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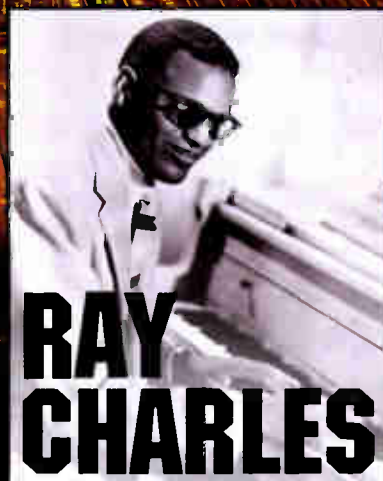
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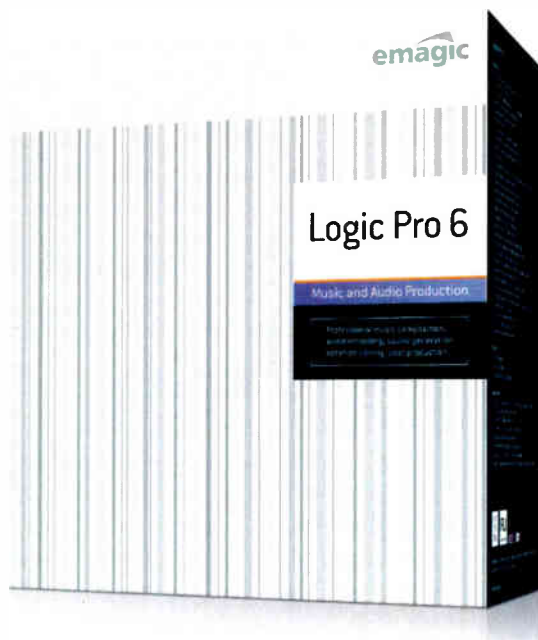


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MIX®

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

OCTOBER 2004, VOLUME 28, NUMBER 11

features

57 EDUCATION SPECIAL

Education chair and president-elect for the AES, Theresa Leonard, begins our education special with an overview on the state of audio education, while providing guidelines on what prospective students need to focus on to determine the school that will offer the best combination of hands-on training, mentorship and job placement.

Every year, *Mix* publishes its directory of North American audio education programs to aid prospective students—and professionals looking for extended learning opportunities—in finding the right path toward becoming a professional in our audio world. Listed alphabetically by region, this guide is only a starting point, offering the school's location, degrees and/or certificates offered and a course description. If a school strikes your fancy, we suggest contacting that program for additional information, a campus tour and—better yet—sitting down to talk with former students about their experiences at the school and post-graduation.

58 Eastern Schools

68 Central Schools

74 Western Schools

30 Fantasy Studio Shopping Spree

What would you do if you were given \$25k, \$100k or \$250k to go on a buying spree for new gear to outfit your studio—be it a mobile rig, a mix room or a tracking room? Compare your shopping list to *Mix's*.

36 Are You Plugged In?

A Proliferation of New Reverb Plug-Ins

Gone are the days of slicing and dicing your way through an edit and then patching in to add effects. As DAWs have become the centerpiece of many studios, manufacturers are responding with numerous dedicated reverb plug-ins—either offered stand-alone or as part of a package. *Mix* plugs into this growing market.



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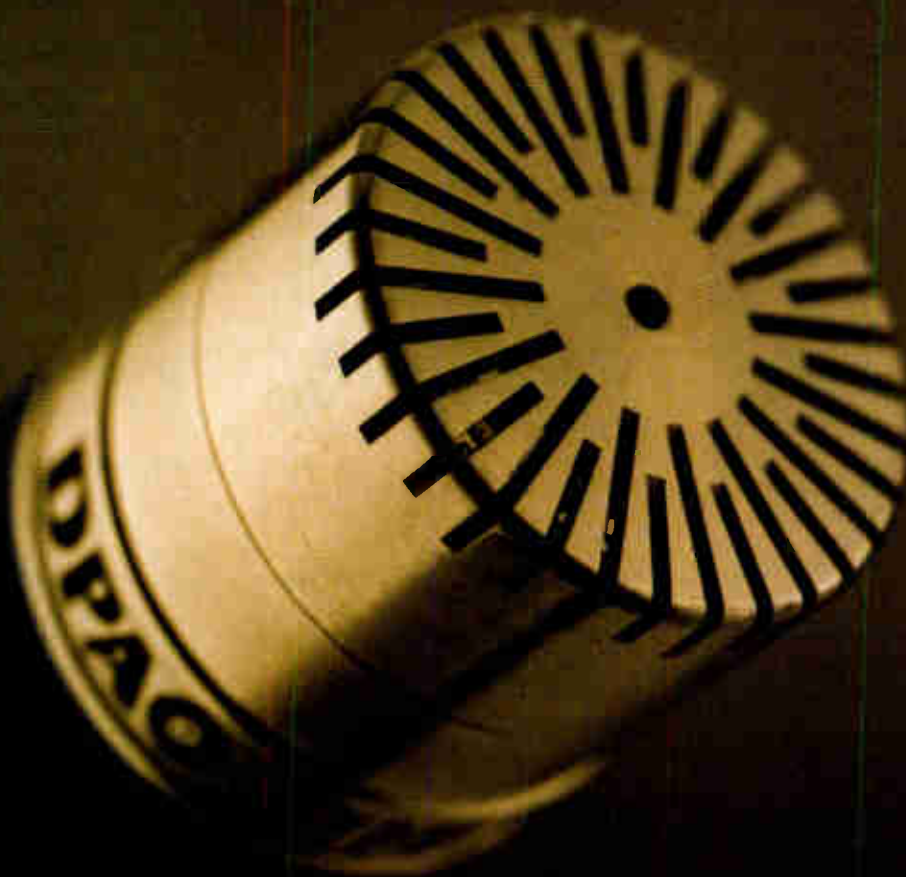
On the Cover: The 6,000-square-foot live room, part of a new 24,000-square-foot complex at the Conservatory of Recording Arts & Sciences (Gilbert, Ariz.), features a Yamaha PM1D console and a JBL VerTec line array **Photo:** John Lamar **Inset:** Norman Seeff



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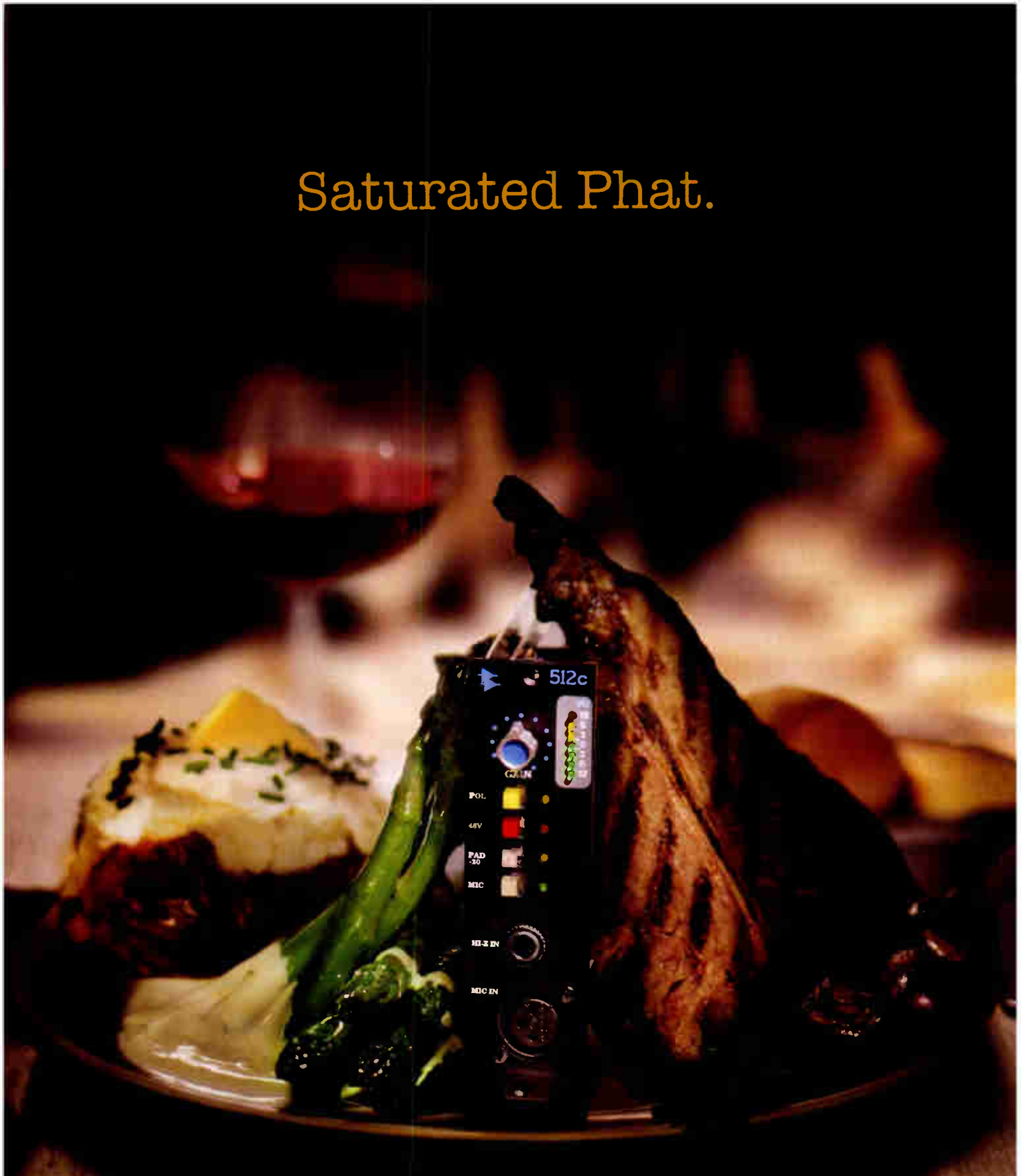
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History: Looking Forward, Looking Back...

As a kid, I had an acute awareness of the effects of history. I suppose that growing up in Naples, Italy, had something to do with that. History becomes a lot more real when your house has a view of the gently billowing Vesuvius and you know that any day you could end up forever frozen in time like those unfortunate residents of Pompeii in 79 A.D. At moments like that, knowledge of history provides valuable insights into the future. The true *Napolitani* just shrug it off, figuring that whenever it blows, it's going to blow anyway, and in such a situation, they are more likely to pull out a cold bottle of *Spumante* and toast the event rather than make a futile attempt to flee through gridlocked streets. It's a different attitude, but at least they know their history.

Not so with most people in pro audio, in which the lore goes back a mere 125 years or so, yet comparatively little is known about our lineage. As the beginning of a long-term project to change (some of) that, the Mix Foundation for Excellence in Audio—essentially the TEC Awards crew—has instituted a TECnology Hall of Fame. We formed a select committee of 50 industry leaders, engineers, producers, designers, educators, journalists and historians to pick 25 innovations (10 pre-1950 and 15 from 1950 to 1994), and the results are made public in the *20 Years of TEC* supplement that mailed out to subscribers with this issue.

Yeah, an audio Hall of Fame is great, but what does it have to do with today? Plenty. Besides heralding phonograph/gramophone pioneers like Thomas Edison and Emile Berliner, less well-known names like Lee De Forest (who developed the first triode amplifier tube) helped bring on a revolution in using electronics and microphones to capture audio in the electrical recording process, as opposed to acoustical recording that involved pointing large horns at the sound source. Meanwhile, improved ribbon and condenser microphones brought the fidelity required for talking motion pictures. And the demise of silent films meant that theaters needed large sound systems, and today's P.A. systems have their roots in film sound.

Other innovations were clearly way ahead of their time. In 1928, Harry Nyquist—in proposing a means of improving telegraph communications—laid down the fundamentals of digital audio sampling, known as the Nyquist Theorem. Some three decades before stereo LPs became common, Alan Dower Blumlein laid down the basics of stereo reproduction and recording in 1931. And this also occurs with more recent products such as trapezoidal speaker designs (with Meyer Sound's 1980 UPA-1) or the SD2 file format of Digidesign's Sound Tools (1989) or then-revolutionary Alesis ADAT (1991), which leaves the legacy of its fiber-optic Lightpipe interface.

So whether you're a prospective student perusing our annual Audio Education Directory (in this issue) or an established professional, we sometimes find that a view of the future is right in front of us. Speaking of the future, AES rolls into San Francisco at the end of this month and this show has all the makings of the best AES ever, so log on to www.aes.org for more details and get those last-minute travel bookings in now. We've got a very special issue planned for AES, but in the meantime, stay tuned to www.mixonline.com for some cool pre-show surprises.

George Petersen
Editorial Director

MIX

A PRIMEDIA Publication

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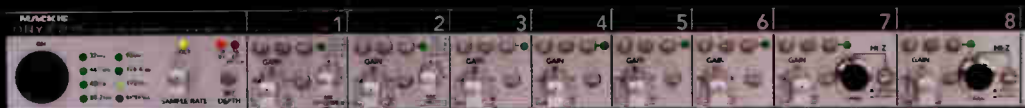
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Letters to Mix



CREATIVE AT THE CORE

I am the guitarist on the Neville Brothers' *Yellow Moon* and Bob Dylan's *Oh Mercy* albums. I just wanted to say thanks for the great interview with Malcolm Burn ["Producer's Desk," August 2004]. I have not been in touch with him in years, so it was great to find out what he's up to. Malcolm was such a pleasure to work with because he and Lanois come from a musician's point of view as opposed to being technicians. Your interview made that very clear. It is very enjoyable to read about guys like that. From working with them all on *Yellow Moon* and *Oh Mercy*, I can say that there is no better team than that of Lanois, Malcolm and Mark Howard. Thanks again—wonderful interview!

Brian Stoltz

ADDING GREEN TO YELLOW MOON

Willie Green might be surprised to hear he did not play drum kit on the Neville Brothers' *Yellow Moon* album, as suggested by Malcolm Burn. He is clearly heard on some of the tunes, including the title track, and is credited as such.

Marq Clarke

BEHIND THE MUSIC

I just read the Stephen St.Croix cliffhanger, "I Can See for Miles and Miles...Part One" [July 2004], in which we are all waiting until the next issue to see which keyboard is best at being the state-of-the-art sampler/synth/workstation/multitrack composer editor. [I thought], "Wouldn't it be great to be able to have your favorite controller that was exactly right for the instrument you are choosing to emulate, be it a guitar controller, breath, weighted piano action or plastic keyboard action?"

Then I realized that, well, that's not only possible, but people have been doing it for years. And all it takes is any of the compositional

programs like Pro Audio 9, Sonar or Cubase; a decent audio interface; MIDI interface; a little setup; and the magical ingredient: a template. One can set templates for any configuration they choose, and you can have many templates ready for any musical style that pops into your head.

The bottom line is that people will always write in pretty much the same way if they are using MIDI composing tools—that part hasn't changed much through the years. It's good to develop a system that works well for the individual. People put way too much importance on having the latest and best piano sample, using massive memory to make yet another fake piano sound. St.Croix says he's spoiled when it comes to voices used in composing. Indeed, a true purist will only use a real piano if they want a piano sound.

There's nothing wrong with wanting the latest and greatest keyboard, it's just that there's a new one coming out every week. Part of the problem is that so many people are having new gear thrown at them that in trying to keep up [with the pace of new technology], there is no time left to spend making intelligent music.

The general emphasis is shifting away from writing and learning to play an instrument (witness the decline of music departments in public schools) and to manipulating things electronically. The result is that we are getting less and less real music and more and more regurgitated garbage.

Music can be composed with the simplest of tools. No DAW or workstation is required. When you look at the technology being used today for composition as opposed to years ago, we truly are spoiled.

Bntune

THE IMPORTANCE OF BEING HONEST

I just read Stephen St.Croix's piece, "I Can See for Miles and Miles, Part 2" [August 2004]. I'm glad when a magazine prints something that may not be palatable to major advertisers, but in the long run provides constructive criticism that leads to better products.

Mix is the only magazine I can read these days. Stephen St.Croix's articles are the first thing I read, every time.

Keep up the good work.

Tom Lang

IVL Technologies Ltd.

NAME THAT MIC

In your July issue's "Letters to Mix," [reader] Nick Joyce corrects [N.E.R.D. front-of-house] David Haines' categorization of the Beyer

M88TG as a ribbon mic and says that "...the M88TG is not a ribbon mic but a dynamic." Well, Joyce is correct in saying that the M88 is not a ribbon, but he has confused the issue, because ribbon mics are also dynamic. The output voltage is generated by an element moving through a magnetic field as opposed to condenser where a voltage is applied to polarize a flexible membrane to act as one side of a capacitor to produce an output voltage. Perhaps Haines was referring to another mic and Joyce meant to say dynamic moving-coil mic? Why a Beyer M88TG would get "thrashed" is open to discussion. I've used it on snare, kick and vocal without a problem.

Bruce

AudioMagic Inc. (Boston)

EX-BROADCASTER WEIGHS IN ON CLEAR CHANNEL

I have been a subscriber to *Mix* magazine for years. I'm not exactly in the recording business, but was in radio broadcasting at the technical level. Until recently, for 20-plus years, I've always found the magazine resourceful.

"The Fast Lane" and "Insider Audio" are by far my favorite sections. I usually find Paul Lehman's writings to be insightful and accurate.

However, this month's article on live concert recording states, "Clear Channel owns about 1,200 radio stations, roughly one-third of this country's stations." That percentage is not even close to the truth.

According to the FCC's most recent total, accurate as of March 2004 (and available at www.fcc.gov/mb/audio/totals/bt040331.html), it lists 11,005 commercial AM and FM radio stations in the country. Because Clear Channel is in the commercial and not the non-commercial radio business, I left out the non-commercial stations. I was unable to confirm the Clear Channel total of 1,200 stations, but that figure has been commonly published. That puts Clear Channel as owning 11 percent of the commercial radio stations in the country. Ten percent vs. one-third [of all national stations] is a considerable difference.

Please don't take this criticism as a support for Clear Channel or several of the other large broadcast groups' actions. Their actions are precisely why I'm no longer in radio broadcasting.

Anonymous

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FITS AND STARTS TURNS HOW-TO

Audio seminar and workshop provider Fits & Starts (best known for its surround sound tours) is now offering the manufacturer-sponsored HOW-To Church Sound Workshops™ for audio volunteers who operate a house of worship's sound system. Each eight-hour workshop features lead instructor Mike Sokol offering hands-on training at a local venue; some colleges offer the workshop in their Continuing Education programs.

According to company founder, Hector La Torre, there will be 30 surround and 20 church sound workshops held during the remainder of 2004 and into 2005. "Instituting the HOW-To Church Sound workshop series has been an exciting, rewarding and refreshing change," La Torre explained. "It has allowed us to cover a more complete range of audio knowledge and experience. Each workshop series keeps us on our toes. We're having fun." For tour and registration details, visit www.fitsandstarts.com.



HOW-To Church Sound workshop attendees check out Rane and PreSonus gear at Central Carolina Technical College (Sumter, S.C.), while Mike Sokol (right) poses for the camera.

GRAMMY LISTENING ROOM GETS FACELIFT

The brainchild of producer Phil Ramone, with help from Peter Chaikin (Harmon Pro Group), John Eargle, George Augspurger and Leslie Lewis, the Recording Academy's L.A. headquarters boasts a new 5.1 system in its boardroom. The install comprises soffit-mounted JBL Pro LSR6332 monitors, two LSR6312SP subs with JBL RMC, three Crown Reference 1 power amps, surround processing via Lexicon MC12 and graphic room EQ with JBL Synthesis systems.

When the installation was complete and the room was tuned, the crew gathered for the final listening test. "The room sounds superb!" Chaikin enthused. "Given the high profile of the Grammy Awards and the supreme level of talent that would be listening to music in the room, we viewed the system as a reference test for our professional and consumer components."



Pictured from left: Neal Portnow (president, NARAS), George Augspurger (president, Perception Inc.), John Eargle (president, JME Consulting Corp.), Leslie Lewis (director, NARAS P&E Wing), Peter Chaikin (director, JBL Pro's recording and broadcast division) and Jeff Harris (Western region sales manager at Lexicon Professional)

DON'T MASQUE YOUR EXCITEMENT



Scott Kalata (right) of Masque Sound & Recording (East Rutherford, N.J.) presented a Neumann M149 Jubilee edition microphone to long-standing customer Jon Bon Jovi at the artist's Sanctuary II studio in Middletown, N.J. Bon Jovi and longtime engineer, Obie O'Brien, immediately used the M149 on a forthcoming release.

AVID ADDS M-AUDIO TO ITS FOLD

Avid Technology has entered into a definitive agreement to acquire Midiman Inc., doing business as M-Audio. At closing, Avid will pay approximately \$80 million in cash, issue approximately 2 million shares of Avid common stock and assume all outstanding M-Audio stock options. M-Audio will become a business unit of Avid's Digidesign audio division, and M-Audio founder and CEO, Tim Ryan, will continue as general manager.

Avid

M-AUDIO

"With this acquisition," said Avid's president and CEO, David Krahl, "we're bolstering our investment in the home studio market segment." Digidesign's general manager/Avid VP Dave Lebolt added, "Digidesign will continue to focus in the professional audio space, while M-Audio will further extend its reach to an even wider consumer base."

TEXAS COLLEGE BRINGS IN SSL

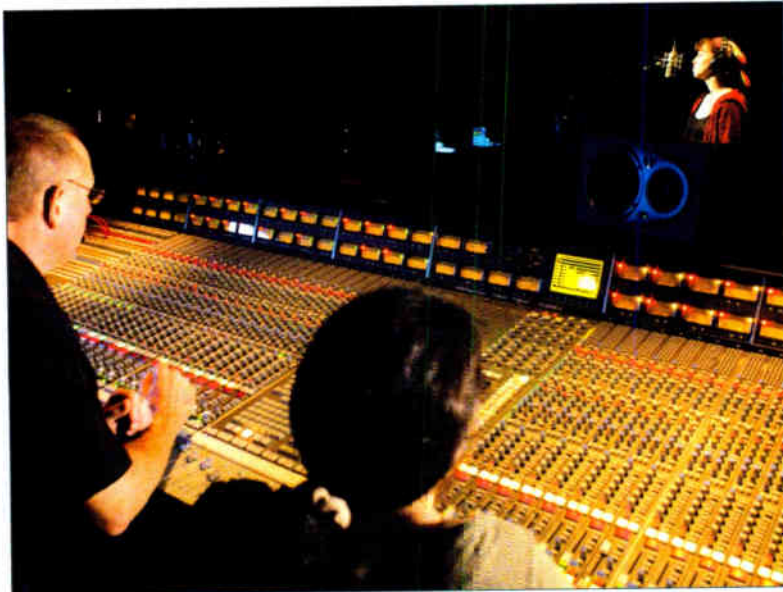


PHOTO: KEITH HUDSON

Gearing up to compete with schools and universities across the country, the San Jacinto College Central's (Pasadena, Texas; www.sjcd.edu) recording department has installed an SSL 4000 G+ console, which complements the reconfiguration and acoustical enhancements to the school's sound rooms. "The console allows us to instruct students on universally accepted equipment," said Les Williams, the school's recording studio instructor. "We assume the student knows nothing about audio recording [when they enter the program]. Through the progression of the courses, the students get hands-on experience with sophisticated equipment, learn audio maintenance and even get an opportunity to intern at a studio facility in the area."

KERRY VIDEO COMPOSED AT FIREHOUSE

Composer Nathan Wang recently stepped into Firehouse Recording Studios (Pasadena, Calif.) to record music for *The Remarkable Promise*, a nine-minute video shown on the final night of the 2004 Democratic National Convention. Created by award-winning documentarian James Moll, the video showcased Democratic presidential nominee John Kerry's lifetime of service.

Composing to film, Wang recorded a 19-piece string orchestra, two woodwinds and a trumpet player in Firehouse's Studio A. All tracks were recorded, edited and mixed in Pro Tools. "I also brought in some pre-recorded French horn, bassoon and piano elements recorded on Pro Tools," said Wang. "These tracks were plug-and-play-compatible with the live sessions."



Composer Nathan Wang (left) and director James Moll

ON THE MOVE

PHOTO: BRIAN MCCONNOR



Who: Steve Garth, president/CEO of Obedia

Main responsibilities: Ensuring delivery of 24/7 tech support for DAW users.

Previous lives

- 1999-2003, president/CEO of Steinberg North America
- 1996-1999, VP, sales and marketing at Steinberg North America
- 1990-1996, VP, sales at Steinberg GmbH
- 1986-1990, founder/co-owner/sales director, Evenlode Soundworks (Stonesfield, England)

The moment I knew I was in the right occupation was...in my first job as service manager at Rod Argents Keyboards in London. I tuned John Entwistle's Rhodes piano while he was trading licks with Joe Walsh in his London studio. I fixed Andrew Lloyd Webber's Prophet 5 during rehearsals for *Cats* at Olympic Studios in London. **The last great concert I saw was...**Sade at the Hollywood Bowl. From the first measure of the first song, they were in the groove.

Currently in my CD changer: Paul Oakenfold's *Swordfish*, John Martyn's *Solid Air*, OMU's *Organized Multi Unit*, Santana's *Caravanserai*, Angeliq's *Kidjo's Oyaya* and Nellie McKay's *Get Away From Me*.

When I'm not in the office, you'll find me...swimming or scuba diving, running my dogs or behind a camera!

HARRY SHEARER TO HOST 20TH ANNUAL TEC AWARDS

Harry Shearer will host the 20th Annual Technical Excellence & Creativity Awards, Saturday, October 30, 2004, at the San Francisco Marriott. Although Shearer is probably best known for his work in *This Is Spinal Tap*, he has appeared in many films including *A Mighty Wind*, *The Truman Show*, *Godzilla* and *Ed TV*. Shearer has guest-starred on countless TV programs, including *Friends*, *ER*, *Just Shoot Me* and *Chicago Hope*, and is entering his 16th season on *The Simpsons*.



The production team for the show includes (for the 11th consecutive year) Larry Batiste and the 2ColdChileBone TEC Band with special guests, sound courtesy of Meyer Sounds Labs, live video shoot by Ex'pression College for Digital Arts and tribute videos by award-winning producer Jeff Scheftel.

For ticket information, call Karen Dunn at 510/985-3263 or visit <http://mixfoundation.org/TEC20/index.html>.

NOTES FROM THE NET

Digital Music Sales to Hit \$1.7 Billion in 2009

JupiterResearch, a division of Jupiter-media Corp., forecasted that digital music sales will more than double by the end of 2004 as compared to last year, reaching more than \$270 million and will grow to \$1.7 billion in 2009, totaling 12 percent of consumer music spending. The company predicted that digital sales will not replace CDs, nor will it bring music sales back to its 1999 peak.



BOYS AND GIRLS CLUB OPENS NEW A/V FACILITY

The youth of San Pedro, Calif., can get off the street and into the studio, thanks to a state-of-the-art multimedia facility at the city's Boys and Girls Club, which opens this month. With design, equipment specification and acoustic treatment



IMAGE COURTESY OF JGLS

handled by James Lawrence Design Studio in Los Angeles, the digital audio and video production facility gives kids a chance to record everything from audio CDs to news programs in 5.1.

The facility's control room houses a Yamaha 02R96 console, a Digi 002 rack and software such as Emagic Logic Pro, Nuendo, BIAS Peak and Reason 2.5. The 5.1 room includes JBL EON and Tannoy Reveal powered monitors; Yamaha, Korg and Roland keyboards; and microphones from AKG, Shure and Audix.

—Heather Johnson

CORRECTIONS

Due to an editing error, a sentence in "Zooming In on the Zone" (August 2004) implied that system control units from TC Electronic and Lake Technology employ Bluetooth wireless protocols. As stated elsewhere, both use fully networked WiFi technology.

The Metric Halo Mobile I/O ULN-2 photo ("Auditions," July 2004) showed the beta version. The current model's front panel (below) adds stepped gain in 6dB increments, trim link and a continuous trim control.

Mix regrets the errors.

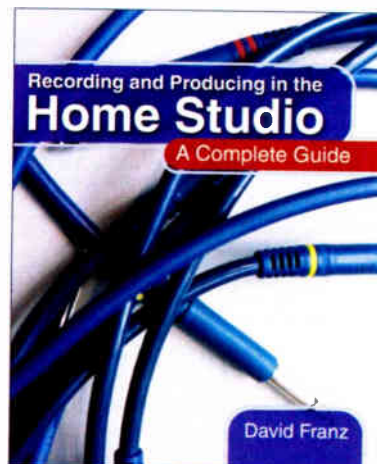


HOT OFF THE PRESSES

From the *Mix* offices comes features editor Sarah Jones' first foray into the book publishing world. Her *Assistant Engineer Handbook* begs the question, "Why would anyone want the assistant engineer gig?" From in-depth discussions and tips from our industry's leading authorities and players, Jones details countless reasons why a budding audio professional *does* want this gig, with useful tools to aid in the career search. Schirmer Trade Books (\$19.95).

Producer David Franz's *Recording and Producing in the Home Studio: A Complete Guide* (Berklee Press, www.berkleepress.com) takes artist/songwriter/band/producers through each production step at a home studio.

Readers gain more information from diagrams and cost-effective setup suggestions to create their own personal studio, in addition to a guide to popular mics and a "how-to" on miking instruments. Franz addresses the role of DAWs and covers mixing, editing and mastering in popular software programs. Distributed by the Hal Leonard Corporation.



INDUSTRY NEWS

Joseph L. Lias (co-founder/president/CEO of Kipper Technologies) is THX's (San Rafael, CA) new president. The company has also added Sheau Ng, CTO; Bruce Kasrel, VP of marketing and customer service; and Adrian Sforti, VP of systems and network engineering...NARAS (Santa Monica, CA) has named Wayne J. Zahner as its new CFO...SSL



Colin Lee

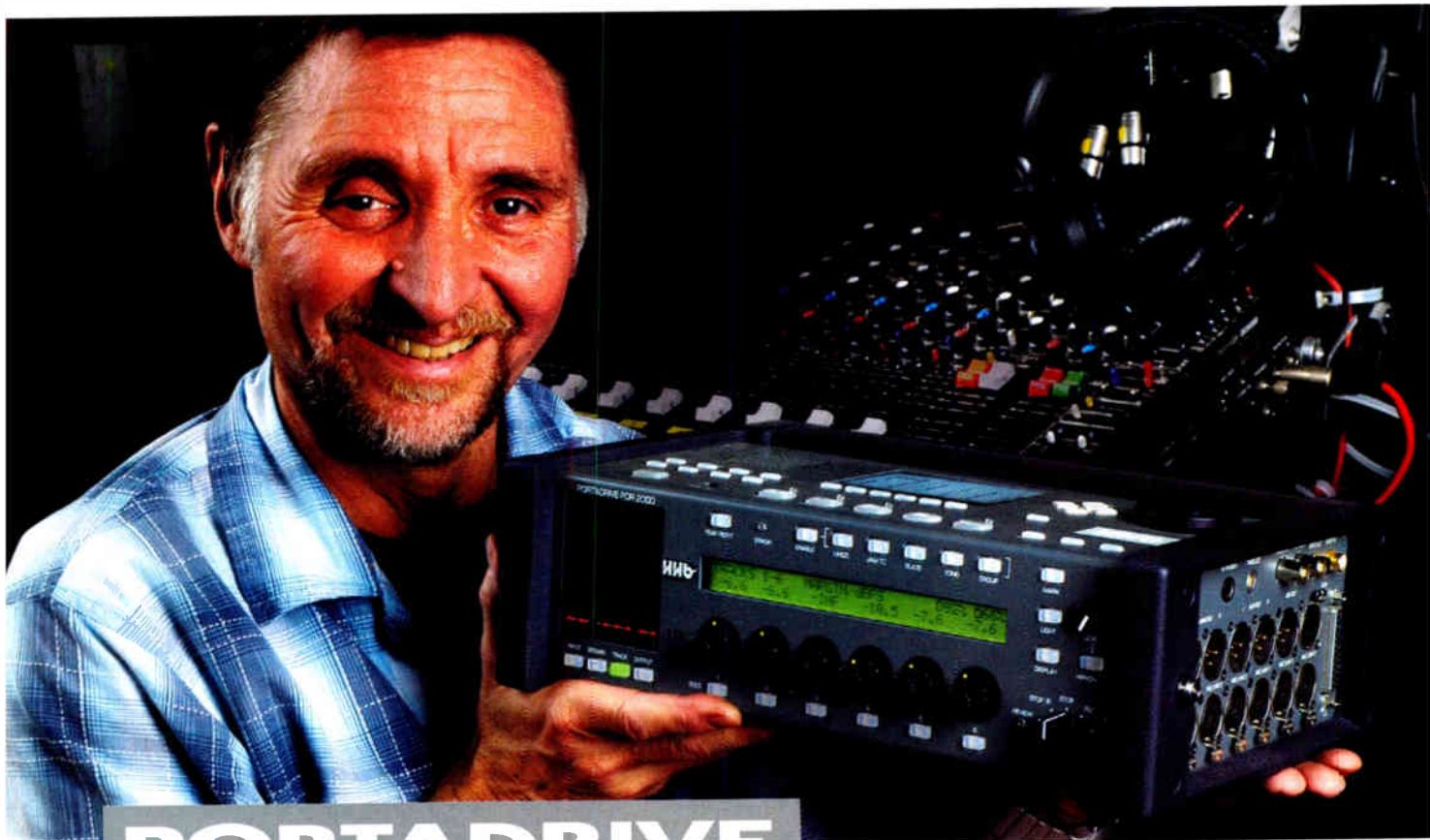
(Begbroke, UK) appointed Colin Lee as product manager for XLogic range. The company also named distributors for its AWS 900 Analogue Workstation System: AudioPro International (Toronto, Ontario), Canada; KMR Audio (London), UK; Arva Trading (Stockholm), Sweden; Promedia Tools, Germany; Juke-Box, France; DMT, China; AudioSales, Austria; HAN SEO Int., Korea; Lexon (Barcelona), Spain; and PRIMETIME, Serbia, Montenegro, FYR Macedonia...Herb Venticinque joined the Yorkville Sound (Niagara Falls, NY) team as the ALTO



Udo Möllhoff

brand manager for U.S. markets...Jumping from Gibson, David Rohrer is DigiTech's (Salt Lake City) new market manager for guitar products...dB Technologies (Bologna, Italy) opened a new office in Singapore, with Sajeev Nair serving as director of sales for the Asian region. The office can be contacted via e-mail at elpro@singnet.com.sg...Udo Möllhoff joined TerraTec Producer (Nettetal, Germany) as international sales manager...Crown (Elkhart, IN) announcements: Sue Livings promoted to newly created position of director of customer service; Amanda Divine promoted to manager of sales administration; and new-hire Brian Divine, director of marketing for the portable P.A., recording and broadcast markets.

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With movies including Troy, About a Boy, Sleepy Hollow and Star Wars (Episode VI) to his credit, award-winning sound recordist Tony Dawe is at the forefront of production sound mixing for film and TV.

"I know a lot of guys are ready to start using hard disk recording on location," says Tony. "With PORTADRIVE, HHB has delivered the perfect solution. It's dispelled any reservations I had about the technology and it has some fantastic features. The real winner for me is the facility to record eight channels. Controls and connectors are well laid-out and, crucially for a location sound recorder, PORTADRIVE is rugged and durable."

"With PORTADRIVE I get the option of recording in a variety of formats which is great for post-production. I can burn rushes straight to DVD and, thanks to the Docking Station, transfers to Avid are lightning fast."

For full details of the professionals' choice in location hard disk recording, check out the HHB PORTADRIVE at www.portadrive.info



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Conservatory of Recording Arts & Sciences

By Maureen Droney

For more than two decades, the Conservatory of Recording Arts and Sciences has provided high-quality audio training to those who believe that they will never be satisfied with any other career path. In an era when many recording schools have diversified their programs to include other disciplines, CRAS has deliberately renewed its focus on the art and science of *audio*.

CRAS emphasizes a "real-world" approach to audio training that includes industry-standard facilities, an experienced teaching staff, manufacturer support and technical certifications. As CRAS administrator Kirt R. Hamm asserts, "You can't enter the audio industry half-heartedly. Our simple formula for success is that we enroll motivated, academically capable people with realistic goals. We educate them comprehensively, then help jump-start their careers via our internship program.

"We have a finite number of seats available in our programs, so throughout our admissions process, we search for people whose goals match up with our goals and industry goals," he adds.

The Conservatory's facilities encompass a total of 45,000 square feet—14,500 in its original Tempe, Ariz., location. Four miles away in Gilbert, 25,000 square feet have been added in the built-from-the-ground-up complex that opened in November 2003.

"We expanded due to need," explains Hamm. "Because we're committed to never having more than 12 students in any class, we had a two-year waiting list at our Tempe location. Our curriculum is very focused: We prepare our students to be entry-level audio engineer assistants, with the skill set to move into higher-level positions very quickly."

The 30-week curriculum comprises audio recording and production, digital recording, sound reinforcement, music business and troubleshooting/maintenance (includes traditional audio equipment and computer, networking and IT studies). Numerous manufacturers' certifications are available to students, including Digidesign, TC Electronic, Alesis, JBL, Yamaha, Antares and Logic Audio. CRAS is also an Apple-authorized education center.

CRAS now boasts eight full analog/digital recording studios and 12 labs. Six of the studios, set up for stereo, feature either SSL 4000



PHOTO: JOHN I. AMAR

G Series, Neve VR or Neotek Elite consoles. Two studios were designed and built for 5.1 with an M&K speaker system, Pro Tools|HD2 Accel and Focusrite controllers.

A sophisticated, 6,000-square-foot live sound venue, with a professional stage and concert lighting, is one of the highlights of the new location. Equipped with a Yamaha PM1D for FOH and a 40x12 Soundcraft Spirit monitor desk, the live room features a JBL VerTec line array system. Outboard equipment includes Klark-Teknik, TC Electronic, dbx, Drawmer, Behringer, Yamaha and Roland.

"We've forged strategic alliances with Yamaha and JBL to develop certification programs," Hamm comments, "and we have made the venue available to them for manufacturer training and listening sessions."

CRAS' live sound curriculum was designed by leading live sound authority (and six-time TEC Award-winner) Robert Scovill. "Working in the field over 20 years, I've seen a growing need for people with formal training," says Scovill. "There's a steep learning curve in audio now and major challenges ahead. At CRAS, we spend a lot of time on audio fundamentals: wave mechanics, signal flow, routing, et cetera. We also strive to teach 'concept versus console' so that students can walk into all kinds of situations with an expectation of success. With the new live venue, the goal was to create an environ-

ment that was as real world as possible."

According to Scovill, another priority has been to develop a network of internships with live sound companies. "There's a need for it," he notes. "It's an important component of the CRAS program that is also beneficial to employers. Recording technology is bleeding into live venues; students who come out certified, for example, in Pro Tools, as well as trained in live sound, are becoming hot commodities."

At any given time, the CRAS student body averages approximately 600—480 on campus and 100 on internships, a required component of the curriculum. "Students choose the city and the kind of business they want to intern in," explains Hamm. "We have strong relationships with incredible facilities such as Electric Lady and Sony Studios in New York, Cello and Signet Soundelux in Los Angeles, Omni Sound and Sound Stage in Nashville, Stankonia in Atlanta and Chicago Recording Company.

"Ultimately," Hamm concludes, "we're successful because of our students. We're charged with the task of looking down the road to see what new gear and techniques will be in use in the years to come. We have graduates employed in all different aspects of the industry; this year two of our students were honored with Grammy Awards. That makes all our hard work worthwhile."

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 digidesign

101 Musicians

All In My Pocket

Let's get right to it. This month, I cover real products that the last columns have been building toward. Specifically, I will cover three offerings from EastWest (www.soundsonline.com). I choose them because they offer an impressive range of seriously over-the-top products from deeply disturbed individuals in far-away companies who are committed to going all the way. To put it another way, these guys are as serious as it gets.

No doubt I really should begin specific product evaluation with lower to midrange entries, but I have been using the EastWest stuff for many months now, and it's just too ridiculous to wait to talk about it.

Let's start with pianos. The company offers two comprehensive products: Galaxy Steinway 5.1 and Bösendorfer 290. They both use a dedicated version of the Native Instruments Kompakt sampler, which is fine by me. This streaming player usually makes sense and is easy to use.

First, the Steinway from Best Service. I ripped the following text directly from the soundsonline site, and so it represents my very first, and therefore definitely best effort at plagiarism. I edited arbitrarily and with wanton lack of responsibility. I couldn't think of a more efficient way to list its specs.

The Steinway Grand was recorded at Galaxy Studios in Belgium, using five Bruel & Kjaer close mics, with additional Neumann room mics. It comes in 5.1 (separate mic for the LFE channel) and stereo.

It was recorded through a Neve Capricorn digital console into Pro Tools. The 5.1 version has six discrete channels in 16/24-bit/48kHz resolution.

The piano is mapped in whole tones with 10 velocity layers. Sample length is up to 40 seconds—with no loops. (This actually seems to be true!)

The 5.1 version is 6.5 gigs, the stereo version is 1.5 gigs. End plagiarism.

This piano sounds great. No, much more than that. It acts correctly and actually *prints* like a very well-recorded piano if you handle yourself properly.

It is a Steinway. Gentle, pleasing, smooth, pretty, relaxing...did I say smooth? It responds well to dynamic input and behaves itself. No velocity crossfade artifacts. No problems at all. The 5.1 sounds incredible, and I use it even if I'm ending up stereo, as the air is so nice.

The Kompakt interface offers many tools for variable degrees and types of original sample destruction, and they're kind of cool if your life's desire has always been to mangle a perfectly good acoustic piano. Some of the more dangerous functions (accessible via a somewhat convoluted path), like the modulation depth for "TUNE LFO," have a huge range and so are *very* touchy.

I wanted to hear a *subtle* vibrato on an expensive acoustic piano, and after some fighting with a tiny two-

octave rotary control (with no digital re-a-out), I finally got it to move one invisible pixel and it then delivered, immoral as that may be. I guess you could ask why I would even *want* to do this, but I paint bikes with crushed glass and almost named my boat the INS Haitian Vacation. This is truly a world where you can try anything.

Now the Bösendorfer from EastWest. As above, it uses the Kompakt interface and offers many, many variations of the actual acoustic piano samples, most of which are quite interesting. I have always used Bösendorfers in my recordings and was very excited about trying this one. And it does sound very nice—full, round bottom, lots of living organic movement. But there is something a little strange about this one. There is a small sound, a kind of grunge or "bubble" on each note. I am not talking about the normal Bösendorfer mechanical hammer action, but something vaguely like a bad reverb.

It appears that I alone,
having been raised by wolves,
can hear this. I can't hear police
sirens behind me on PCH,
but I can hear this dinky little noise
in the LSB of this piano.

Upon asking the creators about this, they vehemently insisted that this is natural ambience and was in fact one of their major goals when they set up the recording sessions. Fair enough. I'll buy that. Obviously, I prefer real acoustic spaces with real acoustic noises over slurred, dead, "commonizing" artificial reverb, too. But in this case, I find it a little distracting. I agree that it should definitely be in there, but I would have handled it a little differently and always have when I have recorded Bösendorfers.

And so you know exactly how obnoxious this is, this is one of their hottest products and absolutely nobody other than me has ever brought this to their attention. Everybody loves this thing. Other reviewers do not find this to be a problem at all. It appears that I alone, having been raised by wolves, can hear this. I can't hear police sirens behind me on PCH, but I can hear this dinky little noise in the LSB of this piano.

But don't get me wrong. I love this thing. I use it all of the time. It, like the Steinway, is amazing, yet of course totally different. This piano is a monster. It's...a Bösendorfer. Dynamic as hell, *huge*, almost scary if you pound it.

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part down an octave, changing filter settings on a bass sound, shortening release time of a synth sound, or other common tweaks.

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For the full story of why new GigaStudio 3.0 creates such breathtakingly realistic instrumentation — and why it's the over-

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GIGASTUDIO3.0



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Flawless velocity crossfading. Two-mile-long lower-register strings. Imposing is the word I'm looking for.

I do agree with the other reviewers on one minor point. This is clearly the best virtual Bösendorfer I have ever heard—bar-none.

Let me plagiarize and re-glue some more hype for you: It offers up to 16 velocity layers, true release samples, true repedalling and two different microphone positions (close and ambient). It comes with 28 programs (nine dry programs, nine wet programs—with and without true real-time repedalling—three dry and wet layered programs, and several effects variations). The bass of this instrument is absolutely huge with a very focused pitch. End text theft. The "huge" and "focused" parts are totally true.

As a side note, several of the Kompakt controls read out in time, usually milliseconds (MS in their displays). And in amusing German fashion—just to show you what country is really in control here—when you pass 999 ms and go to 1 second, the display reads 1 KMS (one kilo-milli-second, I suppose) instead of the planet Earth favorite, s for second. Now, everything from there up would be in the new standard KMS, except it clips larger numbers and shows only KM. Gotta love 'em.

And now on to the EastWest/Quantum Leap Symphonic Orchestra. The very name itself seems offensively ostentatious. Probably some unwieldy, ill-advised attempt at providing a single fake-ass orchestra for all people. Let's see.

There are actually three versions of it: the Silver at \$300, the Gold at \$1k and the Platinum at \$3k. (That's 300 kilo-milli-bucks to

I could go on and on, but merely *listing* the included instruments would fill my column, so go to the site and see for yourself if you are interested. And if you go there, you will see that other reviewers are falling all over themselves telling you how freakin' cool this thing is. (You'll read yet another, in *Mix*, next month.) I, on the other hand, am not about to debase myself by joining the com-

I think that the time has come. There is no question that you can get away with this in many if not most situations. If you can score and arrange, and you understand the physics of the instruments well enough to "play" them realistically, the samples you need are there.

you.) Anyway, I figured the metals denote how well your album will sell, so I had no choice but to go for the Platinum.

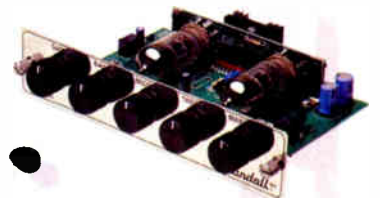
It's just a tiny little package (65 measly gigs), and it arrives at your door in only nine 18-wheelers. You'd better own a dolly. It takes a day to install. No, *really*.

mon fracas. Instead I will give you cold, honest advice—the truth, like it or not. Ready?

Buy this. Get the one that fits your budget and requirements, but get one. This thing will stop your breath, and when you do start breathing again, it will be a good bit

—CONTINUED ON PAGE 151

Real Tube Guitar Tracks.



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Back to the Future

An Ancient Tomb Reveals Low-Cost Audio of Tomorrow



ILLUSTRATION: KITTY MEEK

There's an interesting conundrum in audio these days: As our tools get better and the quality of what we produce achieves new heights, the delivery system for those products in many ways gets worse. Data-compressed audio files; tiny, tinny, under-powered "multimedia" sound systems; and—God help us—cell phones have all somehow become significant elements in the chain that brings music from our 24-bit, 192kHz production systems to our audience.

As "low-end" audio delivery becomes more prevalent, it's finding its way into unexpected new areas. One of these is illustrated in a terrific high-tech "haunted house"-type attraction called Tomb, which should be open by the time you read this. The design and the technology behind it are the very latest, but the audio is surprisingly low-tech. Perhaps even more surprising, it sounds just fine.

The philosophy behind Tomb can be described something like this: Start with a computer game that has several layers of puzzle-solving. Get the player out of his seat

and make him walk through different spaces. Use a whole lot of scary content based on ancient myths and classic horror movies. Make the lights flash, the walls groan, creatures crawl over the player's feet and fly around the room, long-dead folks talk from behind waterfalls, the floors shake and the ceilings drop precipitously. Throw in a complex interactive soundtrack of dialog, sound effects and music. Make it multiplayer so that every player can hear every other player scream. Call it the future of entertainment and put it in a high-traffic area full of students and young professionals. Charge admission.

Tomb is located in a former warehouse in Boston's Fenway neighborhood. It's the first of what the creators, who call themselves "5Wits" (www.5-wits.com), hope will be many such shows. They chose a great location—right down the street from the home of the perennial second-place (yet passion-inducing) Red Sox—in an area teeming with clubs, bars, movie theaters, stores and restaurants, only a stone's throw from some of the city's largest universities.

Is Customer Service Dead?

Not if you're smart about where you buy gear.

Buying musical equipment in 2004 is quite a bit different than it used to be. Music technology is more complex now than at any other time in history, and yet we as consumers have less and less access to knowledgeable people to help us sift through the choices out there or help us get our gear up and running once it's in our studio.

When mom-and-pop music shops ruled the retail landscape, this sort of customer service was commonplace. The folks at your local music store would get to know you and what you did and didn't like, and would help you make decisions about what to buy. If you had questions about how to use something they sold you, chances are they could help you figure it out and, maybe more importantly, were willing to help you figure it out.

THAT WAS THEN, THIS IS NOW...

These days, that level of customer service is largely a thing of the past. While the rise of huge national chain stores has lowered the cost of the average gear purchase, it has also conditioned you to expect the same dismal level of customer support you get at the local discount warehouse. As long as there is a warm body that can point you in the direction of that 5-gallon jug of mustard (or the Guitar Department), you've gotten precisely the level of customer service you expect. The level of "service" one can expect from most mail order or Internet retailers is even less inspiring.

So with music technology becoming more and more complicated, and retailers becoming less and less able to help you figure out what to buy and how to use it, where should you turn? There is one retailer that still believes that customer service is not only important, but the cornerstone on which to build a business, and that retailer is Sweetwater. While others may say they offer great service, Sweetwater actually does it, by hiring only the best to staff their sales department, and backing up their pre-sale advice with post-sale support.

"Over the years, my friends at Sweetwater have always been able to help me stay on top of the latest developments in Music Technology. They actually use much of the gear they sell, so I'm always able to get great advice about how a given product will work in the real world."

Jon Slotte

RETAIL DONE RIGHT

You may think that this sort of service would come at a high price, but the reality is that due to their size, Sweetwater is able to offer the same sort of deep discounts as other big retailers AND a level of support that doesn't exist elsewhere. It's as much about their customer service philosophy as anything else — from the receptionist answering the phone to the shipping specialist who packs your order, everyone at Sweetwater is focused on providing the customer with the best experience in music retail.

This fanatical attention to customer service is most evident with Sweetwater's sales staff. Each sales engineer goes through extensive, ongoing product training, augmenting their heavy-duty real-world experience with the latest information about the products they sell.

For Sweetwater, customer service doesn't end once the sale is made. They've invested heavily in staffing and training a technical support and service department with over two dozen music technology experts capable of helping customers use the gear they buy at Sweetwater or repair it if the need arises.

Sweetwater customers have unlimited free access to the technical support department, which supports every brand of gear they carry, making Sweetwater a one-stop tech support shop for complex multi-manufacturer setups. Todd Tatnall, one of Sweetwater's senior support technicians, says "with today's

computer-based music systems, it's very easy for end users to find themselves amid a sea of manuals from a half-dozen hardware and software companies, wondering why their virtual synth isn't responding to their MIDI controller, or why they're only getting 6 tracks of playback on a system that's supposed to deliver 32 tracks or more. We handle these sorts of issues all day, six days a week, so we're usually able to get a customer up and running in no time."

So whether you're looking for a retailer with the gear you want in stock at great prices, the willingness and expertise to help you make decisions about what to buy, or someone that will be there to help you get your system up and running once it's in your studio, Sweetwater is the place to call. They can be reached at (800) 222-4700 or visited online at www.sweetwater.com ■

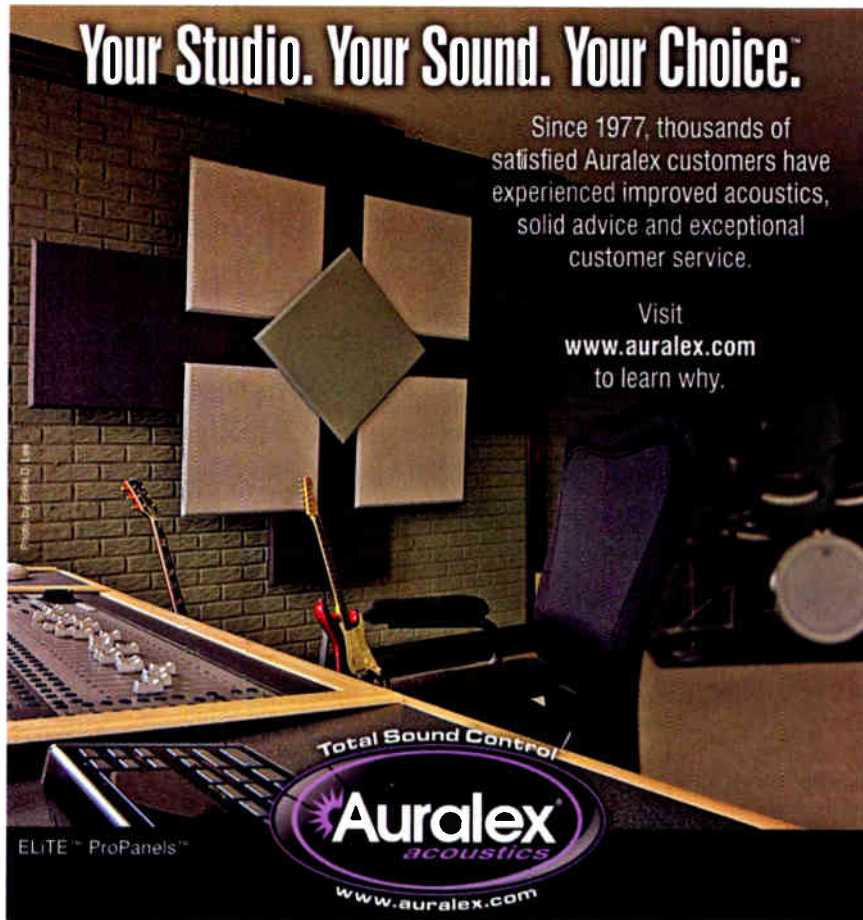


Sweetwater sales engineers take the time to fully explain the gear they sell to their customers — in person or on the phone.

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It's the brainchild of Matt DuPlessie, a designer who has done work for Disney, Universal and the Boston Museum of Science, and who holds an engineering degree from MIT and an MBA from Harvard. In fact, it started out as a business school project. "It was an entrepreneurial studies assignment," he says. "I was supposed to get investors and creators together—and I did."

In Tomb, groups of between five and 15 would-be Indiana Joneses move through a series of rooms that resemble an ancient Egyptian crypt and solve a series of puzzles at each step before they can move on to the next. The walls use art taken from the real thing: Pharaonic tombs were photographed and the images digitized and cut by a computer lathe into foam and Fiberglas. "We don't have to worry about copyright issues," says DuPlessie, "since it's all over 3,000 years old."

When a Tomb-bound group begins their 40-minute journey, they're told that the original discoverer of the tomb never came out and his crew deserted. The goal is to find out what happened to him and to see if the mummy he was searching for is actually there. When the first door closes and the group is plunged into darkness, they switch on flashlights, but it isn't long before the lights start winking out.

Suddenly, there's a splash, and the face of the ancient Pharaoh appears on a curtain of falling water. The Pharaoh speaks, challenging the group to solve puzzles based on each of the "Five Wits," which are either the five senses or, according to Shakespeare, the faculties of common sense, fantasy, memory, judgment and imagination.

There are hidden buttons in the walls, hieroglyphics, snakes on the floor, falling ceilings, a descending mummy, more puzzles and screams.

"Whether you live or die," says DuPlessie, "you end up in the gift shop," where you can buy books and videos about Egyptian history and, of course, have a cappuccino. It's too soon to tell whether it will be a financial success, but the concept and execution, which combine the idea of a haunted house, a "dark ride" and a special-effects show, are a highly effective combination of old and new technologies. "I researched heavily to see if anyone had done this and could maybe advise us," says DuPlessie. "No one has."

Music and sound, of course, are critical to a project such as this, and for that, DuPlessie hired two New York composers, Scott Shapiro (who happens to be a former student of mine) and Rich Jacobs, who call

—CONTINUED ON PAGE 152

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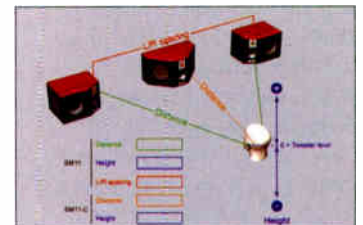
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A FANTASY STUDIO Shopping Spree

Ideal Recording Rigs for \$25k, \$100k and \$250k

By Strother Bullins

We all know what's been happening to the studio economy lately. As labels squeeze their budgets and major studios struggle to make the lease, more and more producers and engineers are going solo and working out of their own facilities. Luckily, these days you don't have to produce a multi-Platinum album—or win the lottery—to outfit a professional studio. As audio technology grows cheaper, faster and better-sounding all the time, hits are being produced on portable rigs, or even at home.

