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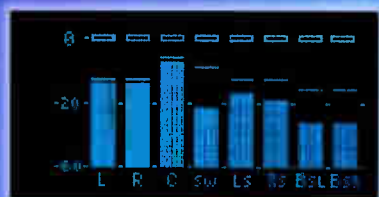


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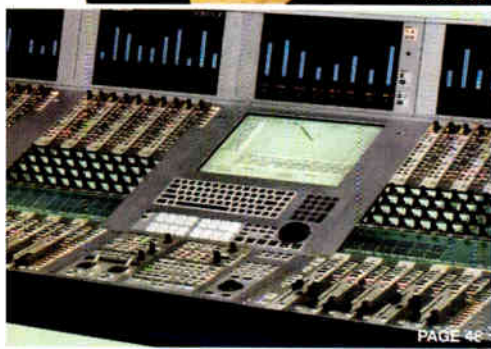
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PROFESSIONAL AUDIO AND MUSIC PRODUCTION
June 2002, VOLUME 26, NUMBER 7



On the Cover: PatchWerk Recording's "Studio 9000" (Atlanta) was designed by Russ Berger Design Group. The facility, features an SSL J 9096 console and Quested 412HM main monitoring. For more about the studio design, see "The Class of 2002," page 42. **Photo:** James Wilson. **Inset photo:** ©Lucasfilm Ltd.



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Top Designers Tackle 5.1

With an increasing number of studios taking on surround work for audio, film and DVD, designers and acousticians are creating a new breed of facility, as well as retrofitting existing ones. Blair Jackson spoke to a handful of top designers to find out how they're meeting the surround challenge.

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Whether you're adding a room or trying to correct an existing acoustical problem, you may want to consider one of the many complete acoustical packages or rooms on the market. Randy Alberts surveys your options.

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Check out the list of products, people and facilities nominated for this year's TEC Awards, to be held October 7 in Los Angeles.

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On May 16, George Lucas pushed the age of digital filmmaking into hyperspace. Larry Blake visits Skywalker Ranch to find out how sound fits with picture in a high-def world.



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The Near-Field Myth

It's been years since I first saw a version of the "Great Lies of Rock and Roll," yet I always get a chuckle from this anonymous document that has been faxed, posted and e-mailed millions of times. Filled with classics such as "This is one of Jimi's old Strats," "We'll have a crew there to help you unload," "It sounds great out front" and "You're on the guest list," the text includes some of the biggest whoppers since the invention of papyrus, when ancient Egyptians first uttered the phrase, "The check's in the mail."

Granted, the music biz can be wacky, but when musicians—and more than a few engineers—get involved in a science such as acoustics, misconceptions and misinformation can result. Sometimes, what starts out as solid science becomes contorted along the way, as is the case with the concept of near-field monitoring. It's a well-known fact that when listening to speakers in the near-field (approximately a meter from the listener), the acoustical effects of the listening environment are substantially reduced. The key word here is *reduced*, but this is commonly misinterpreted to imply the room's characteristics have no effect on the sound during close-in listening. I call this the "Near-Field Myth."

Unfortunately, nothing is further from the truth, especially when the user is high-volume monitoring in the 10x10 or 10x12-foot confines of a typical project studio. In such situations, the room becomes a highly active—and reactive—component in the listening chain. Here, even the finest monitors become highly colored when mid- and LF energy bouncing off the room's parallel surfaces combine with the speakers' direct sound to create an environment that's unpredictable, at best.

The first step to improve stereo or surround listening is to maintain reasonable levels during critical playbacks, tracking or mixing. As a side benefit, lower-level monitoring reduces ear fatigue and lets you work longer—either that day or in your career.

A second step is to experiment with monitor placement. The traditional console-top location for near-field speakers is not always the best. Stands behind the console often provide a better alternative. Tweeters should be at ear level, even if this means placing the monitors upside down. Also, minor variations in the downward angle of the speakers can make a considerable difference by reducing the amount of reflected sound bouncing off the console or worksurface. As for subs? Just remember that they'll couple with adjacent floors, walls and corners.

The third step is treating your room with the appropriate materials that absorb, diffuse or otherwise redirect sounds to eliminate or decrease unwanted room reflections. As a general rule, breaking up parallel surfaces within the listening space will help. However, avoid the novice pitfall of over-dampening the room (covering the walls completely with carpet or foam), because this results in a space that's overly absorptive in the highs, while having almost no effect on the longer-wavelength bass frequencies.

There's plenty you can do to make your studio sound accurate, and hopefully as you peruse our annual studio design issue, you'll find ways to experiment with placement, materials and plain ol' listening. Armed with understanding, let's defeat the near-field myth.



George Petersen
Editorial Director

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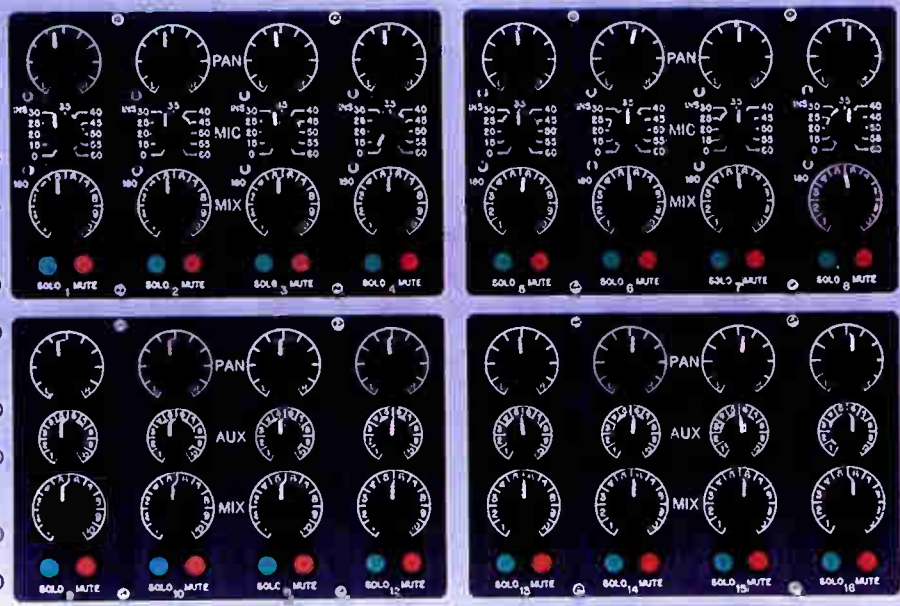
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Letters to Mix



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MARCH MADNESS

I'm a little bugged. Much of the March issue, including the editor's note, was given over to convincing readers that the 48k era is entering its twilight years. In the same issue, Paul Lehrman notes that at his peak, he could hear "up around 22 to 23 kHz," frequencies that can be comfortably recorded with 48k.

So, what is the sonic benefit of huge sample rates? There are plenty of important improvements that can be made to digital recording formats, but this one just seems like pure bulk (twice the data, twice the processing power, twice the storage) for a benefit that is inaudible to humans.

Rather than just publish photos of the new 96k-plus gear, it would've been more useful for you guys to A/B said equipment at 48k and 96k.

Matthew Butterick
Via e-mail

EARS ARE RINGING

I just finished reading Paul Lehrman's latest installment of "Insider Audio" (March 2002 issue), and I felt like I was reading a history of my own hearing symptoms. I've been involved professionally in recording and music since 1974, and have also noticed the high-end drop-off over the years. A couple of years ago, I also noticed a ringing in my ears, which I have learned to live with, and which doesn't seem to affect my ability to do my job as an engineer.

However, I never went to an audiologist about the ringing and have always had a nagging uncertainty about how it was really affecting me. Your article has put me much more at ease with the situation and given me a much better insight into tinnitus. I'm also very curious to read the answers to the questions you pose at the end of the article, as they are the same questions I've asked myself occasionally.

Lee Bargeron
Kismet Audio
Via e-mail

LISTEN CLOSELY

I just read Paul Lehrman's column about tinnitus in March *Mix*. I, too, have developed this damn condition! Like you, I first noticed it after being in a very loud environment. I was surprised to find that there was still ringing the next day, and then became concerned when it did not subside. In my case, the tone is only in the right ear, and is very low in level.

I went to an ENT doctor who is known to handle hearing issues. He was initially suspicious of the loud noise I had been exposed to, but ultimately removed a huge amount of wax from my ear, and the problem seemed to go away. After a few days, however, I realized it was still there. (I suspect the wax had made it seem worse by blocking off outside sounds.) So, I took an audiology test, then went back to the ENT. When he saw that the hearing test was normal, he was pretty confident that ear trauma from noise exposure was not the culprit. The next likely possibility for me is my TMJ. Apparently, the continued tension of the jaw muscles from bite misalignment or other TMJ issues causes stress in the hearing system, as well. This can cause tinnitus; in fact, the ENT says it is the second most likely detectable cause. He did put me on a course of Prednisone, which reduces internal inflammation and sometimes cures the problem, but it did not help.

At this point, I can either consult further hearing specialists, see a dental specialist about the TMJ or do nothing. My investigation into this issue so far has shown that there are many known causes and virtually no solutions—as you pointed out—if the source of the problem cannot be pin-pointed and eliminated. However, the University of Maryland tinnitus clinic was started by a doctor who invented a tinnitus "retraining" program, which is about learning to adapt to the noise until it becomes unnoticeable. It is mainly suggested for people with very severe tinnitus, but I guess anyone can do it.

As a musician and audio professional, I had often thought that this ailment would be the worst thing that could happen, short of losing my hearing altogether. I'm sure you have had similar thoughts about whether it would get worse, whether your hearing would fail, etc. Fortunately, I only notice the tone when I am in a very quiet environment or my ear is covered. It does seem to vary in level, but not in pitch. This has one good side: I can now have a kind of "virtual" perfect pitch by having a reference note in my ear!

I also had similar thoughts to yours about

the people who practice audiology and hearing medicine. I felt as though I knew more about sound than the person doing the tests and probably more than the ENT, as well. In fact, I had to ask to have some tones tested that lie between the octaves they normally use (also topping out at 8k, I believe). I began to think about what it means to be a medical practitioner who deals with the sense organs; they really need to know a fair bit about the physics connected to the sense, as well as the biology.

Eric Wenocur
Lab Tech Systems
Via e-mail

CILETTI DIGS DEEP

Just a note to let you know how much I have enjoyed Eddie Ciletti's articles and reviews. His in-depth knowledge of electronics and curious nature add considerable credibility and interest for me. I have always thought that reviews of products that basically "parrot" the specifications from a manufacturer's brochure and then say, "It sounds great!" were pretty useless. Ciletti is not afraid to dig in (or shall I say, stick an oscilloscope probe into) these products and actually show us what is going on. It is a real learning experience that helps me to understand why a product works, which is very important to me.

Charlie Fox
Via e-mail

THE TRUTH ABOUT TUBES

I am somewhat confused by the article "Sweet and Warm," which I assume was supposed to be a review of "top-of-the-line" microphone preamplifiers (April 2002).

How did *Mix* come to compare \$300 to \$700 units like the Behringer and Bellari with the \$2,000-plus Avalons, Millennias, etc?

This whole "tube" business has been a wonderful marketing tool for so many manufacturers, and I don't doubt that some of these so-called "tube" units make a marked improvement in some users' recording chains. But those of us educated readers know—or should know—the difference between a true tube preamplifier and one that simply puts a 12AX7 with 50 volts or less on its plates between a couple of IC's or transistors.

Chuck Kirkpatrick
Via e-mail

Send Feedback to *Mix*
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NAB 2002: FAIRLIGHT ACQUIRES INTELLECTUAL PROPERTY OF DSP MEDIA

Fairlight announced at NAB 2002 the acquisition of the intellectual property of DSP Media, which includes DSP's V-Motion and A/V-Transfer products.

"When DSP Media ceased operating, Fairlight was presented with the opportunity to acquire A/V-Transfer and V-Motion, which we were sure would complement our current offerings and bring value to our customers around the globe," said Kim Ryrie, executive director of Fairlight. "We have been fortunate to have DSP's core R&D team come onboard, including founder Joseph Narai. Existing DSP customers are supported by a third-party company based in Australia, and while we

have been able to provide some limited support, we are not in a position to continue development on DSP's Legacy editors."

DSP founder Narai commented, "Just as DSP was getting established globally, our funding was withdrawn, so the logical step for us was to work with the Fairlight team."

Fairlight launched new releases of A/V-Transfer and V-Motion as company-branded products at NAB 2002.

For more, visit www.fairlightesp.com.au.



Kim Ryrie, Fairlight executive director

BENEFIT CD ORIGINATED IN MOTU USER GROUP

Blue Dove Music, an international, Internet-based group of musicians and recording industry pros, released a collaborative music CD entitled *September Rising*. The group was created by professionals chatting on the MOTU User Group, MOTU-Mac.

"More than 100 musicians, composers and audio engineers from 13 countries, collaborating almost exclusively over the Internet, donated their

time and talents to create the moving, challenging music featured on *September Rising*," said Blue Dove spokesman Trond Bjornard.

The members of Blue Dove donated all the composition, performance, recording, audio mastering, graphic design, marketing and distribution, and MOTU donated the funds to manufacture the CDs. Inveni, an Internet provider, helped out by donating Website hosting and

technical assistance. Anichini, an importer, manufacturer, wholesaler and retailer of luxury accessories, provided support for Web-related costs.

September Rising CDs can be purchased at www.CDBaby.com; audio samples are available at www.SeptemberRising.com. All proceeds will be donated to the N.Y. Firefighters 9-11 Disaster Relief Fund.



HEARING LOSS INDUSTRYWIDE



A tech works in one of the mobile testing units at last year's NSCA show.

15% TO 25% OF AUDIO PROS AFFECTED, SCREENINGS SHOW

Preliminary results released by the House Ear Institute show a noticeable pattern of hearing loss experienced by music and audio professionals.

HEI offered free hearing screenings to attendees at the 2001 AES convention and at this year's NSCA and NAMM shows. At AES, an average of 15% of those tested were diagnosed by certified Occupational Safety and Health Administration technicians as having mild to serious hearing loss; hearing deficits were found in 26% of attendees at NSCA and 25% at NAMM.

"Our observations indicate that people who install audio systems or who are constantly subjected to amplified music are more likely to have hearing loss than sound engineers, who appear to be more aware of controlling sound in their environment," said Dilys Jones, director of marketing at HEI.

For more, visit www.hei.org or contact HEI direct at 213/483-4431.

SOUND WITHOUT BORDERS

With all the talk about bit rates and sampling frequencies, it's easy to lose sight of the fact that sound is first and foremost a means of communication. Dr. Fred Mednick, founder of Teachers Without Borders, knows that, and he's been making use of basic recording technology to improve the lives of villagers in Third World countries.

TWB is a nonprofit organization whose goal is to bring education and improve living conditions in remote parts of the world. Sound, Mednick found, can bridge the gap between illiterate villagers and government assistance agencies.

"We call it 'Village Voices,'" Mednick explained. "We have set up tele-centers so that kids can go out to the villages and collect information about what they want and need—how do I cure diarrhea, this guy is ripping us off for fertilizer, what's a good price for pineapples, or what do we need to do during these next two weeks to prepare for monsoon season? The kids record their voices, return to the tele-centers, look up information on a Website and report back. Sound is the bridge, and the tele-centers extend the reach."

Mednick has set up programs in India and, with the assistance of TWB board member Jane Goodall, in Costa Rica. This month, he was expecting to be in Nigeria, where the government had signed up 140,000 teachers for training and cultural exchange.

Future plans include a weekly Webcast to update teacher training and certification, a benefit album and a companion project with Pulitzer Prize-winning photographer Phil Borges to focus attention on the problems of poverty and illiteracy.

For more information, or to donate equipment or services, visit www.teacherswithoutborders.org.

—Tom Kenny



Fred Mednick recorded Jane Goodall in Costa Rica on the Korg PXRA.

SKIP SAYLOR RECORDING AMPLIFIES REACH WITH DEVONSHIRE STUDIOS

Hollywood-based Skip Saylor Recording has expanded northward with its acquisition of Devonshire Studios (North Hollywood). The three-room facility, which has hosted the likes of Tom Petty, Roger Waters, Ozzy Osbourne, Nirvana and many others, has reopened as an all-SSL facility. (Currently, Studio 3 boasts an 80-input SSL G-Plus Series, and Studio 1 is fitted with an SSL Axiom-MT.)

