training facility specializing in small class sizes (4-5 max) and instructors with real-world production experience. Featuring an ICON D-Control console, two Pro Tools HD rooms and numerous Pro Tools LE systems. Classes in Reason, Waves plug-ins and more.

ELMHURST COLLEGE: www.elmhurst.edu. Elmhurst, IL; Bachelor's degree. In addition to classwork in music and business of music, students get hands-on experience through internships, industry speakers and course tours. State-of-the-art 24-track digital studio, courses range from music theory to MIDI, practice and recital facilities.

FLASHPOINT, THE ACADEMY OF MEDIA ARTS AND SCIENCES: www.flashpointacademy.com. Chicago, IL. Students pursue two-year programs in Recording Arts, Film, Game Development and Design, and Computer Animation. The curriculum favors a learning-by-doing, total-immersion approach emphasizing workflow and collaboration within project-based coursework, as well as real-world projects led by outside industry professionals.

GRAND VALLEY STATE UNIVERSITY: www.gvsu.edu. Allendale, MI; Electrical engineering with music minor program.

HARMONY SPOT: www.TheHarmonySpot.com. North Canton, OH; Beginner, Intermediate, Advanced Recording Engineer and Producer certificates. Our 32-track digital recording studio is capable of producing small to large audio projects, including demo tapes, audio restoration, jingles, audio for broadcast and industrial audio. 32-channel Mackie 8-bus mixing console, ADAT XT, ADAT LX20, Foxtex VF16, Yamaha Motif SE 8, Yamaha DX7, Akai AX60, Akai S612 and Yamaha FB01. Electro-Voice RE-20, Neumann KMS105, Shure Beta 58, CAD, Audix, Sampson and others. Classes in recording, audio engineering and production.

HOUSTON COMMUNITY COLLEGE: www.nwc.hccs.edu/av. A.A.S. and certificates in audio engineering and film production, certificates in MIDI production. Hands-on experience with eight fully equipped studios. Studio V: SSL 4048 G+. Studio IV: Pro Tools, Control24. Studios IIIA and IIIB: Alesis X2 consoles, ADATs and synths. Studio II: video post and scoring. Studio I: 13 Mac G4s with Pro Tools. Studio VI/VI: 30 Final Cut Pro and Avid editing suites. Studio VIII: 3,000-square-foot soundstage.

INDIANA UNIVERSITY, SCHOOL OF MUSIC: www.music.indiana.edu/som/audio. Bloomington, IN. A.S. or B.S. students record performances of the IU School of Music and complete more than 200 hours of project time in multitrack studio. Four performance hall recording studios, two DAW suites, two maintenance labs and a computing instruction classroom.

INSTITUTE OF PRODUCTION & RECORDING: www.iprschool.com. Minneapolis, MN. 6-quarter A.A.S. degrees in audio production/engineering and entertainment business; Digidesign Pro School Operator and Expert certifications in Pro Tools, Logic certification. A faculty with more than 150 Gold and Platinum records. More than 80 Pro Tools workstations, 15 Digidesign ICONs, multiple SSL consoles, 10 studios.

INTERNATIONAL COLLEGE OF BROADCASTING: www.icbcollege.com. Dayton, OH; Associate degrees in communication arts and video production; diploma programs in audio engineering and broadcasting. Enrollment invitations based on prospective students touring the facility and demonstrating commitment and desire to be part of the broadcasting and recording fields. Small class sizes.

JOHNSON COUNTY COMMUNITY COLLEGE, BRC AUDIO PRODUCTIONS CAMPUS: www.jccc.edu/home/depts/S00003. JCCC's Audio Recording Engineering Certificate program provides a focused two-year education taught by experienced, working audio professionals in a commercial recording studio complex. The superior audio teaching environment includes professional recording studios and state-of-the-art electronics and computer/MIDI/Pro Tools labs. With 1,376-plus contact hours of required work, this curriculum includes a minimum of 30 professional-caliber recording sessions required for graduation. Real, hands-on training.

KANSAS CITY KANSAS COMMUNITY COLLEGE: www.kckcc.edu/music. Associate degree. Classes cover computing skills, MIDI, synthesis, audio recording, audio editing/sound design, sound reinforcement, digital video production and Web design. Classes limited to 12 students. Accredited by North Central Association. Amek Media 51, Pro Tools HD2/LE, Alesis HD24XR, 5.1 Genelec studio, Soundcraft Ghost/MH3 and an 8.2 sound reinforcement system.

LABETTE COMMUNITY COLLEGE: www.labette.edu. Parsons, KS; 2-year A.A.S. program. Hands-on experience learning through recording sessions, classroom lectures and research assignments. MIDI production and digital audio recording using Digital Performer and Pro Tools. Freshmen use the Mackie 32x8 and 24x8 mixing consoles to record to ADAT and to the SDR24. Sophomores use the Tascam D8B to record to Pro Tools and Digital Performer. Internships available.

LAKELAND COMMUNITY COLLEGE: www.lakelandcc.edu. Kirtland, OH; Degrees and 2-year certificates in audio engineering/production, video and broadcast, radio engineering, interactive media technology, animation/cartoon arts; B.A. in communication with Notre Dame College. Hands-on education taught by industry pros. Facilities include digital/analog studio/soundstages. Consoles by Otari, Sony, Mackie, SSL. Mac/PC media production labs.

MADISON MEDIA INSTITUTE COLLEGE OF MEDIA ARTS: www.madisonmedia.edu. Madison, WI; Associate Degrees in Recording and Music Technology, Digital Media Design and Production, and Video and Motion Graphics. As a student, you are part of a community of artistic, imaginative and tech-savvy people who are passionate about new-media arts and who aren't interested in following the crowd.

MCNALLY SMITH MUSIC SCHOOL: www.mcnallysmith.edu. Saint Paul, MN; 2-year A.A.S., 1-year diploma programs and 4-year bachelor's degrees through a direct-transfer agreement with Augsburg College. Extensive Pro Tools training and 10 studios, including three 5.1 rooms and Trident, Sony and SSL consoles.

MEDIATECH INSTITUTE: www.mediatechinstitute.com. Mediatech Institute provides students with hands-on training for audio recording and digital film and video arts through campus locations in Austin, Dallas and Houston. Along with technical training in various multimedia disciplines through our studio facilities, we also offer courses that examine the complexities of the music and television/film business.

MILLIKIN UNIVERSITY: www.millikin.edu/music. Decatur, IL.



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World Radio History

MINNEAPOLIS COMMUNITY & TECHNICAL COLLEGE: www.minneapolis.edu. 2-year A.S. in Sound Arts. Program focused on the nature and control of sound with analog and digital tools. Hands-on practice with the craft of engineering, as well as focus on artistic issues and theory, and broader application of skills and liberal arts learning.

MINNESOTA STATE UNIVERSITY MOORHEAD: www.mnstate.edu/music. 4-year B.M. in music industry, M.M. in new media. The program features a MIDI lab, recording studio, digital audio studio, film/video scoring studio; Dragon Tracks annual CD project; and MEISA student organization.

MOUNT ROYAL COLLEGE: Calgary, Alberta; www.mtroial.ca. 2-year diploma in broadcasting. Program teaches working as a team to inform, create, promote and entertain through radio and television. Students report, write and anchor news and sports programs; create, write and produce commercials; and record, edit and direct programs.

NORTH CENTRAL UNIVERSITY: Minneapolis, www.northcentral.edu. 4-year B.A./B.S., 2-year A.A., 1-year certificate programs. Students experience sound engineering and recording production at McPherson Recording Studios on the campus. The Brad Yost-designed facility houses state-of-the-art equipment and has been employed by professional Christian artists to record and produce.

NORTHEAST COMMUNITY COLLEGE: Norfolk, NE; www.northeastaudio.org. 2-year A.A.S. audio/recording technology. Program combines thorough academics and hands-on training in live and studio environments. Facilities include two control rooms, recording studio, concert stage and isolation rooms.

NORTHERN MICHIGAN UNIVERSITY, MARQUETTE: www.nmu.edu. B.S. degree (options in media production and new technology, electronic journalism and media studies). Professionally equipped studios include Pro Tools, Final Cut Pro and Trinity software.

NATIONAL SYSTEMS CONTRACTORS ASSOCIATION: Cedar Rapids, IA; www.nscs.org. 4-year online and classroom apprenticeship program for electronic systems technicians; 3 levels of certification for those who install and integrate multiple systems. Regional and online review courses offered.

OBERLIN CONSERVATORY OF MUSIC: Oberlin, OH; www.timara.oberlin.edu. 4-year degree. TIMARA Department has excellent facilities for computer music, performance technology and new media. Seven studios, including a recording studio, two computer music studios, a digital media room with a Media 100 system and a computer music lab with multiple Mac-based workstation/samplers.

OHIO NORTHERN UNIVERSITY: www.onu.edu/a+s/comm_arts. 4-year B.S. in broadcasting and electronic media. Students use the facilities of WONB, 94.9 FM and ONU Cable 3. Special courses offered in audio and video editing using Cool Edit Pro, Final Cut Pro and Avid.

OHIO UNIVERSITY, ATHENS: www.ohio.edu. B.S. in communications. The audio production sequence offers three tracks in audio production: music recording, media production or audio post-production. Recording complex includes an Amek BIG 28A-24 console, Tascam MX-2424, Pro Tools HD with Control|24, and wide assortment of mics and processing gear. 16-station Mac G4 digital media lab and Sonic Solutions DVD-authoring system.

PARKLAND COLLEGE: Champaign, IL; www.parkland.edu. Recording essentials through recording studio classes at Pogo Studio. Instructor/producer/engineer/musician Mark Rubel gives skilled guidance and overview in a real-world,

well-equipped environment. Pogo Studio features digital and analog recording and instruments.

PRECURSOR PRODUCTIONS: Winnipeg, Manitoba; www.precursorproductions.com. Certificate courses in digital music production, advanced digital music production, 5.1 surround production, video art/VJ production. Our team specializes in selecting the hardware and software that you will need to make your music a reality. We will set up your virtual studio and provide all of the training that you need to begin producing your own music.

PRO TOOLS TRAINING CENTER, DALLAS/ HOUSTON/SAN ANTONIO: www.protoolstraining.com. The Pro Tools certificate program is 25 hours, Digidesign Operator certificate for music or post is 75-plus hours, Digidesign Expert certificate for music or post is 100-plus hours. Accelerated audio and multimedia training for individuals and corporations. Courses are delivered at high-end studio facilities nationwide. Financial aid available.

RASICCI INTERNATIONAL: North Canton, OH; rasicci@yahoo.com. The Audio Technician certification program emphasizes business and sound engineering. Coursework includes audio production, business law, management and technical courses in acoustics. The program also includes in-depth study of analog and digital audio production techniques in the state-of-the-art recording studios on campus.

RECORDING CONSERVATORY OF AUSTIN: www.trcoa.com. Beginning Audio Engineering, Advanced Music Production. Students are taught all facets of music production, audio engineering, music theory, digital recording, mixing, mastering, business management and client recruitment by working engineers and producers in a working world-class studio. Students are not just taught the technical knowledge, but also given invaluable experience that is needed to have a head start in the growing field of music production.

RECORDING INSTITUTE OF DETROIT: Eastpointe, MI; www.recordinginstitute.com. 39-week recording engineer certificate, 26-week music producer certificate, 8-week associate recording engineer/producer certificate. Three major studios, dedicated student control room and student workstations. Small classes. See Alexander Magazine entry for online training.

RECORDING WORKSHOP: Chillicothe, OH; www.recordingworkshop.com. Certificate programs in audio recording and music production. Approved for college credit toward Bachelor's degree in commercial music at Capital University. Two months of intensive, full-time training in music tracking, mixing and production. Eight studios and convenient student housing.

RIDGEWATER COLLEGE: Hutchinson, MN; www.ridgewater.mnscu.edu. 2-year A.A.S. and diploma programs in audio technology cover studio recording, live sound, system design and installation. Students achieve a strong electronics and computer-applications background. Students will work with Pro Tools HD, Renkus-Heinz EASE and Ears, SIA Smaart Pro, BSS Soundweb, B&K acoustical test equipment, etc.

ROSE STATE COLLEGE: Midwest City, OK; web.mac.com/whitereserecording/RSC. Liberal Studies degree with Music Recording option. Based around Digital Performer and Pro Tools. Eight Mac G5s and G4s. Nice selection of mics and good-sounding rooms in which to record bands or individuals. Classes include two levels of recording, two levels of computers and music, American music industry, pop music theory, lyric writing, Top 40 and country bands.

SINCAGLIAN SCHOOL OF THE ARTS: Chicago, www.sincaglianschool.com. 2-year audio engineering certificate.

SOUND ENDEAVORS: Columbus, OH; www.soundendeavors.com. Specialized private instruction includes music composition, aural training with applications in sound synthesis, MIDI and Mac-based computer music. Apprenticeships and internships available.

SOUTH PLAINS COLLEGE: Levelland, TX; www.proaudioschool.com. A.A.S. in South Technology (2 years), Certificate of Proficiency in Sound Reinforcement (1 year). For more than 25 years, Affordable two-year program dedicated to providing aspiring audio professionals with the skills they need to succeed. With small class sizes, students get plenty of hands-on experience using our three fully equipped digital recording studios, three Pro Tools HD recording systems and our 15-station Pro Tools LE lab.

SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE: rtv.siu.edu. The Radio/Television department within the College of Mass Communication and Media Arts offers a B.A. with a specialization in Audio. Students can specialize while having a broad-based education, including opportunities in animation, video and documentary, as well as experimental/sound art, music production and sound for moving image. Two labs with 30 Mac stations running Pro Tools LE, Digital Performer, Reason, Final Cut; two Pro Tools HD systems with Control|24; WSIU-TV television station, WSIU-FM radio station (NPR affiliate), WIDB Internet radio station and Digital Dog Records (student-run record label). Formal internship programs.

SYNERGETIC AUDIO CONCEPTS: Greenville, IN, www.synaudcon.com. Variety of seminars, each taught using a multimedia approach. The fundamental principles are also taught in a very practical way, which allows you to use them immediately within the workplace. The seminars are approved for continuing education units.

TEXAS STATE UNIVERSITY, SAN MARCOS: www.txstate.edu/music/srt/. B.M. in sound recording technology. Program applicants should have significant musical abilities, well-developed aural skills and ability to complete calculus and other technical courses. The curriculum emphasizes recording, music, digital media, math/science and an internship. TSU owns and operates the Fire Station, a recording facility where students participate in commercial recording sessions.

UNIVERSITY OF CENTRAL MISSOURI, WARRENSBURG: www.ucmo.edu/x18340.xml. B.M. in Music Technology. Program combines audio production and musicianship. Hands-on learning with multiple recording studios, Pro Tools HD3 Accel/Control|24, Yamaha DM2000V2, extensive sound reinforcement equipment, MIDI/synthesis/electronic music studios and multiple computer labs. Class sizes average 15 to 20 students. Graduates currently working in recording studios, live sound, production companies and other music industry companies. NASM accredited. AES Student chapter. Internships required. Audition required.

UNIVERSITY OF CINCINNATI: www.uc.edu. B.F.A. and M.F.A. coursework includes sound technology and production, theater aesthetics, critical listening, music, digital audio, recording, reinforcement and sound design. We offer a diverse season of shows, including large musicals, operas, dance and dramas. Facilities include three well-equipped theaters, a sound design studio and extensive reinforcement equipment.

UNIVERSITY OF THE INCARNATE WORD: San Antonio, TX; www.uiv.edu/music/musicdegrees.html. 4-year B.A. in music with an emphasis in music industry studies program. Students take music theory, ear training, business, accounting and music industry studies, as well as arranging, MIDI and digital audio on a Mac G5 running Digital Performer.

UNIVERSITY OF MICHIGAN, ANN ARBOR: www.music.umich.edu. Four undergraduate degrees let students study a music core curriculum while specializing in separate areas in music technology, ranging from music performance along with technology to the emphasis on electrical and computer engineering. The M.A. degree is a multi-disciplinary program integrating engineering, music and art. The college of engineering has a full recording studio, electronic music studio and computer/synthesizer lab.

UNIVERSITY OF MISSOURI, KANSAS CITY: www.umkc.edu. 3-year M.F.A. in theater sound. Students create sound scores for the theater through design, technical skills, history, production and entrepreneurship.

UNIVERSITY OF NEBRASKA, LINCOLN: www.unl.edu. 4-year bachelor's of journalism. The College of Journalism and Mass Communications houses the broadcasting department with extensive audio and video production facilities and the university's FM radio station.

UNIVERSITY OF TEXAS, AUSTIN: rtf.utexas.edu. Undergraduate classes include production and post-production, and strictly audio production in radio production classes. M.F.A. program has one required audio-for-picture class, and thesis films are mixed by staff mixer in in-house mix theater. Editing stations with Pro Tools HD and LE systems; second small mix theater.

UNIVERSITY OF TEXAS, SAN ANTONIO: music.utsa.edu/technology. Music technology certificate program is a 16-credit block of courses in music production, recording technology, synthesis and multimedia.

UNIVERSITY OF WISCONSIN, OSHKOSH: www.uwosh.edu. 4-year B.M. with emphasis in recording technology. Students are trained in a digital tape/hard

disk/analog studio featuring a Sony 3000 Series console with automation, lock-to-video, full Pro Tools system with Control24, mastering DAWs and a connected MIDI lab. Auditions are required. Final requirement is a full-semester internship.

VINCENNES UNIVERSITY: Vincennes, IN; www.viu.edu. 2-year associate's degrees in broadcasting and music recording. Students use Cool Edit Pro, Final Cut Pro, two low-power radio stations that also broadcast on the Net, 50kw contemporary music radio stations and a public TV station with student-run newscast and Vincennes University sports programming.

WAYNE STATE UNIVERSITY: Detroit, www.music.wayne.edu. Recording techniques and concepts for music majors, including sound design creation for video and performance. A surround recording/mixing studio with Pro Tools HD, Neumann and DPA microphones. An electronic music lab with five Pro Tools workstations. A 165-seat recital hall, two music computer labs, 60 rehearsal spaces with pianos and larger spaces for ensembles.

WEBSTER UNIVERSITY: St. Louis, www.webster.edu. 4-year B.A. audio production program. Students work in music recording, film sound, audio-for-video, radio, electronic sound synthesis, theatrical sound design, sound reinforcement, audio for computers, equipment maintenance and audio facility management.

YOUNGSTOWN STATE UNIVERSITY: Youngstown, OH; www.fpa.ysu.edu/music. Bachelor of Music with emphasis in music recording. Recording classes include music recording workshop, digital editing, advanced microphone placement, digital sound design, recording intern and senior project.

WEST

ACADEMY OF PRODUCTION & RECORDING ARTS: Calgary, Alberta, www.thebeachaudio.com. The certificate courses enable students to learn all elements of audio recording, engineering and production. APRA is located within Alberta's premier recording facility, The Beach Advanced Audio.

ALTA CENTER FOR COMMUNICATION ARTS: Phoenix. 10-week digital audio recording diploma program. Curriculum is created for independent musicians, artists, producers and engineers. Offers a multimedia production program, including digital graphics, video production, animation and Website development.

AMERICAN INTERCONTINENTAL UNIVERSITY: Los Angeles, www.aiula.com. B.F.A. in media production with concentrations in audio and sound recording; computer animation and special effects; editing and post-production; and general media. Starting with a history of popular music, the program allows students to create their own music using MIDI and to record, mix and master live music. Other topics of study include techniques for recording on location and audio post for video.

ART INSTITUTE OF SEATTLE: www.artinstitutes.edu/seattle. 6-quarter A.A.A. in audio production. Program includes studio production, post-production, streaming media, radio production. Required internships, placement assistance upon completion. Hands-on experience: five studios, four DAWs, two 25-seat computer labs.

ART INSTITUTE OF VANCOUVER: Burnaby, BC; www.aivan.artinstitutes.edu. 1-year independent recording arts certificate, 2-year professional recording arts diploma

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ASPEN MUSIC FESTIVAL AND SCHOOL: Aspen, CO; www.aspenmusicfestival.com. The Edgar Stanton Audio Recording Institute is an intensive, 4-week, full-time seminar/workshop. Provides a background in the basics of audio production and prepares students for a career as a recording engineer. A wide range of recording and guest lecturers. The session is limited to 10 students.

AUDIO INSTITUTE OF AMERICA: San Francisco, www.audiointstitute.com. Diploma in recording engineering. Home-study course for professional careers and home recording studios. AIA has students in 100 countries around the world. This licensed school specializes in the art of digital and analog recording techniques.

AUDIOME: San Francisco, www.audiome.com. Pro Tools training and certification for both music and post. Master instructors, world-class facilities, small class sizes. In addition to Digidesign's official curriculum, AudioMe offers ICON D-Control and D-Command training program.

BANFF CENTRE: Banff, Alberta; www.BanffCentre.ca. Work-study program that provides a bi-weekly stipend with no tuition fee. The audio program runs alongside internationally renowned music programs with prominent faculty and musicians. Facilities include recital hall with adjoining control room, digital multitrack recording studio, Pro Tools post-production suite, Sonic Solutions editing suite, Pyramix digital audio workstation and a multichannel research lab.

CALIFORNIA STATE UNIVERSITY, CHICO: www.csuchico.edu/mus/ra/. B.A. in Music Industry and Technology; options in Recording Arts and Music Industry. Courses in composition with audio recording, electronic media and basic electronics, and the music industry.

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS (CARSON): www.csudh.edu/musicdepartment. B.A. and certificate programs. Analog and digital studio, and synthesizer studio. Mackie and Panasonic digital 5.1 mixing consoles, 48 tracks of DA-98 and ADAT multitrack recording, Pro Tools and Sonic Solutions DAWs, and high-res mastering equipment.

CASPER COLLEGE: Casper, WY; www.caspercollege.edu. 2-year A.A. degrees in music performance, music education, multimedia and theater tech. Non-degree students welcomed. Sound Reinforcement I, II and III levels of independent study. Analog, hard disk and Pro Tools LE recording. Aligned with NASM.

CITRUS COLLEGE: Glendora, CA; www.citrusstudios.org. 1-year vocational certificate in recording technology. Two studios with Neve VR and Euphonix CS2000 consoles, Tascam digital, Studer A827 analog and Pro Tools HD recorders. Auditorium for live recordings and film scores, a smaller analog studio and a lab with 25 Pro Tools workstations. The curriculum has courses in engineering, acoustics, live sound, critical listening, digital audio, MIDI and music business.


CITY COLLEGE OF SAN FRANCISCO: www.ccsf.edu. Sound recording/sound design certificates. Program covers analog and digital multitrack techniques, basic tracks, overdubbing, editing, mixing and mastering, mic placement, the console, signal flow, gain structure, music mixing theory and aesthetics, equalization, compression and reverberation.

CLACKAMAS COMMUNITY COLLEGE: Oregon

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For more information about jump starting your career call 1-877-27 AUDIO or go to www.sae.edu

City, OR; depts.clackamas.edu/music. Music Tech Certificate. We have 25 stations and teach Pro Tools, Reason and Ableton LIVE. We also have the state's largest recording studio with more than 4,000 feet of tracking space (five rooms), Pro Tools HD, Reason, Digital Performer and Ableton Live.

COGSWELL POLYTECHNICAL COLLEGE: Sunnyvale, CA; www.cogswell.edu. 4-year digital audio technology program. Students receive instruction in recording, audio editing, musicianship, and the business of audio and project management. The final three trimesters of study concentrate on audio production tailored to students' specific needs.

COLLEGE OF SAN MATEO: San Mateo, CA; www.gocsm.net. 2-year A.A. program. Core classes: Electronic Music I and II, Sound Creation: Sampling and Synthesis, Audio for Visual Media. Three studios and a state-of-the-art theater. Digital Performer, Peak, ARP 2600V and Max/MSP. Mac G5, MOTU 328 audio interface, ADAT and DAT recorders, mics, various MIDI synthesizers, sound modules and drum machines.

COLUMBIA ACADEMY: Vancouver, BC; www.columbia-academy.com. Students in the 1-year program develop pro skills in engineering, music production, post, digital editing and mixing, tracking and recording, with hands-on experience in broadcast production, audio post and music recording studios. In the music studios, students regularly work with live talent. In post-production, independent filmmakers provide students with feature-length movies, documentaries and short films.

COMMUNITY COLLEGE OF SOUTHERN NEVADA, CHEYENNE: www.ccsn.edu. Certificate in music business and technology covering audio recording, the business of music, computer skills and communication abilities. Pro Tools, Otari 24-track analog, 24 tracks of ADAT and more.

CONSERVATORY OF RECORDING ARTS & SCIENCES: Tempe, AZ; www.audiorecordingschool.com. 12 certifications. 12:1 student/teacher ratio, every student receives an Apple laptop, FireWire interface, microphone, headphones, software. Master Recording Program II secures and requires an internship for graduation. Our 40,000-square-foot facility includes eight studios, two Pro Tools labs, two digital labs, two mix labs and a 6,000-square-foot live sound classroom. Gear from SSL, Neve, Yamaha, L-Acoustic, Studer, Manley and more. Financial aid is available.

CUESTA COLLEGE: Paso Robles, CA; www.cuesta.edu. Cuesta College Recording Studio has been a full-service professional studio since fall 2001. Recording technology and studio procedures are taught in the 1,500-square-foot facility. A fine array of new and vintage gear, as well as current digital recording equipment.

EXPRESSION COLLEGE FOR DIGITAL ARTS: Emeryville, CA; www.expression.edu. Bachelor degrees in sound arts in an accelerated 2.5-year program. Class size is limited to ensure hands-on learning. Students are provided with real-world client projects, mentorship and internship opportunities, and a high placement rate for graduates. Accredited by the ACCSCT.

FOOTHILL COLLEGE: Los Altos Hills, CA; www.foothill.edu/musictechnology. A.A. degree in music technology. On-campus and online courses in recording arts, digital audio production, sequencing and songwriting, music business, digital video and performance. Interdisciplinary arts center has 30 workstations where students from every area of the arts work side-by-side.

FULLERTON COLLEGE: Fullerton, CA; www.fullcoll.edu.

Music Production/Recording certificate; Commercial Music A.A. The Fullerton College Music Department recording studio is host to the latest Pro Tools HD3 system. The department also has a MIDI/analog electronic music lab with Pro Tools LE and Digital Performer, along with a variety of hardware and software synths. The music department is the largest in the public California Community College system, where resident students can take classes for \$20/unit.

FUTURE RHYTHM: www.futurerhythm.com. Pro Tools Operator and Expert Certifications in Music Production and Audio Post-Production; Waves Certification; Final Cut Pro Level 1 and Level 2 Certification; Logic Pro Level 1 Certification; Future Rhythm Music Producer Pro Certificate, Audio Post for Video Producer Pro Certificate, Audio Producer Pro Certificate and Multimedia Producer Pro Certificate. Our training programs teach you the skills you need to be an audio producer/engineer in a matter of months so we can jump-start your career in music and/or audio post-production. Dedicated courses in engineering, theory, production and mixing are also available.

GLENDALE COMMUNITY COLLEGE: Glendale, AZ; www.gc.maricopa.edu. 2-year associate degree, 2-year certificate program in audio production technologies. Classes cover principles of sound recording with emphasis on acoustics, signal flow, mic selection and recording equipment, sound reinforcement, DAWs, music business, electronic music, music theory, aural perception and internships. State-of-the-art studio and lab with 25 Pro Tools stations.

GLOBE INSTITUTE OF RECORDING AND PRODUCTION: San Francisco, www.GlobeRecording.com. Audio Producer associates, Psychoacoustics and Sound Healing associates, Audio Recording and Production certificate, Music Business certificate, Audio for Media certificate, Digital Composition certificate, Disc Jockey certificate, Digital Audio Workstations certificate, Psychoacoustics and Sound Healing certificate. Hands-on intensive recording classes on major equipment. Five studios with Pro Tools, Reason, Live. World-renowned 3-D visual system as a tool for explaining and showing how to create a great mix.

GOLDEN WEST COLLEGE: Huntington Beach, CA; www.gwc.info. 2-year A.A. degree, 3-semester recording arts certificate, 1-year certificates in home recording and live sound. Four Pro Tools-equipped control rooms. Specialty labs are provided for Final Cut Pro video editing, CD/DVD duplication, maintenance and electronic music.

LONG BEACH CITY COLLEGE: Long Beach, CA; www.lbcc.cc.ca.us. A.A. degree with emphasis in commercial music, 10 certificates in music, radio or TV. Seven studios with digital audio and/or analog multitrack, 42 MIDI workstations, three-camera online video facilities and three offline editing rooms. Hands-on experience during their first semester. Job placement and intern positions.

LOS ANGELES RECORDING SCHOOL: North Hollywood, www.recordingcareer.com. 900-hour recording engineer certificate. 10 studios include Solid State Logic, Neve VR, Pro Tools, and Sony DMX-R100s and Oxford digital console. Financial aid, student scholarships and dorm housing available.

LOS MEDANOS COLLEGE: Pittsburg, CA; www.losmedanos.edu. Associate of Arts, Recording Arts; Certificate of Completion, Recording Arts. Two fully equipped digital multitrack studios with Pro Tools, automated mixing console. Hands-on workshops. Programs in sound reinforcement, session production, music theory for audio professionals. Four semesters of intensive Audio Theory. Faculty and grads honored with multiple Grammy Awards. California resident tuition: \$20 per unit.

LOYOLA MARYMOUNT UNIVERSITY: Los Angeles, film.lmu.edu. 4-year B.A. in recording arts (music recording and film sound). Educates students in audio engineering, music production, film sound production and post-production. Students must scout the artists they want to record. Pro Tools-based state-of-the-art facilities.

MESA COMMUNITY COLLEGE: Mesa, AZ; www.mc.maricopa.edu. A.A.S. degrees and certificates in Audio Production Technologies, Sound Design Track and Music Business. Classes in studio recording, sound design, live sound reinforcement, DAWs, electronic music (MIDI and digital audio), music business, music theory and more. Two recording studios equipped with an SSL console and a Trident console complemented with Pro Tools HD and RADAR. Neumann, AKG, Royer, Coles and B&K microphones, and high-end outboard processing. Having a huge two-story studio proper, we accommodate orchestras, choirs, big band jazz, rock and pop music bands—all taught by industry professionals.

MILLS COLLEGE: Oakland, CA; www.mills.edu. B.A.s can specialize in composition with an emphasis on technology; M.F.A. degrees in composition can specialize in electronic music and recording media. Studios include 24-track analog (with Dolby SR) and Pro Tools.

MIRACOSTA COLLEGE: Oceanside, CA; www.miracosta.edu/music. A.A. in music; certificates in recording arts, computer audio production, sound reinforcement, music technology and performance technician. Programs in commercial music, choral, instrumental and other general transfer-level courses. Two control room/studios with digital and analog recording and Pro Tools systems. MIDI/digital recording lab with 25 stations and a Foley lab.

MT. SAN JACINTO COLLEGE: San Jacinto, CA; www.msjc.edu. A.A. degrees and 18-unit certificates in audio technologies. Program on theoretical instruction, from basic audio principles to full lock-to-picture audio post with digital and analog recording. Five studio floors, four independent control rooms and computer music lab. Upper-level classes are small. Financial aid is available.

MUSIC CONNECTION: Hollywood, www.recordingconnection.com. On-the-job training in major recording studios, record companies, and radio and TV stations. Available in every city or town. Call for free video or CD-ROM. Network of more than 5,000 recording studios in the U.S. and Canada. Accredited.

MUSICIAN'S INSTITUTE: Hollywood, www.mi.edu. 4-year Bachelor of Music degrees; 18-month music certificate programs; 6-month recording engineer program, recording artist program, music business program and guitar craft academy. Three-story, 64,000-square-foot complex contains classrooms, labs, studios, rehearsal space, live performance facilities and concert venues.

ONLINEDJSCHOOL: San Francisco, www.onlinedjschool.com. Low-cost programs for anyone who is just starting out as a DJ or is refreshing their skills. With our programs, you can learn any place and any time with no schedules to interfere.