If there's one thing that all music recording types have in common, it's that we all crave new gear. While budget, taste and modus operandi may dramatically vary among recordists, all engineers should agree that nothing beats plugging or patching in a new microphone, component or plug-in with the bubbling anticipation of discovering a new auricular secret weapon. Now that we're all salivating, let me ask you a question: Wanna go on a shopping spree? Good, that's what I thought!

Per *Mix's* request, I have researched, shopped and compiled a comprehensive equipment list for three complete recording rigs, each based on three separate budgets of \$25,000, \$100,000 and \$250,000. To preemptively answer your question, no, it's not real money. But when I close my eyes, I can see the multitude of gear before me.

GETTING STARTED

Preparing to spend a similarly hefty sum on gear, I talked to an assortment of recording industry and musical peers about the spree, detailed what I initially

planned on purchasing and asked what they would do if they were behind the shopping cart. Not only did my equipment list evolve because of their input, but—because of the brainstorming—I better visualized the many various “ideal” recording setups that can exist. In other words, there are many possible paths to my own fantasy recording rig nirvana.

After reading this article, some of you will surely say, “Way to blow a quarter-million, bro,” and that's fine. Hopefully, analyzing how you would personally spend the cash will better prepare you for future purchases and may even bring to mind past lapses in judgment, such as having under-employed or unnecessary components on your equipment list. The point of this exercise is to analyze equipment purchases practically, creatively and carefully.

Now for the guidelines: I will shop for equipment assuming that each fantasy recording rig has an awaiting, ideal environment. With more studios in major recording hubs empty and/or for sale, this isn't an unrealistic scenario.

Also, I will shop for new gear. We all know of vintage microphones, processors and consoles that would be wonderful additions to our respective gear collections, but because price and condition of those can vary dramatically, I'll stick to the new stuff.

So, without further ado, let the fantasy begin.



BUDGET: \$25,000 THE FANTASY PORTA-RIG

It's a well-known fact that much music is being recorded today in previously inconceivable locations and scenarios, thanks to the greater affordability of high-end-capable recording equipment in smaller-than-ever packages. From the back of a tour bus, to a soundcheck, to a beach house, recording music on location has now become an increasingly feasible option for engineers and musicians. Besides, we all know how studio fever—a cousin illness to cabin fever—can set in, and that just doesn't seem to happen when you're recording ocean-front at Hilton Head. With that in mind, my \$25k fantasy rig is mobile and easily loaded into the back of my massive and intimidating luxury SUV. (After all, this is a fantasy.)

My porta-rig is based on the Metric Halo Mobile I/O 2882+DSP (\$2,195), a 1U, 7-pound, FireWire-based modular audio processing I/O unit. The 2882+DSP features 18 inputs and 20 outputs of simultaneous I/O, eight mic/line/instrument analog inputs, 24-bit/96kHz converters on all channels, front panel metering, and for the ultimate in mobility, it can run solely from a computer's FireWire bus. Plenty of digital output options on the Mobile I/O will allow much flexibility regardless of where recorded tracks will eventually need to be transferred to. I'll include three 2882+DSPs for 24 tracks of live recording and the 2882's +DSP option offers assignable DSP signal processing even when tracking, thanks to the bundled plug-ins of MIOComp, MIOEQ-6, MIOEQ-12, MIOLimit. MIO Mid/Side Processor and MIOStrip. Having this available DSP processing also eliminates the need to lug heavy, multi-rack space outboard processors from location to location.

While the MOTU Digital Performer (\$1,090, bundled with MOTU Unisyn) is my porta-rig DAW of choice, I can also use the MIO Console—part of Mobile I/O's MIO operating system—for track acquisition; the



Radial J48



AKG K271

MIO Console includes a hearty but no-frills recorder.

Simply stated, I selected Digital Performer based on flexibility, quality and price. With unlimited audio and MIDI tracks, support of a wide range of audio hardware and legendary editing capabilities, Digital Performer is an adaptable, aggressively priced DAW to have out in the field with one CPU. Besides, Digital Performer fully supports Pro Tools 24-bit audio files, and as previously mentioned, interoperability is incredibly important, especially considering that music recorded with my porta-rig may be later manipulated, mangled and added to my \$100k and \$250k fantasy studios.

For the CPU, I've chosen a 17-inch Apple PowerBook 1.5GHz PowerPC G4 with 2GB SDRAM. The maxed-out laptop includes an 80GB hard drive, SuperDrive (DVD-R/CD-RW), FireWire 400 and 800 ports, and, so I can throw it over my shoulder easier, a custom backpack case (total: \$4,178). Considering that recording, editing and mixing will all be happening on this ultracapable computer, a larger screen is a must.

The Mobile I/O rig will be enclosed in a custom ATA approved road case (\$430) built by MT Custom Cases, a frequent builder of cases for Metric Halo clients. The shock-mounted case will also include space for my external hard drive, the Tekserve FireWire 800, which offers 250 GB of storage space (\$379). Considering that an hour's worth of 24-bit, 48kHz recording clocks in around 12 GB used per 24 tracks, the 250GB hard drive should serve the porta-rig very well. Further, with the Tekserve utilizing the G4's FireWire 800 port, the FireWire 400 port is available for the needed FireWire 400 hub, to which the three Mobile I/Os can be connected while running with Digital Performer.

According to Metric Halo, an OHCI-compliant FireWire hub is recommended to prevent damage to the computer's motherboard in case of a power surge when connecting or disconnecting devices while using the Mobile I/O. For this purpose, I've

chosen a six-port hub (\$50)—extra ports are always nice. Also, an OHCI-compliant PCMCIA or PCI card FireWire adapter (\$19) is suggested, which allows for better overall performance by separating the audio and data traffic onto separate buses.

To complete the workstation, I/O and data-storage aspects of my porta-rig, I've chosen a 20-foot, 24-channel custom snake, XLR female-to-XLR male/TRS (\$350), which is available from connector and cable specialists Rapco. Twenty feet of snake should be plenty to separate the rig from the sound sources, while not being too long of a run that adds substantial noise to signal.

As planned, my porta-rig is nearly halfway to the \$25k maximum, which allows lots of purchase possibilities for other necessary gear—specifically, microphones. Considering that the Mobile I/O rig has been configured to record 24 tracks simultaneously, having a substantial amount of quality transducers at the source of the analog signal chain will come in quite handy.

Every good microphone collection needs a high-quality, large-diaphragm condenser. For my porta-rig, a Neumann TLM



Shure SM57

193 cardioid model (\$1,550) is included and ready for versatile use. A RODE NT-4 stereo microphone (\$899), two AKG C 414 B-XLS large-diaphragms (\$999 each), six Shure SM57 dynamics (\$149 each) and an Audio-Technica AT25 (\$275) complete the porta-rig's rather straightforward mic list. While many other models could be substituted into this list, nearly everyone knows what to expect from these well-known, well-built mics. To me, having these mics would help take some of the selection guesswork out of recording on location. With a litany of other factors sure to arise while recording on site, knowing that I have an extremely versatile—and not terribly expensive—mic collection at bay is a reassuring feeling. Because a DI will surely be needed, I'll also include the high-quality Radial J48 (\$199). For transport, the SKB 12-Space Mic Case (\$189) will hold the SM57s and the condensers in their own individual cases and still have room for cables and sundry items.

For monitoring purposes, the Mackie Big Knob Studio Command System (\$384) will

A FANTASY STUDIO Shopping Spree

serve as a combo level control, monitor switcher and talkback box. The iconic, small Big Knob will fit well into the scenario as it only requires a small footprint. A pair of Tannoy System 800A two-way powered



MOTU Digital Performer

monitors (\$1,895 per pair) are large enough to provide necessary fullness, yet are small enough to configure into tight spaces in which a porta-rig such as this may be utilized. The rack-mountable Model 406 6-channel headphone amplifier from ART (\$159) is included for affordable, high-gain headphone monitoring, while five Sony MDR 7506 foldable headphones (\$130 each) and one pair of AKG K271 Studio Closed Headphones (\$249 each) will offer smooth response and maximum isolation for predictably high-volume tracking situations. The K271 offers a nifty extra feature: a built-in auto-mute switch that engage when not worn.



RODE NT4

For transporting the total porta-rig package, I'll use a Rock N Roller R2 Micro equipment cart (\$119). It expands from 26 to 39 inches in length and holds up to 350 pounds—only one trip from the SUV will get my complete rig to where it needs to be.

I still have a bit over \$2,500 remaining in my \$25k budget, which I will spend on necessary cables, a collection of microphone stands and the lightweight Yamaha DS750 drum throne (\$130). While the G4, Big Knob and monitors will most likely rest atop the ATA flight case, I'll also need a place to sit!

BUDGET: \$100,000 THE FANTASY MIX ROOM

An increasingly large number of music projects are now being mixed completely within the digital domain. Simultaneously, prices of ultrahigh-resolution digital recording systems have dropped dramatically while a bevy of new sleek digital desks have hit the market. Because of this—and because a large-format console is personally preferable for mixing—I have chosen to outfit my \$100k studio as a fully digital surround mix room centered on a Soundtracs DS-00 digital console and a Steinberg Nuendo digital audio workstation.

Conceived to be the centerpiece of a total recording, mixing and editing system, the ultra-adaptable Soundtracs DS-00 (\$68,072) offers 64 channels of full processing, 40 buses and surround mixing capability in formats up to 7.1—perfect for my all-digital mix room. The DS-00 is also equipped with eight analog inputs, 16 analog outputs, 24 AES I/O with sample rate conversion for each XLR connection and eight I/O optical connections.

Because this is solely a mix room and all processing will take place within the mix room's DAW, spending such a large part of my \$100k budget on the DS-00 is doable. The base DS-00 includes 16 channel faders, which will be fine for my purposes. Considering the EX-00 eight-fader expanders are \$14,433 each, I'd rather spend nearly \$15k elsewhere.

Perfectly suited for surround mixing, the Nuendo Version 2.0 digital audio workstation (\$1,499) has multichannel architecture throughout the entire signal path. It features up to 12 discrete channels for every input, audio track, effect, group and output. Nuendo 2.0 also offers a massive amount of effects, ranging from standard dynamics and filters to ultra-detail-capable modulators or quality restoration processors. It also supports VST or DirectX plug-ins available from a variety of third-party manufacturers—which can be used both off- and online—so I can build an impressive plug-in collection as my budget and the power of my CPU allows.

To be best prepared for the future—and for 192 kHz—I have selected extra I/O via Apogee AD-16X D/A and DA-16 A/D converters (\$3,495 each). The units feature the C777



JBL LSR6328P

clocking technology found in Apogee's Big Ben in addition to SoftLimit, an analog peak limiter that allows the capture of an additional 6 dB without going into an "over" condition. Combined with the DS-00's own great I/O offering, these Apogee units allow my mix room to be well covered in the realm of ins and outs.

For my host CPU, I have chosen Dell's top-of-the-line Dimension XPS PC (\$1,699), which feature a Pentium 4 540 processor, 512 dual-channel DDR2 SDRAM, an 80GB hard drive and a CD-



Glyph GT103

R/DVD-R drive. The Dimension PC is coupled with a 23-inch Dell W2300 LCD monitor (\$1,399), which will be more than sufficient for my needs.

For data storage, I've opted for the Glyph GT-103 (\$907), a 1U, three-bay FireWire storage frame. Three Glyph GT-Key 80GB hot-swappable, 7,200 rpm hard drives (\$435 each) will be utilized with the GT-103. This configuration will allow easy transfer of session data to and from the mix system.



Soundtracs DS-00

Being a mix room, my \$100k studio rig is especially dependent on having a great monitoring system. Because this is a surround-ready mix room, I've decided to purchase a JBL LSR 6328P/5.1 monitoring system (\$7,775) from the variety of wonderful surround monitor packages currently available. The THX-approved system featuring five bi-amplified LSR6328P monitors and one 250W LSR6312SP subwoofer offers Linear Spatial Reference, RMC Room Mode Correction and boundary-compensation technologies to tackle most any acoustics issues. Most unique is JBL's RMC, which combats low-frequency standing waves. Once a circuit included in the subwoofer is calibrated, low-end accuracy dramatically improves at the mix position.



TC Powercore

After selecting a pair of Herman Miller Aeron chairs with lumbar support (\$1,000 each), I have completed the fantasy mix room's main purchase list—once again, under budget! As I'm under by about \$8k, I've opted to spend the rest on plug-ins and appropriate cabling. TC Electronic's PowerCore system (\$645) will be a great addition to this mix room. It can run up to 12 TC MegaReverbs or other TC PowerCore plug-ins simultaneously and features some truly great plug-in performers. Definite inclusions in the budget are VSTs such as Antares AutoTune 4 pitch correction (\$399) and Steinberg's Surround Edition (\$499), featuring a bundle of ultracool 8-channel effects.



Nuendo 2.0

BUDGET: \$250,000

THE FANTASY TRACKING ROOM

After budgeting for two studio rigs of very different purposes, my final ideal rig will be configured as a tracking studio centered on a high-quality, yet reasonably priced, analog desk: a 48-input Trident Audio Series 80 5.1 console (\$100,000). I carefully chose a comparatively low-cost console because for my tracking setup, I would rather have more available budget to spend on analog outboard processors and high-quality microphones. There's nothing like sitting near a wall of glowing tubed gear awaiting signals from a band passionately flailing away at full blast. *That's* recording excitement!

The Trident Audio Series 80 5.1 is an updated replica of the original Trident Audio Developments Series 80, a legendary British console that has been a part of some truly incredible records. Per channel, the Series 80 5.1 features a reproduction of the original desk's mic preamp and EQ; the EQ offers two swept mids and switchable high-shelving and low-shelving mids. Updates on the original Series 80 design include 5.1 mix capability, eight aux sends and eight aux returns. In the center section, the Series 80 5.1 offers the 2-channel Oram Hi-Def EQ and SoniComp dual-circuit compressor/limiter. Fully automated, the Series 80 5.1 also includes a remote palladium contact patchbay.

As previously mentioned, conversing with gear-savvy peers helped me solidify my gear lists. In regards to the Series 80 5.1, most agreed that an analog desk in such a tracking room was preferable, but in today's recording scene, consoles aren't viewed in the same way as they used to be. These days, when an increasing amount of album projects—even some major ones—are recorded and mixed without the use of a traditional console, spending the largest portion of my budget on one just didn't seem like a good move. I felt that I should include a well-respected analog console with lots of character, but with a comparatively small price tag. Of all the console candidates I considered, the Trident Series 80 5.1 best fit the bill.

This tracking room will include a Digidesign Pro Tools | HD3 Accel system (\$14,000) and five Digidesign 192 I/O units (\$3,995 each) to allow for the recording of 40 simultaneous tracks. The 192 I/O 16-channel 24-bit/192kHz-capable audio interface offers eight channels of analog, eight channels of AES/EBU, eight channels

of TDIF, 16 channels of Lightpipe and two additional channels of Lightpipe or S/PDIF digital I/O, which should cover input and output quite nicely.

A dual-processor Apple 2GB PowerPC G5 (\$2,949) will serve as the system's CPU. The superfast G5 processor, FireWire 400 and 800 ports and seemingly infinite expansion possibilities makes this computer an obvious choice, especially when the budget allows for it! For viewing Pro Tools tracks, Apple's new 20-inch cinema display (\$1,299) will be used. For storage, my tracking room's DAW will incorporate three Glyph GT-Key 80GB hard drives (\$435 each)—just like the \$100k mix room. The Glyphs will allow me to freely move project files from my tracking room to my mix room via the GT-Key hot-swappable drives.

Understanding how most musicians prefer to listen back to tracks in a studio environment, I have chosen to install a couple of large main monitors for—if nothing else—wow factor. Offering the needed wow will be a pair of Dynaudio M3A three-way active main monitors (\$8,945 per pair), which feature dual 300mm polypropylene bass drivers, dual 150mm piston midrange drivers and a 28mm ESOTAR soft-dome tweeter with an aluminum voice coil. The M3A's transparent acoustic characteristics, even while monitoring at high levels, will certainly deliver any desired high-volume "wow" requested by those hanging out in the control room. For near-field speakers, two options will be nice to have: Two Genelec 8040A bi-amplified near-field monitors (\$2,500 per pair) and a pair of ADAM S3A three-way, tri-amplified monitors (\$4,850 per pair) should offer a wide range of monitoring choices. Most engineers are highly impressed with M3A, 8040A and S3A monitors, so these selections should surely serve as a well-rounded monitor collection.



Dynaudio M3A

A FANTASY STUDIO Shopping Spree

The studio will also need a headphone monitoring setup. By selecting an Aviom Personal Monitor Mixing System, performing musicians will have up to 16 channels of audio at their fingertips to mix any way they desire. The system features the 1U AN-16/1 Input Module (\$899), which converts analog inputs from the console and transmits them through the Aviom A-Net protocol, traveling via Cat-5 cable. Receiving digital signal from the Cat-5 will be six A-16/1 Personal Mixers (\$499 each) that allow up to 16 custom mixes to be saved as snapshots. As included in my fantasy mobile rig, six AKG K271 studio headphones (\$249 each) will deliver all audio to the musicians' ears.

Here is where the fun starts. With around \$89k remaining in the budget, I still have a clutch of cash to spend on great analog outboard gear and microphones. To start, I will purchase eight channels of Wunder Audio's PEQR1, a rack-mounted version of the stellar PEQ1 1970s-style mic preamp/equalizer. When purchasing at least eight units, Wunder gives a multiple unit discount (\$2,000 each for eight). Compared to the classic Neve 1073 that the PEQ1 was modeled upon, the Wunder Audio unit offers more equalizing ability with fully developed lows, more presence in the mids and clearer highs. It's truly a great front end for any tracking session and is sure to be used constantly in my tracking room scenario.

The Manley SLAM! Stereo Limiter and Mic Pre (\$6,600) will also find its way into my outboard racks. The SLAM! is outfitted with two tube mic preamps and a FET-based limiter, making it a great rock 'n' roll tracking machine. Two Empirical Labs Distressor EL 8-SX compressors with a pre-installed British Mode option (\$4,599 each) will also be on the list. The EL 8-SX's British Mode concept, based on an unusual setting

on classic UREI LN1176 limiters, offers aggressive, over-the-top compression abilities. For further compression and DI needs, the equipment list will include an API L200 12-slot rack (\$675) holding 10 API 255L compressors (\$695 each) and two API 205L instrument direct boxes (\$595 each). In the realm of guitar recording, a Little Labs PCP Instrument Distro (\$1,050) will come in handy. The PCP is a 1-in, 3-out guitar splitter featuring transformer-isolated guitar level outs with phase reversal, ground lift and level adjustments on every output.

For effects, I've chosen the Lexicon 960LS Stereo Multi-Channel Digital Effects System (\$16,649), which is similar to the 960L without the multichannel processing and AES/EBU digital I/O. The savvy effects system supports eight 24-bit/96kHz balanced XLR I/O, offers flexible I/O mixing capabilities and has a seemingly infinite collection of great reverbs and other effects. Because the 960LS will be used in my stereo-based tracking studio, I feel that it's no big deal to do without the multichannel capabilities. Besides, in this fantasy scenario, I'll do all of my mixing in the surround studio!

The tracking rig's microphone list has been compiled to offer a well-rounded selection of transducers for most acoustic instrument- or amplified instrument-based sessions. Starting with the largest and priciest selection, I have chosen the Soundelux E47 tube microphone (\$3,950), which is based on the classic Neumann U47. From incredibly capturing great vocal performances to room microphone applications such as distance drum miking and acoustic, gather-round-the-mic situations, the E47 should find lots of use at the studio.

The rest of the mic list includes something for everyone and enough to sufficiently record a full band or ensemble. A Neumann U87-A1 (\$3,149), two AKG C 414 B-XLSs (\$999 each), 10 Shure SM57s (\$149 each), an AKG D112 (\$299), an Audix D6 (\$349) and four Sennheiser MD-421 IIs (\$485 each) act as mic locker staples. For stereo-miking needs, dual DPA 4011 cardioid condensers (\$1,850 each) and two Sony C-38 tri-pattern mics (\$1,675 each) are stellar transducer choices to have. For further miking options, a Neu-



Trident Series 8051

mann KM84-styled SKM184 small-diaphragm stereo mic pair (\$1,949), the unique BLUE Dragonfly cardioid (\$1,095) and the ultraflat Earthworks SR77 directional condenser (\$995) round out the list. Finally, two Royer R-121s (1,195 per pair) serve as multipurpose, nearly bulletproof choices when only a ribbon microphone pair will do.

While not exactly in the microphone category, the Yamaha SKRM-100 Subkick low-frequency capture device (\$499) has been added to the list for its ability to get great bass drum sounds to a recorded medium. The unit is essentially a 6.5-inch speaker loaded in a 10x5-inch Yamaha birch/mahogany drum shell. When placed in front of a kick drum, the low-frequency transducer can be combined with an internal kick drum microphone for a bass-bolstering thump. When used with the AKG D112, the SKRM-100 is a really neat and simple tool for getting great bass drum sounds.

Because long-running overdub sessions are a given, two Herman Miller Aeron chairs with lumbar support (\$1,000) will sit before the fantasy room's Trident desk. With around \$2,500 left in the budget—which will be spent on cables, microphone stands and the like—I have again come in under budget. With that, it's time to record!

CHOICES, CHOICES, CHOICES

Looking back at the many pages of gear and prices listed here, I have determined that outfitting a fantasy studio is a worthwhile exercise, regardless of whether you have an available budget or not. It's simply a great way to understand the choices available in outfitting an appealing, realistic and flexible recording rig at a variety of price and purpose points. Doing so also reveals the incredible amount of manufacturers that create interchangeable, yet ultimately different, recording products.

Now, onto my next big fantasy challenge: Where are all of my clients?

Strotter Bullins is a North Carolina-based freelance writer specializing in the professional audio and entertainment industries.



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Are You Plugged In?

BY ROGER MAYCOCK

Computer-based production systems have come a long way since the days of razor blade editing. As DAWs have matured, an entire market has developed for plug-in signal processing. There's no shortage of dedicated (as opposed to FX modelers with echo on them or delays with reverb presets) reverb plug-ins available; some are sold stand-alone, while others are offered in a multiple-processor package.

Many reverb plug-ins are only available as part of a combo hardware/software bundle, while others ship as part of a larger desktop production system. For clarity, we've categorized the various plug-ins into one of these groups. But make no mistake: There are plenty of great reverbs available in every format, with most of them priced far less than what a comparable hardware unit would cost. Here, we explore a few of the options.

TRADITIONAL REVERB PLUG-INS

Anwidasoftware (www.anwida.com) DX Reverb 2.0 is a DirectX plug-in for PC that provides a comprehensive set of tools, including 11 different reverb algorithms (two small rooms, two medium rooms, two large rooms/halls, two plate reverbs, two gate reverbs and one inverse reverb), 60 factory presets, a built-in preset manager and a facility for manual insertion of control parameter values. DX Reverb 2.0 employs 64-bit internal processing and supports 24-bit/96kHz audio. The plug-in offers stereo output and incorporates full MIDI implementation to recall presets using MIDI program change messages and to control all parameters in real time using MIDI control change messages. DX Reverb Light 2.0 is a scaled-back free version (DirectX, VST) and Spazio for SAWStudio 1.0 is a native SAWStudio plug-in with a feature set similar to DX Reverb 2.0.

Enhanced with DirectX automation and available for Sonar, Home Studio, Project5 or any application supporting DirectX or VST, Cakewalk's (www.cakewalk.com) Sonitus:fx reverb is available stand-alone or part of Cakewalk's Sonitus:fx Suite. Sonitus:fx provides keyboard shortcuts and toolbar functionality for bypass, undo/redo, A/B comparison, parameter reset, preset management and help file access, and its built-in preset manager lets you create and use presets in all host applications.

Cakewalk's Soundstage Plug-in for Roland V-Studio is an acoustic space modeler distributed by Roland. Its reverb engine allows adjustment of parameters such as absorption, trapping and HF damping; while its graphic user interface allows control over wall placement and height; microphone position, patterns and separation; and performer positions.

Designed specifically for the Pro Tools|HD Accel card, Digidesign's (www.digidesign.com) ReVibe is a reverb modeling tool that includes nine reverb algorithms and more than 200 room types/early reflections. ReVibe's room characteristics, along with an early reflection, can be added to a reverb; early reflections and room coloration are combined into a single editable control called the Room Type. Reflections and shape can be displayed independently for front and rear channels. Editing control for reverb EQ and color is handled via an interactive graph representing the frequency and gain of these parameters. ReVibe supports mono, stereo and surround processing. Digidesign's Reverb One, which offers traditional reverb processing, is available for Pro Tools|HD Accel, Pro Tools|HD and Pro Tools|24 MIX systems. Digidesign D-Verb is also now free in the DigiRack plug-in set, which is bundled

New Reverb Applications Go Soft, Add Convolution

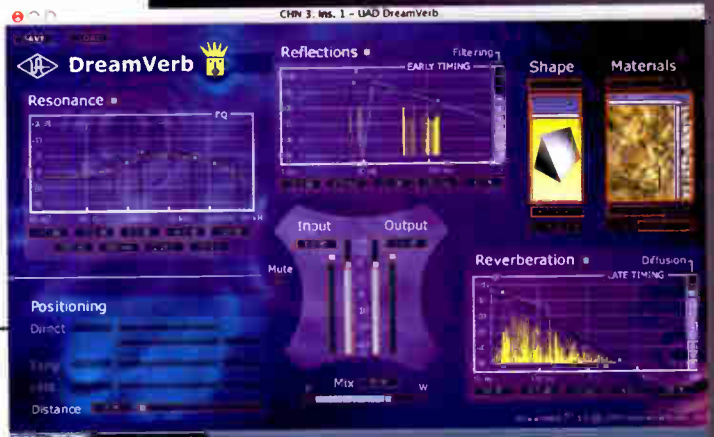
with all Pro Tools Versions 6.0 and higher.

Bringing Eventide's (www.eventide.com) best reverbs from its flagship Orville™ processor to the desktop, Reverb, for Digidesign Pro Tools TDM for Mac V. 5.1.3 or greater, offers halls, chambers, plates, rooms and low-fi effects. Each reverb type offers 3-band stereo parametric equalization before and after the reverb, reverb contour for built-in tone shaping, a pair of delay lines with feedback and a compressor. Hardware control of the Eventide Reverb plug-in includes support for the Digidesign ICON, Command 18, ProControl, Control 24 and other control surfaces.

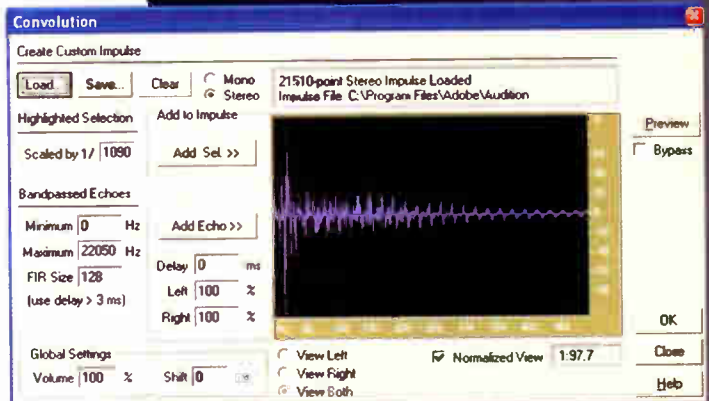
Nomad Factory's (www.nomadfactory.com) Liquid Reverb, distributed in the United States by Tascam, is part of the company's Liquid Bundle. Liquid Reverb has provisions for gain, predelay, damp, room size, high- and low-shelving EQ, stereo width and pan. This is a VST-compatible plug-in for Mac (OS 9 and X) and Windows operating systems.

Power Technology's DSP-FX (www.dspfx.com) bundle incorporates 12 assorted plug-ins, including StudioVerb and AcousticVerb. Both reverbs employ 32-bit floating-point arithmetic for all calculations and can interface with all DirectX-compatible recording programs. These reverbs also function in two stand-alone modes: one for processing .WAV files in real time, and the other for processing the stereo inputs of the PC's soundcard.

PSP (www.pspaudioware.com) EasyVerb contains nine reverb algorithms designed to simulate physical spaces (halls, rooms, etc.) or popular



Universal Audio DreamVerb



Adobe Audition's convolution reverb



Eventide Reverb



Christian Knufinke's freeware convolution reverb

Are You Plugged In?

plate and spring reverb machines. Supporting sample rates up to 96 kHz, this plug-in facilitates easy control over the various algorithms' parameters, low-shelf and high-shelf filters, and includes a library of presets. EasyVerb supports VST and DirectX formats for PC, and VST for Mac OS X. RTAS for PC and Mac versions are forthcoming, as is AudioUnits for Mac.

Nearly freeware **Ambience** was devel-

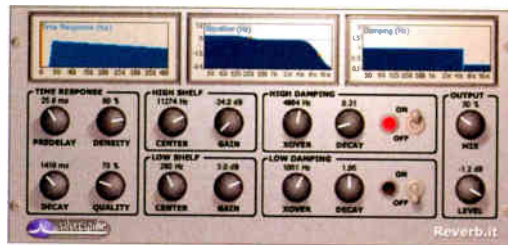


PSP EasyVerb

oped by Magnus, a member of Smartelectronic (www.smartelectronic.com/~magnus), a group of software programmers with an interest in all things audio. This plug-in's principal categories include gating, decay, shape, EQ and damping. Additionally, there are controls for the wet/dry mix and stereo master output. You can download a demo (also referred to as the "nag") version that prompts you for a donation. If you send a donation, then you will be provided the nag-free version. **Ambience** is available for AudioUnits and VST (Mac and PC).

Sonic Timeworks (www.sonictimeworks.com) offers ReverbX and Timeworks Reverb 4080L DirectX plug-ins for PC, and ReverbX RTAS for Mac. ReverbX is a new, more comprehensive and powerful follow-up to Timeworks Reverb 4080L. Both plug-ins are compatible with all DirectX applications and feature real-time previews. The newer ReverbX features SMP (Symmetric MultiProcessor) optimized digital reverberation, supports DirectX 8 automation and sample rates over 192 kHz. ReverbX RTAS runs on Mac OS 9 or higher with a G3 or higher processor. It is compatible with Pro Tools 5.1 or greater applications supporting RTAS plug-ins.

Silverspike (www.silverspike.com) Reverb.it is a real-time stereo reverb plug-in for Mac and PC that simulates diffuse reverberation of rooms—accomplished via a reverb algorithm based on random reflection patterns. This VST plug-in provides two shelving filters and up to three separate reverb frequency bands to provide the spectral balance of the reverberated signal. Reverb.it provides adjustable reverb tail



Silverspike Reverb.it

quality, up to three separate frequency bands, supports sample rates up to 96 kHz and employs 32-bit floating-point processing. The plug-in can be used as a send/insert/mastering effect, contains an equalizer with low- and high-shelving filters, and supports VST automation.

SpinAudio's (www.spinaudio.com) RoomVerb M2 is based on virtual room acoustic modeling to simulate various acoustic spaces. RoomVerb M2 provides a wide variety of effects—including rooms, plates, halls, gates and reverse reverbs—and more than 200 presets. Plug-in formats include VST, DirectX and AudioUnits, with software platform support for PC and Mac. Supported sample rates are dependent upon the host application, and VST automation is provided. RoomVerb M2 employs 32-bit floating-point processing and provides mono/stereo and stereo/stereo I/O support.

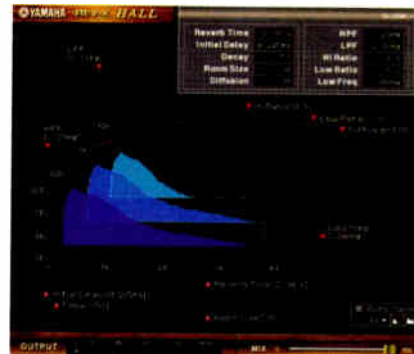
Offered as part of **Steinberg's** (www.steinberg.net) Surround Edition 2.0 collection of VST host application processors for Mac and PC, OctoVerb is an 8-channel room simulation plug-in. OctoVerb includes parameters for ER gain, tail delay, tail gain, pre-delay, reverb time, room size and damp. Additionally, there are controls for the wet/dry mix, level, and low and high damp. Automation is available, as are a Link function and an LFE splitter/combiner capability for special low-frequency effects. It should also be noted that Cubase, WaveLab and Nuendo all come with reverb options built-in; with Nuendo, it also includes the Acoustic Stamp convolution reverb.

Wave Arts (www.wavearts.com) Master-

Verb is a true stereo reverb plug-in for VST, MAS, AudioUnits, RTAS and DirectX host applications. MasterVerb's independent room size and decay time parameters facilitate simulation of a variety of spaces, including rooms, concert halls and cathedrals. This plug-in features a 3-D plot of your reverb's characteristics updated in real time as you edit

decay time, room size, early damping, late damping and low-frequency scale. An added 2-D control helps define one's desired room response quickly.

Yamaha (www.yamaha.com/proaudio) offers a variety of add-on effects packages for its 01V96V2, DM1000V2, 02R96V2 and DM2000V2 digital consoles. The AE-031 comprises three reverbs: REV-X Hall, REV-X Room and REV-X Plate. These reverbs employ the REV-X algorithms first introduced in Yamaha's SPX2000 professional



Yamaha AE-031

multi-effect processor. In addition to the parameters originally found in the SPX2000, these plug-ins incorporate new parameters such as room size and decay envelopes, which offer greater definition and more precise nuance control.

CONVOLUTION REVERB PLUG-INS

Audio Ease (www.audioease.com) Altiverb™ for Mac G4 and G5 is a sampled acoustics plug-in for MAS, HTDM, RTAS, VST and Au-

Convolution Reverbs Made Easy

If you're not familiar with the term convolution, here's how the convolution reverb process works.

In the most basic sense, a convolution reverb employs an audio recording of an acoustic space using something such as a starter's pistol or a frequency sweep to excite the environment. From this, you obtain an impulse response (IR). This is the description given to plot frequency amplitude over time. This IR is then processed by the convolution engine, along with the source program material. The resulting sound, theoretically, should be exactly what you would hear if that source were actually played in the room or hall corresponding to the IR.

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dioUnits that offers realistic 1, 2 and 4-channel sampled acoustics of real halls, cathedrals and other acoustic environments. Host-specific descriptions are available on the company's Website. A new V. 5 will be available shortly, which alters the nature of the product's impulse response files to accommodate additional information about the source recordings. This is a free upgrade for registered users.

Developed in Germany by Christian Knufinke, SIR (www.knufinke.de/sir/index_en.html) is a freeware convolution reverb plug-in that is compatible with VST host applications. Often referred to as a room simulator, SIR enables you to import and manipulate impulse responses to create reverb effects in an assortment of acoustic spaces. SIR imports 24- and 32-bit .WAV files, and provides an FFT EQ for the impulse response, an auto-gain option and has parameters for pre-delay, attack, envelope, length and stretch, plus control for the wet/dry mix. The site provides links to an extensive collection of IRs to create your own acoustic environments.

Delay Dots' (www.delaydots.com) SpectrumWorX VST is not a reverb plug-in in the true sense, but it merits attention as a convolution engine billed as the "ultimate mangle." Among its various convolution capabilities, there are more than 40 modules to mangle and tweak the original sample in the spectral domain. SpectrumWorX VST provides frequency-domain processing with a resolution of up to 2,048 bands; different plug-in signal flow modes from mono to four inputs; 16 queue slots that can be filled with modules; a switchable 8-slots mono



Delay Dots SpectrumWorX VST

sampler; and a huge library of built-in processing modules. This plug-in requires a VST-compatible host application.

Billed as the first TDM-based convolution reverb for Pro Tools, Trillium Lane Labs (www.tllabs.com) TL Space, distributed by Digidesign, has the ability to harness up to eight Pro Tools|HD DSP engines in parallel to create its various effects. TL Space uses 32-bit block floating-point processing and claims zero latency on HD Accel systems. Designed for Digidesign-approved Macin-

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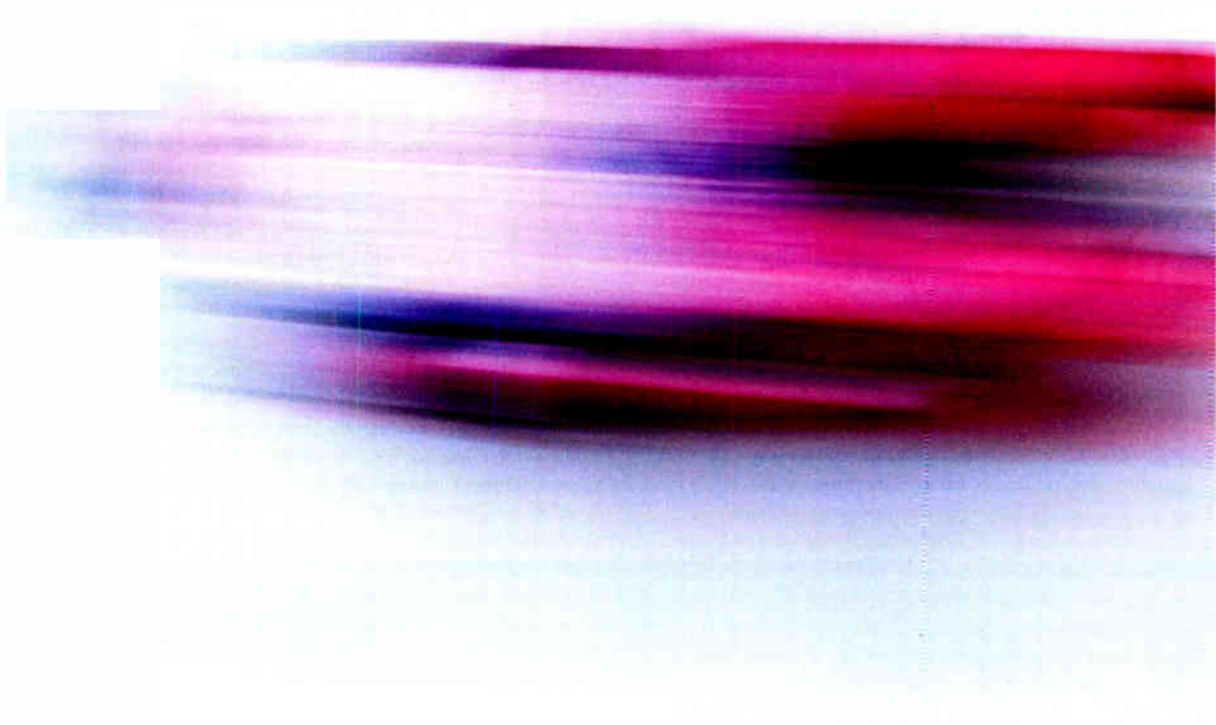
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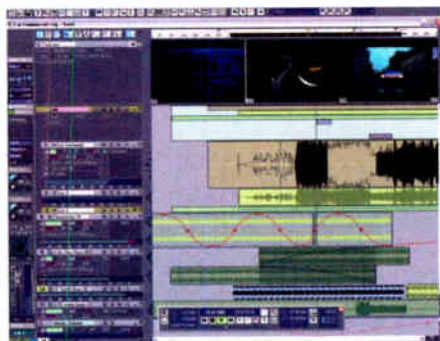
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Are You Plugged In?



Trillium Lane Labs TL Space

toosh and Windows systems. TL Space supports TDM, HTDM, RTAS and AudioSuite processing for mono, stereo and surround formats. TL Space includes a library of reverb and effect impulses for music and post applications, and imports a range of impulse responses in common convolution formats.

Voxengo (www.voxengo.com) Pristine Space is a native PC VST convolution reverb plug-in featuring an 8-channel processor, with each channel independent of the others, making it possible to use it in various surround configurations. Pristine Space supports the loading of up to eight impulse files.

It features nondestructive impulse editing, serial convolution processing, possesses comprehensive routing options and incorporates a linear-phase impulse equalizer. Pristine Space supports all output sample rates, .WAV and .AIF file formats, provides A/B comparisons and offers zero latency processing.

Providing classic controls over its key reverb parameters, **Waves'** (www.waves.com) IR1 provides more than 60 sampled real acoustic spaces and more than 60 samples and presets created by classic hardware devices. With 96kHz high-resolution support, the IR1 provides RT60 impulse response manipulation techniques for controlling reverb times, plus control over room size, reverb decay envelope, density, resonance, decorrelation, damping, direct convolution length control and CPU loading. A 4-band parametric EQ is provided. RTAS, HTDM (Mac), AudioSuite, VST, DirectX (Win), MAS (Mac) and AudioUnits (Mac) formats are supported on select hosts.

PLUG-INS SHIPPED IN HARDWARE/SOFTWARE BUNDLES

Bundled as part of the company's Scope Project and Professional recording system pack-

ages for Mac and PC, Creamware's (www.creamware.com) MasterVerb Pro now incorporates authentic early reflections based on the source-image method and adjustable reverb color and width controls for more realistic impressions of space. The tool also provides an X/Y control for simultaneous adjustment of reverb time and room size, plus control for reverb delay, pre-delay, shape, diffusion and definition. MasterVerb employs 32-bit live processing, provides 11 specially engineered room models—including room, stage, cathedral and others—and provides more than 50 presets.

Part of the Omega Desktop Recording System that ships with BIAS Deck 3.5 SE for Mac and Pro Tracks™ Plus for PC, **Lexicon's** (www.lexiconpro.com) Pantheon reverb plug-in provides six reverb types including hall, chamber, plate, room, ambience and custom, coupled with 16 user-adjustable parameters. There are 35 factory presets and an editor to create your own. Pantheon employs floating-point DSP processing, mono stereo operation, is 16- and 24-bit compatible and supports sample rates up to 96 kHz. Pantheon integrates with well-known applications including Sound Forge, Adobe Audition, Digital Performer and Cubase SE.

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Developed specifically for the Mackie D8B console, TC Electronic's (www.tcelectronic.com) TC Reverb offers 23 reverb types including rooms, halls, church and car interior. The plug-in features pre-delay, decay, high-multiplier and reverb low among its various parameters. An A/B compare function is also present. The plug-in's input assign parameter selects between pre- or post-DSP inserts, aux sends, or left and right mix.

TC Electronic's MegaReverb and Classic Verb are available with TC's PowerCore, an integrated hardware/software solution that brings rackmount processing to DAWs. Plug-ins can be accessed via any AudioUnits or VST host application. By processing plug-ins on its built-in DSP, PowerCore reduces the burden on the host CPU, allowing more tracks, processing and virtual instruments. MegaReverb draws its reverb algorithms from the company's M5000 reverb, provides six room shapes modeled after real rooms with separate early reflections and tail controls, and a host of additional functions. MegaReverb is also available for Pro Tools|HD as part of TC TOOLS. Classic Verb provides a variety of rooms, halls, plate reverbs, etc.; provides a low- and high-color offset parameter; and supports 24/96 processing.

Part of Universal Audio's (www.uaudio.com) UAD-1 Studio Pak (a combination of DSP card and accompanying software), DreamVerb is the company's flagship stereo reverb plug-in and draws from its sibling, RealVerb Pro. DreamVerb's interface lets you create a room from a list of different materials and room shapes. With full real-time control, these acoustic spaces can be customized by blending the room shapes and surfaces with one another, while the density of the air can be edited to simulate different ambient situations. DreamVerb features a 5-band active EQ and level ramping for contouring early and late reflections, along with separate controls for intensity, timing and onset of early reflections and late-field reverberation. DreamVerb and RealVerb Pro run with applications supporting AudioUnits, VST, DirectX, MAS and RTAS. DreamVerb will be available shortly for Pro Tools|HD.

REVERB BUNDLED IN EDITING SYSTEMS

Adobe Audition (www.adobe.com), formerly Syntrillium Software's Cool Edit Pro, is well-known as a comprehensive package that incorporates a complete set of

plug-ins for manipulating sound. Audition provides real-time processing of DirectX- and VST-compatible effects. Among its collection of effects is a convolution engine that allows recording of impulse responses for creating custom acoustic spaces. Adobe Audition also includes four different dedicated reverbs, including the Studio Reverb, which was introduced in the new V. 1.5. The Studio Reverb is designed to be natural-sounding, yet light on the CPU, which makes it perfect for real-time multitrack projects. Audition supports all the standard professional sampling rates up to 192 kHz.

Apple/Emagic's (www.emagic.de) Space Designer is a convolution reverb plug-in for Logic Pro 6 (Mac) and ships with a library of more than 1,000 impulse responses. These include real rooms and halls, as well as legendary classic and contemporary reverb units. You can also record your own impulse responses for custom reverb creation. Reverbs can be customized quickly using Space Designer's



Apple/Emagic Space Designer

envelopes for volume, filter and density. Space Designer includes 12- or 6dB low-pass, bandpass and highpass filters and supports sample rates up to 192 kHz. Also bundled with Logic are PlatinumVerb, GoldVerb and SilverVerb.

Bundled as part of BIAS Peak 4 for Mac, BIAS (www.bias-inc.com) ImpulseVerb is a convolution reverb that provides a substantial library of impulse responses (more than 180 IRs from more than 30 real and physically modeled spaces), including performance halls, cathedrals, caves and other spaces, and has provisions for importing your own IRs to create custom reverbs. ImpulseVerb offers real-time preview; an editable Space envelope, which controls reverb length, attack and decay characteristics; and a wet/dry slider to control the amount of reverb being applied. ImpulseVerb requires a G4 or faster processor.

Bundled as part of the company's Digi-

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Are You Plugged In?

tal Performer 4 package, the MOTU (www.motu.com) eVerb plug-in provides acoustic modeling of initial reflections from auditoriums, small rooms, halls and other spaces to shape your sound. eVerb provides



MOTU eVerb

separate high-end and low-end reverberators with crossover definition; color and diffusion parameters; shelf filtering with definable high cut; high damping; a hi-Q link feature; and control over the size and level of the initial reflections. Furthermore, eVerb

provides pre-delay, delay and level control, as well as support for surround processing.

Magix Samplitude (www.samplitude.com) is a recording, editing, mixing and mastering environment for Windows. The program supports 24-bit audio with sample rates upward of 192 kHz. As part of this system, Samplitude incorporates a real-time room simulator with convolution technology capable of handling 5.1 mixing. Samplitude provides DirectX and VST plug-in support with automatic latency compensation.

Sony Media Software's (http://mediasoftware.sonymovies.com/default.asp) Acoustic Mirror environment simulator is a DirectX plug-in that ships as part of the company's Sound Forge audio editing package. Acoustic Mirror lets users apply the acoustic responses of real environments such as concert halls, caves and stairways to audio material. The plug-in also has microphone modeling capability with a comprehensive vintage microphones up through contemporary models. Acoustic Mirror has provisions for importing impulse responses for custom effect creation.

A component of Tascam's (www.tas-

cam.com) GigaStudio Sampler for Windows PCs, GigaPulse supports the NFX format for GigaStudio and adds microphone modeling, selectable room position and tail extension processing. In addition to an extensive set of halls, soundstages and plate reverbs, GigaPulse imports impulse responses for the creation of your own effects. Its microphone modeling capability lets you choose from a variety of microphones as the transducer for your environment and functions as stand-alone for emulating other mics. GigaPulse's tail extension technology reduces CPU processing load by dynamically generating a traditional reverb decay based on the IR. A cascade function combines IRs to create new ones, and a perspective slider facilitates control over mic characteristics. These capabilities are found in the GigaStudio Orchestra version. GigaStudio Ensemble and Solo versions contain a sample playback version of GigaPulse. A stereo VST version of GigaPulse will become available in the fourth quarter of 2004. ■

Roger Maycock is a freelance writer, composer and engineer based in Southern California.

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Ken Scott

Abbey Road Vet Contemplates Career of Groundbreaking Gigs

Since his first dates as an assistant engineer during The Beatles' sessions for *A Hard Day's Night* at London's Abbey Road Studios (then known as EMI Studios), Ken Scott has been at the forefront of many key developments in popular music. His work with David Bowie defined a sound known as "glam." His sessions with fusion pioneers Mahavishnu Orchestra landed him gigs producing many albums with the cream of that movement's talents.

The experience he gained working with such musically accomplished and compositionally evolved artists enabled Scott to take Supertramp from an unfocused art-pop assemblage to a band capable of producing one of album rock's most enduring records, *Crime of the Century*. His affinity for connecting with quirky artists produced fine albums for Devo, theatrical rockers Happy the Man and The Tubes. Then, when MTV and '80s pop were first making a splash, Scott produced 3D, Missing Persons and Level 42, bands with melodic pop smarts and musical chops that were as solid as any fusion ensemble. Through the '90s, Scott continued producing notable projects, including Dada and their hit "Dizz Knee Land." More recently, Scott did the 5.1 remix of Bowie's *Ziggy Stardust* and worked with George Harrison on the re-release of *All Things Must Pass* and other Harrison projects.

Your SACD surround remtx of Bowie's classic Ziggy Stardust & The Spiders From Mars came out awhile ago. How was the experience revisiting those tracks?

It was an amazing experience, especially going back to Abbey Road to do it, which is where I started. I was working with Paul Hicks, one of the engineers on all of The Beatles re-releases. Because it was a whole new format for me and a new studio—well, kind of a new studio—I thought I should work with someone else. It was an absolute joy.

It was interesting rediscovering things from back then. I would love to know how I got some of the sounds that were on the multitracks; you just can't get them these days, for whatever reason. [Laughs] And things like how for a long time, orchestras over in England refused to use headphones. So when we were overdubbing orchestras, we had to feed it through speakers to them, which would



PHOTO: CHERYL MCMAHON

quite often create problems. I was fascinated, having completely forgotten about that, going back and hearing all of these orchestral tracks and the basic track blasting out of the speakers. But even with things like that, it still sounded great.

Did Bowie have any input on the surround mixes?

No, other than specifying that I had to do it. He was never there for the original mixes, so if he wasn't there originally, he is certainly not going to be there now when he is so fed up with all of his past work.

I feel that quite a lot of 5.1 [material] is being thought of in much the same way as quad was when that was originally coming out in the '70s. Record companies think that they can take an album and get it mixed in 5.1 in a couple of days, spend as little money on it as possible and just throw it out there and the general public won't know the difference. This, of course, is utter bullshit.

Bowie did it the right way: He is reverting back to the people who did it originally, the ones that know the product that well, that knew what was going on back then and how it should sound. We've been talking about doing 5.1 on David's stuff for a couple of years now, and all the way along the line have specified the producer and engineer that did it originally has to do it now, which is the way it should be. *Crime of the Century* by Supertramp would be the most perfect surround record. But after many phone calls, I discovered it's been farmed out. Boy, was I disappointed.

When I look at the list of people that you've worked with, it seems you've always been anticipating trends or developments.



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I suppose it comes down to not wanting to become bored. Although there are some technical and artistic areas that I tend to repeat when it comes to the music, I prefer to do something different and hopefully something I haven't necessarily heard before.

The palette of today's rock and pop music seems quite narrow these days.

Absolutely. As much as we would bitch at English radio years ago—and the fact that there were only like three stations—the amount of different things played on English radio was phenomenal.

I feel that one of the problems we have today is everything is so defined. If you want to hear R&B, you'll go to an R&B radio station. If you want to hear something else, you'll go to another radio station. There's not that sort of mixture of putting on a radio station and suddenly hearing something completely unexpected that is a completely different style of music you've never heard before.

It was much more eclectic on the radio over there back then and that gave people much more varied taste. David [Bowie] always said that he took all of his influences, threw them in a big bowl, mixed it up a little bit and it came out as being Bowie.

I can see that. He seemed equally influenced from artists ranging from Jacques Brel and Anthony Newley to the Velvet Underground. Right. Now, if the only influences you are getting are one particular type of music, how far can you expand yourself?

Another problem is the prevalence of overly



Happy the Man at the gates of A&M, 1976. (L-R): engineer Ed Thacker, guitarist Stanley Whitaker, keyboardist Frank Wyatt, Ken Scott, percussionist Mike Beck and keyboardist Kit Watkins

compressed, uniform, in-your-face music that adds to a sameness. I really believe it undermines much of the dynamic ebb and flow that creates real emotional immediacy. Apparent dynamics and real dynamics are not the same thing.

Absolutely, it's ridiculous. I like dynamics. I hate the compression that's used these days. It bores me to tears. How has it evolved? I feel that it has devolved. It's not something that I'm particularly happy about, but it's just the way it's gone with technology.

Can you describe your methodology when you mixed a track in analog?

The way I worked for many years was to do a short section at a time. For instance, I'd get

the intro right and then go onto the first verse, get that section right, splice it onto the intro and move on to the next section. I used to piece everything together like that and it enabled me to make some drastic changes between sections.

This process evolved from the Bowie sessions. Up to that point, there'd be the producer, myself, a second and quite often an artist, and if we needed to make changes, there would be hands everywhere on the console as we'd go through an entire mix. When it came to mixing *Ziggy Stardust and Hunky Dory*, it was just me, and quite often there wasn't even a second. The only way I could do what I wanted was to do it in sections. The knack was having it so the edit didn't sound like an edit. You had to have the very beginning there, and there had to be enough "hang-over" from the section before to make it sound right so it would all fit together. I would mark everything on the desk and then change it to the way I wanted it to sound. Then I would go back and put it where it had been and quickly I did it—bits and pieces.

I still think that my best work was done that way. These days, with computerized boards—and not necessarily going on to analog—I don't like it as much.

Do you think that the physicality of printing to analog tape and splicing together sections allowed you to mentally and emotionally change gears and get "outside of the box" more?

Yes, absolutely. I know you can do things in sections with automation, but it just doesn't feel quite the same way. Mentally, I'm into it in a different way now and I don't know if I like it.

When mixing in short sections, I found I could really focus and keep my attention on



Ken Scott with 3D in L.A., circa '80s (l-r): Mike Fink, Keiv Ginsberg, Ken Scott, Rick Zivic, Teddy Wender and Nick Stevens



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a specific thing—for instance, the bass—through the section and make sure it's exactly where I want it at all times. I'm afraid that with automation, because one is dealing with much longer sections—normally, the entire song—I seem to suffer with a short attention span and drift around between instruments more. And along with this, I tend to think more in the long—the whole piece—than the short: the intro, verse or whatever. Just a little, but certainly more than I used to.

The Beatles' fearlessly creative works, Bowie's Ziggy Stardust or Mahavishnu's Birds

of Fire, among others you worked on were groundbreaking. You must have had a strong sense that you were involved in something very special on some level at the time. Just working with the greatest band in the world [The Beatles] was a complete high, from beginning to end. What more can one ask for? But, generally, I get freaked out when I think about the whole historical thing and how important they actually are. I chose not to think of it that way. I'm very much like George [Harrison] was in that respect. We did some recordings that happened to be very good and people liked them. Period. They

[the artists] were doing their jobs and I was there just doing my job. That's it.

It's almost blown out of proportion, the way I see it. The whole thing of talking about *The Rise and Fall of Ziggy Stardust* 30 years after the event is incomprehensible to me. We did something we hoped we might have to talk about for six months. That would've meant that it was successful. Over six months, no way.

One aspect that made The Beatles so unique was the fact that many of their recordings had sounds and mixes that were audacious as compared to other recordings of the time, and for that matter, even by today's standards.

Oh, yeah. It was the '60s. Rules were meant to be broken. For a period of time on some of those songs, the standard procedure for mixing was full bass and full treble on every track. That was the EQ. One day, probably John came in and said, "Just put full bass and full treble on everything," and he liked the



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Selected Discography



The Beatles: *White Album* (1969),
Engineer

David Bowie: *Hunky Dory* (1971),
Producer/Engineer

Duran Duran: *Pop Trash* (2000), Engineer

George Harrison: *All Things Must Pass*
(1970), Engineer

Jeff Beck: *There and Back* (1980),
Producer/Engineer

Kansas: *Vinyl Confessions* (1982),
Producer/Engineer

Level 42: *World Machine* (1985),
Producer/Engineer

Lou Reed: *Transformer* (1972), Engineer

Mahavishnu Orchestra: *Visions of the
Emerald Beyond* (1974),
Producer/Engineer

Procol Harum: *Salty Dog* (1969), Engineer

sound of it and it caught on. Everyone wanted to do that on everything. That was just toward the end of the *White Album*.

I remember with "Savoy Truffle," we were mixing it very loud when [Beatles producer] George Martin, who had been on vacation in Greece, walked in and passed a comment to George [Harrison]: "Wow, that's very bright, isn't it?" and George said, "Yup, and I like it." And that's how it stayed. [Laughs]

One of my favorite tracks from the White Album is "Yer Blues," which is The Beatles at their rawest.

We were trying a different approach to the recording of one of George's vocals, and as an aside, I said to John, "I suppose for the next song you'll want to record in there," pointing to a very small room adjoining the control room. He jumped on the idea and the next song to be recorded was "Yer Blues." [Laughs]

For whatever reason, there was a level of unfettered artistry. Maybe before the conglomerates took over the record companies.

I think that has a lot to do with it. The corporations weren't telling any of us what to do. We were just doing what we wanted to do and, one has to add, it was selling.

Tell me about working with Devo.