While Saylor/Devonshire's studios have been cosmetically upgraded, little else was altered. "Most of the acoustics were excellent," Saylor noted. "The monitoring is where we spent our time. Our goal is modern monitoring with classic acoustics. We want to upgrade and enhance while preserving what was good."



Songwriter/producer Damon Thomas (left) and producer/engineer Harvey Mason Jr. take a break in Saylor/Devonshire's Studio 1.

ON THE MOVE

Who: Jeff Pallin

What: senior VP/COO, TOA Electronics

Previous Lives:

- 2000-2002, VP of sales and marketing, TOA
- 1998-2000, VP of marketing, TOA
- 1992-1998, director of marketing, TOA
- 1992-1993, marketing manager, TOA
- 1991-1992, commercial sound sales and marketing manager, TOA
- 1990-1991, business sales manager, TOA
- 1988-1990, marketing manager, University Sound
- 1984-1988, managed a sound contracting firm in Chicago
- 1984, received Masters in Business at Boston University
- 1978-1982, pro division sales management, Bose



Jeff Pallin

Main responsibilities: I am the first American (or "local staff," as our parent company says) to be responsible for the entire U.S. operation: sales, marketing, product development and administration.

If I could do anything else as a profession, it would be... I have always dreamed of teaching history or mathematics at the high school or college level.

The one piece of advice that I would give to aspiring music industry professionals would be... Become wedded to concepts, never to issues. Fix problems, not blame, and always offer an apology before you offer an explanation.

The moment I knew I was doing a job that I love was... The first real sales job I had in a music store in Madison, Wisconsin. I remember how it felt to make my first big sale. It was a very expensive acoustic guitar, and the customer was almost as excited as I was about his decision to buy that guitar.

Currently in my CD player is... I am trying to rekindle my interest in playing music. Naturally, I am listening and re-listening to anything that Duane Allman ever recorded.

When I'm not in the office, I enjoy... I cook, clean and sew for my two sons. I try to read, and I do spend lots of time with friends and family, including a lady who amazes me every time we talk. I am a serious cyclist. I train at least 20 hours a week, race road and track, and placed sixth in Match Sprints in 2001 at the National Championships in Seattle.

A BIG BAND GRAND OPENING



The Shed (New Orleans) kicked off its grand opening with a big band recording produced by Maynard Chatters and Ron Black. Engineering was by Ron Black. The band was made up of members of the New Orleans Preservation Hall Jazz Band. The CD is expected to be released by mid-summer.

Way too much excitement in one room: Maynard Chatters, left, Ron Black, center, and Mark Chatters.

"BLACK HAWK DOWN" AMONG MPSE WINNERS

The Motion Picture Sound Editors (MPSE; www.mpse.org) held its 49th Annual Golden Reel Awards, honoring outstanding achievements in sound and music editorial for the year 2001, on March 23 at the Century Plaza Hotel in Century City, Calif.

Some of this year's big winners were: *Black Hawk Down* (Best Sound Editing in Feature Film for Sound Effects/Foley and Dialog/ADR), *Amelie* (Best Sound Editing in Foreign Film), *Atlantis: The Lost Empire* (Best Sound Editing in Animated Feature Film), *The Lord of the Rings: The Fellowship of the Ring* (Best Sound Editing in Feature Film, Music) and *Shrek* (Best Sound Editing in Animated Feature Film, Music).

For a list of all the winners, check out www.mpse.org.



Beaming with pride, the winners in the "Best Sound Editing in Feature Film, Dialog/ADR" category for Black Hawk Down. Back row, from left: Mark L. Mangini, dialog editor; Zack Davis, ADR editor; Christopher Hogan, supervising dialog editor; Per Hallberg, supervising sound editor; and James A. Williams, ADR editor. Front

row, from left: Karen Baker, supervising sound editor; Stephanie Flack, dialog editor; Anna MacKenzie, supervising ADR editor; Kimaree Long, dialog editor; and Michelle Pazer, ADR editor.



NOTES FROM THE NET

Sneaky court rulings: The Ninth U.S. Circuit Court of Appeals, in late March, ordered Napster to remain offline until it can comply with an injunction that demands it remove all copyrighted material from its service. However, the same appeals judge ordered that the major record labels must supply Napster with documents that disclose copyright infringement...Napster hasn't been online in many months; instead, it has concerned itself with creating a paid online music service. Kazaa has beaten Napster to the punch. Riddled with copyright-infringement complaints, the file-trading network announced a legal, paid subscription service with assistance from Double Click, an Internet advertising company. Kazaa will come embedded with software that allows companies to deliver ads straight to your desktop. No online date was given.

It's not my responsibility: As more and more online music delivery services make their legal debut, the old adage of government vs. big business roars throughout the music industry. The topic: Should the government become involved in, or even spearhead, the initiative to add copy-protection to all media: CDs, DVDs, videotapes, MP3s, etc.? Copyright owners seem unsure about how to proceed. One proposal (dubbed the Security Systems Standards and Certification Act) offered by Sen. Fritz Hollings, D-S.C., requires that computer manufacturers install software, dubbed "policeware," that will essentially rat out consumers who save/download illegally copyrighted material. Co-sponsors of the bill include Ted Stevens (R-Ala.), John Breaux (D-La.), Bill Nelson (D-Fla.) and Dianne Feinstein (D-Calif.). If caught, users can face a penalty ranging from a \$500,000 fine to five years in prison. For more in-depth coverage, check out this month's "Insider Audio."

MARSHALL STILL ROCKIN' AT 40



At the recent Marshall Amplification 40th anniversary party, Mark Martin, director of North American marketing and expansion of SAE, presents Jim Marshall with the Lifetime Achievement Award.

Jim Marshall, who is celebrating his 40th year in the amp business, received a multitude of honors and congratulations during an anniversary party at this year's Winter NAMM show. Pictured, Marshall receives the first Lifetime Achievement Award from SAE Institute for his impact on the music industry and the history of modern music.

Marshall told Reuters at this year's Musikmesse convention, "I'm reckoned to be the only living legend that started the business and is still running it. But I'm just me. I always remember my roots. I came from a very poor family. I never had any education at all."

As British rock 'n' roll boomed, Marshall started making amplifiers in 1962, an essential prop for many guitarists who performed in front of a "wall of speakers."

A ROSE BY ANY OTHER NAME

...would not be this year's C.A.S. Lifetime Achievement Award winner. Pictured at this year's annual Cinema Audio Society Awards Banquet on March 9, sound designer and editor Kay Rose, whose 54-year career includes some of the great classics of cinema (*The Pit and the Pendulum*, *New York, New York*, *The Prince of Tides*) is presented with her plaque.



Industry News

Bringing 17 years of pro audio experience with him, **Philippe Delacroix** is the new managing director for digital audio network solutions company **Digigram** (Montbonnot, France) ...**Meyer Sound** announced the appointment of **Guy Lejune** as managing director of **Meyer Sound Benelux** (Brussels, Belgium), which was opened in January 1999 to serve the technical and sales needs of the European market...**DMOD** (Boston), a provider of secure distribution solutions for the digital arena, has brought on the expertise of **Thomas Ohanian** (Academy Award winner and two Emmy Awards for his role in inventing Avid's nonlinear editing systems) for the position of VP of product development...**David Glaser** is the new audio designer and mixer at **Henninger Media Services'** Washington, D.C.-



Philippe Delacroix



David Glaser



Rich Nevens

based post-production facility...**SADiE** (Nashville) reported these new corporate appointments: **Jeff Giedt**, VP of marketing and new-business development, and **Gary Rosen**, VP of sales for **SADiE U.S.**...**Gerard Volkersz** will assume responsibility for all Fairlight and Soundtracs sales operations west of the Mississippi as **Fairlight USA's** (New York City) director of sales, Western region...Without a CEO for the past year, **Tonos** (Culver City, CA) has promoted **Justin Herz** to that post...With 12 years of **Audio-Technica** (Stow, OH) experience under his belt, **Tracy R. Brefka** is the new sales manager for professional products...**Alcorn McBride Inc.** (Orlando) has announced the formation of **Alcorn Marketing GmbH** (Eislingen, Germany), which will provide sales and tech support for audio, video, show control and lighting products throughout Germany. **Steffan Herzer**, former Alcorn McBride product specialist, will head the new company. In other company news, **Chris Steinwand** is the new director of marketing...**Euphonix's** (Palo Alto, CA) Western U.S. sales director for the past 12 years, **Rich Nevens** now takes on the executive VP of sales for the Americas post...**CDAI** (Atlanta) has added **Matthew Cornwell** as an acoustics and testing services specialist... Adding to its Canadian rep team, **Bag End** (Barrington, IL) has added **The Topp Group** (Delta, B.C.) to represent the company in western Canada. In other distribution news, **ADAM Audio Monitors** (Berlin) announced that **McCave International** (Lafayette, CA) is the company's exclusive distributor in the Americas...**Middle Atlantic Products** (Riverdale, NJ) has promoted **Michael Cukrow** to marketing communications manager.

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MIX LOOKS BACK



For Mix's 25th anniversary this year, we begin looking back at where we started. Here are the Number One albums and singles from *Billboard*, June 1977, with special props to the engineers, producers and studios who make the magic.

NUMBER ONE ALBUM



For the third consecutive month: *Rumours*, Fleetwood Mac. Producers: Fleetwood Mac, Ken Caillat, Richard Dashut. Engineers: Ken Caillat, Richard Dashut. Mastering: Ken Perry, Ken Caillat. Studio: The Plant (Sausalito, CA).

Richard Dashut. Mastering: Ken Perry, Ken Caillat. Studio: The Plant (Sausalito, CA).

NUMBER ONE SINGLES



KC and the Sunshine Band's "I'm Your Boogie Man." Producers: Harry Wayne Casey, Richard Finch. Engineers: Richard Finch, Milan Bogdan.

Studio: Sunshine Sound Enterprises (Miami).



Fleetwood Mac's "Dreams." Producers: Fleetwood Mac, Ken Caillat, Richard Dashut. Engineers: Ken Caillat, Richard Dashut.

Mastering: Ken Perry, Ken Caillat. Studio: The Plant (Sausalito, CA).



Marvin Gaye's "Got To Give It Up (Pt. I)." Producers: Marvin Gaye, Art Stewart.

TEC AWARDS NOMINEES ANNOUNCED, L.A. OPEN SELLING OUT

The Mix Foundation for Excellence in Audio has announced the 18th Annual TEC Awards nominees, on page 66. Voting ballots will appear in subscriber copies of the August issue. Meanwhile, the Mix L.A. Open will be held June 10 at the Malibu Country Club. Confirmed sponsors at press time include Audio-Technica, Emtec Multimedia Inc., CE Pickup Co./Industrial Acoustics Company, Design FX, Disc Marketing, QSC Audio Products, Record Plant, Royaltone Studios, Shure Incorporated, Signet Sound, TC Electronic, The Village and Warner Bros. Studios. For more information, contact Karen Dunn, tournament director, at 925/939-6149 or KarenTEC@aol.com.



BOOK CORNER

The Making of a Drum Company is an autobiography by Bill Ludwig II, patriarch of the Ludwig Drum Company (www.ludwig-drums.com). Available through any Ludwig dealer or direct from The Selmer Company. Orders can be placed via fax at 800/458-2982, or by phone at 800/348-7567. Retail: \$20.

CORRECTION

In April's story on Sphere Studios, the caption to the photo on page 42 should have read: "The mixing room [Studio Two] is equipped with an SSL 9000 J, which features 6-channel compressors and 5.1 alternate-speaker switching." *Mix* apologizes for the error.



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DAVID KAHNE, M-POWERED.

Producer of Paul McCartney's
new album *Driving Rain*.

Photo: www.webersmith.com

David Kahne is one of the most trusted producer/engineers in the music business. In fact, David's ears are so good that it seems everyone wants to borrow them. Paul McCartney did for his latest recording, *Driving Rain*. David has also loaned his lobes to the likes of Shawn Colvin, Sublime, K.D. Lang, Fishbone, Soul Coughing, The Bangles, Sugar Ray, and Matthew Sweet - just to name a few.

Needless to say, people take notice of David's choice of audio cards. David uses the M-Audio Delta 1010 audio card in his studio. The critically acclaimed Delta 1010 has become a staple item in pro studios because of its ability to thrive in so many environments. From Mac to PC, from audio/sequencing programs to soft synths and soft samplers, the Delta 1010 is the card increasingly found behind the scenes. (The slim price tag helps, too.)

All of M-Audio's Delta audio cards offer low-latency drivers, clearly superior fidelity and compatibility with today's most demanding audio applications. Whatever your needs, M-Audio makes a card that fits your budget and exceeds your expectations of what a digital audio card can be. A Delta card and your favorite program will form a system that challenges everything your ears know about professional-quality sound.

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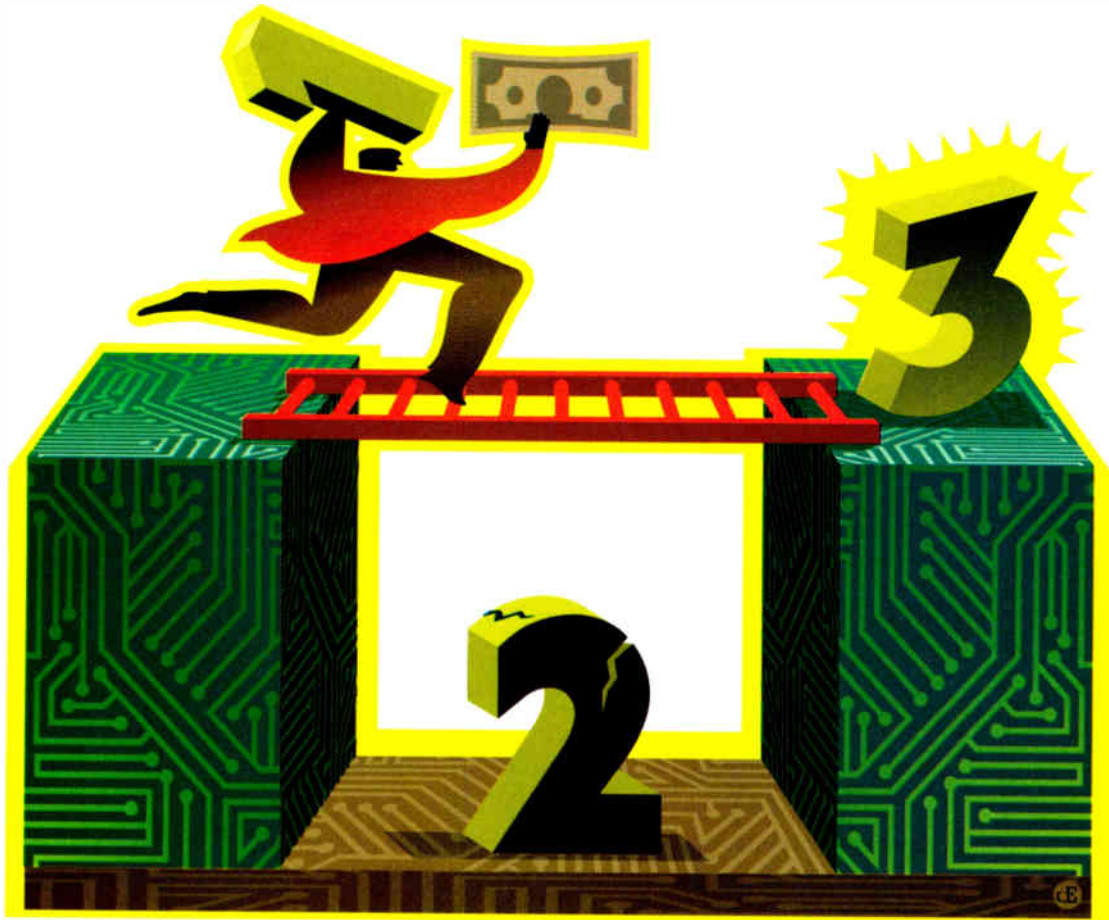


ILLUSTRATION DAVE EMBER

Travel with me to yesterday, specifically to that day when some guy was entering command-line instructions to get WordStar, or maybe even Electric Pencil, to make a bold paragraph header somewhere within his little 130-pound CPM personal computing space heater.