PACIFIC AUDIO VISUAL INSTITUTE: Vancouver, BC; www.pacificav.com. 1-year diploma programs in audio engineering/production, film/music business, game design, film/digital arts, broadcast arts. World-class commercial recording studio. Film students graduate with a pro portfolio and studio experience. Game design students graduate with a completed game.

PYRAMIND: San Francisco, www.pyramind.com. 8-month certificate programs: digital producer, post-production and electronic music producer. Hands-on training interacting with industry professionals in the recording studio and

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classroom. Students learn current software and hardware skills and techniques for media and music production.

ROCK 'N' ROLL RANCH STUDIOS: Las Vegas, www.rocknrollranchstudios.com. 20-week course covers basic to advanced recording techniques and skills.

SACRAMENTO CITY COLLEGE: Sacramento, www.scc.losrios.edu. 2-year program encompassing live sound reinforcement, studio audio engineering, and post-production editing for picture and for sound and independent projects. Associate degrees or certificate programs.

SAN DIEGO COMMUNITY COLLEGE: San Diego, CA; www.sdccd.net. 2-year A.A. in electronic music. Students receive a well-rounded music education while focusing on Pro Tools in a Mac-based lab. Graduates are prepared for entry-level positions in recording studios, radio and TV stations, multimedia facilities including Web-based production, as live sound engineers, etc.

SAN DIEGO MESA COLLEGE: San Diego, CA; www.sandiegomesacollege.net. 2-year certificate, associate degree. Beginning to advanced classes in the Mesa College Electronic Music Studio are hands-on and cover several different music composition, production and recording techniques.

SAN FRANCISCO STATE UNIVERSITY: www.cel.sfsu.edu/music. Music/Recording Industry Certificate, Music/Recording Industry Certificate with an emphasis in Audio Recording, Music/Recording Industry Certificate with an emphasis in Music Business. Variety of music business and recording industry classes for academic credit. State-of-the-art computer labs equipped with gear from Digidesign, Apple, Propellerhead and more. Classrooms house MIDI keyboards, digital turntables, Pro Tools rigs and other current recording devices. Many of our hands-on courses, taught by award-winning producers and industry professionals, are held in the Bay Area's leading recording studios and venues.

SANTA BARBARA CITY COLLEGE: Santa Barbara, CA; www.sbccc.ca.us.

SANTA MONICA COLLEGE: Santa Monica, CA; academy.smc.edu. Certificates and A.A. degrees. The interactive media program is a comprehensive course in the design and implementation of Websites, interactive entertainment and other media. The program emphasizes high-quality design driven by real-world business, entertainment and technical requirements.

SCHOOL OF WORSHIP: Santa Ana, CA; www.schoolofworship.net. 1-year certificate. Program focuses on basic theological concepts, leadership, administration, music theory, studio and live engineering, vocal techniques and many others. The campus is located at Calvary Chapel of Costa Mesa.

SCOTTSDALE COMMUNITY COLLEGE: Scottsdale, AZ; www.scottsdalecc.edu/finearts/music_office/recording_studio.html. A.A.S. and Certificate programs in Audio Production Technologies. Our Audio Production degree program helps students build their knowledge base, develop technical skills and gain real-world knowledge with a curriculum emphasizing studio recording, live sound, DAW and electronic music. Students work with industry-standard equipment including Pro Tools HD, Digidesign Control24, Universal Audio, Digital Performer and much more. We have two recording studios and a lab containing 16 stations of Pro Tools LE.

SELKIRK COLLEGE: Castlegar, BC; selkirk.bc.ca. 2-year certificates in music performance, engineering or composition. A contemporary music program with an emphasis on music technology. State-of-the-art Pro Tools/

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SHORELINE RECORDING STUDIOS: Seattle, success.shoreline.edu/scstudio. A.A./S. degrees in digital audio engineering, MIDI, music business and performance. Certificates of proficiency in Pro Tools, Digital Performer, Reason and Live. Specific courses in producing and songwriting. A.F.A. in music. Traditional A.A. and A.S. for general music transfer to 4-year schools. Regional Grammy University, active Student AES Chapter. Four different digital and analog control rooms, DAWs, analog and digital consoles.

SOUND HARVEST: Meridian, ID; www.soundharvest.com. Training for church volunteers on-site, includes training of worship teams, thorough P.A. system check and 2-day seminar with training on-site.

SOUND MASTER: L.A., www.soundmasterrecording.com. 8-month audio engineer program. Small classes, analog and digital equipment, and a curriculum that covers all the aspects of the industry that you'll need to land gigs as an audio engineer. Accredited.

STUDIOCAT PRODUCTIONS: Phoenix, www.studiocatproductions.com. Courses include recording, editing and mixing of music created by Arizona's top local artists. Small class sizes, hands-on training. Instructed by multi-Platinum Award-winning engineer Jamison Weddle.

TREBAS INSTITUTE: Vancouver, BC; www.trebas.com. 3-year B.A. in sound technology, 1-year diploma programs. Courses in music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. High-tech studios and labs. Lifetime national job-search assistance. Authorized training center for Cubase and Macromedia.

UCLA EXTENSION: Los Angeles, www.uclaextension.edu/entertainmentstudies. Certificate programs that prepare students in the art and science of the music business, songwriting, recording engineering and film scoring. Entertainment Studies has a curriculum of required and elective courses that cover theory and practice in audio technology, equipment, musicianship and business practice.

UNIVERSITY OF CALIFORNIA, SAN DIEGO: La Jolla, CA; music.ucsd.edu. The Computer Music program emphasizes research in new techniques for electronic music composition and performance, and an active concert program emphasizing new works.

UNIVERSITY OF COLORADO, DENVER: www.cudenver.edu. 4-year B.S. in recording arts, 2-year M.S. in recording arts with emphasis in pedagogy, audio forensics, adv. P.A. Five control rooms, 24-track analog and digital, audio sweetening, surround sound and audio forensics. National internship program. AES Student Section and SPARS member.

UNIVERSITY OF DENVER: www.du.edu/lamont. 4-year concentration in audio production within the jazz and commercial music program. The school is housed in the Newman Center for the Performing Arts, comprising state-of-the-art classrooms, concert halls and a Pro Tools HD-based studio. Students work in the electronic music studio and on the Yamaha PM5D and Sony Oxford digital consoles.

UNIVERSITY OF OREGON, EUGENE: darkwing.uoregon.edu/~fmo. The curriculum balances the development of artistic and creative skills with the mastery of the discipline's technical aspects. Courses emphasize music composition, performance and real-time interactive media environments. Focus is on creation of experimental types of musical content.

UNIVERSITY OF THE PACIFIC: Stockton, CA;

www.pacific.edu/conservatory/music_conservatory.asp. 4-year bachelor degrees in music composition and music management. Introductory and advanced training in the use of music technology for composers and music-management professionals.

UNIVERSITY OF SOUTHERN CALIFORNIA: L.A., www.usc.edu/schools/music/programs/industry. B.S. degree. The technology track emphasizes recording, MIDI and other music technologies. Computer lab with 15 workstations, featuring Pro Tools, Logic, Reason, Finale and Digital Performer. Our main studio has Pro Tools HD, ProControl 40-fader worksurface, and a large selection of microphones and outboard equipment.

VANCOUVER FILM SCHOOL: Vancouver, BC; www.vfs.com. Digidesign Operator certificate. Audio engineering for visual media. Students learn the culture of the industry by designing sound for film, games and animation, and

specialize in mixing, dialog editing, recording or music production. All students graduate with original demo reels.

VIDEO SYMPHONY: Burbank, CA; www.videosymphony.com. Pro Tools User and Expert certification classes and exams. Authorized Pro Tools editing/mixing/sound design classes and career program. Job-centric, professional training for Hollywood professionals. Other career programs in Avid video editing and motion graphics are offered.

WOMEN'S AUDIO MISSION: San Francisco, www.womensaudiomission.org. WAM seeks to create an environment that will encourage and enable the aspirations of women in the recording arts and, in turn, expand the vision and voice of media and popular culture. We provide access to audio technology and training to record sound for music, radio, film, television and the Internet for women and girls. ■

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Where Audio Comes Alive

A REPORT FROM AES 2007

BY THE MIX STAFF

The theme for this year's Audio Engineering Society convention (held October 5 to 8, 2007) was "Where Audio Comes Alive," but perhaps it should have been "All Together Now." Finally, after years of talk, things are starting to click in terms of production tools. Walking through the crowd of 20,674 attendees, 445 exhibitors and 150 conference events, New York's Javits Convention Center was packed.

ANALOG: ALIVE AND WELL

AMS Neve (www.ams-neve.com) debuted its Genesys, a hand-built, expandable analog 8-bus mixer with DAW control. Pricing starts around \$50k, and includes 16 channels of mic/line preamps; 16-channel DAW monitoring; 16-channel analog summing at mixdown; DAW control for Pro Tools, Logic and Nuendo; and more. It can be expanded to 60 channels; options include recall, motorized faders and 192kHz I/O.

API's (www.apiaudio.com) new 1608 console builds on the classic API 1604. Sharing the form factor of the 1604, the standard

pell Audio's (www.lachapellaudio.com) Model 583S preamp combines THAT Corp. and Burr-Brown I/O stages and a 12AX7 tube. Purple Audio (www.purpleaudio.com) debuted four 500 Series modules: a FET compressor, 4-band LC equalizer, headphone amp and mic preamp DI. For Tonelux-format rack/consoles, Little Labs (www.littlelabs.com) offers its IBP Phase-Alignment Tool in modular form, while SPL (www.spl-usa.com) unveiled its Transient Designer as a single-channel module. And Tonelux (www.tonelux.com) launched two new modules: the MP1a mic preamp/DI and the TRX compressor.

A-Designs (www.adesignsaudio.com) brought in the HM2EQ Hammer, a sweet-sounding, all-tube, dual-mono EQ. The elysia (www.elysia.com) mpressor compressor can produce fat and freaky sounds by employing a punchy control behavior, colorations full of character and extreme settings. TLAudio's (www.tlaudio.co.uk) Fat Track Tube Production Suite (\$2,195) is a desktop unit with mic/line/DI inputs, 3-band EQ, balanced inserts, FX send/return and headphone outs. On the digital side, Focusrite (www.focusrite.com) put four channels of Liquid Channel mic preamps into its Liquid 4PRE. It can be controlled remotely via an Ethernet connection to Pro Tools, and several units can be networked for larger projects.

DAWS AND MORE

Ironically, the most talked-about DAW product wasn't a workstation at all, but the new Pro-Convert application from SSL (www.solid-state-logic.com), which converts session files across many platforms including the latest versions of Pro Tools, Soundscape, Cubase/Nuendo, Vegas, Sonic Studio, SADiE, Final Cut Pro, Audition, OMF, AES31, Sequoia, Open TL and Tascam BU.

The coolest DAW at AES was Fairlight's (www.fairlightau.com) Xynergi media production center, offering a suite of media processing tools for high-end audio-for-video surround production. Xynergi provides a

MIX CERTIFIED HITS

Listed alphabetically, here are our Top 10 picks for the best of AES 2007.

Ableton Live 7 Software
Apple Logic Pro Studio Software
Cakewalk SONAR 7
Digidesign C|24 Mix Controller
Fairlight Xynergi Workstation
Neve Genesys Console
Ocean Way Audio HR-2A Monitors
Sony PCM-D50 Recorder
SSL Pro-Convert Software
Steinberg Nuendo 4 Software

new concept in tactile control via self-labeling key switches that can display full-color image/icon/text for intelligent control over the entire recording/editing/mixing process.

Steinberg (www.steinberg.net) unveiled Nuendo 4, with an upgraded set of 38 surround and sidechaining-capable VST3 audio effects plug-ins, numerous workflow improvements and a new file-management system to archive/retrieve/search media files across any connected drive.

Cakewalk (www.cakewalk.com) SONAR 7 software for the PC is packed with new features, such as enhanced MIDI editing, advanced multiband linear-phase mastering effects and an external hardware effects insert with automatic plug-in delay compensation. Other extras include the Z3TA+ waveshaping synth, Dimension LE, Rapture LE, DropZone, Roland V-Vocal™ Version 1.5 and tools for publishing music online.

Apple (www.apple.com/logicstudio) updates its Logic software as a bundle of tools. Logic Pro 8 now has a redesigned interface that speeds production. Also in the bundle are Soundtrack Pro 2, Studio Instruments, Studio Effects (with some 80 plug-ins) and Studio Sound Library, with 18,000 Apple Loops and 1,300 sampled instruments. Another plus is MainStage, a new live performance rig for guitar/bass.



The SSL "Shed of Your Dreams"

1608 has 16 548B inputs, eight effects returns, 12 550A 3-band EQs, four 560 10-band graphic EQs, 5.1 monitoring and space for eight additional 500 Series modules. A 16-channel expander is optional.

Great River Electronics (www.greatriverelectronics.com) showed the MP-500NV, a version of its NV Series mic preamp/DI, fitting into two 500 Series rack slots. LaCha-

Ableton's (www.ableton.com) Live 7 includes improved audio and MIDI engines to minimize jitter, along with a new effect integrating three compression models and a sidechain control for it and the gate and auto-filter effects. The EQ Eight plug-in has a 64-bit mode for greater accuracy, and a new spectrum analyzer provides visual feedback.

RX audio restoration software from iZotope (www.izotope.com) removes hiss and buzz, eliminates clicks and crackles, and repairs overload distortion in audio. Spectral-repair algorithms even analyze and fill gaps to restore previously unusable recordings.

Your next plug-in may be hardware: Lexicon's (www.lexiconpro.com) PCM96 can operate as a "traditional" reverb/effects processor using analog or digital I/O, or can integrate with a DAW via Ethernet or FireWire.

DIGITAL CONSOLE/CONTROLLERS

Most of the digital console action at AES involved software updates for existing models, but there were new entries. Digidesign's (www.digidesign.com) mid-format C|24 controller for Pro Tools HD/LE provides an advanced control surface, 16 mic/line/DI preamps, 5.1 monitoring and built-in talk-back. Its 24 bankable control strips have motorized 100mm faders. Retail: \$9,995.

The S5 Fusion worksurface from Euphonix (www.euphonix.com) can control Pro

Tools HD and/or EuCon Hybrid with Nuendo, Apple's Final Cut Pro and Logic Pro, Merging's Pyramix and MOTU's Digital Performer. The basic concept is accessing one or more systems simultaneously to handle any audio job; for example, Pro Tools tracks on S5 faders can exist alongside other tracks coming from Nuendo or Logic Pro.

ENTER THE SHED

Nobody at AES could have missed "The Shed." Now available through SSL, this 240-square-foot Summerwood Cheyenne shed is a copy of Peter Gabriel's songwriting sanctum, complete with SSL AWS 900+ console, SSL XLogic processing/converters and additional equipment provided by Guitar Center, along with Auralex acoustic treatment, Argosy studio

furniture and Henick-Lane air conditioning. Price is under \$250k, depending on finish, specification and location. (Take our exclusive video tour at www.mixonline.com.)

MICRO-MANIA

Blue's (www.bluemic.com) Snowflake USB mic clips to the screen of any laptop or desktop PC or folds into a desk stand. Retail is \$79. Heil Sound's (www.heilsound.com) The Fin, puts a cardioid dynamic element into an Art Deco-style housing, with four LEDs inside the mic that glow when connected to phantom power.

The R-F-T M216 matrix stereo mic from Telefunken-USA (www.telefunkenusa.com) is a dual-capsule condenser design with four outputs that let users capture audio in



Top Ten Live Sound Products at AES

AES remains a major venue for live sound product launches. Here are my picks:

Allen & Heath's (www.allen-heath.com) new iLive-80 is the smallest available iLive control surface, providing 80 control strips arranged in two sections, each with four banks. A color touchscreen provides access to dynamics, graphic EQs, effects and automation, and displays processing operations.

Unlike conventional SPL-based measurement techniques, the CONEQ™ (CONvolution EQualization) measurement technology from Real Sound Lab (www.realsoundlab.com) measures the acoustic power frequency response of a loudspeaker system—live or studio. In a two-minute process, CONEQ compiles hundreds of broadband measurements surrounding a loudspeaker or array, and creates a 4,096-point inverse filter to precisely correct the speaker's response across its entire coverage pattern.

JBL (www.jblpro.com) expands its VRX Series portable line arrays, with the VRX932LAP, a two-way, 12-inch powered system for use in arrays for shorter-throw applications. A matching VRX918SP single-18 powered sub can be flown or ground-stacked. Both models use built-in JBL DrivePack DPC-2 amplification and DSP-based resident input modules for system optimization/equalization.

Lab.gruppen's (www.labgruppen.com) new Powered Loudspeaker Management (PLM) Series integrate a 4-channel amp, dual Dolby Lake Processor™ modules, Dante™ networking, and load verification and performance monitoring. The PLM 10000Q's four output channels (driven independently) provide 2,700 watts, with more power available when driven asymmetrically.

Media Numerics (www.medianumerics.com) released several analog and digital I/O products for its RockNet line of audio networking. RockNet units can be configured using front panel controls to link up to 99 devices, and can route 160 audio channels over standard Cat-5 hardware in a bidirectional ring network.

Yamaha developed 4-channel amps exclusively for Nexo (www.nexo-sa.com) loudspeakers. Built by Nexo, the amps incorporate Yamaha's EEEngine technology for Class-A/B sound with heat dissipation on par with Class-D technology. Featuring three times the DSP muscle of a NEXO NX242 processor, the NX 4x4 generates 4x4,000 watts (2 ohms) or 2x8,000 watts into 4 ohms in a 2x2 bridge mode.

The **Renkus-Heinz** (www.renkus-heinz.com) VERSYS VL3 is a line array system that features RHAON (Renkus-Heinz Audio Operations Network) and onboard Class-D tri-amplification. Up to 20 boxes can be flown per array, with each box employing 1,200+600+250W of tri-amplification. Dedicated VERSYS AimWare software facilitates quick and accurate venue array configuration.

Roland (www.rssamerica.com) demonstrated its RSS Digital V-Mixing System, featuring the RSS M-400 48-channel digital console, configurable digital snakes with remote-controlled mic pre's and multitrack recording option.

Studer (www.studer.ch) takes its Vista mixing console technology on the road with the new Vista 5SR. New features include a built-in flight case; a redesigned, tougher frame; and the ability to reset the Viatonics panels for direct viewing by a standing operator.

—Steve La Cerra

3:3:2 STUDIO
Stereo / 5.1 Mixing & Mastering

T.C Electronic System 6000.Lipinski.
Dangerous Music.Cranesong.Marley.
Avalon.SSL.Digital Domain DD-2.
Weiss.DCS.Z-Systems.

Architects: Walters-Storyk Design Group.
Acousticians: John Storyk.Renato Cipriano.
Dirk Noy.Sergio Molho

info@332studio.com // www.332studio.com

Blumlein, quad X/Y and Z, or stereo patterns. The \$13,950 DSF-1 music surround mic system from SoundField (www.soundfieldusa.com) incorporates the company's unique technology that can output high-resolution recordings in delivery formats ranging from traditional stereo to esoteric multichannel formats—without leaving the digital domain.

For the mic's 40th anniversary, Neumann (www.neumannusa.com) offers the U 87 Anniversary Set special edition in a classic style case, with elastic suspension and pop screen that's reminiscent of the 1960s. Sennheiser (www.sennheiserusa.com) bowed a line of condenser mics based on its flagship MKH 800, but for less than half the price. Available in cardioid, omni and supercardioid (\$1,299 each), the new mics feature a mic head and XLR module (with optional cable assembly for separating the two).

Earthworks (www.earthworksaudio.com) demo'ed the \$4,495 stereo PianoMic system, which features small omni, gooseneck-mounted mics suspended on a bar that can be positioned across the inside of a piano for

lid up/down-miking. SE Electronics' (www.sonicus.net) GM10 acoustic guitar mic is a cardioid condenser on a mini boom that attaches to the guitar. The musician has complete freedom of movement while the mic stays aimed at the desired sweet spot. DPA's (www.dpamicrophones.com) 4080 miniature cardioid lavalier is pre-equalized with a 4dB presence boost to improve speech intelligibility/definition. Retail is \$549.

Using slightly thicker ribbon material, Royer Labs (www.royerlabs.com) created road-rugged versions of three ribbon mics for live sound/touring applications. The new "L" models are priced the same as the studio versions, and deliveries begin Q1, 2008. A ribbon mic tough enough for close-in kick drum miking, "el Diablo-Mercenary Edition" uses Crowley and Tripp's (www.soundwaveresearch.com) ultratough Roswellite™ ribbon material and is said to have the aggression of a 421 with the size of the 47 FET.

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SSL XLogic Alpha Channel

MIC TECHNOLOGY/SOUND REINFORCEMENT

Neumann KMS 104

MIC TECHNOLOGY//RECORDING

Royer R122-V

WIRELESS TECHNOLOGY

Sennheiser NET1

SOUND REINFORCEMENT LOUDSPEAKER TECHNOLOGY

JBL Professional VP Series

STUDIO MONITOR TECHNOLOGY

Genelec 8200/7200 DSP Series

MUSICAL INSTRUMENT TECHNOLOGY

Moog Little Phatty

SIGNAL PROCESSING TECHNOLOGY/HARDWARE

Focusrite Liquid Mix

SIGNAL PROCESSING TECHNOLOGY/SOFTWARE

Universal Audio Neve Classic Console Bundle

WORKSTATION TECHNOLOGY

Digidesign 003

RECORDING DEVICES

Tascam DV-RA1000HD

SOUND REINFORCEMENT CONSOLE TECHNOLOGY

Digidesign D-Show Profile

SMALL FORMAT CONSOLE TECHNOLOGY

Trident Series 8T-8

LARGE FORMAT CONSOLE TECHNOLOGY

SSL Duality

OUTSTANDING CREATIVE ACHIEVEMENT

TOUR SOUND PRODUCTION

John Mayer Continuum Tour

REMOTE PRODUCTION/RECORDING OR BROADCAST

49th Annual Grammy Awards, CBS

TELEVISION SOUND PRODUCTION

The Sopranos, HBO

FILM SOUND PRODUCTION

Pirates of the Caribbean: Dead Man's Chest

STUDIO DESIGN PROJECT

Record Plant/SSL 1, Hollywood

INTERACTIVE ENTERTAINMENT SOUND PRODUCTION

Tomb Raider: Legend, Eidos Interactive

SURROUND SOUND PRODUCTION

Love, Beatles (DVD-A)

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signed to fix acoustic problems with sound systems: Real Sound Lab's CONEQ™ and IK Multimedia's (www.ikmultimedia.com) ARC/Advanced Room Correction run real-time software to correct room response for more accurate reproduction, while Equator Audio Research (www.equatoraudio.com) is now shipping its Q Series of digitally controlled reference monitors, which incorporate DSP for correcting room modes.

Genelec (www.genelec.com) brought its DSP-based monitors to a wider audience with the new SE (Small Environment) DSP Monitoring System, combining a 10-inch DSP subwoofer with 8130A digital input active monitors. At the other end of the spectrum, we were amazed by Allen Sides' (www.oceanwayaudio.com) large \$34k/pair model HR-2A three-way monitors, which—even on the show floor—sounded impressive. ADAM Audio (www.adam-audio.com) unveiled its double-15, four-way S7A MkII monitors.

Taking a passive approach to improved listening, Primacoustic's (www.primacoustic.com) Recoil Stabilizers are console-top speaker pads that promise to make your monitors more accurate. The weighted units reduce speaker movement during playback.

RECORDERS

Interest in analog recording remains high. And to keep those machines well-fed, ATR Magnetics' (www.atrtape.com) line of pro high-output tape—from ½ to 2-inch—is now in full production, with ¼-inch due in early 2008.

The \$599 handheld PCM-D50 field recorder from Sony Pro Audio (www.sony.com/proaudio) features 96kHz/24-bit recording with two adjustable mics (X/Y or wide-stereo) and PC/Mac file transfer via USB. HHB (www.sennheiserusa.com) expanded its line of cardioid and omni FlashMic built-into-the-mic-body recording mics with two new models that also include a line input for recording feeds at press conferences, etc.

The Fostex (www.fostexusa.com) PD606 and PD204 retain the features of its PD6 location recorder, while adding full-size DVD-RAM disc recording, 8-track recording through the digital I/O, dual-drive recording, HD drive access via USB 2, tri-level sync and more.

MORE TO COME

There was a lot more than we could possibly cover here. For more AES insights, including video product demos, blogs, podcasts, hundreds of new products and more, visit www.mixonline.com/ms/aes2007. Meanwhile, AES returns to San Francisco next year from October 2 to 5, 2008. See you there! ■

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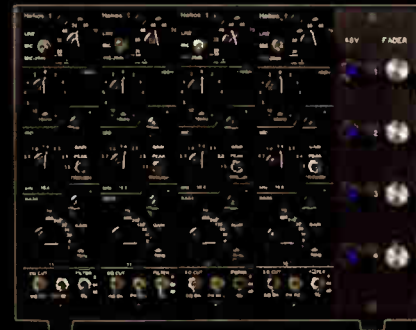
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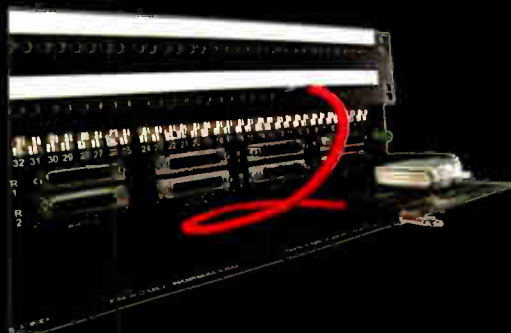
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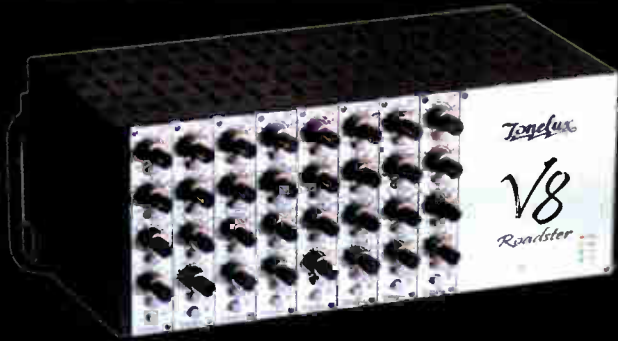
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American Gangster

Ridley Scott's Latest Called for a Gritty, Aggressive Soundtrack

By Blair Jackson

Since he made his first splash as a feature film director with *The Duelists* 30 years ago, Ridley Scott has established himself as one of our most compelling and stylish storytellers. He is rightly revered for his ability to immerse the viewer in whatever world he creates, whether it's the gritty, futuristic L.A. of *Blade Runner*, the gory spectacle of ancient Rome in *Gladiator*, the frenetic blur of modern war in *Black Hawk Down*, the sprawling vistas of the Middle East during The Crusades in *Kingdom of Heaven* or even the bucolic tranquility of Provence in *A Good Year*.

In Scott's latest, *American Gangster*, he takes us to yet another time and place, which he re-creates with his inimitable flair and attention to detail: the mob-controlled drug underworld of Harlem in the early 1970s. The film tells the true story of a heroin kingpin named Frank Lucas (played by Denzel Washington), who manages to outmaneuver the Mafia on his way to dominating the drug trade in northern Manhattan, but then must deal with an even tougher



adversary—an anti-narcotics task force led by a tenacious detective named Richie Roberts (Russell Crowe, a veteran of several Scott films). The multitextured story tackles a number of themes, including the violence of competing organized crime groups, police corruption, city politics, even the raging war in Vietnam—Lucas initially smuggles heroin into the U.S. with the bodies of American servicemen killed in the war.

Scott's films always have an interesting soundtrack—that's why they have earned a slew of Academy Award, BAFTA, C.A.S. and Golden Reel nominations and trophies for sound dating all the way back to *Black Rain* in 1989. Two of the re-recording mixers who won Oscars (separately) on Scott's films—Bob Beemer (*Gladiator*) and Mike Minkler (*Black Hawk Down*)—worked together on *American Gangster*, and as has been the case on most of the director's films in recent years, Per Hallberg and Karen Baker Landers co-supervised the show. The post was done at Todd-AO West, which is based around a Euphonix System 5 console and a plethora of Pro Tools systems.

"When we start a film with Ridley," Hallberg says, "he usually doesn't explain very much. What we do is look at the film and we talk about the picture, and since we've done quite a few films with him we know the kinds of things he likes and what he's looking for. But as for specific notes, he's

not so big on that. One of the main things for this film—and this was the only note, really—was to make you feel like you're really in the city and the city's pressure is on you all the time. He shot this film purposefully in the right locations—mostly in the middle of Harlem—and most of them were very noisy, so there were a lot on the production tracks to fight with. But that's how he wanted it. He wanted it to look like it was in the right place and he wanted it to sound like it was in the right place."

"Right from the get-go, from talking to Per and coming from Pietro Scalia, the picture editor, we knew that [the sound] was always going to be noisy and aggressive," notes Minkler. "That was dictated by the fact that Ridley on location was kind of shooting from the hip—they were always moving, moving, moving, changing locations: It's on the streets, it's in the warehouse, it's back on the streets, it's in a car, they're driving. It was written that way and it's paced that way. It's a very extensive story with a lot of locations. He wanted this energy, and I gather that sometimes they were moving so quickly that they didn't have time to rehearse the sounds or block off the streets. So the noise level of New York City is quite apparent. And Ridley wanted to maintain that: 'It's madness out there.' The production tracks [recorded by William Sarokin]

—CONTINUED ON PAGE 69



Sound supervisors Karen Baker Landers and Per Hallberg.

Creative on Demand

Composers Reap Benefits From Production Music Libraries

By Barbara Schultz

Randy Thornton, the COO of Non Stop Music (now a division of Warner Chappell), jokes that, "No one grows up saying, 'I want to write for production music libraries!'" And he's probably right, not only because the aspiration doesn't seem as grand as writing for film, but also because it's a line of work that young musicians might not be aware of. However, the demand for production music is huge; it's used everywhere from radio promos to network television themes, and that's great news for anyone making a living in the music business. As November is *Mix's* audio education issue, we thought it would be useful to let the next generation of D.I.Y. engineer/producer musicians know more about the composers who specialize in cues that can tell a story in anywhere from 120 seconds down to 60 or 30 or 10.

Thornton began his career as a studio session trombone player in Salt Lake City, where the Osmonds were a driving force. But Donny Osmond grew up, and a lot of studio players also had to move on when much of the local business dried up. A lot of musicians packed up and moved to major-market cities, but Thornton really wanted to stay in Salt Lake City, so he formed Non Stop Productions with fellow trombone player



Sonic Addiction composer Scooter Pietsch at work in Southern California

Bryan Hotheins.

"We specialized in jingles and on-air promos, getting whatever little scoring jobs we could get," Thornton says. "Quickly, we had some really lucky breaks and we were doing national network promos for ABC-TV. Within two or three years, we were doing on-air promos for all the major networks, and that eventually led to the film-trailer industry. Some of the people we were working with at the network level started working in film and took us with them. So we were doing lots of film trailers, and at the same time we did the music for *Good Morning America* for nine years. And we've been doing *The Today Show* for 12 years."

Thornton explains that while the company had reached an extremely successful point, the pace was grueling. "We were working seven days a week and just killing ourselves," he says, "and the music library busi-

ness was looking more and more desirable because you can produce music, put that music on CDs, sell those CDs all over the world, and people would even use it



while you're asleep and send you a check. So 14 years ago, we launched the Non Stop Music Library. We started producing CDs in various genres, and we would license it to TV networks, to ad people and the film-trailer industry."



Randy Thornton, COO of Nonstop Music, began his career playing sessions for the original Donny and Marie Show.

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Kraftwerk fan/composer Jeff Wade cuts up with production partner Ruben Ayala.