It was great. They're much like The Tubes in that they have this stage persona that makes everyone think they're totally insane, but when you get close with them, that persona isn't there and they are very, very clever. They'd do everything they could to make people believe this persona.

One day, we were in the studio and I got a phone call from the studio owner saying, "I've got this guy who wants to book some time. Can I show him around?" We weren't that busy, so I said, "Yeah, sure." It was a normal business-like session. Sanity prevailed. Then in walks this prospective client. Mark [Mothersbaugh, of Devo] started to sort of run around, completely ridiculous. He almost scared the guy out of the control room by appearing completely *manic*; that's the only way I can describe it. He was being very silly. It just went along with the stage persona. As soon as the guy left, we sat down and continued the session as normal. The Tubes were very similar. All business in the studio, but if someone came in, they'd suddenly become one of their many stage personas.

So if you were to look at your sessions, what would you say are some of your greatest Spinal Tap moments?

Oh boy! [Laughs] It's funny, because the things I remember like that are all *me*. It's that kind of thing where you think you're



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changing the EQ on something and you suddenly realize the EQ's not switched in. So all that you're doing is purely in your imagination: You're not changing anything, but you're hearing it change each time.

I've done that with trying to select a vocal. I got into the habit of recording like six takes and then I'll spend an hour or so going through and picking the best bits and making a composite. There's this one line that I can't find a good take of and I'm going through and trying different words and all of that. The second [engineer] and I are discussing it, and he'll say one take is a bit

flat and I'll say a word is right-on. And we'd be going through it when I would realize that I wasn't changing tracks at all. I was hearing the same track all the time, but we were both hearing it different ways each time we heard it. So I just listened to the whole thing turned up to 11 and it all sounded wonderful. [Laughs]

When it came to Missing Persons, I took on the role of manager, as well as producer and engineer. Even chief cook and bottle washer doesn't cover everything that job entailed. We were to do a TV show up in the north of England. Well, the tour man-

ager happened to send the wardrobe case full of dirty laundry to the TV studio and took the one with the stage clothes down with him to London. Luckily, Dale [Bozzio], the singer, had a couple of the transparent plastic bowls she needed, but I had to chase all over Manchester or Newcastle trying to find thin plastic tubing to fashion the bowls into the type of almost see-through bra she was renowned for wearing onstage at that time. I never in my wildest dreams pictured me kneeling on the floor of a TV studio, soldering iron in hand, making holes in bowls to be used to support and cover a singer's breasts.

Almost every one of the things in *Spinal Tap* I saw at one time or another with them, including getting lost trying to find the stage. So you had your "Hello, Cleveland" moment. Oh, absolutely. [Laughs]

One group that did exceptionally fine work with you were the Dixie Dregs. I always thought Steve Morse [Dregs' lead guitarist] had the technical prowess of John McLaughlin, but he had a strong compositional sense of developing melody. Their second album, *What If*, is great from top to bottom, but "Night Meets Light" is a particularly gorgeous piece of music.

Absolutely. "Night Meets Light" is definitely my favorite off of there. Steve was probably the best guitarist I've ever worked with, but he didn't have to prove it, whereas McLaughlin always felt he had to. If Steve felt something called for a lot of notes, he'd do that, but if he felt that one note would've done for an entire solo, that's what he would've done.

Capricorn Records understood their music and how to sell it. Unfortunately, then Arista signed the band and lost them completely. They had this thing with signing those types of bands and then not knowing what to do with them. Had Capricorn still been around and had the next album, the Dregs could've possibly taken over where Mahavishnu left off.

You've covered so many different realms as a producer. What attracts you to an artist or band?

I have no idea. Quite frequently, no one quite knows what it is I'm seeing. All I know is that I don't like to be bored and so I like acts that take you to a lot of different places, and I tend to search for variation on a project-to-project basis. Bottom line, there's just something deep within me that says, "I wanna work with this. I think that it could happen. I think we could make a really good record." If it sells, then that's the icing on the cake. ■

Rick Clark is Mix's Nashville editor.

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Sound On Sound review July 2004


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Dr. Trey

Hawaiian Producer Books Local Talent at The Doctor's Office

It may be difficult to imagine a ukulele player from Oahu loosely modeling his music producing career after gangster rap's überproducer, Dr. Dre, but Trey Terada, known to friends and fellow musicians as Dr. Trey (www.doctortrey.com), has blazed a unique path to establish his reputation as a producer/engineer. Terada challenges what is expected of him as a Hawaiian and a musician, working on Oahu with up-and-coming talent in the hopes of clinching recording deals outside of the island. His recent education via Berklee College of Music's online program has allowed Terada to work in his homeland and collaborate with musicians worldwide.

After studying music at Arizona State University in the '90s, Terada returned to Oahu. As his love for the recording process evolved, he taught music and opened his own studio, the Four Strings. Though the first incarnation of his studio in 1996 was created as an acoustical space for traditional Hawaiian stringed instruments and fitted with analog gear (including a Paris system), interest in digital technology and successful collaborations with one of his ukulele students, Jake Shimabukuro, gave Dr. Trey the impetus to redesign his studio, upgrade to digital gear and become formally educated in various digital systems. Shimabukuro, who is now one of Hawaii's most popular artists, signed with Sony Music Japan International and has recently toured with banjo player Béla Fleck.

The studio's design and structural changes resulted from efforts by Terada and friend David Kawika Crowley, a longtime member of Hawaii's music industry and a carpenter. The newly dubbed studio, The Doctor's Office, is located in a commercial space in Kaneohe. The three-room facility comprises an iso booth, a tracking room and a control room—an intimate 800 square feet. As a producer, engineer and musician, Terada credits his classes at Berklee and his purchase of Pro Tools HD4 Accel with “changing the game” for him. “The great thing about Berklee [is that] they're offering stuff that I can't get here [in Hawaii]. I've always wanted to go to Berklee as a musician or as an engineer, and the online program allowed me to [do that]. Because of Pro Tools, when I was in Japan recording one of Jake's projects, I was able to bring a [Digil] 002 up there with me and turn the hotel into a classroom and recording studio.”

The studio features a Digidesign Command 8, Paris ProControl, Focusrite Control 124 and Mackie CFX 20 consoles. Terada's room also contains an Mbox, which he uses as a mobile rig when needed. The studio relies on a carefully accumulated system of Mac G4s running Pro Tools, Live, Reason and Logic; Apogee converters (which Terada prefers); Tascam CDRW05000, 1DA-P1



Dr. Trey at work

and Roland VS-1680 recorders; speakers including Genelec 1032, Roland DS-90, and Yamaha MSP-5 and NS-10s, among others; and a Mesa Boogie dual-rectifier Blue Angel amp and Epifani 3x10 bass cabinets.

“I wanted to make sure that whatever I could offer would be the maximum amount that anyone would ever need,” he affirms. To that end, the studio also features high-end mics from Neumann, Royer, AKG, Audio-Technica and RØDE, and classic instruments to work with from Fender, Taylor, Martin and Koolau. A wide selection of plug-ins—from Crane Song to TL Labs—and virtual instruments Sound Scan, Ultra Focus, MachFive and Lounge Lizard round out the collection.

Terada recently produced the debut album for Hawaiian female hip hop musician, JRoq. “It's a different vibe from most hip hop,” he says. “The greatest thing about living in Hawaii is that I can actually create and record music that's inspired by paradise.” Terada's continued involvement with Shimabukuro's career and Sony Music Japan International brought a new level of notoriety to his production work and overall career: In 2003, Terada was named Hawaii Music Awards' Producer of the Year for his contribution to Hawaii's music community.

Terada has just begun to plan the path his work will take at The Doctor's Office. And while that future will most likely involve the latest technology and developing and recording new artists, Terada seems happiest just considering the possibilities. “People seem to think that I have a signature sound, but I think that's because they haven't heard my other stuff yet,” he says with a laugh. “I don't like to put myself in a niche. I would like to take it to the next level.” ■

Breean Lingle is Mix's assistant editor.

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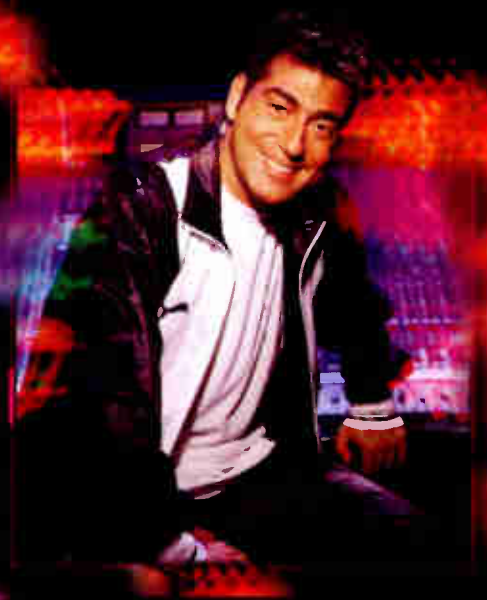
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Center for the Recording Arts

The Education Option

Hands-On Study, Work With a Mentor, Lifetime Learning

Although there have historically been two schools of thought about audio education—on-the-job vs. academic training—the lines are blurring because a slew of successful programs now offer much more hands-on experience. Despite the need for a thorough understanding of theory, ours is still an industry that relies heavily on mentoring, real-life experience and technical expertise.

We can divide the learning process into three stages: choosing an education program, augmenting it with an internship or work-study program and finding an appropriate entry-level position to suit individual needs. Ideally, professional contacts and hard work will ensure that one step leads to the next.

Audio education options range from stand-alone intensive seminars, one- and two-year audio programs offered at secondary institutions and private schools, undergraduate and graduate university programs in sound recording and music technology and doctoral programs for those interested in scientific research and academia. All of these have a place in this industry, but prospective students need to shop around, research and decide how to proceed. Keep in mind that expensive programs don't necessarily mean a better education.

WHAT DISTINGUISHES A GOOD PROGRAM?

The best audio programs may be those that are based within another discipline; i.e., within a Music, Science or Electrical Engineering degree or diploma. Great programs often have an appropriate combination of all three subject matters as they relate to audio. Such programs, in contrast with stand-alone audio programs, offer a wider education, both technically and aesthetically.

Programs offering more studio time to a smaller number of students are obviously attractive. Quality of instruction is critically important: The curriculum, synergy of the program and, specifically, the faculty, staff and adjunct faculty from the professional industry are more important than having extravagant facilities and expensive equipment. Beware of programs that don't teach audio fundamentals or those that don't offer recording of live musicians in acoustic spaces. Many programs offer computer/workstation and MIDI lab practice, but knowing how to operate your digital audio workstation does not make you an audio engineer. Choosing to take part in a course that offers instruction on a particular piece of gear is valuable to augment your learning, provided you have other experience.

Whether you are planning to be a recording engineer, mastering engineer, producer, editor, film score mixer or sound designer, the best foundation is learning how to listen. There are no shortcuts. The best starting point is simply to practice recording many instruments with many types of microphones in a concert hall or a studio (a skill

set previously only found in a classical Tonmeister education). The practice of acoustic recording can lead to the development of technical and musical ear training, along with improved communication and people skills. This kind of experimentation and practice is something that is hard to get once you have a job and paying clients.

By Theresa Leonard

Of course, an audio education need not be solely in music recording or audio for picture. Job possibilities in audio are growing in unexpected areas such as game audio, car audio and Internet audio, for example. A good program must look toward the future with respect to high-resolution, new digital formats and multichannel audio, and the equipment package must remain up-to-date.

BENEFITS OF AN INTERNSHIP

Reading texts, journals and magazines are extremely important, but it is through practice and mentoring that budding engineers can refine their skills. Working closely with peers and clients in internship programs will provide the opportunity to refine people skills. An internship also offers the opportunity to really discover your strengths and refine your technical skills. Internship or work-study positions have led to great contacts in the industry for many students who have gone on to work in a variety of jobs.

AUGMENTING YOUR OPPORTUNITIES

Lifelong learning is the basis for any career. The Audio Education Society provides a unique learning environment in which students and professionals in all areas of audio can pursue personal and professional development, discuss applied research, and share ideas and experiences. In addition to being the only professional society devoted exclusively to audio technology (with greatly reduced rates for students), the AES is a valuable institution for all students to find mentors when attending conventions and participating in international student recording competitions and education events. Students can also acquire new technical expertise by attending a growing number of tutorials and workshops, in addition to papers and exhibitor's seminars. Through AES participation, both online and through conventions, one can develop lifelong contacts in the industry.

A successful audio education continues to rely heavily on mentoring and hands-on skills. Finding an appropriate school, gaining experience through an internship program and participating in professional organizations can provide you with a much broader education and contacts that will lead to better job possibilities. ■

Theresa Leonard is the education chair and president-elect of the AES.

The 2004 Mix Directory of Audio Education Programs

Schools, Courses, Seminars and Internships

EAST

American University

4400 Massachusetts Ave. N.W., Washington, D.C. 20016-8058
Phone 202/885-2746 E-mail sarisky@american.edu Website www.american.edu Degrees/Certificates: 4-year B.S. in Audio Technology, minor in Audio Technology. Program: Housed in the Department of Computer Science, Audio Technology and Physics, the program concentrates on the art and science of music and audio production, electronic recording, and computer and electronic systems. The department's studios give the students hands-on experience in a full-featured facility with 2-inch/24-track analog, Pro Tools HD and a great mic collection. Electronic music studios provide everything from a Moog Modular to digital workstations.

Appalachian State University Hayes School of Music

813 Rivers St., Boone, NC 28608 Phone 828/262-3020 E-mail music@appstate.edu Website www.music.appstate.edu recording Degrees/Certificates: 4-year B.S. in Music Industry Studies; Bachelor's of Music in Performance, Education and Music Therapy. Program: The Music Industry Studies major features a music recording and production concentration offering undergraduate-level training in the principles of music and sound recording and audio post-production. Other concentrations prepare students for careers in arts management, promotions, music merchandising and manufacturing. The 24-track facility offers digital mixing, multiple editing workstations and industry-standard peripherals. The Broyhill Music Center also includes two performance halls, an opera studio, MIDI studio, computer labs, a music library, rehearsal halls and practice rooms. Off-campus music industry internships.

Audio Recording Technology Institute

100-5 Patco Ct., Islandia, NY 11749 Phone 631/582-8999 E-mail inquiries@audiotraining.com Website www.audiotraining.com Degrees/Certificates: Certificate offered for graduates of our 8-month program. Program: 8-month 170-hour program with extensive hands-on experience. Classes are 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.

Audio Recording Technology Institute, Orlando

4525 Vineland Rd., Ste. 201B, Orlando, FL 32811 Phone 888/543-2784 E-mail info@audiocareer.com Website www.audiocareer.com Degrees/Certificates: 45-week Audio

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.

Engineering diploma. Program: 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, and film post in a THX pm3-certified mixing theater. An accredited member of ACCSCT, the emphasis is hands-on training. Studios are equipped with everything you need, from ProControl to SSL digital. Placement assistance is provided, and financial aid is available to qualified applicants. Class size is limited to six students.

Barton College

Box 5000, Wilson, NC 27893 Phone 800/345-4973 E-mail pvalera@barton.edu Website www.barton.edu Degrees/Certificates: B.A. in Mass Communication (Audio Recording Technology concentration). Program: Extensive hands-on training in a 32-track recording studio and a digital audio studio. Very low student/teacher ratio. Curriculum includes: studio recording; MIDI, electronic music; digital audio workstation recording, editing and mixing; production audio for film and video; audio post-production for film and video; and an internship program. Facilities include a Soundcraft Sapphyre Lc analog console with automation, outboard gear, Pentium IV computers with software by Pro Tools, Cakewalk, Nemesys, TC Electronic, etc. Keyboards and modules by Kurzweil, Korg, Roland, Alesis and Yamaha

Belmont University Mike Curb College of Entertainment and Music Business

1900 Belmont Blvd., Nashville, TN 37212-3757 Phone 615/460-5504 E-mail hamiltonp@mail.belmont.edu Website www.belmont.edu Degrees/Certificates: Bachelor's of Business Administration with emphasis in Music Business. Program: The CEMB offers an award-winning faculty and staff of music business professionals and a program combining classroom experience with real-world application. Owns and operates three renowned recording facilities including the multi-Platinum Ocean Way Nashville, historic RCA Studio B and the Center for Music Business. Students have access to eight state-of-the-art recording studios and a full range of digital and analog recording equipment, and both vintage and current signal processors, microphones and DAWs.

Berklee College of Music

1140 Boylston St., Boston, MA 02215 Phone 800/BERKLEE E-mail admissions@berklee.edu Website www.berklee.edu Degrees/Certificates: four-year Bachelor's of Music or four-year Professional Diploma. Program: Established in 1945, Berklee College of Music is the world's largest independent music college. Over 3,900 students and 460 faculty members interact in an environment designed to provide the most complete learning experience possible. The college offers: 12 majors, over 270 ensembles, six recital halls, 300 practice rooms, 12 professional recording studios and Media Center with current industry technology. More information on the Music Production and Engineering major can be found at: <http://classes.berklee.edu/mpc>.

Bethune-Cookman College

647 Dr. Mary McLeod Bethune Blvd., Daytona Beach, FL 32114 Phone 386/481-2740 E-mail polks@cookman.edu Website

www.cookman.edu/Music/musictechnology.htm Degrees/Certificates: B.S. in Music Technology; 4-year degree program; Pro Tools training. Program: The Bethune-Cookman College Music Technology Degree Program (MTECH) is a four-year program designed to prepare students for a career in the rapidly expanding music technology industry. Students are admitted with the same standard as all undergraduate programs in music, and take the full musician-ship sequence, including applied music. Students also take classes in analog and digital audio, advanced computer applications, marketing, management, recording productions and techniques.

Cayuga Community College

197 Franklin St., Auburn, NY 13021 Phone 315/255-1743 E-mail keeler@ayuga-cc.edu Website www.telcomcayuga.org; www.cayuga-cc.edu Degrees/Certificates: 2-year A.A.S. in Audio Production, two-year A.A.S. in Radio/TV Broadcasting, two-year A.A.S. in Telecommunications Technology. Concentrations in Video Production, Digital and Interactive Media, Broadcast Journalism and Electronic Publishing Program: The college's facilities include a 32-track recording studio, FM radio station, television studio, remote truck and digital media lab. Industry internships are required. In-state tuition is \$2,900/year. Residential housing is available. Cayuga is a unit of the State University of New York.

Central Carolina Community College

1105 Kelly Dr., Sanford, NC 27330 Phone 919/718-7257 E-mail bfreemar@cccc.edu Website www.cccc.edu Degrees/Certificates: 1-year diploma in Radio Production, 1-year diploma in Television Production, 2-year Associate Degree in Applied Science in Broadcast Production Technology. Program: Radio production students study analog and digital audio recording, mic techniques and multitrack production with Cool Edit Pro and Pro Tools Digital. Additionally, students operate the college's 3,000-watt station, WDCC 90.5 FM. Television students study linear and nonlinear editing on Avid systems, directing, producing, video photography, field production, video graphics, broadcast writing and reporting.

City College of New York

The Sonic Arts Center, Shepard Hall Room #72, West 140th and Convent Ave., New York, NY 10031 Phone 212/650-8288 E-mail sonicarts@crow.admin.cuny.cuny.edu Website <http://sonic.arts.cuny.cuny.edu> Degrees/Certificates: 4-year B.F.A. in Music (Audio Technology concentration). Program: Exciting seven-studio facility featuring Pro Tools 6, Logic Platinum 6, software synths, plug-ins, all running on gigabit-connected Macintosh G5 computers. Small classes allow ample faculty/student interaction and six hours of lab time per-week, per-course. In-depth coursework prepares students for various careers in the audio and music technology industries.

The College of Saint Rose

432 Western Ave., Albany, NY 12203 Phone 518/454-5178 E-mail nelsamm@mail.strose.edu Website www.strose.edu Degrees/Certificates: 4-year B.S. in Music, Music Industry emphasis; part-time M.A. in Music Technology. Program: The College of Saint Rose Music Industry core includes technology, music business and commercial music. The technology area includes required courses in recording engineering, record pro-

duction, Pro Tools, MIDI. Music business courses include survey, artist management, entertainment law. Commercial music offerings include songwriting, arranging, conducting and applied study. On-campus multitrack studio equipped with Pro Tools, DA-78HR and MCI JH24, a Pro Tools edit room and MIDI lab with 15 Mac-based DAWs.

Duquesne University Mary Pappert School of Music

600 Forbes Ave., Pittsburgh, PA 15282 Phone 412/396-5983 E-mail kikta@duq.edu Website www.music.duq.edu Degrees/Certificates: 4-year B.M. in Sound Recording Technology, B.M. in Technology Performance, B.M. in Technology Composition, Masters of Music Technology, Summer Recording Seminars. Program: Duquesne offers unique programs that blend a strong music performance education with recording and music technologies. On-campus facilities include two 24-track fully automated digital studios, mastering lab, digital music tech lab and workstation lab with 28 digital audio workstations. Hands-on experience is offered in a wide variety of degree programs. AES chapter meets regularly. Professional faculty includes Thomas Kikta and Francisco Rodriguez (Digital Dynamics Audio Inc.), Bill Purse and Lynn Purse (Aergo Electronic Ensembles).

Fanshawe College

1460 Oxford St. East, London, Ontario N5Y 5R3 Phone 519/452-4130 E-mail tmcmamus@fanshawec.ca Website www.musicindustryarts.com Degrees/Certificates: 2-year Diploma in Music Industry Arts. 1-year post-Diploma program in Digital Applications (Advanced Digital Audio and Digital Video Editing). Program: Started in 1975, Music Industry Arts offers a thorough 2-year education that provides a myriad number of career options. 24/7 access to two state-of-the-art recording studios with Pro Tools and traditional 2-inch tracking machines. Our studios and 10-station MIDI facility are equipped with dual-processor G5s and the latest software. The Digital Applications Program accepts graduates from other programs.

Finger Lakes Community College

4355 Lakeshore Dr., Canandaigua, NY 14424 Phone 585/394-3500 E-mail admissions@snfllcc.fingerlakes.edu Website www.fingerlakes.edu Degrees/Certificates: two-year A.S. Music Recording Technology degree. Program: The recording facility contains two recording rooms and a spacious control room. Single instruments to a full symphony orchestra can be accommodated in the 2,000-plus-square-foot recording room. Installed in the control room are a Mackie Digital 8-Bus console and 24 tracks of Tascam DA-88s. Editing and mastering are done on hard disk via MOTU 2408 using Samplitude Studio. Final mixes can be recorded onto DAT, MD or CD-RW.

Firedog Recording Studio and Training Center

57 Vliet St., Spotswood, NJ 08884 Phone 732/251-7775 E-mail contact@firedogstudios.com Website www.firedogstudios.com Degrees/Certificates: Recording Arts program including analog and nonlinear editing techniques. Program: Along with recording and mixing techniques, courses cover recording session procedures, signal flow, microphone techniques and operating recording equipment. The studio features a Pro Tools|HD system with Control24, and a selection of microphones and gear.

Fits & Starts Productions LLC

PO Box 1422, Eatontown, NJ 07724 Phone 732/741-1275 E-mail hector@fitsandstarts.com Website www.fitsandstarts.com Degrees/Certificates: Certificate of Achievement for completing seminar offered by the school. Program: The leading provider of audio seminars in North America, having conducted over 300 surround sound seminars. The multichannel audio seminars tour each year to 30 cities in five regions, featuring industry experts Mike Sokol and Hector La Torre. Colleges, private recording schools and studios should call to host the seminar. A new series of "H.O.W-To Church Audio Workshops" is also now touring the U.S.

Five Towns College

305 North Service Rd., Dix Hills, NY 11746 Phone 631/424-7000 E-mail admissions@ftc.edu Website www.fivetowns.edu Degrees/Certificates: Bachelor's of Music in Jazz/Commercial Music, with concentrations in performance, composition/songwriting, musical theater, audio recording technology and music business. Bachelor's degree program in Music Education. Bachelor's of Professional Studies (B.P.S.). Degree program in Business Management, with concentrations in audio recording technology, music business, video arts and theater arts. Program: The college is equipped with 16/32/64/72-channel SSL 9000J 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

3300 University Blvd., Winter Park, FL 32792 Phone 800/226-7625 E-mail admissions@fullsail.com Website www.fullsail.com Degrees/Certificates: Associate and Bachelor of Science degree programs in Computer Animation, Digital Media, Entertainment Business, Film, Game Design & Development, Recording Arts and Show Production & Touring. Program: Full Sail offers hands-on training in a state-of-the-art multimedia complex with multiple pro recording studios, featuring the Amek 9098i, SSL 9000J and Digidesign ProControl consoles. The Recording Arts facilities feature one-on-one lab environments housing industry-standard digital and analog consoles, as well as over 90 Pro Tools stations. The Recording Arts curriculum includes courses in recording and mixing consoles, audio post-production, workstations and session recording. Career placement assistance is provided, and financial aid available.



Future Media Concepts

299 Broadway, Ste. 151M, New York, NY 10007 Phone 212/223-3500 E-mail info@fmctraining.com Website www.FMCtraining.com Degrees/Certificates: Pro Tools Operator and Pro Tools Expert certifications Program: The nation's premier digital media training center provides a complete range of manufacturer-authorized training in digital media, including nonlinear editing, sound design, Web design and programming, video streaming, DVD authoring, 3-D animation, compositing and desktop publishing. FMC has recently moved to a new state-of-the-art facility, which will include a new upgraded Digidesign audio suite.

Georgia State University, School of Music

75 Poplar St., Atlanta, GA 30302 Phone 404/651-3676 E-mail rsthompson@gsu.edu Website www.music.gsu.edu Degrees/Certificates: B.Mus. in Music Technology; B.Mus. in Music Composition/Computer Music; M.Mus. in Music Composition/Computer Music; B.S. in Music Management; B.Mus. in Music Management. Program: Undergraduate and graduate studies in music technology. Emphasis on digital audio recording, signal processing and music production. Pro Tools|HD systems. Comprehensive internship program.



Guilford Technical Community College

901 S. Main St., High Point, NC 27260 Phone 336/334-4822 E-mail jtittle@gtcc.edu Website www.gtcc.edu Degrees/Certificates: A.A.S. in Recording Engineering, Concert Sound and Lighting, Artist/Music Management, Music Performance. Program: 2-year, state-of-the-art music industry program. Facilities include four recording studios, indoor theater/lighting studio and outdoor amphitheater, and two complete electronic music classrooms.

Hampton University

Department of Music, Hampton, VA 23668 Phone 757/727-5237 E-mail robert.ransom@hamptonu.edu Degrees/Certificates: 4-year B.S. in Music with an emphasis in Music Engineering Technology. Program: The Music Engineering program is designed for students who desire a career in audio engineering, music recording, audio equipment design, sound reinforcement, broadcasting, audio sales or studio maintenance. Students can complete this program, including an internship, in four years. Students who are admitted must have an applied instrument, voice, trumpet, strings, etc.

Harris Institute for the Arts

118 Sherbourne St., Toronto, Ontario M5A 2R2 Phone 416/367-0178 E-mail harrisinstitute@rogers.com Website <http://harrisinstitute.com> Degrees/Certificates: 1-year diploma. Programs in Recording Arts Management (RAM) and Producing/Engineering Program (PEP). Program: 84 courses relating to the business, technical and creative aspects of the music industry. Faculty includes 54 music industry leaders. The 16,000-square-foot facility includes Pro Tools in the audio post-production suite, Logic Audio in the MIDI/multitrack suite and 24-track digital multitrack in the music recording control room.

Howard University Department of Radio, TV & Film

525 Bryant St., N.W. Rm. 230, Washington, D.C. 20059 Phone 202/806-7927 E-mail williams@howard.edu Website www.howard.edu Degrees/Certificates: 4-year B.A. in audio production, 4-year B.A. in television production, 4-year B.A. in film production, 4-year B.A. in telecommunications management, 2-year MFA in film. Program: The school offers courses in radio production, audio for visual media and multitrack recording/mixing. The department has six Pro Tools-equipped audio studios including one state-of-the-art post-production facility that uses Pro Tools|HD. Audio courses provide hands-on instruction, and students have access to the university's professionally run WHUR-FM and the student-run WHBC-AM stations.



Institute of Audio Research

64 University Place, New York, NY 10003 Phone 800/544-2501 E-mail contact@audioschool.com Website www.audioschool.com Degrees/Certificates: diploma in Audio Recording and Production, plus Bachelor's Degree credit at participating universities and colleges. Program: Intensive nine-month program features digital audio and digital music production, analog and

AUDIO

EDUCATION PROGRAMS

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digital recording and mixing, signal processing technologies, audio post, MIDI applications, music business and DAW operations. Equipment features Mac-based platform running on OS 9/X, Pro Tools, Digital Performer, Reason. New all-digital studio with Sony DMX-R100 dual consoles. 18,000-square-foot facility in the heart of Greenwich Village. Professional studio internships and graduate-placement assistance. Licensed by NYS Education Department, approved for veterans training, accredited by ACCSCT. Financial aid for eligible students.

Ithaca College School of Music

3322 Whalen Center for Music, Ithaca, NY 14850 Phone 607/274-3366 E-mail tplant@ithaca.edu Website www.ithaca.edu/music Degrees/Certificates: B.M. in Sound Recording Technology (4 years). Program: Facilities include 24-track SSL/Pro Tools/HD recording studios, 8-track Yamaha 02R/Pro Tools production studio, three electroacoustic music studios. This program trains musicians to be engineers and includes a curriculum of music theory, history, performance studies and liberal arts, as well as specialized coursework in recording and 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. Very small class sizes. Audition and interview for admission are required.

Lebanon Valley College of Pennsylvania

Department of Music, Annville, PA 17003 Phone 717/867-6275 E-mail hill@lvc.edu Website www.lvc.edu/music Degrees/Certificates: 4-year B.M. in Music Recording Technol-

gy and B.S. in Music Business. Program: LVC is a private liberal arts college that combines a strong, traditional music curriculum with industry-related courses and experiences. Studies include music theory, history, performance, studio production and recording industry operations. NASM-accredited. Facilities include two 24-track recording studios (analog and digital), various computer labs for audio/video/new-media development, and Pro Tools production/editing/mastering rooms.

McGill University

Faculty of Music, 555 Sherbrooke St. West, Montreal, Quebec H3A 1E3 Phone 514/398-4535 E-mail wieslaw@music.mcgill.ca Website www.music.mcgill.ca/mmt Degrees/Certificates: 2-year Master's of Music Degree in Sound Recording; Ph.D. degree. Program: The graduate sound recording program combines practical and theoretical training in studio techniques, microphone selection and placement, digital sound processing and related subjects. Also included are technical ear training to improve auditory perception and hands-on experience working with musicians, ranging from solo performers to full symphony orchestras. Three fully equipped control rooms, four performance venues, three post-production editing studios, a separate four-studio suite for electroacoustic music, multichannel audio research lab and two computer labs.

Mercy College Center for Digital Arts

277 Martine Ave., White Plains, NY 10601 Phone 914/948-3666 E-mail psteinman@mercy.edu Website www.mercy.edu/cda Degrees/Certificates: 4-year B.S. in Music Industry and Technology. Program: Located 20 miles from New York City along with other media-related programs in game development, animation and Web design. Five 16-station labs, three recording studios and a performance theater. Comprehensive curriculum in digital audio, MIDI, synthesis, music business and music theory. Experienced faculty working within the industry. Competitive admission.

Miami-Dade Community College School of Film and Video

11380 N.W. 27th Ave., Miami, FL 33167 Phone 305/237-1185 Website www.mdcc.edu/dfvbeta Degrees/Certificates: Associate Science Degree in Radio, Television, Broadcast Programming; Associate Science Degree in Film Production; Certificate in Television Production; Associate Arts Degree in Mass Communication. Program: The program is designed for students who intend to seek employment in radio, television and film production. It stresses hands-on equipment, and students have access to high-end cameras, editing suites and video graphics animation facilities, and complete portfolio-quality production.

Middle Tennessee State University

PO Box 21, Murfreesboro, TN 37132 Phone 615/898-2578 E-mail record@mtsu.edu Website www.mtsu.edu/~record Degrees/Certificates: 4-year B.S. in Recording Industry; 3-year MFA in Recording Arts and Technology (pending). Program: The Recording Industry department offers two concentrations: production & technology, and music business. With over 45 different courses, the RI program is the most comprehensive in the country. Facilities include three on-campus studios featuring SSL and Studer digital consoles, MIDI and Pro Tools labs, mastering and listening labs, and post-production lab. Mixing and mastering in 5.1 channels are available. Two new studios are under construction. AES and SMPTE student chapters meet regularly.

Musitechnic Educational Services Inc.

888, de Maisonneuve East, Tower 3, Ste. 440, Montreal, Quebec H2L 4S8 Phone 514/521-2060 E-mail info@musitechnic.com Website www.musitechnic.com Degrees/Certificates: Computer-Assisted Sound Design, 1 year; Attestation of Collegial Studies (A.E.C.). Program: Musitechnic is the creator of the "Computer-Assisted Sound Design 901.24" collegial training program, offered in French or English. A thorough exploration of the technical and artistic facets of current hardware and software. Located in downtown Montreal and easily accessible by public transportation, Musitechnic offers its students a spacious, comfortable and professional work environment. Respected industry professionals teach the program.

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AUDIO EDUCATION PROGRAMS

Eastern Schools

Nassau Community College

One Education Dr., Garden City, NY 11530 Phone 516/572-7446 E-mail musoff@sunnassau.edu Website www.sunynassau.edu Degrees/Certificates: 1-year certificate in Studio Recording Technology. Program: This three-semester program is designed to introduce students to music and recording technology, provides a broad perspective of the music industry and acquaints students with musical structures (intellectually and aurally). Technical skills and internship training will be acquired in a professional recording studio (at an off-campus location).

The New England Institute of Art

10 Brookline Place West, Brookline, MA 02445-7295 Phone 800/903-4425 E-mail lehmannr@aie.edu Website www.neia.aie.edu Degrees/Certificates: Associate of Science in Audio Production, 2-year; B.S. in Audio & Media Technology, 4-year. Program: You'll get a solid grounding in critical listening, computer music and the physics of sounds, plus exposure to the actual situations you'll run into in your professional career. On the engineering side, you'll learn on our 32-channel automated SSL SL6000E/G+ mixing console and Otari MX80 2-inch 24-track.

New England School of Communications

1 College Circle, Bangor, ME 04401 Phone 888/877-1876 E-mail info@nescom.edu Website www.nescom.edu Degrees/Certificates: 2-year Associate of Science in Communications, Audio Engineering Concentration; 4-year B.S. in Communications Audio Engineering Concentration. Program: Degree programs offering intensive, hands-on instruction in analog and digital sound recording for music, television, radio and digital media. With advanced training in studio techniques using digital technology in an expansive on-site recording studio, students master the skills of recording, producing, mastering and distribution of audio. Lab classes are limited in size, allowing for individualized lab time.

New York University, School of Education

Department of Music and Performing Arts Professions, 35 West 4th St., Room 777, New York, NY 10012-1172 Phone 212/998-5422 E-mail musictechgrad.info@nyu.edu Website www.education.nyu.edu/music Degrees/Certificates: 4-year B.M. in Music Technology and Recording Arts; 2-year Master's of Music in Music Technology. Program: NYU's premier Music Technology program teaches composers, performers, recording engineers and others to use tools of technology to realize their ideas. The program's breadth supports applications to film scoring, multimedia, computer music, Tonmeister studies, interactive performance and collaborations. Our intense musical approach supports research and artistic production around the world. Facilities include 12 sophisticated recording and computer music studios.

NY Institute of Forensic Audio

PO Box 189, Colonia, NJ 07067 Phone 732/574-9672 E-mail owlmax@aol.com Website www.owlinvestigations.com Degrees/Certificates: Video Authenticity certification, Audio Authenticity certification, Voice Identification. Program: Fully equipped lab features the Avid Forensic workstation, which enables hands-on experience for all participants. Audio enhancement and authenticity, video enhancement and authenticity, voice identifications are all offered. Evidence procedures, legal questions and courtroom testimony related to the above specialties will be discussed.

NYC College of Technology/ Entertainment Technology

300 Jay St., #V411, Brooklyn, NY 11201 Phone 718/260-5588 E-mail dsmith@citytech.cuny.edu Website www.

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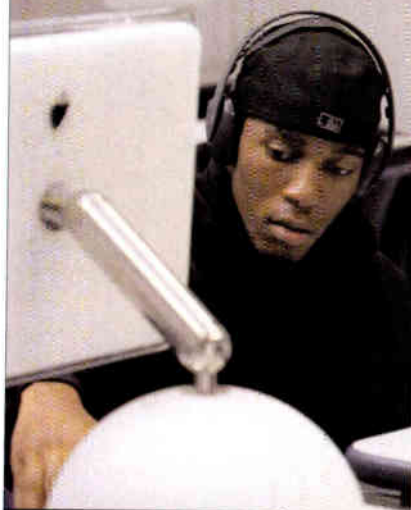
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citytech.cuny.edu/academics/deptsites/enttech/index.shtml
Degrees/Certificates: 4-year B.T. in Entertainment Technology. Certificates in sound, lighting, scenic construction and show control technologies. Program: City Tech's hands-on program focuses on sound for live entertainment. We feature low tuition and a world-class faculty. Our location in the heart of the live entertainment world offers professional opportunities in addition to in-school production work. Our state-of-the-art labs feature \$1.5 million in equipment, including Apogee Sound, Dataton, EAW, Crest, Crown, Level Control Systems, Mackie, Medialon, Meyer, Richmond Sound Design, Stage Research and TC Electronic.

NYU Steinhart School

35 West 4th St., Ste. 777, New York, NY 10012 Phone 212/998-5422 E-mail musictechgrad.info@nyu.edu Website www.nyu.edu/education/music/mtech/ Degrees/Certificates: 4-year B.M. in Music Technology, 2-year M.M. in Music Technology, 2-year M.M. in Music Technology Scoring for Film and Multimedia Sequence, 2-year M.M. in Music Technology Tonmeister Honors Sequence that includes Tonmeister certification. Program: Prepares for careers in recording engineering, production and post, A/V mastering, audio maintenance and repair, synth programming, multimedia and software development. 14 recording and primarily Mac computer music studios, A/V studio with video projection and THX systems, analog synthesis studio, a video digitizing and DVD-authoring studio, plus a 20-bit Sonic Solutions digital mastering room. Audio hardware includes Digidesign's Pro Tools|HD and MixPlus. SSL and Tascam consoles.

Northeastern University

Department of Music, 351 Ryder Hall, Boston, MA 02115 Phone 617/373-2440 E-mail ljanikian@neu.edu Website www.music.nyu.edu Degrees/Certificates: B.S. in Music Industry; B.S. in Music Technology (Composition for New Media); B.A. in Music Literature and Performance; B.S. dual-major in Multimedia Studies and Music Technology. Program: According to *U.S. News & World Report*, Northeastern is the Number One university in the country for programs requiring students to combine classroom learning with real-world experience. You will work professionally for 18 months, alternating with semesters in school. All degree programs with co-op takes five years.

Ocean County Vocational Technical Schools Audio Recording for Electronic Media Career, Technical Institute

PO Box 1125, NAVAIR, Lakehurst, NJ 08733-1125 Phone 732/657-4000 E-mail dbourke@mail.ocvts.org Degrees/Certificates: ½-year Audio Engineering certificate. Program: This program was started in 1996 and is offered to high school and post-secondary students—the first one of its kind offered at the high-school level in New Jersey. 450 hours per year, emphasis on hands-on recording by students. Upgraded program facilities include three control rooms overlooking main studio, audio computer lab, separate mixing suite and three digital audio workstation suites.

Omega Recording Studios School of Applied Recording Arts and Sciences

5609 Fishers Lane, Rockville, MD 20852 Phone 301/230-9100 E-mail school@omegastudios.com Website www.omegastudios.com Degrees/Certificates: Five certificate programs nationally accredited by ACCSCT, approved by the Maryland Higher Education Commission and approved for veterans' educational benefits. Avid-authorized education center. Program: The Omega Studios School functions within the four-studio Omega Recording Studios complex, offering five comprehensive programs, including Recording Engineer-

ing and Studio Techniques, Electronic Music Synthesizers and MIDI, Sound Reinforcement for Live Performance, Audio Production Techniques (featuring Pro Tools Operator certification) and Essentials of Music Business.

Ontario Institute of Audio Recording Technology

502 Newbold St., London, Ontario N6E 1K6 Phone 519/686-5010 E-mail inquiry@oiart.ca Website www.oiart.ca Degrees/Certificates: 1-year, college-level diploma in Audio Recording Technology. Program: North America's first and longest-running integrated immersion program (since 1983). A full-time faculty and 6:1 student/instructor ratio allows well-qualified students from around the world to thrive on creative development while acquiring a genuine skill set. Within six studios equipped with professional-level analog and digital gear, students learn problem-solving through signal flow, and how and why things work. The 1,200-plus-hour program are all in-studio, with 50% dedicated to student hands-on time.

Parsons Center for Audio Studies

192 Worcester St., Wellesley, MA 02481 Phone 781/431-8708 x11 E-mail info@paudio.com Website www.paudio.com Degrees/Certificates: Certificate of Completion for each course (except Golden Ears). Program: Faculty: David Moulton, Tom Bates, Brian Doser and David Franz. Courses for audio professionals include Golden Ears, Critical Listening for Audio Professionals, Principles of Audio for Professionals, Principles of Pro Tools, Pro Tools for Pros: Intermediate/Advanced, Growing Your Personal/Project Studio, Signal Processing I & II, Acoustics for Audio Professionals, etc.

Peabody Institute of Johns Hopkins University

1 East Mount Vernon Place, Baltimore, MD 21202 Phone 410/659-8100 x8136 E-mail apk@peabody.jhu.edu Website www.peabody.jhu.edu/recording-arts Degrees/Certificates: five-year Bachelor's Degree in Recording Arts, two-year Master's Degree in Audio Recording and Acoustics. Program: Comprehensive math/science/music-based degrees in recording arts. Fully automated digital facilities. See Website.

Penn State University

103 Arts Building, University Park, PA 16802 Phone 814/863-4879 E-mail CurtisCraig@psu.edu Website www.psu.edu Degrees/Certificates: 4-year BFA in Technical Theater (Sound Design); 4-year B.A. in Integrative Arts. Program: 3 theaters (all with automation systems: AudioBox, LCS and SFX PASC), recital hall, project recording studio, MIDI/mixdown suite, two computer labs (one Mac-only, one mixed platform) with audio facilities. Full-time faculty in sound design and electroacoustic music, and a graduate-level program in acoustics.

Pro Tools Training Center, Miami

1926 NE 154th St., North Miami Beach, FL 33162 Phone 888/277-0457 E-mail mail@protoolstraining.com Website www.protoolstraining.com Degrees/Certificates: Digidesign Pro Tools Operator certification (music or post-production), Digidesign Pro Tools Expert certification (music or post-production). Program: We are the premier Digidesign-certified Pro School with locations in Miami, Nashville, Atlanta and Texas. We offer all levels of Pro Tools training and have multiple Grammy winners as teachers, including Roger Nichols and Charles Dye. Our facilities are outfitted with Pro Tools|HD, Pro-Control/Control|24 boards and a host of other pro audio hardware. Our classes are intense and condensed to fit the professional schedule.

Radford University

Box 6968, Radford, VA 24142 Phone 540/831-6174 E-mail bmahin@radford.edu Website www.radford.edu/~cmt Degrees/Certificates: B.M. Music and Technology, 4-year program; M.A. Computer Music, 2-year program. Program: 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. Digital Ensemble.

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EQ MAGAZINE

"The best part is that 8 of the inputs are high-quality mic preamps with XLR inputs." TAPE OP MAGAZINE

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It can't stand on its war record and it's totally clueless about



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SOUND ON SOUND MAGAZINE (UK)

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COMPUTER MUSIC REVIEW

"The FW-1884 offers a lot for the money. If more controls strips are needed, there is an expander unit, the FE-8 sidecar which offers another 8 strips. Up to 15 (!) of these...can be added to make a very large console indeed."

RESOLUTION MAGAZINE (UK)

The FW-1884 includes...

- Native, HUI[®] and Mackie[®] Control[™] protocols for compatibility with popular DAW programs
- 100mm touch-sensitive motorized faders
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...and much more. Check it out at your TASCAM dealer today.

"A very innovative and time-saving feature...is the lower left bank of buttons which are dedicated to fourteen of the most common computer DAW functions such as Save, Delete, Cut, Copy, Paste and others. This allows yet more independence from your mouse and keyboard"

RECORDING MAGAZINE

"Set-up couldn't be any simpler. It was fully installed and using the product in under 15 minutes — hats off TASCAM for making it so easy to use."

PRO SOUND NEWS

domestic economic policy...but the FW-1884 FireWire Audio/MIDI interface would sincerely like your vote in the TEC Award balloting.

Heck, it would be out kissing babies if it had lips.

"TASCAM's FW-1884 handles everything you need for getting control, audio and MIDI in and out of the computer...you'll wonder how you ever got along without it."

EQ MAGAZINE

"The motorized faders were fast, responsive and not nearly as noisy as those on my Mackie. I also found that the jog wheel would jog/shuttle around a Nuendo session far better than my Mackie."

TAPE OP MAGAZINE

"...delivers pristine audio quality and low-latency operation."

COMPUTER MUSIC REVIEWS (UK)

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* quote from Computer Music Review/March 2004

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111 Peter St. Ste. 708, Toronto, Ontario M5V 2H1 Phone 416/977-5074 E-mail toronto@recordingarts.com Website www.recordingarts.com Degrees/Certificates: Sound & Music Recording, Digital Media. Program: RAC has a one-student-per-workstation ratio. Our Digital Sound and Music facilities include over 40 studios, workstations and labs. Our 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 Arts Canada, Quebec

390, Notre-Dame Ouest Bureau 320, Montreal, Quebec H2Y 1T9 Phone 514/286-4336 E-mail montreal@recordingarts.com Website www.recordingarts.com Degrees/Certificates: Sound & Music Recording, Digital Media. Program: RAC is host to students from across Canada, as well as to many international and American students. Toronto and Montreal are known around the world as culturally vibrant, safe, clean and affordable cities. Both cities are hot spots for the international film, music, recording and digital graphics industries. Our college-level programs combine a strong academic foundation, reinforced by extensive hands-on studio experience. Over 60 percent of our training is delivered in our studios and labs, working side-by-side with instructional staff.

SAE Institute of Technology, Miami

16051 West Dixie Highway, 2nd Floor, North Miami Beach, FL 33160 Phone 305/944-7494 E-mail saemiami@sae.edu Website www.sae.edu Degrees/Certificates: 9/18-month Audio Technology Diploma (full-time/part-time) and djschool@sae.edu "Turntable Essence" certificate provides the amateur DJ with instruction and lab time utilizing the newest technology available. Our unprecedented DJ studio is packed with equipment by Rane, Numark, Denon, Stanton, Digidesign, Vestax and many more. Program: SAE Institute of Technology is the largest audio and multimedia institute in the world, backed by 28 years of audio and multimedia education experience in over 22 countries. State-of-the-art equipment and facilities offer students maximum hands-on studio time, while providing professional instruction in all aspects of recording and production. Further U.S. expansion to be announced.

SAE Institute of Technology, Nashville

7 Music Circle North, Nashville, TN 37203 Phone 615/244-5848 E-mail saenash@sae.edu Website www.sae.edu Degrees/Certificates: 9/18-month Audio Technology Diploma (full-time/part-time).

SAE Institute of Technology, New York

1293 Broadway, 9th Floor, New York, NY 10001 Phone 212/944-9121 E-mail saeny@sae.edu Website www.sae.edu Degrees/Certificates: 9/18-month Audio Technology Diploma (full-time/part-time), new Electronic Music Production Certificate. Four independent courses offered strictly as a part-time program that encompass composing, producing and creating electronic music.

Savannah College of Art and Design

PO Box 2072, Savannah, GA 31401-2072 Phone 800/869-7223 E-mail admission@scad.edu Website www.scad.edu/dept/snds.

Select Sound Studios

2315 Elmwood Ave., Kenmore, NY 14217 Phone 716/873-2717 E-mail info@selectsound.com Website www.selectsound.com Degrees/Certificates: Six New York state-accredited Recording Technologies programs. Each program is 12 weeks and three

credits. Program: Select Sound Studios is a full-service recording facility specializing in education. Four production rooms offer students the opportunity to 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, the recording chain, microphone techniques, operation of tape recorders, mixing consoles and Pro Tools native and TDM systems. New for this year is a personnel placement program.

Selkirk College

820 Tenth St., Castlegar, BC V1L 3C7 Phone 250/505-1355 E-mail sparish@selkirk.bc.ca Website <http://selkirk.bc.ca> Degrees/Certificates: 2-year Certificates in Music: Performance, Engineering or Composition. 2+2 agreement with Berklee School of Music: Our first two years are equivalent to Berklee's first two years. Program: A contemporary music program with an emphasis on music technology. We have a state-of-the-art Pro Tools/ProControl studio and numerous project studios. Instruction and ensembles in all styles of contemporary music, rock, R&B, Latin, country, jazz, metal and more.

Sheffield Institute for the Recording Arts

13816 Sunnybrook Rd., Phoenix, MD 21131 Phone 800/355-6613 E-mail institute@sheffieldav.com Website www.sheffieldav.com Degrees/Certificates: Audio-Works Program: 290 clock hours/full- or part-time Audio Engineering program. VideoWorks Program: 244 clock hours/full- or part-time Video Production program. TechWorks Program: 380 clock hours/full- or part-time Systems Integration, Installation and Maintenance. Program: Classes taught at Sheffield Audio/Video Productions, a mid-Atlantic recording and video facility. AudioWorks courses include three levels of recording engineering, MIDI, nonlinear digital audio (Pro Tools), live sound/remote recording. VideoWorks courses include camera, lighting, nonlinear digital video (Avid). TechWorks courses include basic electronics, test equipment/signal identification, cable construction, installation and maintenance. Hands-on learning featuring equipment such as SSL console and Avid editing systems.

Shenandoah University

1460 University Dr., Winchester, VA 22601 Phone 540/665-5567 E-mail gonnell@su.edu Website www.su.edu Degrees/Certificates: Bachelor's of Music, Commercial Music emphasis. Program: Shenandoah University is located in a new state-of-the-art facility featuring an SSL 4000 G+ console with automation. Students receive hands-on training and experience by recording over 300 concerts, student and faculty recitals, and internal and external projects every year. In addition to the SSL, we have world-class processing, a large selection of pro microphones and two MIDI/editing suites where students use software programs such as Pro Tools 24, Cubase VST and Cakewalk Pro Audio.

State University of New York College at Fredonia

1146 Mason Hall, Fredonia, NY 14063 Phone 716/673-4634 E-mail bernd.gottinger@fredonia.edu Website www.fredonia.edu/som/srt Degrees/Certificates: 4-year B.S. in Music with an emphasis on Sound Recording Technology. Program: Operated from within the School of Music. Accredited by NASM. Modeled after European Tonmeister training. Competence in playing a musical instrument and in sciences must be demonstrated through scheduled audition. High placement rate: internships at leading facilities are available on a regular basis. Five recently completed studios, SSL console, 24-track analog and digital recording, MIDI/sampling labs. Students receive a minimum of 650 hours in-studio experience.

Top Hat Productions

PO Box 223501, West Palm Beach, FL 33422-3501 Phone 561/697-7772 E-mail info@tophatproductions.net Website www.tophatproductions.net Degrees/Certificates: Certificate of Completion. Program: Learn how to get your voice on radio and TV commercials, video and CD-ROM narrations, corporate training videos and more. This program is taught by three seasoned radio, TV and voice-over professionals from an award-winning audio production company. Learn script interpretation, diction and inflection, creating your demo, studio etiquette, finding work, marketing, launching your career.

Trebas Institute, Ontario

149 College St., Toronto, Ontario M5T 1P5 Phone 416/966-3066 Website www.trebas.com Degrees/Certificates: 1-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New-Media Development and 3-D Animation. B.A. in Sound Technology (2 years, following 1-year diploma in Audio Engineering) with the Liverpool Institute for Performing Arts. Program: Established in 1979 to help students acquire knowledge and develop skills for entry into fields of 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. Grads with major entertainers, studios, companies worldwide. Authorized training center for Cubase and Macromedia. Companion school in Montreal

Trod Nessel Recording Studio

10 George St., Wallingford, CT 06492 Phone 800/800-HITS E-mail info@trodnessel.com Website www.trodnessel.com Degrees/Certificates: MRT 1 (offered 2x per year); MRT 2 (offered 1x per year); CRT (offered 1x per year). Program: Modern Recording Techniques is a hands-on technical course in the basics of recording. MRT 1 is a 12-week program comprising seven weeks of theory, with five weeks of hands-on recording sessions. MRT 2 is a hands-on 15-week program. The newly added CRT is a 10 to 12-week computer-based recording class with take-home lab assignments.

Unity Gain Recording Institute

1953 Ricardo Ave., Fort Myers, FL 33901 Phone 239/332-4246 E-mail aiannucci@unitygain.com Website www.unitygain.com Degrees/Certificates: Certificate of graduation upon completion of each 48-week program. Program: The Audio Recording Comprehensive program and the Advanced Techniques in Audio Recording are two four-level programs that provide over 250 hours of hands-on recording. Class size is limited, providing a semi-private learning environment in two state-of-the-art recording studios. Students record 20 musical acts on analog and digital formats, utilizing MIDI, direct-to-disk recording and CD production.

University of Hartford, The Hartt School

200 Bloomfield Ave., West Hartford, CT 06117 Phone 860/768-4465 E-mail smetcalfe@hartford.edu Website <http://uhaweb.hartford.edu/musicprod> Degrees/Certificates: B.M. in Music Production and Technology. Program: MPT is a competitive program designed to train musicians for careers in music production. A strong academic background and music audition are required. Training includes recording engineering and production, electronic music, acoustics, electronics, music management, internship and practicum, in addition to music theory, ear training, private lessons (instrument or voice), ensemble and liberal arts. Facilities include several studios, a computer lab and a hard disk-based remote recording system.

University of Hartford, Ward College

200 Bloomfield Ave., West Hartford, CT 06117 Phone 800/766-4024 E-mail britt@hartford.edu Website <http://uhaweb.hartford.edu/wardweb/descand.htm> Degrees/Certificates: 4-year B.S. in Audio Engineering Technology. Program: Students take a majority of courses in applied audio electronics, in addition to a track of courses in audio studio engineering, acoustics and computer programming. Electives allow students to take additional coursework. Example concentrations include RF communications, recording and computer programming.

University of Maine, Augusta

46 University Dr., Augusta, ME 04330 Phone 207/621-3267 E-mail richard@mail.caps.maine.edu Website www.uma.maine.edu Degrees/Certificates: B.M. in Jazz and Contemporary Music (audio concentration). Program: UMA has the only music program in Maine with a state-of-the-art recording studio. Recording commercial music and advertisements is a significant part of the music industry in Maine. Our internships are a student's best link to employment.



University of Massachusetts Lowell

Sound Recording Technology, 35 Wilder St., Ste. 3, Lowell, MA 01854 Phone 978/934-3850 E-mail william_moylan@uml.edu Website www.uml.edu/dept/music/srt Degrees/Certificates: B.M. in Sound Recording Technology; Master of Music in Sound Recording Technology (two-year graduate program); Minors in Sound Recording Technology for Electrical Engineering and Computer Science majors (22 credit hours). Program: The B.M. prepares students for production-related careers in the recording industry through studies in music, EE, computer science, math and physics, and a minimum of nine courses in the art and technology of recording. The SRT minors prepare students for technology-development career paths. Supported by eight studios and control rooms: 48-track, MIDI/synthesis, DAW/surround, 8-track, video/post, maintenance/repair, entry-level room.

University of Memphis Music Industry Program

106 Communication Fine Arts Building, Memphis, TN 38152 Phone 901/678-2559 E-mail jwcline@memphis.edu Website <http://music.memphis.edu> Degrees/Certificates: B.M. in Music Industry, 4-year program with concentrations in Sound Recording Technology, Music Business. Program: The Music Industry

Program presents a challenging environment for the independent, spirited musician. Concentrations examine traditional music industry concepts but emphasize developing student's ability to adapt to innovative technologies, practices and creative directions. Instructors maintain active involvement in the music industry. Students enjoy studio access with hands-on training. The Memphis music community offers diverse opportunities and internship possibilities. NASM-accredited.

University of Miami, Frost School of Music

PO Box 248165, Coral Gables, FL 33124 Phone 305/284-2241 E-mail admission.music@miami.edu Website www.music.miami.edu Degrees/Certificates: B.M. in Music Engineering with either a minor in Electrical Engineering or a double-major in Computer Science, Master of Science in Music Engineering. Program: The Music Engineering program accepts undergraduate musicians who desire careers in music recording, audio engineering, audio equipment hardware and software design, sound reinforcement and broadcasting. Graduate students, who must have completed a B.S. degree in Electrical Engineering or Computer Science, engage in research in audio DSP programming, psychoacoustics and synthesis and must complete a research thesis. Facilities include two state-of-the-art recording studios.