Across the room, his buddy was busy tweaking the newly retrofitted solenoids on their cool Now-Converted IBM Selectric golf ball. A lowly electric typewriter mere weeks before, it now literally hummed and buzzed with empowerment. Linked to the Monster Computer by ribbon cables and serial connectors, this imposing now-printer was a shockingly impressive step up from the standard dot-matrix machines everybody else was using. This, the world's final player-piano, was a huge improvement. It brought the quality of a computer-printed page up to that of a human-typed page. No longer would we, the word-processing few, be exposed and embarrassed by a geeky, inferior 5x8 dot, pin-fed final product. We could now masquerade as educated, pro-

ficient typers who knew how to format a page properly, and even knew how to spell! No one would ever again know that our perfect pages, with their 50 invisible corrections, came from a computer.

Even as I...Sorry, even as that guy was struggling to get the words "Time-Modulator Patch Sheet" to appear in bold Tron green on the one-ton screen, he had this sort of thrilling yet guilty feeling—you know that feeling you get when you make technology do something powerful and new, but unnatural and inhuman? When your experiments finally yield results so profound, yet so wrong, that you keep looking out the castle window for signs that the villagers have figured you out and are on their way with torches. You know what I mean, right?

Yes, while the acrid, arcing smell of success filled their nostrils and the clacking of solenoids filled their ears, the haunting knowledge that they were doing something unearthly that would never, ever be undoable filled their heads. They knew it was wrong, but they *had* to do it.

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Like a Broken Record

The RIAA Tries to Outrun the Hackers



ILLUSTRATION DAVE CUTLER

Remember the saying, “You sound like a broken record”? You used it when you wanted to shut someone up who was saying the same thing over and over again. Its origin, of course, is from the (first) days of vinyl: When the stylus encountered a crack, a scratch or a piece of dirt, it would get knocked into the previous groove, so the same little bit of music would play forever. Today, of course, that would be considered an artistic choice, but in the days when the preferred mode of music playback was strictly linear, it was highly annoying.

Ironically, nothing sounds more like a broken record these days than the record industry itself. Like a needle stuck in a particularly irksome groove, the major labels are once again howling that record sales are being killed by piracy. If it all sounds very familiar, it's because we've been here often: When analog cassettes became a major delivery medium (thanks in large part to Henry Kloss—see below), when DAT machines were struggling their way onto the market (and failing) and when Napster was getting a million hits a minute, the record companies were making the same dire prediction.

This is not to deny that *something* is going wrong in the record biz. The revenues of the five major labels that control the RIAA (and it recently almost became four, but for reasons that are about to become obvious, nobody seemed to be interested in buying EMI) were off last year, for the first time in a long time. But to put the entire blame on piracy ignores the fact that we really did have a recession, particularly in the music-loving high-tech sector; plus, we were targets of terrorist attacks, both real and imagined, which put a severe damper on commerce in general, especially of the leisure kind.

And let's not forget that minor accounting problem EMI had when it sacked Mariah Carey: Barely nine months after giving her the fattest recording contract in history, it bought her out, taking a \$49 million hit. Then, it cut 1,800 jobs to cover it and announced it was pulling its stake out of music retailer HMV. You gotta love this business.

Armed with dubious surveys that point to billions of dollars being lost because of teenagers downloading Limp Bizkit tracks from Napster and its more lawsuit-proof descendants Kazaa and Gnutella, the music con-

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glomerates late last year took a bold step toward protecting their bottom line by introducing a new business paradigm: They started to put out—you knew this was coming, right?—broken records.

Several million compact discs have been issued with some kind of “protection” designed to prevent their audio from being extracted by computer CD-ROM drives. Four companies have developed copy-protection technologies for audio CDs, and some of them are very clever, but they all share some rather serious problems. One is that the discs don't seem to work on a fairly significant number of audio CD and DVD players, as well as Sony Playstations. Another is that a lot of computer drives, especially DVD-ROMs, have *no* trouble reading them. And a third is that according to the folks who own the trademark, these discs are no longer CDs.

Most of the action so far in this brave new world of musical copy-proofing has been in Europe. A spokesperson for one developer, Midbar Tech, which is based in Israel, says that this is because European nations are ahead of the United States in terms of both writing copyright laws and enforcing them—and in terms of the inci-

dence of piracy. Something like 15 million of the discs have found their way into stores so far. Avex, Japan's largest indie label, recently signed on as the first label in that country to use protection, while in the States, as I write, there are only two encoded CDs available: the soundtrack from the movie *The Fast and the Furious* and Charley Pride's *Tribute to Jim Reeves*. The

Hackers might be able to get through one level, but it's unlikely they'd get through all of them.

—Marjie Hadad

former uses Midbar's Cactus Data Shield, and the latter uses MediaCloq technology from Phoenix-based SunnComm. Another developer is Macrovision, whom you may remember from its vertical-drive-suppressing copy-protection system for videotapes.

So how do they work? Well, they can't

suppress a sync signal on an audio CD, because there ain't none—PCM digital audio is self-clocking. Nor can they notch out a piece of the audio spectrum, the way some old and unsuccessful systems tried to do, because that would be painfully audible and consumers wouldn't stand for it. And they can't take advantage of the SCMS-bit idea that killed the domestic DAT market, because there are far too many computers out there that wouldn't know a SCMS bit if it (pardon the expression) bit them on the ATA.

The systems use one or more of three basic techniques. One, they deliberately put errors in the audio data, based on the idea that audio players, with their relatively robust error correction, are much more tolerant of media errors than data drives are. Two, they scramble the directory and the header (.cda) files so that the computer looking to rip the audio can't find the tracks. Three, they put non-audio data tracks on what are supposed to be audio discs, with the idea that computers will glom onto the data tracks and not see the audio tracks. One radio engineer reports that on a Michael Jackson promo CD re-

—CONTINUED ON PAGE 175

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Grammy Award winning producer Greg Ladanyi recently completed a DVD A remix of Jackson Browne's *Running on Empty*. He relied on the sonic quality and real-time audio manipulation of Nuendo to bring this unique classic to life in 5.1 surround. "To try creative things without having to stop the music allows me to play Nuendo like an instrument. It's the most creative way to work."

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Surround Solutions

By Blair Jackson

In the world of studio design, form follows function, so it's not surprising to learn that the hot-button topic in that universe currently is surround control rooms: With an increasing number of studios taking on surround work for audio, film and DVD, designers and acousticians have found themselves creating a new breed of control room, as well as retrofitting existing ones, to accommodate engineers' up-to-the-minute needs.

Recently, we spoke to a handful of top designers to find out how they're meeting the surround challenge: Carl Yanchar of Wave:Space, John Storyk of the Walters-Storyk Design Group (WSDG), Francis Manzella of FM Design and Martin Pilchner of Pilchner Schoustal International.

5.1...SON OF QUAD!

It was, to quote that esteemed guru, Yogi Berra, "deja-vu all over again" when Carl Yanchar and Wave:Space were brought in to do a complete overhaul of Glenwood Place Studios in Burbank, Calif. Yanchar was involved in the original studio's design on that site 30 years ago. Back then, it was Kendun Recorders, which enjoyed a long run as a top Southland facility; more recently,

it was known as Front Page. And when it came time to rework the control room for Glenwood Place's so-called "Stealth" surround mixing studio, which is based around a Euphonix System 5, Yanchar already had a leg up, because that room was originally designed as a Quad mastering room back in the day.

"It was a completely symmetrical room, like two really good stereo rooms back to back," Yanchar says. "It was also the first Hidley room that had 360-degree trapping around it. Still, even though it was an existing room, we effectively tore it down to the shell—it's 26 feet by 26 feet—and rebuilt it, primarily because the ceiling of the original room, which had been modified over the years but had one of the old-type compression ceilings, had to go. Now it has what you might call an expansion ceiling, because the angle tilts upward from the monitors, which changes the reflections from the low frequencies and, depending on the geometry, some of the midrange, as well." There have also been major aesthetic changes, stripping away the dark-walnut hardwood and replacing it with maple and lighter fabrics throughout.

The room was designed with surround music mixing in mind, rather

than audio post, and Yanchar notes, "That's one of the decisions the client has to make: What their primary market is. For music, the preference is to have the five primary speakers equidistant from the mixer, like it was in Quad. In fact, some people don't really use the center speaker, so it's very much like Quad. Whereas in film and TV, there is the so-called ITU standard, where the surround speakers are basically 110 degrees, so they're closer to the side of you than behind you, which, obviously, doesn't work too well for music.

"Because of the different standards, it's difficult to build something that's truly multipurpose without compromising one or the other. Often, they don't use the same type of speakers, because you probably want to use matched full-range speakers for music; and in film and TV, the surrounds are sometimes just smaller subsets of the same series. Sometimes not even that. There are even some places that are putting in multiple surround speakers so they can switch back and forth to accommodate both situations."

At press time, Glenwood Place had a second 5.1 mix room about to go online, this one based around an SSL 9000 K. "That was also a Quad room originally, and also a square exterior shell," Yanchar

Top Facility Designers Tackle 5.1

says, "so we didn't have to do anything radical to the shape of the room or anything. We just added the center speaker and the subwoofers...well, actually, it required a bit more than that, but it definitely made the job easier because it had already been a surround room before."

BIGGER IS BETTER

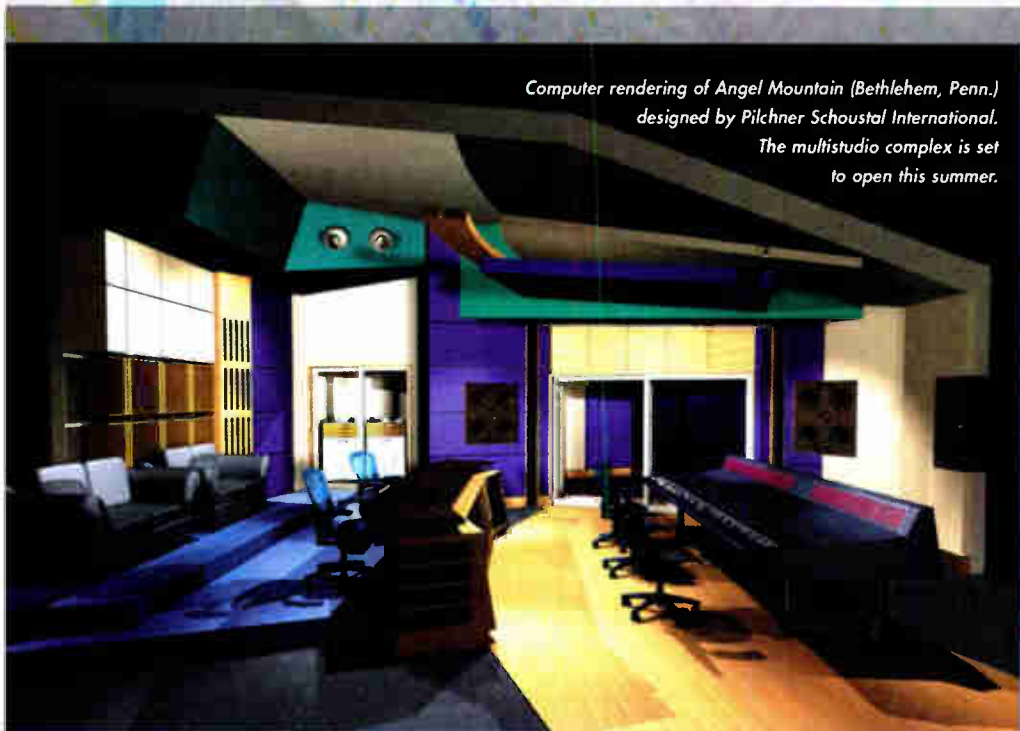
"We've done stereo rooms that are converted to 5.1, and built surround rooms from the ground up," says John Storyk. "Designing a 5.1 environment from scratch is a lot easier. You get to *not* make certain mistakes. You're more in control of surface reflections, particularly with respect to the rear surround speakers."

"In general, it's easier to get a 5.1 environment to work in a larger room, or in a room where you're more in control of the geometry. WNET [in Manhattan], for instance, is not a particularly big room, but because we were able to orient the room sideways and have the sidewall boundaries splayed in excess of 20 degrees of center, we did not run into harsh first-order reflections from these surfaces, even though they are glass. Although most post-production rooms have little or no glass, this is not the case at WNET. 5.1 environments that are also used as tracking rooms, thus often requiring a great deal of glass in the front of the room, pose the most difficult challenges. Mid-high-frequency ray reflection software can assist in predicting exact boundary angles.

"But, again, bigger is going to help you. It's also going to help you with low frequencies, because your first-order standing wave is going to be lower because the longest dimension is bigger. This is the easiest argument for a bigger room. But it's expensive; it costs money to build, you need bigger speakers, etc."

When converting a stereo control room to a 5.1-ready environment, Storyk says, "The first thing we have to do is check the location of the surround speakers. Typically, the stereo rooms will be set up with

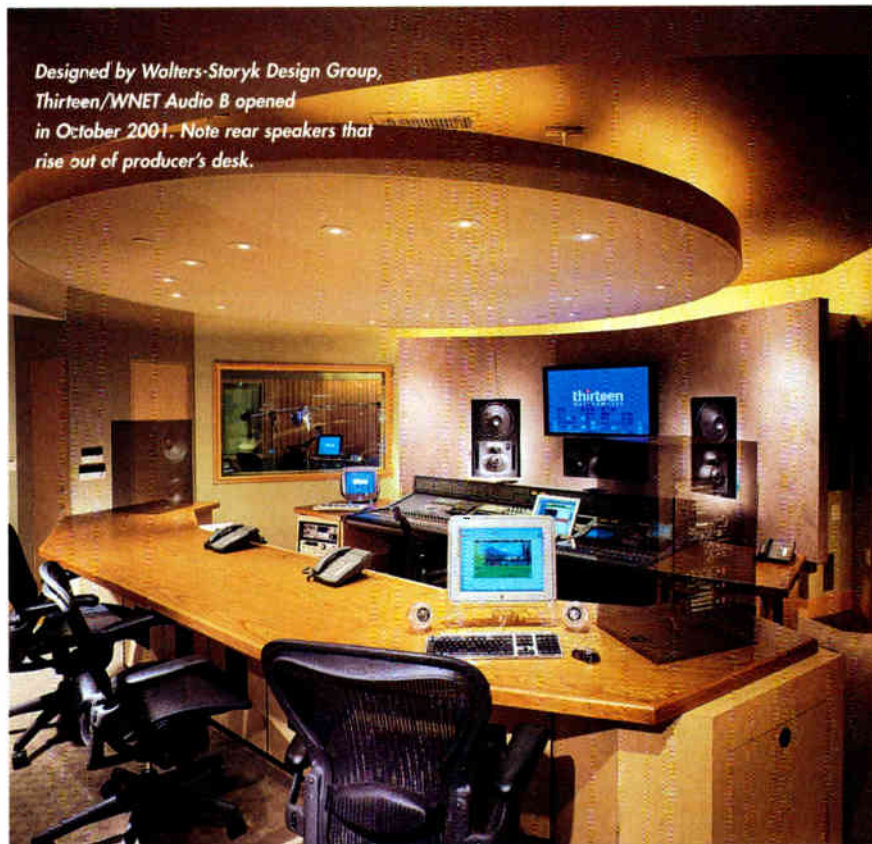
Computer rendering of Angel Mountain (Bethlehem, Penn.) designed by Pilchner Schoustal International. The multistudio complex is set to open this summer.



Surround Solutions

left and right at about 30 degrees off-axis, so chances are, we're not going to have any problem with them. The center channel is in the center, obviously. There, the only issue might be the exact placement of the speaker vs. a video monitor or screen of some sort. Is the center channel fighting for the same space as the plasma screen or video monitor? The best solution is a projector with an acoustically transparent screen; however, cost, size and noise sometimes prohibit this solution. At Lower East Side, for instance, we had a screen with a projector. At Carter Burwell's studio, we put the audio monitor in the prime center location and just put the plasma screen up a little bit; his thinking was, 'Hey, I'm most concerned with the audio mix, not the video image.' If you look at the ITU specs, they permit the rear surround to come up just a little bit. That helps if you have a plasma or big TV in the front, because now everything is being aimed down. Although at Mi Casa [Bob Margouleff's mastering facility in Los Angeles, designed by WSDG], Bob was very strict about having the monitors all at the same ear level. There are arguments pro and con. They can get away with it because they have a very, very big room. As your room gets smaller, and you start getting more machines and more reflections and more glass, it gets a bit more difficult to accomplish."

The WNET project posed another in-



Designed by Walters-Storyk Design Group, Thirteen/WNET Audio 8 opened in October 2001. Note rear speakers that rise out of producer's desk.