When Thornton and Hofheins began Non Stop, they were renting studio time and traveling, or shipping tapes to various far-flung places. Now, the company has offices in L.A., New York and London, and its headquarters in Salt Lake City includes one of the largest soundstages outside of L.A., with room for up to 40 musicians. Thornton divides his time between running a successful business, producing live orchestral sessions and composing some of Non Stop's music in his own MOTU Digital Performer-based studio.

"I have a fairly elaborate home setup that

I mock everything up on, but I'm still very attached to working with live musicians," he says. "I like the interaction of working with live players. When I compose, I hear colors and instrumentation that comes from my performance background more than anything else."

Jeff Wade creates most of the cues for FirstCom's Velocity music library with production partner Ruben Ayala. Wade started out as a DJ and hip hop producer, while Ayala was an established musician/engineer in the Dallas/Fort Worth, Texas, area when the two began collaborating. "Ruben was a very respected engineer, and it didn't take me too long to figure out that one of the reasons my music sounded so good was that Ruben is such a great engineer," Wade says. "So as I moved more into production, we formed a partnership, and it's a unique mix because my background is more urban and he was a really studied musician and a brilliant engineer."

Wade and Ayala have cultivated a niche with FirstCom, producing 10 titles a year for the Velocity library. "This is the first year we're doing this, and it's taking up close to 80 percent of our music time," Wade says. "We're pretty efficient at doing what we do, but now we do a lot more strategizing in the pre-production stage, covering where we want to go so that when we get down to actually creating the music, we're flowing and going."

"FirstCom sets multiple release deadlines throughout the year," Wade continues. "They have six dates, one every two months. So periodically, I get with [FirstCom senior VP] Ken Nelson and suggest concept ideas for a disc. He says yay or nay, and we try to plan a release schedule around having a certain variety." In other words, if FirstCom has two guitar-based collections in the works, then the company wouldn't release both of those on the same date.

For a while, Wade and Ayala had matching rooms based around Digital Performer, both with Genelec 1031 monitoring and a variety of plug-ins and analog outboard. Now, Ayala is in the process of moving his rig to a new studio in San Antonio, so most of the work is being done in Wade's room, which was recently fitted with new Mackie HR824 monitors. "I think they've got a good broad range, and I get good low end, which we care about a lot because we do so much beat-oriented stuff."

Whereas most music library music is de-



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livered in the form of downloads, the companies still conceptualize their releases on a CD model. Velocity "CDs" have about 14 cues each. "And for each cut, there's a full two-minute version; an underscore version; a 60, 30 and 10 [second] version]. We have to have the 60s, 30s and 10s because they're



so useful to people."

Thornton of Non Stop Music says that his company no longer offers those short cues. He reasons that all of his company's clients have their own desktop editing capabilities and can slice and dice their selections at will. Conversely, composer Scooter Pietsch goes above and beyond to create any possibly useful version of his music for his Sonic Addiction library, which he licenses through Premier Tracks.

"I think editors and producers want more," Pietsch says. "so I give full-length two- to two-and-a-half-minute versions, and 60s, 30s, 15s, and I do alternative stuff: change up drum grooves and give different mixes without certain instruments. Anything to help the cues get used more."

That said, Pietsch acknowledges that making money from music library work is "kind of a numbers game. The more tracks you write, the more money you're going to make, because it's impossible to know which track is the one that producers and editors



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across the world are going to latch onto.

"The thing that's strange about music libraries is, you would think it's only the contemporary tracks that sell, but I've found if you write supercontemporary stuff, you get a lot of uses early on, and then it tapers off because it sounds really dated. But a feel-good, happy acoustic guitar track will get used over the years, or a really nice sentimental piano-and-strings track will get used a lot.

"Also, the quirkiest tracks in the world can end up making a ton of money," Pietsch continues. "It's completely unpredictable.

You know the *Curb Your Enthusiasm* theme? That's a Killer Tracks cut. Larry David heard it on a commercial and thought it would be great for his show. I'm sure the composer never thought he would get that!"

Pietsch, who has a master's degree in music composition, taught music at the college level for a couple of years before slowly building his successful composing career in L.A. Over the years, he has composed music for several music libraries until he decided to start his own with Premier. He spends most of his time scoring for TV and film projects, but he enjoys the challenge



and the rewards generated by music library work. "The problem with working on TV shows is you pour your heart and soul into it, and the show gets canceled after a few episodes and everything you've done for it gets dumped into a black hole. It never gets used again. It's work for hire, and the network or production company owns the music. The great thing about music libraries is they continue years later to sell that music and it gets used."

And sometimes, Pietsch says, compositions get used in surprising situations: "I was working on a TV show, and this one particular editor wasn't liking what I was writing, so they called me into the edit bays to talk about it," Pietsch relates. "And the editor says, 'We're not liking what you have, but there is a track I would like to play for you. We absolutely love this cut, and we want you to sound like this.' And I say, 'No problem, I wrote that track.' He says, 'You did not. That's from the Killer Tracks library.' And I say, 'I know. I wrote cuts for them. Look at the CD!'"

Pietsch writes in his own Apple Logic/Apogee Symphony-based studio, which is situated in a separate building on the same property as his house. Sitting in his personal studio, surrounded by guitars and windows onto his backyard, he says that the biggest challenge for him—or any composer—is not about being creative on demand, it's about staying in business, keeping the money flowing in. Music library work offers an opportunity to create an increasing number of revenue streams.

"There's so much need for these pieces of music. Cable TV is so music library-oriented," Pietsch explains. "I think that for all composers now, especially those starting out, music libraries should be a reality. But keep in mind that there are definite specifics they want to see in a library track. For example, nobody ever fades out of a library cue. They always have an ending. And remember that people are cutting picture to it. Things that are rhythmic are al-

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ways a good idea."

FirstCom's Wade recommends that any composer hoping to get music library work should browse library Websites to get a feel for the way the cues are composed. "You have to think in terms of having lots of motion, as opposed to being structured like a song. Once you grasp that, it expands your writing abilities quite a bit." ■

Barbara Schultz is an assistant editor of Mix.

American Gangster

—FROM PAGE 64

are very rich and full of noise."

"But appropriately," adds Beemer (who shared an Oscar with Minkler last year for *Dreamgirls*). "It's really like the grander character in this film is Harlem, so Ridley wanted to capture the city noise you hear pretty much wherever you go. Ridley was really impressed by how loud the El trains were. He kept remarking, 'I don't know how people can live there because it's so bloody loud.' He was interested in maintaining that constant din. So there's lots of different textures—trains and sirens and trucks and people playing music, and people arguing and laughing and all that. It's a very full track."

"Ridley is not afraid of sound," Baker Landers adds. "He loves sound effects and he loves to *feel* things in a film. And you really do in his films. One of the most impressive elements of *American Gangster*, from a sound perspective, is the backgrounds. They're so full and rich and there's stuff going on everywhere. You really do feel like you're there." (In addition to the New York locations, there are also scenes in the opium fields of Thailand, "where we hear lots of bugs," Minkler notes with a chuckle.)

I wondered if having a busier production track limited the flexibility of the post team when it came to creating backgrounds and spotting effects. "Absolutely," Hallberg replies. "That was the biggest challenge—to get that track down and still be able to hear the dialog so that we could then add all the other things. Almost every location in the movie has new stuff going on and there's always something happening. Ridley doesn't shoot anything one-dimensional. He likes scenes that are deep, with lots of activity back in the shot. That's one reason his movies are so interesting to look at. Well, he wants there to be three dimensions to the sound, too. You have to have the dialog *and* all the stuff behind it to sell the illusion of reality and put you right there. Mike

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"Another challenge was dealing with the transitions and making the backgrounds and environments sound distinct and aggressive and interesting, and yet somehow not make the dialog difficult to hear," he continues. "Or maybe at times it *is* difficult to hear, but it's intentional. So keeping it alive and aggressive, but in its proper place—and in every situation, its proper place is a little different."

What does "aggressive" mean when it comes to mixing? "It means letting her rip," Minkler says. "A lot of mixers take the approach of making things elegant and smooth; it's a tendency that you lean toward. But when they say, 'No, we're going aggressive,' you completely change your style and you do things in a more flamboyant way to the point where you might actually be overdoing it. It can be loud, it can be soft, it can be sudden, it can be overlapping,—whatever it is that makes it *jump* more."

Although he rarely gets involved with the details of the sound job as it's going down, Scott encouraged the supervisors and mixers to heighten the sonic drama at almost every turn. "He really gives you the opportunity to stretch yourself," Baker Landers says of the director. "You can stretch yourself as far as you can imagine, and generally he'll embrace it."

"Not only that," adds Hallberg, "but when you think you've done something as extreme as you dare to, he will say, 'That's not quite enough.' And we'll say—even Mike in the mixing room—'We can't do it!' And he'll just smile, and say, 'Yes, you can.'"

He'll push you a couple of steps more than you think is possible."

"He usually doesn't get that involved with specifics," says Beemer. "He takes the grand approach. He hires the people he wants, almost like casting, and then he gives you a broad impression, which is very accurate but he doesn't micromanage how you accomplish it. If you don't do it right, he'll tell you and we'll fix it. But he doesn't get that deep into it. He's like an artistic octopus dealing with all these levels at the same time. It's really impressive to watch."

Picture editor Pietro Scalia is also intimately involved in the process of putting together the soundtrack; indeed, his editing helps dictate the flow of the film, and its rhythm suggests a certain sound approach. "He works in the Avid pretty well with the sound effects that Per provides him with," Minkler comments. "As he's cutting, he's always talking to Per: 'Give me some of this and some of that.' He likes to have fun with it. We don't usually use his stuff, because once it goes in the Avid and comes back out it's pretty mangled. We get the same sound effects and we might use [Scalia's] automation file, but it's a fresh recording, and, of course, we're doing other things with it, too."

"In this case," Hallberg notes, "Pietro also got music very early on from Marc Streitenfeld, the composer. Even in our first temp dub, we had a lot of the score from Mark—that was fairly unusual. Working that way suits everyone really well. They got him very early on—he was writing music when they were still shooting, and Pietro had Marc's temp score in his Avid so they could make sure it hit the right spots and was the right feeling." A protégé of Hans Zimmer, Streitenfeld worked as a music editor on Scott films dating back to *Gladiator* (which was scored by Zimmer), but got his first shot at composing for the director on *A Good Year*.

"It's a very dense, complex, unconventional musical score and we really had our hands full trying to fit it in with the thickness of the production track and the sound effects and all that," Minkler says. "But it's almost never intended to be just sitting there playing and articulating like so many big scores do. It almost takes a back seat in a lot of places and becomes an underlying mood. There's a lot of score, but sometimes you don't notice it so much and it's still very effective. It's not being underplayed, it's just being subordinate. It's not, 'Here's a piece of music!'"

"There's also a lot of really cool source music," Beemer notes. "What's that song,

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'[Across] 110th Street?' It's a classic R&B song from the '70s [by Bobby Womack]. The film occasionally goes into a montage, and that one's particularly great because it's about the drug dealing and distribution network that Denzel's character has. And the song actually refers to one of the streets that Frank Lucas operates from. It's a great match because it really puts you in that time. Then when they're in Frank Lucas' café that he operates from, there's source music that puts you in the time."

When it came to period-specific FX, Hallberg and Baker Landers were meticulous in their search for the right car sounds, some of which they found in the Soundelux library and some of which they recorded new. "There's a '65 [Mustang] Fastback that's like this big old muscle car," Baker Landers says, "and is important in the film. It was so much fun playing with that car taking off."

In general, the sound approach to the film was fairly realistic, "but there are also some stylized moments, which you always get in Ridley's films," she says. "We always took our cue from what's up on the screen. We were able to get creative in some montages."

And then there's the scene where, Beemer says, "the streets are really busy and Lucas goes to deal with one of his adversaries and he ends up shooting him, so, of course, people are screaming and running everywhere, but on the [sound] track, the din drops almost to zero and then gradually creeps up; it's very effective. It's definitely stylized, but it's done in a kind of natural manner. There's a suddenness when a gunshot goes off in the middle of a very busy street, but then it's back to normal within, like, 25 seconds.

"It's almost like, 'Oh, well, another murder in Harlem,'" Minkler says with laugh. "It's like 'BAM, scream, quiet,' and then it comes back up. It's very powerful and it doesn't feel gimmicky at all."

"I think what makes this movie so har-

rowing is its bold reality," Beemer says. "You really feel frightened. Because it's *not* that stylized, it really feels like you're there."

"It's a very handsome movie made by a great director," Minkler concludes. "The acting is amazing, the writing is great. Everything about it is big and classy. It's what you'd expect from someone like Ridley Scott." ■



Re-recording mixers Mike Minkler (left) and Bob Beemer

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Education Generation

Game Audio Programs on the Rise

There are a lot of audio education programs out there, from week-long studio classes to Master's programs. From Berklee College of Music to Musicians Institute, you can find recording programs that can teach you everything you want to learn about high-end audio tools, but only a precious few schools devote time to game audio.

Why is it important to understand the difference between film and games? It's easy to dismiss the difference with the simple notion that "games are nonlinear," but it's much more complex than that. Let me quickly give you an example: After I finish writing this column, I am going to implement a weapon-"firing" sound for a game that Obsidian is developing. The engine we are using currently does not attach the firing sound as a single loop, but as a single file that is triggered each time the weapon actually fires. The difference between a linear sound that's timed perfectly to what is taking place onscreen vs. multiple files triggering together is surprisingly large. Refire rate, reverb, pitch and volume modulation all come into play on a real-time basis. It is this kind of information that students need to digest to compete in the game audio industry, and, at last, audio schools are taking it seriously.

HOT CLASSES

The Conservatory of Recording Arts and Sciences in Arizona has started something really special: the first audio integration course with certification in Audiokinetic's Wwise application, one of the most widely used audio middleware apps.

Director of education (and *MIX* technical editor) Kevin Becka explains that the school starts and finishes a new course every three weeks. Because each student enrolled at the Conservatory goes through the game, more than 800 students a year become familiar with Wwise and game audio integration concepts.

"We're in the process right now of developing a [Version] 2007.2 Certification in collaboration with Audiokinetic," says Becka. "Each student would then be manufacturer-certified as an operator. We will also offer this on the corporate level to game producers wanting to quickly get up to speed on the app. We can train locally or travel with computers and an instructor."

In addition to the game audio segment, students learn all the audio skills they'll need to use as third-party content providers and integrators, such as operation of

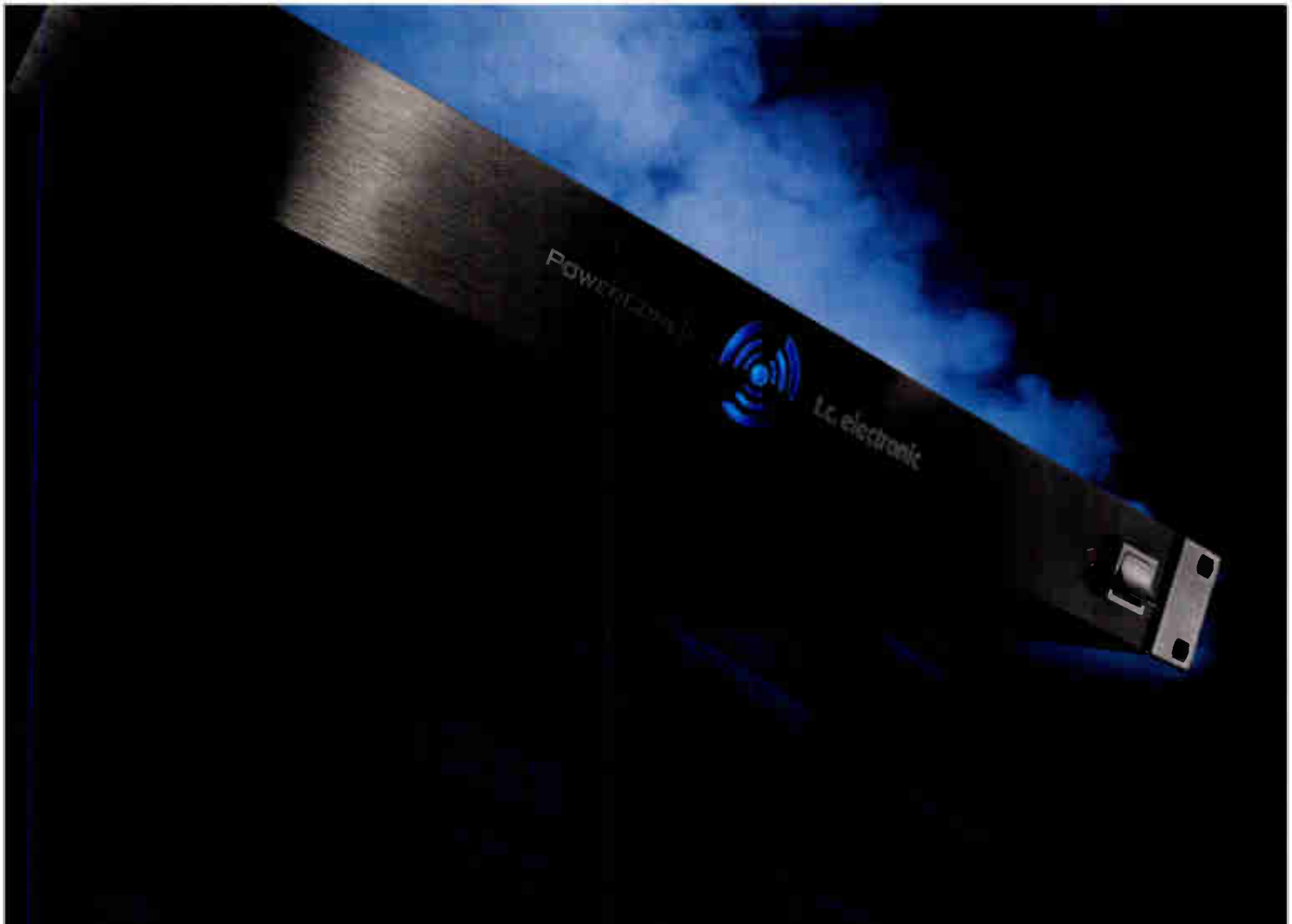


Pro Tools, Logic Studio and Reason, along with advanced recording and mixing skills.

This is a huge step forward, but how successful has it been? CRAS has placed students at Volition Inc., Rainbow, Pure Audio, Midway, 2XL Games and GenAudio. "We're attracting more and more students interested in game audio now that we have the Wwise curriculum in place," says Becka. "We also had a booth at the Game Developers Conference for the first time last year. We were on the show floor and got some very good leads and interest generated from that."

There are other institutions that have game audio integration goals in mind. David Javelosa is a digital audio instructor at Santa Monica College in Santa Monica, Calif. He started a course titled "Digital Audio for Games" in the fall of 2004 as part of an overall certificate program in game development, and the class is still going strong in 2007. "Our headcount is increasing toward us offering the class every semester. We also teach a summer game program for high school to load the regular semester," he says.

Javelosa, having been an audio director at Sega until 1994, also adds a much-needed historical perspective in his class. "The students are happy with the studies in 'old-school' platform development: cartridges, MIDI, downsampling, proprietary tools and more. They also embrace techniques in our current audio tools. We offer the Sony Suite in the class: Sound Forge, Vegas, ACID. But there is strong interest in real-time interactive implementation. I use a template in Game Maker [a freeware



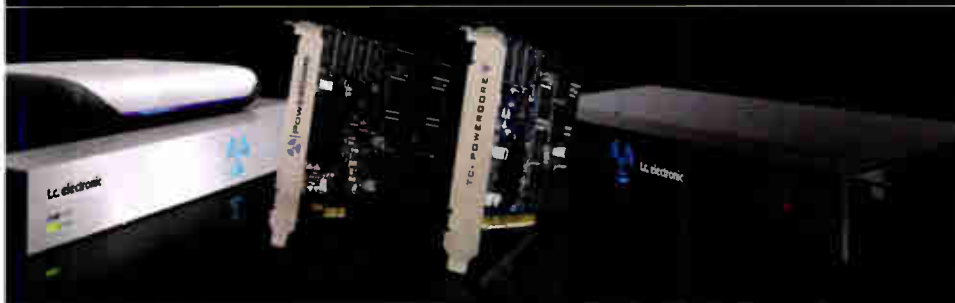
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game engine developed by YoYo games] for them to drop their audio into and actually 'play' the game audio."

GETTING WITH THE PROGRAM

In addition to courses being taught at UCLA Extension and USC, audio schools are making plans to offer even bigger courses beyond certification and single classes. Paul Lipson, dean of Academic Affairs at Ex'pression College for Digital Arts in Emeryville, Calif., is developing a full-scale Bachelor's degree program in Game Audio.

"Ex'pression takes game audio very seriously, and our Sound Arts program has blazed a trail for undergraduate courses of study," says Lipson. "Our Program Partnership with the Game Audio Network Guild [G.A.N.G] has enabled us to bring in a constant stream of industry professionals for master classes, panels, demo derbies, curriculum review sessions and advisory committee meetings—all of which have contributed positively to our program. We have also been successful in creating a unique post-production environment, as all of our visual media students are often in need of audio assets and content. There is a natural synergy when our audio students

work closely with other departments, and we feel that opportunities for asset implementation provide for a deeper experience beyond pure content creation."

Ex'pression offers specific game audio courses, along with MIDI and digital audio workstation courses that deal with content creation, post-production, implementation and adaptive audio techniques. "We have students scoring interactive projects, as well as using version-management systems to track assets for implementation into professional game engines."

The school has two game audio scholarship programs: "Ex'pression offers two \$10,000 scholarships for G.A.N.G. members for game audio studies, and we announce the winners at the G.A.N.G. awards ceremony held at the Game Developers Conference," says Lipson. "We are entering our third year of offering specific game audio scholarships, and the response has been inspiring."

Full Sail also is jumping aboard the game audio education bandwagon. As reported by Bill Smith, head of Full Sail's Recording Arts program: "Each year, the number of Full Sail Recording Arts graduates entering the gaming industry doubles. There is

clearly a demand for competent, qualified people and we're doing everything we can to prepare our grads to take advantage of the opportunity. Our Multimedia Audio, Digital Audio Workstations, and Audio Post-Production courses all contain game-audio related content using the most common tools in the gaming industry. Our Recording Arts grads also have the opportunity to gain practical experience by working as with our Game Design and Development program as their audio team.

"Full Sail does its best to garner feedback from the industry and from our grads working in the field to determine how our programs should evolve," Smith continues. "To that end, we plan to incorporate more emphasis on implementation, coding, and file management in the coming months."

Game audio education is a discipline whose time has arrived, and these schools are leading the pack on developing and exposing curriculums. More schools are developing courses as we write this; keep your eye on this space for developments. ■

Alex Brandon is the audio director at Obsidian Entertainment.

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The Stray Cats



Photos and Text by Steve Jennings

The reunited Stray Cats have been touring as both a headlining tour and on dates opening for ZZ Top. We spoke with Jake Mann, the band's front-of-house engineer (as well as monitors for ZZ Top), and monitor engineer Tim Engwall.

Mann is using a Digidesign D-Show Profile for the Stray

Cats and a VENUE for ZZ Top, using onboard plug-ins that include the Eventide bundle at FOH and Crane Song's Phoenix for both positions. "I can't live without the Phoenix," Mann says. "It is an amazing plug-in and I use it in more places than I would have originally thought. I spent some time talking with Scott Lillo from Crane Song, which was enlightening. The Phoenix will do wonders for your low-end instruments, and the overall effect of it on in-ear mixes is pretty amazing, too!"

The tour is carrying a Clair Bros. rig: 28 i1s (main hang), 12 i3s (side hang), T2 subs and FF-2 front-fill, with Crown/QSC power.

"It's been a roller coaster of fun working both ends of the snake for two of the acts," Mann continues. "The Stray Cats are an amazing bunch of musicians, and working for them has been fun from day one."

Over in monitor world, Engwall mans a Digidesign D-Show console using just 16 inputs and five monitor outputs, including a center pair of Clair Bros. 12 AMs, a single wedge for Slim Jim Phantom on stage-right, another pair of wedges for Lee Rocker (stage-left) and three-way Clair stereo sidefills.

Vocals are Shure SM58s, with all Audio-Technica mics on Phantom's drum kit. "The band doesn't do sound-checks," Engwall says. "They put trust in the fact that we will have everything dialed in before they get onstage. If anything needs adjusting during the show, they know I'll be right there to handle it."

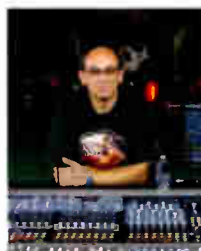


Tim Engwall (background, monitors) and Jake Mann (FOH)

FixIt

Fabrizio Del Monte is currently mixing front of house for Hinder; he has mixed for Theory of a Deadman, Billy Talent and Econoline Crush.

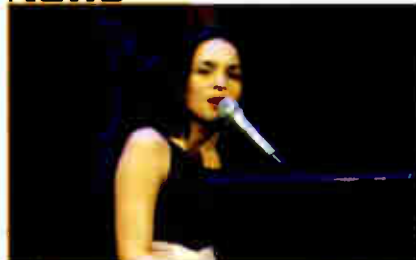
We have all faced the problem at some point in our career where your vocal mics are grabbing a lot of the backline and cymbals from the kit. A cool little problem-solver for this is to use a product called Mic-Mute (www.micmute.com). These are infrared-activated gates that plug in between the microphone and the cable right at the mic stand. They are easily adjustable with trim pots for threshold and decay, and they also run off of phantom power. These are great for cleaning up your mix. I've had great success with these with a number of bands—especially when a singer or guitar player stands in the center of the stage in front of the drum kit.



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News



Norah Jones and the Handsome Band, with longtime FOH engineer Lee Moro, are touring with Neumann microphones, and Sennheiser's Evolution 900 Series, Evolution wireless 300 Series instrument systems and the 300 Series personal monitor systems.

Sound Image (Escondido, Calif.) is currently on a U.S. tour with Rascal Flatts; the tour's HiQnet system features dbx processing and Crown power configured to drive passive JBL VerTec line arrays. Out at front of house is Jon Garber...Scotland-based Apex Acoustics is reportedly the first hire company in that country to own a DiGiCo console—a D1 MDR 56—which was used on a 10-week festival tour with Kasabian...Prince is using a Meyer Sound system for his performances at London's O2 Arena. Major Tom Ltd. is supplying the audio, which includes 104 Meyer Sound MILOs, 20 M'elodies, 40 700-HPs and seven UPA-1Ps...Sound Explosion Productions (Ajax, Ontario) added to its amp racks with 40 Lab.gruppen FP+ Series FP 13000 amps for FOH arrays and six FP 10000Q 4-channel units for stage wedges...To stay connected with the natural sound from his amp while controlling the volume level reaching his ears, Paul Reed Smith has added the 3D Active Ambient IEM system from Sensaphonics to his touring rig...The 2007 Vans Warped Tour saw numerous acts using Sennheiser mics, including Paramore (Sennheiser 935), Coheed and Cambria (900 Series) and Red Jumpsuit Apparatus (e 835, e 604).

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On the Road

Joan Baez

Jason Raboin just wrapped up a tour with Joan Baez and is now out with Modest Mouse. With only one day off between two distinctly different tours, Raboin gave *Mix* the low-down on the Baez tour, which he'll pick up again in March.

How much gear are you carrying on this tour?

We are carrying mics, stands, cables, a console and processing. We have a mic package comprising mostly Heil mics. I'm using a prototype vocal mic that has the PR30 diaphragm in a handheld housing that the company is calling the PR35. Other mics include PR40 on kick; overheads are Beyer M160 ribbons into A-Designs' Pacifica pre's; bass is an A-Designs REDDI into a dbx 162SL; and electric guitar is PR30 into a Pacifica into a Distressor. Joan's acoustic is an Avalon U5 into a dbx 162SL, and her vocal is a PR35 into a Pacifica into a Speck ASC-T EQ; backing vocals are also PR35s.

What's your mixing style for Baez?

The mix runs through a Drawmer 1968 ME [Mercenary Edition] compressor. I'm using a Yamaha DM1000 console and run monitors from front of house. Joan is on in-ears and the rest of the band is on a wedge each. Joan's mix has her voice and guitar pre-fader, while the rest of the band is sent post-fader to her ears. This way, as I adjust for solos and dynamics, she gets the same changes. I try to keep the mix as simple as possible. I use little or no effects, depending on the hall. It's a quiet show, and it's all about Joan's voice; everyone else's job is to support that.

What's the one piece of gear for this tour that you can't live without?

Nothing—Joan would still be Joan no matter what we had her singing through. That said, I have become quite fond of the Heil mics and A-Designs' Pacifica mic pre's.

Where can we find you when you're not on the road?

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Now Playing

Rascal Flatts

Sound Company: Sound Image
FOH Engineer/Board: Jon Garber/
DiGiCo D5 112ex
Monitor Engineer/Board: Stu Delk/
two Yamaha PM5000s
P.A./Amps: JBL VerTec, QSC Wide-
line/Crown I-Tech 8000s, Sound Image
G2 wedges
Monitors: Sennheiser G2, Shure 700
(ears)
Outboard Gear: dbx DriveRack 4800s,
Harman HiQnet System Architect
Microphones: Shure SM58 and
UR4D, AKG C 420 wireless headset
Additional Crew: crew chief Landon
Storey, system engineer Pete Mc-
Donough, stage tech Jeremy Moore,
and techs Jason Blackburn and Brian
Burg

Mutemath

Sound Company: Clair Bros.
FOH Engineer/Board: Steve Chant/
Midas Heritage 3000
Monitor Engineer/Board: Sean
Schultz/Yamaha M7CL
P.A./Amps: V-DOSC/dV-DOSC
Monitors: Amcron, Shure PSM700
Outboard Gear: Avalon 737; TC Elec-



tronic M1, D-Two; Yamaha SPX-990; Drawmer gates; BSS
Audio comps
Microphones: Shure Beta 52, SM56, KSM 32, KSM 137,
KSM 27, KSM 9, Beta 58

Billy Bob Thornton Rocks S.F.

Actor/musician Billy Bob Thornton recently finished up a West Coast tour, including a date at San Francisco's Slim's in mid-September, in support of his Universal Music release, *Beautiful Door*, his fourth solo album.

Thornton purchased two Digidesign VENUE D-Show consoles for the tour for both front-of-house and monitor positions. Jim Mitchell handled FOH and Michael Bangs managed monitors. Numerous Gibson acoustic and electric guitars rocked the show, as Thornton is a Gibson endorsee.

The band comprises Thornton on lead vocals, keyboardist Teddy Andreadis, J.D. Andrew (guitar/bass/background vocals), drummer Mike Bruce, Mike Butler (guitars/slide guitar), Brad Davis (guitars/mandolin/background vocals) and Mike Shipp on guitars and bass.



Billy Bob Thornton and Boxmasters' bandmembers (from left) Michael Shipp, J.D. Andrew and Teddy Andreadis

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From the same label that brought you Franz Ferdinand and other Britpop/alternative rock groups comes Arctic Monkeys, a foursome of highly talented musicians who blasted to the top of the UK and U.S. charts with their highly acclaimed debut, *Whatever People Say I Am, That's What I'm Not*. Following this initial success, the band released *Favourite Worst Nightmare*, and their current tour supporting *Nightmare* is selling out every house. *Mix* caught up with the lively band—and their equally boisterous engineers—in San Francisco's Warfield Theater.

Photos & Text by Steve Jennings

Alex Turner's Fender amp has a Sennheiser e 906 mic; there's a Shure 57 on his Selmer amp. "There's also a Sennheiser 421 in the back of each cabinet to give more energy for FOH," says monitor engineer Will Doyle.