University of New Haven

300 Boston Post Rd., West Haven, CT 06516 Phone 203/932-7101 E-mail gmager@newhaven.edu Website www.newhaven.edu Degrees/Certificates: B.A. Music, B.A. Music and Sound Recording, B.S. Music and Sound Recording, B.A. Music Industry. Program: The Music and Sound Recording and the Music Industry programs provide a unique balance of courses in music, sound recording and business, and music industry. The sound recording courses include multitrack recording, digital audio and the use of computers in the recording studio. The music industry courses covers record companies, contracts, recording studio management, copyright law and music publishing.

University of North Carolina, Asheville

Music Department, One University Heights, 024 Lipinsky Hall, CPO #2290, Asheville, NC 28804 Phone 828/251-6432 E-mail musica@unca.edu Website www.unca.edu/music Degrees/Certificates: 4-year B.S. in Music Technology, 4-year B.A. in Music with a concentration in Jazz Studies, B.A. in Music (general music studies). Program: The UNCA Music Technology program was established in 1982. The recording facilities include two multitrack studios (both with digital and analog recording equipment), which house a variety of consoles, microphones, signal processors, Pro Tools, etc. The electronic music laboratory houses analog and digital synthesizers, samplers, as well as a Moog, Theremin, etc.

University of South Carolina, School of Music

813 Assembly St., Columbia, SC 29208 Phone 803/576-5639 E-mail jfrancis@mozart.sc.edu Website www.music.sc.edu/recording Degrees/Certificates: B.M. in Music Engineering Technology (under development). Program: Curriculum includes more than 10 classes in sound recording (pop and classical recording, mixing techniques, workstation editing, digital audio technology and audio-for-video) and music technology (synthesis, signal processing, sequencing and computer music). Facilities include a large recording studio with a 48-input console, 24-track digital recorder and Pro Tools|HD2. There is also an 18-station computer music lab and two electronic music/MIDI studios equipped with 24-input consoles, 8-track digital recorders and Pro Tools workstations.

Visible School

9817 Huff N Puff Rd., Lakeland, TN 38002 Phone 901/381-3939 E-mail kerry@visibleschool.com Website www.visibleschool.com Degrees/Certificates: 1-year certificate, Audio/Video Production; 2-year certificate, Audio/Video Production; B.A., Liberal Studies in Audio/Video Production (with Crichton College). Program: Visible School is an artistic, technologically edgy audio/video/radio production program in

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AUDIO

EDUCATION PROGRAMS

Eastern Schools

Memphis, training students in the art and skill of production in all formats. The strength of the program is the attention to creative detail, innovation and character for a life career, not just a job. Mac-based courses also taught at Ardent Studios and major studios in the area.



Yale School of Drama

PO Box 208244, New Haven, CT 06520-8244 Phone 203/432-8825 E-mail david.budries@yale.edu Website www.yale.edu/drama/academics/sound/index.html Degrees/Certificates: 3-year MFA in Sound Design; 1-year Sound Engineering internship. Program: The Sound Design Program trains eligible applicants in the theory and practice of professional sound design. Coursework covers script interpretation, compositional elements of design, introductory sound design, fundamentals of sound and music technology, advanced problem-solving, sound delivery systems, advanced digital sound and music technology, design master class and a practical-design thesis project. Qualified students will have numerous opportunities to design for student and Yale Repertory productions.

CENTRAL

AEC Southern Ohio College

1011 Glendale Milford Rd. Cincinnati, OH 45215 Phone 513/771-2424 E-mail dyeager@edmc.edu Website: www.so-caec.com Degrees/Certificates: 2-year Associates degree in audio/video production. Program: All digital audio and video production degree. Techniques and hands-on training from concept to the final master. Digital music recording studio with Mac-based Pro Tools and Alesis HD24. Location sound techniques and sound for video and film.

Alexander Magazine

14071 Stephens, Ste. #A-5, Warren, MI 48089 Phone 877/683-1743 E-mail administrator@alexandermagazine.com Website www.alexandermagazine.com Degrees/Certificates: Recording Institute of Detroit Completions for Production Courses; RID Theory Certification on basic audio, mixing and music business. Online program study with lessons, reference materials, audio demonstrations and interactive quizzes. Online final exams and certification. Many additional advanced-study articles and postings. Free CD-ROM for high-speed study (U.S.-only). Study for Recording Institute of Detroit and other recording programs.

Aspen Music Festival and School

2 Music School Rd., Aspen, CO 81611 Phone 970/925-3254 E-mail school@aspenmusic.org Website www.aspen.com/musicfestival Program: 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 are noted representatives of the recording and broadcasting industries. The session is limited to 10 students.

Audio Engineering Institute

6610 Buffalo Hills, San Antonio, TX 78256-2330 Phone 210/698-9666 Website www.audio-eng.com Degrees/Certificates: 10-week basic and advanced Audio Engineering classes. Program: Classes are taught by Gold and Platinum record-winner Marius Perron III. Students are trained with part hands-on equipment, part lecture. Basic class covers theory, microphones, consoles, tape recorders, live band recording and mixing. Advanced class covers signal processors, hard disk recording, MIDI, synthesizers and samplers, drum machines and sequencers, audio-for-video, computer-assisted mixing, real-time analysis and studio equipment maintenance. The advanced course is structured around an apprentice engineering program working as second engineers at studios in San Antonio.

Butler University

4600 Sunset Ave., Indianapolis, IN 46208 Phone 317/940-9828 E-mail csarmstr@butler.edu Website www.butler.edu/telecom Degrees/Certificates: B.S. in Telecommunication Arts. Concentrations in Recording Industry Studies, Multimedia, Video Production and Electronic Journalism. Program: We prepare students to enter the recording industry by providing them with first-rate classroom instruction, hands-on experience with technology and internship opportunities at recording studios and music production facilities in the Midwest. Students encouraged to utilize our state-of-the-art on-campus studio and control rooms featuring Pro Tools, ADAT, a piano, MIDI keyboard and a wide selection of microphones.

Case Western Reserve University

Department of Music, Cleveland, OH 44106 Phone 800/808-MUSC E-mail musicinfo@case.edu Website <http://music.case.edu> Degrees/Certificates: 4-year B.A. in Audio Recording, 5-year double-major with Electrical Engineering. Program: Audio Recording Technology is a professional program for those interested in becoming audio recording engineers or working in recording studios. State-of-the-art facilities, frequent opportunities for hands-on-studio time and Case's national reputation in electrical engineering contribute to this program's appeal.

Casper College

125 College Ave., Casper, WY 82601 Phone 307/268-2606 E-mail psearcy@caspercollege.edu Website www.caspercollege.edu Degrees/Certificates: Associate degree in Theater Tech, Music Performance, Music Ed., Music Theater and Multimedia. Program: Sound Reinforcement I: Live Sound Theory and Practice; Sound Reinforcement II: Recording Studio; independent studies in audio and recording 8-track analog on 1/2-inch tape, 16-track digital hard disk, Pro Tools, Tascam M512 mixing console, Sound Workshop 30 Series 8-track console, Roland VS 1680, Digi001, Tannoy monitors and a deep mic cabinet. Main control room remodeled 2003.

Central Missouri State University CMSU Dept. of Music

Hudson 108, Warrensburg, MO 64093 Phone 660/543-4589 E-mail honour@cmsu1.cmsu.edu Website www.cmsu.edu/music/musictech/mutechindex.htm Degrees/Certificates: 4-year B.M. in Music Technology. Program: Emphasis on audio engineering and musicianship. The program stresses hands-on learning with multitrack recording/editing studios, Pro Tools|HD3 and HD2 systems, sound reinforcement equipment, MIDI/synthesis studios and a 12-station computer lab. Internships required. Class sizes between 15 and 20 students. Financial assistance is available for those who qualify.

The Cleveland Institute of Music

11021 East Blvd., Cleveland, OH 44106 Phone 216/791-5000 E-mail cimadmission@po.cwru.edu Website www.cim.edu Degrees/Certificates: 8.M. in Audio Recording; double major with an Instrument or Composition major in five years. Program: 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, audio for video, acoustics and studio maintenance. Equipment: See Website. Professional faculty features multiple-Grammy-winners Jack Renner and Michael Bishop, Dr. Peter D'Antonio, Bruce Egge (Azica Records) and Alan Bise.

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Nashville, TN 37203
615-244-5848



*our nashville campus offers Federal Financial Aid for those who qualify and is accredited by the accrediting commission of career schools and colleges of technology (ACCST).

AUDIO

EDUCATION PROGRAMS

Central Schools

Collin County Community College

2800 E. Spring Creek Pkwy., Plano, TX 75074 Phone 972/516-5041 E-mail csmcclure@cccd.edu Website www.cccd.edu Degrees/Certificates: 2-year AAS in Commercial Music; 1-year certificate in Audio Engineering. Program: CCCD offers a professional studio featuring Pro Tools 24 MIXPlus, Control|24 workspace, Genelec 1030A monitors, a wide array of microphones and six Mac G4s with Digi001s for student projects. The MIDI/synth studio contains 16 Mac G4 workstations.

Columbia College Chicago

Department of Audio Arts & Acoustics

624 S. Michigan Ave., Chicago, IL 60605 Phone 312/344-7652 E-mail kimo@omik.com Website <http://aemmp.colum.edu> Degrees/Certificates: 4-year B.A. concentrating in Music Business with sub-concentrations in Music Production, Music Marketing, Label Management and Talent Management. 2-year M.A. or 2-year M.A.M. concentrating in Music Business with emphasis in Music Production and Label Management. Program: The Music Business curriculum includes specialty courses in producing recorded music, AEMMP Records (the student-run record label), music publishing and presenting live performances. In addition to studying comprehensive business foundations, students develop skills in critical thinking, communication and quantitative/qualitative analysis.



Cuyahoga Community College

2900 Community College Ave., Cleveland, OH 44115 Phone 216/987-4252 E-mail tommy.wiggins@tri-c.edu Website www.tri-c.edu/rat Degrees/Certificates: 2-year (5-semester) A.A.S. in Recording Arts & Technology. Certified Pro Tools training center. Program: Students train under professional audio engineer/producer/faculty members and plan, execute and deliver finished audio products. Projects include producing recordings for regional music groups, cable television programs, RAT Records (student-run label) and concert sound production (summer outdoor amphitheater season on the river). Semester-length internship at local and national audio facilities.

Dallas Sound Lab

School for the Recording Arts

6305 N. O'Connor Blvd., Ste. 119, Irving, TX 75039 Phone 866/498-1122 E-mail info.dallas@dallasoundlab.com Website www.dallasoundlab.com Degrees/Certificates: Diplomas in Audio Engineering and Studio Techniques; seminars in Music Business Administration, Audio Engineering for Film and Television Production and Contemporary Music Theory. Program: Courses provide students with extensive hands-on training SSL, API, Neve, Focusrite, Yamaha and Mackie consoles. Lab sessions are held in the school's 12,000-square-foot multistudio facility. Instructors are industry professionals. Many of our graduates have secured positions working with video-production companies, recording studios, television and radio stations, sound reinforcement companies, management agencies and other related media businesses.

dB Pro Audio Tool Box

4785 Eastern Ave., Cincinnati, OH 45226 Phone 513/281-7700 E-mail dbinfo@dbsounddesign.com Website www.db-sounddesign.com Degrees/Certificates: Certificate of completion. Program: Individual Pro Tools Training, with elements of MIDI and Recording Techniques. Instruction is offered in our studio, dB Recording & Sound Design. Training from novice to advanced.

Del Mar College/Radio & Television

101 Baldwin Blvd., Corpus Christi, TX 78404 Phone 361/698-1508 E-mail maippper@delmar.edu Website www.delmar.edu/comm/trv/RTVHome1.html Degrees/Certificates: Radio & Television, 2-year A.A. degree. Program: Three-camera television studio with permanent interview and news sets. Control room includes switcher, character generator and audio board, a typical setup found in television stations. Students learn linear editing and advanced students do nonlinear projects. Two audio sound rooms, one set up to produce commercials, etc.

DePaul University School of Music

804 W. Belden Ave., Chicago, IL 60614 Phone 773/325-7444 E-mail rbearaf@depaul.edu Website <http://music.depaul.edu> Degrees/Certificates: 4-year B.S. in Music. Program: SRT students take classes in analog and digital microelectronics, computer science and calculus, in addition to the undergraduate music curriculum. Recording classes and student practicum take place off-campus in a 48-track SSL studio where students have access to state-of-the-art equipment. On campus, students develop their skills at Studio DePaul, a Pro Tools facility featuring video, synthesis and surround sound capabilities.

Elmhurst College

190 Prospect, Elmhurst, IL 60126 Phone 630/617-3500 E-mail kevin@elmhurst.edu Degrees/Certificates: B.M. in Music Business, B.S. in Music Business, B.M. in Music Education, B.A. in Music. Program: In addition to classwork in music, business and business of music, students get hands-on experience through internships, industry speakers and course tours. Resources include a state-of-the-art 24-track digital studio, courses ranging from music theory to MIDI, recently expanded practice and recital facilities, and an artist faculty of more than 50. Scholarships available from trade organizations such as NAIMM and NARAS, corporate sponsorship, a student chapter of MEIEA and an intern/job bank.

Grand Valley State University

1 Campus Dr., Allendale, MI 49401 Phone 800/748-0246 E-mail go2gvsu@gvsu.edu Website www.gvsu.edu Degrees/Certificates: Electrical Engineering with Music minor. Program: Grand Valley State University has a unique program for students who have the talent and interest to combine engineering and music. This program can help launch a career that can span the entire audio and music industries, from hardware design and manufacturing to performance.



Houston Community College

1010 W. Sam Houston Pkwy. N, Houston, TX 77043 Phone 713/718-5621 E-mail scott.gehman@hccs.edu Website <http://nwc.hccs.edu/av> Degrees/Certificates: A.A.S. and Certificates in Audio Engineering; Certificates in MIDI Production; AAS and Certificates in Filmmaking, Production, Screenwriting. Program: Unlimited hands-on experience via eight fully equipped studios. Studio V: SSL 4048 G+, UREI, Lexicon, Eventide, Aphex processors; Telefunken, Neumann, AKG microphones; Studio IV: Pro Tools, Control|24; Studios

IIIA and IIIB: Alesis X2 consoles, ADATs, synthesizers by Roland, Korg, Yamaha, Oberheim, E-mu, Alesis, Akai. Studio II: Panasonic DA7 Video Post & Scoring. Studio I: 13 Mac G4 with Pro Tools, Korg and Roland. Studio VI/VI: 30 Final Cut Pro and Avid editing suites; Studio VIII: 3,000-square-foot sound stage.

Indiana University, School of Music

1201 E. Third St., Bloomington, IN 47405 Phone 812/855-1087 E-mail kstrauss@indiana.edu Website www.music.indiana.edu/som/audio Degrees/Certificates: A.S. in Audio Technology, B.S. in Recording Arts. Program: As part of their coursework, students record performances of the IU School of Music, including symphonic, opera, jazz, chamber music and popular music; and complete over 200 hours of individual project time in the multitrack studio. Advanced students serve as engineers for university-sponsored CD projects (over 40 releases to date). Four performance hall recording studios, two DAW suites, a multitrack recording studio, two maintenance labs and a computing instruction classroom.



The Institute of Production and Recording

312 Washington Ave. North, Minneapolis, MN 55401 Phone 866/477-4840 E-mail lancesabin@iprschool.com Website www.iprschool.com Degrees/Certificates: Six-quarter A.A.S. in Audio Production and Engineering. 4-quarter Diploma programs in Audio Engineering and Audio Production. Two Certificate programs in Digidesign Pro Tools. Program: Identified by Digidesign as one of the "fastest growing Pro Tools learning centers in the Midwest," our 40,000-plus-square-foot facilities include two SSL consoles, multiple recording studios each equipped with Pro Tools/JHD Accel systems, over 50 Digi002 Mac workstations, 11 ProControl consoles, each with HD Accel, plus, coming in fall 2004, the new ICON 7.1 integrated console. IPR faculty includes 10 Certified Pro Tools instructors and staff credited with over 50 Gold and Platinum awards.

International College of Broadcasting

6 So. Smithville Rd., Dayton, OH 45431 Phone 937/258-8251 Website www.icbproductions.com Degrees/Certificates: Associate degree program in Applied Science of Communication Arts in Television and Radio, Associate degree program of Applied Science in Video Production/Recording, Audio Engineer diploma program in Recording Audio Engineering, Diploma Program Broadcasting I. Program: ICB is a small, private college. Enrollment invitations are based on prospective students touring the facility and demonstrating commitment and desire to be part of the broadcasting and recording fields. Smaller class sizes ensure more individualized attention.

Kansas City Kansas Community College

7250 State Ave., Kansas City, KS 66112 Phone 913/288-7634 E-mail mayfield@toto.net Website www.kkcc.edu/music Degrees/Certificates: Associate of Applied Science degree in Audio Engineering; Associate of General Studies degree with an emphasis in Music Technology. Program: Classes cover computing skills, MIDI, software and hardware synthesis, audio recording, audio editing and sound design, digital video production and live sound reinforcement. Classes limited to 12 students. Accredited by North Central Association. Two 24-track Alesis HD24XR studios, Pro Tools/JHD2 studio, Soundcraft Ghost, 5.1 Genelec system, Pro Tools LE studio, multistation MIDI/digital audio/synthesis lab, multistation MIDI lab, digital video lab, live sound reinforcement, multitrack location recording system.

Labette Community College

200 S. 14th, Parsons, KS 67357 Phone 888/522-3883 x1020
E-mail darylg@labette.edu Website www.labette.edu Degrees/
Certificates: A.A.S. in Music Performance, A.A.S. in Music Techno-
logy. Program: Two-year program gives students hands-on
experience. Students are encouraged to learn through recording
sessions, classroom lectures and research assignments. Students
gain knowledge in the use of MIDI production and digital au-
dio recording through programs such as Digital Performer and
Pro Tools. Freshmen utilize the Mackie 32x8 and 24x8 mixing
consoles to record to ADAT and to the SDR24. Sophomores uti-
lize the Tascam Digital 8-Bus to record to Pro Tools and Digital
Performer. Internships available at area studios.

Lakeland Community College

7700 Clocktower Dr., Kirtland, OH 44094 Phone 800/589-
8520 E-mail rhill@Lakelandcc.edu Website www.Lakeland
cc.edu Degrees/Certificates: 2-year certificates in Audio Engi-
neering and Production, Video Production and Broadcast, Ra-
dio Engineering and Broadcast, Interactive Media Technology,
Animation and Cartoon Arts, Interactive Entertainment Tech-
nology. 4-year Bachelor's of Communications (with emphasis
in the above fields) through association with Notre Dame Col-
lege. Program: Lakeland has provided quality, active, hands-
on education taught by an educational faculty primarily com-
prising industry professionals. Certification and degrees in six
broadcast and interactive media disciplines. Facilities include
digital/analog studios/soundstages (24/48-track). Consoles by
Otari, Sony, Mackie and SSL. Outboard by many leading man-
ufacturers. Mac/PC media production labs.

Madison Media Institute

2102 Agriculture Dr., Madison, WI 53718 Phone 608/663-
2000 E-mail mmi@madisonmedia.com Website www.madis
onmedia.com Degrees/Certificates: A.A. in Recording and Mu-
sic Technology, A.A. in Multimedia Technology, Video Pro-
duction diploma. Program: New education facility with over
19,000 square feet of state-of-the-art classrooms, computer
labs and studio space. Low student-to-teacher ratios. Classes
taught by industry professionals. Hands-on and classroom ex-
perience. Accredited. Placement service.



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programs in Audio Engineering & Studio Techniques, Producing
& Songwriting, Music Business Administration, Mixing, Mas-
tering and Post-Production Audio, Live Sound Reinforcement
and Multimedia Production. Program: With campuses in Dal-
las, Houston and Austin, students get immediate hands-on
training in studios featuring SSL 6056E, SSL 4000G+, Neve
8058, API Legacy, Focusrite Control 24, Soundcraft TS-24 and
Yamaha DM2000 consoles. Our extensive MIDI studios and
digital editing suites showcase Pro Tools|HD systems, iZ RADAR
24, Otari, Sony and Studer. Job-placement assistance is pro-
vided, and financial aid is available.

Millikin University

1184 W. Main St., Decatur, IL 62522-2084 Phone 217/424-
6300 E-mail swidenhofer@mail.milikin.edu Website
www.milikin.edu/music.

Minneapolis Community & Technical College

1501 Hennepin Ave., Minneapolis, MN 55403 Phone
612/659-6000 Website www.minneapolis.edu Degrees/Cer-
tificates: 2-year A.S. in Sound Arts. Program: The Sound Arts

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AUDIO

EDUCATION PROGRAMS

Central Schools

program is focused on the nature and control of sound with analog and digital tools. The craft of engineering plays a large part in the course, but the program focuses on a broader application of skills and liberal arts curriculum. Courses include the full range of engineering and production topics, project design, history of electronic music and music theory.

Minnesota State University, Moorhead

1104 7th Ave. S., Moorhead, MN 56563 Phone 218/477-2101 E-mail music@mnstate.edu Website www.mnstate.edu/music Degrees/Certificates: B.M., Music Industry (4-year); M.M., New Media (flexible program). Program: MIDI lab, recording studio, digital audio studio, film/video scoring studio; Dragon Tracks annual CD project; MEISA student organization.

Mount Royal College

4825 Richard Rd. S.W., Calgary, Alberta T3E6K6 Phone 403/440-6945 E-mail alamb@mtroyal.ca Website www.mtroyal.ca/communicationstudies/broadcasting.sh Degrees/Certificates: 2-year Diploma in Broadcasting. Program: The program teaches students to work as part of a team who inform, create, promote and entertain through radio and television, as well as in the expanding sectors of corporate in-house, and Web-based productions. With the guidance of industry-experienced, award-winning instructors, students learn to report, write and anchor news and sports programs; create, write and produce commercials; and record, edit and direct programs for both of these media. Our studios are equipped with current, digital technology that students use to produce radio and television programs aired on local cable.

Musitech College

19 Exchange St. East, Saint Paul, MN 55101 Phone 800/594-9500 E-mail dsandridge@musitech.edu Website www.musitech.edu Degrees/Certificates: 2-year A.A.S.; 1-year diploma programs; 4-year Bachelor's degrees through a direct-transfer agreement with Augsburg College. Program: Musitech College is a leader in contemporary music education, drawing the finest students and faculty for 18 years. The college has developed one of the most advanced recording and production programs in the country alongside a respected school for professional musicians. Our facility features 10 studios, including three 5.1 rooms, as well as Trident, Sony and SSL consoles. An extensive Pro Tools training program.



Northeast Community College

801 East Benjamin Ave., Norfolk, NE 68701 Phone 402/844-7365 E-mail northeast_audio@yahoo.com Website www.northeastaudio.org Degrees/Certificates: 2-year A.A.S. in Audio/Recording Technology. Program: Located in Northeastern Nebraska, Northeast Community College'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. Otari, Soundcraft, Yamaha, Pro Tools, MOTU.

Oberlin Conservatory of Music

TIMARA Department, Oberlin, OH 44074 Phone 440/775-8413 E-mail Gary.Nelson@oberlin.edu Website www.timara.oberlin.edu Degrees/Certificates: 4-year B.M., 4-year B.A. in Visual Arts with an emphasis in Digital Media. Program: Based at one of the nation's top-ranked conservatories, the TIMARA Department has excellent facilities for computer music, performance technology and new media. There are seven studios, including a recording studio (16-track digital tape, 16-track Pro Tools), two computer music studios, a digital media room with a Media 100 system and a computer music lab with multiple Mac-based workstation/samplers. The program admits fewer than 10 students per year.

Ohio Northern University

Freud Center, OH 45810 Phone 419/772-2469 E-mail r.gainey@onu.edu Website www.onu.edu/a+s/comm_arts Degrees/Certificates: B.S. Degree in Broadcasting and Electronic Media: 4-year, liberal arts degree program. Program: ONU offers academic programs in Broadcasting and Electronic Media and utilizes 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 School of Telecommunications

9 S. College St., Athens, OH 45701 Phone 740/593-4870 E-mail tcomschool@ohiou.edu Website www.tcomschool.ohio.edu Degrees/Certificates: 4-year B.S. in Communications. Program: Audio Production Sequence requires the student to choose between three tracks in audio production: Music Recording, Media Production or Audio Post-Production for Moving Image. Our newly renovated recording complex includes an Amek Big 28x24 console, Tascam MX-2424 digital recorder, Pro Tools|HD with Control|24 mixing surface, and wide assortment of mics and processing gear. The school is also equipped with a 16-station Macintosh G4 digital media lab and a Sonic Solutions DVD-authoring system.

Oklahoma State University

Department of Music, Stillwater, OK 74078 Phone 405/744-6133 E-mail twalker@okstate.edu Website: <http://music.okstate.edu> Degrees/Certificates: B.M. Music Business, Music Education, Music Performance; B.A. and M.M. in Pedagogy and Performance. Courses in music technology and recording techniques. Program: Courses are designed to offer undergraduate training in the fundamentals of music technology, sound recording and audio post-production. Our 24-track project studio is built around a Tascam MX-2424 and a Macintosh G5 DiGi002 running Pro Tools. The Seretean Center for the Performing Arts also includes two performance halls, a computer lab, teaching studios and practice rooms.

Parkland College

2400 W. Bradley Ave., Champaign, IL 61821 Phone 217/351-8155 E-mail info@pogostudio.net Website www.parkland.edu Program: Since 1985, more than 1,500 people have learned the essentials of recording through Parkland College's Introduction to Recording Studio Class at Pogo Studio in Champaign. 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 (Studer/API), and a wealth of equipment and instruments. Rubel also teaches music business at Millikin University, is on the NARAS producer's committee and has recorded since 1980.

Rasicci International

464 Heather Circle NE, North Canton, OH 44720 Phone 330/327-0660 E-mail Rasicci@yahoo.com Degrees/Certificates: Audio Technician Certification. Program: Emphasizes business and sound engineering. Course work 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 Institute of Detroit

14611 9-Mile Rd., Eastpointe, MI 48021 Phone 800/683-1743 E-mail administrator@recordinginstitute.com Website <http://recordinginstitute.com> Degrees/Certificates: Recording Engineer certificate; Music Producer certificate; Associate Recording Engineer certificate. Program: Operating since 1975 with extensive training in recording and music production. Web training through Alexander Magazine. Three major studios, dedicated student control room and student workstations. SSL, Yamaha O2R and Tascam consoles, PC and Mac computers and 48-track digital and analog recorders. Small classes (eight to 10), relaxed and comprehensive. See Alexander Magazine entry.



The Recording Workshop

455 Massieville Rd., Chillicothe, OH 45601 Phone 800/848-9900 E-mail info@recordingworkshop.com Website www.recordingworkshop.com Degrees/Certificates: Certificates in Recording Engineering and Music Production, Studio Maintenance and Troubleshooting, Advanced Recording Engineering and Music Production, New Tech Computer-Based Audio Production. Program: The Recording Workshop offers short-term training that has helped thousands of audio pros get their start. In less than two months, students get more real-in-studio experience than at many other schools that last much longer. Working in small teams of three to six, total student body is restricted to 96. We have eight studios full of the latest gear. Affordable on-campus student housing, job-placement assistance and financial aid available.

Ridgewater College Audio Technology Program

2 Century Ave., Hutchinson, MN 55350 Phone 800/222-4424 E-mail dij@ridgewater.mnscu.edu Website www.ridgewater.mnscu.edu Degrees/Certificates: 2-year diploma in Audio Technology, 2-year A.A.S. in Audio Technology. Program: Program ranges from studio recording to 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 and many other specializations.

Rose State College

6420 S.E. 15th St., Midwest City, OK 73110 Phone 405/733-7426 E-mail whiteroserecording@mac.com Website www.rose.edu/faculty/cwhite Degrees/Certificates: 2-year Liberal Studies degree with Music Recording option. Program: Provides the student with the entry training needed to begin work in the recording field. MIDI and audio recording, as well as songwriting and music business, are the emphasized areas. There are three recording lab areas for hands-on experience.

South Plains College Sound Technology Program

1401 S. College Ave., Levelland, TX 79336 Phone 806/894-9611 x2276 E-mail smoody@southplainscollege.edu Website: www.southplainscollege.edu/creativearts/soundtechnology Degrees/Certificates: 2-year A.A.S. in Sound Technology. Accredited by the Southern Association of Colleges and Schools (SACS). Program: Two 24-track studios with Sony, Mackie digital consoles, Mackie HDR24/96 digital recorders. One 24/16-track digital/analog studio with Sony MXP-3036 console, MCI 2-inch analog, Mackie SDR24/96 digital. Lexicon, Yamaha, TC Electronic, Eventide, Summit, Orban, dbx, Drawmer processing. Neumann, Sennheiser, AKG, Shure, Earthworks, Audix, Electro-Voice microphones. 15-station Pro Tools lab, 12-station MOTU

Performer Lab, two Digital Performer DAWs, MIDI lab. Small class sizes, individualized attention, affordable tuition and comprehensive curriculum.

Texas State University

601 University Dr., San Marcos, TX 78666 Phone 512/245-8451 E-mail me02@txstate.edu Website www.txstate.edu/music/srt Degrees/Certificates: Four-year B.M. in Sound Recording Technology. Program: SWT owns and operates the Fire Station, a multipurpose recording facility housing analog and digital recorders, an automated console and numerous professional microphones and outboard devices. Students participate in commercial recording sessions. Admission is competitive. Program applicants should have significant musical abilities, well-developed aural skills and possess competencies indicating an ability to complete calculus and other technical courses.

Synergetic Audio Concepts Inc.

8780 Rufing Rd., Greenville, IN 47124 Phone 812/923-0174 E-mail brenda@sinaudcon.com Website www.sinaudcon.com Degrees/Certificates: "Week of Audio Training" includes System & Optimization and System Design. Program: Syn-Aud-Con offers a variety of seminars, each taught using a multimedia approach. The fundamental principles are also taught in a very practical way, which allows you to utilize them immediately within the workplace. The seminars are approved for continuing education units. Please visit Website.

University of Cincinnati Conservatory of Music (CCM)

PO Box 210096, Cincinnati, OH 45221-0096 Phone 513/556-5462 E-mail Michael.Hooker@uc.edu Website www.uc.edu/www/ccm/tdp Degrees/Certificates: B.F.A. in Theater Design and Production; M.F.A. in Theater Sound Design. Program: Coursework includes sound technology and production, theater aesthetics, critical listening, music, digital audio, recording, reinforcement and sound design. CCM offers 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 Colorado, Denver

Campus Box 162, PO Box 173364, Denver, CO 80217-3364 Phone 303/556-2727 E-mail rpritts@carbon.cudenver.edu Website www.cudenver.edu/cam Degrees/Certificates: 2-year M.S. in Recording Arts, 4-year B.S. in Music (major in Recording Arts or Music Industry Studies). Program: Master's emphasis in Advanced Recording Arts, Audio Pedagogy or Audio Forensics. Bachelor's emphasis in Technology, Music Business or Music Performance. Two 24-track analog and two 24-track digital control rooms, five performance studios, theater, concert hall, recital hall. Studies of audio sweetening, surround sound and music production. SPARS member, AES Student Section.

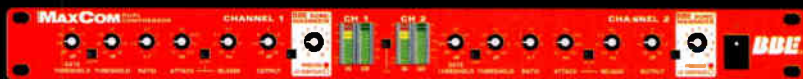
University of Michigan, School of Music

Department of Performing Arts Technology, 1100 Baits Dr., Ann Arbor, MI 48109-2085 Phone 734/763-7558 E-mail francieg@umich.edu Website www.music.umich.edu/departments/pat/index.lasso Degrees/Certificates: B.M. in Music and Technology, B.F.A. in Performing Arts Technology: Music Concentration, B.F.A. in Performing Arts Technology: Media Arts Concentration (Sonic Arts, Visual Arts, Engineering), B.S. in Sound Engineering, M.A. in Media Arts. Program: The department seeks to advance the aesthetics of technology-based arts through performance, the development of emerging technologies and research.

University of Missouri, Kansas City

4949 Cherry St., Kansas City, MO 64110 Phone 816/235-2964 E-mail mardikest@umkc.edu Website www.umkc.edu Degrees/Certificates: M.F.A. in Theater Sound Design. Program: This three-year training program teaches students to create sound scores for the theater through design (interpretation, collaboration and idea development), technical skills (mastering tools of production with 24-track analog and Pro Tools), history (research, text analysis and dramatic history), production (artistic merging of design, history and technical skills) and entrepreneurship (study of the business and career growth).

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AUDIO

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Western Schools



University of Nebraska, Lincoln

206 Avery Hall, Lincoln, NE 68588-0511 Phone 402/472-2258 E-mail krnu@unlinfo.unl.edu Website www.jet.unl.edu Degrees/Certificates: 4-year Bachelor's of Journalism degree in Broadcasting. Program: The College of Journalism and Mass Communications houses the broadcasting department with audio and video production facilities and the University's FM radio station, KRNU. Courses are devoted to audio and studio production for broadcast/cable operations and A/V production careers. Extensive digital audio and video gear.

University of Texas

Department of Radio-Television-Film, University Station A0800, Austin, TX 78712-0108 Phone 512/471-4071 E-mail blmohan@mail.utexas.edu (undergraduate), maureenc@ccr.utexas.edu (graduate) Website www.utexas.edu/ccr/rtf Degrees/Certificates: B.S., M.F.A. and Ph.D. Degrees in Radio, Television and Film. Program: Please see Website.

University of Wisconsin, Oshkosh

800 Algoma Blvd., Oshkosh, WI 54901 Phone 920/424-4224 E-mail messner@uwosh.edu Website www.uwosh.edu Degrees/Certificates: 4-year B.M. with an emphasis in Recording Technology. Program: Students are trained in digital tape/hard disk/analog studio featuring a Sony 3000 Series console with automation, extensive outboard gear, full 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

1002 N. 1st St., Vincennes, IN 47591 Phone 812/888-5417 E-mail dyoung@vinu.edu Website www.vinu.edu Degrees/Certificates: 2-year A.S. and A.A.S. in Broadcasting and Music Recording. Program: Cool Edit Pro, Final Cut Pro, two low-power radio station that also broadcasts on the Net, 50kw contemporary music radio stations, public TV station with student-run newscast and Vincennes University sports programming.

Wayne State University

Department of Music, 1321 Old Main, Detroit, MI 48202 Phone 313/577-1795 E-mail music@wayne.edu Website www.music.wayne.edu Degrees/Certificates: Undergraduate and graduate degrees in Music, with program disciplines covering music technology, jazz studies, instrumental education, vocal education, vocal performance, piano, composition, orchestral studies, theory and musicology. Program: Recording techniques and concepts, including sound design creation for video and performance. One large surround studio running Pro Tools TDM with Kawai Grand pianos, Neumann and DPA microphones. Electronic Music Lab with five Pro Tools LE and MOTU workstations. Vintage and current hardware synthesizers with software variants. A new 165-seat recital hall, two music computer labs, 60-student rehearsal spaces with pianos and larger spaces for ensembles, choral and orchestra.

Webster University

470 E. Lockwood Ave., Webster Groves, MO 63119 Phone 314/968-6924 E-mail hufkerbe@webster.edu Website www.webster.edu/depts/comm/audioprod/audioprod.html Degrees/Certificates: B.A. in Audio Production. Program: Webster University graduates pros capable of working successfully in music recording, audio studio maintenance and management, audio for video, film, radio/television broadcasting, theatrical sound design, sound reinforcement and audio for interactive computer applications. The education is theory-based and practical. Students learn in the studio and in the field while operating state-of-the-art equipment.

WEST

Alta Center for Communication Arts

9014 N. 23rd Ave., Ste. 1, Phoenix, AZ 85021 Phone 888/729-4954 E-mail info@thealtacenter.com Website www.thealtacenter.com Degrees/Certificates: diploma in Digital Audio Recording. Program: 10-week Digital Audio Recording program is designed by Wayne Vlcan, a multi-Gold Award-winning engineer/producer and founder of The Conservatory of Recording Arts & Sciences. Curriculum is created specifically for independent musicians, artists, producers and engineers. Offers a Multimedia Production program, including digital graphics, video production, animation and Website development.



Art Institute of Seattle

2323 Elliott Ave., Seattle, WA 98103 Phone 206/239-2338 E-mail sbarsotti@aia.edu Website www.aia.edu Degrees/Certificates: 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: 5 studios (3 tracking, 2 mixing), 4 DAWs, two 25-seat computer labs (Windows/Sonic Foundry, Mac/Pro Tools LE). Consoles: SSL 4000G+, Euphonix C3000, Digidesign Control24, Mackie D8B, Yamaha 02R, Mackie 32x8. 24 I/O Studer/Sony analog 2-inch, 24 I/O Pro Tools|HD, 16 I/O Pro Tools|HD. 5.1 DTS room.

The Art Institute of Vancouver, Burnaby

3264 Beta Ave., Burnaby, BC V5G 4K4 Phone 604/298-5400 E-mail aivbinfo@aia.edu Website www.aivan.artinstitutes.edu Degrees/Certificates: 1-year Independent Recording Arts certificate and 2-year Professional Recording Arts diploma. Program: Students train for careers in music and post-production for film, video, TV and new media. The campus covers over 55,000 square feet across four separate buildings and boasts five recording studios, a mix-to-picture surround studio and automated music production facility. Liberal access to facilities and equipment creates an environment where art and creativity blend with technology.

Audio Institute of America

PO Box 15427, San Francisco, CA 94115 Phone 415/752-0701 E-mail audioinst@earthlink.net Website www.audioinstitute.com Degrees/Certificates: diploma in recording engineering. Program: Home-study course for recording engineers, producers and live sound engineers. Learn how to build and operate your own studio or join successful working graduates in studios around the world.



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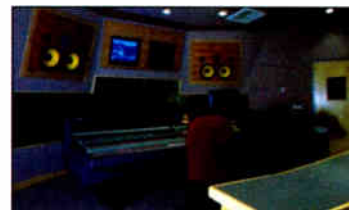
107 Tunnel Mountain Dr., Box 1020, Banff, Alberta T1L 1H5 Phone 403/762-6180 E-mail Theresa_Leonard@banffcentre.ca Website www.BanffCentre.ca Degrees/Certificates: Audio assistant and associate work/study programs; 1 to 3 terms. Program: Work-study program that provides a bi-weekly stipend with no tuition fee. The audio program runs alongside internationally renowned music programs with prominent faculty and musicians. Guest audio faculty have included John Eargle, Bob Ludwig, George Massenburg, Elliot Scheiner, Jim Anderson, Doug Sax, Shawn Murphy, David Frost, Jean Marie Geijsen, Tony Faulkner and Richard King. 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

Department of Music, Chico, CA 95929-0805 Phone 530/898-5500 E-mail ksepanen@oavax.csuchico.edu Website www.csuchico.edu/mus/rcrd Degrees/Certificates: 4-year B.A. in Music with an option in Recording Arts; 4-year B.A. in Music with an option in Music Industry.

California State University, Dominguez Hills

1000 E. Victoria St., Carson, CA 90247 Phone 310/243-3543 E-mail dbradfield@dhvx20.csudh.edu Website music1.csudh.edu/Music Degrees/Certificates: 4-year B.A., Audio Recording; 4-year B.A., Music Technology; certificate in Audio Technology. Program: CSUDH has a fully equipped analog and digital studio in addition to its synthesizer studio. Completely renovated in 1999, new equipment includes Mackie and Panasonic 5.1 consoles, 48 tracks of DA-98 and ADAT multitrack recording, Pro Tools and Sonic Solutions DAWs and mastering equipment.



Citrus College

1000 W Foothill Blvd., Glendora, CA 91741 Phone 626/852-8061 E-mail Info@citrusstudios.org Website www.citrusstudios.org Degrees/Certificates: 1-year Vocation certificate in Recording Technology. Program: Citrus offers hands-on training in a working studio. The facility centers on two studios with Neve VR and Euphonix CS2000 consoles, with Tascam digital, Studer A827 analog and Pro Tools|HD recorders. Other rooms include an auditorium for live recordings and film scores, a smaller analog studio and a lab with 25 Pro Tools workstations. The curriculum comprises courses in audio engineering, acoustics, live sound, critical listening, digital audio, MIDI and music business.

City College of San Francisco

Broadcast Electronic Media Arts Department, 50 Phelan St., Box A6, San Francisco, CA 94112 Phone 415/239-3527 E-mail twinston@ccsf.edu Website www.ccsf.edu/Departments/Broadcast Degrees/Certificates: Sound Recording and Sound Design certificates. Program: Covers analog and digital multi-track techniques. Basic tracks, overdubbing, editing, mixing and mastering. Mic placement for ensembles, instruments and vocals, console, signal flow, gain structure, music mixing theory and aesthetics, equalization, compression, reverbation.

Cogswell Polytechnical College

1175 Bordeaux Dr., Sunnyvale, CA 94089 Phone 408/541-0100 E-mail tduncan@cogswell.edu Website www.cogswell.edu Degrees/Certificates: 4-year B.S. in Digital Audio Technology; 4-year B.S. in Audio Engineering. Program: Digital Audio Technology prepares students for careers in the music industry with concentrations in studio recording, synthesis and sound design, and composing and arranging. Addresses the manufacturing side of the music industry. Students can get a B.S. in Electrical Engineering or Software Engineering with a concentration in audio. Both programs are supported by a facility that has three recording studios and two classroom labs. The college is regionally accredited.

Columbia Academy

1295 West Broadway, Vancouver, BC V6H 3X8 Phone 800/665-9283 E-mail administration@columbia-academy.com Website www.columbia-academy.com Degrees/Certificates: 1-year diploma in Digital/Analog Recording Arts. Program: Utilizing three recording studios, students develop professional skills in engineering, music production, post, digital editing and mixing, tracking and recording techniques. The program provides practical, hands-on experience in broadcast production, audio post and music recording studios. In the music studios, students are regularly working with a variety of live talent. In post-production, independent filmmakers provide students with feature-length movies, documentaries and short films.

Community College of Southern Nevada

3200 E. Cheyenne Ave., NV 89030 Phone 702/651-4112 E-mail john_jacobson@ccsn.nevada.edu Website: www.ccsn.edu Degrees/Certificates: Certificate of Achievement in Music Business and Technology, comprising 30 credits (10 courses). Three of these courses are the audio recording program, two are the Business of Music program and the rest involve basic music courses, computer skills and communication abilities. Program: CCSN provides a three-course program combining theoretical knowledge with hands-on training. Equipment includes Pro Tools, Otari 24-Track analog, 24 tracks of ADAT, Lexicon, TC Electronic gear and more.



Conservatory of Recording Arts & Sciences

2300 East Broadway Rd., Tempe, AZ 85282-1707 Phone 800/562-6383 E-mail info@cras.org Website www.audio-recordingschool.com Degrees/Certificates: Master Recording Program II. Program: MRP-II is a 37-week program with classes limited to 12 students. It is the only program that secures and requires an internship for graduation. 40,000-square-foot facility includes 8 control rooms, 5 studios, 2 Pro Tools labs, 2 digital audio labs, 2 mix labs and a 6000-square-foot live sound classroom. The six labs each have six workstations. Gear includes SSL, Neve, Studer, Manley and Neumann, among others. Students are offered manufacturer certification on Pro Tools, TC System 6000, Logic, Auto-Tune, SIA Smaart. Financial aid available.

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Western Schools



Ex'pression College for Digital Arts

6601 Shellmound St., Emeryville, CA 94608 Phone 877/833-8800 E-mail yee-ju@expression.edu Website www.expression.edu Degrees/Certificates: 2.5-year accelerated Bachelor's degree in Sound Arts. Degrees also offered in 3-D Animation and Graphic Design. Program: The 85,000-square-foot campus includes a 200-seat 5.1 Meyer Sound Theater, 11 full-size studios and gear from Studer, Neve, SSL, Mackie, Yamaha and more. Class sizes are small to ensure personalized attention. In addition to sound engineering and production, students are trained in game audio and post-production, music theory, studio etiquette and psychology, DVD authoring, Pro Tools, MIDI, mastering for 5.1, live sound and media law. Students have unparalleled hands-on access to digital and analog studio equipment (e.g., 15-20 sessions at the controls with a live band), and all students are required to do a professional internship. Programs start every month except January, May and November.

Fullerton College

321 E. Chapman Ave., Fullerton, CA 92832 Phone 714/992-7302 E-mail acima@fullcoll.edu Website www.fullcoll.edu Degrees/Certificates: Music Production Recording certificate as part of a Commercial Music major. Program: 24-track digital studio with Mackie HDR24/96, D88, monitors. MOTU 896 and Pro Tools LE, MIDI and analog electronic music labs.

Globe Institute of Recording and Production

739 Bryant St., San Francisco, CA 94107 Phone 800/9000-MIX E-mail Info@GlobeRecording.com Website www.GlobeRecording.com Degrees/Certificates: 2-Year Audio Producer Associates degree; 4-month certificates in Audio Recording and Production, Music Business, Digital Composition, Audio for Video/Film, Digital Audio Workstation, Disk Jockey, Psychoacoustics. Program: Hands-on classes in recording, mixing, production and Pro Tools utilizing the Virtual Mixer concept, which visualizes sounds in 3-D. Top instructors including David Gibson, author of *The Art of Mixing* and *The Art of Producing*. Classes include instruction in music theory and instrument proficiency to become a producer.

Golden West College

15744 Goldenwest St., Huntington Beach, CA 92647 Phone 714/895-8780 E-mail ssteidinger@gwc.cccd.edu Website www.gwr.info Degrees/Certificates: Commercial Musician/Recording Arts certificate program. Program: Classes include music, business and recording study areas. The hands-on facilities include three 24-track digital control rooms. Specialty labs are provided for Pro Tools, Final Cut Pro, CD/DVD duplication, maintenance and Digital Performer. The program, which is almost 30 years old, has produced graduates working in recording studios and in almost all related sound areas.

Long Beach City College

4901 East Carson St., Long Beach, CA 90808 Phone 562/938-4309 Website www.lbcc.cc.ca.us Degrees/Certificates: A.A. with emphasis in Commercial Music; 10 certificates in Music, Radio or Television. Program: LBCC offers job placement and intern positions. Most instructors are active in the professional field. Facilities include seven studios with digital audio and/or analog multitrack, 42 MIDI workstations, three-camera online video facilities and three offline editing rooms. All students get hands-on experience during their first semester. Equipment includes ADAT, Fostex DMT, MCI 24-track, Soundcraft, CAD, Sound Workshop, Pro Tools, Music Shop, Vision.

Los Angeles Recording Workshop Center for the Recording Arts

5278 Lankershim Blvd., North Hollywood, CA 91601 Phone 818/763-7400 E-mail info@recordingcareer.com Website www.recordingcareer.com Degrees/Certificates: 900-hour Recording Engineer Certificate. Program: One of the best-equipped schools on the planet. Our 10 studios include Solid State Logic, Neve VR, Pro Tools, five Sony DMX-R100s and the Sony Oxford digital console. Financial aid, student scholarships and dorm housing are also available.

Los Medanos College

2700 E. Leland Rd., Pittsburg, CA 94565 Phone 925/439-0200 E-mail fdorriti@losmedanos.edu Website www.losmedanos.edu Degrees/Certificates: 2-year A.A. in Recording Arts and 2-year Recording Arts certificate. Fully accredited. Program: The most highly respected community college Recording Arts program in the country. Faculty honored with multiple Grammy Awards and nominations. Tuition for CA residents: \$18/unit. Two fully equipped 24-track studios, with Studer and Alesis ADATs, Otari MX-70 and MTR-90 multitracks and Pro Tools.

Loyola Marymount University

One LMU Dr., MS-8230, Los Angeles, CA 90045 Phone 310/338-4575 E-mail jpresent@lmu.edu Website http://film.lmu.edu Degrees/Certificates: 4-year B.A. in Recording Arts (music recording and film sound). Program: Educates students in audio engineering, music production, film sound production and post-production. Students cannot record their own music at LMU. They must scout the artists that they want to record. Entirely Pro Tools-based state-of-the-art audio facilities.

Mesa Community College

1835 West Southern Ave., Mesa, AZ 85202 Phone 480/461-7273 E-mail aseagle@mail.mc.maricopa.edu Website www.mc.maricopa.edu Degrees/Certificates: A.A.S. in Audio Production Technology (approximately 2 years) or Certificate of Completion (CCL), approximately 1 year. Program: Classes in studio recording, Pro Tools, live sound reinforcement, electronic music, music business, music theory, aural perception and more. Our recording studio recently installed a Solid State Logic console. Using digital multitrack recorders, we record with Neumann and AKG microphones and the finest of processing. With a huge two-story studio, we're able to record orchestras, big-band jazz, choirs and pop music bands.

Mills College

Phone 510/430-2191 Degrees/Certificates: 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. Program: Mills College is an undergraduate women's college and a co-educational graduate college. Our studios include 24-track analog (with Dolby SR) and Pro Tools workstation.

MiraCosta College

Music Department, 1 Barnard Dr., Oceanside, CA 92056 Phone 760/757-2121 x6703 E-mail ccoobatis@mcc.miracosta.edu Website www.miracosta.edu/music Degrees/Certificates: A.A. in Music. Certificates in Recording Arts/Record Production, Computerized Audio Production, Sound Reinforcement, Music Technology and Performance Technician. Program: We offer programs in commercial music, choral, instrumental and other general transfer-level courses. Two control rooms/studios with digital and analog recording. Pro Tools

systems and state-of-the-art equipment. Students are given many opportunities for hands-on recording experience. We also have a MIDI/digital recording lab with 25 stations and a Foley lab. Located near the beach in North San Diego County.



Mt. San Jacinto

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8033 Sunset Blvd., Ste. 4042, Hollywood, CA 90046-2427 Phone 800/295-4433 E-mail musicbiz@earthlink.net Website www.recordingconnection.com Program: Recording Connection is a 15-year-old accredited program that has a worldwide network of over 5,000 recording studios throughout the United States and Canada. The company signs on new affiliates each month. We provide 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.

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3835 Freeport Blvd., Sacramento, CA 95822 Phone 916/558-2111 E-mail donyg9999@aol.com.

San Diego City College

1313 Park Blvd., San Diego, CA 92101 Phone 619/388-3337 E-mail jfenwick@sdccl.net Degrees/Certificates: 2-year A.A. in Electronic Music. Program: Students receive a well-rounded education in music while focusing in-depth 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 and for positions in retail electronic music sales.



San Diego Mesa College

7250 Mesa College Dr., San Diego, CA 92111 Phone 619/388-2219 E-mail: ikornet@sdccl.net Website www.sandiegomesacollege.net Degrees/Certificates: A.A. in Music with emphasis in Music Technology. Certificate in Music Technology (2 years), Certificate in Music Composition (2 years). Program: Beginning to advanced classes in the Mesa College Electronic Music Studio are hands-on and cover several different music composition, production and recording techniques: MIDI, digital hard disk recording, notation software, digital and analog tape, acoustics, mixing consoles, sampling, soundproof sound booth, multitrack and concert recordings via trunk lines and CCTV links to band and choir rooms.

San Francisco State University

Broadcast & Electronic Communication Arts Dept., 1600 Holloway Ave., San Francisco, CA 94132 Phone 415/338-1787 Website www.sfsu.edu Degrees/Certificates: B.A. and M.A. in Radio and Television with emphasis in Music Recording, Audio-for-Visual Media and Audio Post-Production. Program: Fully equipped recording studio with 2-inch analog multitrack, state-of-the-art DAWs and labs for individual work.

Santa Barbara City College

721 Cliff Dr., Santa Barbara, CA 93109-2394 Phone 805/965-058.

Santa Monica College

Academy of Entertainment and Technology, 1660 Stewart St., Santa Monica, CA 90404 Phone 310/434-3700 Website <http://academy.smc.edu> Degrees: Certificate and A.A. degrees in Interactive Media Certificate Level I, Interactive Media Certificate Level II, Animation. Program: 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

3000 W. MacArthur Blvd., #520, Santa Ana, CA 92704 Phone 714/979-4422 x3547 E-mail devenberryhill@calvarychapel.com Website www.schoolofworship.net Degrees/Certificates: 1-year certificate program. Program: Designed to equip and train future worship leaders for a specific ministry role in the local church. Classes are basic theological concepts, leadership administration, worship administration, music theory, worship team development, studio and live engineering, songwriting, vocal techniques and many others. Throughout the year, students will participate in four mini-workshops focusing on specific subjects such as songwriting, choir arrangements, leadership and other topics relating to the worship ministry. The campus is located at Calvary Chapel of Costa Mesa.

Sound Master Recording Engineer School Audio/Video Institute

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audio/video post-production, film scoring, digital mastering, synchronization, MIDI and technical maintenance. Job placement is given upon graduation. Many graduates hold key positions in top music/recording companies. Student grants and loans are available for those who qualify. Day or evening classes are available.

Studiocat Productions

PO Box 38128, Phoenix, AZ 85069 Phone 602/403-9497 E-mail Studiocat@cox.net Website www.studiocatproductions.com Degrees/Certificates: Certificate of completion and letter of recommendation. Program: Courses include recording, editing and mixing of music created by Arizona's top local artists. Students will learn how to make constructive production decisions and how to effectively communicate them to the artist. With smaller class sizes, students can maximize their hands-on training in a real working atmosphere, instructed by multi-Platinum Award-winning engineer Jamison Weddle.



The Academy of Production & Recording Arts

619 11th Ave. SE, Calgary, Alberta T2G 0Y8 Phone 403/237-8561 E-mail beachinc@telusplanet.net Website www.thebeachaudio.com Degrees/Certificates: Sound Basics 101 certificate, Music Advanced certificate, Post-Production Advanced. Program: APRA is a school that is located within Alberta's premier recording facility, The Beach Advanced Audio. The courses enable students to learn all elements of audio recording, engineering and production. Courses focus on all elements of audio.

Trebas Institute, British Columbia

112 East 3rd Ave., Vancouver, BC V5T 1C8 Phone 604/872-2666 Website www.trebas.com Degrees/Certificates: 1-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production and Film/Television Post-Production; B.A. in Sound Technology in partnership with the Liverpool Institute for Performing Arts; B.A. in Enterprise Management. Program: Established in 1979 for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Government loans. Internships. Lifetime national job-search assistance. Grads with major entertainers, studios, companies worldwide. Resource center. Authorized training center for Cubase and Macromedia.



UCLA Extension

Department of Entertainment Studies, 10995 Le Conte Ave., Room 437, Los Angeles, CA 90024 Phone 310/825-9064 E-mail entertainmentstudies@uclaextension.edu Website www.uclaextension.edu/entertainmentstudies Degrees/Certificates: Certificates in Music Business, Songwriting, Record-

ing Engineering, Film Scoring. Program: Rigorous training programs that prepare students in the art and science of the music business, songwriting, recording engineering and film scoring. Drawing on the talent and studio facilities of Los Angeles, Entertainment Studies has created a curriculum of required and elective courses that cover theory and practice in audio technology, equipment, musicianship and business practice.

University of Oregon, School of Music

1225 University of Oregon, Eugene, OR 97403 Phone 541/346-3761 E-mail lgoren@oregon.uoregon.edu (undergraduate), gradmus@oregon.uoregon.edu (graduate) Website <http://darkwing.uoregon.edu/~fmo> Degrees/Certificates: B.S., Music Technology option; M.M. in Intermedia Music Technology; and Intermedia Music Technology as a secondary area for doctoral students. Program: Each curriculum strives to balance the development of artistic and creative skills with the mastery of the technical aspects of the discipline. Courses emphasize music composition, performance and real-time interactive media environments. The focus is on the creation of experimental types of musical content and not on the training of recording engineers or related technicians.

University of Southern California School of Music

Music Industry/Recording Department, Los Angeles, CA 90089-0851 Phone 213/740-3224 E-mail scmusind@usc.edu Website www.usc.edu/schools/music Degrees/Certificates: 4-year B.S. in Music Recording, 4-year B.S. in Music Industry, B.M. in Music Industry. Program: All classes taught by full-time faculty and local L.A. professionals. Music industry class lecturers/instructors include Mark Goldstein, Jay Cooper, Jeff and Todd Brabec, Donald Passman, Mark Isham, Chris Stone. Recording arts classes taught in SSL/Student-equipped classroom by instructors/guest lecturers Ed Cherney, Steve Krause, George Massenburg.