PHOTO: WOLSCHE-TAKAYAMA

teresting problem to Storyk "because the only place for the rear speakers was the exact same space as the keyboard location in the production area desk. So what we did was have the speakers come up on motors. When they want to work in 5.1, they come right out of the rear desk; it's the first time we've done that, but it was the only way to solve the problem. The speakers wanted to be where something else needed to be. So how do you do two things at the same time?" Problem solved

SWEET SPOT(S)

"I think by now most people have figured this out," says Francis Manzella, "but four or five years ago, when the whole 5.1 thing was just starting, something that people hadn't really become attuned to is that when you're setting up surround monitors, the most important part of the equation, other than having five speakers that are basically the same, is having five speakers that are the same distance from you. What people very commonly do is put three speakers across the front, and so they end up with a center speaker that is significantly closer to them than the left and right speakers. What this does is shorten the path length, and everything you put out of the center speaker seems forward of everything else; it seems to be standing apart from the rest of the mix in a more present way. Well, guess what? It's arriving at your head anywhere from a millisecond to two milliseconds earlier than everything else, and that's going to make it more prominent. As a result of this, some people were shying away from the center speaker."

Manzella adds that the best way to configure for the speakers is to think of the listening area as a circle, and each speaker is located equidistant at a point on that circle. The infamous sweet spot, then, is in the middle of that circle. Creating the perfect circle, though, depends on more than



Egan Media Productions control room A was designed by Francis Manzella of FM Design, and opened in July 2001.

PHOTO: GEORGE ROOS

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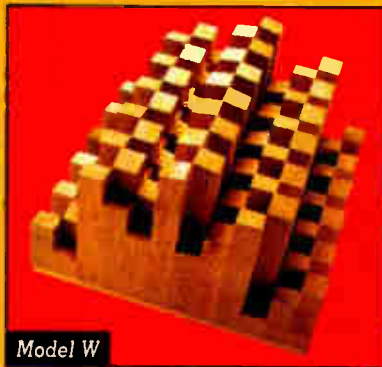
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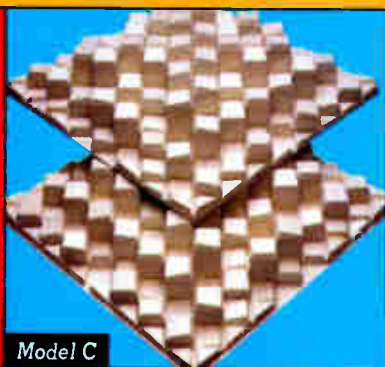
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mere whim: before you even worry about reflections, there is room geometry to think about, and such other concerns as the size of the console in the room.

"You'd always define a sweet spot in a stereo room somewhat based on the size of a console," Manzella says. "If you're going to have to slide 10 feet across the console to make adjustments and you're listening on giant monitors, we would opt for a larger stereo triangle that focuses slightly farther behind the console than if you had a Mackie 8-bus and a couple of Genelecs. One of the things with 5.1 is there really only is one sweet spot—I think there is only one seat where you can make critical decisions about balance and timbral decisions when it comes to 5.1. That said, I also believe—trying to remove my critical hat for a moment, and a lot of my clients have pointed this out to me, as well—that even if you're sitting *behind* the surround speaker in a good-sized room, you can still perceive that there are multiple sources, and I think there is some experience to be had beyond the sweet spot. Just as in stereo, if you're not sitting pretty close to the middle—if you're standing off to the side of the room—you're going to miss a lot of the subtle depth of imaging and the subtle panning, but that doesn't mean that you can't still tell that there are two speakers and there is program spread across those two speakers.

"As far as designing 5.1 rooms, it's like taking the stereo rooms and raising it by a factor, because now instead of two sources to be concerned about reflections from, there are five. Most of our clients are still doing primarily stereo work. Most are doing a little surround and want to be prepared for a larger amount of surround.

"Obviously, it's going to be different designing a room just for mixing and designing a 5.1 room attached to a recording room. The real world of music recording studios is if you've got a room for musicians, you're going to have glass. There's a whole psychology about glass: What we try to do with our designs is eliminate as much of the barrier as possible between the control room and the musicians by extending the size of the window beyond what may be necessary for visual contact, to make the musicians feel like they are not being looked at

Photos by Robert Wolich

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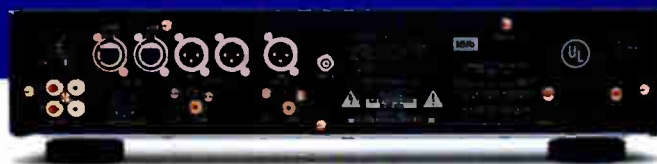


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through a porthole; not feel so separated from what's going on in the control room. The more you make it feel like one big working environment, the more comfortable everyone is going to be. So we're always trying to break down the psychological boundary between the control [room] and the live room.

"But, of course, glass is very reflective, and when you've got surround speakers projecting forward, that can be a problem. We do everything we can to position surround speakers and control the size and angle of the glass in the front portion of the room to minimize early reflections from the surround speakers. It can be difficult. I'm not aware of any solutions that work for all situations. We have the same problem with near-field speakers that are not in the wall, because then you have sound diffracting around the back of these speakers and splashing off the glass. I haven't been able to angle the



Wave:Space-designed
Glenwood Studios'
"Stealth Room" opened
in August 2001.

PHOTO: EDWARD COVER

glass to make them completely go away. So it's all a matter of degree and cautious compromise.

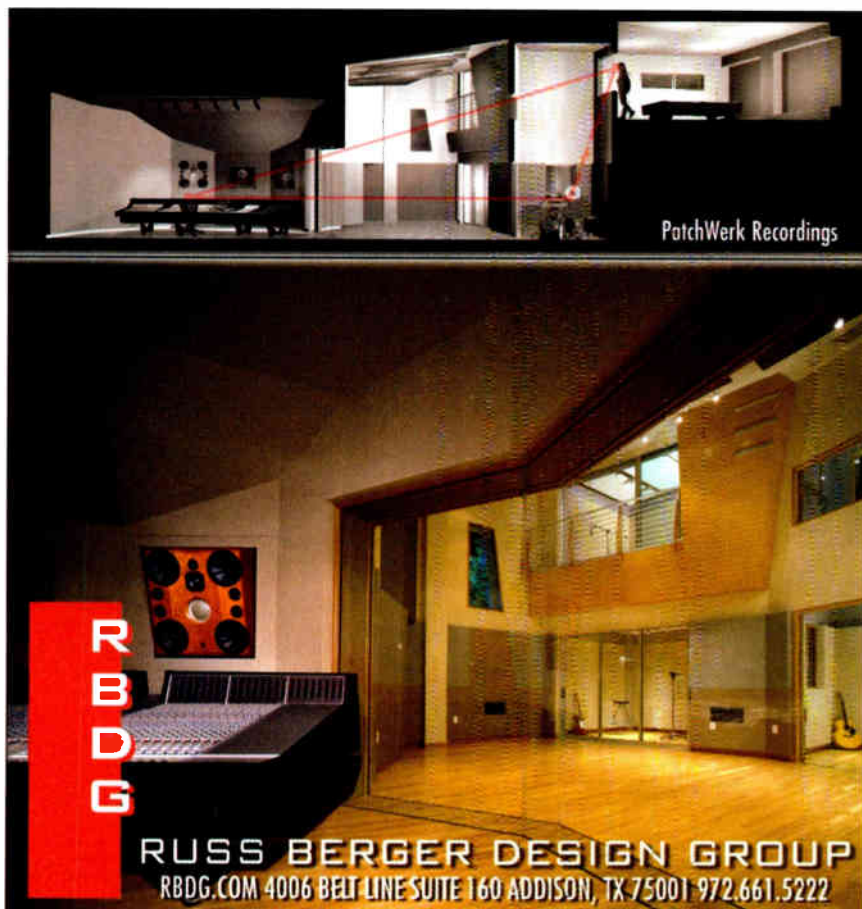
"One of the things we've been experimenting with in freestanding speaker environments is actually making a version of a diffuse return system for the front of the room, the way we do in the back of the room, so that the surrounds are not

just orphan children sitting on the sidewalk. Over at Sterling Sound, all the front parts of the rooms were considered as carefully as the rear parts when it comes to steering reflected sounds into diffuse devices. The diffusers are not visible—they're hidden behind fabric—and the sound gets to them in a different way than the sound gets to the rear diffusers from the main front speakers. We have side walls and doors feeding the rear diffusers, but in the front, we have reflections off the floor and the angled glass in the front of the room that steer sound from the surrounds into the diffusers. We didn't have that luxury at Egan Media, because the front of the room is full of equipment, monitors and glass. But we did play the angles of the glass carefully to avoid as much as possible early reflections from the surround speakers.

"Another interesting thing about Egan [Media] is that we have a much higher ceiling in the front half of the room than we do in the back. That was dictated by the building, but we designed into that and made it a feature, if you will, so the rear part of the room is damped down. We still have diffusers and trapping going on in the back half of the room, but the ceiling is much lower and the lighting is different. Technically, you're out of the listening area, but it still sounds nice and pleasant back there, at least in stereo."

Like a lot of designers these days, Manzella's company now builds its own custom monitor systems—The Griffin loudspeakers—specially tied into the control room design, "but a lot of my clients still have a strong predetermination about their equipment," he says.

Manzella notes that 5.1 has been good for the business and good for recording,



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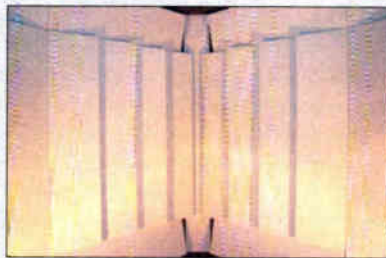
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ther where the picture or where the glass should be.

"Also, in a film-style mix room, where you have three speakers lined up flat across behind the screen, you have to think about the screen interaction, which influences the sound a little bit. There is cancellation that occurs between the screen and the speaker based upon the distance between them. If the center speaker is pushed back to align the time domain, this cancellation changes frequency, which, even on a good screen, is audible on an A/B. So what we end up doing is keeping the speakers in the same relationship with the screen distance and applying a slight digital delay for the time domain—like a 1-millisecond delay—pushing that center speaker back, and it satisfies both conditions. This was carried out with great success in a film mix suite at Deschamps Studios in Toronto.

"The better control rooms have some depth. If you've got a small room and you're cutting corners, then you can't put the rears where they need to be, and then you end up having to use delays, which is not the end of the world but isn't ideal, certainly. If all the conditions are right, you should be able to close your eyes and pan a source through all the channels and not have it change tone, only position. An imbalance in room treatment, speaker coupling or speaker loading will work against you in this regard.

"Another important factor in room design is providing enough LF damping. This was always an issue in stereo control rooms, but now is compounded by firing five mains and a subwoofer. To properly monitor the low end, there has to be enough treatment to keep it in context with the rest of the system. Cinemas have been dealing with this problem for years."

Pilchner Schoustal has extensive experience designing surround environments—another recent project was the overhaul of two control rooms at Phase One in Toronto—but Angel Mountain clearly represents the high end of the technological spectrum. "It's going to be quite a facility," Pilchner says with characteristic understatement. "They want to make it truly state-of-the-art. They should be very competitive."

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The Class of 2002

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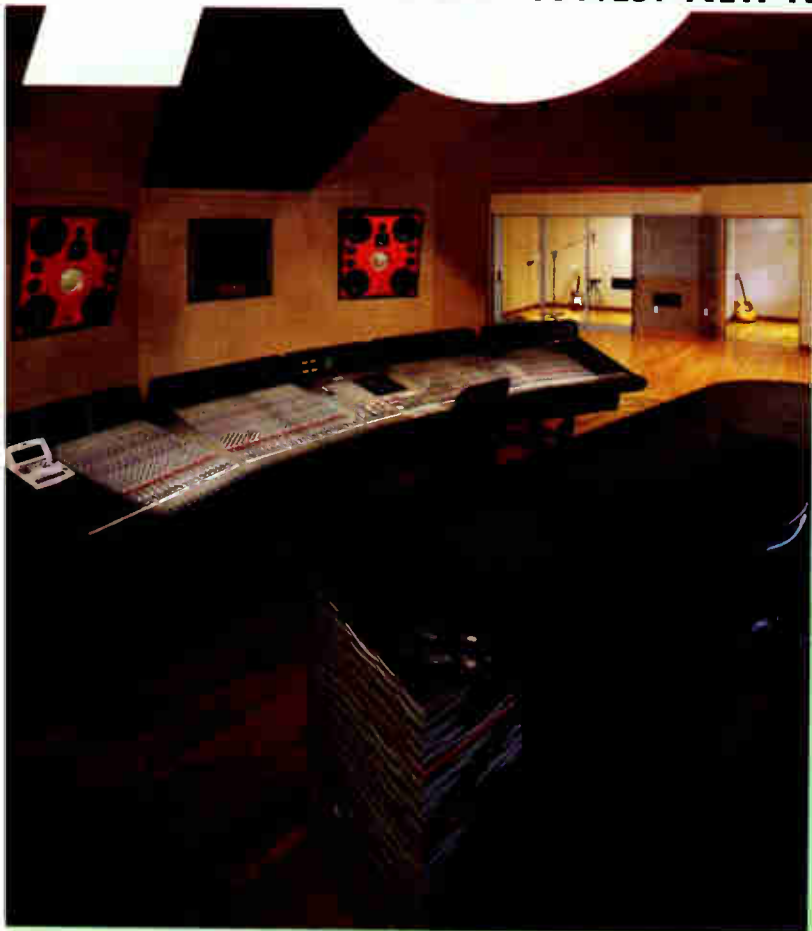


PHOTO: JAMES WILSON

On the Cover: PatchWerk Recordings

Completed in July 2001, PatchWerk Recordings' (Atlanta) new "Studio 9000" was designed by Russ Berger Design Group. PatchWerk was founded in the mid-'90s by Bob Whitfield, a pro football player for the Atlanta Falcons who is also a musician. The facility was built into an existing warehouse that required extensive reconstruction to become both aesthetically and sonically suitable as a studio. Of primary importance to the design process were the size and sonics of the control room, and sightlines from that room into all of the recording spaces. "The area we had to work with is very tight," explains Berger. "The SSL that's in there is over 18 feet wide. We had to allow room, obviously, to get around it, and to provide an area of good listening all the way to the end of this console."

A corner window provides views from the control room into three iso booths as well as the main recording room. Berger says that in the big room, the client needed "an open, airy sound for certain instruments, like percussion, but because they also do a lot of rap and hip hop, they need certain instruments, when they're pushed way forward in the mix, to be very dry so they have absolute control. So, we have a booth that offers that, and there is an alcove area in the studio that allows them to get that really dead, dry sound, but both of those spaces can be used to speak into the main space." Featured equipment includes the large SSL 9096J console, Quedest 412HM main monitors, a Lexicon 960L digital effects system and three Alesis ADAT XTs with BRC. Recording is to Studer A827 24-track, 2-inch recorders and Pro Tools 5.1.1.

Sony Music Studios Tokyo

Sony Music Studios Tokyo is one of the largest ground-up, high-end studio facilities of recent years, with five recording studios, 12 mastering suites and nine authoring studios housed in a single building. Designed by studio bau:ton with Tokyo-based architect/contractor Obayashi Corporation, it opened in May 2001. Equipment of note includes TEC:ton TTH-1 soffited far-field main monitors, with Tannoy SGM-10 and Yamaha NS10M nearfields. Recording is to Sony, Euphonix and Studer machines. Studios 1, 2 and 3 feature Neve 8872 consoles; Studio 4 houses a SSL 9072 J; and a Euphonix System 5 is at work in Studio 5.

PHOTO: KAZUMI KURIGAMI





PHOTO: PILO SCHOUSTAL

Global Fusion

Opened in April 2002, Global Fusion's (Monterrey, Mexico) new room, El Cielo, was designed by George Newburn of Studio 440. The room is equipped with a 72-channel SSL 9000 J Series Super-Analogue Console with SL 959 surround monitor section, Genelec 1035 (LCR) and 1038 (L/R rear) monitors and a Genelec 1094 sub. The room also features two Studer A827s, Pro Tools Mix|24 CUBE and HD192, and Otari RADAR II. Its main room is large enough to fit a 50-piece orchestra; other features include three iso booths, two lounges, a full kitchen and countless amenities.