ARCTIC MONKEYS
Favourite Worst Nightmare The 2007
ALL AREA ACCESS

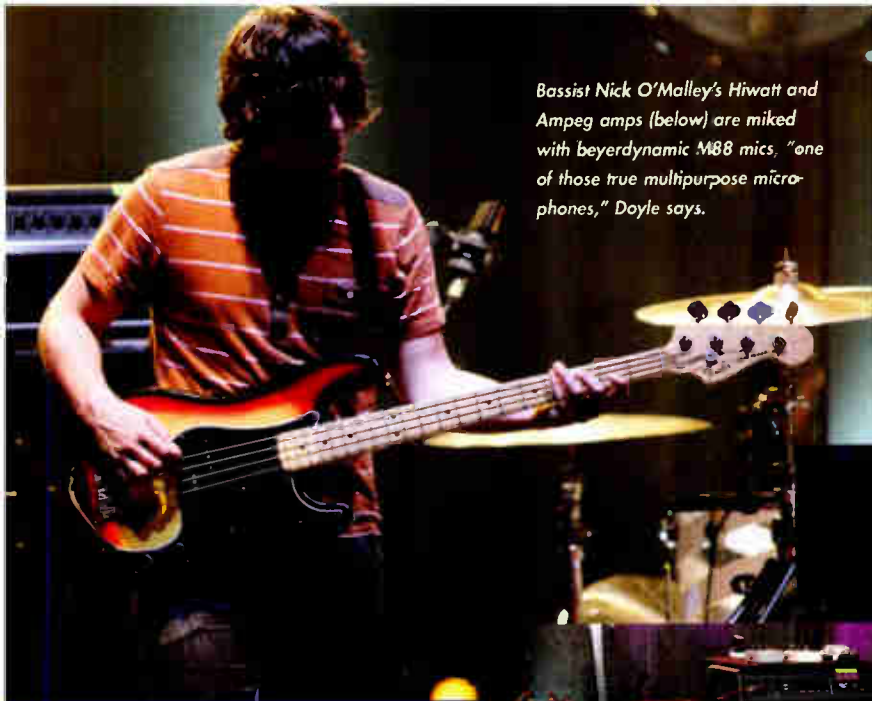
ARCTIC MONKEYS

Front-of-house engineer John Ashton had been using a Digidesign VENUE, but is now manning a D-Show Profile because, according to the engineer, it's cheaper to hire. "For plug-ins, I thought I was keeping it pretty simple, but looking at it now I've gone a bit mad, though at least it's still all in the desk," Ashton adds. "Effects-wise, I use the D-Verb on drums, ReVibe on the vocals, a simple slap delay and the Line 6 Echo and Amp Farms for special effects on Alex [Turner, vocals/guitar]." In addition, Ashton uses gates and comps for most inputs, as well as the Smoock! compressor on bass and Turner. Other effects include the Bomb Factory BF-3A leveling amp modeler over the guitar groups and Focusrite D3 over kick and snare groups, as well as a moogerfooger phaser over the dirty bass mic input to re-create a bit of the album's filter-y noises. For EQ, Ashton relies on onboard offerings with the Focusrite D2 over the mic.

"I've very recently gotten hold of the Crane Song Phoenix plug-in, but it's still in its early days, and I'm using such wildly different rigs in such wildly different rooms each day it's difficult to hear whether I'm actually getting anything out of it."

Vocal mics include Sennheiser e 945s (Turner and drummer/vocalist Matt Helders) and e 935s (Nick O'Malley, bass/vocals; and Jamie Cook, guitar/vocals). "I'd like to thank the band for ignoring our advice and perpetually driving the onstage sound up and up and brighter and brighter, thus making our job so much easier," Ashton says with a laugh. "And PRG, our P.A./lighting company, for employing sarcastic lighting guys called Jason, and the marvelous Mr. Mike Hawkins, who makes it look like I know what I'm doing."





Bassist Nick O'Malley's Hiwatt and Ampeg amps (below) are miked with beyerdynamic M88 mics, "one of those true multipurpose microphones," Doyle says.

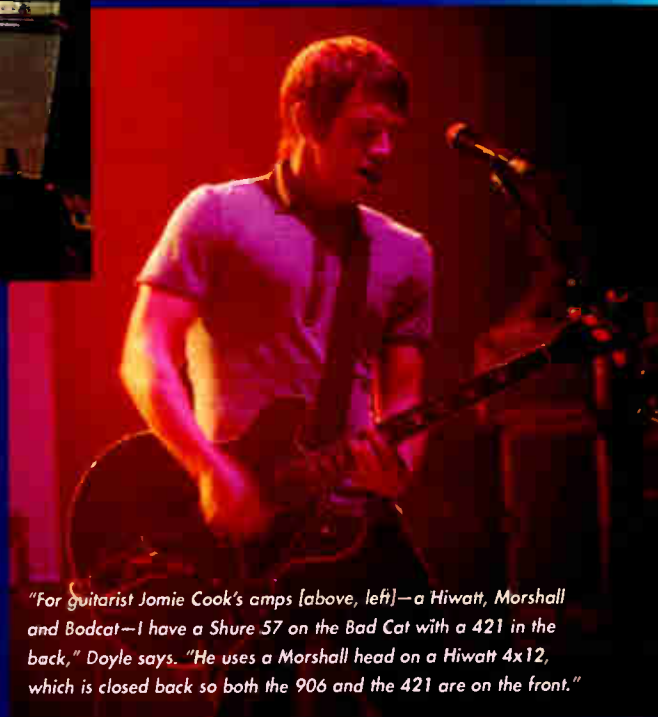


Matt Helders' drum kit is miked with Sennheiser e 901 and Shure Beta 52 (kick); Sennheiser e 905 (snare top and bottom); Shure SM81 (hi-hats); Sennheiser e 904 (toms); and two AKG 414s (overheads). According to Doyle, there's also a third overhead that doubles as Helders' vocal. "Great for me, as I get an extra drum mix for his ears, but not so good for John."



Monitor engineer Will Doyle is using his first digital board: a Yamaha PM5D, calling the desk very straightforward and easy to use. "I might try the Soundcraft Vi6 soon, though," he adds, "just to keep my brain ticking and learning. I'm using internal gates and comps, but quite sparingly: Matt (drums) is on in-ears [Ultimate Ears UE7s with a Shure PSM 600 wired pack], so I try not to gate anything that he'll hear. [Helders also uses a Buttkicker Pro.] As for plug-ins, I think that any subtle effect they may have on a sound would probably disappear as soon as the guitars started.

"The in-ears are not that new anymore, but they've been the biggest change of recent times," Doyle continues. "Beforehand, I used two wedges and a sub for Matt, which sounded great, but he was worried about his hearing so he wore earplugs. Then we got the UE7s, and admittedly they're the first pair of custom molds either Matt or I have owned, but they sound amazing—very full and clear, and they're attenuated enough that you can still hear everything at low volume. I'm very pleased with them; now, I just have to convince the other three."



"For guitarist Jamie Cook's amps [above, left]—a Hiwatt, Marshall and Bodcat—I have a Shure 57 on the Bad Cat with a 421 in the back," Doyle says. "He uses a Marshall head on a Hiwatt 4x12, which is closed back so both the 906 and the 421 are on the front."



It's a Love Fest

By Sarah Benzuly

From the producers of last year's highly acclaimed Primal Twang series of concerts comes another gathering of stellar musicians: a theatrical celebration of the music from 1967. The Love In concerts took place at Birch North Park Theatre in San Diego, Calif., from September 6 to 9. While the marquee featured such names as Peter & Gordon, Jesse Colin Young (of The Youngbloods), Buddy Miles, Strawberry Alarm Clock and many others, the gear inside the venue was all state-of-the-art, designed and mixed by the capable hands of Lloyd Kinkade.

President of Escondido, Calif.-based

nice to have control of both [sound designing and mixing FOH]. I knew exactly what I was getting into! I also did all of the optimizing on the system, so I was pretty much in it from top to bottom. The equipment choices that I came up with were basically dialed into the requirements of the show." Kinkade's design had to reflect the three-prong approach that producer Anthony Adams envisioned: musical theater, live performance with dialog and a DVD.

"When you're doing theaters," Kinkade describes, "it's always a different thing from doing concerts. So we had to be able to switch back and forth quickly between doing a spoken-word narration that was dramatic into a small concert-type scenario within the same few minutes. I think a lot of people were surprised that we were able to make those transitions quickly while keeping it from getting louder and louder.

"The biggest problem we had is that one of Henry's requirements was that everything needed to have multiple lines from the stage and all the instruments," Kinkade continues. "On all of the guitars, we had a direct line and a mic on all the little guitar amps sponsored by Fender. With so many groups, the music was basically set up in two acts, and it ended up being over 100 channels that were going to be re-recorded. That's not really a big problem, but the management of it turned into being quite a handful."

And so Kinkade asked Austin if he could pare his input list down to 96, which involved submixing keyboards and such. "But the way we distributed everything,

RELIVING '60s MUSIC

WITH MODERN GEAR

and this was the part that ended up working like a charm, is we had two 48-channel [Yamaha PM5D] monitor consoles onstage, and we word clocked them together so they were synchronized. We came out of each of the monitor boards with a 48-channel Ethersound network." Eighteen Aviom AVY16-ES expansion cards were used for the 96-channel distribution; no conventional snakes were used. In addition, 47 shielded ¼-inch-to-¼-inch Mogami cables of various lengths were used on guitars, keyboards, direct boxes and additional equipment, as well as a dozen 25-foot Mogami XLR mic cables.

The feed from monitor world went to the Yamaha DM2000 at FOH, which was daisy-chained into another DM2000 to record monitoring. That second DM2000 was daisy-chained via Digigram 6464 Ethersound cards into an ADK LyveTracker, which handled the entire hard disk recording via Nuendo for the eventual DVD.

In monitor world, engineer Bob Meyers not only had 96 channels to mix, but he also managed a 16-channel Aviom Pro16 personal mixing system for the Future Sonics in-ears, and then six wireless in-ear mixes and two Nexo PS10 wedge mixes. The wireless aspect comprised Lectrosonics Venue modular receiver systems stocked with 12 (six per unit) receiver modules. Transmitters included Lectrosonics' UH400A



Front-of-house engineer/sound designer Lloyd Kinkade at one of the Yamaha DM2000 boards.

Professional Production Associates Henry Austin (audio producer for this show, as well as for Primal Twang) brought Kinkade onboard as front-of-house engineer and sound designer. "Henry pretty much left the design up to me," Kinkade says. "It was

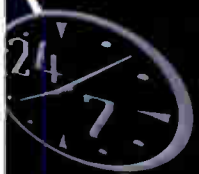
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ON THE MAP

From coast to coast, Remote Recording has made a name for itself with involvement in big names and even bigger shows. Sporting dual DM2000's with 24-bit 96kHz performance and 96 inputs, this truck is really going places. Key features include a complete surround sound panning and monitoring package, a full mixdown automation system and advanced DAW integration. Newly added VCM effects such as recreations of compression and EQ units from the 70's, and a variety of vintage stomp boxes provide endless options in the world of recording.

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UHF plug-on units for use with the Audix handheld mics, plus LM Series belt packs.

Whew! And did we mention that all of this gear was sponsored? "So it was ambitious," Kinkade says a bit too mildly, "but to put the network together was actually pretty simple. We had the whole thing up and running in just a couple of hours. The amount of time we spent hunting down anything like [ground potentials, and hums and buzzes] was reduced to zero. [Laughs] We plugged things in, they appeared on all of the consoles and at the recorder, and the noise floor was extremely low.

"It was really quite amazing. You're basically laying these things out at first on paper, and you're thinking, 'Well, this should work.' And in practice, when we put it together it was pretty stunning to have the noise floor so low for me mixing front of house, because if I would roll up from scene to scene, you would have no aural cue that something was coming; it was really nice."

THEN THEY ADDED SURROUND

While the show's attendees were not aware of the intricate signal flow diagram Kinkade had created, they were, however, pleased to

hear his mixing techniques—especially when Eric Johnson came onstage to wield his axe for Jimi Hendrix and Eric Clapton tunes and those stunning solos were heard in 5.1.

"The room was small enough that we could get a pretty good sweet spot; it wasn't just a nice experience for someone sitting dead-center in the room," Kinkade says. The engineer chose a Nexo GEO S 805 line array for the room (with S830s for mains and the surround setup), and while he wouldn't normally use a line array for this shallow of a venue, the Nexo let him tightly control the vertical domain of the coverage. "The theater has a back wall that is treated for absorption, but only in the middle third of the room," Kinkade adds. "So I had to really get the coverage patterns very precise so that we didn't get too much on the outer thirds that were reflective to stop slapback from getting on the stage. We used directional subwoofers on the floor—the Nexo GD12s—that kept low end from getting back onto the stage, which is always a consideration when you're recording." Nexo GEO S 1210s and 1230s were used for the center cluster, as was a Yamaha T4n amp.

Kinkade also spent some time work-

ing on the mic selection. In addition to the standard guitar, bass, drums and horns onstage, Kinkade had to properly mike tablas, a tambora and sitar. "These are straight acoustic instruments, and it's really hard to get these things up with any gain," Kinkade says. "And on top of that, they were going to situate all of these people out on the orchestra pit, so they were literally right at the edge of where coverage began for the seating area. So it was really tricky, but the Audix mics really proved themselves.

"The performances were really good," Kinkade says. "It was an eclectic mix of groups—you have Ravi Shankar's protégé onstage within a few minutes of Peter and Gordon [laughs]. Peter and Gordon were great; they were charming, they had some nice stories to tell. Actually, everybody had some sort of interesting insight into what it was like for them to be performing and to be part of the world in the '60s. The whole project was ambitious, but our 96-channel digital network worked great."

Sarab Benzuly is group managing editor of Mix, Electronic Musician and Remix magazines.

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Labels for microphones: HARDTOP, CONVERTIBLE, GT30, GT40, GT50, GT60, GT57, GT67, MD18 FET, MD18 TUBE, VELO 8.

Labels for preamps: GLORY COMP, SuPRE, VIPRE.

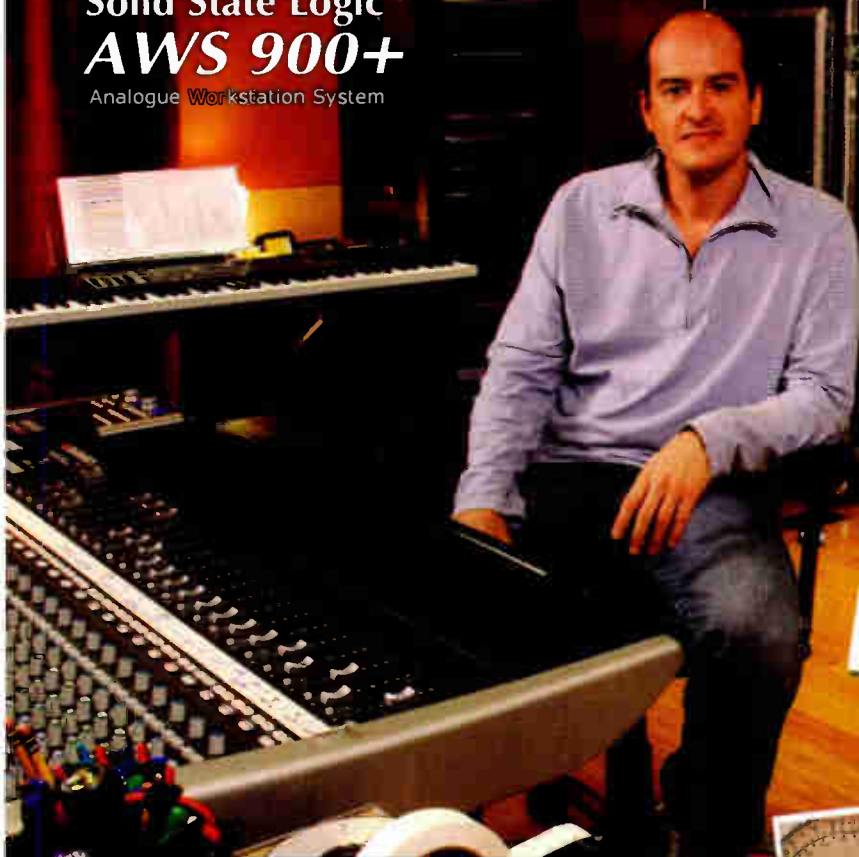
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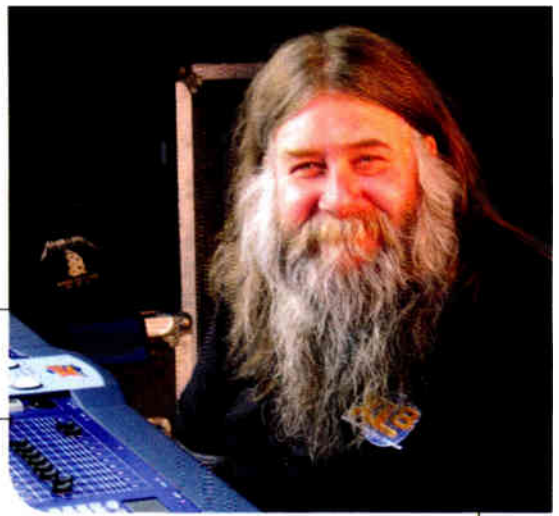


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“Big Mick” Hughes In the 21st Century



MIXING METALLICA AND MAKING THE LEAP TO DIGITAL

In July, *Mix* caught up with longtime Metallica front-of-house engineer “Big Mick” Hughes at London’s new Wembley Stadium. It was the seventh show of the band’s Escape from the Studio ’07 tour, a concert for 70,000 fans following their performance at the Live Earth festival. Hughes chatted about his decades on the road, and getting over his fear of digital consoles—by helping design one.

Tell me about this tour.

This is Escape From the Studio. They tend to do this when they’re doing an album—they just want to walk away occasionally, and go out and ‘play for a few friends.’ [Laughs]

It was a diverse Live Earth lineup last night.

Did you scare the Pussycat Dolls’ fans?

I did say to the band, “Look, I’m not going to crush like I would normally. It’ll be a mild crush.” I appreciate there are people out there who wouldn’t want to hear Metallica.

Is the mix pretty straightforward?

It’s a rock band at the end of the day. I did Def Leppard and Ozzy and Slipknot—the heavier sounding the band, the harder it is to mix. Take Def Leppard: If there’s a solo going on, everybody calms down and shuts up. But with these guys, if there’s a solo, they all play harder. So it’s not quite as easy as you think; there’s a lot of juggling.

So you’re riding the volume a lot?

Oh, I have to mix it constantly. But I’m also trying to capture an attitude. They created a type of sound in the beginning and we honed it together. Of course, I used to spend a lot of time with the band and we talked about stuff. It’s funny now because we haven’t talked about sound for many years.

You guys are like family.

What are they going to say to me after 23 years? If it’s not sounding good, they’ll know I’m trying my hardest to sort it out. And when it’s right, then we’re all roaring together.

What is James [Hetfield, vocalist/guitarist] singing into?

[Audio-Technica] AE5400s. They’re all Audio-Technica mics—2500s on guitars, 5400s on vocals, ATM35s on toms and “under heads,” 23s on top of the snare, 451 on the bottom, 451 on the hi-hat.

What are you doing to his vocal channel?

James has a really powerful voice and a hugely dynamic mic technique. In the mid-range, he makes a lot of 630 Hz. So once you’ve chunked that out and tweaked a few other EQ points, then he sounds fine. I also use an RMS averaging compressor [the adaptive compressor on the Midas XL8] at about 3:1 with a moderate attack and a gain reduction of about 6 dB. This smooths out the dynamics a little, but still allows the performance to shine through.

Is the whole band on in-ears?

In-ears and wedges. Most bands, when you get in-ears, you get rid of the monitor speaker system. Metallica never gets rid of anything; they just add. James’ statement was great: He said, “We need wedges.” I said, “Why?” He goes, “For guitar feedback. I can’t hold the guitar up to my ear!”

How many inputs are you working with?

Total number of input channels from the stage is 48, including six triggers. There’s “pyro playback,” there’s the VT playback, so I think it’s like 38 channels of band.

You’re a fan of Midas boards. How did you get involved developing the XL8?

I did 11 years of XL4. I bought my own desk; it was lovely. But they can’t make them anymore [due to Europe’s Reduction of Hazardous Substances Initiative]. To be honest, there are no other new big analog boards about, and I thought, “Well, it’s probably time to step into the 21st century and take a walk on the digital side.” I had a couple of boards at home to play with and didn’t like the sound;

didn’t like the way they felt. So I thought, “I’d better get involved in making one.”

What did you want out of the console?

Something I could use. The ergonomics of it, the feel of quality, like the XL4. I also wanted to remove the scary bit about getting sound out of it, because some of these things, it’s like you’ve got to play Battleship with them to get the sound in or out.

So they were mid-swing when you came in?

Oh, yeah. [Midas XL4 designer] Alex Cooper sat there for six months-plus, listening to a wood block, among other things. He had an XL4 EQ and other EQs for comparison and he modeled the new XL8 EQ in the analog world. Then the digital boys came in and turned these analog plots into digital, and then it was stuck together with Lego bricks and bits of wire for him to do further listening. I sat there with him a few times, and it’s pretty soul destroying, actually, to sit there and listen to a wood block go *clik dik* for 12 hours a day. [Laughs]

And then I’d come in, and say, “You should press this button and touch these and it should all work,” and they all go, “That’s 150,000 lines of code to sort through.”

And they’re not making the console just for you...

Yeah, yeah, I just have to back off sometimes and realize that they have other agendas afoot, not just mine. So we’ve pulled and pushed, and they’ve accommodated me as much as they could. It’s made a fantastic console; it brings channels to you—you don’t have to go to channels anymore.

So you’ve spent literally half your life with Metallica. What kind of effect does that have? Drives you insane. [Laughs] ■

Ed. note: To hear the full interview, featuring more of Big Mick’s miking tips and touring tales, visit www.mixonline.com.

Like father, like son.



ISA 828

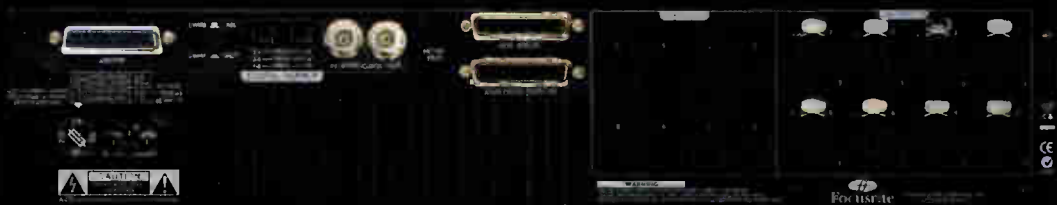
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The XDR95 24-bit wireless system from X2 Digital Wireless (www.x2digitalwireless.com)



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QSC WIDELINE-8 ARRAY

Including the full-range WL3082 and WL212-sw sub, the WideLine-8 Series from QSC (www.qscaudio.com) offers the same wide, 140-degree dispersion as the larger WideLine models, with a rigging system integrated into each enclosure. The 20x9-inch (WxH), tri-amplified WL3082 provides a 68-20k Hz response from two 8-inch drivers with neodymium magnets and a 3-inch voice coil neodymium compression driver on a 140-degree, multiple-aperture diffraction waveguide. The dual-12 subwoofer produces 135dB SPL and takes LF response down to 32 Hz.

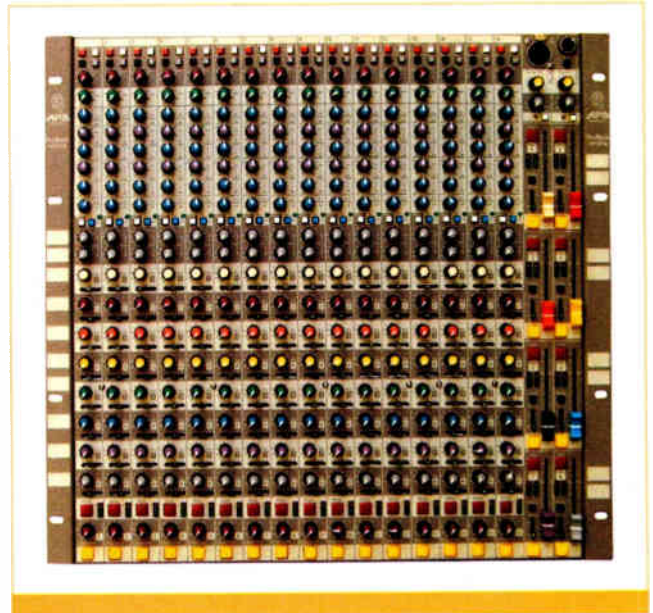


BEYERDYNAMIC TG-X 930

Based on the capsule of Beyerdynamic's (www.beyerdynamic-usa.com) MC 930 studio mic, the handheld TG-X 930 combines the sensitivity of a condenser with road-tough durability.



Like the Opus 900 wireless, the cardioid TG-X 930 features a stainless-steel grille with multilayer gauze and a second inner grille for protection from breath pops, while the mic's slight treble boost helps vocals cut through a mix. Max SPL handling is 150 dB, and the turned-brass housing is available in matte-black or satin-nickel finish.



APB-DYNASONICS PRORACK MIXERS

The ProRack mixers from APB-Dynasonics (www.apb-dynasonics.com) are compact, 10-rackspace designs that, like the company's Spectra Series, offer minimum phase-shift circuitry, expressive EQ and high-performance preamps. The ProRack House has 12 mono input channels and four dual-mono/stereo input channels (20 mic preamps in total); the Monitor is fitted with 16 mono input channels. All mono and stereo inputs have variable (20-400Hz sweep range) highpass filters; mono channels have fixed HF/LF EQ bands and two sweepable mid-bands. The ProRack House has six (pre/post-fader-switchable) aux sends. The ProRack Monitor can create eight stereo mixes and two mono mixes while adding a passive input-splitter system. ■



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The Beatles Retro Expedition Continues

Back in July, I taught a two-week, full-immersion class that re-created Beatles-style recording sessions. Our space, dubbed “Not Too Shabby Road,” was outfitted with six analog tape machines, lots of tube/retro gear and two turntables. With five students, there was a job for everyone—tape op, editor, separate recording and mix engineer positions, plus an “effects operator” who was responsible for tape-based echo, flanging and ADT (artificial double-tracking). The gear and tracking techniques were covered in this column in September 2007.

WELCOME TO PART 2

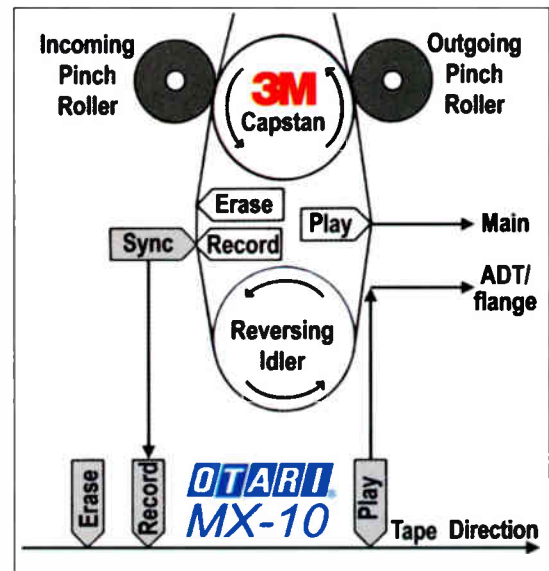
As you step into class at the crack of noon, imagine all that vintage gear—warmed up and at the ready—creating its own version of “aroma therapy.” Each day, we listened to finished recordings on vinyl and read excerpts from the reference material—*Recording The Beatles* (Kehew/Ryan) and *The Complete Beatles Recording Sessions* (Mark Lewisohn). Certainly, no pop band is better documented than the Fab Four.

In the analog-only control room, the best takes of the *Please Please Me* album session were compiled, edited if necessary and assembled on a master reel. (The song list included “Please Please Me,” “Anna,” “Misery,” “Baby It’s Your” and “Do You Want to Know a Secret,” plus “Honey Pie” from *The White Album*.) Four-track bounces were mixed on a mid-70s Raindirk desk routed through a pair of modified UREI LA-4 optical limiters to another 4-track. The songs determined whether mono or stereo bounces were required. Along the way, students learned the importance of proper documentation.

We quickly realized that two days of tracking had generated more material than could be processed by one class in the remaining week. But thanks to the “backup” Pro Tools rig in the studio—and a little help from our friends (teaching assistants and volunteers)—two simultaneous crews worked in analog and digital domains to get enough done for the listening party on the final day of class.

DIGITAL LO MEIN

“The Medley” from the *Abbey Road* album (starting with “Sun King”) was the last of the rhythm tracks to be completed. Immediately after, the students gathered up their notes and chose the best of five takes. A rough mix from the 4-track was made to ¼-inch, 2-track tape to test the edits before applying them to both the analog and the digital multitrack. Initially, we planned to overdub “The Medley” in Pro Tools and then fly the overdubs back to the 4-track bounce reel, but time limited us to the overdubs and a rough mix.



A separate sync output was added to the 3M ½-inch 4-track. When sent to the Otari MX-10, it was possible to create a range of comb filter effects like flanging, chorus and ADT.

“Revolution,” “Savoy Truffle” and “Cry Baby Cry” were also done within Pro Tools. To the best of our ability, tasks were scheduled in such a way as to allow us to independently work in the control room and studio. The digital team ventured “off-site” to nearby Master Mix studios (Minneapolis) for piano overdubs, and I sang “Mean Mister Mustard” and played horns on “Revolution” (all through a lovely Coles 4038).

SIMPLY REDD

EMI’s REDD 37/51 recording consoles had a single bass and treble “pop” equalizer per channel—a 100Hz shelf, 5kHz bell/boost and 10kHz shelf/cut, the latter providing similar, if limited, curves to what a Pultec EQ can do with its separate boost and cut controls. There was also an optional, fixed bass lift on each mic channel and specialized outboard EQs for additional frequencies.

In stark contrast, the Raindirk EQ was not particularly accommodating—the midrange bandwidth was too narrow and the single high frequency was too low—so we relied heavily on Dave Hill’s Summit equalizers and the Manley Massive Passive, both based on the Pultec (Bell Labs) design. If necessary, tracks were re-routed through the Altec 438 and Manley Variable Mu compressor/limiters, as well.

For the *Please Please Me* session overdubs, lead vocals were recorded with a modified Nady 1150 multipattern tube mic into the Altec 438 preamp/compressor. For

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*— Reviewed by Bill Tullis
Studio Engineer, SoundsAtlanta Studios*



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background vocals, we used the Cascade Fathead ribbon through a Summit preamp and EQ. If there was an extra track, the vocalists were repositioned around the Fathead, including sneaking in the lead vocalist at the ribbon's null point. This not only provided a different texture and mix of the background vocals, but it also added a subtle depth/ambience to the lead vox. Vocals were either recorded in the studio or in the perfectly reverberant lounge area, the latter simulating the amount of reverb on The Beatles' first album.

THE "L" WORD

The *Please Please Me* sessions predated the use of a Leslie as an effects device, but we took the liberty of using it on the guitar solo for "Baby It's You." A Fender Strat—feeding the DI input of the Summit mic pre—was filter-optimized through the Summit EQ and compressed with a dbx 163 before being routed into the preamp pedal of a Model 825 Leslie with a single-speaker "Rotasonic" woofer. It was recorded in the reverberant lounge area with two Cascade Fat Head ribbon mics about four feet from each side of the cabinet (above and angled down).

ANALOG OOOHS, AAHS AND OOPS

Punching *in* the solo was something new to the students; the sheer terror of getting *out* in time was eased when I blew the first one (there was no tape counter), giving us an excuse to redo the guitar solo. One tricky punch-out was made stress-free by inserting a piece of leader tape at the out point.

Tape delay is one of the effects instantly available when using an analog tape recorder. The tape delay is determined by the distance between the record and play head, plus the tape speed. Even at 30 ips, however, the delay may not be short enough, so EMI engineers took advantage of a feature offered by their multitrack tape machines—simultaneous output from both the sync and repro heads. The resulting range of effects included ADT, the precursor to using digital delay. Before ADT, whenever The Beatles doubled their vocals—live or overdubbed—you can often hear them messing up the lyrics. While this adds to the charm and character, it must have been a cool relief when technology came along to save the day.