Vancouver Film School

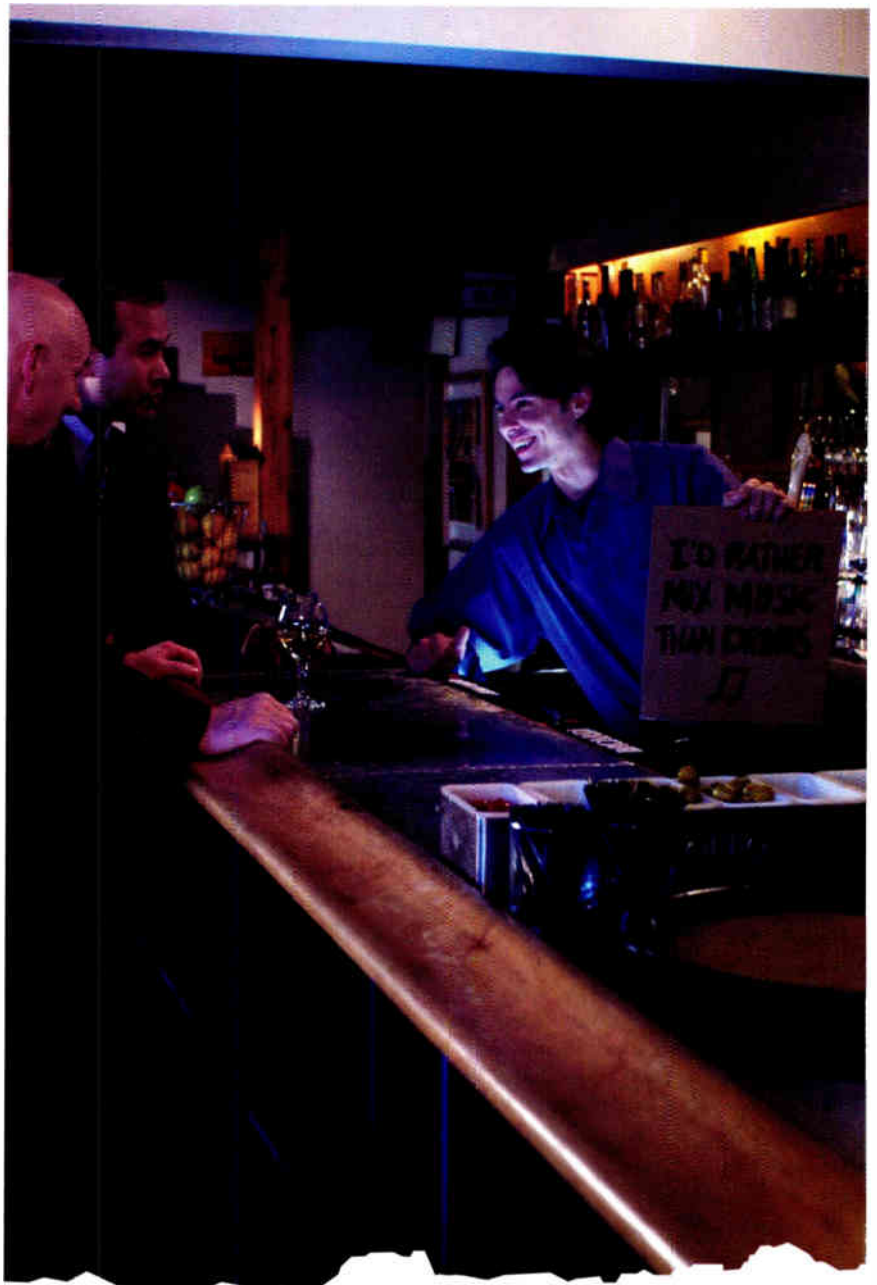
200-198 W. Hastings St., Vancouver, BC V6B 1H2 Phone 604/685-5808 E-mail admissions@vfs.com Website www.vfs.com Degrees/Certificates: 1-year diploma in filmmaking, 2-D and 3-D animation, sound design, broadcast, new media, acting and writing for film and television, makeup for film and television. Program: VFS maintains industry-standard, high-quality production so that sound design students have the opportunity to author and produce the surround sound audio requirements for original film and digital media content. The program has several objectives: produce a professional-quality audio component portfolio; author and produce the complete audio components for a short film or digital media package; expand audio design principles to include Web-based audio delivery; and complete Digidesign Operator certification.

Video Symphony

731 N. Hollywood Way, Burbank, CA 91505 Phone 800/VS-1-AVID Email info@videosymphony.com Website: www.videosymphony.com Degrees/Certificates: One-year certificate. Program: Authorized Pro Tools Editing/Mixing/Sound Design classes and career program. Job-centric, professional training for Hollywood professionals now and soon. Video Symphony is a Digidesign Pro School. Pro Tools User and Expert Certification classes and exams included. Other career programs in Avid video editing, motion graphics also offered.

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PO Box 410663, San Francisco, CA 94141 Phone 415/239-3269 x5 E-mail twinston@womensaudiomission.org Website www.womensaudiomission.org Degrees/Certificates: Audio Workshops taught by women for women. Audio Certificates are scheduled for fall 2004. Program: In a field where women professionals are historically underrepresented, 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 in its use to record sound for music, radio, film, television and the Internet for women and girls. ■



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The Manchurian Candidate

Hallucinatory Sound for a Paranoid Vision

By Blair Jackson

With roots planted firmly in the Cold War paranoia, John Frankenheimer's superb 1962 film, *The Manchurian Candidate*, does not seem like a good prospect for a remake. But director Jonathan Demme—whose films have run the gamut from the brilliant Talking Heads concert movie, *Stop Making Sense*, to the Oscar-winning thriller *The Silence of the Lambs*, to his adventurous retooling of another great '60s film, *Charade* (remade as *The Truth About Charlie*)—has succeeded in re-imagining *The Manchurian Candidate* as a spellbinding contemporary tale, with up-to-the-minute references to the current political climate and levels of deceit and evil that make the earlier drama seem positively quaint. In Demme's film, the "Manchurian" in question has no ties to "Red China"; instead, it refers to a large, evil, Halliburton-like corporation, Manchurian Global. And the lead characters—one running for the vice presidency of the United States—are haunted by memories, dreams and questions about things that happened to their Army unit during the first Gulf War.

Demme's riveting film is shot in a very straightforward, at times almost documentary, style. The sound design, however, is highly unconventional. Radios and televisions drone on in the background, talking about terrorism, disasters and the election. Police sirens blare in the distance, crowds sound tense and nervous, and inside the mind of lead character Ben Marco (Denzel Washington), the sounds of city life merge with his increasing paranoia and flashes of

recovered memory into a horrifying and dissonant roar that seems to be driving him mad.

"Jonathan wanted the film to be hyper-real," notes supervising sound editor Paul Urmson, who works out of C5 Sound in New York. "He wanted it to be a modern-day, very post-9/11 environment, so he constantly wanted things in the background that sounded 'state-of-emergency': sirens, cop radios, helicopters. The first challenge was to get that sense throughout the whole movie. We wanted the film to have a very organic background, with a lot of real elements but played in unusual ways.

"Jonathan also really wanted to play with the psychology of all these guys [from the Gulf War] and how they'd been screwed with mentally," Urmson continues. "So one of the key points was to show Denzel's character coming unglued through the course of the movie, and as that's happening, more and more sound comes into play. Jonathan wanted him to be hypersensitive to sound, so there's always source music playing from another apartment and constant newscasts and media—camera shutters. Everything is really building on him, and he's becoming more paranoid as he's discovering that what he thought was completely ridiculous is actually real. The overall approach to the sound was to build, build, build in layers."

The film was shot in the fall of 2003, followed by the arduous task of editing and doing the early sound work at Demme's Nyack, N.Y.-based facility in the winter of 2004. "I set up a 5.1 room with Pro Tools|HD and a Control|24 and started doing design work on a few key scenes," Urmson notes. "I also use Logic Audio quite a bit for design because there are so many cool AudioUnits plug-ins available.

"It was so beneficial to be [at Demme's studio] with the picture department for three months. I did tons of temp mixes. I'd feed them back to the



PHOTO: REX REAGAN

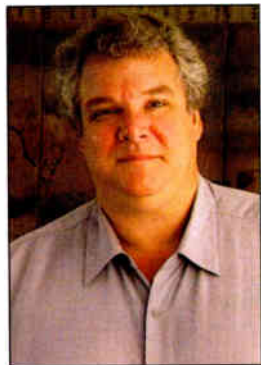
[film editors] and they'd look at it on their Avids; there was lots of back and forth. Jonathan doesn't have conservative ideas about sound at all, and he doesn't care compartmentally whether it's effects or music or textural. It's all part of the sound to him. So we ended up working very closely with [music composer] Rachel Portman. The music and effects are blended in very interesting ways."

"There are a lot of things that Rachel Portman did that don't sound like score, per se, that are used more like effects—great low tones on cello and basses," adds re-recording mixer Tom Fleischman, who did his work at Soundtrack F/T (Film & Television) in Manhattan on a Euphonix System 5. "There were scenes where she wrote these long pads that were constantly shifting clusters of those instruments.

Then Wyclef Jean came in and did these tracks where he was just plunking around on the guitar. It was not melodic at all, but it added a lot. There were several instances when I listened to these guitar tracks by themselves and thought, 'This is never going to work.' But when they were put to the rest of the track, they added a whole new insane dimension to the feel of the scenes. Later, as we went back in and saw how well the guitar was working with the score, they added

—CONTINUED ON PAGE 84

Left: Paul Urmson. Right: Tom Fleischman



Mr. 3000

When Baseball Doesn't Sound Like Baseball

By Paul Soucek

Fall is in the air, and the regular baseball season is about to give way to the playoffs and then the World Series. So when supervising sound editor Paul Soucek called the Mix offices and said he was doing a baseball movie with the mandate to make it "not sound like a baseball movie," we asked him to write about it.

Mr. 3000, from *Spyglass/Touchstone*, is the story of Stan Ross, an arrogant Milwaukee Brewer who quits the game once he gets his 3,000th hit, leaving his team in a lurch during the playoffs. Years later, it's revealed that there's been a miscount and Ross is three hits shy of possible induction into the Baseball Hall of Fame. The now rusty Ross must re-enter the game to reclaim his fame. You can guess the rest.

Mr. 3000 brings Soucek back together with director Charles Stone III, whom he had previously worked with on *Drumline*.—Eds.

From a sound perspective, "crowd movies" are challenging. The goal is to provide a "you are there" sonic reality, but avoid making the track sound like a wash of white noise. A cheer is a cheer, and the challenge is to fuse the sheer mass of the crowd with sprinkles of detail that anchor it in reality.

The team learns to love Stan Ross



Milwaukee Brewers superstar Stan Ross (Bernie Moc, right) confronts a young fan who just caught his 3,000th hit and—more importantly—his ticket into the Baseball Hall of Fame.

During our work on *Drumline*, we dealt with crowd issues, but on *Mr. 3000*, we wouldn't have the dozens of marching band performances to "hide" behind: The crowds would have to live on their own, augmenting the dramatic ups and downs of numerous lengthy game sequences—from the massive roar of 10,000 excited fans to almost complete silence within the few frames it takes for a fastball to "pop" into the catcher's mitt.

In September 2003, I met with Charles, picture editor Bill Pankow, dialog editor Dan Korintus, ADR editor Gina Alfano and sound effects editor Brian Langman for an initial spotting session. Our consensus, conceptually, was that baseball movies tend to sound like—well—baseball movies: The guy hits a homer with a big bat "Thwack!" and the crowd cheers. Charles and Bill wanted something different.

THE FEEL OF THE GAME

The production arranged for us to meet with Vito Vitiello, producer of events for the New York Mets, and source and temp score music editor Nick Meyers, who would handle the many "needle drops"—bursts of music or organ flourishes that take place in response to what's going on during the game—and the multitude of other source cues throughout the film.

Vito screened each game sequence with us, giving us a play-by-play of what would be happening in the crowd and what typical stadium source cue might be concurrent with game activity. Meanwhile, much of the game's binding sonic thread would be the voice-over of veteran sports broadcaster Dick Enberg, as scripted by Charles. This spotting session enabled us to come up with something of an orchestration, which proved immensely useful as we proceeded toward shaping the track.

In preparation for the first temp dub, Langman started shaping crowds culled from a wide variety of libraries, notably from the Ascent Media Creative Sound Services effects server in Hollywood.

Dialog editor Dan dove into his work

dealing with the tremendous amount of track work from the Avid, which came over via OMF. His first goal was to split materials out so that they were easier to mix, segregating what would be “fuzted” (filtered for stadium P.A., through a television, etc.) and splitting sound effects that we had given to the picture department vs. what had been recorded on location.

Production sound mixer Steve Aaron had done his best to capture crowds, but he was facing a tight shooting schedule and the ambience of open-air stadiums, complete with overhead jets and a Jumbotron screen that hummed and buzzed like a nuclear power plant. Korintus then had to meticulously mine the bits and pieces of usable production crowd material, knowing sound effects would provide the “glue” of the crowds but production would anchor them in the actual locations.

Eventually, group ADR (recorded later by ADR supervisor Laura Graham in L.A. would provide the final human layer to pepper through crowd sequences, but for our first temp dub, we would rely on effects, crowds and whatever Korintus could salvage from the location recordings. During our first temp in early November 2003—with re-recording mixers Leslie Shatz and Michael Barry at Sound One’s Stage 1 in New York—we quickly learned that our “wall of sound” fears were a reality.

An audience is only able to process so much aural information at once; at a certain threshold, the brain just shuts the ear down. Our barrage of cheers, Dick Enberg’s play-by-play, the stadium P.A., onscreen dialog and needle-drops through the P.A. were *beyond* the shutdown threshold. Given the temp dub’s immense time constraints, Charles had to make rapid-fire decisions about what the aural focus of any moment should be. We knew that we needed a more dynamic crowd.

THE ROAD WEST

Following the first temp, the picture department moved from New York to the Disney Lot in Burbank, Calif., and we began what I fondly refer to as the “transcontinental shuffle.” Often, the charge of a supervising sound editor is not only working with the creatives, but dealing with the logistics of scheduling materials. We knew that turnaround of picture changes was going to be down to the wire, so old and new sound elements would be conformed to the picture re-cuts at the last minute. We literally hit our second temp (Disney’s Stage A with Shatz and David Parker, mid-December 2003) “hot off the hard drives.”

In addition to proceeding toward the final dub (which had been delayed from early January to early February 2004), I worked with supervising sound assistant Mike Poppleton and Sound One chief engineer Avi Laniado to map out our equipment line-up out West.

Our “migrant” New York City crew—yours truly, Poppleton and music editor Nick Meyers—flew out to L.A., praying we would be met by our “main” and “safety” mix materials on the Disney Lot, even though they had left New York only hours before. Poppleton and I went straight from LAX to Disney, met up with stage editor Jen Ralston and spent a very *long* day making sure our Pro Tools rigs worked, sessions opened, etc. Because of the tight turnaround of picture changes—and the volume of elements to conform—we had only two reels ready for the stage.

Back in New York City, the “home team” was churning along on outstanding reels of picture changes. As they finished each one, revised sessions and associated materials would be put up on the Sound One FTP server and downloaded to the stage at Disney. It proved an enormous time/cost savings that couldn’t have been done even a few years ago.

Likewise, owing to workstation technology and an evolving method to the madness, we are now able to deliver conformed elements—from the original units through pre-dubs and stems from the previous mix versions—that slide through like butter. The crew is careful to provide only new or “patch” tracks in areas where there are picture changes. This raises the stakes on the editorial end, as much of the “smoothing out” that used to take place on the dubbing stage now takes place “inside the box.”

TEMP 2: DYNAMIC CROWDS

Working with re-recording mixers Shatz and David Parker, we picked our moments carefully during temp dub 2, using the bulk of our time focusing on several key game sequences that are pivotal to Stan’s rise and fall and—I won’t give away the ending.

We did a lot of what Charles and I called “aural focus-pulling”: using sound to shift audience attention from “watching” the game to getting inside Stan’s head while he’s at bat. At those moments, we stripped away the detail crowd and left the generic roar of the masses. This bed would then melt away to what I called the “psycho crowd,” which was a blend of underwater ambiences, a crowd I had pitched down and treated to within an inch of its life and a mix of several altered winds.

The resulting effects bed was ostensibly a smooth wash of sound and worked beautifully with the score that could live and breathe comfortably on top of the design transitions.

While the variety of “Stan’s brain” sequences had the same sonic motif, we always introduced new elements to take us in or out of these moments. Sometimes getting out of these transitions was as simple as an over-the-top bat crack to “thwack!” us back to reality; other times, we used some of the stunning visual effects—the point-of-view of a baseball as it’s hurtling toward the catcher’s mitt—to sneak in the kitchen sink (jet flares, screams, reversed gunshot decays, basically whatever “felt” right for the moment) and quickly ramp the audience from Stan’s brain back to the game.

In one of my favorite transitional sequences, the crowd is rhythmically chanting, clapping and stomping in the stands. The chanting disappears into a reverb that fills the room, the “loose” crowd clapping crosses into a tighter effects crowd clapping and the stomping melts into depth charge explosions and a gated kick drum.

Mixers Shatz and Parker did a tremendous job blazing through picture changes and taking temp dub 2 to the next level. We also gained tremendous insights in terms of articulating our crowds and getting a leg up on how to approach our subjective sound moments for the “real” mix.

Thanks to the ever-changing nature of film schedules, our *real* mix—the final dub—was blessedly delayed a month. Shatz and Parker would be moving over to *Van Helsing*, and we would be working with Disney’s A-team of Terry Porter and Dean Zupancic in the main theater.

THE FINAL

Historically, we’ve delivered magneto-optical disks for stage playback. This is a real-time process requiring an average of 30 minutes per 8-track unit. With 48 tracks of dialog, 90-plus tracks of effects, 48 tracks of principal and group ADR, 32 tracks of Foley and backgrounds, this would’ve meant 125 hours of laybacks—or, roughly three crew weeks we didn’t have.

So I sat down with assistant Poppleton and Sound One engineer Laniado and designed a new approach, which we dubbed the “Uber Dubber.”

We would *not* lay back units; instead, we would rely on a Hemi-powered Pro Tools system dedicated exclusively to playing back units through the various waves of pre-dubs. Flanking this 96-output Pro Tools|HD system would be two 32-output

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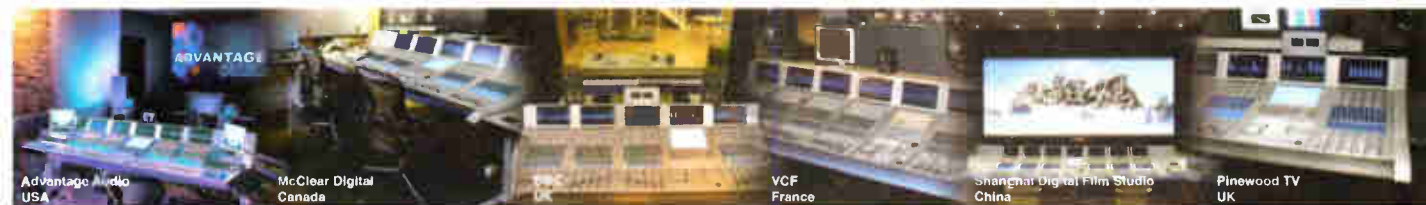
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World Radio History

dialog/ADR and effects/background/Foley fix stations. Not having to lay back playback units saved us from serious headaches—and thousands of dollars.

Except for a mid-mix temp dub 3 that incorporated some new scenes (and had us working until 4 a.m. on a very rainy night), our final on *Mr. 3000* could not have gone more smoothly. Without technical deadwood, we were able to take time to focus on experimentation with sound design moments. Porter did a phenomenal job cleaning up some difficult production tracks, and Zupancic brought his impeccable craftsmanship and creativity toward realizing Charles' vision on effects and design.

Thanks to an incredibly talented sound team and a remarkably communicative director and editor, we were able to create a solid mix for *Mr. 3000* that is less about baseball and more about Stan Ross.

I recall a printmaster playback with a studio executive, who is rumored to never say anything positive, saying, "The crowds sound great." Whew! Then a colleague who came to the same screening said to me, "You know, this track is kind of...crazy..." Even better.

To end up with a track that *everybody* is pleased with is kind of an anomaly. We were all delighted to make a "baseball movie" not *sound* like a baseball movie. ■

Manchurian Candidate

—FROM PAGE 80

some more with an electric bass. And then there's all this source music coming out all over the place that's piled on top, especially toward the end, where [Denzel's] going nuts and running around the city. That was all multilayered." Urmson notes that he also added some synth textures here and there, and that he worked closely with Portman's music editor, Suzana Peric, "who also concocted some great things, too."

The ongoing news reports, which drift in and out of scenes like an unnerving audio hallucination, "came to me mostly as ADR tracks," Fleischman says. "They spent quite a bit of time recording a number of different real newscasters. Jonathan wrote pretty much all the lines himself and then, because he wanted it to be as fresh as possible, he kept writing new lines. If something happened in the news while we were mixing, they'd get the newscasters back in [the studio] and record a bunch of lines about it. And literally, right up until the last days of the mix, those lines were being changed." Deborah Wallach was the ADR supervisor and Jac Rubenstein served as the dialog editor.

One set of particularly unnerving scenes has Washington's character visiting the lab of a German scientist named Delp (portrayed chillingly by Bruno Ganz) in search of answers about his disturbing dreams and memories. The lab backgrounds are a mysterious, irritating scratching and scraping, like some awful metallic rubbing, mixed with what sounds like bird or animal screeches. It's not until near the end of the film that we learn that caged lab monkeys made that hideous noise.

"The monkeys were another texture we wanted to play with," Urmson says, "because the idea is they've *all* been experimented on—the soldiers and the monkeys; that's that metaphor. For some of that [sound], we went to the [C5] Foley department [in northern New Jersey] and asked for the scraping on metal and cage rattles so we could make a background. I also played a lot with monkey recordings I had done awhile back in Los Angeles and there was also some really good production material—there actually were monkeys on the set and I used some of that." Steven Visscher was the supervising Foley editor. The production recordist/mixer was multi-Oscar-winner Chris Newman.

Another challenging scene was the graphic drowning murder of a kayaker that occurs toward the end of the film. Here, the approach was shocking realism.

According to Urmson, "I had a friend of mine, [noted L.A. effects recordist] Eric Potter, go up to Eugene, Oregon, with a kayak. He banged the hell out of it and did some great recording. I gave that to my effects editor, Wyatt Sprague, and he cut that material in with some additional effects that he had recorded. Meanwhile, I worked on a lot of the underwater vocals and processing. In Logic, I used these bizarre filter plug-ins from Pluggo, which are made by Cycling '74. There's one called Harmonic Dreamz that you can use as a fast modulation filter so you get this sort of bubbly underwater sound.

"I also had some other recording of movement and bubbles that I did with an Audio-Technica mic with a condom over it. You put it in your bathtub, stick your head under there and start screaming. It works



Denzel Washington and Meryl Streep

great every time. Then Foley made a lake and did all this nice water detail and paddling noises. It meshed together nicely."

In general, Urmson says, when they first started working on the soundtrack, it was quite dense. The temps, then, accomplished mostly on Pro Tools Control |24, became an exercise in weeding out. "I was able to give those elements to Tom [Fleischman]," Urmson notes, "and he's so amazing; just an incredible mixer. He brings it to a whole other level."

Fleischman, meanwhile, is generous in crediting Urmson and others for delivering such creative effects to the stage and notes that Demme was an active participant in every stage of the soundtrack's construction. "The ambiences were very carefully designed, and Jonathan would often be there picking these pieces of sound that he wanted to hear," Fleischman says. "There's a scene where [Marco] is going to [his former army mate] Melvin's apartment, and that hallway has like 14 different sounds happening in it. It's really wild."

"He's extremely creative," Urmson says of the director. "He's so into the characters. Sometimes the sound he's looking for is something more psychological than literal. And he's also looking for the dramatic in anything. He would ask us to do things that might be counter to your initial intuition, like, 'Let's make that truck-by gigantic, but let's make this gun-cock small. But the door-open is *huge* and it'll scare the shit out of everyone when it happens!' He likes to keep everyone guessing."

Including the sound crew? "Oh, absolutely," he says with a laugh. ■

Blair Jackson is Mix's senior editor.

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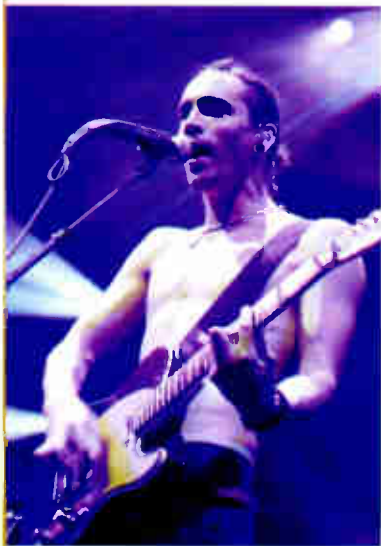
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Incubus



Vocalist Brandon Boyd

Text and Photos by Steve Jennings

Incubus' radio smash hit in 2001, "Drive," boosted the band into top seating on the Modern Rock charts. Currently touring under their newest album, *A Crow Left of the Murder*, the band (vocalist Brandon Boyd, guitarist Mike Einziger, drummer Jose Pasillas and bassist Ben Kenney) is criss-crossing through the nation's arenas. *Mix* spoke with front-of-house engineer Greg Nelson at San Jose, Calif.'s, HP Pavilion in early August.

The P.A., supplied by db Audio, comprises 14 Electro-Voice X-Lines (main hang) and 14 X-Arrays (side hang). "I'm flying 12 single-18 X-Line subs that db built and eight X-Line subs a side," Nelson explains. "The front-fill is six single-12 [Electro-Voice] wedges. I split my ground subs up with four in the middle and six on each side of the stage. The low-end coverage is great. The array of flown subs is very tight and covers the upper seats while I use the ground subs for the floor and the lower seats."

Nelson is mixing on a Midas XL4 using 35 inputs. "I also have six audience mics I send direct to Pro Tools [LE, mixed on a laptop] for recording. The band is recording all the shows and then picking a select few to be sold on the Internet for the band's Make Yourself Foundation. They wanted the shows to have a rough, bootleg feel to them, so I don't use too many plug-ins or get too analytical about the mix.

"Brandon is using a Shure Beta 58. Almost all the mics are Shure except one [Audio-Technica] AT-4050 on guitar. I have three PCM 80s for drums and percussion, two SPX-990s for weird effects and distortion, and TC Electronic's D2 delay and an M5000 for vocals. For compressors, I've got two dbx 160SLs and four Smart Research C2s."



Front-of-house engineer Greg Nelson

FixIt

Aaron Beck is a theatrical sound engineer whose credits include Jolson: The Musical, The Buddy Holly Story, Beauty and the Beast and The Lion King.

After dealing with several different orchestra setups, I have found the perfect solution. On my current tour, the sound designer decided to use the Aviom A16 personal mixer for our pit musicians. After using several different systems before the Aviom, we were willing to try something new. "Wow!" is all I can say. With the Aviom, we don't need someone stationed at the monitor console. And when the bandmembers control their own mix, it gives us more time to monitor the 36 wireless microphones on the actors, so we only require two operators, a FOH engineer and a backstage wireless tech.



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News



The Hollywood Bowl is undergoing a \$25 million renovation—adding six Lake Contour Pro26D loudspeaker processors, among other gear.

Allen & Heath will celebrate its 35th anniversary at PLASA (September 12-15, 2004, in London), in addition to introducing two new products in the Xone family, the PL10 compact mixer and iDR system manager software...MIT's Killian Hall's (Cambridge, MA) new SLS loudspeakers were installed by Alactronics, a Massachusetts-based design and installation provider...The Queensway Cathedral (Ontario, Canada) replaced its current console with a Soundcraft MH4 as part of an ongoing renovation. According to the cathedral's

technical director, Rich Bodnar, the console was chosen for its "monitoring capability, channel capacity, cost and ease of use for the volunteers using the console"...



Sennheiser gets in on the action during live music events at L.A.-based club Molly Malone's. L-R: Scot Little, Steven Van Zandt, International Underground Garage Festival, which took place in mid-August in New York City. Acts included Iggy Pop & The Stooges, The Strokes, New York Dolls and more...Promedia Productions (Orlando) doubled its EAW KF730 monitor supply, boasting its list to 24.

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Who is FiberPlex?

Experts in fiber optics for more than 35 years, FiberPlex pioneered some of the first commercial fiber optic devices. Our work in audio and data communications products is known in US government applications worldwide. With LightViper, we combine the technology we pioneered with our expertise in audio engineering.

Why fiber optics?

Fiber transmits light rather than electrons, permitting digital transmission over much greater distances (more than 1.25 miles without attenuation problems). Optical fiber provides complete electrical isolation, immunity to radio frequency interference (RFI) and electromagnetic interference (EMI) and eliminates ground loop problems. Plus, it can be easily routed overhead, around obstacles, through walls, or underground.

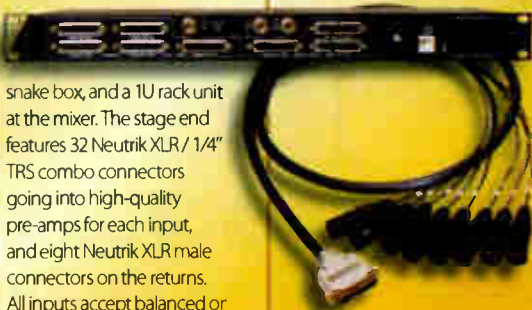


The cable's small diameter and extended range allow for routings that avoid foot traffic yet maintain the aesthetics of the venue. A 32 x 8 channel copper snake of 300 feet weighs more than 200 pounds, whereas 300 feet of the LightViper's fiber weighs less than 6 pounds. Built to "ruggedized" military standards, the LightViper 1832 will outlast copper snakes by many years.

How does it work?

The Light Viper has two main components: a stage box, the size and form of a traditional snake box, and a 1U rack unit at the mixer. The stage end features 32 Neutrik XLR/ 1/4" TRS combo connectors going into high-quality pre-amps for each input, and eight Neutrik XLR male connectors on the returns. All inputs accept balanced or unbalanced signals, eliminating the need for costly direct boxes. When using the digital i/o the unit can be slave or master using either Word Clock or Super Clock via BNC connectors. Each input has three gain level adjustments; 0 dB (line), 26 dB, and 46 dB (mic) as well as 48V phantom power. The outputs of the ultra-high quality pre-amps are sampled at 24bit/96 KHz for pure and rich audio before being multiplexed and sent to the mixer on a single fiber pair. The stage box also offers the option

providing lossless digital splitting of all 32 inputs for use in monitor mixes and/or broadcast/record-



ing mixers. The mixer end is a 1U rear- or front-mount rack unit with DB-25 connectors utilizing Tascam DA-88 balanced pin-outs; five connectors, eight channels per connector. There are also three DB-25 connectors with simultaneous AES3 digital inputs/outputs (for direct feeds to peripheral digital equipment, such as recording, broadcast or archiving feeds).

The best answer to the question "How does it work?" can only be "It works brilliantly!"

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FIBER OPTIC AUDIO SNAKE



On the Road

Jonathan Byrd

Washington-based band Death Cab for Cutie (DCFC) has a reputation for melancholic, reflective lyrics, doing their best to dodge being labeled indie rockers. We checked in with front-of-house engineer Jonathan Byrd.

What challenges do you face with the band?

This summer, we've been doing festival shows and one-offs, so it's been rental backlines and minimal or no soundchecks at outdoor venues with eight other bands.

What do you try to bring to the show?

I try to make what I'm doing unnoticeable to the audience. I like things clean, well proportioned and not too loud. I want to eliminate the impression that there is a big P.A. up there. And if all of that is too much to ask, I just make sure that everyone can hear Ben [Gibbard, also guitarist] sing.

Any interesting pieces of gear that you can't live without on tour?

I'm a big fan of Audix OM7s and the RNC compressor. I've got a great idea for mounting four of them in an ammo case like the Daking or API Lunchboxes.

Do you have any favorite venues?

I'll go ahead and represent my hometown: the Cat's Cradle in Carrboro, North Carolina. I saw my first rock shows there and spent many years working there before I started touring, so I've got a pretty good handle on the room. The Showbox in Seattle is my home away from home, and the Variety Playhouse in Atlanta is a favorite because of the great crew.

What do you like to do when you're off the road?

Music and audio occupy almost all of my time. I'm learning how to be a studio engineer so that I have at least one other marketable skill. I play music, repair equipment, go to shows. Oh, and I go to the farmers' market every chance I get. Support your local growers!

Now Playing

Chayanne

Sound Company: Lizano Audio Services Corp.
FOH Engineer/Console: Rafael "Cocoy" Alvarez/spec'd per country
Monitor Engineer/Console: Joe Lizano/Midas Heritage 4000
P.A./Amps: EAW KF-760, 761, 730, SB-1000, F-300/QSC Powerlight 1.0, 2.0; Lab-Gruppen FP-6400

Monitors: L-Acoustics 115FM, Crown I-Tech 4000; Sennheiser EW-300; Shure PSM600; Avalon, custom DIs

Outboard Gear: TC Electronic M5000, M2000, 1280, D2; Lexicon PCM70; Sony D-7; BSS Soundweb, DPR-402, DPR-404; XTA SiDD; Drawmer DS-201; Klark-Teknik DN-410; Aphex Dominator II
Microphones: Shure SM91, SM57, SM86, Beta 98, KSM 109; Audio-Technica AT4033, AT4051, ATM25; Sennheiser E 604, E 609; ADK A51s

Earth Wind and Fire

Sound Company: Eighth Day Sound
Monitor Engineer/Console: Michael Lionetti/two DiGiCo D5
P.A./Amps: V-Dosc/D&B subs
Monitors: Eighth Day Sound 2x2 wedges, Sennheiser EW300IEM-G1, Ultimate Ears UE7
Microphones: Sennheiser SKM5000, EW365-G2 Series



Yamaha Helps Bombay Dreams

Broadway's *Bombay Dreams* is the story of a slum boy who rises to fame and fortune making "Bollywood" movies and features a 5.1 score combining traditional Indian rhythms, pop music, hard rock, soft ballads and lots of ethnic percussion. The show's sound designer, Mick Potter, selected a Yamaha PM1D digital board (provided by Masque Sound) because nearly all of the orchestra is mixed in surround.

"The idea for making *Bombay Dreams* sound like a movie is due to Andrew Lloyd Webber's record producer Nigel Wright," says Potter. "The biggest singular challenge was figuring out which numbers would work in surround and which wouldn't." Part of the "aural experience"—and another mixing challenge—includes two percussionists housed in two of the theater's boxes on either side of the stage. "They obviously have to play with the orchestra and with each other," Potter explains. "And they are very loud, acoustically. I fed them gradually into the systems that were further away from them. The



further away you sit from them, the more of them you hear through the sound system."

Engineer Jordan Pankin handled front-of-house duties and is enthusiastic about the PM1D. "The onboard effects virtually eliminate having extra racks. The recall is amazing—especially when you can bring up your scenes again and again and all the settings are there at the touch of a button."



PHOTO: JOAN MARCUS

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Text by Steve Jennings
and Heather Johnson

Photos by Steve Jennings

GLORIA ESTEFAN

After eight years off the road, Gloria Estefan has returned, with her Live & Re-Wrapped 2004 tour, which winds up with two final sold-out nights at Miami's American Airlines Arena in late September. But unlike other artists who run "farewell" tours year after year, Estefan insists that this current show is the end of her touring career, hoping to focus more on recording and spending time with her family. However, any Estefan show is a huge and complex performance, and we were able to catch up with front-of-house engineer Mark Dowdle and monitor engineer Craig Melvin at San Jose, Calif.'s HP Pavilion in late August.



Clair Bros. crew chief and FOH engineer Mark Dowdle, who has mixed Gloria Estefan since 1988, uses 116 inputs—96 for instrumentation and vocals and 20 for effects and playback—on a Yamaha PM1D.



Back row (L-R): Joe Dougherty, Clair Bros. FOH system engineer; Courtney Burger, Clair Bros. system tech, and Nyle Wood, Clair Bros. stage/system tech and candy supplier. Front row (L-R): Clair Bros. monitor system engineer Chris Fulton, FOH engineer Mark Dowdle and monitor engineer Craig Melvin



FOH engineer Mark Dowdle is archiving each show on a pair of Sony PCM-3348 digital 48-track recorders. "I come out of the direct outs for each input and into three Yamaha AJO8s and back out to a pair of Euphonix converter boxes. From there, all the inputs are sent to the two machines via one [MADI] cable each. It's user-friendly and works every day."

"I feel fortunate to have the use of the kind of technology that allows me to do scenes for each song or scenes within a song, which can be remembered by the software in the console and recalled at will," says Mark Dowdle, Clair Bros. crew chief and FOH engineer. While Dowdle relies mostly on the console for dynamics such as compression and gates, he does carry outboard gear such as a Lexicon 960, TC Electronic 2290 and M5000, AMS RMX-16 and a pair of Eventide H3500 Harmonizers. For Estefan's vocals, he uses a pair of Avalon 7375P Producer Packs that have mic pre, EQ and compression in one unit. In addition, there is an Avalon AD2022 inserted on the bass guitar channels and an Alan Smart compressor on the console outputs.

For the Miami Sound Machine, Estefan's ensemble—which has grown to more than 20 players including three percussionists, a full horn section and background vocalists—Dowdle uses an assortment of Audio-Technica, Sennheiser, Neumann, AKG, Shure and Electro-Voice mics. The Clair Bros. i4 house P.A. includes an array of 44 i4s and 44 i4Bs, eight P2s on the monitor thrust and eight S4 subs on the floor, all controlled by the Clair iO processing system, which, "is probably the most valuable piece of equipment I have out there," Dowdle says. "With so many players who use a large assortment of instrumentation, as well as so many percussion instruments being used simultaneously, creating something musical out of so much information is a challenge. It's difficult to get definition and clarity when you have that much information coming at you. It's probably the most challenging situation I've had in my 30 years of mixing. It is extremely difficult, but pulling it off is extremely gratifying."

Monitor engineer Craig Melvin—who has been with Estefan since the late '80s—is using a Sennheiser 865 capsule with an Evolution G2 RF system for Estefan's vocal mic. "I introduced the capsule to her a year ago," Melvin says. "We listened to other capsules, but she loved the accuracy of the 865. She especially likes what it does for her low-mid register. Gloria was one of the first to use Ear Monitors about 14 years ago and has never gone back. The keyboard player, one guitar player, three percussionists, the drummer and the violinist all use Future Sonics Ear Monitors. The five horn players, 10 dancers, three singers, bassist and second guitarist are using wedges. Front wedges and sidefills are for the dancers.

"Until a year ago," he continues, "I used two analog consoles [4ks or a 4k and a Paragon] to deal with all the I/Os. Last year, Gloria added a third percussionist, a second guitarist and made the violin player a full-time member. She also added a Pro Tools system for embellishment tracks [backward guitar, radio voice, etc.] and the analog boards couldn't keep up with the number of I/Os. Alan Richardson, Elton John's monitor engineer, came on the first day of rehearsal and got me up to speed on the PM1D. He's one of the most experienced PM1D users and his help was invaluable. The board let me get 22 wedge mixes together for band rehearsal, and during those rehearsals, I got my stereo ear mixes dialed-in. The on-board effects work fine and I only use a couple outboard pieces: a 224xl, an H3500, a Sony DRE 5777 and a Focusrite 430 for Gloria.

"Overall, the PM1D makes this show a lot easier to deal with because of the scene recall. It can be challenging, though, when pasting changes and changing scenes need to happen simultaneously. At first, the latency of the board against the immediacy of the bone conduction in the ears bothered me, but I've gotten used to that. I do wish it had a de-esser though. As far as in-ears, I do think it's advisable to stay onboard and not insert any external analog processing due to the latency of the extra conversion."

Projekt Revolution

Unlikely Partners Find Success in Packed Bill

Photos and text by Strother Bullins

On a Saturday evening in mid-August, a quick stroll through the sprawling, grassy parking lot of Charlotte, N.C.'s Verizon Wireless Amphitheater revealed something about Projekt Revolution. Unlike what's heard in the majority of concert parking lots, the music that blasted from countless car stereos wasn't all the same. It was a wash of guttural metallic grinds, the blips and bubbles of hip hop and all-American backbeats.

Co-headliners Linkin Park, Korn and Snoop Dogg, along with The Used and Less Than Jake, Projekt Revolution's diverse bill is "annihilating the boundaries of genres," to quote Linkin Park guitarist Brad Delson. "Projekt Revolution isn't simply a tour," he continues, "it's a state of mind."

SET IT AND FORGET IT

According to Showco's Jason Vrobel—Projekt Revolution's systems engineer and crew chief—choosing the company's Prism Series P.A. array system lets him give each band

their exact sound. "The system is columns of Prisms, 16 subs per side, and it's all controlled through the Clair Bros. I/O," Vrobel explains. "For me, it's about adjusting the EQ and changing the levels they're sending out, which changes from band to band. Some of the bands like lots of low end and some don't like it whatsoever."

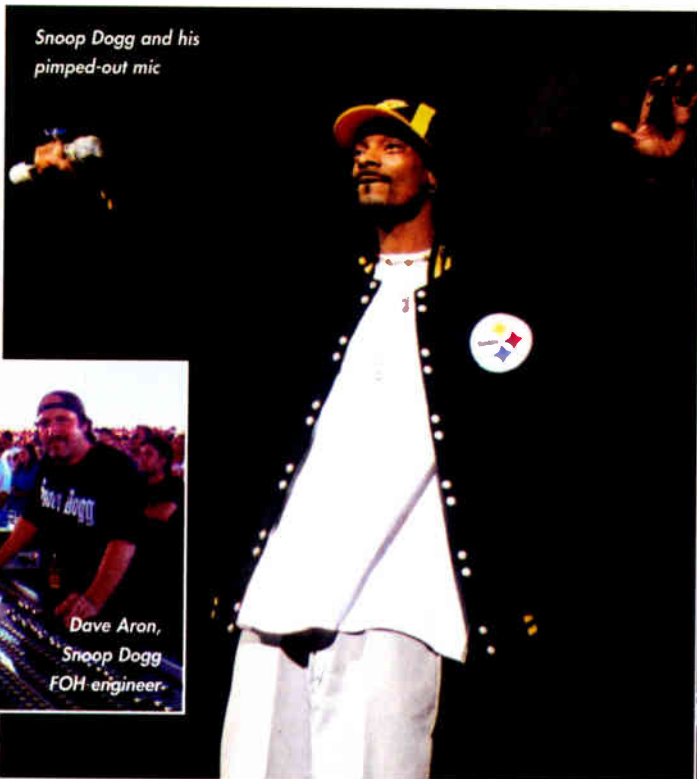
For Korn's front-of-house engineer Bill Shepell, the Prism P.A. works incredibly well. "If the gain structure is set right, I can keep everything in check gain-wise and make it loud but comfortable and not harsh," he reasons. "The band asks me every night, 'Hey, did you crush 'em?' They want to know that it was a big rock show."

Snoop Dogg's FOH engineer, Dave Aron, credits the tour's smooth-sailing to Vrobel. "Vrobel's a great tech," he attests. "It makes touring fun when someone is really willing to go out and get the sound that you're looking for and make the necessary adjustments."

System tuning, while relatively consistent from venue to venue, isn't taken to extremes. Says Linkin Park FOH engineer Brad Divens, "The Prism is a very consistent rig. At the beginning of the day, I'll listen to a few tracks of my CD and a [Shure] SM58 through the P.A. with some pink noise. Bill then has a CD he'll listen to. After a few little tweaks on the I/O, we're ready to go. You know that there are a few spots you'll hit once the house fills up and it gets a little cooler, but I don't tend to over-EQ the P.A. I'd rather have to take something out later than to put something back."

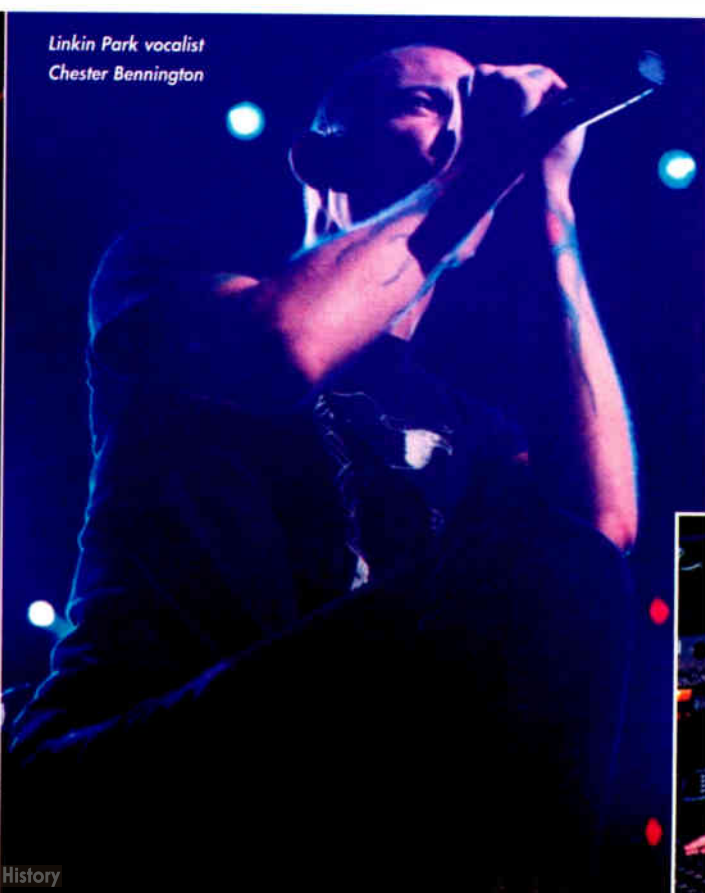
Most everyone on the tour shares this "less-is-more" approach when it comes to system equalization. "The one thing I've learned over the years is that on the days when the place sounds really bad, we don't bury ourselves in unnecessary work," Korn monitor engineer Scott Tatter says. "We're not going to kill ourselves all morning try-

Snoop Dogg and his pimped-out mic



Dave Aron,
Snoop Dogg
FOH engineer

Linkin Park vocalist
Chester Bennington



ing to fix a tiny nuance because we know that it's not going to make things sound okay. We know that our source signal is good, and we're not going to over-EQ."

ONE SHOWCONSOLE, FIVE ACTS

From square one, those selecting the equipment made sure that all engineers would be comfortable with each piece of gear, and that they were equipped to deliver the sound that the audience expects and the bands demand. Each FOH engineer is using Showco's Showconsole. "It saves a lot of space," says Vrobel about the digital desk. "In an amphitheater, you don't have a lot of room at front of house and you really can't carry four different consoles. It also saves a lot of time and patching."

Luckily, the desk has effectively found approval from everyone. "This is probably the sixth tour I've used it on and I just love the way it sounds," Divens comments. "It makes changes painless at front of house, and because there's only one desk, everyone is on a level playing field. It's like, 'This is my P.A. and now it's yours.' I think that makes it more enjoyable for everyone."

Sheppell, who has used the Showconsole since its introduction, agrees that it's a good choice for the tour. "After using a D5 on Ozzfest, we chose to use [the Showconsole] for a bunch of international dates because it's a lot lighter and doesn't have a big execution rack," he says. "The Showconsole does sound really, really good."

MONITORING MINUTIAE

While the concept of a shared Showconsole worked well at FOH, the tour's monitoring engineers brought in other choices: Linkin Park brought in a Midas Heritage 3000, while the other acts chose a DiGiCo D5 Live.

"It's all smoothed out now," says Linkin Park monitor engineer Brad Wright. "I ended up swapping consoles and I chose the Heritage. I really like it a lot, especially when dealing with so many in-ear mixes."

Linkin Park—a six-piece band that includes vocalist Chester Bennington, vocalist

Mike Shinoda, guitarist Delson, turntablist Joseph Hahn, drummer Rob Bourdon and bassist Phoenix—is almost completely on IEMs with the exception of Phoenix and Delson, who use Prism wedges and sidefills for monitoring. For Wright, that—combined with the band's thick instrumentation—makes for involved monitor mixes. "I enjoy mixing Chester because he basically wants a full, FOH-style mix. Everyone else also wants a full mix, except for Rob, who doesn't take drums, which is kind of strange: just the kick to a Buttkicker on his throne."

For all IEM needs, Linkin Park uses Ultimate Ears UE7, while Delson prefers extreme monitoring isolation. "He wears -25dB foam inserts and shotgun muffs on top of that," Wright says with a chuckle. "If I put those things on and walk around, all I can hear is my heartbeat and my feet!"

For Korn and the rest of the acts, using the DiGiCo D5 has worked well. "I love it," states Tatter. "I'd like to never have to mix on another console. It just does everything that I need it to do."

Korn (vocalist Jonathan Davis, bassist Fieldy, drummer David Silveria, and guitarists James "Munky" Shaffer and Brian "Head" Welch) uses all wedges for monitoring, except for Silveria, who uses a Shure PSM600 personal ear monitoring system. "Everybody wants to hear everybody else," Tatter explains. "Munky and Head need to hear each other. Munky starts every song, Head needs to hear him, and it's freaking loud over there, so I'm riding my intros a lot. Jonathan has a big, fat stereo band mix up there, which is also what's in the sidefills. David's on in-ears, but it's a quiet, high-end attack-y mix. Along with that, he has six 18s, four 14s and two thumpers for drum fill. The wedges don't go over 200 Hz, I boost 80 Hz in the subs and use a Behringer Subharmonizer to get a little more low going. So there's tons of air moving up there, but all the magic is in the in-ears."

MIXING DOGGY-STYLE

Snoop Dogg doesn't travel with his own monitoring engineer, but Showco monitor systems tech Seth Kendall expertly handles his needs on the D5. Kendall delivers mostly



Korn FOH engineer
Bill Sheppell



Korn monitor engineer
Scott Tatter



Korn's vocalist Jonathan Davis

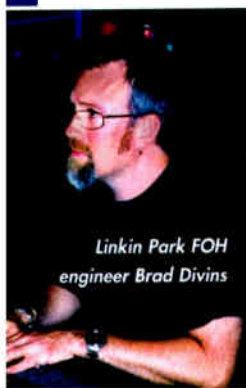
full wedge mixes for The Snoopadelics, the rapper's freewheeling backing band. "We hired great jazz guys," explains Snoop Dogg's FOH engineer Aron. Aron has worked with Snoop as a studio and live engineer since 1992. "These guys are used to really stretching out and just get the blend as far as mixing is concerned. The band just has to roll with what Snoop's doing, and so do I and the rest of the crew."

According to Aron, the continual shift between the studio and the road allows him to intuitively know what Snoop needs. "Snoop, [backup rappers] Daz Dillinger and Superfly have it together, but everyone takes their own approach. We used to do all the shows without the band, but for this tour, we felt like there were a few elements missing from the tracks, and we've got both the DJ and the band going at the same time. Sometimes, I have to filter out a bit of the low end on the tracks and let the band fill it in."

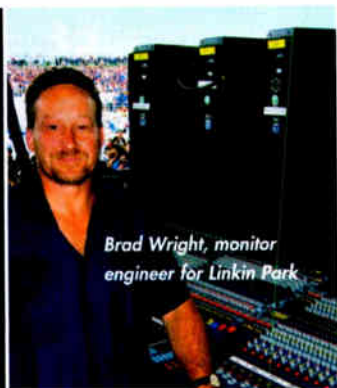
Snoop's raps are delivered via a "pimped-out" Sennheiser Evolution wireless mic. "It's all rhinestones and platinum, engraved and has a handle," Aron enthusiastically explains. "It sounds and looks great. For the mix, Snoop's always out front, and it's important that the vocal is crystal-clear. I don't use any reverb on his voice, and I leave it dry for most of the show, just throwing in delays here and there. It's spontaneous."

ROCKIN' OUT TO KORN

At FOH for Korn, Sheppell is a seasoned pro at delivering Korn's highly identifiable, venue-rattling metal, which he claims is surprisingly uncomplicated. Using an all-Shure microphone setup, guitars are miked via road iso cabinets. More than 30 inputs are used for drums, and all bass guitar sounds are direct. For vocals, Davis uses what Sheppell refers to as a "truly hybrid" microphone: a Shure U24D/Beta 58A. "Mike Allison, a Showco systems engineer now touring with Van Halen, built it,"



Linkin Park FOH
engineer Brad Divins



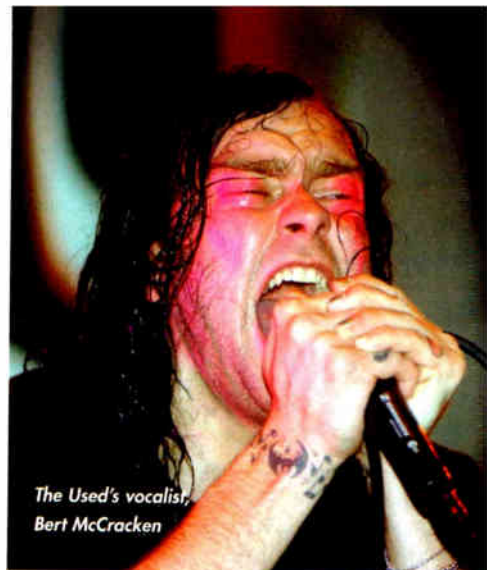
Brad Wright, monitor
engineer for Linkin Park

Shepell says. "Jonathan refuses to use a round windscreen—he hits his teeth on it—so we have a Beta 56 screen and a hot-rodded capsule inside."

Davis' vocal signal continues to a Summit TLA-100 leveling amplifier and a Shure DFR22 audio processor with a feedback filter. Shepell claims that the vocalist isn't a very loud singer, so finding ways to increase signal output is a must. "After Linkin Park does their line-check, we'll take the mic down-stage and run it as high as we can," Shepell explains. "If we feel

that there will be some feedback problems, I'll kick in the BSS Audio DFR-22 and notch a few things out. Other than that, it's just about keeping my hands on the faders."

For effects, Shepell rolls in his own rack loaded with processors he has programmed during his years of working with Korn. "I hated having a rack shipped out for every leg and then having to re-program the whole show again and again. I have a different scene for every song, and it all works really well."



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IN THE END, AUDIO MATTERS

Onstage, Linkin Park uses all Audio-Technica microphones except for a few stray Shure SM57s and a Shure Beta 91/Audio-Technica 2500 combination on the kick. An Audio-Technica 3300 wireless condenser is used on vocalists Bennington and co-lead/rapper Mike Shinoda. According to Divens, "For Chester, we go through the console's mic preamp to a BSS 901 and then into a Manley ELOP pre-EQ. I'm also engaging the limiter on the channel strip just a tiny bit when he eats the mic. For Mike, I run him straight into the Manley."

Mixing dual lead voices means lots of continual adjustments for Divens. "I try to put Chester front and center in the mix, but it's give-and-take with him and Mike throughout the night. I have fingers on those two VCAs all night long." Although Divens uses a small chamber reverb and a micro-pitch shift program via an Eventide H3000, vocal effects are kept to a minimum.

Guitar tones are gathered with a Shure SM57 and Audio-Technica 4050 on each cabinet, while the bass guitar uses a SansAmp RBI unit and a PSA1: one pre, one post. Add DJ Joe Hahn to the mix, and the aural landscape is thick but well-defined. "I like to keep the overall sound really true to the records," Divens explains. "There is the nice, thick guitar, the Pro Tools tracks are always going, and there's a fine line in-between where the vocals, the turntables and the electronics are. I spread the guitars out and create that hole for the vocals and electronics."

Since the fall of 2000, Divens has witnessed Linkin Park's continual musical growth from the best seat in the house. "It started as a bus and a trailer and now it's grown to 16 trucks and eight buses," Divens reminisces. "My challenges are few. If I'm able to make those 15,000 to 20,000 people at each show happy, then it's going to be a great show and I've done my job." ■

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New Sound Reinforcement Products

SMITH PRO AUDIO 1230 PRO

The 1230 Pro from Smith Pro Audio (www.smithproaudio.com) is a 12-inch three-way loudspeaker offering high output, wide dispersion and long throw in a light, compact, pole-mountable cabinet. Designed for mid- to high-frequency use in installed and mobile applications, the 1230 Pro

measures 31.75x18x12 inches (HxWxD) and weighs 61 pounds. Drivers are a 12-inch woofer with 4-inch voice coil, 8-inch cone mid and a 2-inch titanium compression driver/horn, providing a response of 47-20k Hz (± 3 dB), with 650-watt continuous handling. Max output is 139 dB, dispersion is 66x90 degrees and sensitivity is 107 dB (1W/1m). The all-birch-ply enclosure has a protective weather-resistant Roadcoat™ finish with powder-coat steel grilles and Neutrik connectors. MAP is \$1,399; options include custom finishes and pro flying hardware.



EAW DSAPILOT SOFTWARE VERSION 1.2

Eastern Acoustic Works has released DSAPilot™ V. 1.2 software for its innovative Digitally Steerable Array™ (DSA) Series loudspeaker system. A free download from www.eaw.com, DSAPilot provides a simple control interface for adjusting the vertical coverage pattern of up to 32 DSA loudspeakers. DSAPilot V. 1.2 also includes SPL mapping in listener area, drag/drop room definitions, a selectable amplifier shutdown timer, support of more cluster types and six parametric filters on each input.