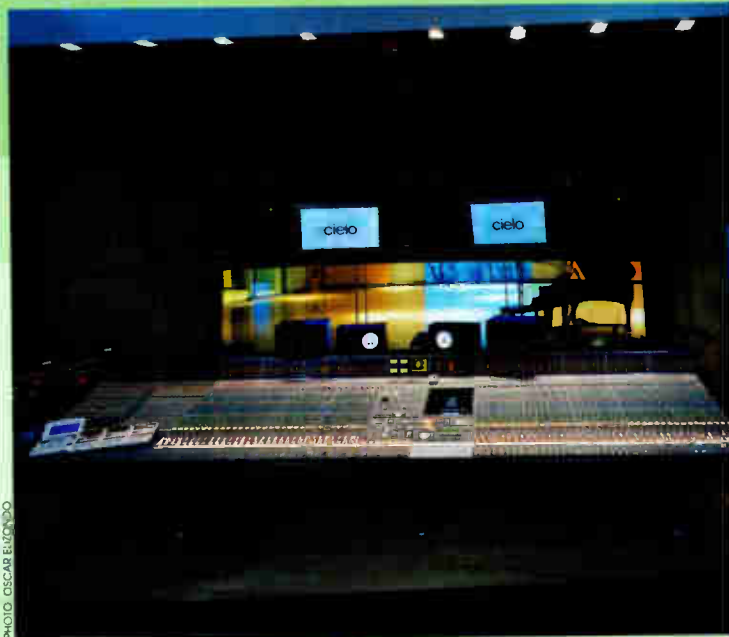


PHOTO: OSCAR ELIZONDO

Crunch Recording Group

This new room for the Crunch Recording Group (Toronto) was a redesign of an existing space by Pilchner Schoustal International Inc., incorporating new ceiling systems and treatment, and mechanical systems and video projection addition. Room treatments feature RPG Diffusors mounted in an array located in the rear wall's LF trapping. A window provides natural light into the space. The room reopened in March 2002, with marquee gear that includes Digidesign Control|24, M&K 2510P 5.1 surround monitor system and Soundminer Network with 200,000 effects.



PHOTO: EDWARD C. COLVER

Soundmirror

Soundmirror is a mastering and post-production facility that specializes in location recording of acoustic and classical music, as well as post-production for music mixing/editing and CD mastering, and SACD recording and editing. Based in Boston, the facility brought in Tom Horrall of Acentech to build its new Studio D, which opened in September 2001. Featured gear includes a Sony DMX-R100 console, Pyramix PCM and SACD workstation, and B&W loudspeakers.



PHOTO: JOHN URBAN

Mi Casa Multimedia Inc.

Los Angeles-based Mi Casa Multimedia Inc., a two-room, home theater-style facility, was designed in association with the Walters-Storyk Design Group, with additional acoustical consultation by Waterland Design's Vincent Van Haaff. Located in a 1928 Spanish Revival house formerly owned by actor Bela Lugosi, each room is identically equipped with a Sony DMX-R100 digital mixing console, a TC Electronic System 6000 multichannel processor, Z-Systems Detangler Pro 64x64 digital audio routers and a SADiE Artemis 24-track workstation. Open in late October 2001, the facility is seeing a large amount of high-profile 5.1 DVD mixing and mastering work. Shown: The Livingroom.

The Class of 2002

Salmon Peak Studios

The warm, creative vibe at Salmon Peak Studios (San Antonio, Texas) is in large part due to the design by Jack Piercy of Acoustech Studio Services, with system design by RB Blackstone of Sound Madness. Features include a control room with a vintage Neve 8232 console, coupled with a spacious tracking room and five iso booths (pictured). Monitoring is through soffit-mounted, JBL-modified UREI mains, and Genelec and Yamaha near-fields. Recording is to MCI/Sony JH24 2-inch 24-track analog, as well as 24 tracks of Pro Tools|24 MIXplus. The facility opened in December 2001.



PHOTO: VERRON WENTZ



PHOTO: MARLISE MIZERA PHOTOGRAPHY

Avenue Edit

New York City-based Janson Design Group's work for Chicago's Avenue Edit's new 7,500-square-foot audio post-production facility included three identical 750-square-foot audio post rooms, two with large iso booths and the third with a Foley stage. Each room is equipped for 5.1, and has a custom production station featuring a Euphonix System 5 digital console and an integrated Fairlight MFX3 Plus workstation. Speakers are Genelec 1037B (L/C/R), 1019As for rears and a 1094B sub. Video projectors are Sony VPL-VW10HT. The facility opened in July 2001.

Firehouse Recording Studios

Constructed in the livery of the 1889 Firehouse (Pasadena, Calif.), this facility was founded by producer/songwriter Tena Clark. Designed by Studio 440 with integration by Paul Cox, the 5.1 studios not only house the 48-track Pro Tools HD192 system, but also offer classic analog equipment, vintage mics and a Bösendorfer grand piano (pictured). Composer Mark Mancina has set up a satellite studio within the facility.

PHOTO: MICHAEL GARLAND



PHOTO: JOHN BRIGLEVICH

Crossroads Productions

Crossroads Productions (Vancouver, Wash.), designed by Russ Berger Design Group and opened in February 2002, boasts a Neve 5315 console with a Geoff Tanner 24x2 custom monitor section. Utilizing the exterior slot windows, a low-frequency quadratic residue diffuser forms one of the wells in the mathematical diffuser series. The room is capable of recording to Otari MX-80 2-inch, 24-track and 3M M79 half-inch, 2-track, as well as Pro Tools MIXplus. The Crossroads studio also doubles as a choir rehearsal room for Crossroads Community Church.

PHOTO: JAMES F. WILSON



Sonica Recording

Built into a 1920s-era building, Sonica Recording (Atlanta), completed in the fall of 2001, was designed and built by John and Steve Briglevich. The single-room facility features a custom API 3232 console, Studer recorders, Pro Tools MIXplus, and an extensive list of mics, outboard gear and musical instruments. The studio also boasts Equitech balanced power throughout. More than 100 tons of sand was used in the massive masonry wall structures of the facility.

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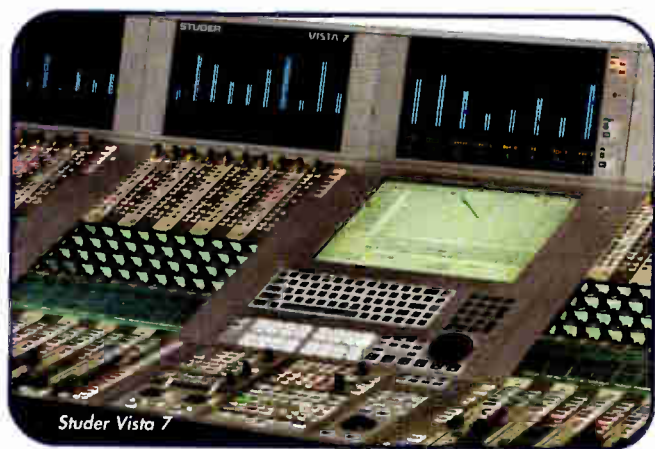
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BROADCAST AND

Product Hits of NAB 2002



From April 6-11, 2002, tens of thousands of broadcasting and production professionals made their annual pilgrimage to Las Vegas for the National Association of Broadcasters convention. The word "broadcaster" has become far-reaching at these conventions, with 950,000 square feet of technologies for traditional radio/television uses, coupled with tools for film and video production/post-production, audio creation, multimedia, the Internet, satellite and telecommunication applications.

After years of upwardly spiraling attendance, NAB 2002 was slightly off—reportedly 15% to 20% down from last year—but exhibitors we spoke with felt the quality of the showgoers was quite high, with fewer "tire-kickers" and more serious buyers looking to upgrade or expand their production capabilities. Certainly, one bright spot was the unveiling of the new South Hall, which nearly doubles NAB's available exhibit space. Populated by key anchor destinations, such as Sony, Apple, Microsoft, Avid, Digidesign and Dolby, the South Hall was NAB's hotbed of activity, just as the Sands Expo Center had been several years ago during the multimedia boom. This year also marked NAB's farewell to the Sands, as all of next year's NAB exhibits will be located in the EVCC, making this large show much easier to digest.

Audio releases at conventions tend to run in cycles, with products such as microphones, tube outboard gear or near-field speakers advancing and receding in the consciousness of the audio public. This time, the focus seemed to be on consoles, software and solutions for multichannel delivery, digital broadcasting and/or networking applications. Here are a few that caught our eye...

BIG BOARDS!

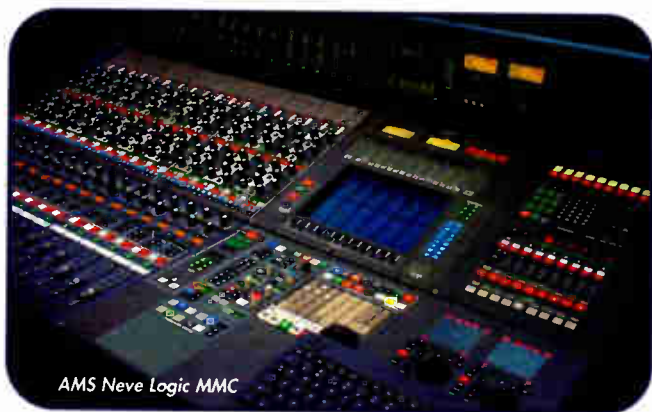
The most talked about console at NAB was Studer's (www.studer.ch) Vista 7 Digital Mixing System, which uses

Vistonics™ technology and incorporates rotary and push-button controls that protrude through a flat-screen display, resulting in a fast, non-fatiguing worksurface. A stunning achievement in ergonomic design, Vista 7 allows multiple channel strips to be almost instantly ganged or shifted for easy access, while the operator has full control—even mid-session—in determining whether switches (such as mutes, solos, talkback, etc.) can act as latching or momentary controls. This 96kHz/40-bit, internal-resolution console is available in configurations from 20- to 70-channel faders, and standard amenities include Autotouch Plus automation (also available for Studer's flagship 950 console), virtual surround 5.1 panning with motorized joysticks, machine control and a simple one-finger I/O routing matrix.

SSL's (www.solid-state-logic.com) XL 9000 K Series made its public debut at NAB. Designed specifically for the needs of DVD-Audio, SACD and surround sound mixing, this high-performance analog console (SuperAnalogue™ engine) includes discrete, low-noise preamps, ultrawide bandwidth and an advanced approach to surround panning. For more details on the K Series line, see the March 2002 issue of *Mix*.

Intended for post, film, DVT and music production, the new Logic MMC console from AMS Neve (www.ams-neve.com) is based on the popular Logic 2 digital audio console, but combines features from its legacy of music and DFC film consoles. Designed to provide the familiar work environment and Encore automation used in its VR, Logic and DFC consoles, the board adds a new suite of 96kHz-capable I/Os, DFC-style monitoring, full machine control and up to 500 signal paths available at 48 kHz.

Finally, Fairlight showed its DREAM console for music and post, which was sneak-peaked at AES in December. Other big news at the booth included the announcement that the company had acquired the intellectual property of DSP Media (namely, the A/V Transfer file exchange utility and V-Motion



By Sarah Jones and George Petersen

BYOND

random-access video) and had resuscitated Lightworks, the editing package with more than 2,100 loyal users still out there.

BROADCAST CONSOLES GO AFFORDABLE

With ever-lowering prices and second-generation designs, a number of console manufacturers showed new products targeted toward the growing middle-America station market. The Calrec (www.calrec.com) Sigma 100 offers many of the features of its larger Alpha 100 board, but in a smaller-format package with 5.1 and stereo monitoring, Dolby E

integration and mix-minus outputs. Wheatstone (www.wheatstone.com) covered both bases by launching its new high-end D-8000 console, as well as the more affordable D-4000 that is based on Wheatstone's popular D-5000. The 96-channel Max Air from Euphonix (www.euphonix.com) shares the technology of the company's award-winning System 5 flagship, such as an integral MADI router, touchscreen control, onboard diagnostics and a wide range of I/O options—MADI, AES EBU, S/PDIF, TDIF, ADAT, Pro Digi and Pro Tools digital. Harrison (www.glw.com) unveiled a new version of its top-end TVD digital broadcast console, the



Kamesan on location

TVD-SL, which offers the same power but doubles the number of physical input faders. Harrison also introduced the Pro950-EX, a compact analog board for on-air and post duties. Soundtracs (www.soundtracs.com), distributed in the U.S. by Fairlight, showed the DS-3B, a digital broadcast console based on its successful DS-3, and offered in 24- or 32-fader worksurfaces with touchscreen control. Like its sibling, the DS-3B can mount its DSP sections either in the board's central leg assembly or up to five meters away in a standard 19-inch outboard rack.

SMALL BUT MIGHTY

HHB (www.hhbusa.com) is now distributing the Kamesan (www.kamesan.info) line of audio film/broadcast products. Kamesan has developed quite a following among NHK producers in Japan since its inception 30 years ago, and location audio products now available in the U.S. include the flagship KS-342 (4-channel) and KS-T2000 (3-channel) mixers, as well as the KS-6001 4-channel submixer/expander and KS-6002 4-channel EQ/compressor. Also new from Kamesan are the Moni Cough KS-4320 remote mic pre/monitor, the KS-1017 Lip Sync Checker and its companion piece, the KS-1018 Video Kachinko.

VIDEO POWER!

No getting around it: Audio needs to know video. A big hit at the show was Media 100 (www.Media100.com) and its Genesis-Engine, which provides real-time image and signal processing of concurrent effects on simultaneous video and key streams. On the audio side, Genesis can support four channel pairs of AES EBU. Media 100's new 844 x system offers real-time image processing with 10-bit internal resolution for creating complex and layer-intensive audio/video content.

SIX PICKS YOU MIGHT HAVE MISSED

With six exhibit halls packed with goodies, there's no way anyone could see them all. Here are some cool debuts you may have overlooked...

M&K Professional (www.mkprofessional.com) redefines the meaning of surround sound with the MPS-422 "Wraparound" multichannel monitor, a U-shaped array of speakers designed to fit around a standard 19-inch broadcast monitor. Add in M&K's LFE-5 bass-management controller and a subwoofer, and you have a complete, compact, multichannel listening package.

Dolby's (www.dolby.com) LM100 Loudness Meter is an analysis tool that addresses the ongoing problem of loudness inconsistencies, enabling users at any point in the broadcast chain to subjectively measure (and hopefully eliminate) the loudness differences between various broadcast materials, programs or channels.

Switchcraft's (www.switchcraft.com) Model 555 EZ Norm 96-point TT patchbay has tiny, screwdriver-accessible switches between the upper and lower jacks, enabling the user to easily reconfigure any jack pair for normaled, half-normaled or full-normaled operation. A variety of rear configurations are available, including solder lugs, EDAC multipin, punchblocks or wire-wrap interfacing.

Terrasonde's (www.terrasonde.com) Digital Audio Toolbox combines a digital signal generator, jitter meter, level meter, bitstream analyzer, clock/sample counter, error display, distortion meter, digital cable tester, Sony 9-pin tester and much more, with ADAT, S/PDIF (co-ax and optical), AES/EBU and Word Clock I/Os, along with analog outs and Dolby 5.1 digital and video sync inputs.

Audio Accessories (www.patchbays.com) demoed 48- and 96-point digital audio patchbays with 110-ohm, self-normalizing TT cord patching on the front panel and 75-ohm BNCs on the rear. A 75/110-ohm balun built into each jack keeps everything operating at AES-3 standard for longer cable runs, less distortion and a 300MHz bandwidth.

SRS Labs (www.srs technologies.com) turned heads with its BPP-02 Broadcast Phase Protector, a simple-to-use, 2-in/2-out stereo processor that allows the accurate reproduction of any stereo program material without any loss of center-channel voice information—regardless of any phase reversals in the distribution chain following the BPP-02—including the listener's home!

The Apple (www.apple.com) booth was jammed with attendees clamoring to check out demos of Cinema Tools for Final Cut Pro, which supports film cut lists and 24-frame EDLs, providing video editors an affordable path to online hi-def finishing. Apple was also showing DVD Studio Pro 1.5, which is now optimized for OS X, with MPEG encoding and the ability to set chapter markers in Final Cut Pro.

Microsoft's Windows Media (www.windowsmedia.com) booth was also buzzing, with the preview of the next ver-

sion of Windows Media Player, code-named "Corona." The system promises a home theater-like broadband experience that uses professional audio and video codecs to deliver 24-bit/96kHz audio in 5.1 at data rates of 128 to 768 kbps, with HDTV-like video quality. Corona will also have an instant-on, always-on presence that is said to eliminate buffer delays. Creative Labs, Echo, M-Audio/Midiman, Steinberg and Syntrillium were all in the pavilion previewing systems that support the new Windows Media technology.