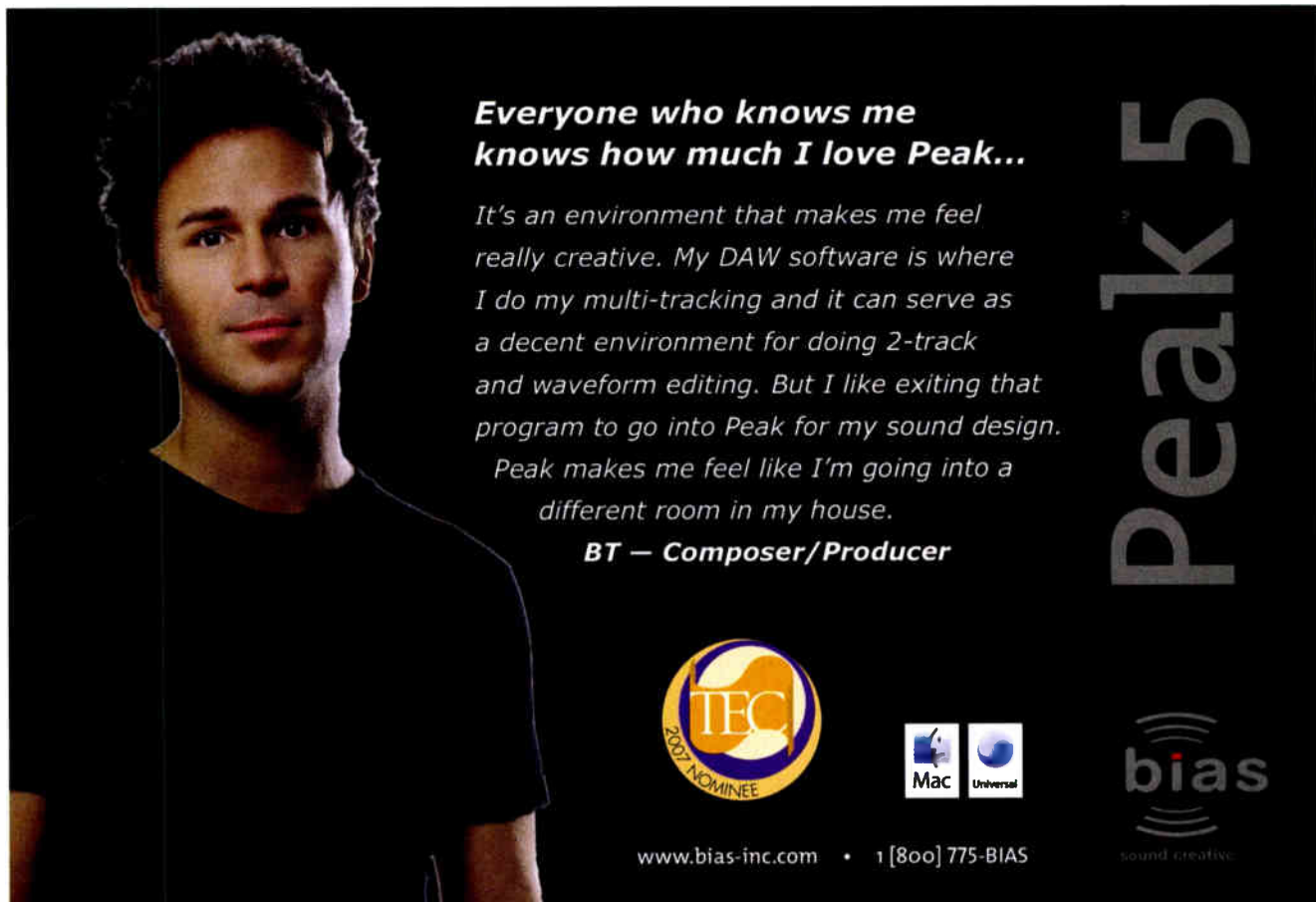
GEEK OUT

I modified the 3M's signal card so that a separate sync output could then be routed

through an Otari MX-10, the obvious choice because it has varispeed. 3M's Isoloop design puts a great deal of space between the record and playback heads, much more than the MX-10, which ran at about 7 ips to match the 3M at 15 ips. (See the figure on page 94.) Once the delayed signal was exactly in sync with the 3M's repro head, turning the varispeed control slowly up and down would create quick, easy and "emotionally controlled" comb filter effects like flanging and chorus. Again, the students commented on analog's tangibility factor.

Varispeed on Beatle-era tape machines was more of a process than a built-in feature. In those days, the "mains" frequency determined the capstan motor speed. The AC power-line frequency is 50 Hz in the UK and 60 Hz in the U.S. To be independent of the mains, EMI engineers used a stable oscillator, with easily repeatable settings, feeding a power amp capable of driving the motor.

Simultaneously changing speed and pitch on a DAW is about as complicated as it was in The Beatles' era because it changes the sample rate. On Pro Tools and other workstations, this feature requires an external clock that's often limited to a range that



Everyone who knows me knows how much I love Peak...

It's an environment that makes me feel really creative. My DAW software is where I do my multi-tracking and it can serve as a decent environment for doing 2-track and waveform editing. But I like exiting that program to go into Peak for my sound design. Peak makes me feel like I'm going into a different room in my house.

BT — Composer/Producer

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won't "freq-out" the system. In the analog domain, you must be careful not to change the speed too quickly to protect the tape from being wrinkled. Varispeed allowed one of our vocalists to switch from baritone to tenor.

ZOOM OUT

All during rehearsals, I was admittedly torn between accepting the spirit of the moment and pushing for greater authenticity. Hovering too much would have killed the vibe before it could take flight, so I chose to experiment with mics and placement rather than become the overhearing producer.

From the control room, the most egregious "errors" were related to guitar dynamics. I made repeated trips back to vinyl to emphasize The Beatles' dynamic control and restraint: Supporting guitar parts were remarkably understated, key guitar parts were heavily pushed (and especially obvious if you independently listen to left and right channels of "Savoy Truffle," for example).

Somewhere between superimpositions (overdubs) and mixing, the mental light bulb went bright. We got a sweet, rich tone that worked perfectly for a lead lick, but the neighboring chords on either side were over the top. A seasoned pro would have pushed the lick more and held back on the chords, or—in modern times—separated the parts on two separate tracks. The solution in Pro Tools was to reduce the chords' level so that they were below the distortion threshold. That made a big impression on the guitarist, who also happened to be the teaching assistant *and* Pro Tools operator!

THAT'S A WRAP!

I believe the project met the student's expectations. From the submix/bounce to the final mix, everyone took the sonics more seriously because less could be done post-bounce—a big contrast from last century's joke about "fixing it in the mix." They saw the value of incorporating the "discipline" of working in the 4-track domain into their next digital project. Many expressed interest in buying an analog machine.

The class made us all realize the power of many creative forces working together to yield a body of work that is truly greater than the sum of its parts. Our collective artistry may have paled by comparison, but the journey on this long and winding road paid us all back tenfold. ■

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



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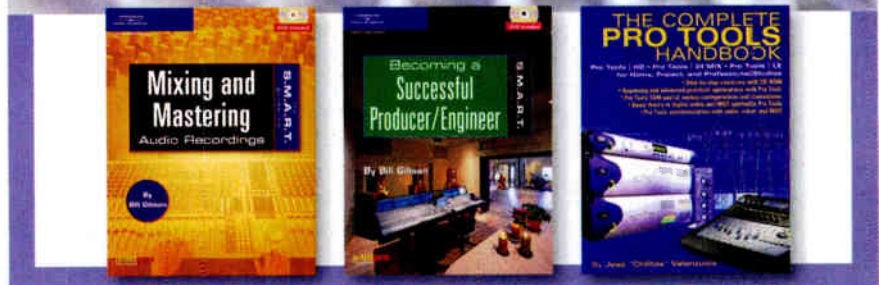
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Tools of the Trade



IK MULTIMEDIA SAMPLETANK VERSION 2.5

The latest version of IK Multimedia's (www.ikmultimedia.com) SampleTank (\$499) offers a bevy of new features, including five insert effects, five master insert effects, a new reverb derived from Classik Studio Reverb, 200 Combi patches based on the SampleTank XL sound set, and the ability to read any "Powered by SampleTank" instruments, such as Sonik Synth 2, Miroslav Philharmonik and the upcoming SampleMoog, SampleTron and StudioPhonik. Other features include global volume pan, master loop sync and selectable portamento curves. The software supports Mac OS X (Universal Binary) and Windows Vista, and comes with more than 1,800 sounds and more than 6.5 GB of samples. Version 2.5 is a free update for all registered SampleTank 2 L and XL users.

PEARL ELM-A

Pearl (dist. by Independent Audio, www.independentaudio.com) has released a new rectangular capsule mic, this time with dual, back-to-back membranes and outputs. The \$3,196 ELM-A feeds the twin outputs via a 5-pin XLR connector with both outputs delivering independent cardioid signals, one from each membrane for back-to-back output or 180-degree stereo. The rectangular capsule has more than twice the surface area of large-diameter round capsules, which provides



excellent signal-to-noise ratio while avoiding high levels of in-band resonance. In addition, the mic's small width lets users tune out unwanted reflections due to the narrow side-to-side pickup pattern.

SOUNDFIELD DSF-3 SURROUND DECODER

This all-digital solution for surround decoding from SoundField (www.soundfield.com) improves upon the company's previous analog decoder's performance with enhanced sound



quality and greater channel separation. The DSF-3 (\$4,995) decodes SoundField mic or B-format signals to digital 5.1 surround or stereo audio (or both simultaneously) at any sample rate. Features include five-segment LED input level meters, separate signal-present and clip LEDs, and output level controls for each of the six channels in the 5.1 signal. In addition, switches are provided for selecting the virtual pickup pattern, localization and orientation of the mic without physically handling it.

DB AUDIOWARE COMPRESSOR, GATE PLUG-INS

The new, affordable Sidechain Compressor and Sidechain Gate plugs (\$84 each) from db audioware (www.db-audioware.com) feature new compression and gating algorithms, claiming authentic analog sound with low distortion. Other features include EQ and Shape controls for fine-tuning dynamic response and character, compressor auto-gain with brickwall limiter for extreme compression settings, dual-metering and Sidechain Listen mode. The plugs come in VST and Audio Units format for Mac OS X (Universal Binary), and VST format for Windows.

FOSTEX PD 606 FIELD RECORDER

Perfect for the high-end field recordist who wants a power-efficient solution with no compromises, the PD606 (\$7,995) from Fostex (www.fostex.com) offers eight tracks of recording with two virtual tracks on full-size DVD-RAM discs, plus dual-drive recording, support for 6+2 poly files, and a digital mixer and router with a stereo bus. It also features HD drive access through USB 2, high-resolution LED meters, tri-level sync and more. For long days on location, DC power options include NiCad and IDX Endura cell technologies.

ATC SCM16A MONITORS

This new console-top monitor from ATC (dist. by Las Vegas Pro Audio, www.lasvegasproaudio.com) boasts improved off-axis frequency response through the use of Constrained Layer Damping (CLD) on the bass driver. The innovation uses two lightweight driver cones that sandwich a constrained damping layer. When the cone flexes, CLD shears adjacent cone sections, causing unwanted vibration energy to dis-



sipate as frictional heat rather than acoustic distortion. In addition to the 6-inch CLD mid/bass driver, the SCM16A (\$3,995/pair) has a 1-inch, neodymium, soft-dome tweeter, upgraded onboard (200- and 50-watt) bi-amplification, and user-adjustable input sensitivity and bass boost.



UNIVERSAL AUDIO PLUG-INS

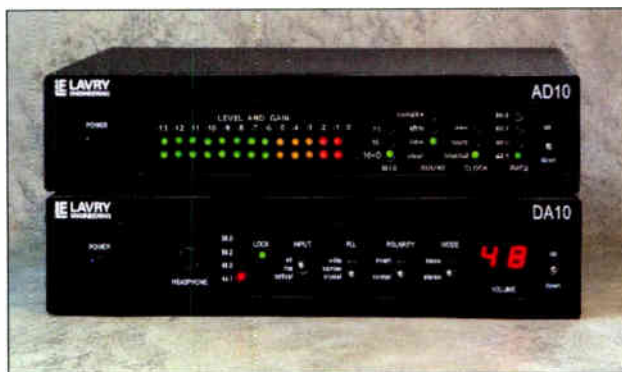
Version 4.8 software for the UAD family of DSP cards and powered plug-ins includes 14-day, fully functional demos of the new Precision Maximizer and Precision De-Esser plug-ins. The Precision Maximizer promises to inject loudness, punch and perceptible energy into a mix without destroying its dynamics, while the Precision De-Esser is a dynamic sibilance remover. The Maximizer features an easy-to-use interface, offering controls for loudness, harmonic content and sonic control supporting a wide range of program material. The de-esser has bandpass or traditional highpass de-essing, split mode for minimizing unwanted artifacts, and dual-speed time constant and wide frequency range. Registered UAD customers can purchase full authorizations of the Precision Maximizer plug-in for \$199 and the Precision De-Esser for \$99 at my.uaudio.com.

Functions include precision knob scales for easy recall, continuously variable attack/release, four ratios (2:1, 4:1, 8:1, 12:1) and a wide-range sidechain highpass filter. The unit also offers -20 dB of gain reduction, a greater-than-76dB signal-to-noise ratio, flat frequency response (within 0.5 dB) from 20 to 20k Hz and harmonic distortion that's less than 1%. It comes in a handsome and

external word clock or AES sync for 32 to 100kHz operation. Its I/O connections comprise 24-bit AES/S/PDIF and optical outputs, +4dBu XLR and -10dBV TRS analog inputs, and 14-segment digital meters with peak hold.

AUDIENT MICO MIC PREAMP

This twin mic pre from Audient (www.audient.com) offers a front end with some unique features. The Mico (\$1,100) includes digital converters and one channel of the HMX harmonic-sculpting technology from the Audient Black Pre, along with variphase control, which lets users precisely alter phase alignment (or perform creative misalignment) of the two signal paths. It also has 40/80/120Hz highpass filters, phase inversion, switchable 48V phantom power, -10dB pad and 66 dB of gain. The DAC operates at up to 192kHz/24-bit on AES/E1BU, S/PDIF coaxial and optical outputs. To keep all of your digital ducks in a row, Mico has a BNC word clock input and switchable word clock termination.



decidedly Soviet-looking gray, enameled steel enclosure that can be strapped in stereo (or more), with a limited lifetime warranty.

LAVRY BLACK AD10 A/D CONVERTER

The AD10 (\$1,480) A/D converter from Lavry Engineering (www.lavryengineering.com) has a proprietary Digital Alias-Free Emulation™ mode conversion that lets engineers choose between Clear, Tube or Transformer input characteristics. The half-rack unit features operation up to 96 kHz, internal or external clocking, greater than 117dB dynamic range (unweighted), less than 0.0009% THD+N, and

ROYER LABS LIVE SERIES

Until now, taking expensive ribbon mics on the road has always been a scary proposition. Royer (www.royerlabs.com) has released rugged, road-ready versions of its SF-24 phantom-powered stereo ribbon





microphone, the R-121 ribbon microphone and the R-122 active ribbon microphone. These mics are road-worthy thanks to more robust ribbons: On the SF-24, the thickness of the two ribbons has been increased from 1.8 microns to 2.5 microns, while on the R-121 Live and R-122 Live models ribbon thickness has been increased from 2.5 microns to 4 microns. Live Series microphones are identified with an "L" on the top of the mic and are priced the same as the studio versions.

AVLEX MX8-1RM MIXER

This single-rackspace mic/line mixer from Avlex (www.avlex.com) supports eight mic/line channels, each with gain and tone pots. I/O comes on XLR and TRS mic/line inputs, along with two channels of RCA unbalanced line ins and TRS balanced mic/line inputs. The MX8 (\$240) has eight channels of DIP switch-selectable phantom power, pre-fader output and an aux/bus input so that two MX8s can be cascaded for 16 channels or more. The unit promises THD at less than 0.003%, a 106dB signal-to-noise ratio and a frequency response ranging from 16 to 22k Hz (-3 dB).



MXL V67Q STEREO MIC

This new stereo mic from MXL (www.mxl.com) features dual 22mm capsules with gold-sputtered diaphragms aligned in a 90° X/Y configuration. The V67Q (\$299.95) features a green body with a gold head grille designed to protect the sensitive capsules from wind noise,

plosives and other popping-type sounds. It ships with a protective pouch, mic clip and a 5-pin cable that breaks out to two standard XLRs.



METRIC HALO 2D CARD

This new DSP processing powerhouse from Metric Halo (www.mhlab.com) comes with all-new Mobile I/O units or as a user-installable upgrade. The 2d Card offers 5.5x the available processing power of the original Metric Halo + DSP implementation and includes a SIMD engine that doubles the power for certain operations such as mixing. The card also offers ADAT implementation, including optical S/PDIF support (independently switchable on both input and output) and asynchronous SRC for the optical S/PDIF input. For those who favor a D.I.Y. approach, the upgrade cost for 2882 and 2882+DSP units is \$400; it's \$500 for ULN-2 and ULN-2+DSP (including a new rear panel and ADAT I/O ports). For the fainthearted, the company offers factory-install options.

GALAXY II GRAND PIANO COLLECTION

Designed for and equipped with the new Kontakt 2 sample player, this new collection of pianos recorded in surround from The Badroom (dist. by EastWest, www.soundsonline.com; \$119) offers more than 6,000 24-bit

samples modeled in 13 velocity zones. Sampled pianos include a Steinway D, Bösendorfer 290 and a 75-year-old Blüthner. The collection (offered in Audio Units, VST, RTAS and stand-alone formats) offers ad-

justable hammer, pedal, damper and string noises; sympathetic string resonance with overtones; and sostenuto and re-damper, pedal functions. The GUI offers detailed,

editing plus one-knob control of tone color, dynamics, and adjustable stereo width and position. For those wanting to toy with the sound even more, a Warp section has four FX machines for drastic sound design and a Pad Machine for generating spheric and atmospheric synth pads.

SPL TRANSIENT DESIGNER FOR TONELUX VRACKS

SPL's (www.spl-usa.com) Transient Designer (\$549), formerly available only as a standard rack unit from SPL, is now also offered as a Tonelux (www.tonelux.com) VRack module. The vertical unit has variable controls for attack, sustain and output with buttons for linking more than one unit and on/off. Just like the original, Transient Designer can shorten or lengthen the attack and sustain of all kinds of percussive signals—such as the bass drum, snares and toms—or sustain or dampen the reverb time of a choir or alter the sustain of an acoustic guitar track.



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YAMAHA

 **YAMAHA**

Mackie Traktion 3 DAW/Sequencer

A Beguiling UI Design and Some Slick New Features

The original release of Mackie Traktion was notable for its bold attempt to redesign the traditional sequencer user interface in a way that would be less intimidating and more fun. Since then, Mackie has moved aggressively to add features. Traktion 3 sees an upgraded UI with an integrated browser, folder tracks, better support for markers, etc. A suite of software instruments and a big set of loops are now included in the Ultimate Bundle (\$319.99); the Project Bundle (\$129.99) has less content. REX files and Apple Loops can be imported. Like most DAWs, Traktion 3 is so complex that this review can only hit the high spots.

ON THE SURFACE

Traktion 3 puts most editing features in a single window. The panes can be resized or hidden. A few features, such as groove template editing, appear in pop-up windows, but MIDI track editing is in-line: The track expands vertically to display notes and controller data. Rather than use a standard menu bar, Traktion puts menu headers in a box in the lower-left corner and packs the transport into the lower-right corner. In combination with the pastel color scheme and oval buttons, this gives the program a distinctive look. Once I learned my way around, Traktion operated much like any other sequencer. It's richly supplied with pop-up menus, key-command equivalents and so on.

Traktion's mixer is arranged vertically at the right edge of the track display and is very configurable. Aux sends can be positioned at any point in the channel signal path, as can extra level meters and faders. Because of the one-to-one linkage between tracks and mixer channels, aux channels and subgroup channels occupy space along the entire length of the track. This is less than ideal, but they can be tucked away in a slender folder track to minimize the clutter.

After recording a few tracks, I tried recording automation using the mouse and an external MIDI control box. Everything worked flawlessly. Editing the multipoint automation envelopes was just as easy. At first glance, it seems only one envelope can be displayed at a time for a given track, but you can create extra tracks for display pur-

poses and show the envelopes for various parameters of the "real" track on their own tracks. Automation curves can be locked to audio or MIDI clips.

When I dragged REX files into Traktion's tracks, they conformed to the project tempo as expected. You can also turn raw audio files into tempo-stretchable loops using a utility that detects beat transients. The beat markers can be edited manually by dragging, but there's no way to zoom in on the waveform in this utility area. I would need a zoom control if I wanted to use this feature regularly.

I bookmarked my favorite folders in the browser, which is handy except that the bookmarks are displayed in the pop-up menu with the entire directory path rather than just the name of the destination folder. The browser has a sweet category tag system for finding audio loops by instrument, genre and so on. You can also add your own loops to the database, which made me long for an intern who could spend a week entering the data for my voluminous loop library.

PLUG AWAY

The Traktion 3 Ultimate Bundle comes with three synths from LinPlug, plus IK Multimedia's SampleTank 2 SE (with a 285MB library), almost 3.5 GB of loops from Sonic Reality, Submersible Music DrumCore (2.3 GB) and the Garritan Personal Orchestra T3 Lite Edition (820 MB). As I use more than one DAW, I was disappointed to find that the LinPlug instruments operate only in Traktion.

LinPlug Alpha3 is a rich, satisfying analog-type synth. Each of the two oscillators can blend two waveforms, and ring mod and waveform symmetry modulation are included. Other features include a multimode filter, matrix modulation, MIDI Learn for

controlling the knobs and three LFOs.

LinPlug CronoX3 is a four-oscillator sample-playback synth that generates textures using some unusual waveform-modulation techniques. It comes with almost 500 MB of waveforms, and can set up multisample keyboard layouts of your samples. Dual filters, six effects modules and an arpeggiator are onboard. In a word, CronoX3 sounds "brushed"—it has a wiry digital flavor that I like a lot.

LinPlug RMIV is a hybrid drum machine capable of both sample playback and synthesis. It comes with a 1GB sample library, plus hundreds of MIDI beats in more than 40 styles. A kit comprises 18 pads, each of which can use any of the 12 types of synthesis. Distortion, compression and random variations are available for each pad, along with resonant filters, envelopes and so on.

The SampleTank and Garritan plug-ins fill in the sound palette with the expected variety of multisamples—everything from grand piano to an 808 kit. DrumCore TK, which specializes in acoustic drum tracks, runs as a ReWire client, not as a plug-in. Loops from name drummers like Terry Bozzio and Sly Dunbar are included at multiple tempos and variations, but because this is an "introductory version," you get only one style from each drummer. Even so, it's a great addition to Traktion.



Mackie Traktion 3 puts everything in one window, but you'll want a big monitor—the mixer runs vertically along the right edge.

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RACK ACTION

The Racks in Traktion share a name with the Racks in Ableton Live, but not much else. Although the goal is similar—to allow mul-

Racks let you create modules that you may not have with relative ease, such as multiband compressors and multitap delays. VSTs that have multiple audio outputs should



Traktion lets users patch up plug-ins in weird and wonderful ways and encapsulate the patch as a Rack. Shown here is a factory preset for a multiband compressor.

multiple plug-ins to be connected in complex ways—the design is completely different. In Traktion, I dragged plug-in effects and/or instruments (Mackie calls them all Filters) onto a worksurface, as shown in the figure above. I then connected the elements with virtual patch cords, as in a patchable environment like Cycling '74 Max. I then was able to insert the entire Rack as an insert or on an aux bus, just as if it were a single plug-in. In fact, a single Rack can be inserted on several tracks at once—odd sounding, but useful.

generally be inserted in a Rack; this is how you extract the outputs to separate mixer channels. Traktion ships with a couple dozen Rack presets to get you started, and you can save your own configurations.

At first, I couldn't figure out how to automate the parameters of plug-ins inside of Racks using Traktion's automation envelopes, as these modules don't show up in the list of automatable parameters for the track. But it turns out to be easy: Just drag the little "A" button from the track onto a

Filter within the Rack. When I deleted a plug-in from a Rack by mistake, my action was not placed in the Undo queue, which meant I had to recall the settings of the plug-in using my poor, addled brain.

THE RIGHT TRACK

In this review, Traktion scored many points in a lot of departments. The manual is solidly written and informative, and newcomers will appreciate the informative pop-up help (which can be switched off when it gets annoying, as it soon will). After spending a few weeks with the program, I can think of only a few things it won't do. It has no MIDI event list, no logical criteria for editing MIDI data and no notation editing or printing. Yet even with these no-shows, if I didn't have a long-standing commitment to another DAW, I would seriously consider Traktion as my platform of choice for music production. It scores the hat trick with all the right tools, ease of use and attractive pricing.

Mackie, 866-858-5832, www.mackie.com.

Jim Aikin writes about music technology for Mix, Remix, Electronic Musician and other magazines.

Tony Maserati	<i>(Black Eyed Peas)</i>
Steve McMillan	<i>(Rod Stewart)</i>
Charles Dye	<i>(Ricky Martin)</i>
Spike Drake	<i>(Pet Shop Boys)</i>
Jon Feldman	<i>(Ashlee Simpson)</i>
Ron Harris	<i>(Christina Aguilera)</i>
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Waves API Collection Plug-Ins

Hardware Classics, Modeled for Native and Pro Tools

Waves and Automated Processed Inc. (API) have co-engineered the API Collection of plug-in processors based on the latter's hardware processors. The API Collection bundles four plug-in processors: 550A 3-band EQ, 550B 4-band EQ, 560 10-band graphical EQ and the 2500 stereo compressor. The processors are carefully modeled in stereo and mono versions using 48-bit double-precision math, and they operate at up to 96 kHz, except the 560, which goes up to 192 kHz. They are available in native (\$1,000) and TDM (\$2,000) versions; iLok authorization is required.

A SIMPLE GUI

Each of the four plug-ins is encased in a virtual anodized-blue Series 500 Lunchbox with a large output level control. A pair of large VU meters dominates the GUI; even the mono versions of the EQs have two meters, both showing output level. Unlike the original hardware units, the plug-in offers an I/O clip indicator, polarity "flip" switch and an Analog on/off switch. The Analog feature can engage or bypass the modeling of the hardware's processor noise and harmonic distortion. With Analog on, these plug-ins sound so close to the originals it's scary, so I chose to do all my testing with Analog enabled. As with all Waves plug-ins, the included Wave-System toolbar manages user and factory presets with 32 levels of undo/redo, preset A/B'ing and recall/save/load functions.

BRING ON THE EQUALIZERS

The plug-ins model the signature sound of the compact API 550A, 550B and 560 hardware EQs, which is due to the proportionate-Q circuit design and API's discrete 2520 Class-A/B operational amplifier module. Applying more boost/cut sharpens the Q, offering a more aggressive sound. The boost and cut curves are reciprocal—you can easily reverse an equalizer setting used in a recording by applying an equal but opposite amount of boost/cut. This is as close as it gets to an Undo button in an analog unit.

The 550A offers five frequency choices across three overlapping bands. The high and low bands are switchable from peaking to shelving filters. The plug-in also models

the independent 50 to 15k Hz bandpass filter that's only available on the 550A. The 550B offers seven frequency choices for each of its four overlapping band sections. Again, the high and low bands are peak/shelving-switchable.

The 560 graphic EQ has 10 frequency bands, spaced one octave apart with ± 12 dB boost/cut. A graphical EQ with proportionate Q means that just touching a frequency band with a small boost or cut makes a very subtle change. However, moving the fader up by more than one-third begins carving more deeply.

The equalizers each have a Trim window, which, as your audio plays, displays the highest peak signal level for that track over time. When Trim shows the top level to be 1.5 dB, another 1.4 dB of headroom remains before clip. If you click on Trim, it will reset the highest peak to be at -0.1 dBFS. This is a great feature for maximizing gain structure in a channel strip's signal chain.

A LOOK AT THE 2500

Like the hardware unit, the API 2500 stereo compressor plug-in has separate threshold, attack, release, ratio, and fixed- and variable-release controls. Unique to the 2500 are the compressor Tone section and comprehensive stereo linking. The Tone section offers hard, medium and soft-knee compression options; the patented Thrust detector filter circuit; and a choice between two compressor-detector signal derivation topologies: old-style feedback or the more modern feed-forward method.

Choosing between hard, medium or soft-knee compression configures the 2500 for the desired compression task—anywhere between aggressively controlled and noticeable to gentle, smooth and subtle. Thrust inserts any of three different filters before the compressor's RMS detector. Normal position is flat; Med decreases the energy in the low frequencies and slightly boosts the high frequencies; and Loud



The API 2500 stereo compressor plug-in has separate threshold, attack, release and ratio controls.

decreases even more lows and adds more highs to the detector's input.

The L/R linking system sends a mix of the left and right channels' level contributions to the left and right channel detectors. You can set the "depth" of linkage from none—or 0 percent—for dual-mono setups to 50, 60, 70, 80, 90 or 100-percent linked. The Link control signal can be shaped using a three-position filter: highpass, lowpass or both together for a bandpass filter.

Waves has accurately modeled the 2500's Auto-Make-Up gain; it maintains the same output level without regard to changes made to threshold or ratio—a great feature for "on-the-fly" adjustment.

ON TRACK WITH API

I tested the API Collection in a Pro Tools Accel HD3 rig running on a quad-core Mac. I started using the 550A as if I were engineering on a real API desk. The 550A's low latency and low DSP usage make it ideal to use across your mixer as a main EQ for vocals, guitars, keyboards or program. On guitars, the Trim feature helped to maximize the channel strip for the wide dynamics of a wah-wah part, but a simple input trim control (similar to that on Waves' SSL channel strip plug-in) would have saved me the trouble of adding a DigiRack Trim plug-in to keep an over-recorded track (in the red) from overloading the EQ.

On the 550A and 550B, the amount of boost/cut (2/4/6/9/12 dB) changes to yellow to verify that you've selected it—a nice touch. I recorded vocals through the 550B with no trouble at all. A smooth boost at 5 kHz and 12.5 kHz was just what my singer needed when using a Neumann U47.

It's About Time

Anyone who works in post knows the constant pressure to get more work done under tighter and tighter deadlines. At Steinberg, we know that every extra key stroke and edit move adds up, costing both time and money. That's why Nuendo 4 has been specifically tailored to audio post professionals and gives you back something priceless: time to be creative. The ultra-smooth workflow built around a brand new routing and recording engine includes stunning new native processing tools specifically designed to streamline repetitive tasks and free you up to try new things. Nuendo 4 lets you work faster, be more creative and still deliver on schedule, no matter how crazy the deadline. It's about time.



“ Nuendo has grown through a dedication to the post community, which is fantastic. The rethinking of the automation has been incredible, especially the Write-To-Punch feature, which is an extremely powerful tool for our type of work. Nuendo is absolutely world-class at this point. ”

John Ross,
Sound Supervisor and Re-Recording Mixer



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The 550A and -B provide subtle EQ until the boost/cut knob goes beyond 4 dB. The 550A worked with just about any track, but if I needed a fourth frequency the 550B came to the rescue. Most individual tracks benefit from a little EQ, and subtle ± 2 dB here and there can make a big difference in the overall sound. Like the hardware 550A, winding up to +9 dB at 10 kHz on a vocal track will open up the air and ambience to recover from the dulling effect of a compressor that's ahead in the chain, but beware of sibilance.

The 560 graphic EQ went to work on all my drum tracks. Whether you're adding point and boom to kicks, carving out something useful from a dumpy old snare drum or dialing in tom-toms, this is the one! Good thing the output level control lowered the level-off clip when I pushed excessive 8 kHz on a side-stick sample. On kick drums, I thinned out the 500Hz area and boosted the frequencies an octave down to get more kick drum presence and a better "marriage" with the bass guitar.