DIGICO D5 LIVE MANUAL ON DVD

Following the release of the *Quick Start* DVD, DiGiCo (www.digico.com) now offers the full version of its D5 Live user manual, a DVD giving users individual tuition wherever required. The D5 Live is an intuitive, simple-to-use console, so the DVD focuses on its less-obvious features, while still including a quick-start section for getting novice users up and running in 15 minutes. An offline version (and full PDF-format manual) is also available on the DiGiCo Website.

format manual) is also available on the DiGiCo Website.



MC2 AUDIO E45 AMP

Following the highly successful launch of its E Series of lightweight, switch-mode power amps last year, MC² Audio (www.mc2-audio.co.uk) now offers the long-awaited flagship, E45. Rated at 2,250W/channel (@ 4 ohms), the stereo E45 features 6,400W in bridged mono, internal low-distortion speaker-protection limiters and light weight (24.2 pounds)—all a rugged two-rack space aluminum chassis.

A.R.T. DTI

Applied Research and Technology (www.artproaudio.com) announces the ARTcessories Dual Transformer Isolator™ (DTI), a high-quality, totally passive box intended to eliminate ground loop-based noise (hum) in sound systems. Requiring no power, the 2-channel DTI offers ¼-inch, XLR and RCA connections, has a high-performance audio transformer and does not degrade the audio signal. Retail is \$59.



ADAMSON SPEKTRIX SUB

Designed to complement the SpekTrix compact line array, the SpekTrix Sub from Adamson (www.adamsonproaudio.com) uses Convertible Cardioid Technology, and is a single-sided box that can be arrayed conventionally (all facing the same way) or can be arrayed in back-



to-front pairs for true cardioid performance. The 170-pound, 23x28x33-inch (HxWxD) unit has two powerful AW18 Kevlar woofers mounted in a tuned, vented enclosure with four NL8 connectors (two front, two back) for easy cable loop-through, regardless of the sub's orientation. Adamson's Integrated Rigging system makes setup quick and easy, with four sets of captured, precision-machined, spring-loaded rigging hardware that retracts into the cabinet when not in use.

BUYING MONITORS?

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Pedant In a Big Box: Part Six

A Glossary of IT Terms for the Audio Professional

“**B**itstream” columnist Oliver Masciarotte once again scours his audio data dictionary to come up with another round of today’s top IT terms as they apply to the audio pro. Italicized words will be, or have been, defined in the glossary, some in upcoming issues.

PERIPHERAL: When used in the IT sense as a noun, a peripheral means any additional device added to existing computer systems to improve functionality. Common peripherals are displays, printers, direct-attached storage and *HUI* products.

PEBKAC (PROBLEM EXISTS BETWEEN KEYBOARD AND CHAIR): aka, operator error. Also known as *code 18* (operator error), which refers to the human entity screwing up, 18 inches from the display.

PHY: the physical transmission pathway in a network, usually “copper” (copper wire), glass “fiber” or *POF*. *PHY* often refers to the physical “layer,” or Layer 1, of the *OSI Model*.

PLATFORM: oblique marketing-speak for the combination of software and, to a lesser degree, *hardware*, chosen for a product or service’s design. This catchall is usually used in reference to a *CE* product, such as the use of the Symbian “platform,” as opposed to Windows *CE*, for a *converged* PDA/cell phone.

POE (POWER OVER ETHERNET): See *802.3af*.

POF (PLASTIC OPTICAL FIBER): In the world of fiber optics, the actual fiber strand can be manufactured from glass or plastic. Plastic fiber has poor internal reflection, as opposed to glass’ high efficiency in transmitting light from one end to the other. Though *POF* is very low-cost, this high loss results in much higher susceptibility to jitter and makes it suitable only for low data rate, short-haul connections. The AES Type 2 and *1394b* standards both specify *POF* as a *PHY* media choice.

POTS (PLAIN OL’ TELEPHONE SERVICE): Telephone service is based on a *circuit-switched* network over *UTP*.

PPC (POWERPC): a highly optimized *RISC CPU* design co-developed by IBM, Motorola and Apple Computer. Used by IBM in its more advanced server lines and by Apple in all of its computer products, the power architecture has remained a viable competitor to Intel’s 32-bit Pentium and 64-bit Itanium families.

PROGRAM: a file that instructs a computer to perform certain tasks. Programs are usually called *applications*.

PSEUDO-STREAM, PSEUDO-STREAMING: the use of *HTTP* protocols and services for streaming rather than the more appropriate *RTSP* or *UDP* protocols and services.

PSDN (PUBLIC-SWITCHED TELEPHONE NETWORK): the public *circuit-switched* telephone network, paid for in large



ILLUSTRATION: PHOTODISC

part with our tax dollars, that originally carried *POTS* around the world.

QoS (QUALITY OF SERVICE): network performance metrics that include data loss rate and delay, aggregate throughput and packet priority. Usually implied to mean some guarantees that certain levels of performance are met.

QT (QUICKTIME): an ad hoc standard created by Apple Computer that provides a scalable, cross-platform wrapper for a wide variety of media data types. QuickTime has been incorporated into the *MPEG-4* standard. QuickTime is a *wrapper* file format.

RICH MEDIA: digital multimedia presentations that integrate *streaming* audio and video with images, text, *hyper-text* or any other media type. *SMIL* is one method for delivering rich media.

RISC (REDUCED INSTRUCTION SET COMPUTER): As opposed to *CISC* computers, *RISC* architecture is only capable of a select or streamlined number of tasks, but they perform those select tasks with great alacrity. This is akin to BMW’s supercharged Mini against a normally aspirated Chevy Camaro. Intel and AMD sell more *CISC CPUs*, while Sun and IBM make *RISC CPUs*.

ROUTER, TO ROUTE: A router connects multiple nodes and directs *packets* from one node to one or more other nodes. The forwarding mechanism “looks” within each packet *header* for address data. A router specializes in exchanging packets between subnets. A *TCP/IP* router is a basic *Layer 3* or network layer device that provides media-independent, dynamic packet forwarding.

RSTP (REAL-TIME STREAMING PROTOCOL): an open standards-based protocol for streaming multimedia content to an *RTP* client. *RTSP* provides better *isochronous* delivery than *UDP*.

RTP (REAL-TIME TRANSPORT PROTOCOL): The *RTP* protocol,

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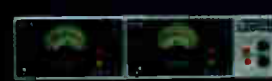
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part of the next-generation IPv6 (*IP* Version 6) spec, provides end-to-end network transport functions suitable for applications transmitting real-time data over *multicast* or *unicast* network services. Real-time or *isochronous* data, such as audio, video or simulation data, requires uninterrupted, time-critical transmission. RTP data packaging, which usually flows over *UDP*, does not address resource reservation or *QoS* issues.

SAIT (SUPER AIT): See *AIT*.

SAN (STORAGE AREA NETWORK): collections of initiators, such as servers or individual "*workstations*," and storage devices, typically disk- or tape-based, that are connected over a specialized or private *LAN*. The LAN can either have a copper or fiber *PHY* and usually employs either the *ISCSI* or *FC* protocols.

SAS (SERIAL-ATTACHED SCSI): a fundamental change to the seemingly evergreen *SCSI* standard that defines a shielded *serial* connection in place of the unshielded *parallel* connection of prior versions. As with *SATA*, another protocol originally a parallel approach, SAS provides higher *throughput* and higher reliability with reduced form factor and a lower overall cost when compared to the parallel version.

SATA (SERIAL ATA): See *ATA*.

SCALE, SCALABLE: In IT parlance, to scale means to change a system's size, capacity or functionality. What is often implied is that the scaling can be done in a relatively easy or straightforward way, which is seldom the case.

SCSI (SMALL COMPUTER SYSTEMS INTERFACE): The SCSI standard defines a parallel and scalable interface that connects a peripheral, often storage devices, directly to a server or individual "workstation." SCSI has largely been supplanted by other protocols such as *ATA* that are less costly or ones such as *Fibre Channel* that provide higher sustained throughput and availability. As one of the oldest computer protocols extant, SCSI is still keeping up with market demand by yet again updating the standard. The ratification of the Serial-Attached SCSI, or *SAS* standard, adds a new member to the already sizable SCSI family. ■

This column was written while under the hypnotic influence of my new Dyna-Flex gyroscopic exerciser and the addictive, slightly country grooves of The Cardigans' Long Gone Before Daylight on Koch Records.

Show Me the (Virtual) Money Or, Is Digital as Good as Analog?

While writing this month's column, I received a notice in my monthly bank statement. It informed me that, as of October 28, 2004, the Check Clearing for the 21st Century Act will take effect. As you may have received a similar insert, I thought it was a timely real-world case of information technology affecting your daily life. So, let's take a look at what's going on behind the scenes with your precious moolah.

My local Bank of the West, the North Beach area of San Francisco branch of a really great regional banking corporation, had begun the adoption of this paperless system. According to the insert, "...it is intended to improve the efficiency and reliability of the nation's check payment system." The act was signed into law on October 28, 2003, and, according to the Federal Reserve Board's Website (www.federalreserve.gov), "...is designed to foster innovation in the payments system and to enhance its efficiency by reducing some of the legal impediments to check truncation." Check truncation is the now-common practice of digitizing a check

on its way to clearing so that the paper version can be retired and the electronic facsimile can be forwarded to the paying institution.

Check 21, as the law is known, facilitates check truncation by creating a new negotiable instrument called a substitute check, which, the Fed says, would permit banks to truncate the original, "...process check information electronically, and to deliver substitute checks to banks that want to continue receiving paper checks." Though the law does not require banks to accept checks in electronic form nor does it require banks to use the new authority granted by the act to create substitute checks, it does codify that "...a substitute check would be the legal equivalent" of the original. In other words, the digitized version is just fine by us, thank you very much.

Bank of the West hopes that "Check 21 will reduce the time and cost of transporting billions of paper checks between banks. It will also reduce the vulnerability of the check payment systems to disruptions, such as extreme weather and natural disaster." Or terrorist threats.—*OMas*

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Tools of the Trade



ACOUSTICAL SOLUTIONS ISOLATION CLIPS

Those looking to build a wall with outstanding isolation will be interested in AlphaResilient Isolation Clips from Acoustical Solutions (www.acousticalsolutions.com). The clips attach to an existing wall with a rubber interface that holds an aluminum crossbar, which can be used to attach a second piece of drywall. This creates an acoustically isolated second wall using a minimal amount of space. Used with the AudioSeal Sound Barrier (1/8 inch thick and 1 pound/square foot), a Sound Transmission Class rating of 60 can be achieved.



YAMAHA Y96K DSP CARD

Co-developed by Yamaha (www.yamaha.com/proaudio) and Waves, Y96K is an add-on dedicated DSP card in Mini-YGDAI format for Yamaha digital mixers and workstations, reducing the need for outboard processors. The \$1,149 Y96K uses two DSP56K devices, providing 2 billion DSP operations per second and includes ADAT

Lightpipe fiber-optic digital I/O. Each installed card supports up to eight (44.1/48 kHz) or four (88.2/96 kHz) effects chains across eight channels of ADAT I/O. Included Waves software offers reverb, delay, compression, EQ, de-essing and limiting.

M-AUDIO REVOLUTION 5.1

Waiting for affordable hi-res? M-Audio's (www.m-audio.com) \$99 Revolution 5.1 PC/Mac soundcard brings surround audio to the home computer, and features six simultaneous discrete outs (5.1) on three 1/8-inch stereo jacks at up to 192kHz/24-bit resolution. A S/PDIF digital out provides Dolby Digital and DTS passthrough to a capable decoder. A control panel handles bass management and other adjustments, and the package includes SRS TruSurround XT and SRS Circle Surround II.



rackspace unit that accepts two microphone and three stereo inputs. A variety of features—such as phantom power, input summing and channel ducking—is switchable via a series of six DIP switches. Price: \$130.

SUBMERSIBLE DRUMCORE

To create pro drum tracks fast, Submersible Music's Drumcore library sys-



HERCULES 16/12 FW

Sure to please any audio god in search of high-resolution I/O, the 16/12 FW from Hercules (www.hercules.com) is a FireWire, 24-bit/96kHz, 16-in/12-out audio and MIDI PC/Mac interface. It has twin mic/DI preamps with phantom power on Neutrik Combo jacks, 12 analog and four digital inputs, eight analog and four digital outputs, two MIDI I/Os, word clock input and a full driver package for Mac OS X and Windows (ASIO, GSIF, .WAV and DirectSound). It's compatible with a variety of third-party software and is bundled with Arturia's STORM Version 2.0 and Ableton Live Special Edition. Price: \$899.

ROLLS MX152 MIXMATE

For light mixing duties, the Rolls (www.rolls.com) MX152 is an economical half-

tem has two DVDs of audio and MIDI content created by renowned drummers. Features include a content search engine, a MIDI drum module, ReWire and Core Audio support, and easy exportability to Pro Tools, Cubase, Nuendo, Digital Performer and Logic. It's \$249 direct from www.drumcore.com.

URS EVERYTHING BUNDLE

The first to design a plug-in to perfectly map to Digidesign's ICON D-Control Master EQ section, URS (www.ursplugins.com) has released the Everything Bundle V. 3.0. The new package is compatible with Pro Tools OS X and OS 9, TDM, HD Accel, HD and 24|Mix systems (Versions 5 and 6); offers full Windows XP support; 192kHz support for TDM, RTAS and AudioSuite; and support for all Digi interfaces and control surfaces. Prices: \$2,299 (TDM/RTAS/AudioSuite) or \$1,199 (native).

WAVES VERSION 5 PLUG-INS

Version 5 is a major upgrade for Waves' (www.waves.com) product line, offering HTDM support for all plugs, mono-to-stereo operation for Native plugs and Windows XP TDM support for 360° Surround Tools. Automatic latency compensation is supported when used with Pro Tools TDM 6.4. A new advanced compiler provides faster GUI operation and a dramatically faster interface response. Version 5 supports Mac OS X, Windows XP and 2000.

available from Speck (www.speck.com) or authorized dealers.

MINNETONKA PRO LOGIC II ENCODER

Minnetonka's first encoder for the OS X platform, the new SurCode Dolby Pro Logic II accepts up to six 32, 44.1 or 48kHz PCM audio files in .WAV or .AIFF formats



AUDIO EASE NAUTILUS BUNDLE

New for OS X (G4 and G5), the Nautilus bundle from Audio Ease (www.audioease.com) has three plug-ins for RTAS, HTDM, MAS, AudioUnits and VST. The three plugs are RiverRun, a granular synth; PeriScope, a real-time graphic analyzer and phase-correction tool; and Deep Phase Nine, a phaser offering beat-locked sample and hold and up to 24 notches per channel. Improvements to the trio include extra automation features, support for surround formats and extended sample rates. Price: \$299, or upgrade for \$99.95.



SM PRO AUDIO SM PR8MKII

This twin-rackspace, 8-channel preamp from SM Pro Audio (www.smproaudio.com) features eight analog XLR balanced I/Os and an optional ADAT Lightpipe out. The unit features a 20dB pad, phantom power and polarity reversal on each channel, as well as -10dB 1/4-inch line outs and peak lights on every channel. Price: \$299.

and then crunches the audio into an Lt/Rt file. Features include the ability to monitor source and encoded audio, and to individually mute and solo channels and specify start and stop points. The encoder is available direct from Minnetonka Audio (www.surcode.com) and authorized SurCode dealers. Price: \$495 (Mac and PC).

SPECK ELECTRONICS LILO

The \$8,490 LiLo desktop analog line mixer offers more than 100 balanced I/Os, mixing of 32 simultaneous line inputs, four aux sends, two stereo aux returns, transformer balanced outputs, and line and summing preamps on plug-in satellite boards for future upgrades. The unit is

PSP PROZILLA PLUG-INS

This new set of sound-shaping plugs is specifically written for the Plugzilla hardware VST plug-in player. All PSP (www.PSPAudioware.com) plug-ins use 64-bit floating-point processing. The set comprises PSP AutoComp compressor, PSP EasyLimit limiter, PSP MasterQ parametric EQ, PSP MixPressor mastering compressor, PSP MixSaturator distortion emulator, PSP MS mid-side codec, PSP StereoController phase corrector, PSP StereoEnhancer and PSP VintageWarmer multiband compressor/limiter. Demo versions ship with each Plugzilla. Price: \$599.

Correction

AMS-Neve's (www.ams-neve.com) MMC12 was inadvertently omitted from our "Mid-Priced Consoles" article in the August *Mix*. Priced from around \$120,000, the MMC-12 digital console



combines a small-footprint 12-fader mix surface controlling up to 500 signal paths at 48 kHz or 250 signals at 96 kHz. Encore automation (compatible with the 88R and DFC) is standard, along with full surround monitoring/mixing (up to 7.1), onboard multi-machine transport control/synchronization, and each fader can be mono/stereo/5.1/etc. Other features include Neve's famed preamps, EQs and compression (40-bit floating point) and the flexible MIOS96 I/O system.





KORG TP-2 TUBE PREAMP/ COMPRESSOR

Korg's (www.korg.com) TP-2 is a compact dual-tube preamp/DI with optical compression and coaxial/optical S/PDIF out. Also available as a user-installable option (TPB-2) for its D32XD and D16XD recorders, both versions feature twin 12AX7 tubes, XLR and 1/4-inch TRS inputs, stereo linking and phantom power/phase/low-cut/hi-Z switches on each channel.

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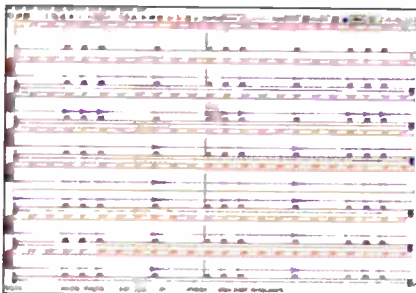
Composers will love this new affordable GigaStudio library from Kirk Hunter (www.kirkhunter.com). The library, titled *Strings/Brass/Winds*, is programmed so the composer can work by choosing from easy-to-read .gig files arranged by vibrato intensity, nonsustained, or combinations and effects. Single-layer Gig instruments are contained in each file, letting users quickly create custom templates. The 180GB library retails at \$995.

MUSICLAB MIDIOVERLAN CP

Smoothing cross-platform communication for audio production, MIDoverLAN CP lets MIDI applications work together locally and on a network (PC and Mac). A single mouse click transforms a MIDI device into a multicient device. Suggested systems: Windows XP SP1, 4 2GHz Pentium, 512MB RAM; and Mac OS X 10.3, 800MHz G4, 512MB RAM. Pricing is \$129/\$199/\$299 for two/four/eight computers. Download a free trial at www.musiclab.com.

ZERO-X BEATQUANTIZER

This stand-alone audio slicer/dicer for the PC (98/Me/2000/XP) uses time stretchers and crossfade tools to automatically mask the gaps and smooth the overlaps caused by the quantizing process. Version 1.2 adds an improved GUI and new options including real-time gain, improved keyboard shortcuts, improved MIDI export, mute and solo functions, extended time signature support and more. Price: \$250. Visit www.beatquantizer.com.



WAVEARTS DSP PLUG-INS

Making plug-in processing more affordable are the Power Suite bundle and MultiDynamics from WaveArts (www.wavearts.com). MultiDynamics (\$149) is a 6-band dynamics processor offering independent compression or expansion/gating per band. Other features include per-band bypass, solo and mute controls; mono/stereo operation; adjustable knees; and look-ahead. The \$499 Power Suite bundle includes MultiDynamics; TrackPlug, a 10-band EQ/comp/gate; MasterVerb; WaveSurround spatial enhancer; and FinalPlug mastering limiter/volume maximizer.

EQUATION AUDIO RP-20 'PHONES

The first product from Equation Audio (www.equationaudio.com), a new company formed by industry veteran Bruce Forbes, the RP-20 (\$139 with two-year warranty) is a set of wideband (10-22k Hz, ± 3 dB), circum-aural studio headphones.

The RP-20s feature high-output, 50mm neodymium dynamic transducers; fully adjustable swivel ear cups with user-replaceable cushions; a 9.8-foot, braided-jacket, tangle-free cable; and 32-ohm impedance.



Upgrades and Updates

Lexicon (www.lexiconpro.com) is shipping the **Omega Desktop Recording Studio**. The integrated computer recording system includes the Omega 8x4x2 USB I/O mixer, ProTracks Plus 32-track and BIAS Deck 3.5 SE software. Also included is the Pantheon reverb plug-in...The new **Oaking Mic-Pre IV** is now shipping. The unit features Class-A preamps in a single-rack-space unit with outboard power supply. Visit www.transaudioelite.com...**Native Instruments** has released **Mac OS X-compatible demo versions** of its B4, FM7 and PRO-53 software synthesizers. Visit www.native-instruments.com...**MX4**, MOTU's hybrid synthesis virtual instrument, is now shipping for **MAS, RTAS, Logic Pro and AudioUnits**. The release includes built-in effects, more LFOs, ex-

ternal audio input, a unison multiplier and parameter randomization options for creative programming. See more at www.motu.com...**Eventide's** (www.eventide.com) **Clockworks Legacy, Reverb and Octavox** plug-ins are available for the **Windows XP Pro Tools platform**. In addition, these plug-ins and the H3000 Band Delays will gain support for Digidesign's new ICON and Command|8 control surfaces as free upgrades...**BIAS** has released **Peak 4.1 Mastering and Restoration edition** that includes SoundSoap Pro and SuperFreq, the 10-band mastering EQ for \$899. Visit www.bias-inc.com...**The Basics of Drum Recording**, from **Secrets of the Pros**, is a three-hour, \$39.95 instructional DVD with tips and tricks from pro engineers, producers and

artists. Visit www.secretsofthepros.com...Nashville shootout king **Lynn Fuston** offers **iReplica**, a \$19.95 audio CD comparing Focusrite's Liquid Channel to classic mic pre's and compressors. In calibrated tests using the same recorded source track, he auditions the old and new. Fuston draws no conclusions, but supplies the 69 separate 48kHz/24-bit A/B soundfiles so listeners can decide. Go to www.3daudioinc.com/catalog...**RML Labs** releases **V. 3.8a for SAWStudio** and **SAWStudioLite**, and **V. 1.3a** update for **SAWStudioBasic**; all are available at www.sawstudio.com...**Track Talk** is the new **Roland/Boss Website** for educating VS and BR users with tips, user profiles and hints for the beginner and pro. Check out www.RolandUS.com/tracktalk. ■

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NHT Xd Series Speakers

A New Approach to Listening

NHT has long been known as an innovative company that set its own destiny, often doing things differently. One such example is the company's acclaimed A-20 monitor system, with an external bi-amplification/crossover package that allows users to make HF/LF setup and compensation decisions from the listening position rather than tweaking controls on the back of the speaker, where direct A/B comparisons would be impossible.

In any loudspeaker system, the crossover has traditionally been the weakest link that limits system performance. No driver can deliver all frequencies in the hearing band, so some combination of LF and HF components are required for full-range reproduction. In the analog domain, the simplest crossover (a basic first-order -6dB/octave filter) should create the least interference in terms of phase distortion. However, the slope of a dividing network such as this is too shallow, leading to the need for more complex designs, which provide more precision with steeper crossover slopes but create more problems with phase and image shifting.

Three years ago, NHT partnered with two other small companies with unique core technologies—PowerPhysics (www.powerphysics.com) and Australia's DEQX (www.deqx.com)—to develop the Xd Series, a DSP-corrected active speaker system. NHT would focus on transducers and enclosures; Power Physics would provide high-quality digital amplification; and as you could infer from its name, DEQX (Digital Equalization and Crossover) supplied DSP and software support. The goal was to build a small, high-output, low-distortion system with equalization control for placement compensation while correcting for response and phase anomalies, thus eliminating the tightly defined listening sweet spot and providing a wide, accurate soundstage from anywhere in the listening environment. Other enhancements would include allowing for future DSP tasks such as room correction, custom EQ curves for each listener, etc. Moreover, the system would be applicable to consumer and professional monitoring speakers.

Examining the drawbacks of existing PWM (Pulse Width Modulation) digital switching amplifier designs, Power Physics

developed a new nonlinear control method (U.S. patent #6084450). This "One-Cycle Sound" approach monitors the switched variable on a cycle-by-cycle basis, so in each cycle, the average value of the output (power to the speaker) equals the control reference (audio input signal). This rejects power supply disturbances, non-ideal switching edges, component variation with temperature and other distortion-creating problems in typical PWM amps.

Great amps and transducers are certainly part of the equation, but the "magic" in the Xd system comes from DEQX's proprietary algorithms that provide high-resolution filtering with low latency. Typically less than 10 ms from input to output, such low-latency performance permits syncing with virtually any video signal and opens the door for developing even more complex filter sets that could sync with any video signal. The DEQX processor achieves flat frequency response while correcting for speaker irregularities through the use of linear phase, high-slope crossovers (up to 300 dB/octave) that improve driver control and system output while virtually eliminating comb filtering and audible rippling in the frequency and phase response in the crossover region. Such high-slope crossovers minimize the effects of driver overlap while maintaining flat system frequency and phase response over a much wider area than is possible with conventional crossovers.

"NHT's Xd technology responds to demands for high-performance smaller systems with a wider soundfield that remains precise and accurate no matter where the listener is situated," says NHT co-founder Chris Byrne. A few months ago, I auditioned some Xd speakers first-hand. The results were remarkable, to say the least. With two speakers on stands, well away from walls and corners and about 12 feet apart, I could still perceive a solid stereo image even standing a foot to the right of the right



speaker, with the left speaker 13 feet away! In a near-field situation, this could permanently put an end to that "Where does my mix go when I reach to EQ channel 1?" syndrome we all know.

Rather than the usual approach of "recycling" a consumer design into a pro monitor, NHT's new Xd monitors are built from the ground up for pro users.

Housed in a futuristic-looking, *very* nonparallel enclosure, the M-20 near/mid-field monitor has a flat, wide baffle across the tweeter and a narrower baffle surrounding the low-distortion woofer. NHT's XdA DEQX-calibrated amplifier/processor sends up to 150W to each of the four drivers in a 2-channel system and provides four presets for different boundary conditions. Room correction and multiband parametric EQ will be offered in the near future as a software add-on. A 2-channel system is \$3,800, including the XdA amplifier/controller.

Designed for high-SPL playback, the M-80 tracking monitor has dual 8-inch magnesium-cone woofers, two 2-inch dome mids and a 1-inch dome tweeter. The \$7,000 stereo package includes 1,100 watts of tri-amplification and DEQX processing with four switchable boundary positions, parametric EQ and room correction. A powered, dual-12 subwoofer is optional.

The M-20 and M-80 monitors debut at AES in San Francisco. For more information, visit NHT Pro at www.nhtpro.com. ■

George Petersen is Mix's editorial director.

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**Event TR5
Powered Monitors**

Event's Tuned Reference 5 (5.25" woofer) monitors are precision-tuned to provide flat frequency response and uncolored sound, giving you a true sonic reference for mixing. BR1600: 50 watt LF power and 30 watts HF power. List: \$399/pr

**Boss BR1600
Digital Multitrack**

The Boss BR1600CD is a 16-track hard disk workstation loaded with amazing features. Back up your sessions to CD, bounce tracks, mixers and data to your PC or Mac via USB, or master your mixes right in the unit. It's all here. List: \$1,595

**AKG K2405
Headphones**

Designed for accurate reproduction at all listening levels with reduced fatigue, even after prolonged use. 55 ohm, frequency range 15 Hz-25 kHz, the 10 ft. cable terminates in a mini-USB with a 1/4" screw-on adapter for secure use. List: \$167

**Omnirax
Nova Studio Desk**

Black melamine with maple laminated top surfaces. Upper shelf is 32 1/2" high with main desk at 28" desk is 29" D x 33 1/2" W. Two 2-space rack bays under upper shelf. Casters provide easy mobility and casting. Weighs 59 lbs. List: \$175

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Fairlight Dream Constellation Console

Fully Integrated Digital Mixing/Recording System

In the pro audio world, a bargain is a beautiful thing—especially when your purchase offers a full feature set, ease of use and great-sounding output. Fairlight's Dream Constellation definitely fills the bill, providing all of the things you'd expect from a console in this price range and more.

The Dream Constellation digital mixing system is capable of 192 channels of digital and/or analog audio and up to 72 output buses ready for any surround format up to 7.1. In addition to full automation of all controls, including onboard processing and parameters, routing and third-party plug-ins, the Constellation has a built-in 48-track hard disk recorder and editor.

THE SYSTEM

The Constellation comprises a control surface connected to an individual eight-space rack unit—the QDC rack—using TCP/IP Ethernet over a standard Cat-5 cable. The QDC rack contains two hard drive bays: a system drive and generally a removable SCSI drive for project files. The QDC rack contains up to six QDC processor cards: the heart (and brains) of each Fairlight Dream system. The new QDC-XT cards allow (via its more compact size) for up to eight processor cards in a same-size rack. Each QDC card has eight Analog Devices SHARC processor chips running 40-bit floating-point math and 128 MB of waveform memory.

I reviewed the Constellation console that uses four cards for 144 channels and 48 buses, with a maximum of 192 channels and 72 using six QDC-XT cards. (This month, Fairlight plans to release an upgrade that will take the system to more than 250 channels.)

A CLOSER LOOK

The Dream Constellation comes in three-bay (63.8 inches wide) and five-bay frame (102.5 inches) versions. Both frames are 28.3 inches tall at the meter bridge and have external power supplies. I reviewed the three-bay model with the Central Assign panel in the middle bay and 12 fader banks on both sides. The fader bank panels are hinged to lift up for maintenance and are USB-powered. Each motorized fader has an individual LCD to indicate its level (in dB) and current assignment (track, bus or group).



The Channel panel has controls for input/insert, EQ, dynamics, aux send and panning. You can have one of these Channel panels above each fader bank for convenience, but only one is required for full operation.

Central operations are carried out on the Binnacle Editing interface: an easy-to-learn jog wheel surrounded by dedicated, illuminated keys for transport and range, play/jog, jump, from/to, copy, cut, erase, trim/slip and fade. I found this tool fast, intuitive and easy to learn.

Typically, two flat-screen plasma displays are used with the Constellation: one for all file management, waveform editing and track views; and another showing routing and all fader activities with pop-up screens for EQ, dynamics, panning and third-party plug-ins.

48-TRACK DISK RECORDER

Fairlight made every effort to make the internal hard disk recorder behave like a digital multitrack tape deck. The same system as the Fairlight StationPlus, the Dream recording system is capable of up to 96 tracks of 48kHz/24-bit audio spooling from a single ultrawide SCSI drive. Gapless drop-in/out is possible across 48 tracks at the 48kHz sample rate. Other features include layer recording (nondestructive recording); track arm, record and rehearse at any time; and near-instant location and play to any spot in the project.

Editing features are top-notch with high-resolution scrolling waveforms of one to 48 tracks shown on the main edit screen in all transport modes. The screen's upper section shows track-arming, metering, project management, EQ, crossfades, clip data, sound effects library and database search engine. This screen works perfectly with the Binnacle Editing interface.

CENTRAL ASSIGN PANEL

The Central Assign panel is where all bus assign, input routing, monitoring—including multiple speakers sets—and bus-to-bus mixing are accomplished. A color-coding button scheme to quickly shows which buses are already assigned and where. The system's open architecture allows for patching any source to any destination. For monitoring, 24 macro buttons let you control up to nine speaker sets and internal and external audio sources.

For all functions, when any button on the console is pushed, the centralized light 320x80-pixel LCD shows the status of that button. All routing and a complete overview of the console's operation are always shown on one of the flat-screen plasma displays.

The Link Group feature allows up to 7.1 channels to be under a single fader and then, with one key push, unfold out all eight channels to separate faders on the console. This is invaluable for a quick, on-the-spot rebalance of 8-channel orchestra stems during a big mix.

Lastly, the Format switch lets you instantly hear your work in any predetermined fold-down desired. You could listen to a 5.1 mix in 7.1 channels, all the way down to mono. Fold-down is a user-defined stored text file and—along with all 24 monitoring macros and up to 100 libraries of compressor/EQ/plug-in data, console, bus and routing presets—can move with the client or engineer from project to project.

CHANNEL PANEL

Above the fader bank panel is the EQ, dynamics, panning, aux send and input channel panel. This panel is used for all faders, bus outputs, master faders and sub buses.

Alesis ProLinear DSP Studio Monitors Create Your Own Environment



The studio monitors you can program

Alesis ProLinear DSP monitors feature 28-bit DSP for performance unattainable by an all-analog design. Bi-amplified with 120 watts of power, each incorporates a digital crossover for superb efficiency and time-alignment. Use the built-in LCD interface or a PC to adjust parametric EQ for precise monitor tuning—even from a "sweet spot." In addition to eight rewritable user presets, eight more programs allow emulation of popular monitor types. So you can create mixes that stand out in any environment.



Program directly with LCD interface, or graphically with PC software

- Eight emulations of popular speaker models
- Link monitors to adjust DSP from one interface
- Adjust from sweet spot with included software
- Up to 16 discreet channels of control—perfect for surround
- Apply EQ to compensate for room resonances
- Eight editable user presets

Whatever the fader or bus is set up as, from mono to 7.1 channels wide, the Channel panel follows and changes to accommodate with linked operation of all processors.

To assign the Channel panel, push the Call button located on each channel fader or from the Central Assign panel. I liked that the Call button remains lit to indicate that you are adjusting parameters for that channel. All of the motorized controls on the Channel panel are touch-sensitive, change to red when operated and trigger the appropriate pop-up menu on the plasma screen to show exactly—numerically and graphically—what the current processor and parameter value are.

INPUT SECTION AND PROCESSING

At the top of the Channel panel is a strip of controls for the channel's input signal. Just like an analog console, there are input trim, phase, insert in/out and direct out, as well as input patching, bus routing, fader grouping and plug-in bypass. Constellation comes with 80 Creamware plug-ins of all types; a future update will allow an external PC, routed to the QDC rack via an Ethernet connection, to run VST plug-ins.

Also on the Channel panel is the compressor/gate/expander with controls for

threshold, ratio, attack, release and make-up gain. The 6-band equalizer offers four parametric sections and high- and lowpass filters. Q ranges from 0.3 to 10.3, and you can select between four different filter types for each section of the parametric. Next on the panel are the aux send controls. Four controls are dedicated to aux buses 1 through 4 and two more send controls are assignable to aux buses 5 to 12. All six are stereo sends with pan pots and pre/post-switching.

PANNING AND AUTOMATION

There are complete stereo-to-7.1 panning facilities in the panning section. A single joystick is used for all formats, and the GUI is the best way to set a pan position. Controls include Spread for opening or contracting the soundfield all the way down to mono; Diverge, which controls a source between adjacent speakers; Rotate rotates the entire soundfield about the listener's position; and Boom controls the amount of full-range audio to the sub or boom channel.

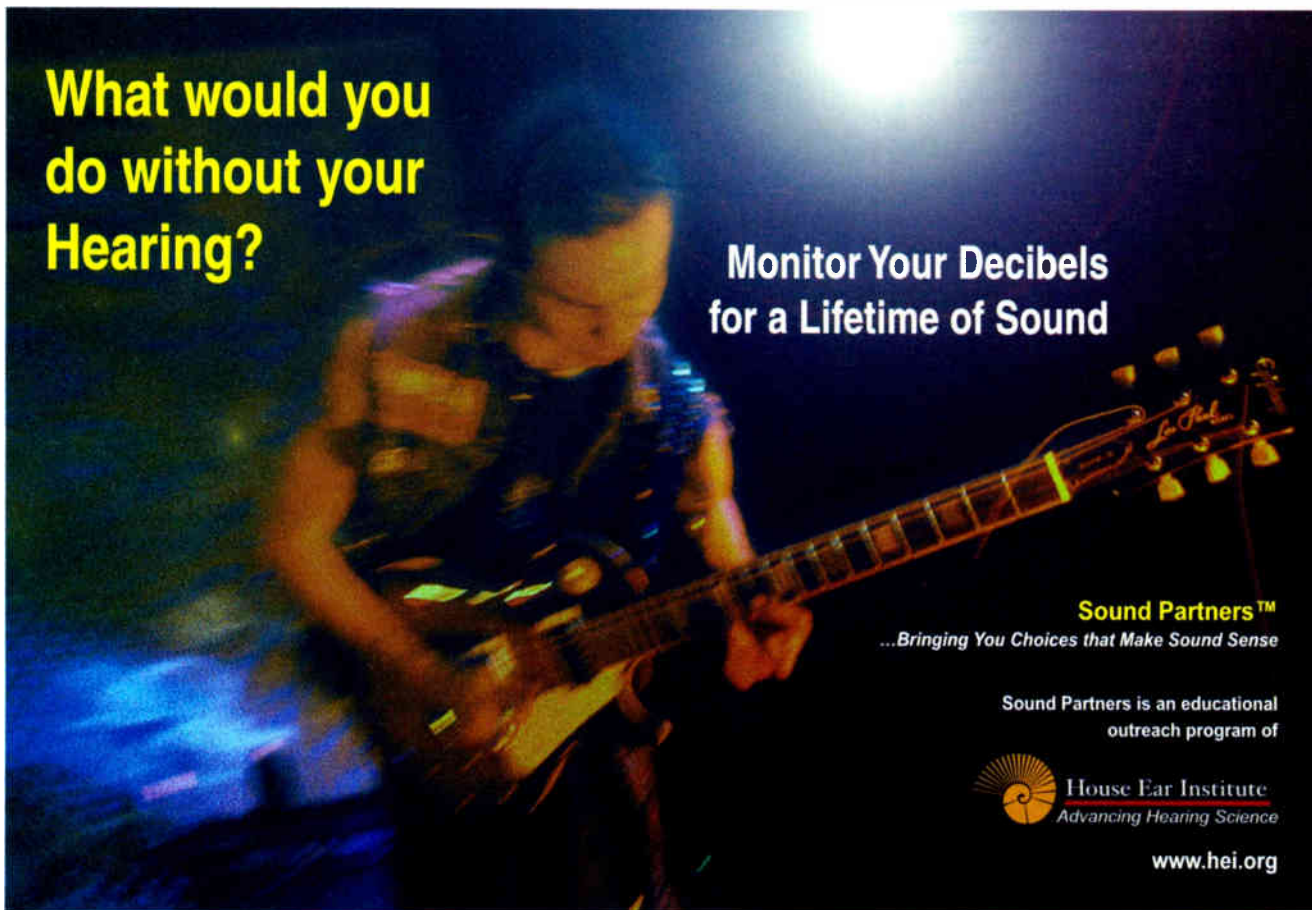
Automation is always running. There is no need to write a first pass because you can immediately add an automation move anywhere at any time. All of the usual modes are available such as snap, trim

and write (or absolute), and they can be entered on-the-fly at any time. There is also a handy Preview mode in which you can rehearse an automated move without writing it.

IN THE STUDIO

My studio test started with mixing a multi-track production already on the Constellation's hard drive. I could have also imported any files from Pro Tools or another DAW as OMF, raw .WAV or .AIFF files at any sample rate. The QDC rack will automatically sample rate—convert all incoming files to the project's rate. With appropriate QDC I/O, I could have also imported any number of analog tape tracks, converted them to 96kHz/24-bit files and kept working. Constellation saves all audio files, automation data and EDL in one big, easy-to-find OMF file.

I set up my mix on the console so I could also derive a stereo version of my 5.1 mix. This is accomplished by "cloning" the main bus mix using the console's Reduce mode and folding down that mix to stereo. You can make additional automation moves, EQ changes and effects—anything on this cloned mix without affecting the original main 5.1 mix. However, if the 5.1 mix is changed in any way, then the re-




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duced mix follows. This is the best way I've seen to tackle stereo fold-down in surround mixing.

The first thing I noticed when I started getting sounds on the individual tracks was the powerful and great-sounding equalizer. The on-screen graphical view of the EQ and compressor/gate is essential here as there are no numerical readouts on the EQ panel, but it is easy to carve and shape with the fast-responding, touch-sensitive controls. The compressor and noise gate also surprised me with their very precise controls and more personality (if you press them) than I would have thought. My only wish for the EQ and the compressor would be to see more LED metering and numeric values displayed on the Channel panel. This would save constant head-turning to check the flat-screen monitor.

I mix records and not film, TV or commercials, so I liked how quickly I "got" this board and how "analog" it works: Everything does what it is supposed to do instantly without feeling like a sterile interface. You just call the fader channel you want to work on and the Channel panel's motorized controls swing to where you last left them, as all of the faders, switch and rotary controllers are always remembered in static positions. I liked to stay in the sweet spot and use the centrally located Fat Channel fader that mimics the currently selected channel fader.

For 10 drum tracks, I used Link Group to put them to one fader but, when unfolded, I compressed and EQ'd the kick and snare separately and routed the overheads through a Creamware compressor. The many plug-ins' parameters are assigned across channel faders for easy access—there is no mousing a plug-in's GUI here!

Sending to effects is simple once you've set up effect send paths and returns. Returns are just connected to the assigned bus, and there is a 2-band EQ if needed.

A CONSOLE FOR ALL SEASONS

The Dream Constellation is aptly named. It was a "dream" to work on, and it didn't feel like I had to learn a new system at all. I can't imagine an easier yet more powerful system that is this intuitive and great-sounding. Thanks to Robert Fiest at Ravenswork Studios (Venice, Calif.) and Philippe Guichard of Fairlight's Media Gear Inc.

Fairlight, 626/792-8773, www.fairlightau.com. ■

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

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Thanks for the compliments, Eric Clapton & John Mayer

"I've kind of mucked around with that AdrenaLinn – the Roger Linn piece. I think that's a fabulous piece of equipment...it's got some great sounds."

– **Eric Clapton** from Vintage Guitar magazine, June 2004

"I started messing around with the AdrenaLinn and very soon found this combination of the beat and the arpeggiator. I've never heard a guitar do that before. I just stayed there in that room for like two or three hours...I remember thinking to myself, this is really strong, this really makes me feel good."

– **John Mayer** from UK's Guitarist magazine, November 2003, on creating his hit "Bigger Than My Body"

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Genelec 8050A Reference Monitors

Revamping a Classic Design

“Genelec Messes With Success!” was the headline I envisioned when I heard that the Finnish company was attempting a major redo of its ubiquitous studio loudspeakers. After all, audio pros are a picky bunch, and once they like something, it can be hard to change their minds (e.g., Yamaha NS-10s). But after hearing these new “curvy” monitors, I think the headline could read: “Wheel Successfully Reinvented.”

Recently introduced at AES Berlin in May 2004 and just hitting the U.S., the new 8000 Series speakers (8030A, 8040A and 8050A) are upgrades of the 1029A, 1030A and 1031A, respectively—speakers of days gone by. The pair tested here are the 8050As, the largest of the group.

THE BASICS

The 8050As have something old and new to offer. The enclosure, drivers, amps and crossovers are new. The cast-aluminum enclosure is rock-solid. Some cabinet lessons learned in the design of the 7000 sub series are employed in the new models and pay off in spades. Many pieces and internal parts have 1mm critical distances. The drivers are a redesign, with the 8-inch bass driver porting in a wide opening at the back of the enclosure. The high-frequency driver is a 1-inch metal dome-type.

The active crossover (frequency set at 1.8 kHz) comprises dual-parallel bandpass filters and offers the familiar treble tilt, bass tilt and bass roll-off dip switch controls. What's also new is the desktop low-frequency control that compensates for the bass boost encountered when mounting a speaker on a meter bridge or other surface. The amplifiers are mounted on the back of the speaker and offer completely variable input-sensitivity control.

Input is provided on an XLR connector and—along with the tone controls, sensitivity adjustment and on/off button—is neatly tucked into the back of each 28-pound unit. The speakers can be mounted on a console or stand using the included Iso-Pod system. This comprises a hard-rubber isolation mount that is adjustable front to back so the speakers can be aimed at the listener. The mounts are attached to the

speaker via two screws on the back and can be shifted for horizontal or vertical mounting.

The speakers also carry integral mounting holes for ceiling or wall mounting. Mounts are available as accessories from Genelec, as are a soft carrying bag and a black floor stand.

LASTING IMPRESSIONS

I tested the speakers on a console top in a medium-to-large-sized control room. The 8050As exceeded my expectations on a number of mix playback listening tests and tracking sessions. First, I noticed the unbelievable imaging. The center is truly nailed with no smear. Any mix items panned anywhere across the stereo pair were precisely placed. Music in varying styles sounded great. The midrange was detailed and full. In short, these speakers rock with the best of them.

Another nice thing is the smooth top end. Cymbals and other transient high-frequency material speak incredibly well on the 8050As. The bottom end is even and well-matched with the rest of the spectrum, although for this particular room, it wasn't quite big enough. (I kept everything flat.)

In my test room, there was a full six feet between the back of the speaker and the front wall, which also had a large window, angled downward, indented beyond that. In another environment, having the speakers closer to a wall would change the listener's experience in reference to the low end.

The speakers usually residing in this room are a pair of Genelec 1032As, which provide a nice big bottom end. The 8050s had a hard time keeping up with their big brothers and rightly so. This, according to Genelec, could be because the 1032's driver is more directional in the upper bass due to its size relative to the frequency it is producing. Depending on room and setup, the 8050s may need help from a sub.

THE VERDICT?

The 8050As are a well-executed upgrade of an industry standard. The only disappointment I experienced was when using the Iso-Pod speaker stands. Genelec recommends



vertical mounting for optimal results, but there is no way to accurately aim the speaker along the vertical axis, and with the cabinet having no square edges, you can't even eyeball it. At this asking price, Genelec could have come up with a better way to accurately position its new flagship product.

That said, these speakers truly step out beyond their predecessors without overdoing it. Looking and listening back to the 1031As, the improvements are things that needed to be addressed. Imaging on the new speakers is stunning and dead-on. High-frequency replication has a ribbon tweeter-like smoothness (I hesitate to make that comparison but that's how it sounded to my ears), and for a mid-to-small-sized room, there is plenty of robust and even low end.

The 8050As still sound like Genelecs. One comment I heard from a colleague summed it up: “When I went to EQ tracks I've previously mixed on 1031As, I blindly grabbed for the same frequencies,” he said. This is important for anyone leery of stepping up to these new monitors. If you liked the Genelec 1031As, then you'll love the new 8050As. List: \$4,100 a pair.

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Radial X-Amp Re-Amplifier - suggested list \$199 US

Ever wish you could go back and change the sound of a pre-recorded guitar track? Now you can with X-Amp. When tracking, record a spare dry track and play it back through the X-amp after the guitarist has gone home. Two outputs lets you drive amps and pedals to create thick new textures. X-plosive.

Radial JPC Stereo DI - suggested list \$199 US

Designed specifically for PC sound cards, DVD players and all those cool consumer devices that cause nothing but havoc, the JPC is 100% transformer isolated to eliminate nasty ground loops and equipped with a 48V active drive circuit for long cables. Easy to use. Great sounding. Indispensable.

Radial JDV Super DI - suggested list \$499 US

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MOTU MachFive Software Sampler

Universal Playback Plug-In With Next-Gen Features

Until recently, Native Instruments' Kontakt, Apple/Logic's EXS-24 and Tascam's GigaStudio have arguably led the market for software-based samplers. Now, in the race for supremacy, the Mark of the Unicorn (MOTU) MachFive kicked in the afterburners with high-end features such as 5.1 sound and sample import and playback at rates up to 192 kHz. With the latest Version 1.2 release for Mac OS X and PC, MachFive supports hard disk streaming, but that's just the start of this stellar sampler's sky-high feature list.

PLAYS WELL WITH OTHERS

MachFive opens as a plug-in in Mac (OS 9 and OS X) and Windows (2000 and XP) host applications that support AudioUnits, HT-DM, MAS, DXi, RTAS and/or VST formats. Mac users will need a 500MHz G3 or faster (an 800MHz G4 or faster is recommended), while PC patrons will need an 800MHz or faster Pentium (an 800MHz PIII or faster is recommended). To use MachFive on either platform, 256MB RAM is required, but at least 1 GB is highly recommended. I tested MachFive V. 1.2 in Digital Performer V. 4.12 and Mac OS X 10.2.8, and MachFive V. 1.08 in DP V. 3.02 and Mac OS 9.2.2 using a dual-processor 867MHz G4 with 1.8GB RAM.

The 32-bit MachFive doesn't directly record samples but imports them from DAW files and sample libraries. All samples and instrument presets are stored on your hard drive inside the MachFive Sounds folder, which can be organized into Soundbank folders containing related presets. When you select a preset in MachFive's file browser, it is assigned to one of 16 parts. Each instantiation of MachFive is 16-part multitimbral and has unlimited polyphony. Each part can be independently muted and assigned a unique or shared MIDI channel and audio output(s), and has its own pan and volume controls and a MIDI input activity indicator.

MachFive's display area contains a keygroup mapper, in which note assignments and velocity layers are set up; waveform editor for truncating, looping and crossfading samples; list editor, in which various parameters can be adjusted for each keygroup/zone or individual samples; group editor for compiling keygroups together for common



MachFive offers 5.1 support, sample import and playback up to 192 kHz, and hard disk streaming.

editing; and sample info pane, spectrum analyzer and tuner (virtual pitch display).

KEYGROUP PARAMETERS

MachFive's keygroup parameters section is organized into smaller filter, pitch and amplitude sections for ease of use. The controls in these sections can apply a dizzying variety of modulations and effects—many fashioned after standard subtractive synthesis—to any single sample or keygroup you select in the display area or to all keygroups simultaneously. Any of 28 possible modulation sources and combinations—including four tempo-synched LFOs, mono and poly after-touch, modulation wheel, keyboard tracking, velocity, breath control and amplitude, filter and pitch envelopes—can modulate pitch, amplitude, pan, drive (distortion), and filter frequency and resonance.

Three separate AHDSR envelopes are provided for filter, pitch and amplitude modulation, respectively. Envelope attack and decay times can be modulated by velocity, and envelope depth (amount) is controlled by velocity and keyboard tracking by way of four additional independent controls per AHDSR envelope.

MachFive's filter section also boasts eight

filter types, as well as separate controls that adjust the depth of envelope influence and keyboard tracking, and depth of frequency, resonance and drive modulation applied to the filter's cut-off frequency. MachFive's pitch section can transpose keygroups in semitone and cent intervals, turn off keyboard tracking so that drum samples are not arbitrarily transposed and adjust pitch envelope and modulation depth to the desired intensity. MachFive's amplitude section lets you tweak volume levels and panning for individual samples and keygroups and apply amplitude and panning modulation (for tremolo and auto-pan effects) to them.

Four aux send sliders allow you to feed your selected samples and keygroups in measured amounts to four parallel global aux effects. Additional insert effects and serial effects can be applied to each MachFive part. Now add four serial master effects to MachFive's main output, and you've got 136 total effects slots per 16-part instances. Dozens of effects are included with MachFive, all sporting independent bypasses including reverbs, chorus, flanger, phaser, tremolo, auto-pan, auto-wah, EQ, overdrive, compression, gate, ring modulator, tempo-synched delays and more.

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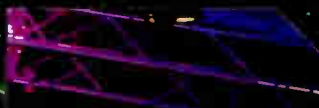
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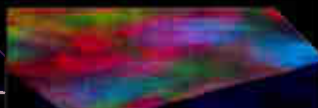
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EXPERT CONTROLS AND THEN SOME

MachFive's master section provides global volume and tuning controls and a button for enabling Expert mode. Ideal for live performance applications, Expert mode lets you turn parts on and off using MIDI note-on or continuous controller events, as well as enables keyboard splits. Your entire MachFive setup can be saved as a performance for later recall, and MachFive's current state is also automatically saved and recalled with your host application's project file.

MachFive ships with a 4.9GB sample library produced by Ultimate Soundbank. Most of the offerings here are excellent, with notable exceptions being some mediocre kick drums and a guitar preset with a few choked notes. There are also very playable Bösendorfer pianos with seven velocity layers, sweet suitcase electric pianos, rock and gospel organs, electric and acoustic guitars and bass, stick and brush drum kits, 192kHz percussion instruments, a surround church organ, numerous excellent synth presets and a few dozen loops, including some wild ethnic sounds.

MULTIFORMAT IMPORT CAPABILITIES

A soft sampler's ability to import samples and programs in different formats is critical, and

MachFive excels in this department. UVI-Xtract, MachFive's user-friendly conversion utility, can import soundbanks in the following formats: Akai S1000/S3000, S5000/S6000 and MPC2000/MPC3000; Kurzweil K2xxx; Roland S7xx; E-mu III/ESI/IV/EOS; Tascam GigaSampler/GigaStudio; Emagic EXS-24; Digidesign SampleCell; Creamware Pulsar STS; and Native Instruments Kontakt. Supported sample formats include Kurzweil K2xxx, Akai MPC. Snd, Creamware Pulsar.S, WAVE/ACID, .AIFF, SDII and .REX. MachFive automatically maps a .REX file's audio slices to consecutive keys for independent triggering. Its drag-and-drop functionality also made keymapping my own SDII samples a snap.

UVI-Xtract recognizes many sampler discs that a computer would normally reject as unreadable. I was able to import the Roland Strings & Orchestral Percussion (Roland format), Sonic Implants Drum Series 1 (Akai S3000 format) and Afro-Cuban Percussion (Kurzweil format) sample libraries without using external hardware samplers, although UVI-Xtract could only recognize the latter in OS 9. Directory structures and keymaps converted successfully, and UVI-Xtract also translated Akai pitch and filter programming on the *Drum Series 1* disc.

UVI-Xtract also successfully imported

half-a-dozen post libraries and the phenomenal SampleTekk White Grand Piano (all in Giga format) with one caveat: It couldn't convert White Grand's .gsp file, which rolls high, middle and low-velocity presets and releases samples into one huge preset with 16 velocity layers that Giga can handle. I assigned each preset to separate parts in MachFive and streamed them all from disk as a MIDI stack assigned to the same MIDI channel.

Converting the superb Sonic Implants Symphonic String Collection from EXS-24 format, preset keymaps were imported properly, but the EXS-24 program's MIDI controller conventions, such as mod wheel crossfades, were not correctly translated. Fortunately, MachFive's Expert mode and extensive MIDI implementation can be used to set up similar programs after importing the presets.

There's a lot more to MachFive than space permits here. Its gigantic feature set, excellent sound quality, user-friendly interface, diverse stock sample library and ever-expanding conversion capabilities make the MachFive an excellent value at \$395 list.

Mark of the Unicorn, 617/576-2760, www.motu.com. ■

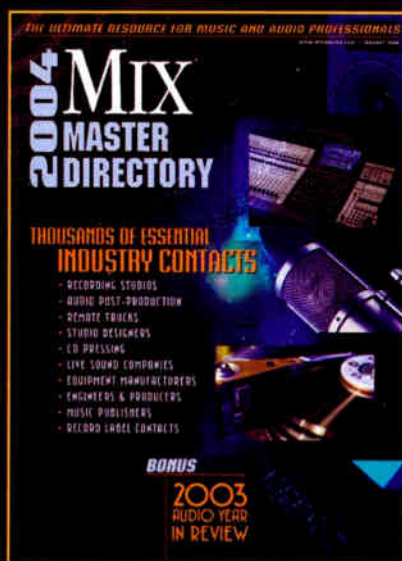
Michael Cooper is the owner of Michael Cooper Recording in beautiful Sisters, Ore.

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Lynx AES16 AES/EBU Interface Updates

Streamlined Audio Routing, Enhancements for OS X

Macintosh power users rejoiced on Internet forums when the long-awaited OS X drivers for the Lynx AES16 and AES16-SRC PCI interface cards arrived in June 2004. Version 1.01 added support for changing the sample clock source from within applications (for example, Nuendo and audio and MIDI setup). It also set the maximum limit of the number of devices at high sample rate (more than 96k) to five for 10 channels of I/O.

Users of native audio applications have welcomed Lynx's attention to the needs of engineers working in stereo and multichannel high-definition audio. For example, the Lynx AES16 was the first soundcard to offer 16 simultaneous channels of single-wire, 192kHz/24-bit digital I/O (switchable to eight channels of dual-wire digital I/O at 192 kHz). Its extraordinarily solid reclocking system, SynchroLock™, provides superior jitter reduction. I wanted to see if the Lynx quality stood up in OS X, so I took the new drivers for a spin. The focus of this test is on the AES16-XLR (MSRP: \$795), LynxTWO mixer applet (included) and the optional LS-ADAT (\$249).

WHEN IS CLOCKING TOO GOOD?

To check out the new OS X low-latency drivers on my Twin-Gig G4 with OS 10.3.4 and Nuendo V. 2.2, I created a 96kHz session, clocked internally, and recorded the 44.1kHz digital audio output from a CD player. The first question was, "Where's the snatting?" A quick call to Lynx software engineer David Hoatson confirmed the only quirk with the system: The reclocking is so good that often you will only notice a snat after minutes of recording excellent audio material. Bottom line: You can't depend on poor audio quality to inform you of a synchronization mistake. A simple solution is to purchase the AES16-SRC (\$995) with sample rate conversion. The decision between these two should be based on the engineer's need for reliability in a fast-paced environment with multiple users of equipment vs. the engineer's perception of the audio quality with SRC applied. I did not test the AES16-SRC, so I have not been able to compare the two versions.