Apogee NativeTools

WORKSTATION NEWS

Due to growth of its DVD business, Sonic Solutions (www.sonic.com) has spun off a separate company dedicated exclusively to the Sonic Studio line of digital audio workstations. Sonic Studio LLC is headed up by veterans Jeff Wilson and Eric Jorde, along with key Sonic Solutions engineering and marketing personnel. In other Sonic news, Digidesign has licensed the company's NoNoise restoration technology for integration into Pro Tools.

Speaking of Digidesign (www.digidesign.com), Pro Tools 5.3.1 offers interoperability between Avid and Pro Tools HD workstations. Also, Soft Sample-Cell (now with 96 voices!) is available in a 192kHz version, with more third-party plug-ins offering HD compatibility.

The hottest plug-in of the show had to be at the SADiE (www.sadie.com) booth: CEDAR's (www.cedaraudio.com) ReTouch audio-restoration/forensics plug-in can identify and eliminate unwanted sounds such as piano pedal creaks, coughs, etc., and it operates on both the temporal and spectral content, replacing mistakes with audio matching the surrounding signal. It operates at up to 96 kHz, has 64-bit internal resolution, and uses an intuitive, visual interface with a Photoshop-style approach.

WaveFrame Inc. has been acquired by Cybermation, dba The WaveFrame Software Group. Merging Technologies (www.merging.com), which designed and licensed the Frameworks and WaveFrame 7 hardware for WaveFrame, will support Frameworks customers by offering the opportunity to upgrade to Merging's Pyramix, the system on which Frameworks is based. The WaveFrame Software Group will support WaveFrame 7 users.

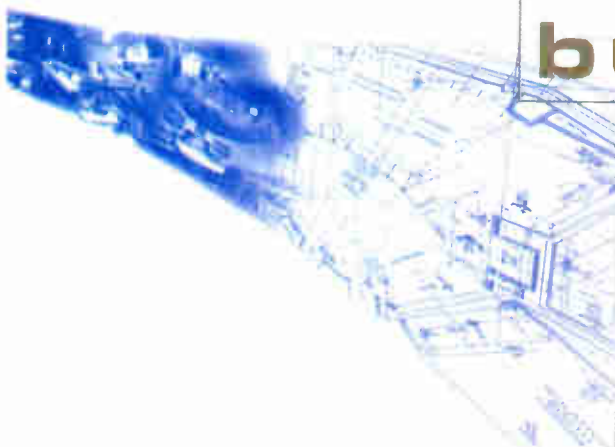
Apogee (www.apogeedigital.com) announced NativeTools, which combines Apogee's 16-channel, 24/96 converters with Steinberg's Nuendo software, plus the Nuendo 96/52 PCI interface. And Sonic Foundry (www.sonicfoundry.com) showed a new version of Sound Forge. The biggest developments in 6.0 are non-

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destructive editing and multitask background rendering, but interface enhancements and video-rendering features are also significant.

Rocket Network (www.rocketnetwork.com) announced new partners at NAB. SADiE Artemis and RADiA workstations are now RocketPowered, and Tascam has developed a new application that supports both RocketNetwork and Tascam's OpenTL native file format.

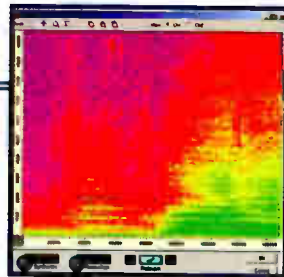
HBB (www.hbbusa.com) showed a prototype of Portadrive, its new 8-track, 24-bit 96kHz location sound recorder. Portadrive records onto a 2.5-inch removable hard drive that can store more than two hours of 8-channel 24/96 audio, and it has an onboard 6x2 digital mixer, with six balanced XLR mic/line ins and individual phantom power. AES and S/PDIF digital I/O and SCSI, USB and Ethernet ports are built-in.

MONITORING THE SITUATION

One of the ironies regarding many "surround-capable" mixers is the fact that they can create surround material, yet they offer no means of easily monitoring

the results. Fortunately, several new products designed for such situations were unveiled at NAB. Tascam's (www.tascam.com) DS-M7.1 Digital Surround Monitor Controller adds multispeaker monitoring control to consoles with only eight output buses. The DS-M7.1 duplicates the digital console's output buses, then routes the signal to both a stem recorder and multiple amp/speaker combinations. A compact remote controls a rackmount processor, and the DS-M7.1 has eight channels of TDIF, AES/EBU and ADAT I/O for interfacing with a stem recorder, with support for all surround formats from LCRS to 7.1 (including 5.1/6.1); it can also downmix to stereo from any surround format. The DS-M7.1 handles sampling rates up to 96 kHz, and onboard bass management is standard.

Studio Technologies (www.studio-tech.com) has expanded its line of stereo and 5.1 monitor controllers with the StudioComm 78/79, remote/processor rack combo, which also handles 7.1 monitoring. Surround controllers were definitely in bloom, as Martinsound (www.martinsound.com) is now shipping its PanMAX



CEDAR ReTouch for SADiE

automated surround panner and MultiMAX EX multiformat monitor controller. Martinsound also showed FilterMAX, an outboard surround LFE filter, which was designed in conjunction with Tomlinson Holman and TMH Corp.

Dolby (www.dolby.com) debuted the DP564 Multichannel Audio Decoder, the next generation of its industry-standard DP562 reference for Dolby Digital, Dolby Surround, Dolby Surround Pro Logic II and PCM decoding, as well as an LTC SMPTE output, AES and optical inputs, master volume and an onboard Dolby Headphone processor.

There were plenty of other slick products at NAB and we'll cover these in our regular product columns in the months to come. Meanwhile, NAB returns to Las Vegas next year from April 5-10. See you there!



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TASCAM DM-24: The Affordable Luxury Console Is Here



Luxury usually comes with a hefty price tag. Not so with the new TASCAM DM-24 32-Channel 8-Bus Digital Mixing Console.

The DM-24's features are usually reserved for super high-end mixers. With 24-bit/up to 96kHz digital audio, the DM-24 blows away the standards in sonic quality for affordable consoles. With its internal automation, you'll get more power at your fingertips than you would from those huge consoles in commercial facilities. With some of the finest spatial and modeling processing from TC Works™ and Antares™, you can create fully polished productions without ever going to the rack. With incredibly flexible routing, fully parametric EQ, machine control capabilities, touch-sensitive motorized faders, and lots of audio interfaces, you can integrate the DM-24 into any studio environment.

Whether you're working with standalone hard disk recorders, DAW systems, MDMs or analog tape, the DM-24 is optimized to be the very best choice in consoles designed for 24-track recording. Ready to get everything you ever wanted (and more) in a digital console? Get the DM-24 today at your authorized TASCAM dealer.

DM-24 DIGITAL MIXING CONSOLE



Two DM-24s can link together with optional Cascade modules to create a seamlessly integrated 64-channel super console. For larger studios operating on a budget, it's a no-compromise affordable solution for high-end digital mixing.



The DM-24's rear panel includes AES/EBU digital I/O, S/PDIF digital I/O, MIDI In, Out and Thru jacks, ADAT Optical input and output, external footswitch connector, time code input, GPI port, word sync in, out/thru, DTRS remote port, RS-422 9-pin control port, 24-channel TDIF I/O and more. Shown here with standard interfaces. Not luxurious enough? Customize your DM-24 with two expansion ports for extra analog, TDIF, ADAT or AES/EBU modules.

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Product Hits of NSCA Expo 2002

BY MARK FRINK

From April 25-27, 2002, NSCA Expo 2002 swung into Denver, providing the best tradeshow opportunity for live sound vendors to kick the tires and check out the latest products before touring season begins. Attendance is mandatory for those contemplating a large purchase for the upcoming season. In addition to various off-site demos at clubs, theaters and stadiums, a plethora of demo rooms were available for auditioning the latest offerings. Thankfully, most manufacturers presented products that were already shipping, a commendable trend. Although much of the show is contractor-oriented (intercom and nurse-call systems, anyone?), there were plenty of cool live sound products. Here are some highlights...

Mid-sized and compact line arrays were introduced by several manufacturers, with Adamson (www.adamsonproaudio.com) showing the Y-10, a three-way, 150-pound enclosure measuring 43x10.5x24 inches (WxHxD). It employs two Adamson 10-inch LF drivers plus a patented mid-high module in the center, with a co-axial entrance, a co-linear exit, and powered by an Adamson 9-inch Kevlar mid driver and a JBL 2451 compression driver.

Apogee Sound (www.apogee-sound.com) unveiled a range of Apogee Powered Loudspeakers (APLs), featuring lightweight, 300kHz digital amplification and onboard intelligent DSP with precision eighth-order crossovers. A line of optional subwoofers complemented the three full-range APL models.

Best quad 21-inch subwoofer at NSCA? Bag End's (www.bagend.com) awesome \$7,995 Bassault ELF subwoofer. The 310-pound, 44x40x46-inch, birch-ply enclosure has the backs of the four 21-inch woofers loading into a common central-slot chamber. The Bassault has a sensitivity of 104 dB at 45 Hz, and 3,200-watts continuous-program power handling. Bag End's ELF Integrator technology provides superior time-domain performance.

The dbx (www.dbxpro.com) DriveRack PA (\$499.95) is an affordable 2x6 equal-



dbx DriveRack PA

ization/loudspeaker control system with several unique refinements. A front panel measurement mic input allows auto-EQ with the 28-band graphic EQs. It also has a dozen anti-feedback notch filters and a sub-harmonic synthesizer. It provides both

classic dbx compression and stereo output limiters. JBL speaker tunings are included in the 25 factory programs, plus there are 25 user memories. A setup Wizard makes user configurations easy.

Electro-Voice (www.electrovoice.com) introduced the compact XLC line array. The XLC 127 (\$4,000 list) is a three-way, single-12 box with two 6.5-inch mids on a 120° horizontal waveguide, two HF drivers and a bi-ampable internal passive crossover. The XLC 124 is a downfill version with a single HF driver and 40° vertical coverage. The \$2,200 XLC 118 is a companion subwoofer.

The dual-18 VT4880 VerTec subwoofer line array element (\$4,195 list) from JBL (www.jblpro.com) em-



JBL VerTec VT4880 Subwoofer

plies VerTec rigging hardware, allowing it to not only be integrated into arrays, but also to firmly connect them in ground-stacked applications. Though the enclosure is a foot deeper, the front baffle is the same size as the VT4889. The 132-pound enclosure is made of hybrid materials and uses two JBL 2258H dual-voicecoil, neodymium Differential Drive® cones for a 4,800W rating. JBL also introduced a stunning collection of 33 new AE-Series installed sound products that incorporate its new driver technologies.

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Meyer Sound (www.meyersound.com) extended its array offerings, introducing both mid-sized and ultra-compact self-powered models. The M2D (\$7,500) employs two 10-inch cone drivers and the same 4-inch, diaphragm-compression driver used in the CQ speakers. The 120-pound enclosure is 39 inches wide and a foot high. A companion dual-15 subwoofer can be incorporated into M2D arrays. A rigging grid designed by Dave Lawler facilitates flown and stacked arrays, and can be used as a transition grid below M3D arrays. The M1D (\$2,950) is two feet wide, weighs 40 pounds, and employs two 5-inch cone drivers and three horn-loaded neodymium HF dome drivers.

Primacoustic (www.primacoustic.com) debuted the Razorblade™ Quadratic Diffuser (\$259 list), a 2x4-foot, 8-inch-deep, semi-random quadratic-diffusion panel made of MDF to reduce standing waves and flutter echo down to 350 Hz. For a fraction of the cost of high-end hardwood diffusers, effective control of reflections from the "receive" wall can be achieved in venues where this type of solution may have been thought to be too expensive. Razorblade offers a practical recording studio solution for backwall reflections.

SIA Software's (www.siasoft.com) Version 5.0 of SMAART Live (\$695) offers many new features, including RTA peak hold, RTA timed average and harmonic distortion calculation. In Transfer Mode, Coherence is stored in reference files, and devices under external control can draw their EQ curve on the screen. Data Logging creates files for LEQ and SPL logging with A and C weighting, as well as user-definable curves. Upgrades from Version 4 are \$95 until October 1.

SLS (www.slsloudspeakers.com) debuted the RLA/1 Ribbon Line Array (about \$6k), a three-way module based around



SLS RLA/1 Ribbon Line Array

its proprietary PRD 1000 neodymium HF ribbon driver, providing improved HF performance in a line array. The RLA/1 employs axial symmetry with a 15-inch driver at each end, bracketing two pairs of 6.5-inch mids and its two ribbon drivers in the center. The 250-pound enclosure has a 5° taper, and is 54x21 inches (WxH). The ribbon drivers reproduce

HF at lower distortion than compression drivers.

World Rigging (www.alumalok.com) offers a certified AlumalOK airwall track-rigging device (\$325/pair) made of machined aluminum and rated for static loads up to 750 pounds. The AlumalOK accommodates 3/8-inch shackles, spansets, C-clamps and has three 1/2-13 threaded mounting holes. This labor-saving device provides a safe, secure solution for pro-

ductions that must quickly mount speakers and lights in hotel ballrooms. The AlumalBLOK (\$105/pair) is a smaller, 500-pound rated device with three shackle holes designed for cable picks.

NSCA travels to Dallas next year from March 13-15, 2003. For info, visit www.nasca.org. Mark those calendars now! ■

Mark Frink is Mix's sound reinforcement editor.

MORE COOL GEAR FROM NSCA

By George Petersen

With dozens of demo rooms and more than 500 booths, it's hard to see everything at NSCA in just three days. Here are some highlights that you may have overlooked.

WEBster, from Alcorn-McBride (www.alcorn.com), lets users remotely control nearly any device with a serial port via the Internet, using an ordinary Web browser. WEBster can also automatically send e-mail or data if a fault condition is detected during a show, and an onboard real-time clock permits triggering show control events based on time, date, month or year. Retail: \$995.

After too many years away from pro circles, Altec is back as Altec Lansing Technologies (www.altecpro.com). The company's first release includes a line of high-performance ceiling speakers, ranging up to the CD912-8A, a coaxial, cast-frame, 12-inch with 125W power handling. Welcome back!

Gibson Labs (<http://labs.gibson.com>) previewed its scalable MaGIC high-bandwidth protocol using standard Ethernet interfacing at last year's AES in New York. Now, Gibson Guitar's technology division debuts its first products, including 8x8 and 16x16 audio distro systems (with up to 64 channels of bi-directional audio over fiber or CAT5 cable), a line of high-end flyable speakers (including the MA215-3 three-way, double-15 line array with optional DSP control) and a range of power amps with lightweight switching supplies.

It's still a few months away from shipping, but Hosa (www.hosatech.com) showed its FireWire Extender, a compact receiver/transmitter combo that allows users to send audio—and/

or video—data 150 feet or more (much longer without video) over IEEE-1394 protocol.

No need to dim the lights! Mocom's (www.mocom-screens.com/) line of ultra-high gain screens are up to 20 times brighter than white paper and 10 times brighter than conventional high-gain screens. Diagonal sizes range from 40 to 500 inches, in 1.33 or 16:9 aspect ratios.

Described as a "poor man's Mediamatrix," Peavey's (www.peavey.com) DigiTool is a no-computer-required system that packs eight inputs and outputs, mic preamps, mixing and DSP



Peavey DigiTool

into a two-rackspace box. A simple 4-button remote gives end-users easy access for selecting presets. Price: \$799.

TC Helicon (www.tc-helicon.tc) debuted the VoiceOne "voice pitch and modeling tool," a one-rackspace unit combining the power of TC's popular Intonator pitch fixer with single-voice harmonies and voice-modeling effects from the VoicePrism Plus. It's \$1,299, with line in/out and S/PDIF I/O. In other TC news, TC has purchased high-end Swedish amp manufacturer Lab. gruppen (www.labgruppen.se).

Famed for its studio DSP plug-ins, Waves Ltd. (www.waves.com) showed MaxxBass™ Pro101, a hardware version of its popular Maxxbass LF enhancement in a single-rackspace chassis. Priced at \$299, Maxxbass extends the apparent LF response of bass-limited speakers in commercial installations, without endangering drivers. ■

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Turnkey Acoustic Treatment Packages

A Guide to All-in-One Starter Kits and Isolation Booths

by Randy Alberts

Are you thinking about adding a new edit suite or doubling your studio floor space? You can easily turn an unused storage area into a tracking room or create a new voice-over recording booth almost from thin air, thanks to several complete DIY acoustical materials packages and iso booths on the market.