THE 2500 ON MY MIX

I did extensive A/B'ing between the 2500 and Waves' other stereo bus compressor, the SSL Compressor. On the SSL, I normally use



The 550 EQs are capable of subtle and radical EQ.

only about 3 dB or less of max compression at 4:1. I use this technique for the slight level jump and the way it colors and enhances my mixes' bottom end. Set the same way, the 2500 excels over the SSL whenever I'm after a more crushed sound. With all the ways you can program this compressor, creating specific combinations of the knee, thrust and feedback/feed-forward settings, the 2500 provides more punch and clarity when it's pushed hard.

For stereo mixes, I found myself using the Med Thrust and Knee positions most often—changing to Loud Thrust necessitates resetting threshold and/or output level. I don't use stereo linking because it always narrows the stereo width in my mixes—but then I never put superloud "events" on one side only, which might shift the center image.

Available for both Mac and PC platforms, this bundle is a serious asset to DAW studio users. These plug-ins are as invaluable as a rack of outboard gear is in analog studios.

Waves, 865/909-9200, www.waves.com.

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



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Klein + Hummel O 300 Studio Monitors

Accurate, Revealing, Tri-Amped Near-Fields With Room Correction

It wasn't long ago that active monitors were the exception in studios rather than the norm. Part of the popularity of self-powered speakers can be linked to shrinking control rooms and surround mixing, where having six speakers and amps, plus a bunch of cables becomes unwieldy. Addressing these issues, Klein + Hummel manufactures active monitors for studio use. The O 300s (\$6,995/pair) reviewed here fall in the middle of the company's line; a version with digital inputs (the O 300 D) is also available.

THE STORY OF O

Though housed in an ordinary-looking cabinet finished in gray paint, the O 300 is anything but run-of-the-mill. The speaker is mag-shielded so nearby video monitors are safe, and the front baffle is sculpted with a high-frequency waveguide to control tweeter dispersion. The O 300 has an 8-inch woofer, 3-inch midrange and a 1-inch titanium-dome tweeter.

Power is supplied by three internal amps delivering 150, 65 and 65 watts RMS for the bass, mid and HF driver, respectively. Crossover frequencies are spec'd at 650 Hz and 3.3 kHz—well out of the critical vocal range. A red, backlit K+H logo on the front panel indicates when the speaker is on. Rear panel controls include an on/off switch, fuse and AC power inlet; balanced XLR input with attenuator; and switches for bass, low-mid and high contour.

IT'S A SETUP

I set up the O 300s where I normally place my Westlake Lc 8.0 monitors: on Auralex MoPADs on a shelf well above the meter bridge, roughly four feet apart and equally as far from the mix position. I used Mogami cable to connect the O 300s to a Tascam DM3200, and I set the input attenuators to 0. When the O 300s arrived, I jumped right into mixing the upcoming CD *Seas of Blood* from Portland, Maine-based goth/metal band By Blood Alone.

The first thing I noticed about the O 300s is that they present an incredible sense of depth. Many monitors throw a wide left-to-right image, but few allow you to hear into a mix. The O 300s really let you hear

front-to-back position and help you easily place elements into a mix while producing a smooth, natural and uncolored response. After doing a few rough mixes, lead guitarist John Graveside and I burned some CDs and checked our mixes on a variety of audio systems (cars, home hi-fis, headphones, etc.). We observed that the mixes were light in the low end—*exactly* what I expected, given the fact that the monitors were within a foot of the rear wall. (I did not want to use the O 300s' EQ before hearing their unmodified response or finding out how they reacted with the room.) The O 300s' bass response was being bumped up due to its room placement; when we took the mixes elsewhere, there was not enough bass.

Enter the rear panel EQs. These recessed rotary switches compensate for the O 300s' response—especially useful in small control rooms where a free-field placement (i.e., on stands, several feet from the nearest boundaries) is impractical. Options include 0, -3, -6 and -9 for bass; +2, 0, -2 and -4 dB for low-mid; and +2, +1, 0 or -2 dB for the HF driver. K+H did its homework when designing these controls. In the case of the bass control, these values coincide with the nature of acoustics: Place a speaker near a wall, and you'll get a 3dB bump in the bottom end; place it in a corner, and you'll get a 6dB bump; in a corner near a ceiling or floor, and your bass response is exaggerated by 9 dB.

Changing the bass EQ to -3 dB did the trick, keeping the bass response tight in the control room and providing balanced mixes wherever we listened. Because the console was approximately 18 inches below the bottom of the O 300 cabinets, we didn't need the low-mid EQ, which is designed for situations where console reflections can exaggerate the low-mid response, or the HF control, which compensates for bright- or



dull-sounding rooms.

In addition to mixing, I also tracked drums, bass and keys with the O 300s. Though the two are not mutually exclusive, many monitors that work well for mixing do not have what I call the "ruthlessness factor" for tracking (i.e., they are not revealing enough). The O 300s excel at both. Signal anomalies, such as a squeaky hi-hat stand were clearly exposed, as were extraneous lip noises on vocal tracks and very low-level guitar buzzes. The O 300s are capable of effortlessly producing SPLs approaching the mid-100dB level (higher than I'd care to listen to) with a bottom end that is clean, tight and extended—though it may not bring the walls down. (K+H offers the optional O 800 and O 900 subwoofers for that.)

HONESTLY, I WANT THESE

Klein + Hummel O 300s are among those rare speakers that are transparent enough to let you know *exactly* what you are recording and yet somehow translate mixes very well. In the process, the O 300s are honest without causing fatigue—even after doing countless 10 to 14-hour sessions. Granted, at \$6,995/pair, the O 300s are not cheap, but they definitely rise to the top of the monitor food chain. I am *not* looking forward to returning them.

Klein + Hummel, dist. by Sennheiser, 860/434-9190, www.klein-hummel.com, www.sennheiserusa.com. ■

Steve "Woody" La Cerra is Mix's sound reinforcement editor.

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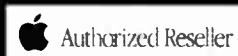
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Langevin Mini Massive Stereo EQ

Manley Legacy Unit Redone for Mastering and Bus Applications

When it was released in 1999, the Manley Massive Passive EQ took the high-end pro audio world by storm. The "Pultec on steroids" design gave engineers a unique tool. The new \$2,800 Langevin Mini Massive Stereo EQ is a scaled-down version of the Massive Passive and is likely to have a similar effect on the industry. I was lucky enough to borrow the big brother from Design FX in Los Angeles so that it could go toe-to-toe with our newbie.

INTERDEPENDENT CONTROLS

The front plate of the single-rackspace unit is crowded but clear. And just as you'd expect, there are switches for shelf and bell, bypass, boost and cut, as well as a power switch. Other adjustments include level

levels with all bands bypassed, I then dialed in the high bands until I was happy.

Now with the identical setup, I switched to the Mini and copied over the EQ settings, making sure to use only the low and high bands on the Massive for a fair comparison, and recorded the Mini's output to an outboard 24-bit/88.2kHz stereo recorder where I had also dumped an identical snippet from the Massive for an A/B comparison.

The overall tone was very close, but there were subtle differences. Mainly, I thought the mix seemed extra large with the Massive—especially on the low end. Somehow, it commanded more depth and width at identical volume.

The Mini comes standard without transformers, but they're available as an

Two other factors should be considered when comparing the Mini to the Massive, both of which are a result of the latter's tube design: heat and noise floor. The Massive is not a noisy box, but it does have tubes while the Mini doesn't. In my tests, the Mini was quieter and cooler.

NO SMALL CONCLUSION

Using this unit has always been a little challenging for idiots like me who normally resist cracking open the manual, but once you get the idea of the interaction between different parameters and stop "worrying" about where the pots are positioned, you can have some fun with the box. It also amazes me that what in the beginning seem to be subtle changes to program result in something very dramatic when you hit the



(± 20 dB) pots for the 11 positions between 22 and 1k Hz on the low stereo bands, and another 11 between 560 and 27k Hz on the high stereo bands and variable Q control.

Traditionally, when you add +2 dB at 10 kHz and -4 dB at 1 kHz, that is what you get—more or less. However, the Mini's passive EQ controls function much more interdependently. Most EQ bands are traditionally connected in series, while the Mini's run in parallel, so it is better to listen to the unit's sonic results than to glue your eyes to the front panel numbers. For example, when you cut and boost the same frequency on different bands on the same channel, they don't cancel each other out, but rather provide another option to "shape" your EQ curve. Functions such as the bell/shelf toggle can dramatically affect the adjacent band's response, and bandwidth settings can affect the frequency's effective gain.

IN MY EARS

I started my listening test by A/B'ing the Massive Passive with the Mini. I opened a Pro Tools HD session and inserted the Massive on the stereo bus' output. After matching

option on the unit's output. My review unit came with this option and I had it engaged for this part of the test, as the Massive has transformers on its outputs. As an interesting extra, not only can you bypass the Mini's transformers, but another setting marked "vintage" exaggerates the effect of the transformer even further in an effort to emulate classic British consoles.

I tried the vintage setting on my program material, but found it too crunchy and compressed for this type of "hi-fi" audio. However, this could be fun on an amplified guitar or drum loops.

I then switched to the bypass transformer position and got a nice surprise. The extremes at the high and low end were extended and clear, and this adjustment also appeared to tighten up the low end. It would be great to have this setting on a high-res digital project or on an analog session.

Another unique Mini feature is the "Bell 2" setting on the top four frequency selections of the high bands. It narrows the Q at these settings and provides more flexibility when working on the high end.

bypass on both these units.

As I continued to go back and forth between the units, the strengths of each became more obvious. The Massive has character, warmth and puts the "p" in "phat." The Mini is open, clean, punchy and tight. One of the design team's goals was to provide an updated version of this unit that is better suited for mastering rooms and stereo bus applications. My experiment both succeeded and failed. I know people who will find the Mini perfectly suited for these situations, but I can imagine that some mastering engineers would rather have the Massive pried "from their cold, dead hands."

If you want the engineering equivalent of hitting 755 home runs or winning "Le Tour," the Massive cannot be replaced. If you want to run a "clean" race, or if money, rackspace and heat are considerations, the Langevin Mini Massive is not a compromise, but the logical alternative.

Manley Laboratories, 909/627-4256, www.manleylabs.com.

David Rideau is a Los Angeles-based recording engineer/producer.



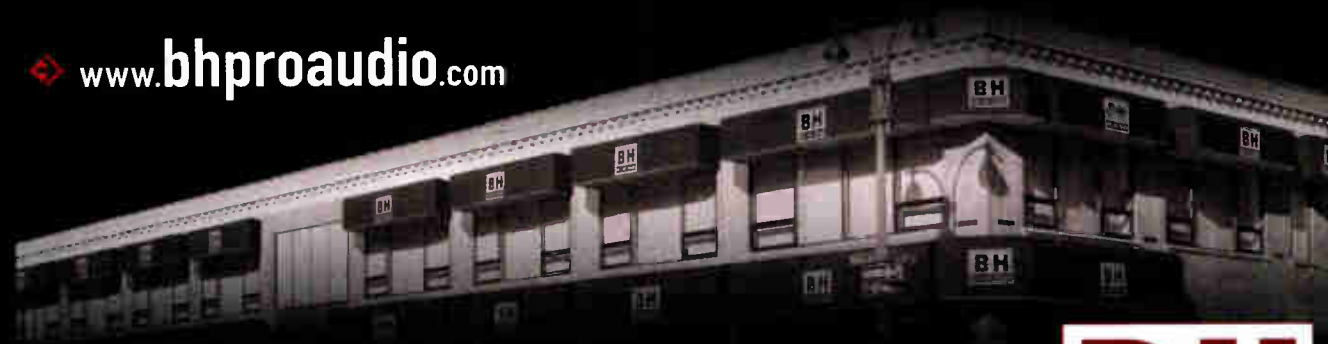
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Snapshot Product Reviews



ULTRASONES EDITION 9

Studio Headphones

Since 1991, Ultrasones has concentrated on building one product: headphones. The new Edition 9 headphones use the company's patented S-Logic low-radiation principles, and at \$2,092 retail they are decidedly aimed at the high end. Hand-made in Germany, the Edition 9s employ black ruthenium-plated ear cups with chrome-plated brass insignia, titanium-plated Mylar drivers and polished MU metal shielding to claim a 98-percent reduction in magnetic field emissions. They also sport a gold-plated adapter, ear and head pad made of Ethiopian sheep leather, and come in a hard-shell carrying case.

The ear pads are very comfortable, but the first time I wore them the Edition 9s felt too small and tight for my head, although they sounded great and offered a remarkable soundstage. After listening to these for a good bit of time, I went back to my workhorse Beyerdynamic DT 770 Pro headphones, and I noted how the DT's sounded almost "directional" by comparison, as though a little cannon was pointed at the outside of my ear. You've all heard the exclamation, "Wow, I was hearing things I've never heard on (insert name of album heard 1,000 times here)." Well, it happened to me. The Edition 9s' separation and detail was astounding compared with my other standard-fare cans—AKG K 240M and K 26P portables, Sony MDR-7506 and Beyerdynamic DT 770 Pro). If you closed your eyes, the difference would be like having a speaker in each ear and one on top of your

head for center (conventional designs) vs. a series of tiny little speakers that start at one ear and wrap around the *front* of your head, leaving no holes in the soundstage (Edition 9).

Even more surprising was when I matched the headphone levels with my reference monitors (JBL LSR6328Ps). When I put on the headphones, there was no change in volume. When listening back and forth between

the Edition 9s and my speakers, it was as if I hadn't put them on. I've never had this happen with a set of cans. The timbre and soundstage matched as perfectly as I've ever heard—astonishing.

Despite my love affair with the sound of the Edition 9s, I do have some complaints. For starters, the comfort factor—or lack thereof. I'd like to see a product at this level of performance and price have adjustable tension and offer different-sized ear cups, providing a truly semi-custom fit. It would make listening to these great 'phones much easier over a long haul. I'd also like to see a left-side, single-cable exit; it's what I'm used to. I found the dual wires annoying and more difficult to work around if I'm tracking as a musician. Lastly, the cable needs to be upgraded; it's doing its job sonically, but it felt and looked kind of chintzy. Other than that, if price is no object, the Edition 9s offer a unique and portable listening experience.

Ultrasones of America, 615/599-4719, www.ultrasonesusa.com.

—Bobby Frasier

APHEX MODEL 454 HEADPOD Headphone Amplifier

The latest studio problem-solver from Aphex Systems is the Model 454 HeadPod™, a studio headphone amplifier with four stereo headphone stations, each with its own power amp and level control. The \$249 HeadPod will interface any audio system at any operating audio level or with vary-

ing impedance requirements. It can drive any combination of disparate headphones simultaneously, exhibiting the maximum comfortable loudness with minimal distortion.

About 5 inches square and powered by an included wall wart power supply, HeadPod is constructed in a low-profile, heavy steel box, making it perfect for desktop use. Headphones with an impedance range between 8 ohms and 1 kilohm are usable with 55-ohm impedance 'phones receiving up to 1.5 watts of power. Distortion (THD+N, 1 kHz) is specified at less than 0.001 percent when driving a 25-ohm load with 100 mW.

The unit accepts balanced and unbalanced line inputs of any impedance from 10 to 20 kilohms and up to +24dBu level. It has a pair of balanced TRS left- and right-channel jack inputs and a single ¼-inch unbalanced TRS input. A solid-feeling switch toggles between these two inputs. The mas-



ter level input control sets the gain structure for a wide variety of levels and sources.

Comparing the headphone output of my pro CD player to that of the HeadPod, the CD player's headphone amp sounded fine at low volumes on my 55-ohm AKG K 271 headphones, but at higher volumes I could hear compression and dips in overall volume on loud bass notes. The overall sound thinned out noticeably. After adding HeadPod, the loud bass notes remained loud and clear, and the overall mix sounded fatter.

Aphex Systems, 818/767-2929, www.aphex.com.

—Barry Rudolph

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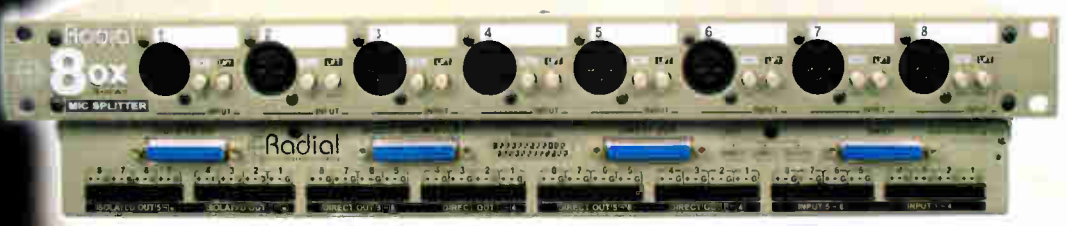
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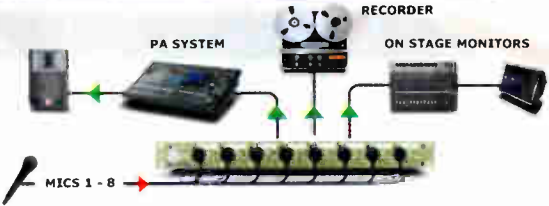
Steve Stevens
(Billy Idol, Atomic Playboys, soundtrack - Top Gun)



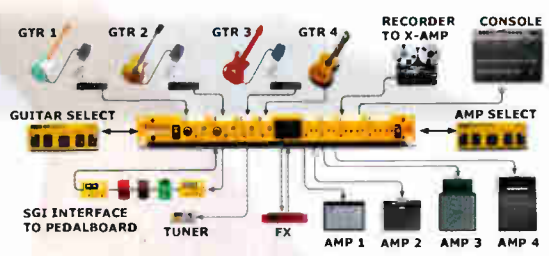
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DIGIDESIGN REEL TAPE SATURATION Analog Recorder Emulation Plug-In

With the DAW becoming commonplace in modern audio production, several companies have introduced analog tape-simulating plug-ins. Not to be outdone, Digidesign has introduced the Reel Tape Saturation (RTS) plug-in, which comes separate (\$295) or as part of the Reel Tape Suite (\$495). The bundle includes an analog tape delay plug-in called Reel Tape™ Delay and Reel Tape™ Flanger that emulates old-style, two-machine analog tape flanging. These TDM, RTAS or Audio Suite plugs are offered in mono or stereo versions, and handle up to 192kHz sample rates.

Reel Tape plugs are designed to re-create that analog *je ne sais quoi*—the elusive

character of analog electronics and tape recorders that is hard to describe. These plug-ins model analog tape's frequency response, noise, distortion and saturation with no detrimental delay, wow or flutter. Reel Tape Saturation, like the other plugs, starts with four controls that define the signal path of the "virtual" analog recorder.

Tape saturation is controlled by the Drive knob (± 12 dB); Output (± 12 dB) is the deck's playback level—useful for reducing the level when Drive is maxed; Tape Machine gives you a choice between the sound of an American-made 3M M79 deck, Swiss Studer A800 multitrack and low-fi tape echo machines like a Maestro Echoplex or a WEM Copy Cat. Lastly, a subtler parameter called Tape Formula switches tape stock between the old-school Ampex 456 Grand Master, which saturates at lower Drive levels, and the higher-output, modern Quantegy GP9.

The Speed switch provides the effect of 7.5/15/30 ips tape speeds. Each setting does a great job in mimicking the original machine. The Noise knob (0 to -24 dB) adds tape hiss and grunge, depending on the speed, tape formula, machine and drive set-

tings. Noise is produced only during playback. The Bias (± 6 dB) control simulates over- or under-biased tape for duller or brighter-sounding recordings with differing distortion characteristics. This effect works the same as with real tape, but the plug-in lets you hear the effect instantly, unlike real tape where the change isn't discernable until playback.

I inserted RTS on electric guitars, bass, vocals and keyboard tracks. This is strictly an insert plug-in with only 4 ms of latency. Electric guitars take on a thick, almost syrupy character, as if recorded at a superhot (analog) level. For bass guitar, I like 15 ips because the low end is fatter—just like real tape. As I would expect, the 7.5 ips speed had more noise and rounded-off high frequencies. It was better for supergrungy vocal effects. Wurlitzer electric pianos get very warm and fuzzy with much more harmonic distortion and sustain.

RTS is well used in the send path to reverb or delay effects. It rounds off sibilance and compresses in an analog sort of way that makes for a smoother result—you'll want more. I liked RTS' nonsubtle nature; you can go overboard and dial it back later. I could relate to all of the adjustable pa-

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—Barry Rudolph



ROGUE AMOEBA NICECAST 1.8 Streaming Audio Software

Rogue Amoeba's Nicecast Version 1.8 was designed for creating an Internet radio station on your home computer. This \$40 program for Mac OS X broadcasts any audio from your computer to a server that other

people can then stream into their computer or MP3 player. Although not specifically created for audio pros, it's perfect for streaming a mix in real time to your clients. It also comes bundled with four effects plug-ins for adjusting and improving your audio, plus a dozen free VST plug-ins—although I didn't use them in this application.

After downloading the software (a free demo version is also available), setting up Nicecast is a two-part task involving hardware and software. If you use a Firewall and/or router, you may have to make some changes to your network settings. Nicecast will automatically configure the newer routers supporting UPnP (Universal Plug-and-Play) and NAT-PMP (Network Address Translation

Port Mapping Protocol).

Software operations occur in four windows: Broadcast, Server, Effects and Archiving. The Broadcast window lets users select the audio source and quality, and displays the streaming information that clients require to “listen in.” A Server window

restricts access to your stream via a user name/password that you send to the client, along with the Internet address. Effects and Archiving are of little or no consequence for professional streaming of mixes, although they could be useful.

Once installed and set up, I had to specify how to deliver audio into Nicecast for broadcasting. Nicecast will “look” at audio internally from the computer (e.g., an iTunes playlist) or at the computer's audio inputs. My Mac G5 has analog and optical digital inputs, so I could broadcast using either one. I used the optical output from my Digidesign 192 I/O to feed the G5's optical input. Once you're streaming, the client simply opens any MP3 player that accepts an Internet stream. That's all there is to it.

Streaming my mix for approval, I selected the highest quality that Nicecast allows—the 48kHz/24-bit, 320Kb/second setting. I was concerned that at the highest settings my G5 processor might take a hit and the audio quality might suffer. However, I noticed no difference in the audio. I conducted tests using my G5 2.5GHz PowerPC quad-core machine, and the same results may not be possible on slower or weaker machines. My remote clients and I were

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—Erik Zobler



MICROBOARDS GX DISC PUBLISHER CD/DVD Duplicator/Printer

The GX Disc Publisher from Microboards is a \$1,795 CD/DVD duplicator with a 50-disc capacity, a Plector burner and an HP print engine. The GX's width is only 11.5 inches, but what they don't tell you is that the unit is nearly three feet long! It's built like a tank, which I liked, but it commands a bit of space.

The GX's length is tied to its assembly line-style disc movement. Blank media is loaded into a "hopper" in the middle of the unit at a slight angle, which takes a little getting used to. The hopper drops the discs into the burner. After burning, a mechanical arm quickly lifts the disc out of the tray and onto a conveyer belt that moves the newly burned disc under the print head and into the output bin. This operation is fairly noisy—one of the unit's downsides. In addition to the unit's long footprint, you'll need ample clearance in front of it for its output bin. The good news is that the lengthy design does produce speedy production results and shouldn't bother those with desk space to spare.

The software bundle includes third-party packages for Mac and PC. Charismatic's Disccribe is a solid Mac offering, while on the PC side, using Prassi Zulu2 with SureThing's CD Labeler gets the job done. Disccribe has the better GUI, while Zulu2 is very utilitarian and could be spruced up a bit for mostly aesthetic reasons. SureThing's CD Labeler 4 SE works fine and offers numerous options for creating labels. Everything you need is included for a wide variety of dupe jobs. My only complaint is that the software and

driver installation for the unit requires far too many mouse clicks before everything is up and running. I ran the GX without issues with an older 1.7GHz Pentium 4 Windows XP system.

What the GX and many duplicators lack, for that matter, is tight integration of the duplication and labeling software with the hardware. This results in little quirks that can be confusing. For example, SureThing's CD Labeler can be used with the GX to create a label, and it offers a print option. However, the GX requires the Prassi Zulu2 software to move discs through the system,

so making a simple label sans the burn necessitates running two programs.

I'd like to see a revised version of the GX with a smaller footprint, less fan noise and a hopper that's easier to load. However, I was very pleased with the results while using the GX Disc Publisher for burning and printing CD/DVDs. Despite the noise, the build quality is good and the price is competitive. For small, quality jobs, the GX Disc Publisher is definitely worth checking out.

Microboards, 800/646-8881, www.microboards.com.

—Rick Spence ■

An advertisement for the Digidesign Reference Monitor Series. It features two large black speakers with white grilles and a smaller black speaker. The background is dark with a subtle grid pattern. The Digidesign logo is in the top right corner. The text reads: "Digidesign Reference Monitor Series— High-Definition Sound Revealed". Below the speakers, it says "Digidesign revolutionized the music and post-production industries with Pro Tools®, empowering audio professionals to create the best-sounding audio possible. Now Digidesign looks to redefine the near-field monitoring experience with the introduction of the Digidesign® Reference Monitor Series (RMS), co-developed with world-leading professional monitor manufacturer, PMC." At the bottom, it says "Using PMC's groundbreaking Advanced Transmission Line (ATL™) technology, the RM1 and RM2 professional near-field monitors deliver pristine, high-resolution clarity and accurate low-frequency response to provide the most honest representation of your audio mix. And the onboard DSP manages a variety of tasks, including the complex digital crossover, which employs sophisticated filter designs resulting in extremely low distortion and superb phase response over a wide listening window." At the very bottom, it says "To experience high-definition monitoring first hand, visit www.digidesign.com/rms to find a local Digidesign RMS dealer near you." The bottom left corner has "digidesign.com" and "ENGINEERED WITH PMC". The bottom center has "World Radio History".

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PHOTO: ANDREW ZICKERMAN

Maroon 5, from left: Jesse Carmichael, Mickey Madden, Adam Levine, Matthew Flynn and James Valentine

MAROON 5

TAKING TIME TO GET IT RIGHT

By David John Farinella

It turns out that the old saw about hard work paying off is true, as the members of Maroon 5 can attest. They spent a little more than eight months recording their latest release, *It Won't Be Soon Before Long*, with three different producers in a handful of studios across Los Angeles and Las Vegas, and then scored a Platinum Number One release on the strength of the smash single "Makes Me Wonder."

The band—vocalist/guitarist Adam Levine, keyboardist Jesse Carmichael, guitarist James Valentine, bassist Mickey Madden and new drummer Matt Flynn—started to work on this collection of songs while still supporting *Songs About Jane*, their multi-Platinum debut. Writing sessions spanned all sorts of locales, from the road to producer Rick Rubin's Houdini mansion to the studio.

All in all, reports producer Mike Elizondo, the band had around 30 songs ready to go when they were finally ready to cut the new album. However, before the band, Elizondo and engineer Mark "Spike" Stent headed into Conway Studios (L.A.), they spent a week together in rehearsals for a final bit of pre-production and finalizing arrangements. One of the things the team did was listen to songs by Michael

Jackson. The Police. Prince and Talking Heads to get a vibe on how to record the tracks.

For instance, when they were working up the song "If I Never See Your Face Again," the Jackson

song "Off the Wall" was playing. "We wanted to hear the way the drums felt and the way the bass interacted with the part," Elizondo explains. "We were using the song to say, 'Look, every bit of this song is a hook, from the hi-hat pattern to the bass line to the clav keyboard parts to the guitar riffs.' Then, on top of that is the ultimate vocal. It helped us gauge what the most essential bits were for each of the songs."

Once the songs were sorted, the band headed into Conway's Studio A. The choice of the facility was not a random one, says the band's Carmichael, as the majority of the group had worked there with producer Rob Cavallo while they were still known as Kara's Flowers a few years earlier. "We also recorded some demos there right before we changed the band name to Maroon 5," he reports. "Graham Nash fronted us the money to go in there to record five songs that eventually got us signed to Octone."

Comfort with their surroundings and a heightened level of confidence, gave the band a certain cushion. "We felt like we were much better musicians this time around, and we felt like the songs were special and that there were a lot of good emotional things represented in the songs," Carmichael says. "We had good, diverse material, too. We all have different tastes in music."

One of the first steps for engineer Stent was setting up two drum kits: one in the main room for a live sound and then a second in a booth for more control. He put Carmichael's keyboards in the main room, the bass cabinets and guitar amps in two different booths, and then built a tent around Levine's area for the vocal tracking dates.

For drum miking, Stent will typically put a Neumann FET 47 and perhaps a dynamic mic on the kick; the snare will get a Shure 57 and a Josephson; and

—CONTINUED ON PAGE 125



THE L.A. GUITAR QUARTET

A MUSICAL TRIP TO BRAZIL

By Blair Jackson

For 27 years now, the Los Angeles Guitar Quartet has been among the most respected chamber ensembles in this country, wowing classical music audiences with their incredibly rich and detailed ensemble work on pieces by composers old and new, while also drawing in many fans who know rock more than they know Bach, and who previously (and perhaps still) worship at the altar of various electric guitar gods. It's telling that on their 2004 album, *Heroes*, the acoustic quartet paid tribute to everyone from John McLaughlin to Jimi Hendrix to Django Reinhardt to Frank Zappa. These guys have deeply eclectic inclinations, serious chops and exquisite



Outside Skywalker Sound, L-R (front): Robert Friedrich, William Kanengiser, producer Erica Brenner; (back) John Dearman, Matthew Greif, Scott Tennant, reeds player Katisse Buckingham and percussionist Kevin Ricard

ley. The LAGQ enlisted a few guests this time out, too: Brazilian singer/percussionist Luciana Souza appears on several tracks (she toured with the group before the album was recorded). Katisse Buckingham plays reeds and Kevin Ricard added percussion. There has also been a change in the core group. Last year, Andrew York left and was replaced by Matthew Greif, a longtime friend who fit in well immediately. He joins original members William Kanengiser, Scott Tennant and John Dearman—magnificent soloists and ensemble players.

The *Brazil* album was recorded during three days in mid-May at Skywalker Sound in Marin County, Calif., the group's first recording excursion there after several outings at O'Henry in L.A. "The Number One reason we ended up here is O'Henry closed down," Kanengiser says during a break on the third day of sessions at Skywalker. "That being said, it's so incredible to be here, and they're putting us up at this inn over here—it's kind of like going on vacation. We've never recorded before where we've had to leave town, and in a way it's not great because we're not home with family for a whole week, but the upside is we're able to focus, and we're getting lots of bonding time and it's so nice up here. And it sounds really good, too."

Out on the studio's cavernous scoring stage, the LAGQ are tucked inside some wooden baffles at one end of the high-ceilinged room, warming up on the piece they're about to record, the Brazilian

pop standard "Mas Que Nada," which was popularized by Sergio Mendes. Engineer Robert Friedrich, who has worked on all of the group's Telarc recordings, makes some last-minute adjustments to his complex microphone setup, which combines close-miking with two arrays of overheads to capture the room and the overall sound of the ensemble.

"We've miked them differently on every [Telarc] record," Friedrich says. "On the first one, we used tube M49s on the guitars; the second record we did four MKH 800s; the third record, *Spin*, we had stereo 800s on each of them. This time I'm using all these ribbon mics, which sound really good in this room." Friedrich used Royer R-122s on each player and then two AEA R88s and two R84s as overheads. ("I also had some MKH 800s as overheads, but I ended up neglecting those when it came time to mix," he tells me several months later.) Preamps included AEA TRPs, Sonic Lens 20/20-4s and Millennia HV-3Ds. He also used four tracks of EMT plates.

As with many Telarc projects, it was recorded to a Sonoma Direct Stream Digital (DSD) workstation with EMM Labs ADC and DAC converters custom-engineered by Ed Meitner. Gus Skinas, who operated the Sonoma, "drove out here from Colorado because he doesn't want to ship his equipment," Friedrich says. "He knows the Sonoma better than anybody." The sessions were produced by Kanengiser and Telarc's Erica Brenner, who had previously worked

—CONTINUED ON PAGE 126



taste in both material and arrangements.