Both cards come with HD26-to-XLR and clock cables. The aforementioned optional

daughterboard, called the LS-ADAT, has two ADAT Lightpipe I/Os with S/MUX support for 16 channels at 48 kHz and up to four channels at 192 kHz. Note: Although PC users may link several Lynx cards, Mac users running Nuendo are limited to one card. Digital Performer 4 users can use four cards per system.

MAC INSTALLATION CONCERNS

The AES16 card ships with Windows firmware installed; Mac users must update the onboard flash memory before using the card. A simple utility called L2Update_OSX.sit is provided.

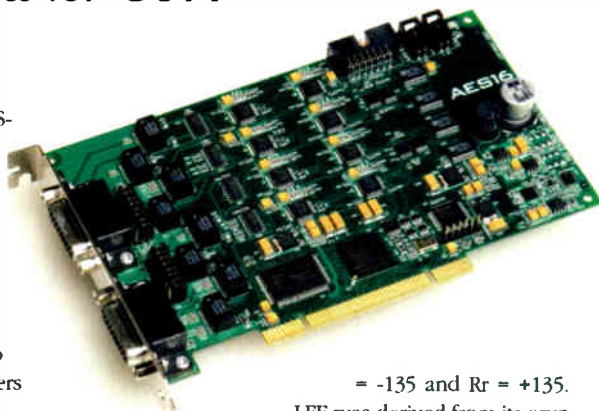
Before installing the AES16 device driver and mixer, earlier versions should be removed using a third-party uninstaller. I used DesInstaller to remove my beta version of the LynxTWO_OSX.pkg. The utility is available at www.macfixit.com/library/osxu.shtml.

DREAM MULTIROOM ROUTING

To facilitate the connection of JamSync's second-floor Nuendo room with the primary listening control room, I used the LynxTWO mixer applet. It provides digital routing via virtual patchbay with zero latency and allowed me to save and load scenes to configure the mixer for my various converters and save the settings.

I used the LS-ADAT 16-channel IStream interface to send and receive 96kHz audio with an old Nuendo 8 I/O (an OEM'd RME Hammerfall). From the AES16 cables, I routed eight channels of 48kHz AES/EBU audio I/O to an Apogee AD-8000. I assigned the same eight-output stream to the second set of AES/EBU cables using the LynxTWO mixer patchbay. Then, I routed these cables to the studio's basement, which houses the Lighthouse K Series AES router. This audio was routed to the first-floor control room with a Prism ADA-8 converter and Snell THX 500 monitoring system.

I recorded several sets of 5.1 tracks with a Soundfield MKV mic and the MKV control unit. W, X, Y and Z were connected to the SP451 surround processor with channel de-gree settings as: L = -45, C = 0, R = +45, Lr



= -135 and Rr = +135.

LFE was derived from its own virtual omni mic.

The results were stunning at 48- and 96 kHz, and the AES16's excellent clocking provided the only time I've been able to rely on the upstairs Nuendo system to provide excellent audio in the downstairs control room. (Having a Prism ADA-8 in the control room certainly contributed to the playback quality.) I did note that buffers in Nuendo needed to be set at 1,024 to prevent glitching at 96 kHz.

The rich flexibility of the LynxTWO mixer cannot be overstated. On the Adapter page, you can troubleshoot your system using parameters such as rate detection, CRC data, validity and parity.

HAPPY, HAPPY, JOY, JOY

I was impressed by the total system including the Lynx AES16, optional LS-ADAT and LynxTWO mixer. Although the mixer can be confusing at times (sometimes channels are numbered as single channels, other times as pairs), it's a great routing and troubleshooting tool that outclasses other such applets I've seen by a country mile.

With Apple remote software, I can be in any of JamSync's three studios, control Nuendo from a Mac notebook and send its output to any room using the LynxTWO mixer with the studio's switcher. In fact, I can have one engineer in the Nuendo room adding sound effects so that the mixer in the control room can proceed with mixing and audio sweetening for video. I have been looking forward to this day, and it arrived when the Lynx OS X drivers finally appeared. They're well worth the wait.

Lynx Studio Technology, 949/515-8265, www.lynxstudio.com. ■

K.K. Proffitt is co-owner of JamSync in Nashville.

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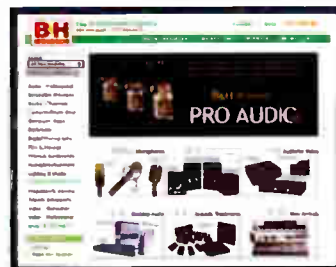
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Nautilus NEMO DMC-8 Monitor Controller

Match Levels to Compare Your Mixes

Mastering engineer John Vestman is often asked, "How do I make my mixes sound better?" The answer could easily fill a book, but Vestman's initial reply is simple: "Listen to recordings that you like and compare them to your mix. Use them as a reference to judge your work and then adjust your mix accordingly." While this sounds like an easy exercise, there is an inherent problem when listening to an unmastered mix vs. an EQ'd, compressed and leveled master: The mastered sound source is usually much louder. Most consoles can select multiple monitor sources, but none allow the user to quickly and easily match levels.

Vestman saw a need for a product that would allow level matching and simultaneously provide an increased sonic perspective by improving on the circuitry found in most console monitoring sections. He started Nautilus Master Technology to bring mastering techniques and technology into the recording studio environment and make products that help people improve their mixes. Enter NEMO (Nautilus Extended Monitor Options) DMC-8, a high-quality replacement for a console's monitoring section. If you mix in a DAW, then it becomes your monitoring controller with input selection, level and speaker control.

BREAKING DOWN THE BACK PANEL

The DMC-8 has four input pairs: One monitors the stereo bus output of a console or DAW, two 2-track balanced XLR inputs accept +4dB inputs and the last accepts -10dB playback devices. The stereo input has no trim; the other monitoring sources have dedicated high-precision trim controls, allowing users to match their mix levels to other sources. These trim controls are simple attenuators, while the unbalanced -10dB input can add extra gain. The stereo bus input accepts XLR or 1/4-inch inputs; two RCA connectors provide input for -10dB devices. There are switchable input pads on the -10dB input and the stereo input.

The DMC-8's stereo outputs comprise two stereo bus outputs, a source-select output and speaker A and B outputs. The stereo bus outputs are simple pass-throughs to keep the signal path clean. The source-select output is a fully balanced line-level output that follows the button selection on the front panel. Other



er connections include a dim logic phono connector that allows remote dimming of the monitors when using a talkback and a socket for remote switching.

METERS AND MORE

Front panel controls include mono, dim, mute, speaker B (with dedicated trim) select switches and overall volume. Two moon-shaped meters give the unit much of its retro look and feel. Vestman chose analog RMS VU meters because he believes their ballistics relate more closely to how the ears hear. However, most modern mixes are much louder than a VU meter displaying the industry-standard 0 dB. Many custom mastering consoles can pad the meters, returning their movements to their useful range. The DMC-8 has a meter range selector switch with settings from -4 to +4. (These can be changed by adjusting pots inside the unit.)

The Class-A DMC-8, codesigned by Vestman and Inward Connections, uses all precision, high quality components, featuring the SPA690 discrete amp block designed by John Hall of early Langevin renown.

The DMC-8 is a rackmount unit, which is fine if you are working at a DAW desk where you can mount it off to the side or underneath the desk, but still within reach. When used with a large-format console, the DMC-8 is difficult to place. I prefer it on the meter bridge, right in the middle of the console, but this is not always practical. Placing it in a rack means that you will have to leave your chair to make monitor adjustments.

There is no talkback function, headphone output or solo bus. If you want talkback and solo, then you can route the console's monitor output to a 2-track tape return input of the DMC and then use the console's talkback and solo functions while monitoring the DMC's 2-track return. A future solution is to use NEMO's forthcoming optional

remote, or Communicator headphone distribution unit. The remote controls volume, source select, dim, mute, talkback and a headphone jack, and can sit on top of the console or desk. Headphone outputs for cue mixes could then be derived from the DMC-8's source-select outputs or cue sends from the console. That would feed the Communicator, which would add talkback with the source on its way to the headphones. In use, the moon-shaped meters are very comforting to look at while mixing. The large monitor control knob is large and precise, instead of small and jumpy as are some console monitor control knobs. The front-mounted trim controls make level matching a breeze.

To showcase the unit, Vestman built an A/B switching box that facilitates comparing the DMC-8 to a console's monitor section. I compared the DMC-8 to a Euphonix CS2000 and a Digidesign ProControl. In both cases, the DMC-8 demonstrated an increased clarity, width and depth of field. My initial response was that audio through this box sounded brighter, so I checked its frequency response and found it to be ruler-flat. The DMC-8 was just showing me a more accurate picture of my mix. Using this unit to replace your monitor section is like going to the optometrist for glasses: You could see before, but now your vision is clearer.

The DMC-8 lists for \$3,600 or purchased direct from Nautilus for \$3,200. This is an expensive piece of gear, but you get what you pay for. If you are willing to pay that much for a recording chain (mic, preamp, EQ, etc.) to record one channel, then why not do the same for a piece of gear that affects every channel you record?

Nautilus Master Technology,
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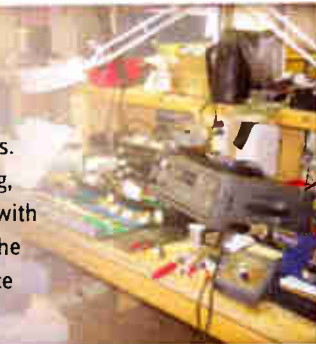
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Snapshot Product Reviews



RANDALL RM4 AND RT2/50 Guitar Tube Preamp/Amplifier

Getting a great guitar sound is all about tone, and the amp is a major part of that. We've seen all kinds of digital simulators (hardware and software) providing amp tones from the desktop. But these aren't the genuine article and they leave out the miking process, which real engineers know is the hippest way to get an awesome amp sound in the studio.

To that end, Randall teamed with amp guru Bruce Egnater to create the RM4 Modular Tube Preamp and RT2/50 power amp, a rig that puts all the fun back into getting guitar sounds. This is the real thing. The RM4 is a two-rackspace chassis accepting up to four preamp modules (all with two 12AX7 triodes, bass/mid/treble EQ, bright switch and gain controls). Fourteen modules are based on the front ends of popular vintage and new amps, including the Vox AC30TB; Mesa Recto; Fender '59 Bassman, "blackface" Twin and Deluxe; Marshall JTM45, Super Lead and Plexi; and Randall's clean, high-gain designs.

The preamp connects to a dual 50-watt power amp with EL34s on one side and 6L6s on the other, so users can instantly switch between various amp/cabinet combos. Connecting a MIDI cable between the RM4 and amp enables automatically switching the EL34 or 6L6 side to the selected module, or an optional footswitch handles the duties.

Randall sent me a bucket of modules. I started with the Fenders, which in 6L6 mode with a single- or dual-12 cab were spot-on, because not only did I get *that* tone, but the two gain controls, mid EQ and bright switch gave me a whole range of new tones. Switching to a 4x12 cab (with Celestion Greenbacks), I went to the Vox module, which disappointed me until I clicked the amp over to EL34s and then I could go from "1Day Tripper" to Brian May: What a blast! I'm a Mesa fan, but this Recto module screams and the JTM and Plexi

modules are simply amazing. The main problem with this system is narrowing your choices to only four modules, but, fortunately, they're hot-swap-

pable—no problem in the studio.

There's a lot more here. The 58-pound power amp has slick front panel connections for checking tube bias—perfect for swapping tube types on the amp for more tonal variation. The amp also has density (low EQ) and presence knobs for more voicing, and the preamp has tube-buffered parallel/series loop jacks, so options abound. Also, the system is ideal for re-amping, especially with the preamp in the control room right at your fingers while you try different mixings. I love it!

Randall, 847/949-0444, www.randallamplifiers.com.

—George Petersen

ANTARES FILTER Quad Multimode Filter Plug-In

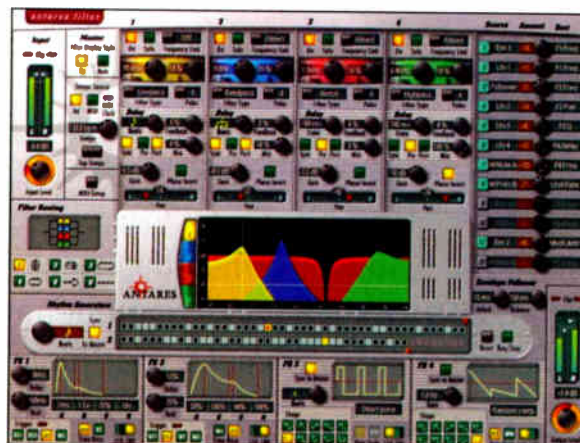
Filter (\$199) provides everything from subtle harmonic enhancements to dramatic rhythmic effects. The plug-in is based on four filters that can be set as lowpass, highpass, bandpass notch or flat filter types. Each can be set as two-pole (12dB/octave), four-pole (24dB/octave), six-pole (36dB/octave) or eight-pole (48dB/octave) filters. Four delay sections accompany each filter with feedback and mix controls. Each delay can be patched pre/post-filter or can be used without filtering.

The filters can be routed in six different options with a slick visual graphic displaying each configuration. Four LFOs offer a choice of up to 10 different waveforms, including three different types of random waves. Each LFO's rate can be set in Hz or bpm and, like all of the time-based parameters in Filter, can be synced to the master tempo. Four envelope genera-

tors offer delay, attack, decay, sustain level, hold time and release parameters. The envelope follower lets you control filter parameters with the dynamic characteristics of your input audio. The two drum machine-style Rhythm Generators can easily create rhythmic patterns to be used directly as control sources in the Mod Matrix or act as rhythmic trigger generations for envelopes (or both). You can modulate virtually any of Filter's key parameters from the very extensive and powerful modulation matrix. There are 12 modulation routings in all—very impressive!

Routing a drum loop through Filter, the fun began right away, providing some interesting and usable sounds. I liked the choice of setting the display in Hz or in relation to note values. Filter offers extensive control from either pre-recorded MIDI tracks or live from MIDI controllers. Each of Filter's time-based parameters can be set in absolute time or synced to its master clock, where all parameters automatically scale properly and remain in sync as the tempo is changed. As I changed the static tempo in the filter interface, the modulations followed suit without any jumps or clicks in the audio output. The ability to grab the filter's graphic display and move up or down to change resonance, and left or right to change the cut-off is great. You can set the frequency link menu options to let you slave a filter's frequency to any of the other filters so that changing the master filter's frequency causes the linked filter's frequency to move in parallel.

Filter's modulation possibilities are only limited by the number of LFOs the software



uses. The rhythm generator is a very nice feature, the interface is well-designed and laid out and the sound is high quality. This Mac/PC software supports VST, DirectX, RTAS and MAS formats. How about an AudioUnits for Logic and a TDM version.

Antares Technology, 831/461-7800, www.antarestech.com.

—John Travis



LUCID AUDIO GENx6-96 Master Clock/Distributor

Lucid's GENx6-96 (\$799) is a master clock generator/distributor that operates at 44.1/48/88.2/96 kHz. In addition to "standard" clock data, the GENx6-96's BNC outputs can be individually switched to send super clock (256x) data. Inputs for external clock are from AES, word or super clock sources, which are distributed to six outputs. Controls are simple, yet complete: Mini toggle switches per output select word or super clock, a Source switch sets the GENx6-96 to any of its four sample rates or to external sync, and another mini toggle lets users choose AES, word or super clock input. LEDs indicate sample rate, source and external source lock. It's housed in a half-rack package and uses a "line lump" power supply.

I ran RG59 co-ax cable terminated with BNC connectors from the GENx6-96 to a Yamaha 02R, Tascam DA98, MOTU 2408 (original version) and a dbx 386 mic preamp with onboard ADC. This allows a direct hookup from the source to destination without any thru connections. During the majority of tests, the GENx6-96 ran at internal clock, though it easily and quickly locked to, or distributed, sync from external word or AES input. I connected the GENx6-96 and went about doing sessions (mostly at 44.1 kHz), some of which were overdubs to previous recordings.

Under certain conditions, the GENx6-96 made no audible difference. However, multi-track mixing when combining a variety of digital gear produced more noticeable results. I compared automated mixes of the same song comprising 24 tracks recorded into Digital Performer before and after the GENx6-96 was added. A MOTU 2408 and Tascam DA98 and DA88 were connected to the 02R. The 02R's analog master mix outs were patched

to the DA98 for A/D and routed via TDF1 back through the 2408 to Digital Performer onto a new stereo track. This process was done with and without the GENx6-96. Sonic differences were not obvious, but on careful listening, I could hear low-level "tick" noises in the non-Lucid clock mix. (The noises were not present on the original tracks.) These were not the loud "snatting" noises heard when two digital devices lose word sync. These subtle noises could easily be mistaken

as reverb artifacts, lip-smacking from a vocalist or a percussion sound. With the GENx6-96 as the master, the noises were not present, providing a clean background.

Whether listening in the studio "direct" from Digital Performer or to a CD of the mixes, the differences were apparent. Using the GENx6-96 as master clock, dynamics had more impact, particularly when source material shifted from quiet to loud passages.

My only gripe with the GENx6-96 is that the rear panel BNC connectors are close together and awkward to access. I'd liken the GENx6-96 to having a high-quality power amp in your control room: You won't realize how important it is until you remove it. Using the GENx6-96 as the studio's clock master, I simply didn't worry about word sync issues, and its ability to generate or sync to super clock at high sample rates ensures it won't be obsolete anytime soon.

Lucid Audio, 425/778-7728, www.lucidaudio.com.

—Steve La Cerra

ROXIO TOAST WITH JAM 6 CD/DVD Creation Software

Roxio's Toast with Jam 6 (\$199, \$99 without Toast) is a wonderful collection of applications bundled with Toast 6 Titanium and Jam 6, its Redbook-compliant CD master program. Made for Mac OS X 10.2 or above, Toast with Jam 6 is a complete set of tools that readies your raw audio, images, data or digital video files for burning a fast CD/DVD copy or an error-free CD master disc for mass replication. Toast and Jam burn Disk-At-Once (DAO), Track-At-Once (TAO) and mult-session discs. It also integrates BIAS Peak Express 4.1, a stereo audio editing/mastering program for building song lists, doing cross-fades and normalizing (mastering a CD's or a DVD-V's audio before burning in Toast or Jam). Peak uses Roxio and BIAS VST and AudioUnits plug-ins and includes BIAS' Freq EQ (when you register) and an assortment of MDA AudioUnits plug-ins.

New features make this popular "drag 'n' drop" program seamless. Toast It™ burns from the desktop with no initialization or disc-checking; ToastAnywhere™ lets you share CD and DVD burners across your network; and CD Spin Doctor 2 digitizes vinyl or old cassettes. Once the audio's on your hard drive, you can define tracks, reduce surface noise and hiss and add VST effects. Toast burns audio CDs, music DVDs or MP3 discs ("Save As MP3" is possible after downloading the free LameLib.bundle from www.homepage.mac.com/awk/lame); PC/Mac/mixed-data CD-ROMs and DVD-ROMs; DVD/VCD/SVCD video discs; enhanced or mixed-media CDs; or disc "clone" (except commercial DVD movies). An automatic Universal Audio Converter will burn from .WAV, .AIFF, MP3, .AAC or iTunes files.

You can make self-extracting, data-compressed Mac-only discs and designate which Mac OS can read them. I liked the 128-bit encryption for password-protecting Mac-only files and the new Déjà Vu automatic backup utility. Toast burns videos directly from DV camcorders plugged into the FireWire port or from iMovie, and you can extract video and audio from iDVD or a Toast disc using the Universal Video Converter. Video file support includes .dv, .avi, .mov and .mpeg 1/2/4. The new Motion Pictures application creates Quicktime movies out of still-photo image files with panning and zoom effects. Built-in Dolby Digital encoding compression is used for DVD-A and DVD-V with a single disc holding up to 36 hours of music or two hours of good-quality video.

Jam 6 is a stand-alone app for creating professional CD mixes and for finalizing and mastering commercial CDs. Jam 6 sets up track lists, titles, pauses and playback order; does nondestructive crossfades, trims and gain adjustments; sets track start and length; and adds PQ subcodes, ISRC data and more. A CD can have up to 99 tracks, but using Peak, you can parse audio files into regions and add index markers throughout any file. Jam 6 checked my work, ensuring a good "ready to replicate" master CD.

Toast 6 is DVD+R Double Layer (DL) compatible (with a free update from Roxio's Website), recording nearly 8.5 GB of data or more than three hours of MPEG-2 (DVD-quality) video on a single DVD+R DL disc. Easier to use and offering more control, more file format options and a superior graphical interface than iTunes, Toast 6 with Jam is a real workhorse for everyday CD/DVD burning and preparing master CDs.

Roxio, 905/482-5200, www.roxio.com.

—Barry Rudolph ■

Oscilloscope 101

Understanding a Misunderstood Audio Tool

Looking to enhance your audio production skills? Consider reinforcing your "major" with a dash of Electronics 101. The oscilloscope is the most important tool in the "Tech's Files" arsenal. Geek instinct and plenty of e-mails tell me that too many people are experimenting in the dark. A 20MHz dual-trace oscilloscope is all you need for most analog audio work and is available new for less than \$500. Hopefully, this article will inspire you to buy a 'scope and we can zoom into more waves in the coming year.

An oscilloscope converts electrical signals into visual images known as waveforms. A traditional analog 'scope uses a Cathode Ray Tube (CRT) for this purpose. (While an LCD enables portability, the smaller/cheaper versions tend to have "digitized" artifacts that, for the inexperienced, make it hard to judge signal quality.) A CRT is like a television's picture tube: High voltage accelerates streams of electrons to bombard a phosphor-coated screen, creating a visible light beam in the process. The beam is deflected up, down and across the screen by electrostatic force. It's amazingly simple and remarkably precise. A TV CRT, on the other hand, requires electromagnetic force: four amplifier-driven coils—two for horizontal, two for vertical.

There are many different types of 'scopes, from the no-frills analog example used in Fig. 1 to digital versions with memory for image and data storage. Readers who want to modify or upgrade their gear should be willing to invest a little money in test equipment. Why? Because, for example, a circuit oscillating outside the range of human hearing can be deadly to tweeters. A 'scope can reveal the danger before any damage is done.

MODES

An oscilloscope has two basic modes: X-Y and Sweep, with the former used to measure the phase differences between two channels, and the latter to display amplitude vs. frequency. In X-Y mode, a sine wave connected to either the vertical or horizontal input will create a vertical or horizontal line, respectively. A mono signal connected to both channels generates a 45-degree diagonal line (Fig. 2, top row, left). If the polarity of either channel is flipped 180 degrees, then the line changes direction (Fig. 2, top row, right). In between are some of the Lissajous pattern variations representing 45- and 90-degree phase shifts. It's quite common to use a 'scope (and now software) to monitor a stereo signal in X-Y mode.

VERTIGO

A dual-trace 'scope has two vertical inputs (Fig. 3): Input A becomes the vertical channel, and in X-Y mode, input



Figure 1: a simple dual-trace oscilloscope with a blank screen

B is routed to the horizontal channel. Note: In this example, three switches must be flipped for the 'scope to be in X-Y mode: two in the trigger section (Fig. 5) and one in the vertical amplifier.

SWEEP

In Sweep mode, a sawtooth oscillator driving the horizontal amplifier (Fig. 4) moves the beam from left to right. Most of the time, the sweep rate is so fast that the beam appears to be a line (aka the trace). When the sweep rate is slow enough, you'll see a spot move across the screen. Faster sweep rates reduce the brightness of the trace, something to consider when making a purchase if you plan to do RF work, for example. Better, more expensive 'scopes have more consistent brightness



Figure 2: an oscilloscope display with a composite image of various waveforms (a simulation that is not possible in the real world). In green at top, the Lissajous patterns are the result of X-Y phase measurements. In blue, a square wave (far-left) as manipulated by equalization (or bad capacitors) to the right. At bottom, a sine wave (green) and two versions of distortion (violet and red).



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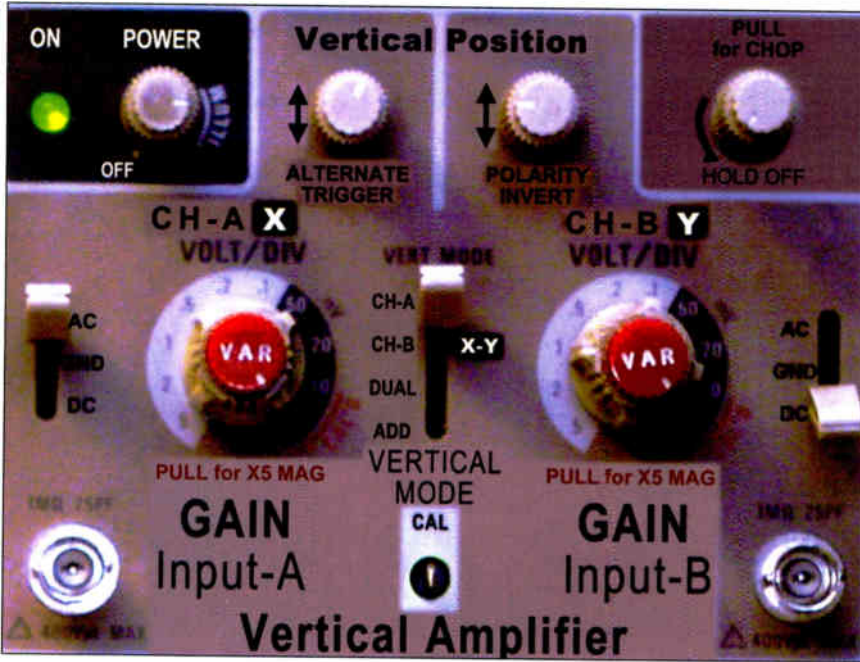


Figure 3: an oscilloscope's vertical amplifier section

throughout the sweep's range.

The display screen has a graticule comprising horizontal and vertical lines that are typically one centimeter apart. Both axes display volts per division when in X-Y mode. In Sweep mode, the horizontal axis now indicates time per division. Measuring amplitude is pretty straightforward, but translating waveforms into frequency requires some ciphering. A single sine wave that precisely fills the screen (bottom example in Fig. 2) is 10 cm wide. If the sweep rate is 0.1 ms/div, then the total sweep time for that wave is 1 ms (0.001 seconds), and one over that amount will reveal the number of cycles per second; in this case, 1,000 Hertz, or 1 kHz.

ROY ROGERS' HORSE

An oscilloscope also has a trigger section to stabilize the waveform (Fig. 5). In Auto mode, the trace is always visible, with or without a signal connected to the vertical input. Normal mode is similar to a noise gate: The trace is turned on once the am-

plitude reaches threshold.

The range and effectiveness of the controls are most obvious when viewing a sine wave. The Trigger Level control determines where the sine wave starts at, plus or minus the zero crossing. A Trigger Slope switch is also provided so that sine will start on its positive or negative slope. The Trigger can be optimized to expect high- or low-frequency signals from either A or B inputs, the power line (good for power supply tests) or an external source.

A square wave is essentially on or off, so either the positive or negative half of the wave will appear first. Square waves with superfast rise times will have almost no visible vertical traces, minimizing the effect of the Trigger Level control. Don't worry, it's not broken.

COMPENSATION

The high input impedance of the vertical amplifier specified in this example is 1 megohm with 25 picofarads in parallel—great for *not* loading a signal, but it also makes the 'scope cable-sensitive. Consider that high-quality cable has 17pF/foot capacitance and the total (cable plus input capacitance) could easily reach 100 pF. This could potentially load high-impedance, high-frequency circuits. For this reason, most 'scope probes feature a 10X mode that inserts a 10-megohm resistor to further increase the input impedance. While this reduces the signal by one-tenth, when combined with an adjustable parallel capacitor, the probe can be "compensated" for cable loss.

A fixed-frequency square wave oscillator is provided on the front panel for probe calibration, both amplitude and frequency response. It's labeled CAL and is centered at the bottom of the vertical amplifier (Fig. 3). Of the four square waves on the display (Fig. 2), the one at the far-right is an example of an under-compensated probe. (High frequencies are rolled off.) The example just to the left is over-compensated. (High frequencies are boosted.) Of course, we want a perfectly square wave (far left).

SUM DIFFERENCE

I've had an oscilloscope since my sophomore year of high school. Reflections on my early "eureka" moments, plus tips for geeks in training, will be online at www.tangible-technology.com, with an extended version of this column and summaries of additional pieces of test equipment. ■



Figure 4: the horizontal sweep section of a 'scope

Eddie applied for a teaching position near the Twin Cities. By the time you read this, he may be deeply involved in the fall semester.

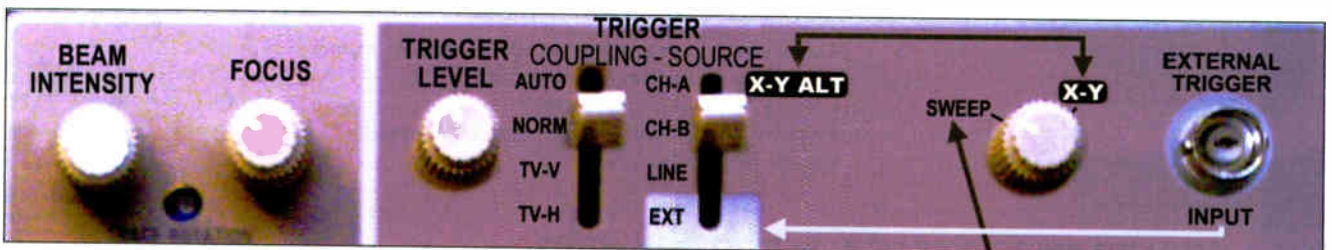


Figure 5: The trigger section of an oscilloscope stabilizes the image much like a noise gate so that the waveform starts where you want it—at the positive or negative excursion or at the zero crossing.

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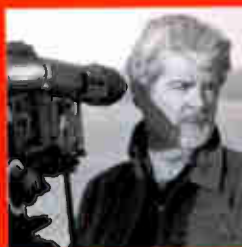
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RAY CHARLES

THE GENIUS AND FRIENDS AT THE END OF THE ROAD

By Blair Jackson

It somehow seems fitting that Ray Charles' swan song, a duets album on Concord Records called *Genius Loves Company*, finds the legendary singer creatively joining with several generations of vocalists who admired, respected and were influenced by him. At the end of his long road—a 53-year career—Charles was weak and sick, but at least he wasn't alone. He was working almost until his final days surrounded by musicians and singers (as well as family and friends), a trooper through and through, giving everything he had, even when there wasn't much to

give. His duet partners didn't care that they weren't working with a man in his prime; they were just happy to be sharing a song with this musical titan.

And what a collection of singers it is: Elton John, Willie Nelson, Diana Krall, James Taylor, Bonnie Raitt, B.B. King, Norah Jones, Michael McDonald, Van Morrison, Natalie Cole, Gladys Knight and Johnny Mathis. There aren't many artists who could pull off so many stylistic shifts on one album—from lush pop ballads to blues to soul to gospel to jazz—

—CONTINUED ON PAGE 134

Concord Records A&R chief and producer John Burk



Left: Willie Nelson Right: Ray Charles with Bonnie Raitt



JAM BAND AXEMAN WARREN HAYNES

PLENTY OF LIFE IN THIS OL' MULE

By Blair Jackson

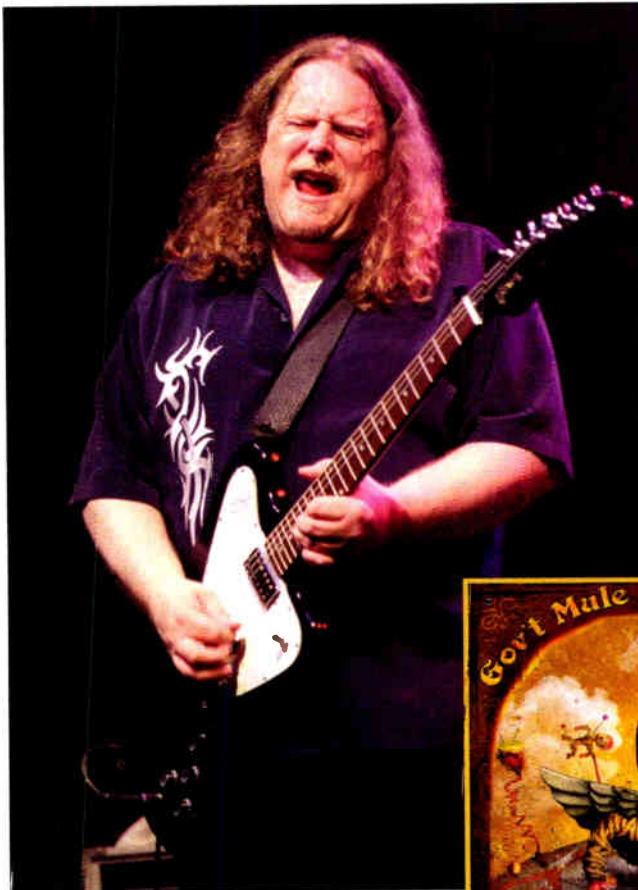
So you think *you're* busy? How'd you like to be in Warren Haynes' shoes? The prodigiously talented guitarist/singer/songwriter is having quite a year, juggling commitments to three different jam bands: the Dead, where he and Jimmy Herring are sharing the guitar duties once handled by Jerry Garcia (and Haynes is singing many of Garcia's songs); the Allman Brothers, Haynes' on-and-off second home since he helped revitalize the band 15 years ago; and Gov't Mule, the long-running power trio—now expanded to a quartet—that is Haynes' principal vehicle for his material.

I caught up with the affable North Carolinian a day after his July Allmans tour ended, which was the day before the second leg of the Dead's summer tour. Down the line, he was scheduled to fly directly from the Dead's last show in Atlanta to the first show of the next part of the Allmans' tour in New Hampshire. September would find him on the road with Gov't Mule, promoting the album he made in his "spare" time, *Déjà Voodoo*.

"It's been crazy," he says with a laugh from a hotel room in St. Louis. "I'm bouncing from one to the other to the other. But if I were going to be this busy, it's better to do it with multiple projects rather than just one; it's easier to get burned out on a single project."

Haynes has been hovering in the Grateful Dead's universe for the past few years; he and Herring were members of the Dead's bassist Phil Lesh's exceptional quintet, Phil Lesh & Friends. But this year marked the first time he has toured with surviving Dead members Lesh, guitarist Bob Weir and drummers Mickey Hart and Bill Kreutzmann. "It feels totally different than Phil & Friends," he offers. "I was prepared for a lot of the material, having played in Phil & Friends, but the approach here is totally different. Bobby's such a unique guitarist and, of course, having the two drummers changes everything."

"As far as my own playing goes, I try to



take a different approach in each band: use different guitars, different speaker cabinets and different amps. With the Dead, I find that the Les Paul takes up too much space—it's got a lot of midrange—so I end up playing a [Gibson] SG or a 335, or an Epiphone Sheridan. I have this new Corrina Les Paul with an ebony fingerboard that's much brighter than a regular Les Paul. Then, effects wise, with the Allman Brothers, I don't really use any. In the Dead and Gov't Mule, I use different effects, just trying to give each a distinct personality."

Though Haynes says that working with the Dead is "an amazing opportunity" and that the Allmans "have been like family" to him, "Gov't Mule is something I plan on doing for many, many years to come. Gov't Mule is where I can create anything I want to and there are no parameters and no pressure; it's the vehicle that's necessary for me to do what I need to do."

Déjà Voodoo marks Gov't Mule's first "regular" studio outing since the death of original Mule bassist Allen Woody four years

ago. In the years after Woody's demise, Haynes and drummer Matt Abts were in search mode, retooling the Mule using a slew of great bass players—including Lesh, Jack Bruce, Jack Casady, the late John Entwistle, Bootsy Collins, Flea, Tony Levin, Victor Wooten, Jason Newsted and a host of others—on a pair of fine studio CDs, *The Deep End, Vol. I* and *II*, and a live DVD/CD.

During that period, Gov't Mule also brought in a number of fine keyboardists and other support players, but eventually settled on a new permanent lineup: Haynes, Abts, bassist Andy Hess and keyboardist Danny Louis. The new Mule is every bit as heavy as the old one: *Déjà Voodoo* is loaded with long, blues-soaked tunes that give Haynes plenty of space to stretch out on guitar and unleash his potent growling vocals. These guys can definitely rock hard, but Haynes actually seems to prefer simmering

—CONTINUED ON PAGE 140

RAY CHARLES' "WHAT'D I SAY"

By Blair Jackson

With a career spanning more than five decades and scads of hits in multiple genres, choosing a single "Classic Tracks" from Ray Charles is a tall order—the breakthrough single "I Got a Woman" or the country stylings of "I Can't Stop Loving You"? One of the great Sid Feller productions from the early '60s, like "Georgia on My Mind," or Ray's immortal take on "America the Beautiful," which gets me teary even *thinking* about it? How about the Ray Charles single I bought at the age of eight, "Hit the Road, Jack?" It's still played over the P.A. at various baseball stadiums when an opposing pitcher gets pulled: "That's right, hit the ro-oad Jack, and don'tcha come back no more..." Finally, I decided that because the lead "Recording Notes" feature this month deals with the end of Charles' storied career, the "Classic Tracks" should deal with the beginning, or at the very least, with his fertile Atlantic Records period. "What'd I Say" was the first Ray Charles song to make it into the Top 10 on the pop charts, and it helped turn the singer from an R&B phenomenon to someone who was embraced by the mainstream, even as he went genre-hopping.

Charles' first recordings (as part of the Maxine Trio) were made for the Downbeat label in 1949. In the early '50s, under his own name, he scored a pair of Top 10 R&B hits with "Baby Let Me Hold Your Hand" and "Kiss Me Baby" on the Swingtime label. By 1954, however, he'd signed a deal with New York-based Atlantic Records, lured by the enthusiasm of label bosses Ahmet Ertegun and Jerry Wexler, and encouraged by the fledgling operation's successes with the likes of Ruth Brown and Joe Turner.

In the early '50s, Charles' style had been closer to the suave and jazzy Nat King Cole's than Atlantic's R&B artists; indeed, it can be said that Charles found his "mature" style at Atlantic, with Ertegun and (mostly) Wexler producing, and Tom Dowd engineering. Wexler has famously noted about his first years at Atlantic: "We didn't know shit about making records, but we were having fun." But that's selling the talented Dowd short, and as history has shown, there was no better place to make records in the late '50s and early '60s than at Atlantic. Dowd was using multiple miking schemes when many other engineers were still limiting themselves to just two—one for the band, another for the singer—and he moved into stereo recording earlier than most.

Charles' initial R&B hit with Atlantic came in 1954 with "It Should've Been Me," but it was the incendiary R&B/gospel blend of "I've Got a Woman" (recorded at a radio studio in Atlanta) the following year that really put Charles (and Atlantic) on the map and led to a string of other popular singles. After "I've Got a Woman" hit big, Charles rewarded himself by buying a new Cadillac every year for the next six years. An inveterate road warrior who traveled with a crack R&B/jazz band that included sax greats Hank Crawford and David "Fathead" Newman, Charles was driving 100,000 miles and playing up to 300 dates a year in the late '50s, so, naturally, he wanted to ride from gig to gig in *style*.

In those days, Charles mostly played clubs and dances, and he quickly gained a reputation as one of the most exciting per-



formers on the R&B circuit. In 1958, he took on the vocal group The Cookies (themselves an Atlantic act), later changing their name to The Raeletts. In fact, Charles' first serious duet recording, some 44 years before *Genius Loves Company*, was with The Cookies' Raeletts' Margie Hendrix on "(Night Time Is) the Right Time" in late 1958. That was also the year that Charles moved to Los Angeles (from Dallas), where he would live for the rest of his life after a peripatetic first three decades spent around the South and Northwest. Of course, it goes without saying that "the road" was also his home.

Things were going well for Charles professionally during this era, but his personal life was a little more dicey. A notorious womanizer, he had lovers on the road while his wife stayed home, and he also had a serious junk habit through the late '50s and early '60s. In his autobiography, *Brother Ray*, Charles was surprisingly dismissive about the impact of heroin on his life, other than the occasional difficulty of scoring: "One important thing about me and dope—I never lost myself, even just after I shot up...I made my gigs, I sang my songs."

Back at Atlantic Records in New York during 1958, engineer Dowd bolted into the future by convincing Ertegun and Wexler to buy one of the first 8-track recorders made by Ampex—this at a time when records were still overwhelmingly released in mono.

"I remember when talk of 8-track first came up," Dowd told me in a *Mix* interview in 1999. "I said, 'Wouldn't it be great if we had 8-track because then we could do this and that and that.' And [Ertegun and Wexler] said, 'Find out how much it'll cost.' So I got a quote on the phone, and they said, 'Well, go ahead.' So all of a sudden, here it's the fall of 1957 and I've ordered an 8-track machine. As I'm thinking about it, I realize I've got to now design or convert the damn console I have to fit 8-track. I couldn't order [a new console] if

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"By January of '58, the new machine rolls in the door. A week later, I have it connected and I'm recording. There is no difference in our approach to recording except I'm storing it differently. When they ask for something to be played back, I'm still playing it back mono, mixing it on the fly."

In Michael Lydon's fine biography, Ray Charles: Man and Music, Dowd recalls the first time he used the 8-track for one of Charles' sessions: The singer nearly jumped out of his chair when he heard Edgar Willis' bass isolated on its own track. Charles already knew quite a bit about studios and engineering and was fascinated by this new development. In what must have been quite a scene to witness, Dowd then put Charles' hands on the studio's new custom-built console and taught him how to use the 8-track.

This month's "Classic Tracks" was recorded on that 8-track at Atlantic's venerable 56th Street studios on February 18, 1959. "We made it like we made all the others: Ray, the gals and the band live in the studio, no overdubs," Dowd told Lydon. "Three or four takes, it was done. Next!" Among the mics Dowd typically used on sessions in those days were RCA 44s and 77s, Western Electric 639-As and 633 "salt shakers," and a pair of Emory Cooke mics made by M.W. Kellogg & Co. By the late '50s, too, some Neumann microphones were popping up in select New York studios such as Atlantic.

The song itself has an interesting story behind it. As Charles explained in Brother Ray, "We happened to be playing one of my last dances, somewhere in the Midwest, and I had another 12 minutes to kill before the set closed. A typical gig of that kind lasted four hours, including a 30-minute intermission. It was nearly 1 a.m., I remember, and we had played our whole book. There was nothing left that I could think of, so I finally said to the band and The Raeletts, 'Listen, I'm going to fool around, so y'all just follow me.

"So I began noodling—just a little riff that floated into my head. It felt good and I kept going. One thing led to another and I found myself singing and wanting the girls to repeat after me...Then I could feel the whole room bouncing and shaking and carrying on something fierce." After the show, a stream of people asked Charles where they could buy the record of this tune he and the band had improvised, so for the next few nights, Charles closed the show with the song, adding to it, making up new verses and solidifying the arrangement. Charles was so excited by the song that he called up Wexler from the road to tell him about it; soon af-

ter, he and the band hit New York and laid it down.

The song was fairly unusual for its day in that the hypnotic central riff was played on an electric piano. "Musicians used to laugh at me saying, 'What are you going to do with that toy? That little-bitty thing can't do nothin'," Charles told NPR's Robert Siegel in 2000. "But I liked the sound of it and that little-bitty piano is really what captured the public's attention."

Of course, the song had a lot more going on than just the piano riff. It had a series of simple, unconnected verses, some exciting call-and-response passages with The Raeletts and a false ending conceived in the studio, in which the band and singers beg Charles to keep playing. It was seven-and-a-half minutes in its original form, but Dowd cut it down to two three-minute sides (labeled "Part One" and "Part Two") by trimming here and there and taking out a couple (but not all) of the passages that contained the lyric "Shake that thing!"

Even with Dowd's editing, the song was very controversial. "Not everyone dug it," Charles wrote in Brother Ray. "It was banned by several radio stations. They said it was suggestive. Well, I agreed. I'm not one to interpret my own songs, but if you can't figure out 'What'd I Say,' then there's something wrong. Either that or you're not accustomed to the sweet sounds of love."

No doubt the controversy ended up helping the record become a hit: It entered the Billboard charts on July 13, 1959, and within a few weeks had made it into the Top 10, finally nesting at Number 6. Later that fall, Charles hit Number 11 with "I'm Movin' On," and for a while, he could seemingly do no wrong. He celebrated the way he always did: He bought a new Caddy: "Nothing flipped me like that '60 Cadillac," he wrote. "Man, I loved those long lines and those big fins!"

The lasting legacy of "What'd I Say" is that it became Charles' show-closer for the rest of his career. As he told NPR, "What you want to do is build the people up. You start 'em off and you give them this first half, and their feet [are moving], and next thing they got their heads goin', and the next thing they got their mouths open and they're yellin' and they're screamin'—it's a great feeling when you can have your audience get involved with you...where everyone can jump in and have a real good time. 'What'd I Say' is my last song onstage. When I do 'What'd I Say,' you don't have to worry about it—that's the end of me; there ain't no encore, no nothin'. I'm finished!"





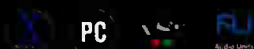
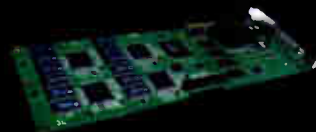
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RAY CHARLES

FROM PAGE 128

but Charles was, in a sense, the original crossover artist: Boundaries meant nothing to him. He played *every* style and turned it into Ray Charles Music. And that's the case on *Genius Loves Company*. Occasionally faltering and diminished, Charles still digs deep to find the emotional truth at the center of these songs.

The album was the brainchild of Concord Records A&R chief (and producer) John Burk, who notes, "Two of Ray's most

outstanding feats in music were that he was highly influential to so many vocalists and that he was also able to cross over genres, which made him the ideal focus of a duets project. One of our main goals was to try to put him in the room live with the guest artists—the way he used to make records. He makes magic in the studio. And as I learned from working with him, perhaps his greatest gift is his ability to really communicate what a song is about and the emotion behind it. And when he works with another artist, he draws that out of them, as well."

From the earliest days of his career,



Phil Ramone produced five of the album's tracks.

Charles was an artist who liked to assert control over his albums. He was a magnificent arranger and bandleader, a shrewd businessman and he even learned engineering from Tom Dowd and others at Atlantic Records in the late '50s. (See "Classic Tracks," page 130.) For the past 40 years, Charles mostly recorded at his RPM Studios in Los Angeles (it was declared a city landmark in April 2004) and the bulk of *Genius Loves Company* was cut there, using some of Charles' regular musicians and his longtime engineer, Terry Howard. Burk produced most of the album, but five tracks were helmed by Phil Ramone, who used Ed Thacker as his engineer. The three songs that were cut live with a full orchestra on the Warner Bros. L.A. scoring stage were co-produced by Howard and engineered by Bobby Fernandez. SACD pioneer Herb Waltl also earned a co-production credit for his assistance on the project, and it was he and Howard who facilitated Burk's initial meeting with Charles. The album was mixed by Al Schmitt at Capitol's Studio C on a Neve VR.

Burk notes that having Ramone onboard for the project was particularly important. "Phil is clearly one of the greatest producers and engineers ever. He's also a friend and I consider him a mentor," he says. "When I first talked to Ray about doing the project in his own studio, which has such a distinctive vibe and so much history, I wanted to bring Phil in right away because there's nobody better at making a room work. We ordered some baffling and did various other things to make the room sound better—Phil even brought in a huge garden umbrella to put over the drums because they were leaking all over the room. He put that in and taped in some foam and that really helped."

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"It's a very bright room," Ramone comments, "but I still didn't want to use a lot of isolation. It's decent-sized, maybe 40-by-30. It has a sort of late-'50s, early-'60s feeling, which is, of course, when he made some of his greatest music. Ray is very fussy about what he wants to hear, but he's also very cooperative and was open to suggestions."

It was Ramone who chose the vocal mic that Charles and his partners used. "We tried a couple of things at the outset," he says. "We started with some Neumanns, but for some reason, they didn't feel right to me so we ended up using Audio-Technica 4060s. Once we settled on that, we stuck with it. I like to get things early; I'm a first-taker. I don't want to be changing mics on take five—if we get there—especially on someone like Ray Charles." Ramone's vocal chain on Charles also included a Summit EQ and a Neve 1073 preamp. "I like to go with the simplistic best," Ramone comments. "I like API and Avalon [preamps], too. I'm good with any of the top-of-the-line Class-A amps." The project was recorded to Pro Tools, and Ramone notes that he used RPM's Quad 8 Virtuoso console mostly just for monitoring.

Once Charles, the producers and the

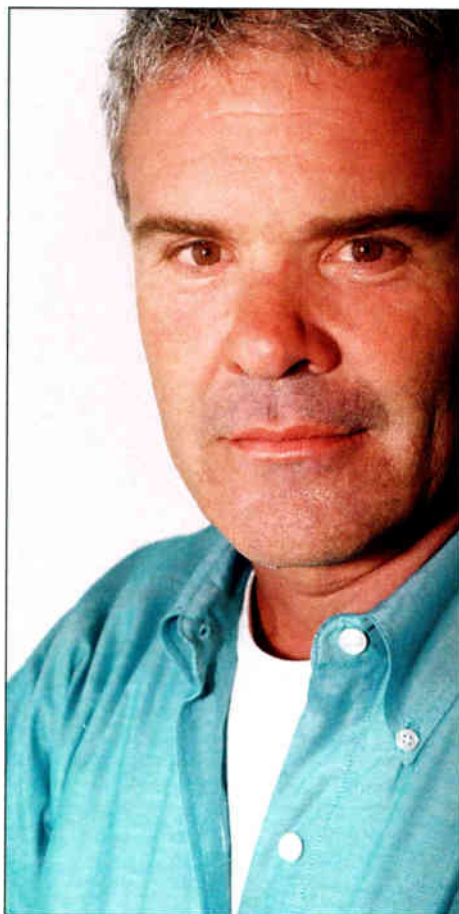


Orchestral session for *Genius Loves Company* at Warner Bros.' Eastwood Scoring Stage, with arranger Victor Vanacore conducting

duet partners agreed on song choices, the work turned to picking appropriate arrangements. "It was so many different styles, you wanted to treat them differently," Burk says. "There was a core band, which was pretty much Ray's guys—bass player Tom Fowler is probably the main one there—and then

for drums, Ray wanted Ray Brinker, who has worked with [jazz singer] Tierney Sutton and others, and Randy Waldman did a lot of the piano work. Billy Preston was on the B3, and then there was a whole variety of guitar players."

As for the vocal arrangements, Ramone



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says, "Where I could prepare [the duet partners], I'd send them an idea of the arrangement, which would usually give a sense of where they might come in. But you learn your lesson fast with Ray, because he's such a great arranger himself and he's full of ideas and he always seems to have an opinion about how things should go. So you might come into a session thinking it's going to go one way, but with Ray, there's always the possibility that he's going to change it once you're in the room with him. If you're a singer and he feels you're stretching or straining and he doesn't like it, he'll change it. Or if he *wants* you to strain a little, you'll do it. He's so intuitive about how it should go."

"He has a very clear vision of what he wants," Burk adds, "so a big part of the [producer's] job is to get that for him. A lot of the

work is the dialog you have with him before the date. Then when you get into it, there's a lot of give and take, but now and then, it's going to go a certain way and that's all there is to it.

"You don't tell Ray Charles how to sing," he continues. "There were certain times where he'd say, 'That's it. That's the take.' Sometimes I'd ask him to try something and he'd say, 'Okay.' Other times, he'd say, 'No.' He knew when he got what he wanted, and he didn't do a lot of takes. Every now and then, he'd come back later and swap in a word or a line, but in general, that didn't work as well as the vocals he did in the moment with the other artists."

As is frequently the case with these sorts of all-star projects, scheduling turned out to be one of the biggest challenges; at the be-

Ray Charles and Mr. T

A little more than 20 years ago, Terry Howard became an "on-call" studio maintenance technician for Ray Charles. By the time Charles recovered his master tapes from ABC, Dunhill and other labels a few years later, Howard assumed the role of engineer and friend and was given the nickname "Mr. T," or just plain "T."

Howard recalls that Charles was a very "hands-on" artist who knew every nook and cranny of his control room—and most things engineering. One time, Charles called Howard down on a weekend to check the monitors. "I came in there and could not hear what Ray was hearing," Howard recalls. "He said there was a difference in the bottom end between the left and right monitors. I ended up playing a test tape and found a ¼dB dip at 100 Hz on the right channel. After I fixed the problem, he heard the difference right away. He had amazing golden ears and could hear that ¼dB difference!"

Even though Charles often recorded his own vocals and piano by himself, for most sessions, he and Howard sat shoulder-to-shoulder at the console. Howard says he will always value the many lessons Charles taught him about music and sound—from picking tempo and keys that best fit his voice and the song's emotion to identifying a mysterious distortion way down inside the mix.

"Ray taught me so many production skills and mixing tricks, but I'll always remember him telling me to never let the music out-shine the star," Howard says. "When another producer would critique Ray's vocal timing, Ray would say, 'You can tell the drummer, you can tell the horn section and you can tell the bass player that I'm the singer and I don't have a timing problem 'cause what I'm doing is emotion!'"

For Howard's tracks on *Genius Loves Company*, he says that he and Charles returned to old-school production in which everything was worked out and recorded all together with the musicians live in the studio. "Ray had gotten used to coming in and overdubbing piano and vocal on finished tracks supplied by producers," Howard says. "After working this way again, he told me that he hadn't had such a great time in years. Ray said, 'The only way to spell work is F-U-N.'" —Barry Rudolph



Charles working with Terry Howard (R) and assistant engineer Patrick Callahan circa 1997

ginning, Charles' demanding agenda proved to be daunting. "He was still touring in June [2003], and he'd say, 'I have three days—the eighth, the 14th and the 29th—so we'd scramble to see which artists we could come up with who were free,'" Burk says. "When he stopped touring, he came into the office every day and the album became his main focus, so that actually made our job a little easier."

The first studio session, with B.B. King, came together in July 2003. "I could tell his hip was bothering him," Burk says, "but he was an incredibly strong guy. He's someone who overcame obstacles throughout his life. He never let his disability get in his way. He was a recording engineer, he played chess, he drove cars—he did everything. His attitude was, 'I'm fine. I've got a little somethin' I'm dealing with. Don't worry about it. Let's go to work.' So he might have an off-day. But he was a man of his word and a man of commitment. There was a day when he came to a session and he really wasn't feeling well, and I told him, 'Ray, please don't ever do that again. I'm more than happy to reschedule.' But his feeling was, 'I said I was going to be there,' so he showed up. He always showed up on time, ready to work."

For engineer Howard, who had worked with Charles for nearly two decades, he could tell that his boss was not well, "and I know B.B. was kind of shocked by how weak Ray seemed. But that session was one of my most memorable, because when you hear Ray singing, you really hear the pain in his voice, but when you hear B.B. coming in, you hear the strong shoulder of a friend



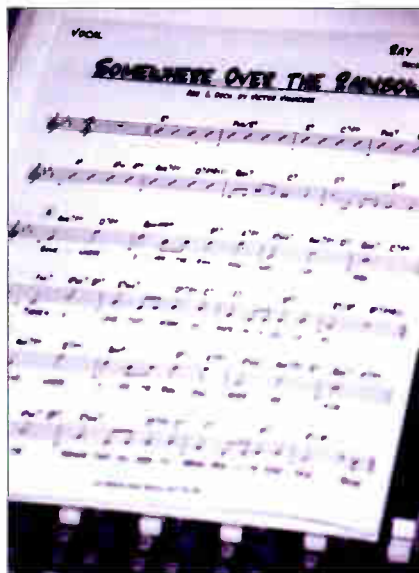
Arranger Victor Vanacore

that someone like Ray could lean against. Ray was already frail: When he talked, he sounded like an old person. But the fire in his soul was still there and once the song started, that frail voice left him and Ray Charles the star entered the building. He belted it out and we did it in just a couple or three takes."

Another of Howard's favorites was the session with Bonnie Raitt, who Charles admired "for taking the time to really work on the song with Ray, changing a part a little here, changing the bridge this way. It was amazing to see two of the most talented people in the world crating a song before your eyes. I know Ray really loved that track."

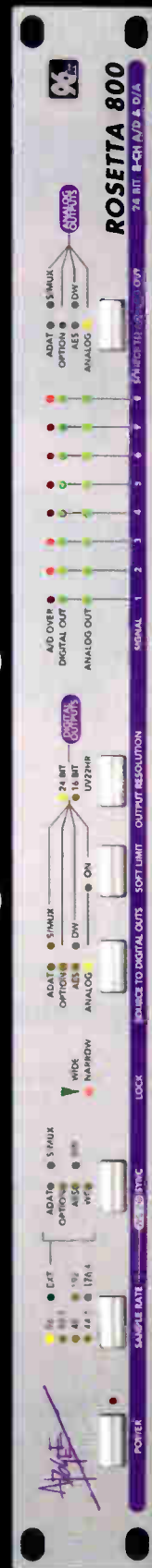
Originally, Burk says, he had not planned on including orchestral tracks on the album, "but Ray had an idea about a song that he wanted to do with Willie Nelson ['It Was a Very Good Year'] with a full orchestra. And this is something Ray would do from time to time. He said, 'I've already got the arrangement written and I've got to tell you, it's going to be awesome.' He was so convicted, I said, 'Okay, let's do it!' before I heard the arrangement. The arranger, Victor Vanacore, does these amazing detailed demos of his charts, and when I heard it, I was knocked out, too." One thing led to another, and soon Michael McDonald and Johnny Mathis were also cutting live with the orchestra at the Eastwood Scoring Stage, which is equipped with an SSL 9000J console.