Are you battling front-to-back flutter and standing waves? Excessive side wash and primary reflections? Or is there simply too much bass in your newly created audio space? There are many ways to tackle these acoustic challenges, as well. Although you can certainly pick and choose individual materials to adjust your room (and for more information on those products, read our buyer's guide to acoustical materials in June 2001 *Mix*), sometimes an all-in-one package is a convenient and cost-effective solution.

In this article, we'll take a look at some of these turnkey packages, focusing on ways to isolate a small to medium space, plus get a headstart on acoustically treating a 15x15-foot or larger room with one package.

THE PACKAGES

Created with the company's Tube Trap, Studio Trap and Monitor Stand components, Acoustic Science's AttackWall (\$4,998) provides a portable and repeatable sound field wherever it travels. Placed aside monitors and with its absorptive sides rotated in toward the engineer, the 20-piece AttackWall package creates a well-tuned, soffit-loaded, dead front end that is stated to be absorptive down to 110 Hz while eliminating vertical low-bass bounce. The MixStation System (\$1,500) is an economical soundproofing package available for medium and small rooms. MixStation consists of three wall-mounted diffuse panels (front, left and right arrays) and 10 of the company's Sound Panels, 48x8 inches by 2-inch-thick panels available in a wide selection of fabrics. Each Sound Panel's beveled-relief face helps provide absorption from 200 Hz over the entire treble range, and all Tube Trap products use a built-in reflector strip to maintain diffusive brightness.

Check out Acoustic Science's Iso-Wall System package as well (approximately \$3 per square foot for wall and ceiling area) when you're ready to get more physical with sound issues and build some seriously sound-treated walls. This multilayered wall package is made up of unique damping materials that utilize a special visco-elastic polymer designed to absorb low-frequency bass energy and keep it from feeding back into a room, resulting in cleaner, richer sound and a better balanced-frequency response. There's even an interactive QuickTime 3-D tool on the company's site that walks visitors through each step of the Iso-Wall installation process.

Offering solutions for spaces ranging from a tiny 3x26-inch vertical square to a 7x7-foot room with an 8-foot ceiling, Acoustic Systems calls itself "a construction company doing custom sound isolation work for several markets," including pro audio. With prices starting at \$4,195,



Auralex offers a line of total room control kits.

each Acoustic System room is a modular, pre-engineered space with various options for fully floated floors, silenced ventilation, canted windows and handy cable-management packages. The company's BB-141 is great as a single-person voice-over booth; its BB-142 does the same for one person and a lot of desktop audio gear, with an internal 110-volt recessed outlet and externally mounted six-plug outlet strip for surrounding equipment. The Delta 142 booth fits 4-inch-thick panels into the tiniest of studio corners to provide space and soundproofing for a classy-looking voice-over room or a new computer post-production suite.

One of the most affordable all-in-one soundproofing solutions available is the Model 1014 Acoustakit (\$398) from Acoustics First. It comes complete with enough foam, bass traps and patented binary-array diffusers to handle any 10x14-foot desktop music production suite or small mixing room. Acoustakit includes the company's Cutting Wedge acoustical foam panels, a selection of their Bermuda Triangle Traps for bass control and original Art Diffuser panels. The kit, which ships in studio-gray foam, comes with complete installation, room layout and technical documentation from the company's new full-time acoustician.

Auralex's line of total room control kits (call for pricing) provide all you'll need to treat a tiny edit space, 20x20-foot facility and everything in between. Ease of installation is primary in all four charcoal-gray kits, starting with the 64 1'x1'x2"-thick foam Wedgies, four LENRD Bass Traps and can of Foamtak Spray Adhesive found in the Alpha 1 Roominator Kit. The Alpha 1 is designed for small rooms—less than 100 square feet with a minimum room dimension of six to eight feet—and the Project 2 Kit does the same for rooms measuring roughly 12x8 feet with two dozen 2'x2'x2" Wedge Panels, eight LENRD Bass Traps and five Tübetak Pro Liquid Adhesives. Deluxe Plus Kit adds six TFusor 3-D Sound Diffuser panels to the Project 2 Kit for rooms with 10- to 14-foot walls, and the Pro Plus Kit acoustically treats



Primacoustic offers over a dozen soundproofing packages.

rooms up to 500 square feet with additional TFusors, Bass Traps and Wedge Panels.

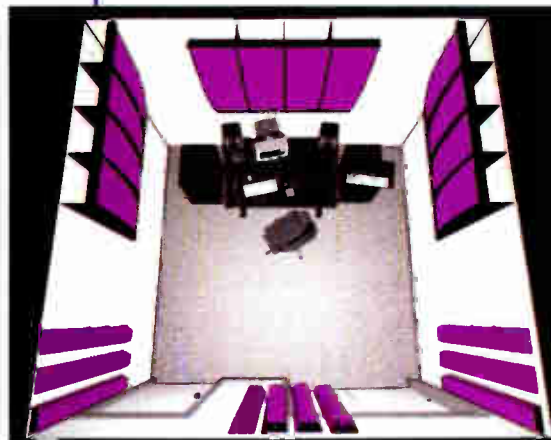
Also from Auralex is the MAX-Wall Modular Acoustical Environment Series. (MAX stands for Mobile Absorptive Expandable.) Available in charcoal gray, burgundy and "vivid purple," each MAX-Wall package combines modular speaker stands, windowed panels, corner couplers and stand-mounted LENRDs in different ways to suit different rooms' acoustical treatment requirements. MAX-Wall panels with 18x12-inch Plexiglas windows can be angled and attached to create convenient vocal and dialog booths built right into a transportable sound wall.

The Acoustic Division of **Gretch-Ken Industries**, Soundsuckers.com offers a wide selection of standard and custom sound-isolation booths. Each booth comes with a heavy-duty door closure system with compression door seal, a sound-deadening window, internal lighting, 3-inch cable passage hole, 2-inch-

thick acoustic foam, and a ventilation system specific to each booth's size to prevent "overbuying" a one-size-fits-all ventilation system. Smaller booth sizes require no extra hardware or parts. A 4'x6'x7'2" premium model booth with all the above and a 1x2-foot window in the door and 3x3-foot wall window, with 1½-inch walls costs \$3,835; an economy version of the same costs \$2,499 with 1½-inch walls, and a full-blown 8x8-foot premium room goes for \$6,835. Custom orders don't upset the Gretch-Ken folks: They recently built a 6x38-foot iso booth for the UC Berkeley.

Another provider of audio isolation is **Markertek**, with its pair of affordable booths, aptly titled the Portable Double Sound Booth (\$1,149) and Portable Sound Booth (\$595). The PMB-2 is a single-person booth, and the PMB-3 double-wide (3.5x7x6.5 feet tall), which includes eight acoustic foam panels and all leg, clip and crossbar parts, can isolate two or three musicians or dialog cast members and be combined with another PMB-3 to create a very portable 7x14-foot room. Markertek, which is also a distributor and dealer for many other acoustical materials companies, offers many porta-booth accessories, including a cross-bar microphone mount (\$59.95), single- (\$99.95) and double-booth (\$129.95) cordura travel bags, replacement acoustic foam kits (from \$99.95) and low-wattage clip-on lights (\$19.95 each, bulb not included).

Primacoustic, a division of CableTek, offers over a dozen all-in-one soundproofing packages for existing rooms. Complete rooms can be treated with the London Studios, New York Voice-Over Booths, Rio Video Suites and Mon-



Acoustic Science's MixStation

Turnkey Acoustic Treatment Packages

treat Studios "Prima-kits," which start at just \$200. Good for soundproofing a 14x10-foot desktop production room with a live drum kit, London-14 (\$600) is a 19-piece solution that features the company's Europa-63 Flutter Walls for reducing slap echo and standing waves, a pair of Orientique-33 Washboards to dissipate primary reflections, four Australis Corner Traps for controlling the low end in each corner and numerous Scandia-74 Scatter Blocks for soft diffusion. Systems can be customized with other products such as the new Razorblade Quadratic Diffusers.

Studio-in-a-Box Silver Package (\$549.99) is the first in a series of project studio turnkey solutions from RPG Diffusor Systems. Including 46 individual pieces, Silver Package uses the company's ProFoam Panels to control comb filtering arising from strong reflections in a small room, ProFoam Tiles mounted in a 1x1-foot checkerboard pattern to provide a variable-impedance surface, and four ProCorners to increase low-frequency absorption down to 125 Hz, while seamlessly inte-

grating with the kit's ProFoam Panels. Studio-in-a-Box Silver Package components come in white, white fleck and gray fleck Class-A Melaflex, and charcoal gray, blue and purple Class-B/C Polyflex material. One kit can acoustically treat a project studio room up to 14x10x8 feet high.

Primarily focusing on custom acoustic treatment designs, Taytrix also offers a nine-piece package of acoustically paneled gobos called Vocal Package (\$3,000). Six full-sized StackIt Portable Gobos, each with a Plexiglas window, and three short gobos can be combined in a number of configurations to form a vocal booth and room dividers or amp enclosures. One side of each gobo is made of natural maple for low-frequency absorption and high- and midrange frequency deflection, while the other is covered in absorptive acoustical material. A rounded-edge design allows each Vocal Package gobo to be set up at virtually any angle. Cable feed panels are available, and gobos are offered in blue, neutral, green, oatmeal and slate.

The folks at VocalBooth.com say two people can assemble a typical 4x4x7-foot tall Calvin Mann booth in less than an hour. Each expandable room comes standard with 1-inch-thick hard walls with high-density, 2-inch interior acoustic



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Primacoustic Razorblade

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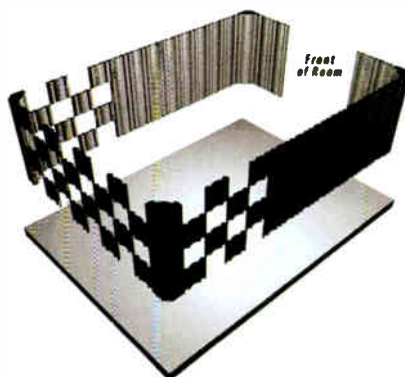
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foam, the company's proprietary 1-inch foam core door with 2-inch acoustic foam, and exterior and interior seals with a door latch system that compresses and locks. Options and accessories include various ventilation system, window, sub floor, foam and caster wheel base choices. Vocal-Booth.com spaces start at \$1,499, and as of this writing, the company was offering the Producer's Special model (\$7,399), an 8x12-foot sound room with three windows, two ventilation systems, door window, lighting and sub-flooring.

V-Room Booth from Wenger Corp. is a sound-isolating modular booth for recording studio and broadcast applications that's flexible when it comes to audio relocations. V-Rooms from 3'9"x5' up to 10x10-foot (interior dimensions), ranging from \$8,700 to \$17,000, come complete with a Wenger technician installation, and options include several window and lighting choices, communications passages for studio cabling, floating floors, extended height doors and variable active acoustics that can simulate 10 different acoustical environments. Other isolation options include horizontal and vertical windows, double doors and a way to increase a V-Room's height by 15 or 30 inches when space allows.

WhisperRoom's line of modular and expandable 7-foot-tall sound-isolation rooms can be tailored from a snug 3.5x2.5-foot vocal booth up to a 8.5x15.5-foot room (\$2,185 to \$18,525 and up, respectively, depending on options). Each WhisperRoom can expand in wall thickness, size and features when the user chooses from a selection of wall and door window, ventilation system, caster plate and Soundwave Deflection System (SDS) options. (SDS panels are available for all SE2000 Series WhisperRooms, and are used to control soundwave reflections and to convert parallel into nonparallel walls when the user attaches a series of panels to two perpendicular walls.) A ¼-inch-thick window deflector option kit redirects soundwave reflections when microphones need to be placed in front of a WhisperRoom window. ■

Randy Alberts is a Montara, Calif.-based audio and music journalist. His first book, TASCAM: 25 Years of Recording Evolution, is in final print production; see a preview at www.opendooredit.com.



Taytrix's Vocal Package



VocalBooth.com's Colvin Mann booth



Wenger Corp.'s V-Room Booth



WhisperRoom offers several 7-foot-tall sound-isolation rooms.



Hans Zimmer

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Hollywood Sound Systems	1541 North Wilcox Ave	Hollywood	CA	90028-7308	323-466-2411
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Parsons Audio	192 Worcester St.	Wellesley Hills	MA	02481	781-431-8701
Sam Ash Professional Audio Group	1600 Broadway 8th Fl	New York	NY	10019-6832	212-586-1100
Sound Productions, Inc.	10430 Shady Trail Suite 104	Dallas	TX	75220-2525	214-351-5371
Washington Professional Systems, Inc.	11242 Grandview Ave.	Wheaton	MD	20902	301-946-3441
Westlake Audio, Inc.	7265 Santa Monica Blvd.	Los Angeles	CA	90046-6717	805-499-3681
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DM2000



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18th Annual Technical Excellence & Creativity Awards Nominees

Listed below are the nominees chosen by the Nominating Panel of the 18th Annual Technical Excellence & Creativity Awards. A special TEC Awards nominees supplement and voting ballot will appear in subscriber copies of the August issue of *Mix*. Please note that in the Outstanding Creative Achievement category, significant changes have been made to reflect contributions made to individual projects. Visit www.mixonline.com for detailed credit listings for creative nominees.

The TEC Awards will be held Monday, October 7, 2002, at the Wilshire Grand Hotel in Los Angeles. For more information, contact Karen Dunn at 925/939-6149, KarenTEC@aol.com or www.tecawards.org.

OUTSTANDING TECHNICAL ACHIEVEMENT

ANCILLARY EQUIPMENT

Equi-Tech ET SWQ Balanced Power Cabinet System
 Future Sonics EM3 Universal Earphones
 Gold Line/PMI TK51 5.1 Audio Toolkit DVD
 Hosa PBP-362 Lightpipe Digital Patchbay
 Millennium Media LPE-2 Archival Playback Environment
 Sennheiser HD280 Pro Headphones

DIGITAL CONVERTERS

Apogee Electronics AD-16/DA-16
 Genex GX48/GXD8
 Lynx Studio Technology Lynx Two MOTU 896
 Midiman/M-Audio USB Audiosport Quattro
 Swissonic AD8

AMPLIFIER TECHNOLOGY

Bryston 6B-ST
 Crown CTs Multichannel
 Hot House Two Thousand "B"
 QSC CX-168
 Quedsted AP500

MIC PREAMPLIFIER TECHNOLOGY

AMS Neve Modular I/O System Quad
 Aphex Model 207
 Crane Song Spider
 George Massenburg Labs 2020
 Groove Tubes VIPRE
 Universal Audio 2-610

MICROPHONE TECHNOLOGY/SOUND REINFORCEMENT

AKG C900
 Countryman E6
 DPA 4066
 Sennheiser MKE-2 Gold-EW
 Shure Beta 98H/C

MICROPHONE TECHNOLOGY/STUDIO

AKG C451-B
 Audio-Technica AT3035
 BLUE Kiwi
 Neumann M150 Tube
 Royer R122
 Soundelux E47

WIRELESS TECHNOLOGY

Audio-Technica Freeway Series
 Electro-Voice RE-1
 Mipro ACT 707 Series
 Sennheiser SK 5012
 Shure ULX
 Sony WRT-847B/WRR-862B

SOUND REINFORCEMENT LOUDSPEAKER TECHNOLOGY

EAW KF760
 Electro-Voice QRx 153/75
 Funktion One Resolution 5
 JBL MPRO MX418SP Crown-Powered Sub
 Meyer M3D Line Array
 Nexo GEO

STUDIO MONITOR TECHNOLOGY

ADAM S3-A
 Blue Sky System One
 Dynaudio Acoustics AIR 6
 Earthworks Sigma 6.2
 KRK V4
 Mackie HR-624

MUSICAL INSTRUMENT TECHNOLOGY

Akai MPC 4000
 Korg Karma
 Nord Lead 3
 Propellerhead Software Reason
 Steinberg HALion
 Yamaha Motif

SIGNAL PROCESSING TECHNOLOGY/HARDWARE

Antares Vocal Producer
 Eventide Eclipse
 Kurzweil KSP-8
 Lexicon MPX200
 TC Electronic VoicePrismPlus
 Yamaha SREV1

SIGNAL PROCESSING TECHNOLOGY/SOFTWARE

Ableton Live
 AudioEase Altvorb
 Cycling '74 Max4/MSP2
 McDSP Analog Channel
 Universal Audio Powered Plug-Ins
 Waves Restoration Bundle