Like their excellent 2002 album, *Latin*, the quartet's latest Telarc CD is a genre work: *Brazil* allows the foursome to tackle a wonderful cross-section of pieces by such legendary Brazilian composers as Antonio Carlos Jobim, Heitor Villa-Lobos and Hermeto Pascoal, as well as a number of writers well-known in guitar circles but perhaps not so much in the American mainstream: Marco Pereira, Raimundo Penaforte, Paolo Bellinati, Baden Powell and Clarice Assad, daughter of Sergio Assad of the Assad Brothers duo; Sergio Assad also arranged the CD's Jobim med-

THE TRAVELING WILBURYS' "HANDLE WITH CARE"

By Matt Hurwitz

The Traveling Wilburys were perhaps popular music's most unusual "supergroup." George Harrison, Bob Dylan, Jeff Lynne, Tom Petty and Roy Orbison wrote all the material together, worked up arrangements on the spot and made two fine, light-hearted albums that captured the personalities and eccentricities of its members. They never toured, and their vibe was casual in the extreme. Still, they produced a number of excellent songs, including the infectious radio hit "Handle With Care."

It was during the recording of Harrison's 1987 LP, *Cloud Nine*, co-produced with Lynne, that the former Beatle first got the idea. "At the end of the day, we'd be listening back, and he'd say, 'Oh, I wish we could have a group,'" Lynne says. "George could always get what he wanted." The two kidded around with names for such a dream band of "over-40s," jokingly referring to them as possibly The Tremblers, Lynne tossing in "Wilburys," a name akin to a Willoughby Street in his native Birmingham, engineer Richard Dodd recalls. The name eventually evolved into Traveling Wilburys, the two offering up their picks for "if-only" bandmembers, including Dylan, Orbison and Eric Clapton.

The idea for the band resurfaced in the fall of 1987 when Harrison, Lynne and engineer Bill Bottrell were at the Village Recorder in Los Angeles creating an extended mix for a 12-inch single of Harrison's "Got My Mind Set on You." "We were sitting around, and George said, 'Yeah, I guess we're gonna have a group or something,'" Bottrell, who had worked with Lynne since the early 1980s, recalls. "Then he handed me a Traveling Wilburys guitar pick."

A few months later, in April, another B-side was in order for Harrison, so he finagled his producer, Lynne, who was working with Orbison, away from the singer's sessions—with Orbison in tow. The three were joined by another collaborator, Petty, with whom Lynne had been recording *Full Moon Fever*. "We were getting close to being a band by the time we got out to Bob's that day," Petty recalls.

Needing a place to record that was under the radar, Harrison called Dylan to find out if the garage studio at his Malibu home was available. Lynne and Bottrell had been to Dylan's home a few months earlier. "We did a little song with Bob, just on our own—I'm in the Mood for Love," Lynne explains. But in April, Harrison arrived with his friends and the beginnings of a new song, which he used to lure Dylan into participating in the group. "George told me the way he hooked Bob into the idea was to ask if they could use Bob's studio," Dodd recalls. "Bob was saying, 'Well, I don't know



From left: George Harrison, Jeff Lynne, Tom Petty and Roy Orbison

if it works,' and George told him, 'Well, we'll get someone to make it work.'"

Dylan wondered what Harrison had in mind, and George explained, "We're just going to sit down, write a song and record it." When Dylan inquired how such a thing could be done so easily, Harrison looked around and, spotting an Ampex 2-reel tape box, noted a legend on the side of the carton—"Handle With Care." "And George just broke into this previously written song," Dodd says.

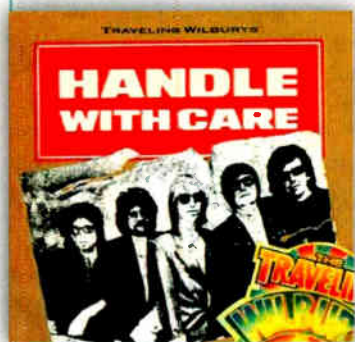
Dylan's studio was indeed hardly in "record-ready" mode. "He had a pile of equipment Dave Stewart had sold him, and it looked to me like it hadn't really ever been used," Bottrell says. "It was semi-connected, but it wasn't working very well so I had to sort of make it work." As for a "studio," he says, "There was a booth of some sort. But the garage door was still just the garage door."

The studio had a 2-inch, 24-track ACES tape machine and an ACES console. "I remember the tape machine was skewing, so we had to baby it along a little bit," Bottrell says. "I was worried it would be heavily out of alignment—there was nothing there for me to use to align it." In fact, later during overdubbing at Westlake Audio, Bottrell had to set up the machine by ear when playing back the tapes to set it in alignment with the recordings made at Dylan's.

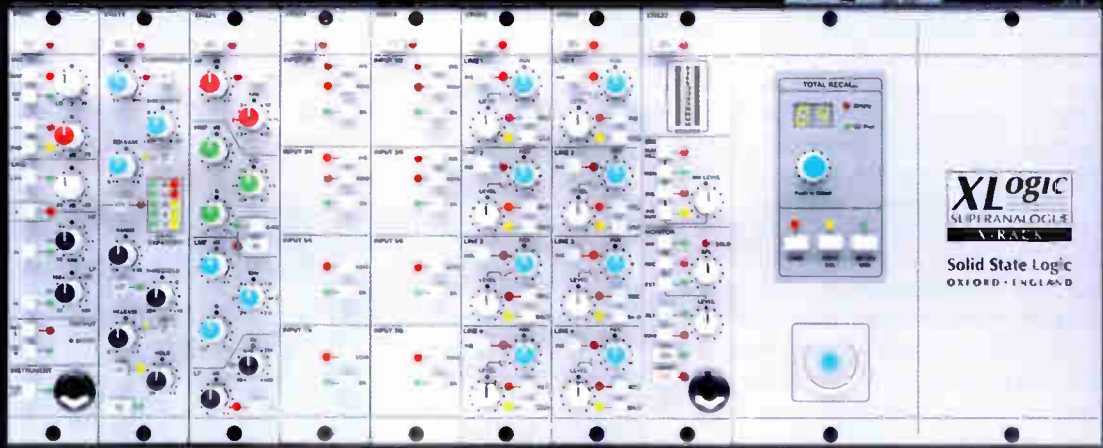
Once the bandmembers arrived, Lynne and Bottrell laid down a drum machine click track to record to. "The next thing I remember," Bottrell says, "was all the guys sitting in a circle, each with an acoustic guitar, and I scrambled to find enough mics to record them." Adds Lynne, "It was just five microphones, five strumming guitars in a semicircle—some 6s, some 12s—double-tracked. So you'd end up with 10 guitars. A really beautiful, shimmery, thick sound, like a thick skiffle."

Lynne played bass and drums on the track. "Jim Keltner, who played on the rest of the album, couldn't get there that day," explains Lynne. "[The drumming] was all done in pieces," adds Petty.

The rhythm track completed, the group took a break for dinner. "We wrote the words sitting outside around the grill in Bob's garden after he'd made us barbeque," Lynne recalls. The menu? "It was chicken," says Petty.



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George Harrison with engineer Don Smith

"They were having the best time," recalls Bottrell. "They kept coming and going into the yard, coming back with lines. It was really collaborative." Says Petty. "It was a new experience, doing all that collaboration."

The next day, the group retreated to a more professional environment, Hollywood's Westlake Audio, to complete the song. Harrison re-recorded his lead vocal and played the song's solo on a Fender Strat, while Lynne added a cowbell and the song's distinctive lead riff, played on his Fender electric 12-string. Ian Wallace even added some tom toms. "It sounded fantastic to me," says Lynne. "I was thrilled to bits with it." Adds Petty, "It was a band."

Present at the Westlake session, too, was Petty veteran engineer Don Smith, who had been asked to assist with some technical issues. Upon leaving, Smith recalls, Harrison, not wanting to wait for a bill, insisted on paying the assistants on the spot. "It's 7:00 on a Sunday morning, the sun's coming up, we're standing in the parking lot, and George goes, 'I'm not leaving until somebody gets down here so I can pay 'em!'"

The following day, Harrison presented his "B-side" to Warner Bros. Records chief Mo Ostin, who had other ideas about the track: "Mo said, 'No, you can't use it for that. You should be doing that group you've been telling me about that you want to do,'" Lynne recalls. "I think, in a way, he really wanted that band to happen," says Petty.

A month later, Don Smith, who was working in Montserrat with Keith Richards, got a call from Petty asking him to return to L.A. to continue with the next phase of recording the album. "Keith gave me three weeks off," he recalls. "I left Montserrat on a Tuesday, rested on Wednesday and was working with them on Thursday." (Bottrell, who was developing his career as a producer, opted out of the project and would go on to produce artists such as Madonna and Sheryl Crow, to name a few.)

The band again retreated to the home of a friend to record; in this case that of Dave Stewart. "Dave kind of moved through

everybody's life in one way or another," says Petty. "He was out of town, so that became the clubhouse."

The "studio" was a guest house on the property. "It was not a studio—nothing worked," Smith says. "It was a kitchen and a room with a console in it. There was a little vocal booth, but there were no acoustics. I was like, 'Why do you want to record here? Are you guys out of your minds?'" Smith had two days to build a studio. "We got phones, had people come in, and we rented carpets and stuck them on the walls. And not one patch cable on the console would work. We had to go and have all that done."

"We" included Allan "Bugs" Widel—a cohort of Petty's since his Mudcrutch days—who handled everything from instruments to recording equipment. "Whatever needed to be done on the Wilburys, he was 'the guy,'" says Smith.

Smith recorded through Stewart's small Soundcraft 1600 console onto a rented Atari MTR-90 tape machine. Mics included a small selection of Neumanns, an AKG 414 and a pair of prized Telefunken 251s rented from a friend of Smith's. "They were in brand-new condition, with consecutive serial numbers and '1963' on them. George wanted to buy them real bad," Smith notes.

The group set themselves up in the kitchen—the only place available—in a semi-circle. "I had five guitars and five microphones," Smith recalls. "We only recorded two tracks of acoustic guitars, all pre-balanced."

Writing, in the kitchen, started around 11 each morning, with recording beginning in the afternoon and usually lasting until about 8 in the evening, after which the group were often treated to Beatles tales from Harrison. Sometimes, one of the band would come up with a new song during the recording of another. "We were right in the middle of getting the sounds for 'Last Night,' and Bob starts coming up with the rhythm for 'Congratulations,'" Smith says. They went. "Did you get that on tape?" "Yeah, I got it."

Recording the group vocals, even with such established pros, was a challenge. "The first time we did a backing vocal part, I got them balanced by having them step back and forth," says Smith. "And then I went, 'Okay, everybody, don't move,' and I ran down with a piece of tape and marked all

their feet. They were all laughing at me—I'd done it before, but not with that kind of a cast of characters! They'd start on their marks, and I would go, 'Okay, George, take a step forward' for his line in a song."

Drummer Jim Keltner was brought in to overdub drums, replacing a click track from a DMX drum machine used to record once a handful of songs had been tracked. Keltner was set up in the main house, Smith miking him simply with a Neumann U69 two feet in front of the kit at about head height, "just picking up what your ears are picking up," he says. This was supplemented with an Electro-Voice RE20 on the kick and an SM57 above the snare.

Safety copies of the tapes were made—under strict supervision—after which the masters were loaded on a plane with Lynne, who joined the rest of the band (minus Dylan, who was on tour) a week later at Harrison's home studio in England for three or four weeks of overdubs and mixing.

Dodd recalls the Wilburys' sound being derived from an amalgam of ideas from the



Roy Orbison sings in a "vocal booth" blocked off by movers' blankets.

two experienced producers: Harrison and Lynne. "They're both very competitive," he says. Lynne might prefer an overdub for a track, while Harrison might be inclined not to include one. "It was like watching two thoroughbreds going at it. I mean, both of these guys are so good."

The resulting albums, *Traveling Wilburys Vol. 1* and its smartly named follow-up, *Traveling Wilburys Vol. 3* (recorded by Dodd a year later), remained favorites of all involved, including Harrison, who died in 2001. "He missed having a band," says Petty. "And he *loved* the Wilburys. He treasured it." The discs were recently reissued by Rhino, along with bonus tracks and a DVD featuring a 25-minute documentary chronicling the recording of the albums. ■

MAROON 5

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on the toms he moved between AKG 414s, Sennheiser 421s and Neumann KM84s. "I'll put a pair of Coles microphones literally by the drummer's ears, set flat," he says. "Then I may have another couple of old ribbon mics on the floor and distort the hell out of them to get a bit of grit and dirt. We also put some [Telefunken] 251s around the room to get the room sound, and then I compressed the absolute nuts out of them."

On bass, Stent relied on Madden's Ampeg and Aguilar setup, as well as a Line 6 bass amp combo. "I would DI that using my Pendulum preamp and a combination of a FET 47 and an [AKG] D-112," he says. Guitar cabinets were typically miked with a combination of 57s, Josephsons and Royers. Levine and Valentine played through a handful of different amps, including classic Vox AC30s and Divided By Thirteens.

More often than not, Levine's vocal chain started with a Blue Bottle microphone into a Neve 1081, an LA-2A and then into Pro Tools. "I tried loads of different things with him," Stent says. "I like vocals to punch out and through. We also used a [Shure]

SM7." Depending on the song, Stent would process the vocal during tracking using the Echo Boy plug-in. During the mixing process, he might run some Logic effects in the background: "Just some distortion and bit crushes to add a bit of grit to make it punch through and dirtier."

Although the album features an underlying programmed feel, Elizondo points out that almost everything was played live. "The band really wanted to make sure this album sounded contemporary and had that element that it was live with musicians playing," he says. "But we took that almost Steely Dan approach of making sure that every performance was locked in and was right on the nose."

That approach, says Carmichael, had its positives and negatives. "The top side of it is that everything is really locked down and able to stand up against all the other songs that are on the radio right now in whatever genre. For me, the downside is that a little spontaneity gets lost. It was a long process. I would say 'painstaking' is a good word to use, but also 'focused' and 'deliberate.'"

After six months or so at Conway, the band took a break, feeling they should live with the tracks for a while to gain some

perspective. "Then we regrouped at Glenwood Place Studios in Burbank [Calif.]," Elizondo says. "We rethought a couple of songs and we went back and recut about three songs."

After the band and label took their opportunity to re-examine the recordings, producers Eric Valentine and Mark Endert were asked to lend a hand. Valentine worked on "Little of Your Time" and "Can't Stop," while Endert contributed his producing talents to "Makes Me Wonder" and "Back At Your Door."

Elizondo says he understood the move. "I think if there's one thing that Spike and I can take credit for, it's for helping the band set up the vibe of what this record was going to be," he says. "I think what Eric and Mark did was fantastic. After working with Spike and me for that long, it was good for the band to get that outside perspective and reassurance."

Carmichael admits that by this time, the band had entered a delirious state. "We lost track of time, in a good way. We thought about it for so long, so hard, that finally we gave up and were really kind of loopy the last two months of recording, but it yielded some of our favorite stuff," he says.

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Valentine, who had worked with the band before when he mixed a handful of live covers for a specialty release, picked up on the vibe of the situation quickly. "As can happen on a lot of album projects, you'll get to a certain point where there are some people that feel that it's done and there are some people that don't," he says with a laugh. "They found themselves in one of those spots."

With Valentine in the producer's chair, the crew started on "Can't Stop," a song that had been worked on extensively already. The differences on the version that ended up on the release, Valentine explains, "were mostly sonic, with small embellishments here and there. There were no major composition or arrangement changes. A lot of it was subtle aesthetics. We wanted it to feel more like a high-octane rock band."

The band's time with Valentine—on and off for about a month at his studio, Barefoot Recording in Hollywood—was a relatively straight-ahead affair. When Endert came into the picture, though, his involvement went from remixing "Wake Up Call" to producing "Makes Me Wonder" and "Back At Your Door," and re-cutting drums for a song or two and changing the arrangement on "If I Never See Your Face Again."

The biggest challenge that Endert and the band faced was finding the song in "Makes Me Wonder." The music for that track had been around for four years, but they couldn't figure out a chorus that worked with the rest of it. "The initial demo that Adam made was minus the 'Gimme something to believe in' part, and we knew that something felt incomplete and so we would spend time trying to force writing a part, which never really yields anything good," Carmichael says.

During one of the breaks in the recording process, the band headed out to Las Vegas to work in the Studio at The Palms. While working on another song, the band came up with a part they thought might work in "Wonder" if they changed the chords. "We were skeptical," Carmichael admits, "but Mark [Endert] was a big help in tying it all together. That was the last session that we did—recording that song with Mark."

Endert brought all the tracks into Logic to work on the arrangement and then had the band re-cut their parts. The song moved from a more rock 'n' roll feel to a '70s funk vibe. "Something that sounds vintage, but modern at the same time," he says. "Maroon's writing style lends to that—they have a very recognizable writing style that sounds classic even though they are a new band." ■

THE L.A. GUITAR QUARTET

FROM PAGE 121

as a production supervisor and editor on other LAGQ releases, but not as the primary producer, a role previously occupied by Robert Woods.

"In some ways, this was a producer's dream to record," Brenner comments, "because so often you go into a studio with an artist or a group that's just come up with

Brazilian and the guys who are the specialists in it have done it their entire lives—it's in their blood. So right from the beginning, the idea was, 'Let's ask our friends who are experts in this to help us.' 'What can we do to learn from you guys?' There's a breezy element, especially to the melodic stuff, but the rhythmic precision of the accompaniment and the groove is absolutely unrelenting, so it takes a certain kind of attack—a right-hand percussiveness that's



PHOTO: GUS SIKINAS

The L.A. Guitar Quartet at Skywalker Sound, May 2007. From left: Matthew Greif, John Dearman, engineer Robert Friedrich (standing), Scott Tennant and William Kanengiser

their concept and they're practicing the tunes right up to the session and then they tour the album right after. We had the benefit of them touring this for months with Luciana, so they had this feel about the music and they were very well-prepared when we went in to record."

On my afternoon at Skywalker, the group runs through a nearly perfect rehearsal of "Mas Que Nada" as a quartet, then Katisse Buckingham and his alto flute arrive and the recording begins in earnest. They do a couple of takes—both of which sound perfect to my admittedly untrained ears—each ending with a fantastic improvised flute flight. Later, Kevin Ricard arrives and lays down a pair of percussion tracks, adding some pepper to the already rhythmic piece.

When Kanengiser and I talk again in late summer, I marvel that the group manages to capture the casual swing of Brazilian samba while maintaining their incredible precision as a quartet. "We were a little nervous about that from a playing standpoint," he says, "because we're not

a little more edgy than the traditional classical guitar feel. With classical guitar, refinement of tone is so important, but at times we deliberately tried *not* to get it on this project. You want it to slap a little bit and you want your short notes to be exaggeratedly short to get that funky groove. I've listened to the Assad Brothers play for 20 years and I have a pretty good idea of how they sound, and that's what we were really trying to imitate at times."

Using percussion overdubs was a first for the LAGQ; traditionally, they have tracked everything completely live (though edited from multiple takes of portions later). "He would record live [with the group] and then go back and record extra passes," Friedrich says. "We had to build a lot of the percussion tracks in post."

"I guess you'd say we took a slightly more pop approach; more crossover in nature," Brenner adds. "It's a slightly tighter sound and there was a more multichannel approach."

Asked about the project's pop crossover nature, Kanengiser offers, "It's arguable that



PHOTO: MICHAEL NORWOOD

Singer Luciana Souza had a blanket draped over her shoulder to separate her voice from the hand percussion she was playing.

some of the repertoire is definitely more in the pop sensibility than some of the classical material we've recorded. But it runs the gamut—that Villa-Lobos piece we did is completely classical chamber music by any definition. But my arrangement of 'Mas Que Nada' is definitely pop; it's a pop tune and we do it in a pop way, even though I try to throw in a couple of inside jokes that make it a little more toward the chamber music side. But that's how our albums seem to go; hopefully, we're not exactly 100-percent one thing or the other."

After three days of tracking at Skywalker, the long post-production process began, starting with Kanengiser going through all the performances and making his editing decisions. "There was something very liberating about it for me, because in the old way of doing it we'd go to the studio and record, and then months later we'd get an edited version and then we'd be asked what needs to be fixed, and we would say, 'In measure 6 there's a wrong note, and in measure 10 we're not together, and in measure 12 we're out of tune.' And they would search around and try to fix it and then they'd send it back, and say, 'Is this better now?' It's a whole different thing to hear all of the raw tracks and have the opportunity to go compare all 20 takes of measures 1 through 7, and say, 'This take has got the absolute best groove; it's got every single thing happening that we want to have happen.'"

Producer Brenner had her own opin-

ions about performance anomalies, too, and then did the hands-on editing on a Sonoma at Telarc's Ohio headquarters. "It's fast, it's clean and you can do some amazing edits that sound seamless," she says. "I wish more people understood the power of DSD."

This release also has a multichannel version that Friedrich prepared for during tracking. "This surround is the way I've always wanted to approach surround with them but I've never had the right microphones or opportunity to do it," he says. "I put them in the four corners, which is a

really fun approach that lets you hear each player really well."

What's next for the prolific group? "The general consensus seems to be that maybe we've gone a little too long without making a classical album," says Kanengiser. "If you just look at what we record, you might think we almost never play classical music, but if you come to our concerts, the first half is usually completely classical. It's just market-driven that our last two record companies want to highlight the crossover stuff. It's not 100-percent sure, but we might do a Bach record next—get back to our roots a bit." ■

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L.A. GRAPEVINE

by Bud Scoppa

Last fall, Pepperdine University, whose main campus covers a Malibu hillside overlooking the Pacific, unveiled its music lab, featuring 17 specially designed workstations, each outfitted with an Mbox, a Yamaha keyboard and a suite of the latest software.

The project had its genesis when Pepperdine received a five-figure donation targeted for the creation of a music lab to be housed in the fine arts department. When GC Pro director of sales Rick Plushner got the call from a university official, he en-

systems and all the technical networking to hook everybody up—using a 1-terabyte RAID server. The concept was, you record something to a local drive, and the minute you leave the lab that file gets saved onto the RAID server, and then, when you come back again, you make a reservation at, say, Station 3 and all the files get dropped in that station. So nothing ever lives in the local hard drives, and they stay clean and operating at optimum speed."

The other challenge was coming up with functional furniture. "It was a small room, and we had to do some serious furniture design to make everything work," Hsu explains. "The Yamaha keyboards take up a lot of space, and then you've got a computer keyboard, as well. We found some inexpensive but strong desks that were modifiable to put a computer keyboard tray underneath. Then we bought these special stools that are similar to piano stools but more hip and modern, and on casters so you can roll around."

In a sense, the Pepperdine project was also a learning experience for Hsu. "It was atypical for us," he says, "in the sense that we didn't do any acoustics to the room at all. It involved the design of a furniture system integrated with a very compact and powerful, but cost-effective audio system, as well as training, technical support and working with a university, which is never simple. But what's cool about the lab is that, with all this stuff and a pair of headphones, these kids can compose scores and crank out albums."

Now let's move on to a work in progress. The undergraduate programs offered at the Art Institute of California, Los Angeles' Santa Monica campus (another of the AI's 34 locations is in the mid-Wilshire area) reflect L.A.'s status as a media and entertainment center. For years, the school has offered majors in video production, media arts and animation, game art and design, graphic design, interactive media design and interior design. But until this year, AILA lacked an

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NASHVILLE SKYLINE

by Rick Clark

One of the most fertile scenes in the South for interesting new pop and rock music is Murfreesboro, Tenn. Only half an hour south of Nashville, it is a small, vibrant music community, where I'm always struck by the amount of humor and playfulness bands exude in their music and performances. Most of the musicians in Murfreesboro record either in Brian Carter's wonderful analog Paradox Productions or in the excellent recording program and studios in Middle Tennessee State University, where student engineers have ample opportunity to learn their craft. Recently, three alums of MTSU's audio program decided to try their luck on Music Row.

Lake Fever Productions was created by John Baldwin, Jason Bullock and Joe Baine Colvert, who say they felt there needed to be a place in Nashville that "got" the music and the scene of the Murfreesboro bands. Located between Ocean Way and House of David studios, in a space that was once a studio for Island Bound Publishing, Lake Fever is a place where buzz bands like How I Became the Bomb and The Features, as well as established artists like Silver Jews and Tomahawk, are now working.

Shortly after graduating from MTSU's Recording program, Bullock opened a personal studio. Colvert was playing in several bands (Girls and Boys, Sneaky Eaters, The Comfies and Elaine) but was keen on learning more about engineering. Baldwin was working at Georgetown Masters as a mastering engineer.

"When we were in Murfreesboro, we were always working on various projects and ideas, all in the same orbit," Baldwin says. "But how we got together was almost a cosmic decision in that we each sought each other out to team up," says Baldwin.

Bullock adds, "It was like all three of us independently had the same idea in just a week span and sought each other out."

"For each of us, it was frustrating watching our friends who were creating music have unsatisfying experiences with other studios and labels," says Baldwin. "We knew there must be some way we could help. All of our music friends from



In the new music lab at Pepperdine University (L-R): technician Christine Huynh, Fine Arts department chair Cathy Thomas and facility designer Hanson Hsu of Delta H Design

listed the help of account manager Gadget Hopkins, whose specialty integrating gear into studio and live sound environments. Plushner contacted Hanson Hsu of Delta H Design (profiled in the November 2006 "Grapevine") to tap into that firm's extensive studio design experience.

"Gadget pretty much had the layout when we got involved," Hsu recalls. "It was going to be 17 workstations for 16 students and a teacher. Each one would have an iMac; a full-sized, weighted, MIDI-capable Yamaha keyboard; and an Mbox. He and I picked out the software together—Pro Tools LE, Digital Performer, Finale and a Yamaha LC learning system. The weird thing is that there are no speakers—it's strictly headphones. We then designed the whole thing—including furniture, IT, sound

NEW YORK METRO

by David Weiss

Murfreesboro had moved to Nashville.

"We took about two months to find the perfect location," Baldwin continues. "We'd been looking at warehouses and industrial spaces, and were so pleased when we found a space that had once been a studio. It had everything we needed to get started, and we found it on Music Row."

They started out with the gear they had between them and built out the space a little more to suit their vision. Then they began investing judiciously in more equipment, including a Trident console.

"Over the last few years, we've had some help, but for the most part the studio has paid for itself," Baldwin notes. "We've now got over \$100,000 of gear and feel like we're finally a 'real' studio. With the console and 32 channels of Lynx converters, it's really easy to configure any sort of setup. Our patchbay is point-to-point military parts I bought from NASA. The Trident is easy to modify and sounds great, and has improved our workflow. We've already added a custom monitor section to the console and are working on a custom discrete center section."

At a time when more and more people are working solely in the box, the guys at Lake Fever prefer to use classic, time-proven gear. "This Trident console allows me to get to a point in reaching a satisfactory mix so

—CONTINUED ON PAGE 132

Mention "cutting edge" and "recording" in the same breath, and big band music doesn't automatically come to mind. However, the market for very lively styles like jazz and big band remains healthy, which is precisely why the sizable live rooms of New York City continue to push the technical envelope for these classic styles.

One recent project that attests to the vitality of jazz recording in New York is the new album from big band leader Gary Morgan's 20-piece Latin jazz orchestra Pan Americana! called *Felicidade*. For noted New York City-based producer/engineer George Petit, the intensive project was an opportunity to apply his considerable experience to nontraditional record/mix procedures.

Petit selected Studio A at Legacy Recording Studios. "People generally associate traditional big band recordings with a very live, plate-y, splashy sound," explains Petit. "All of the horns are stacked, as opposed to recording with a lot more attention to placements of individual instruments throughout the panorama of the speaker. Because of Gary's writing style, we were trying to approach it so you could hear the counterpoint and intricacies happening between each section."

Pan Americana's style reflects Morgan's diverse influences, with high-energy songwriting and a heavy dose of Brazilian music. The band included irregularities like two French horns, forcing Petit to approach the sessions—which would see the recording of 70 minutes of music at 88.2 kHz in just a day and a half—with an open mind. "Studio A at Legacy has been one of the best jazz rooms in New York City for 25 years," Petit says. "It's a big, warm room and it has a magnificent sound for acoustic music and rock. It's also got a not-very-bright Yamaha 9-foot piano and four nice-sounding iso booths looking out into the live space. Plus, there's the SSL 9000 J console and 24 channels of Neve 1081



George Petit (left) and Yvan Bing in Legacy's A room

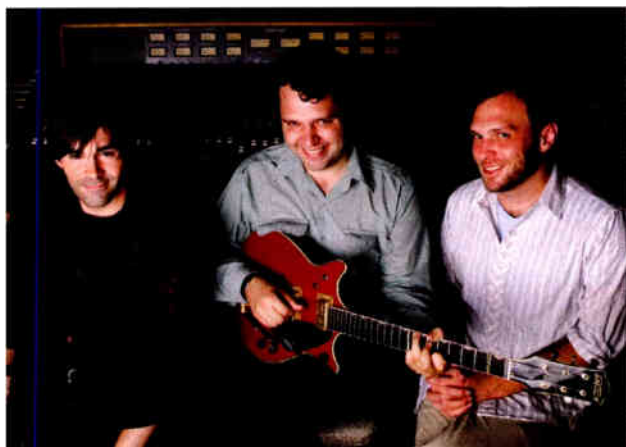
preamps and EQs, so you can track with Neve and mix with the SSL if you choose."

Petit was aided by the expertise of engineer Yvan Bing in drawing up and executing an involved setup for Studio A. In the main room, an assortment of 28 microphones—including Neumann FET 47s and U67s, Cole and Royer ribbon mics, and Schoeps models—handled close-miking situations for saxophones, French horns, trumpets and flutes. A pair of DPA 4006 omni mics captured the overall room, while RCA 77 microphones served as overheads for each section. Bass went direct, as well as being miked through an Ampeg B15 amp.

Isolation was achieved by using the iso rooms to the hilt: Piano, drums and each of the percussionists received their own sealed space. In the main room, gobos were placed between the reeds and the trumpets; trombones and French horns were similarly separated. "It was like a big 'u,' with short gobos and large standing separators," Petit says.

Once in place, the setup played to the hybrid live/tight sound that Morgan and Petit were seeking. "The RCA 77s were selected because we wanted a ribbon-y, warm sound for each section," recalls Petit. "We were looking for a room sound that would be traditional, but with a close-mike sound that's more modern. With this method, when we mixed we could choose between close and room depending on Gary's drums. We ended up capturing 47 tracks simultaneously into Pro Tools. Not all of the

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Left to right: Jason Bullock, John Baldwin and Joe Baine Colvert of Lake Fever Productions

BIG IN TEXAS MAXIMEDIA STUDIOS COMES OF AGE

By Barbara Schultz

Ron Rutledge had been talking about getting out of L.A. almost as long as he'd been managing A&M/Henson Recording Studios. Even with that plum job, after 12 years at Henson (following seven years managing Precision Mastering), Rutledge and his family were tired of high stress, bad traffic and troubled public schools. So when his wife got a great job offer in '06, the Rutledges packed up and moved to Dallas. Rutledge didn't have a job lined up, but it didn't take the high-end studio veteran long to find one.

Rutledge landed at Maximedia Studios, a multiroom complex that opened in 1999 and added a Russ Berger-designed SSL room in 2002. "The idea was for me to come in here and see what I could do for the studio, and take it to the next level," Rutledge explains. "This building used to be a TV studio, so it's quite large. We recently turned a 5,000-square-foot space into a venue where we have concerts, band rehearsals, live DVD video shoots, parties and showcases. Maximedia Design Group is the newest addition to our facility. The Design Group offers services ranging from CD art to MySpace design, making us a true 'one-stop shop.' We don't do CD duplicating here, but we can coordinate that. Our complex and business are both built so that anything a band or artist needs, they can do here."

Currently, Maximedia's three recording studios comprise the Berger-designed SSL Suite (4072 G+); the API Suite, which is centered around a custom 48-channel console, classic API outboard gear, a Studer A827 and Pro Tools HD; and the Neve Suite with its 8108 board; the Neve is soon to be replaced with an SSL Duality.