By the late winter of 2004, Charles' health had declined precipitously and finding moments when he could work on the project became difficult. The knock-out duet with



Vanacore's arrangement for "Somewhere Over the Rainbow"

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Elton John on John's "Sorry Seems to Be the Hardest Word," cut last April, turned out to be the project's final recording.

"I must admit, I was a little shocked at how frail he seemed when we got together in March," Ramone says. "Compared to the way he was the previous fall, he seemed very, very fragile. He whispered to me at one point, 'I'm really not well.' I wanted to cry right there. People who were around were weeping in the control room, it was so emotional. But, of course, you always hope and believe that someone will get better, and I think we all believed that he would get better. I'll say this about him: He funneled every bit of energy he had into that performance. The chemistry between Ray and Elton was just incredible."

Though historically Charles was deeply involved in the mixing of his albums, his failing health kept him away from Schmitt's mixing sessions for the most part, and, as Burk notes, "At a certain point, he was not leaving his place much, so we set up an edNET system that would tap him into the studio so we could play the mixes for him. Even then there were times when he couldn't really give it his all. Once I got a CD ref to him, though, he played it nonstop in his car and I know he was happy with how it came out."

Charles succumbed to liver cancer on June 11, shortly after the album was mastered. "At the time, he wasn't really admitting to any of us how ill he was," Burk says. "But you look back at some of the songs he chose and you start to wonder: 'Was he trying to say something?' 'Was he trying to make some final statements?' I think maybe he was." ■



The current Gov't Mule lineup, from left: guitarist/vocalist Warren Haynes, bassist Andy Hess, keyboardist Danny Louis and drummer Matt Abts

"Michael [Barbiero] really loves that studio," he continues. "It's got an old Neve 8078 and one of the better ones—it's in great shape and it sounds amazing. It's got a really big control room and a big cutting room that can be sectioned off any way you want. It's very ambient, but you can structure it so there's more isolation if that's what you're after. In the past, to get the big rock drum sounds, we've always set the drums out in the middle of the room and there's a certain place the room mics catch the most ambience. But Matt [Abts] and Michael decided they wanted to go for a little different sound on this record, so we moved the drums to a different place closer to the control room in a less ambient spot. We went for a little tighter sound."

"We set up all the keyboard stuff in a huge iso room—two Leslies, an amp for the clavinet, an amp for the Wurlitzer—and it was even big enough to put ambient mics in there."

"I had my guitar rig set up in another fairly big [iso] room. We're all actually out in the main room together, but our stuff is in iso rooms. I'm standing near mine, with the [iso room] door partially open so I can feel some of the pressure [from the speaker cabinets] and I can hear it bleeding, but it's not overpowering everything in the main room." Haynes says that basic tracks were cut live; finished vocals and overdubs were added later, though the disc still manages to have a live-in-the-studio feel.

For miking the cabinets, Haynes says he'll "usually just use two, but occasionally three mics. On the 4-by-12s, I'll have a [Sennheiser] 421 and a [Shure] 57 on each.

WARREN HAYNES

FROM PAGE 129

ballads and sprawling mid-tempo numbers.

The Mule disc was cut at one of Haynes' favorite studios, Water Music in Hoboken, N.J., aided by his longtime co-producer and engineer, Michael Barbiero. "I've done a lot of projects there," Haynes says. "The third Mule record was done partially there; we did the last Allmans album there and I produced the Bottle Rockets there."

Then on the Zeta, just a 57. We also started doing something new on this album. We took this sheet of plywood and put it on an adjacent wall in the room and we put a 57 facing the plywood, away from the speaker. That's for the Zeta more than anything—you mike the area where the Zeta sound is hitting the plywood and it gives it a nice quality.

"I have a Bradshaw switching system where I can use up to three amps at a time and blend them together, and I can have my effects going through them or not, depending on how they're programmed. So it makes switching and looking for sounds a lot cooler. When we're setting up from song to song, we'll try something and I'll check it with Michael to see if a combination is better than some of the parts. For the most part, they're all going to different tracks; occasionally, we might commit and blend two onto one track."

For his vocals, Haynes used an AKG C1000S condenser mic. "I'd been using an SM7, but I got a little tired of it, which is something that happens," he says. "Sometimes, you just want to try something new. So Michael and I went through a bunch of options and agreed that the AKG sounded the best with my voice."

Déjà Voodoo was recorded to analog tape ("I still prefer the sound of hitting tape first," Haynes says) and then transferred to Pro Tools for editing. It was mixed on an SSL at Soundtrack in New York City. "Michael loves to mix there," Haynes says. "The new SSLs have a lot of bottom end, and he's a bottom-end freak. The early Mule records were all mixed on Neves.

"Making records is something I really enjoy—playing on records, producing them. I'm not one of those guys who thinks that playing live is the whole thing...though, obviously, I enjoy that, too." Indeed, playing concerts—not album sales—has been Haynes' bread-and-butter throughout his career, which is how he's earned his rep as an infinitely creative and indestructible road warrior. And speaking of which, tonight it's the Dead, so it's time to shift gears, quit the promo talk for the Mule album and get ready to knock 'em out in St. Louis. I conclude by asking Haynes if he ever mistakenly plays Allmans' licks in Dead songs and Dead licks in Allmans' songs.

"Well, it's *never* a mistake," he says with a chuckle. "I do it on purpose. At [Dead] rehearsal last night, we were playing [Garcia's] 'Foolish Heart' and all of a sudden, Jimmy [Herring] and I both arrived at [The Allmans'] 'Blue Sky' at the same moment. It was perfect—I love it!" ■



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L.A. GRAPEVINE

by Maureen Droney

The Los Angeles Recording Workshop (LARW, www.recordingcareer.com) has a much larger location, new gear and a very impressive new partner: Full Sail's owners. Founded by musician/engineer/producer Christopher Knight, LARW has been in business and growing since 1985. However, the past couple of years have been particularly challenging for the company as Knight struggled to comply with city redevelop-

inception. Knight envisioned a hands-on program. In 1986, LARW moved to 3,000 square feet in Studio City; in 1994, Knight bought a former Bank of America building on Lankershim Boulevard in North Hollywood encompassing 12,000 square feet.

That building, however, was in an area slated by the North Hollywood Community Redevelopment Agency for, well, redevelopment. In 2003, a saga began that rivals the best bureaucratic nightmare stories.

"Basically," Knight explains, "the CRA

NASHVILLE SKYLINE

by Rick Clark

It's not surprising that Nashville, a city that's had a thriving music business for many decades, is also home to a number of educational institutions catering to students eager to become part of that business. One of the best-known programs, located 40 minutes southeast of Nashville in Murfreesboro, is Middle Tennessee State University and its College of Mass Communication (www.mtsu.edu/~record/index.html). The college (which currently has 1,700 music business and audio production majors) has 25 full-time faculty members.

It's housed in the \$15.5 million John Bragg Mass Communication complex and strives to make the latest in recording technology available to students. Facilities include two excellent audio recording studios, a post-production lab, a MIDI lab, up-to-date classrooms and more. The acoustic spaces were designed by Russ Berger of Russ Berger Design Group while systems design was overseen by Richard Zwiebel of Peak Audio. Additional design work and consulting on the facilities was provided by designer Bob Todrank and department chair Christian Haseleu.

The school has just opened two recording rooms for the fall semester. The control rooms feature Sony DMX-R100 consoles, iZ RADAR hard disk recording systems and monitoring via Genelec I037 and I029. Out-board gear includes units by Lexicon, TC Electronic, Eventide, Drawmer, Yamaha and Millennia Media. The rooms were designed and constructed in-house. Haseleu notes, "These new project-type studios will help keep our technology current with the industry while opening up additional studio time for our students."

A measure of a school's success can be gauged by its graduates' career paths. "Many of our graduates can be found working on major projects in L.A., New York and Nashville," says MTSU associate professor Cosette Collier. "On the West Coast, we have recent graduates like Josh Newell at NRG Recording Services; Courtney Blooding working for David Foster on recordings by Josh Groban, Celine Dion and Renee Olstead; and Andy Lackey and

PHOTO: MAUREEN DRONEY



L.A. Recording Workshop founder Chris Knight in front of the school's SSL XL 9000 K console

ment issues at his longtime North Hollywood location.

Knight is no stranger to adversity: the first incarnation of LARW was a graffiti-scarred, 500-square-foot space in Eastern Hollywood, which, Knight notes, also included his bedroom and bathroom. "In the beginning," he recalls, "I'd spackle walls in the morning, make phone calls in the afternoon and teach in the evening. The first term, I had six students."

That was almost 20 years ago. Since then, LARW has become one of the top recording schools in the country, with a student body averaging about 300. Since its

bought my building under threat of condemnation." I had to find another place with the possibility of them taking over in only 90 days. I found another North Hollywood building and hired a city consultant to help with the required zoning variances. We were under enormous time pressure, so with the support of the deputy councilperson, we bought the building and began renovation—to the tune of almost \$2 million. We were literally putting up walls when the zoning administrator called to say we'd been misinformed; a public hearing was required. Long story short, the neighbors objected to

—CONTINUED ON PAGE 146

NEW YORK METRO

by David Weiss

How does a dance track move through New York City's underground and onto the charts? This month's story is all about how one track found its groove.

Hopelessly addicted to New York City's club scene since 1989, Igor Kisil made the leap last year from busy producer to full-fledged artist through his project, Sweet Rains, with the hope of making a more direct impact on his fellow night owls. "The sound of a big bass system is intense and sometimes you really want to feel it on the dance floor," he says. "I feel the crowd's reactions. When a track gets through and they're supporting it, that's exciting."

Kisil and Sweet Rains co-founder John Brunkvist set out to build their own *Billboard* Dance Chart hit from the ground up, writing a sultry, driving electronic song, "Slippin' Away," recorded with vocalist Lenaure belting the chorus' main hook: "Slipping away with every breath I take/You can get a girl so high." To get the track started, Kisil recorded at Manhattan's AM Studios while keeping production as streamlined as possible to keep ahead of the dance world's fast-evolving tastes. "Our main unit is the Apogee Trak2 preamp/converter," Kisil notes. "When the music comes through that, it just sounds gorgeous and every track is huge and fat. The Drawmer Tube Station is a really nice compressor for keyboards and vocals, too. After we do tracking, I take it back to my house, where I'll mix it in Logic Pro."

For Kisil and his label, Nostalgic Records (www.nostalgicrecords.com), mixing and master-

ing "Slippin' Away" was only the first part of a strategy that would eventually take it to Number 4 on the *Billboard* chart. "Even if you haven't recorded a dance track, you can get your song played in clubs everywhere, but you need a remix," he points out. "Every DJ in the world is looking for new tracks, and if you do your promotions, remixes are really helpful. It boosts recognition of the track, helps your artist get additional shows and then it can go on to different radio and Internet radio stations."

A group of busy New York City-based DJs, including Mike Rizzo, Johnny Vicious and Bobby Rios, were chosen to remix the track into trance, progressive and other dance genres. "My goal was to show this song from different points of view. All of these remixers have their own followers and technique. Bobby Rios basically created a short movie in music form; it's a very artistic mix."

The version that eventually took was Rizzo's "Global Club Mix," a rocked-up take that played extensively off the chorus and a marauding bass line. "Today, the whole industry's on AOL Instant Messenger," Kisil says of how he initially located Rizzo. "One day, I just AIM'd Mike Rizzo and I sent him a quick MP3 mix of what I had. We chatted, and in a couple of days, he came up

—CONTINUED ON PAGE 148

Chris Alba doing sound for films such as *The Matrix Reloaded*, *The Matrix Revolutions*, *Ghost Ship*, as well as video games such as *Enter the Matrix* and *Spider-Man 2: The Game*.

"In the New York area, we have Pablo Arraya at Sony Studios, Missy Webb at Sound on Sound Recording and Dan Bucchi assisting at Hit Factory and working with such artists as Beyoncé and Dream Theater.

"In Nashville at East Iris Recording Studios are Mike Paragone, studio manager and house engineer, and Sang Park, house engineer. We also have Leslie Richter at Oceanway Nashville. Working for Byron Gallimore, producer for Faith Hill and Tim McGraw, are two MTSU grads: Erik Lutkins and Sara Leshner." The school also has a well-organized intern program, which I have used from time to time.

Outside of the regular curriculum, MTSU's Department of Recording Industry recently co-hosted the second annual Southern Girls Rock & Roll Camp (and the June Anderson Women's Center at MTSU). There were around 80 to 100 girls between the ages of 12 and 18 who participated in the week-long event, which was started in Tennessee

—CONTINUED ON PAGE 148



PHOTO: DAVID WEISS

Co-founder of Sweet Rains, Igor Kisil recently made the leap from producer to artist, finding a niche in the DJ market.

MTSU's new Studio D/E features Sony DMX-R100 consoles and iZ RADAR systems.

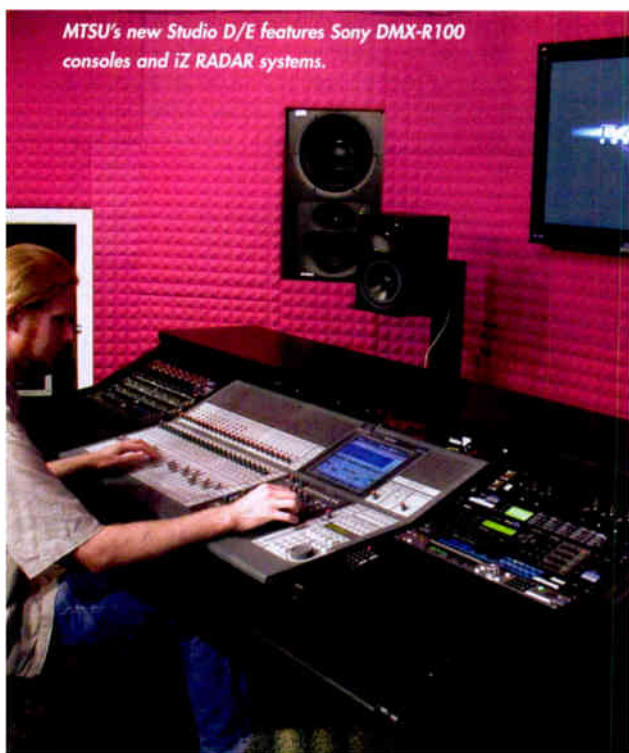


PHOTO: JAE-UN PARK AND WATSIAN ADAM

SCARFACE OPENS THE GARAGE

Def Jam South president/rap artist Scarface, the hard-hitting rapper and former Geto Boys member known throughout the 1990s for his "Southern thug rap," has erected The Garage, a project studio located in his Houston home. The studio centers on a Pro Tools|HD system and Digidesign Control|24 (which he runs into Digidesign 192s).

Professional Audio Design (PAD) helped plan and execute the studio and supplied equipment such as 4-band Neve EQs, SSL and API mic pre's and "every Pro Tools plug-in that money can buy," according to studio consultant Tony Belmont. PAD also advised Scarface on microphone purchases, including the Soundelux U99 and Neumann U87Ai studio microphone set that will be used on upcoming Def Jam South projects and the soundtrack for Scarface's upcoming movie, *Consequences*.

The Garage will also be used for Scarface's upcoming album and many guest appearances, as well as for outside projects with acts such as New York hip hop artist Method Man.

To find out more about Scarface's latest endeavors, visit www.defjam.com/defjamsouth.

PAD consultant Tony Belmont (left) and Scarface take a break after cleaning up The Garage.



INDIE BUZZ

NEW BANDS REV UP WITH AUDIO ENGINE



L to R: Great Jones guitarist Rob Kudyba, drummer Brad Parker, engineer John Grant and vocalist Tommy London

Audio Engine, considered one of Manhattan's most active audio post facilities, is now recruiting independent bands and student filmmaker projects. "We are very thankful to have the kind of high-profile clients that have made the Engine what it is today," says engineer/mixer John Grant. "But at the same time, I do not want to overlook new, younger clients such as indie bands and student filmmakers who will some day be the industry." One of their inaugural D.I.Y. music clients, rock band Great Jones, took advantage of one of the studio's four mix rooms to record and mix a track for *Kiss: Cover to Cover*, a compilation CD of songs performed, but not written by, Kiss. Check out clips from their current CD, *Seven Days From Saturday*, at www.greatjonesband.com.

WHAT IS HIP? SY KOPPS POWERS UP WITH T.O.P. HORNS

Sy Kloppe Studios in San Francisco welcomed a Tower of Power reunion recently when the original horn section, along with bassist Francis Rocco Prestia, dropped by with co-producer Steve Finch and engineer Gordon Briswell to lay down tracks for Mic Gillette's forthcoming solo CD, *Before I Go*, out later this year. The new album is Gillette's first solo venture after 35 years serving as lead trumpeter of Tower of Power, and recording for such acts as Santana, the Rolling Stones, Jefferson Starship, Rod Stewart and many others. The sessions also got the former Tower of Power bandmates together for the first time since 1972. Sy Kloppe's main tracking room, Studio A, is home to a Digidesign Pro Tools HD|3 Accel workstation and Control24, as well as choice Class-A outboard gear and a Hammond B3 organ. Visit the studio at www.sykloppestudios.com. To view live footage of Gillette and crew at work, log on to www.rockvideos.us.

PHOTO © 2004 ROCKY BARBANICA, ROC VIDEO PRODUCTIONS



L to R: Greg Adams, Stephen "Doc" Kupka, Mic Gillette, Skip Mesquite and Emilia Castilla

TRACK SHEET



Latin music sensation Antonio Orozco teamed with Grammy Award-winning mixer/engineer Rafa Sardina and co-producers Xavi Perez and Tato Latorre to record his Universal Music debut, *El Principio Del Comienzo* (New Beginning) at The Mix Room's (Burbank, Calif.) Studio B. From L to R: Co-producer Xavi Perez, mixer Rafa Sardina, Antonio Orozco, co-producer Tato Latorre and engineer David Batolia

MIDWEST

The Jim and Kay Mabie Performance Studio, located in the Chicago Public Radio complex, stays busy with in-house and outside projects. Jazz pianist Marian McPartland recorded shows for her NPR Piano Jazz Series with guests Ramsey Lewis and Jodie Christian... Paragon Recording (Chicago) welcomed Sun Records legend Hayden Thompson, who recorded a project for St. George Records. Blues guitarist Charles Hayes also tracked tunes for the St. George label, and was produced by George Paulus; Jack LeTourneau produced songs for local acts Trading Brains and The LaVellas.

NORTHWEST

Producer/Talking Head Jerry Harrison, engineer Eric "E.T." Thorngren and assistant Matt Cohen recorded 10 shows in 11 days for guitar whiz Kenny Wayne Shepherd's forthcoming CD and 5.1 DVD release; they're mixing the project at Harrison's studio, Sausalito Sound (San Francisco). Harrison and Tommy Lipnick produced and mixed ex-Candlebox vocalist Kevin Martin's version of the Lynyrd Skynyrd classic "Sweet Home Alabama" for an upcoming Skynyrd tribute album. Thorngren engineered and Cohen assisted...San Francisco Bay Area-based singer/songwriter Brad Wolfe completed his debut album, which was recorded with producers Adam Rossi and Joey Muller at Bay View Studios (Richmond, CA), Coast Recorders (San Francisco) and Studio 880 (Oakland, CA).

SOUTHERN CALIFORNIA

Dan Lavery of Tonic was in at Westlake Audio's (Los Angeles) Studio A recording a song for an upcoming Windup Records compilation inspired by *The Passion of the Christ*. Lavery produced, while Jeff Powell engineered.

SOUTHWEST

Gary Hickinbotham broke in Syntaur Productions' (New Braunfels, TX) new Sony DMX-R100 console to mix a live CD for the Center for Texas Music History, which features Ray Benson (Asleep At the Wheel), Sisters Morales and Chris Wall, among others...Singer/songwriter Tody Castillo is recording his full-length debut at SugarHill Studios (Houston) with engineer Steve Christensen. ■

BEHIND THE GLASS

CHUCK D ENTERS THE THRESHOLD



L to R: Universal's Jeff Fura, Chuck D and mixer/sound designer Michael Perricone

Public Enemy's Chuck D stopped in Threshold Sound + Vision (Los Angeles) to oversee mixes for *Power to the People and the Videos*, a DVD featuring more than 22 P.E. music videos spanning the group's 17-year history, out on September 11 on Universal Music. The DVD, which features remastered, high-resolution audio and a running commentary by Chuck D, will be released the same day as their greatest hits CD, *Power to the People and the Beats*. The group plans to release as many as eight DVDs, along with an "unprecedented" box set next year. Bring the noise!

PIE STUDIOS IS SO LAST WEEK



L-R: PIE engineer Dylan Ely, Brian Malouf and bandmembers Ido Zmishlany (sitting), Matt Reich and Neal Saini

Producer/engineer Brian Malouf (Dave Matthews, Eve 6) stopped in PIE Studios (Glen Cove, N.Y.) to track a few songs for Last Week's forthcoming Sony Records release. The pop/rock group leaped to major-label status after winning AOL's "First Break" contest.

NORTHEAST

Joss Stone, Lonestar, Maroon 5, Story of the Year and others performed for Sessions@AOL at Avatar (NYC) with engineers Greg Thompson and Anthony Ruotolo. Elliot Scheiner and producer Bobby Cumbly recorded Sting's vocals for a Chris Botti track, while Glenn Rosenstein came in to produce an album for Livingston Taylor with engineer Joe Ferla. Los Lonely Boys recorded an acoustic version of "Heaven" with engineer/A&R man Angelo Montrone... Speaking of LLB, their label, Or Music, chose the Cutting Room (NYC) to remix a song for jam band Particle. Others on the cutting room floor include actor/R&B artist Will Smith, rock band Orange Park and indie acts Kay Slay and the Bran Nubians...Cheap Trick stopped in PIE Studios (Glen Cove, NY) to track a song, while post-punk band Reunion Show (Victory Records) came in to record drums with producer Bill Wittman and engineer George Fullan...Sound on Sound (NYC) reports another active month, with Quincy Jones working on mixes for Universal International's "We Are the Future" project with producer Mark Ross and engineer Paul Logus. *American Idol* fave Fantasia also tracked her J Records album with producer Swizz Beatz and engineer Steve Conover..."Breakthrough" band Breaking Benjamin tracked and mixed their sophomore release, *We Are Not Alone*, which features co-writes with Smashing Pumpkin Billy Corgan, with producer/mixer David Bendeth at Mirror Image Recorders (NYC)...Tony Bennett wrapped up his new album at his son's place, Bennett Studios (NYC), with producer Phil Ramone and mix engineer/studio owner Dae Bennett. On a much different note, Franz Ferdinand worked on an MTV special in Bennett's video production suite...The New York Philharmonic kept Manhattan Center's (NYC) Grand Ballroom hoppin' when their 102-piece orchestra came in to rehearse...Gateway Mastering (Portland, ME) reports recent sessions with the Brian Setzer Orchestra, SheDaisy, J.D. Natasha, Lara Fabian and Keith Urban, among others...Lynyrd Skynyrd performed their pronounced 'leh-nerd 'skin-nerd' album at XM Satellite Radio's (Washington, D.C.) 60,000-square-foot facility for an upcoming "Live at XM" Series. Steve Cross mixed...Nsync's Chris Kirkpatrick recorded solo material with producer/SR-71 frontman Mitch Allan and engineer Scott Spelbring at Dragonfly Studio (Haymarket, VA). Spelbring also engineered Allan's forthcoming CD, *Clawing My Way to the Middle*.

SOUTHEAST

Catalyst Recording (Charlotte, NC) welcomed rock band Grand Society, who recorded a five-song EP with producer Rob Tavaglione; Tavaglione also engineered a six-song EP for alt-country act Stephen Fell Asunder, which was produced by Steve Smith; meanwhile, nu-metal band Joshua's Whisper tracked 10 songs in nine hours...Cleveland-based country trio Treble Bay visited Cartee Day Studios (Nashville) to record material for their debut album with producers Jeff Ronay and Steve Crowder Ronay.

the school, the councilman pulled his support and we had to sell the building. Since we could no longer afford to buy another one, we had to look for a rental property."

In October, Knight lucked on a space that previously housed Hollywood Digital. In short order, he signed a lease and started construction. With the help of MGA Design and Rudy Skedel's RS Construction, the work was completed in time for a July move-in.

Now serendipity: During construction of the aborted North Hollywood facility, Knight entered into discussions with Winter Park, Fla.-based Full Sail regarding a possible partnership. The talks ended when con-

struction went awry; once the new location was secured, Knight got back in touch.

"In the meantime," he relates, "Full Sail had developed a strategic partnership with L.A. Film School, which is, amazingly, three blocks from our new building. That made it even more exciting to reconsider an alliance. It led to a deal where I'm selling the school to Full Sail but will stay on and run it, essentially the way I always have."

The name, at least for the present, will remain Los Angeles Recording Workshop. "Full Sail has long-term vision," Knight explains. "They're bringing us enormous resources and a great deal of knowledge about how to operate an extraordinarily high-quality school.

PHOTO: MAUREEN DRONEY



Producer Philip Steir (l) and mix engineer Chris Haynes at 5.1 Entertainment

We already do a lot of things similarly because I've studied them over the years. Now, we'll be able to incorporate so much more of what I've always wanted for the school."

The new 35,000-square-foot facility has almost doubled the number of studios to 15. It boasts SSL XL 9000 K Series and a 4000 G+ consoles. Knight is especially proud of the K Series, noting that it's the first in an educational institution in the United States. "We have a great relationship with SSL," he says. "They've always been very concerned with what's good for us. [SSL senior VP] Phil Wagner knows us as well, or better, than we do ourselves."

The curriculum remains at 900 hours. Other equipment includes a Neve VR and a Sony Oxford; Pro Tools, Reason and Cubase labs; and student lounges and gathering spaces.

Knight remains as infectiously enthusiastic as ever, even putting a positive spin on the recent tribulations. "There are always obstacles," he reflects, "but there are also great opportunities. Because I spent all the money on a property that didn't work and I had to rent, I ended up three blocks away from the people I truly wanted to be involved with. I couldn't know all this would happen, but I never had any doubt that things would work out."

I expected to hate *Warner Bros. Remixes Volume 1*. As an engineer who's spent way too many wee hours laboring over dance remixes, I'm unimpressed with barrages of quarter-note delay, repeatedly sampled vocal phrases and boring breakdowns. But it only took one listen to *Volume 1*'s fresh versions of such '70s classics as the Doobie Brothers' "Listen to the Music," America's "Ventura Highway," Rod Stewart's "Do Ya Think I'm Sexy" and Seals & Croft's "Summer Breeze" to win me over.

It was the brainchild of producer/remixer Philip Steir, who (with Leah Simon) co-executive-produced the project, combining vintage hits from the Warner Bros. catalog with creative remixers like Mocean Worker, DJ Malibu, Meat Beat Manifesto, Supreme Beings

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Steir, who worked on Devo's "Whip It," Todd Rundgren's "Hello It's Me" and "Summer Breeze," explains: "I'd done a remix of Steppenwolf's 'Magic Carpet Ride' in 1999 for the movie *Go*. It was supposed to be just a short segment, but they loved it so much that it went on the soundtrack album and became the movie's single. Since then, I've always wondered why more people don't do this with classic songs. I pitched it to Xavier Ramos and Jeff Ayeroff at Warner Bros. Jeff had previously run the Work Group, which released the *Go* soundtrack, and he said, 'Let's do it!'"

The first hurdle was choosing songs from Warner's vast library, with tempo, lyrics and rhythmic style in mind. "A swing song or one that's not in 4/4 time doesn't lend itself to a great remix," Steir points out.

Next came permissions, finding master multitracks and ensuring that versions were complete. Most of the tapes hadn't been played in more than 20 years and required baking at Eagle Rock's Penguin Studios, where they were transferred to .WAV and .AIFF files.

"Summer Breeze," remixed by Steir with Ramin Sakurai, has already received significant radio play in addition to it being in a Gap commercial. "For that mix," says Steir, "we re-did the arrangement, put on a hip hop beat and added keyboards and strings, but kept their awesome acoustic guitar and bass tracks. It was one of my first choices, but, originally, Seals & Crofts weren't interested. Then the Gap expressed interest in the song, but they wanted a modern version, so Seals & Crofts let us try it. I did a rough version and they loved it. I ended up using a stripped-down version for the commercial and a full version for the record. When it aired on the Gap commercial, we weren't prepared for the response: an onslaught of iTunes searches and a big jump in sales of the original album. That was pretty exciting!"

"My intention was always to take classic songs and redo them artistically to make them more accessible for today's ears," Steir concludes. "People hearing the remixes often think that we haven't changed much, when in reality we changed almost everything. But we didn't remix them to be dance hits. We wanted to keep the integrity but make them modern." ■

Got L.A. news? E-mail Maureendroneya@aol.com.

NASHVILLE SKYLINE FROM PAGE 143

by a current Recording Industry major, Kelley Anderson, who was inspired by a similar event held in Oregon each year.

"The girls sign up for a particular instrument, whether they know how to play or not," says Collier. "They receive lessons throughout the week, form bands and perform. They also take part in workshops about recording in the studios, promoting their bands and 'zine-making. It's very exciting to see these girls excited about making music and engineering. We've also started a new student-run record label called Scared Rabbit Records, which has three artists currently under consideration for production deals." Demo projects on two of the artists—Victor Furious and Big Fella & Te' Arthur—are being recorded and produced in MTSU's studios. The label is currently working on a deal with Sony's Red Distribution.

Northeast of Nashville in Gallatin is Volunteer State (www.vsc.c.c.tn.us), a community college that has just opened a multimedia studio complex featuring a recording studio, audio editing suites, a large video studio and several video edit suites.

The recording studio (designed by Austin Belmar of J. Scaff & Associates) features an ample tracking area with an additional isolation booth; a control room with gallery seating for up to 16; and an editing room with three Pro Tools editing suites with Mackie Control fader surfaces.

The Vol State recording program is led by engineer and producer Vaughn Skow, who has taught there for the past seven years. Skow also served as design and construction consultant on the facility, and selected and installed equipment in the main studio and editing suites. "The studio is all about the students and I have personally chosen every piece of gear based on its educational value," Skow says.

The facility features a Pro Tools HD|2 Accel rig in the main studio running on a silent Carillon PC with a 192 expanded I/O. There is also a MOTU MTP-AV SMPTE hub, 8-port MIDI interface and a 438-point long-frame patchbay. In addition, there are 24 tracks of 24-bit DA-78HR tape machines clocked to the Digi 192 I/O for additional clock stability, plus a Tascam BR-20 15/30 ips 2-track reel-to-reel, Sony DAT and Tascam CD burner. The console is a Mackie 32-input, 8-bus in an Argosy 90 Series custom console.

Skow is especially excited about the donation of A-Designs' MP-1 mic pre. A Designs president Pete Montessi notes, "Vol State's class is trying to promote the arts and I feel engineering is an art unto itself. From



PHOTO: ROCK CLARK

Vol State's Vaughn Skow (left) and singer/songwriter and A Designs rep Brian Thomas

my own teaching experience, I know that money is always in short supply for the arts in any educational system."

Vol State's program is a great value for anyone getting into recording and video, but it has become an even better deal thanks to a collaborative effort with MTSU's program: "MTSU has formed a committee to develop an 'articulation agreement' between Vol State and MTSU," says Skow. "Successful grads of our program would gain guaranteed admittance to the MTSU R.I.M. [Recording Industry Major] program as a junior. We've always felt the commercial music program at Vol State was a real bargain. Once this agreement is in place, it will be even more so." ■

Send your Nashville news to MrBlurge@mac.com.

NEW YORK METRO FROM PAGE 143

with the rough version of the mix. He was very quick. I made some suggestions and then we went to Webster Hall to play it. People were dancing, but then he saw there was a lag in the middle, so he re-adjusted it. His mix is really progressive, and I don't think I've ever heard anything like that."

Rizzo's role in the remix actually began 10 years ago, when he crossed over to remixing and production along with being a top club DJ. "DJ'ing is my first love, but I always wanted to take things to their extreme by producing records," Rizzo explains. "I like remixing because it's a way for every demographic to be able to enjoy that record, whether it's for the adult contemporary listeners who love ballads or the kids that want to hear an uptempo version with a remix. For Whitney Houston's song, 'Try It on My Own,' I transformed it for a younger audience so they say, 'I get that now.'" ■

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With other remixes under his belt for the likes of Luther Vandross, Brian McKnight and Jewel, Rizzo has the tools to work quickly. Once he has the vocal track in hand from the record company, he and his engineer, Robert Larow, will build a blueprint to follow in their Pro Tools HD-equipped Manhattan studio. "You have to have an idea from the start with any remix," he says. "The bass line is so important to me and I always start with that because that's the vibe of the record. If it's an emotional remix, I'll try and find dreamy synth pads to use. I try to build the whole vibe and then get the energy going at the end in the choruses with synthesizer stabs.

"With some remixes, they give it to us in

dance form already, so what's our game plan there? It's all about the drums: keeping the energy flow throughout."

It was only natural that Kisil would eventually work with Rizzo, and "Slippin' Away" was the perfect impetus. "A friend of mine referred Iggy to me," Rizzo recalls. "He e-mailed me a demo version of the track and I liked the delivery. I knew how it could go done right. I told him how I would remix it, he sent me the stems and I did my thing: dark elements and heavy bass lines.

"It became a hit because it's all about the hook of the record. If it sticks in your head, that's a hit. 'Slippin' Away,' with that line, 'You can get a girl so high'—you know right away



Producer/DJ Mike Rizzo has worked on remixes for Luther Vandross, Brian McKnight and Jewel.

you can get girls to sing that record. It was a great element—a great piece of writing."

Before the remixes hit the floor, some mastering was in order. For that task, Kisil selected Joe Yannece of Hit Factory Mastering after seeing his name on several of his favorite dance remixes. "All of these remixes and mixes in dance go to vinyl—that's the only genre where that's guaranteed," Yannece points out. "Cutting to vinyl is one of my favorite things to do and it separates the mastering engineers from the guys in the den with a really fast computer. You still need a big Neumann cutting lathe to put it on vinyl!"

Yannece attacked the "Slippin' Away" remixes with his favorite mastering tools, including the Prism Sound MEA-2 EQ and MLA-2 compressor, Manley Massive Passive and Weiss EQ1. "These remixes didn't need a lot of EQ: Out of the box, they sounded pretty good," he observes from his session notes. "We used mild compression to bring the overall level up, squashing a little of the dynamic range. We like to make it punchier and tighter. Mike Rizzo's version got a little top end using the Weiss gear: 12.5k on a shelf at +2 dB. I get to see a lot of different levels of quality mixing, and it always seems like remixers really pay attention. They're perfectionists."

From Yannece's mastering room, "Slippin' Away" was on its way to the promoters who work the remixes to DJs nationwide in hopes that it will make it onto their rotations and get reported to the charts. The song cracked the Top 5 in March of 2004. For Kisil, it all added up to a remarkable journey starting in New York City's underground and ending up at the top. "I was with this project from day one to the very last day," he reflects. "This song is my dream come true."

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—FROM PAGE 24, 101 MUSICIANS

faster than you were before. If you are a classical studio musician, mmmm.

The Creators have spoken of it thusly:

"The EastWest/Quantum Leap Symphonic Orchestra was produced by Doug Rogers from EastWest and Nick Phoenix from Quantum Leap, who collectively have received over 30 international awards for sample libraries they have created." Man, they *deserve* awards.

"This is the first 24-bit orchestral sample library to include three simultaneous stereo mic setups (close, stage and hall), so users can mix together any combination of mic positions to control tone and ambience.

"A major benefit of this recording philosophy is the tonal control the three simultaneous stereo tracks provide. Users can literally alter the tone and ambience of any instrument or section by incrementally moving out from the close mics, to the stage mics, to the hall mics (an audio zoom) in real time!

"All of the players were recorded in position. All of the instruments and sections were chromatically sampled with multiple dynamics, with extremely dynamic and expressive articulations, and although the library is huge [it wasn't *that* huge—the ninth semi was almost half empty], it has been programmed to be extremely easy to use. For example, an efficient method of composing would be to use just the 'close mics' or the 'stage mics' during the composition stage, adding a combination of the three stereo pairs to adjust ambience and tonality in the final mixing stage."

And what do I really think? I think that the time has come. There is no question that you can get away with this in many if not most situations. If you can score and arrange, and you understand the physics of the instruments well enough to "play" them realistically, the samples you need are there, along with the rational structure and expressive tools to get it all to work. No bull. I am amazed and that is rare to say the least.

Live hall ambience is definitely there, as it was recorded with instruments in place across a stage in a real hall. Of course, you can control this, but there is always a certain integrated ambient component that, while it may take a little bit of intimacy away, delivers a realistic physical soundstage in return. No artificial reverb needed or wanted.

I don't know how often I would actually want to use rock-type in-your-face intimacy with an orchestra anyway.

Is it the best? Yes, actually. It *is* the best I have heard—by far.

Is it perfect? Come on. Of course not. It's not *totally* maxed out, and this may be a good

thing unless you have four monster computers to dedicate to it. For example, several instruments loop, and loop early. A beautiful forte bassoon loops after two seconds, but it does it so very well...And there is the *rare* bad edit. For example, the lowest note of one of the clarinets has the front clipped off. But I bet you could use this thing for years and never notice these tiny objections.

And if for some reason you *do* actually want an even more insane version, believe it or not, one is on the way. The creators are busy "filling it out," making it even bigger and better...I tremble at the thought.

I do love this package, and it has already influenced my arranging considerably. One tends to try more alternatives when it is this easy and they sound this impressive.

And so I leave you to ponder the new virtual world that is undeniably upon us whilst I go forth in search of a bit of virtual rosin. What the hell is French for virtual rosin? ■

SSC is currently in the French Riviera, happily tracking a full orchestra to back up a vocal he did last week in Scottsdale. He got the entire orchestra through customs unnoticed.

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—FROM PAGE 28, BACK TO THE FUTURE

themselves Composers' Collective. "Believe it or not," DuPlessie says, "I met them through Craig's List [www.craigslist.org]." Shapiro and Jacobs have been working together for about a year-and-a-half, making music and sound effects for clients such as CBS, NBC, Showtime, ESPN and the Discovery Channel.

"There are five basic pieces of music," says Shapiro, "which we did based just on Matt's descriptions. When we finally got together with him, we found they all worked with just some minor tweaks. We also did a

couple-hundred sound effects, some adapted from libraries and some we recorded ourselves." Borrowing from techniques used in video game scoring, they broke the music down into loops so that, for

"The acoustics are horrific in the Tomb, and there's no way you could EQ these rooms to make them sound better...people can't tell the difference between this and high-end audio." —Matt DuPlessie

example, when a group solves a puzzle or accomplishes some other task, the music can jump quickly to the end of the track or to a new piece. Making the transitions between loops seamless was a critical task. "We did the entire score right in Pro Tools, even the MIDI stuff, since we didn't need to do much editing," Shapiro says. "The sound sources were GigaSampler and Reason, and we used some samples of Egyptian instruments. We mixed the files to .WAVs and put them on an FTP site where Matt could download and audition them."

There are a number of alternate shows built into Tomb for different types of groups. One program is for a typical college/post-college walk-in audience, while another is for corporate team-building events, "where everyone sees that it's the secretary who makes the hard decisions and solves all the puzzles, while the CEO doesn't do anything," says DuPlessie with a laugh. One morning a week, school groups are scheduled and the place goes into "educational" mode: Besides a specialized show, workstations in the café are set up for students to make papyrus and explore hieroglyphics. Of course, each version of the show has its own soundtrack, using different versions and mixes of the tracks.

Tomb is totally automated and totally modular, which makes sense for a show that DuPlessie hopes will be able to travel after its initial shakedown. Every aspect of the show is operated by a self-resetting show-control control system made by AVStumpfl, an Austrian manufacturer of high-end audio/visual systems. The system is made up of multiple modules linked together with Cat-5 Ethernet cable and speaking a proprietary protocol called SC Net. Each module has 16 contact closure inputs, which are programmed to generate commands using the lighting industry-standard DMX protocol to more than 200 different devices.

The show is programmed using software developed by AVStumpfl (for Windows) called Wings, which looks a lot like a music sequencer, in that each show has multiple tracks that can cue other tracks and sub-routines. How and when the various tracks are executed are largely based on user input: What the visitors do inside the tomb. "Dis-



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ney and Universal rides aren't this complicated because they're not really interactive," says DuPlessie. "Tomb gives everyone the illusion of control."

DuPlessie can sit in the middle of his show and program it on his laptop. "We're beta-testing a version of the software for the company," he says. "They've never had anyone do something of this complexity before." When the programming is finished, it gets burned onto a 512MB Flash card, which goes into a slot on the AVStumpf1 system's control module. "There are no crashes, as you would expect if we had a PC controlling everything. That just wouldn't be tolerable."

The lighting is mostly intelligent LD fixtures made by Color Kinetics under DMX control, as are the mechanics, which are handled by dimmer and relay packs from Light Stream Controls. "You know them as 'American DJ,'" says DuPlessie. "They're that company's theatrical arm. It's the highest of the low end." The mechanics are relatively simple: direct-drive electrical motors to open and shut *Star Trek*-style sliding doors between the chambers and a pneumatic system to move buttons, statues and walls. "Air is safer," he explains. "If something gets in the way, like someone's hand, the pressure drops and the movement stops until the obstruction is removed."

Much of the intelligence in the system is distributed. For example, the flashlights winking out are triggered by a single command from the master controller, which starts a routine built into a custom radio transmitter. The transmitter generates various coded signals according to a set schedule, each of which triggers a dedicated chip inside one of the flashlights, which causes that light to blink a few times and then turn off. It looks random to the player, but, of course, it's not. "Everything that can be driven by an on/off control is," says DuPlessie. "It makes it much simpler. Why do you need proportional control?" The complex mechanical systems that drop the ceiling and levitate the Pharaoh's mummy are similarly hard-coded: "The DMX system just says, 'Go.'"

For one of the major effects, input to the system is translated into MIDI: The buttons and touchpads that the visitors interact with are wired to an Alesis D4 drum module, which has eight trigger inputs. "It's the cheapest multichannel MIDI trigger ever made," says DuPlessie, "and it was even cheaper since we got it on eBay." The D4's output goes to a MIDISolutions R8 relay box, which, in turn, feeds the AvStumpf1 system.

The audio is handled by another pair of



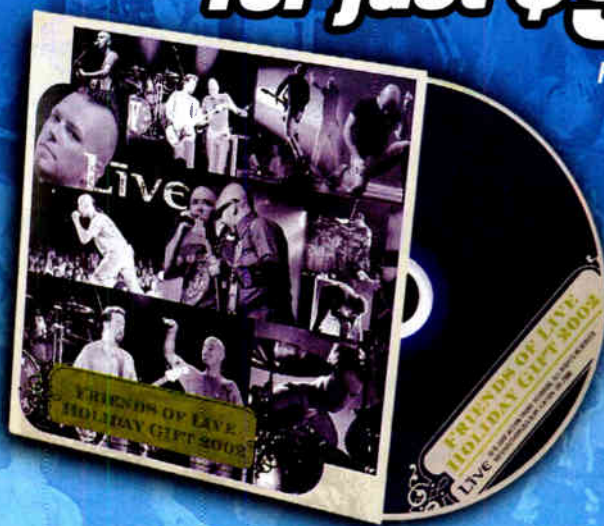
AvStumpf1 modules, Master 16 Players. Each module generates eight stereo pairs under the control of the master system. The output goes through four Crown 660 amplifiers, delivering 24 channels at 60 watts each. The

audio is also stored on the 512MB Flash cards so that it, like the master controller, is essentially fail-proof. To get all of the segments and their individual tracks onto the cards, the files are converted to MP3.

All of the chambers in Tomb have multiple speakers for the music and sound effects, which serve to provide a surround general environment and specific locations for effects. Subwoofers handle the ominous rumbles and other low-end effects, and in the chamber in which the ceiling comes down, bass shakers are installed in the floor, adding to the players' anxiety.

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Surprisingly, except for the amplifiers, almost none of the audio components are from the usual professional sources. "Only recently has home theater stuff become powerful and robust enough for this kind of operation," says DuPlessie. "For these sound levels, home theater speakers work fine. The acoustics are horrific in the Tomb, and there's no way you could EQ these rooms to make them sound better, so under these circumstances, people can't tell the difference between this and high-end audio."

A foot of airspace and 12-inch-thick doors separate each of the rooms from the

others, but there is still plenty of leakage. "Since it's haunted house-style, leakage is okay," explains DuPlessie. "People coming in want to know that it's an emotional experience, and they like to hear the screams of the people in the other rooms. The sound in each room is overpowering enough so that you know what's background and what's foreground."

The speakers DuPlessie and his team decided to use are from Cambridge Soundworks, the consumer electronics company started by the late Henry Kloss and more recently owned by Creative Technologies, cre-

ators of the infamous Soundblaster computer sound cards. Even the subwoofers come from there: 15-inch, self-powered, down-firing Bass Cubes. The floor shakers are from a similar CE source: Car Audio Bass Enhancers from a company called Aura Systems. Sold in pairs, these are typically wired in parallel (through an internal 100Hz active crossover and 100W amplifier) with a sound system's main speakers to provide that added *oomph*. But in Tomb, they are sent their own dedicated track, which is designed to be felt and not heard.

It's not just the low initial cost that attracted Tomb's designers to these components, but also their practicality for the long term. "The usual approach is to make a bulletproof installation in a steel cage," says DuPlessie, "but that's expensive and it can still fail. When a show at Disney goes down, the whole thing is down—they put tape over the entrance for a month while they fix it. Here, I have a shelf with spares of everything in the show, so if something goes down, I just swap it out. And since the show will be traveling, it's important to be able to get spares quickly anywhere in the field. If we have to replace everything two years down the road, that's fine. If I need 20, I buy 25. When I have to replace a box, I just plug in the new one and set its address." Even the lighting control boxes are easily replaceable. It's an eminently sensible approach and reflects the realities of today's electronics marketplace—much like the early adopters of Alesis' 8-track ADAT knew they needed at least four units if they wanted to promote themselves as a 24-track facility.

As a symbol of how the line between professional and consumer electronics has become increasingly vague, the ADAT serves well. But today, the distinction has gotten even more confusing, and as the newest technologies often find themselves in mass-market mail-order catalogs before they make it into our studios, Tomb can be seen as an indicator of where things are going.

Besides creating an exciting new form of entertainment, DuPlessie and his team are valuing replaceability and quick and easy repair over making sure their sound systems are of the highest possible quality. MP3 audio, home theater and car audio speakers are easily good enough for Tomb—and that means, as disturbing as the concept may be to some of us, they're good enough for a lot of things. ■

Paul D. Lehrman prefers his multiplayer games outdoors, preferably using some kind of ball and plenty of beer.

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
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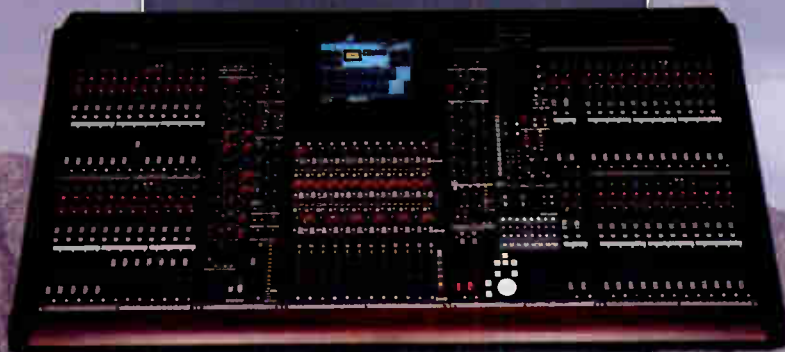
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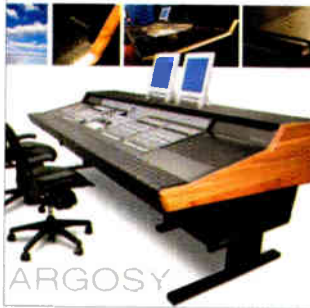
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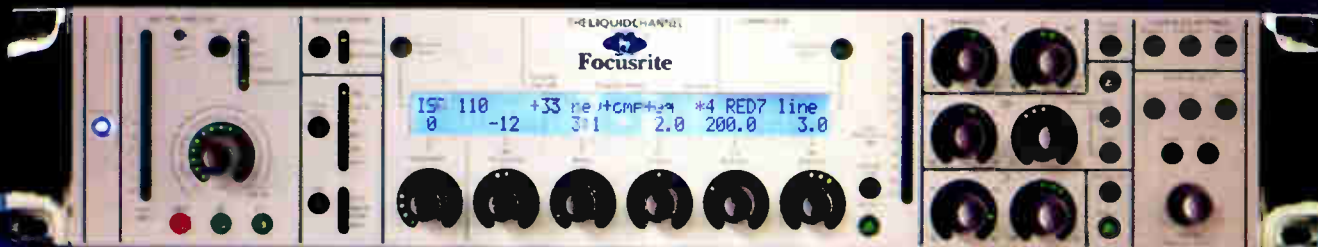
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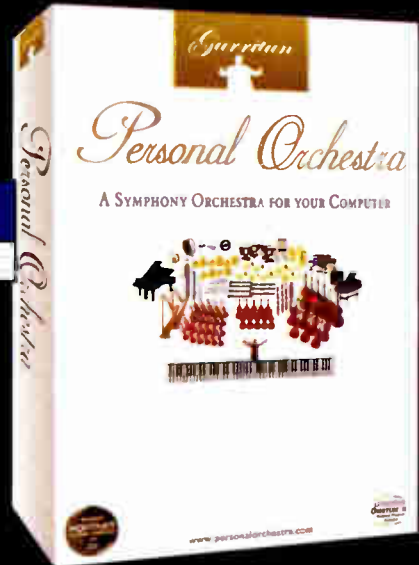


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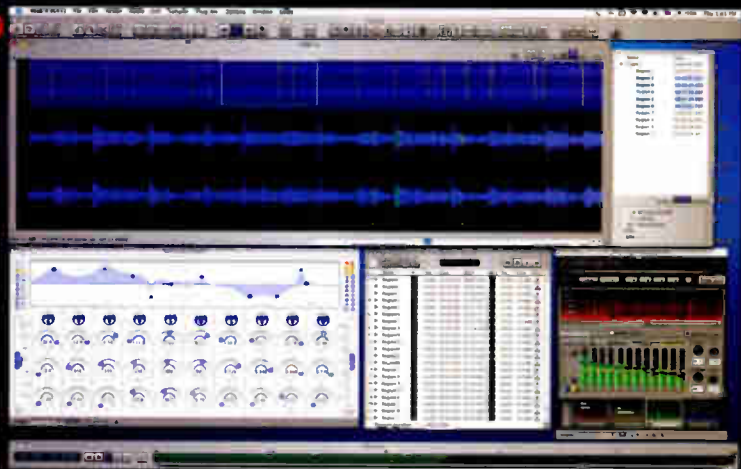
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For mixing "inside the box" or "outside the box" with Digital Performer, the Yamaha O1x gives you the best of both worlds. In fact, the O1x can serve triple duty in a MOTU-based studio as a mixer, control surface and audio interface. First and foremost, the O1x is a world-class 28-channel moving-coil digital mixer with 8 mic preamps, 24/96 A/D converters and total recall. Built on world-renowned 96kHz DSP technologies found in Yamaha's flagship DM2000, 02R96 and 01V96 professional digital mixers, the O1x has massive power under the hood, at an amazingly affordable price. If you choose to mix in Digital Performer instead, the O1x serves as a comprehensive control surface for Digital Performer's mixing environment, complete with motorized faders. And Finally, the O1x can serve as a multi-channel audio interface and multi-port MIDI interface via mLAN FireWire.



Call the DP4 and MOTU experts.

Mackie Control Universal and Extender

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact,

desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on Digital Performer itself.



PreSonus Central Station

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active ICs or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication

solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to deliver a powerful and affordable solution for Digital Performer that will enhance the creative process and ease mixing and music production.



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MOTU Digital Performer 4

Editing Shortcuts and Rhythm Tweaking Tips

Digital Performer 4 from MOTU is one of the most robust DAWs available, featuring formidable audio capabilities coupled with a devastatingly powerful MIDI sequencer. The application is quite comprehensive—with a manual that weighs in at more than 900 pages!—but DP4 can do a lot more than what immediately meets the eye. I'm going to drill down a bit and point out some tricks to help you pull even more power out of Digital Performer 4.

SAVE YOUR CLIPPINGS

Digital Performer 4's Clippings feature is often overlooked, but it can save you time and make your work far more efficient. You can select and make pretty much anything a clipping that will be available to be dragged in to play at any time.

There are Digital Performer or Project clippings available; the former type always appears in the Clippings window, regardless of which project you're working on. The latter variety is only available in the current project. To set up a Clippings window, choose Project>Clippings> and then either New Digital Performer Clipping Window or New Project Clipping Window. Then select whatever you'd like to make a clipping and choose Edit>Copy to Clipping Window. The alternative is to drag things into the Clipping window.

For example, you can set up instruments or effects on the channel's inserts and save the entire stack as a clipping. Then, drag that clipping to any channel on the mixer and the entire stack will appear. You might have frequently used combinations, and it's nice to have them in a "rack" that can be dragged in. One example would be an EQ/compression/limiting combination for use on the master. To do this, once you've established your stack of plug-ins, shift-click on the left edge of each so that all are selected and highlighted yellow. As you move your cursor over the left edge of any of them, a hand-grabber cursor appears, which you can use to drag the whole thing into your Clippings window—a simple but very effective time-saver.



A few of MOTU Digital Performer 4's audio and MIDI treats

LET'S GO CHOPPING

A clever way to come up with nice rhythm synth parts is by chopping a pad rhythmically with a keyed gate. Lay down a pad with the chords of the song played in blocked fashion end to end. (Digital Performer 4's Region>Change Duration command has an Extend Releases to Next Attack option to yield really tight and smooth transitions from one chord to the next.) Put a gate on that synth's audio output with a sidechain set up to receive the input of a bus, say bus 1. Set up a trigger track, most likely a very transient percussion instrument—hi-hats work particularly well. I recommend using a soft sampler.

Send the output of the trigger track to bus 1. Start playback and tap out the rhythm you'd like to hear. You'll need to adjust the threshold, attack and decay of the gate to yield the envelope you're looking for. With that accomplished, you can record the resulting chopped synth while playing the rhythm that you want, or you can record the MIDI that controls the trigger and then quantize to get it perfect or create a groove. This same technique can be used to chop up anything, so don't be afraid to experiment.

DRUM REPLACEMENT THERAPY

Digital Performer 4 has a very slick way to fix awful-sounding drums that can't be fixed with any amount of EQ or dynamics massaging. The Trigger plug-in listens to your audio and triggers a MIDI note of your choice whenever it hears a drum hit. Simply plug Trigger into the snare track, for example, and set up a soft sampler, hardware

sampler or drum module—your choice. Trigger allows you to determine which MIDI note is sent, and thus, the drum sound you'll get. There are also controls for the threshold at which the trigger happens, the duration of the MIDI note and a slider that allows you to compromise between less latency and better velocity tracking. A Retrigger delay also determines the minimum amount of time between triggers. You're not going to get 64th-note triplets precisely right, but for most purposes, this thing is manna from heaven! You'll probably want to record the new drum and then nudge the track earlier in time to compensate for the latency introduced by the triggering process.

POLAR EXPEDITION

POLAR allows you to record one pass after another until you get the perfect take and build rhythm loops very easily. It records into RAM, solving speed issues to enhance the interactive nature of the process. One trick is to overdub new loops of differing lengths over the initial one. You could, for instance, start with a four-bar loop and then set up an overdub to be three-and-a-half bars long. The result is that every time the initial loop plays, the second shorter loop starts at a different place in relation to the original one. You can do this as many times as you want, with loops of different lengths every time. You can even put longer loops over the top of shorter ones. This is not unlike a digital Echoplex, only quite a bit more sophisticated. Robert Fripp fans, take note! ■

John McJunkin is the principal of Avalon Audio Services (Phoenix).

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Digital Performer in the Movies

The Lord of the Rings Motion Picture Trilogy (New Line Cinema)

Howard Shore Composer



"For me, film scoring is a combination of tradition and technology. I write my initial sketches with pencil and paper, but filmmaking today involves a digital world with frequent editing changes. Whether I need to tighten sync on a shot, or conform my original sketch to the latest version of picture, Digital Performer gets me there. At my desk and on the scoring stage, DP is there."

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