"That room has a large window that looks into our Soundstage—the venue I talked about—and we need to be able to use it for live DVD shoots. The idea is that for any band that plays here, we can do on-the-fly 2-track recording of their



Ron Rutledge brought his experience and ideas to Maximedia Studios last year.

shows, or do a full multitrack recording and mixing, 5.1 DVD shoot. I love Neve consoles, but this Neve isn't the right tool to do this. We need something more versatile and flexible."

Rutledge's idea is that the venue will feed the studio, and vice-versa. "Young bands and fans come in and they see that this venue is a lot bigger and nicer than most local clubs," he says. "We have a 700-square-foot stage, a custom-built P.A., and they find out we're a studio and we get calls from them to come back and record."

Maximedia mainly serves local hip hop and rock acts, but thanks to Rutledge, the studio's brochure now also boasts some very big names. "About a month ago, the girls Aly & AJ were performing here in Dallas, and Randy Jackson wanted them to sing one of the tracks on an album he was producing. He knew I was here, so he flew in for the day and they came in to record. Not everyone is coming to Dallas to make records, but they do come through town, and they might want some rehearsal time or recording time after a party or after a show. Just last weekend, the band Saliva happened to be in town and wanted to record, so they flew their producer, Bob Marlette, in from L.A. to come in and record a track."

Other high-profile artists on Maximedia's client list include R. Kelly, Mary J. Blige, Michael Bolton, Insane Clown Posse and others.

"I'm proud of how far we've come in the past year: ramping up the business, having people know about us, getting the live venue up and running," Rutledge says. He's also pleased in general with the move from L.A. to Dallas: "I love it here. My family loves it. My daughters love their school. My wife loves her job. People say, 'Oh, it must be culture shock. It's so different.' But mostly it's different in a good way, because things are a little more laid back and people are more easygoing. It's a smaller music market, but that also means less stress." ■



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Meridian West onstage in The Max



BEHIND THE GLASS

USHER IN TORONTO TIMBALAND AT CHERRY BEACH



Ezekiel Lewis (left) and Balewa Muhammad of The Clutch wrote songs for Usher's (center) next album.

Artist/producer Timbaland brought a creative team to Cherry Beach Studios (Toronto, Ontario) to work on tracks for Usher's next album. Engineers Jimmy Douglass and Miles Walker, and songwriters The Clutch took over all of the studio's rooms, sometimes working simultaneously to get the job done. Cherry Beach has been serving Toronto's music recording community for more than 25 years.

WILLIE AND DEANA WORK AT STUDIO UNICORN



Co-producer Buddy Cannon (left) with Willie Nelson and Melonie Cannon

The Academy of Country Music's 2006 Producer of the Year, Buddy Cannon, visited Studio Unicorn (Redding, Conn.) to do overdubs for two new album projects. Deana Carter's latest features a version of "On the Road Again," including vocals by Willie Nelson. Nelson also sang "Back to Earth Again" on Cannon's daughter Melonie's upcoming release. Paul Avergerinos engineered the sessions.

SOUTHEAST

At Better Than Ezra's Fudge Recording Studios (New Orleans), Jack Miele and Ezra bassist Tom Drummond engineered the sophomore release from Sons of William. The producer was Kenny Corbett...Almost Blue began recording a second album at G&G Studios (Atlanta) with engineer Noel Goff...Tokyo Joe recorded basic tracks in Tree Sound (Atlanta) with producer Don Maracle, engineer Wyatt Oates and assistant Ryan Hobbs...Engineer Trevor Reddick worked on projects for Triumphant Quartet (produced by Jeff Stice), Matt Coleman and The Husongs (produced by Shane Roark) in Audio Matters (Kodak, TN).

NORTHEAST

Bob Clearmountain mixed live Rolling Stones tracks for iTunes in Avatar's (NYC) Studio G with assistant Brian Montgomery. Neil Young recorded with the Young People's Chorus in Studio A with engineer/co-producer Niko Bolas and assistant Colin Suzuki; Madeleine Peyroux recorded a Billie Holiday tribute in Studio B with producer Larry Klein, engineer Montgomery and assistant David Tolomei; and Gonzalo Rubalcaba mixed an upcoming album in Studio B with engineer Jim Anderson, producer Ken Blaydow and assistant Montgomery...Tracks recently mixed at Chung King Studios (NYC) include "Hourglass" by David Gahan, mixed by Tony Hoffer with assistant Andy Marcinkowski; and "Graduation" by Kanye West, mixed by Andrew Dawson and Mike Dean with assistance from Marcinkowski...At Electric Lady Studios (NYC), the Mars Volta mixed a self-produced album with engineer Rich Costey; and producer/engineer Ray Bardani mixed the re-issue of Elvis Presley's live *Viva Las Vegas* album... At Tapeworks Studio (Hartford, CT), producer John Colby and engineer John Holbrook and the studio's chief engineer, Bill Ahearn, mixed a new version of ESPN's *Monday Night Football* anthem "Are You Ready for Some Football."

MIDWEST

At The Terrarium (Minneapolis), Very Emergency recorded with producer/engineer Chris Kimsey and second engineer Dustin Miller. The album is the first to be made there on the Neve VR console that owner Jason Orris acquired from Grateful Dead Productions...Chester French recorded their first release for the new Star Trak record label at Burst Labs (Milwaukee, WI). Daniel Holter engineered, assisted by Belinda Dom...Madrhymes is tracking and mixing an upcoming album with engineer/producer Brad McGrath at Brick City Sound (Chicago).

PHOTO: DAVID GUCKIN



In Ocean Way Studio B: Herbie Hancock (seated) with (standing L-R) producer/arranger Larry Klein, bassist Dave Holland, drummer Vinnie Colaiuta, assistant engineer Wesley Seidman and engineer Helik Hadar

HANCOCK'S "RIVER" SESSIONS ALBUM HIGHLIGHTS MITCHELL'S JAZZY SIDE

Herbie Hancock brought an all-star group to Ocean Way Recording (Hollywood) to work on his album *River: The Joni Letters*. Working with longtime Mitchell producer Larry Klein, Hancock's homage to Joni Mitchell includes performances by Wayne Shorter, Dave Holland and Vinnie Colaiuta. Guest vocalists on the album include Mitchell, Tina Turner, Norah Jones, Corinne Bailey Rae, Luciana Souza and Leonard Cohen.

NORTHWEST

Radio Angel recorded material for their debut album at Studio 880 (Oakland, CA) with engineer Brad Kobylczak...At Mile High Music (Denver), producer Nathan Marshall and engineer Scott Griess recorded two songs with Barry Ebert...Also in Denver, Rudy's Studio hosted Majestic, who worked with producer Mark S. Berry and engineer/studio owner Mark Obermeyer...In Prairie Sun's (Cotati, CA) Studio B, the Dresden Dolls' Amanda Palmer tracked with producer Tim Smolens and engineer Justin Phelps.

SOUTHERN CALIFORNIA

Lucinda Williams' contribution to the recent Fats Domino tribute album was recorded at The Village (L.A.) with engineer Erik Liljestrang and assistant Vanessa Parr. Also at The Village: Alanis Morissette with producer Guy Sigsworth, engineers Sean McGhee and Andy Page, and assistants Jared Nugent and Chris Owens...Post-punk quartet Junius spent more than a month at Henson Recording (Hollywood), tracking and mixing their next album with production team Tom Syrowski and Kevin Mills... Alternate Sound of Life tracked and mixed a new album at Veneto West (Culver City) with producer/engineer Ronan Chris Murphy and assistant Aaron Holmlund. ■

Send "Track Sheet" news to bschultz@mixonline.com.

audio production program.

After launching in April, the department has been in fast-forward mode under the aegis of 27-year-old whiz kid Ryan Gahagan, a Maine-bred musician with post-production experience who's been at the school for five years. Gahagan, who pushed to get the program launched, has taken on the tasks of coordinating the curriculum, hardware/software acquisition, overseeing the five-person faculty—"and just making sure that it's a well-oiled machine," he says, sounding totally on top of things.

Starting with 10 students in April, the pro-

gram now has 60 enrolled as the third quarter begins this month; its rapid growth is a reflection of the long-standing need for professional training in the West Coast recording capital. Those 60 students will have to wait until January to start logging time on the fledgling department's prized acquisition, a gleaming new SSL C224 digital console.

"We chose the C224 for its versatility," Gahagan explains. "There are gonna be so many projects going on at once—student projects, shows, movies and animation projects—so the instant recall of sessions is gonna be great."

The C224 will be installed in the control

room of a dedicated recording studio—designed by nonzero/architecture's Peter Grueneisen—which is under construction in one of the two buildings on the compact campus.

"I've been charged with getting the studio built and everything put together," says Gahagan, "and I knew I wouldn't get it done without bringing in the best people possible. So it came down to getting nonzero/architecture, Paul Cox and Phil Wagner from SSL involved to help make it a great room."

For the fall quarter, the undergrads will continue to share the 175 Macs spread over the school's seven labs with students enrolled in the above-mentioned programs. "For now, we're doing everything in the box, using the Mbox 2 environment," Gahagan explains.

In the labs, the students will learn how to drive the software and understand the principals behind it, with an emphasis on Pro Tools HD and LE, but also including Logic, Reason, Peak and Digital Performer. They'll also be trained on the video department's ADR/Foley studio, running a Digidesign 003. There's already plenty of interaction between the video and audio departments, and Gahagan anticipates increased back-and-forth when the new audio space, which has been dubbed Studio C, is up and running. Gahagan is counting the days. ■

Send L.A. news to bs7777@aol.com.

NASHVILLE SKYLINE FROM PAGE 129

much quicker where I can walk away happy," says Bullock. "We cut the theme song for the ABC show *Carpoolers* with The Features a couple of months ago. They came into the studio late in the afternoon. We tracked the song and mixed it right there, and it was done. I could not have done that in the box as easily."

In addition to the console, Bullock is also proud of the studio's "ever-expanding API rack," a Pendulum compressor and Korby mics: "We've been using Korby microphones on nearly every session," Bullock says. "The Korby FET is a better U87. We use it on drum overheads, acoustic guitar, piano and vocals. Korby's flagship microphone, the KAT System with interchangeable capsules, is the greatest tube microphone ever made. Besides being unbeatable for vocals, we use it on kick drums and bass cabinets, and drum rooms. We're also crazy about the Great River MAQ-2NV EQ. It's just a great-sounding equalizer that's designed intuitively, and that improves anything you throw it at, which is a tall order for an EQ."

Gear aside, the three owners know that creating a comfortable and unpretentious

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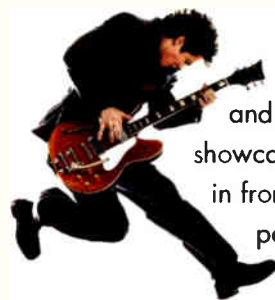
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World Radio History

setting in the studio is essential for real creativity to take place. "As cliché as it sounds, the vibe is really important to us," says Bull-ock. "Sometimes we treat the space like our own personal dorm room. Making a record should be fun."

"We're completely focused on helping our clients walk out with the record they wanted to make when they walked in," Baldwin says, "whether it's just tackling the technical end of ideas that are already fleshed out or full-on production where we take a germ of an idea and turn it into a wall of sound. I feel very strongly as if there's still something to prove in pop and rock music, and I'm confident we can help get it there." ■

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NEW YORK METRO FROM PAGE 129

tracks were used, but we had to have them so we could make decisions later."

In addition to the technical elements, Petit was prepared for the challenges inherent in keeping a big band on its toes. "You have to keep up with the energy of the group because you don't want to have a lot of people hanging around for long," he says. "Once

you get 20 people in a room ready to roll, you have to be ready to roll, too. If you're just doing a quartet, there are lots of issues to address, so all the possible complexities of a 20-piece band just go up exponentially."

With tracking complete, the team moved to the Cutting Room (also in New York City) to mix on an SSL 9000 J. "The mix would eventually work out the way we wanted it, but it was still the most challenging mix that I've ever done," says Petit. "We went for a sound that would be very representative of this 20-piece band live in that studio, instead of having to enhance the ambience with digital reverb. What we got was something that was very exciting—I don't want to say aggressive, but a punchy, live sound."

This was one case where having a highly trained musician like Petit in the engineer's seat was essential. "A lot of time was given to following the arrangement, keeping track of Gary's music on paper to 'follow the ball,'" Petit states.

The need for effects and outboard gear was minimal on the *Felicidade* mix. Instead, Petit focused on every aspect of level and positioning within the stereo soundfield. "Basically, what we were doing was balancing our sections by balancing close mics with the ambiences of the individual overheads or room

mics, trying to really make each section distinct from the next," he says. "In most cases, we decided that the center of the mix would be occupied by the drum kit, acoustic bass and piano. With such a punchy rhythm section, Gary wanted that anchor in the middle of the speakers.

"We knew we would have overlapping sections because there's just not enough room in the speakers to place 20 people. What we did was paint or create in the mix the actual visual of what was going on in the room, so listening from the conductor's perspective we ended up having the reeds mostly on the left, French horns on the right, and trumpets and trombones verging on the center of the mix. When flutes were present, we tried to paint across the panorama. There were a few EQ details, but most of the issues were in balancing and panning, and that's where most of the time was spent."

"Gary was depending on his engineering staff to take what was in his head and translate it to a recording," Petit concludes. "It takes a lot of time, energy and emotion for musicians to put down personal statements—for them not to worry about whether or not it's working is a lovely thing." ■

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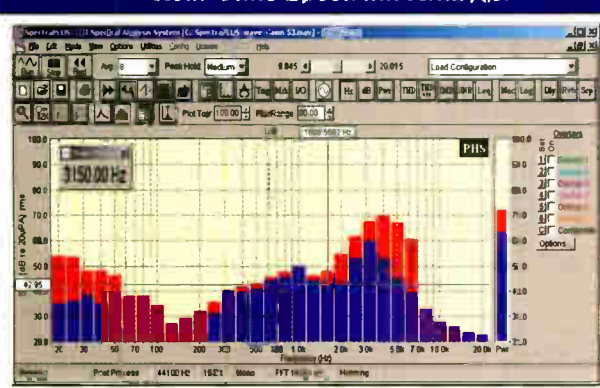
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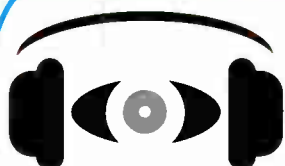


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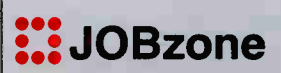
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manipulate data and execute instructions in large chunks to deliver advanced computational power to iMac. That adds up to exceptional speed and agility, improved performance you'll notice when working with large multi-track Digital Performer sessions running all of your favorite plug-ins and virtual instruments. Augmenting the advanced Core 2 processors is an equally advanced system architecture, which includes an 800MHz system bus and 4MB of shared L2 cache. With such substantial L2 cache, data instructions can be kept close to the two processor cores, greatly increasing performance and allowing the entire system to work more efficiently. Your MOTU desktop studio is now more stylish, powerful and affordable than ever.

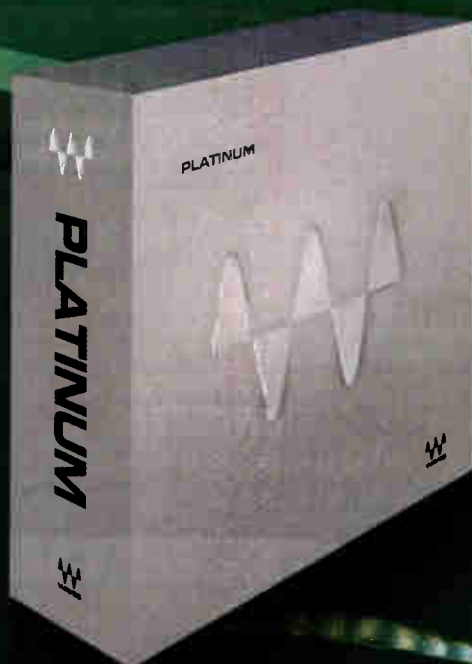


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Waves native processing

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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Acclaimed instruments from EastWest/Quantum Leap

An essential addition to your MOTU studio are the six new PLAY-powered Virtual Instruments just released by critically acclaimed sound developer **EASTWEST/QUANTUM LEAP**.

All of these Virtual Instruments include the EASTWEST PLAY advanced sample engine, with 64/32-bit support, easy to use browser, user controllable articulation window that allows users to build custom key-switches, built-in scripts, legato sensing, high quality convolution reverb (including 29 impulses), unique effects such as ADT (Automatic Double Tracking), and a high quality resampling engine.

There are too many other features unique to each product to cover here, so we urge you to go online and check out the video tutorials and audio demos.

- **SD2**
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- **FAB FOUR**
Virtual Instrument containing 47 instruments inspired by the sounds of the Beatles
- **VOICES OF PASSION**
Female voice based instrument - Ethereal, Passionate, Mysterious vocals
- **MINISTRY OF ROCK**
The ultimate production toolbox for rock producers recorded in famous EASTWEST Studio 2
- **GYPSY**
Extremely detailed Gypsy style instruments essential for film, tv and game composers
- **QUANTUM LEAP PIANOS**
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Komplete control

For DP5 users who want it all: **Komplete 5** is a first-class collection of 11 groundbreaking instruments, including the all-new KONTAKT 3 and GUITAR RIG 3 Software Edition. You also get the award-winning MASSIVE, ABSYNTH 4, BATTERY 3, FM8, REAKTOR 5, B4II, AKOUSTIK PIANO, ELEKTRIK PIANO, and PRO-53. Add KORE 2 — the Super Instrument — and you have perfect synergy with KOMplete 5: Use the Sound Browser in KORE 2 to access any of the 7,500 presets from KOMplete 5 within seconds. Open the sound and instantly tweak it analog-style using the KORE 2 hardware controller. Access and tweak your software instruments like never before. KORE 2 and KOMplete 5 — an infinite universe of sound at your fingertips.



Vintage EQ/Compression

The **Focusrite Liquid Mix** is another Focusrite first and a true one-of-a-kind. Based on the award-winning Liquid Technology, the Liquid Mix provides 32 channels of simultaneous DSP powered vintage and modern EQ and Compression plug-ins into your DP5 mix without affecting your host computer's CPU. 40 classic compressors and 20 timeless EQs are included. Each EQ and Compressor emulation is painstakingly created through a process called Dynamic Convolution which is a huge step beyond modeling. Through Dynamic Convolution, every frequency at every possible combination of settings is perfectly sampled. That means that you get the true sound and feel of a vintage or modern classic. Tens of thousands of dollars of gear is now right at your fingertips! Think how great your Digital Performer tracks will sound with the Liquid Mix.



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Complete control

The **M-Audio Axiom 25** represents an entire line of advanced Axiom MIDI controllers that are perfect for Digital Performer and your MOTU virtual instruments. Built around a rugged chassis, the Axiom 25 includes 25 semi-weighted velocity-sensitive keys with assignable aftertouch, eight MIDI trigger pads, six reassignable transport buttons and 20 non-volatile memory locations. Eight endless rotary encoder knobs let you get your hands on MachFive 2 parameters, Digital Performer's Mixing Board and more. Virtually everything is freely MIDI-assignable, and the backlit LCD screen makes programming easy and intuitive. If you need more keys and controller options, the 49-key Axiom 49 and the 51-key Axiom 61 complete the line.



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Professional pad controller

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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New Mackie monitoring

The high-resolution **Mackie HR824mk2** active studio reference monitor sounds as smooth as it looks. The new Zero Edge Baffle™ minimizes diffraction for a crystal clear image of your Digital Performer mix, and controls sound waves for wide, even dispersion. The rear-firing, mass-loaded passive radiator ensures tight, detailed bass extension, down to 35Hz. And thanks to remarkably linear frequency response, you always get accurate mix translation. Acoustic Space, LF roll-off and HF controls let you tailor the sound to suit your MOTU studio space—and your taste. With all this and more, the HR824mk2 turns your Digital Performer desktop studio's sweet spot into a full-on sweet zone.

New hands-on control for DP5

The new **Mackie Control Universal Pro** control surface gives you ultimate hands-on control of your Digital Performer desktop studio. Nine motorized, touch-sensitive Penny + Giles faders, eight V-Pots and more than 50 master buttons let you tweak parameters to your heart's content. Unlike generic MIDI controllers, the MCU Pro employs a sophisticated communication protocol that delivers ultra-precise control, makes setup easy - no mapping required - and enables you to see your mix in action with real-time visual feedback via the huge backlit LCD and eight LED rings. Apply the custom overlay for Digital Performer for dedicated labeling of DP-specific functions. The MCU Pro is the ultimate way to mix in DP5!

Purified power

To get the most out of your MOTU studio gear, you need the cleanest power possible. The negative effects of poorly supplied wall outlet AC power on your gear can be dramatic, without your ever knowing how good your gear can really sound with properly supplied power. **Furman Sound** introduces the all-new **Power Factor Pro** with its groundbreaking Clear Tone Technology™, which actually lowers the AC line impedance supplied by your wall outlet while storing energy for peak current demands — over 45 amps of instantaneous current reserve. Additionally, Linear Filtering Technology™ (LiFT) dramatically lowers AC line noise to unprecedented levels in the critical audio

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Propellerhead Reason

Spinning Off a Few Cool Tricks for Version 3 and 4 Users

Ever since Propellerhead first showed Reason, its sequencer and virtual rack filled with cool-looking DSP models of mixers, synths and effects—and then dropped jaws by flipping the rack around to show the virtual cabling and I/O ports—this software has been a mainstay for electronic musicians. Over the years, Reason has earned a reputation for helping musicians make more music in less time, thanks in part to a fun and intuitive graphic UI, and also because it can produce a lot of sound with very little CPU strain.

The recent release of Version 4 demonstrates that efficient music production is still Reason's *raison d'être*. The workflow has been further refined, the sequencer nearly rewritten, and new additions include a multimode arpeggiator (RPG-8), a real-time "feel" console called the ReGroove Mixer and the "starship" synthesizer Thor. But nearly every version runs on nearly every system. So the following ideas are intended for versions 3 and 4.

COMBINATORIAL

The Combinator can split and layer sounds on the keyboard, create multi-effects devices or wrap sounds and effects devices into a single patch. But it's also designed to expand the real-time control possibilities of any instrument in the Reason rack. Try grabbing a Subtractor synth (Create/Subtractor) and check out the modulation possibilities for the mod wheel (the five knobs to the right). You can program any combination of the following parameters: filter frequency, filter resonance, LFO 1, phase and FM amount. Now wrap the Subtractor into a Combinator (Edit/Combine), hit the Show Programmer button and select Subtractor.

The Modulation Routing section to the right lets you assign controllers (four rotary, four buttons, mod wheel, pitch bend, after-touch, expression or pedal) to any Subtractor parameter (way too numerous to list—just pop up the list and scroll). This means you can use that mod wheel to profoundly alter the patch sound. As an example, start with a new patch (Edit/Initialize Patch), which for Subtractor comprises a sawtooth wave with the mod wheel routed to filter fre-

quency. Then apply the settings listed below in the Combinator Programmer.

Now the mod wheel moves through three distinct sounds: the initial, punchy filtered sawtooth sound; a slower envelope synth clarinet (the oscillator switched to square wave); and a slow, mellow detuned pad (now switched to triangle wave).

Because of the Combinator shell, you can reprogram the synth in real time using stan-

Modulation Routing			
Device	1	Subtractor 1	
Source	Target	Min	Max
Mod.W	Filter Freq	0	60
Mod.W	Filter Res	0	60
Mod.W	Filter Env Sustain	127	90
Mod.W	Filter Env Mod Wheel R.	63	0
Mod.W	Filter Res Mod Wheel R.	24	0
Mod.W	Osc2 On/Off	0	1
Mod.W	Osc1 Wave	0	2
Mod.W	Osc2 Wave	0	2
Mod.W	Osc1 Fine Tune	0	10
Mod.W	Osc2 Fine Tune	0	-10

Modulation Routing assigns controllers to any Subtractor parameter.

quency. Then apply the settings listed below in the Combinator Programmer. Now the mod wheel moves through three distinct sounds: the initial, punchy filtered sawtooth sound; a slower envelope synth clarinet (the oscillator switched to square wave); and a slow, mellow detuned pad (now switched to triangle wave).

REGROOVY

With the new ReGroove mixer, you can adjust the timings of separate musical parts from a single console interface, sliding the material back and forth, shuffling beats and applying Groove Patches to up to 32 "feel" channels.

Load a drum patch in Redrum or NN-XT and record a two-measure rhythm part with Input Quantize using one Lane for each



Reason's new ReGroove mixer provides access to adjust the timings of separate musical parts from a simple interface.

type of sound or note (one for hi-hats, one for kicks, one for each snare, etc.). Set each Lane to a different Groove channel (the pop-up menu next to the Record button—A1, A2, etc.). In the ReGroove mixer, use the same Groove Patch for each channel so that the beat has the same overall feel, but adjust the individual Slide and Shuffle controls on the mixer and adjust the various impact settings using the Randomize slider in the Groove Inspector window until it feels right. This is an easy way to create a natural-sounding beat that's also "on."

It's also easy to create your own Groove Patch. Turn off Input Quantize and record a drum loop that feels great, maybe tucking in a few note-ons and velocities in the Note Editor to make it perfect. Now select "Get Groove From Clip" in the Edit menu, and a new "User 1" patch becomes available as a new Groove Patch, along with all the preprogrammed ones that come with the program.

TEMPLATES AND SKINS

An easy way to further increase workflow and get down to the music is to create starter songs that are loaded with your favorite effects patched into the mixer and ready to go. Just create a new song (File/New), select the mixer and add an effect (Create menu). Reason connects it to the aux 1 send/return and even names the return strip for you. Then select the mixer again and add another effect. That's routed to aux 2, etc. And to customize your rack's look, the Combinator lets you apply your own design to its front panel. Generate a 754x138-pixel JPEG file, save it to your hard disk, and from the Combinator in Reason choose "Select Backdrop" from the Edit menu. ■

Gerry Bassermann is a composer/producer based in the San Francisco Bay Area.

AURORA INTERFACE OPTIONS

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Cabling kit gives LynxTWO and .22 owners direct connectivity for up to 16 channels of Aurora I/O.

1824 AURORA TRIM OPTION

Aurora 16/1824 model features +18 dBu and +24 dBu full scale trim settings, which replace the +6 dBV and +20 dBu full scale trim settings of standard models.

Aurora Converters from Lynx. Okay, let's review...

"Aurora offers superb converter quality and small footprint for such a powerful piece of gear. Imaging was so pin-point sharp that I could almost reach out and touch each instrument, and I have never been able to listen so far into reverb tails before. To my ears, Aurora offers something special, and can compete on audio quality with converters from other companies, but often at a significantly lower price per channel."

Sound on Sound, June 2006

"Aurora has amazing high and low frequency definition and a notable sonic depth. After using the Lynx Aurora for several weeks, I can say that it is one of the finest sounding A/D and D/A boxes in existence today. It is the perfect solution for stereo or multichannel music production or mastering or simply as the front end for digital audio work stations, digital mixers, or modular recording devices."

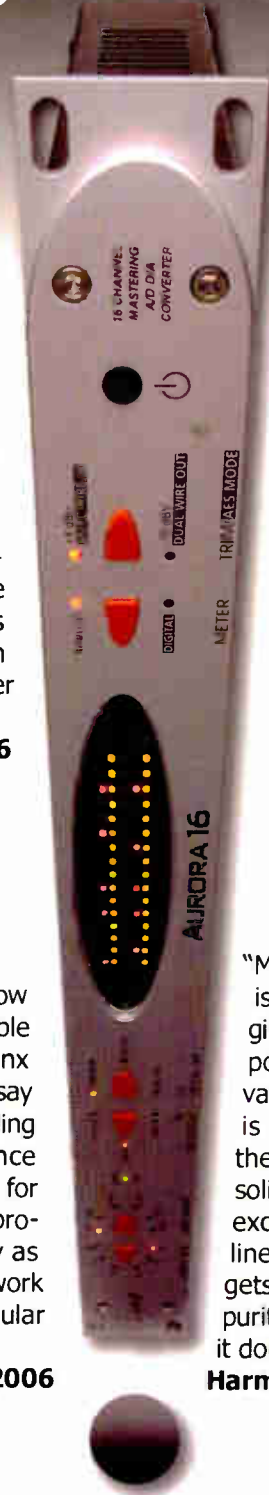
Pro Audio Review, March, 2006

"Lynx Studio Technology scores another hit with Aurora. Aurora has the necessities for audio acquisition / playback without some of the pricey extras that mastering facilities and careful audio engineers tend not to use, such as soft distortion or soft clipping limiters. It's no surprise that the Aurora provides superior sound for less than other converters with similar features."

Mix, June 2006

"My overall conclusion is that this is a very 'pro' setup. I can't imagine that anyone would be disappointed or feel it doesn't provide value for money. It sounds great, is relatively easy to hook up, and the mixer applet software is totally solid. Furthermore, Lynx provided excellent support. So the bottom line is if you have the money, this gets a thumbs up in terms of sonic purity. It's all about conversion, and it does that job really, really well."

Harmony Central, April 2007



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Includes 32GB of sounds

- DVD 1 — Universal Loops and Instruments
- DVD 2 — MachFive Concert Grand (8GB piano)
- DVD 3 — 192K and Surround Instruments
- DVD 4 — VSL™ Orchestra MachFive Edition

Direct sample library support

- Reads all major sample library formats directly
- No lengthy importing or converting needed
- Reads multi-layer "dimension" Giga libraries directly
- Reads native sampler discs & disc images directly



"An impressive production tool"
— EQ

"We were floored"
— EM

"The most powerful sampler ever"
— Future Music

"Finest in the fleet"
— Remix

Drag, drop and trigger tempo synced loops while playing sampled instruments. Edit samples in MachFive's full-screen editor with unlimited undo/redo. Switch to MachFive's unique LoopLab™ and edit beat-sliced loops down to the smallest beat. For sound design, music production and broadcast, MachFive delivers superb audio quality, powerful programming, fast operation and broad compatibility.

Across-the-board compatibility

AIFF, SDII, WAV, ACID, Apple Loops, REX, Akai MPC, Akai S Series, E-mu, Ensoniq ASR, Ethno ufs/dat, EXS24 / GarageBand instruments, GigaSampler 1/2/3, Kontakt 1/2, Kurzweil K2xxx, MSi dat, Roland S700 Series, SampleCell, SoundFont, UVI Soundcards, VSampler 2



MOTU
motu.com

Feature highlights

- Unique, unified design provides instruments, loops, phrases and synthesis in one window
- Unlimited parts (unlimited multi-timbral operation)
- Unlimited polyphony and ultra low software latency
- Unlimited sample keygroups and keygroup layers
- 200 audio outputs (with supporting host software)
- 256 MIDI channels (with supporting host software)
- Three-dimensional layered keygroup mapping with unlimited layers and dynamic, programmable rule-based layer switching (supports Giga dimensions)
- Graphic mixer with faders, effects inserts, graphic EQ and effects, VU metering and unlimited channels
- Disk streaming – can be enabled/disabled per part
- New modular synthesis architecture with two synth engines (organ drawbar and vintage analog) — program and play synth sounds side by side with, or as part of, your multi-layer sampled instruments
- Automatic keyboard mapping of imported samples via advanced pitch-detection and velocity algorithm
- One-click MIDI controller mapping for all settings
- Powerful modulation matrix with controller mapping
- Syncable envelopes with unlimited control points
- Drag and drop audio import/export
- Advanced time-stretching and pitch-shifting engine
- LoopLab™ beat-slice editing of multi-channel loops; playback at any tempo with or without stretching
- Full-screen keygroup/sample editor with unlimited undo/redo, batch processing and 47 DSP effects
- Multichannel surround support with multiple outs
- Plug-in or stand-alone operation
- Multi-column browser for fast and easy navigation
- 47 built-in effects with hundreds of presets
- Support for multi-effects with over 100 multi presets
- Flexible effects architecture — apply effects anywhere, from individual samples to your entire mix
- Convolution reverb for stunningly realistic spaces