RECORDING DEVICES

Alesis ADAT HD24
 ATR Service Aria Reference Tape Electronics
 Fostex D2424
 Mackie Designs MDR24/96
 Nagra V
 Tascam DSD-98

WORKSTATION TECHNOLOGY

Digidesign Pro Tools HD
 Emagic Logic Audio 5
 Fairlight DREAM Satellite
 MOTU Digital Performer 3.0
 Roland VS2480HD
 Sonic Solutions CVD-Audio Creator

SOUND REINFORCEMENT CONSOLE TECHNOLOGY

Crest XR20
 InnovaSon Compact Live
 Midas Venice
 Shure AuxPander
 Soundcraft MH4
 TL Audio M-3

SMALL-FORMAT CONSOLE TECHNOLOGY

Behringer DDX 3216
 Emagic Logic Control
 Event Ezbuss
 Soundcraft Spirit M Series
 Tascam DM-24
 TL Audio M-3

LARGE-FORMAT CONSOLE TECHNOLOGY

AMS-Neve Libra Live Series II
 Euphonix System 5B
 Harrison TVD
 Soundtracs D4
 SSL MT Production (MTP)
 Trident 80/5.1

OUTSTANDING CREATIVE ACHIEVEMENT

STUDIO PROJECT DESIGN

Award goes to Studio Architect, Acoustician and Studio Owner

Cherokee Studio 2, Los Angeles
 Glenwood Place Recording, Burbank, Calif.
 PatchWerk Recordings, Atlanta
 Right Track Studio A509, New York City
 Sterling Sound—Chelsea, New York City

TOUR PRODUCTION

Award goes to Tour Company, FOH Engineer and Monitor Engineer

Crosby, Stills, Nash & Young
 Dave Matthews Band
 Janet Jackson
 Madonna
 U2

REMOTE PRODUCTION/RECORDING OR BROADCAST

Award goes to Remote Facility, Remote Engineer, Production Mixer and Music Mixer

2002 Grammy Awards, CBS
 America—A Tribute to Heroes, all networks
 The Concert for New York City, VH-1
 Madonna Drowned World Tour, HBO
 Wall to Wall Miles, NPR

FILM SOUND PRODUCTION

Award goes to Supervising Sound Editor, Sound Designer, Re-recording Mixer, Production Sound Mixer, Score Mixer and Audio Post Facility

Black Hawk Down
 The Lord of the Rings: The Fellowship of the Ring
 Moulin Rouge
 Pearl Harbor
 Shrek

TELEVISION SOUND PRODUCTION

Award goes to Supervising Sound Editor, Sound Designer, Re-recording Mixer, Production Mixer, Score Mixer and Audio Post Facility

Late Show with David Letterman, CBS
 Saturday Night Live, NBC
 Six Feet Under, HBO
 The Sopranos, HBO
 United We Stand, ABC

RECORD PRODUCTION/SINGLE

Award goes to Recording Engineer, Mixing Engineer, Producer, Recording Studio, Mastering Engineer and Mastering Facility

"Drops of Jupiter": Drops of Jupiter, Train, Sony Music Entertainment
 "Fallin'": Songs in A Minor, Alicia Keys, J Records, Arista Records
 "Jaded": Just Push Play, Aerosmith, Sony Music Entertainment
 "Lady Marmalade": Soundtrack for Moulin Rouge, Christina Aguilera, Lil' Kim, Mya and Pink, 20th Century Fox/Interscope Records
 "The Space Between": Space Between, Dave Matthews Band, BMG Entertainment

RECORD PRODUCTION/ALBUM

Award goes to Recording Engineer, Mixing Engineer, Producer, Recording Studio, Mastering Engineer and Mastering Facility

Acoustic Soul, India.Arie, Motown Record Company
 Drops of Jupiter, Train, Sony Music Entertainment
 Lateralus, Tool, Volcano Entertainment II, LLC
 The Look of Love, Diana Krall, The Verve Music Group, a division of UMG Recordings Inc.
 Songs in A Minor, Alicia Keys, J Records, Arista Records

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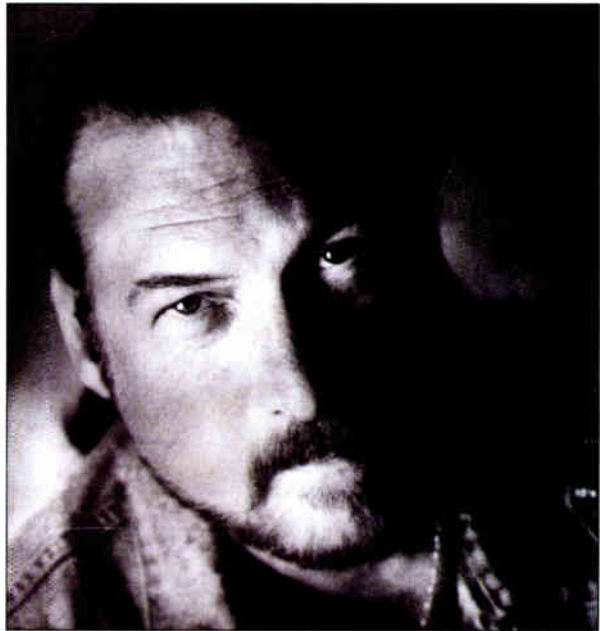
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Steve Cropper

A Jack-of-All-Trades Reflects on Four Decades of Music

Steve Cropper's guitar signature is all over the soundtrack of American pop music culture, from the unforgettable opening bars of Sam & Dave's "Soul Man" to tracks by Eddie Floyd, Otis Redding, Jerry Lee Lewis, Aretha Franklin, Rod Stewart, Etta James, John Lennon, and two of the greatest instrumental bands ever to make it to vinyl, The Mar-Keys and Booker T. & The MGs, both of which he helped start. He's had stints as a musician, engineer, producer, studio owner, composer, musical director and businessman. Since his teenage years in Memphis, Cropper has played all of his roles to the hilt. Now just past his 60th birthday, he remains one of music's incurable optimists: You can see it in his eyes as they light up at the sight of his 15-month-old son toddling into his office off Nashville's Music Row. In fact, Cropper—burly, ponytailed and unfailingly friendly—looks closer to 40, and he plays as well as he ever did. At a birthday bash/charity ball in a Nashville club, which was also the occasion of the MGs' 40th anniversary, Cropper was joined onstage by his old bandmates Booker T. and Donald "Duck" Dunn, and the guitarist simply did not miss a lick and, as always, made it all look effortless. (The show was capped by a presentation to Cropper, from ASCAP, citing his song "Dock of the Bay," co-written with Otis Redding, as the second most-played song in the organization's history.)


PHOTO: RON KEITH

Even in the old days, the influx of southern blues and jazz all passed through Memphis on its way to St. Louis and Chicago. Memphis is in a very lucky position on the map because of being on the [Mississippi] river; you got Tennessee, Mississippi, Arkansas, Missouri, Kentucky [nearby]. Everything just gravitated to Memphis for years.

Your first recording work was with Jim Stewart, who founded Stax Records in his garage.

Jim had a studio in his garage. First, he and Estelle Axton had Satellite Records in Brunswick, Tennessee, near Memphis. I had a band, the Royal Spades [featuring bassist Donald Dunn, drummer Terry Johnson and sax player Don Nix, which would soon become The Mar-Keys], and this guy Charles Axton, a sax player, came to us and wanted to join. We kinda brushed him off till he mentioned that his uncle owned a recording studio. That changed things. Jim wanted a bigger studio and Estelle wanted a record shop, so they moved to Memphis and started the store and recording studio on McLemore Avenue, which Mrs. Axton borrowed on her house to finance. That's where The Mar-Keys would play—they would open the studios on Sunday to let us rehearse—and we became Jim's house band. One day, Jim recorded Rufus Thomas' daughter, Carla, and Chips Moman heard it and flipped out. So he produced the duet with Rufus "Cause I Love You," and that was the first hit record I played on, and Booker T. played on it, too. [The record also won over Atlantic Records president Jerry



You're usually associated with Memphis, but you're not from there, are you? Was yours a musical family?

I was born in Missouri. We didn't move to Memphis till I was 10 years old. My dad was a farmer, then a machinist in the Navy and then a policeman. My mom was a schoolteacher. Neither of them were musicians. I grew up in the Church of Christ, which was musically very restrictive—

you couldn't even play a tambourine during services. The only singing was a cappella, but it was the first time I heard gospel music. I had been raised on country and western in Missouri. But gospel was great. And I had a brother-in-law who had a guitar, an old Gibson, and I remember touching the strings and loving the vibration. *Why did Memphis become a major recording center? Nashville had the Opry and clear-channel WSM. What did Memphis have going for it?*

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Wexler, who optioned distribution of Stax's releases for the next five years.]

The McLemore Avenue studio opened in 1960. What were the studio and its technology like?

It was an old movie theater. We had two Ampex 4-channel mixers strapped together for eight inputs. The last one was dedicated to an echo return, from a microphone in the bathroom. Me and some of the other bandmembers helped pull the seats out and built baffles. The control room was up on the stage with a sloping ceiling—it was about 13½ feet high at one end and went to 23 feet at the other. The studio had an Ampex 350 mono deck, and that was the one we recorded "Green Onions" and "Midnight Hour" on. Later, the studio moved up to a Scully 2-track.

I'm still very much
a hands-on board player.
I play the faders
like a piano, which is how
we did it back then.

Tom Dowd came down from New York a few times to record and brought Phil Ely, who was the chief engineer for Atlantic Records, and they wired the left side of the mixer directly to the Scully to make stereo records. And the way it was set up, the music went to one side and the echo went to the other side; there was no middle pot. We knew it was crude, but most of the hits to that point had been in mono, and we all thought that stereo wouldn't amount to much, anyway. [Noted Memphis producer] Willie Mitchell refused to mix in stereo.

The thing about those days was that you could change hats on a daily basis—one day you're the musician, the next you're the producer, the next you're engineering. How did all of those roles fall together for you?

Well, for starters, the funniest thing was that I started getting calls to do sessions at Stax and Sun Studios as a guitarist, because Scotty Moore and Chips Moman wanted to do their own engineering. I never thought I was that good of a guitarist compared to Scotty, though I knew I could hold my own. But he wanted to engineer, so he would call me to play guitar. Later in life, I would do the same thing.

I mixed a lot of records then. I loved being an engineer. I still love to mix. I'm still very much a hands-on board player. I play the faders like a piano, which is how we did it back then. I think I could have gone on to be an engineer full time, except that there was more demand for my playing. But the love of working the board never leaves you. I wasn't schooled on it, but back then, no one was. I learned about miking [guitar] amplifiers from Ron Capone, who engineered at a jingle company in Memphis. He had learned microphone placement on classical sessions, so that was the most formal training I ever got. He also taught me how to listen to a room. At Stax, the microphones never moved from day to day. It was like that for 20 years. The same singers sang on the same microphone, so it was easy to remember where to put the mics. Most studios in Memphis had a house set of drums; the drummers just brought their own sticks. I remember a time when Al Jackson got called to a session someplace, and they didn't have a drum kit. It was like, "Are you kidding? Every place has its own drums!"

EQ was just how you positioned the microphone. A typical session was like the one we did for "Green Onions": one microphone on the organ, one on the guitar amp, one on the bass and one each on the kick and the snare. We'd put that microphone up in between the snare and the hat. We didn't use an overhead microphone on the drums. I didn't see that technique till I moved out to Los Angeles.

When you and Duck Dunn and the rest of the MGs were the house band at Stax, were you playing sessions elsewhere regularly?

At Stax, originally, we weren't allowed to do outside projects. I got calls I had to turn down—I got called to play for Frank Sinatra Jr. and I couldn't do it. There was a guy, Dominic Frontiere, a big arranger for Hollywood films. I had met him in New York and he loved the work I was doing, and he said he had three movies coming up and he was swamped. He said if I could do the music tracks, he would do the sweetening. But it had become Jim's policy that his musicians only played for him in the studio. A lot of friction developed around that. It's one of the things that led me to own my own studio for a while. I had a place in Memphis called Trans Maximus—TMI—with a partner named Jerry Williams. I had it for about two-and-a-half years, but it didn't really pan out. We had deals with Columbia



Records, then RCA, but there was a recession in the early 1970s, and you had to wait for your royalties in the record business, so Jerry pulled the plug.

But owning your own studio and leaving Stax behind broadened your horizons. You began to get calls as a producer.

I got signed as a producer to Columbia first, then to RCA. At Columbia, Clive Davis had me do a record for Poco [the 1971 release, *From the Inside*]. But it was RCA that wanted me to do a record with José Feliciano, and that really changed a lot of things for me. He wanted to record in Los Angeles, in Orange County, where he lived. So I lived in a hotel across the street from Disneyland for a month while we made *Memphis Menu* [1972]. In doing that, I went from the really crude way we had of recording in Memphis to working with the top engineers and technologies in Los Angeles. I was moving around more, meeting more people. I was flying between Memphis and L.A., and that's how I met people like Mike Curb and Ringo [Starr], who asked me on the plane to play on his records [*Ringo*, 1973; *Goodnight Vienna*, 1974] that Richard Perry produced. I was doing records with Phil Spector, and I worked on the John Lennon *Rock & Roll* record. I played on Barbi Benton's record—she was Hugh Hefner's girlfriend at the time, so there I was at the Playboy mansion two times. I was getting around. It was fun. I was in Los Angeles for 13 years altogether.

What eventually brought you to Nashville?

I had been doing some songwriting in Nashville. Mentor Williams and I were big friends in L.A., and when he got ready to do his demos, he wanted to use Nashville musicians, guys like Tommy Coghill and Reggie Young, who had moved to Nashville. Nashville back in those days reminded me of how Memphis had been.

But you were able to get some of the old Memphis vibe back with the Blues Brothers. I mean, it started as a gag for John



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Belushi and Dan Aykroyd on Saturday Night Live, but it really did do a tremendous service by bringing the great R&B and blues songs and artists back into contemporary music culture.

It did. It all started with *Briefcase Full of Blues*, which was the live album. The way that came about was, [comedian] Steve Martin was going to do nine shows at the Universal Amphitheater. He was very hot at the time, in 1978. He didn't want to do 90 minutes straight himself, so they said, "You can pick any opening act you want." He had a connection with John and Danny from *Saturday Night Live*, so he called them up and said, "I want you to open." Belushi says, "We don't do stand-up comedy," and Steve says, "Do whatever you want." So John says, "We can do the Blues Brothers!" They had been doing their Jake and Elwood Blues thing as a warm-up for the audience before the show, and the audiences loved it. They wanted to work it into the show but [pro-



PHOTO: DENNIS REELEY

Booker T. & The MGs recently celebrated their 40th anniversary. L to R: Booker T. Jones, Donald "Duck" Dunn and Steve Cropper.

ducer] Lorne Michaels said no. Then there came this week where the writers were working on a sketch till 10 minutes before airtime, and it just wasn't working. They

had a hole in the show, and Lorne finally said, "Do the Blues Brothers thing." The response was amazing. People went nuts.

My connection with them was, during the summer, Lorne Michaels had given all of the cast members a camera crew to record their summer vacations. Tom Malone [trombone player, now with the Letterman band] had been on the road with Donald [Dunn] and I and suggested that we do it. He told them the records we had played on, John called up [Capricorn Records president] Phil Walden and said, "What's with this Cropper guy? Did he really play on all that stuff?" So I got the call. I was mixing a Robben Ford record at the time, and Robben was good about saying go for it. We did the show, and the record sold four-

and-a-half million copies. *What kind of input did you have into the development of the Blues Brothers' music?* I truly respected their love for the blues,

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but they were doing stuff that no one had ever heard of, including me, so that's pretty obscure stuff. Duck says to me, "These guys are off the wall; you have to talk to them." I was thinking along more commercial lines, so I suggested that they move around a little more onstage, a little more like Sam & Dave did. That led to them putting "Soul Man" in the act. The fun part was that Duck and I had played on that record. We were getting to relive that part of our career again. But my favorite moment of the whole thing was when John suggested that I get a hold of all the blues records I could so I could research the music.

I suggested that
[the Blues Brothers]
move around a little more
onstage, a little more like
Sam & Dave did.
That led to them putting
"Soul Man" in the act.

You've produced records for Robben Ford, Jeff Beck, Albert King, José Feliciano. What's the dynamic when a guitar player produces other guitar players?

Establishing trust. Letting them know that I'm one of them, that I've been there, that there's no competition between us. It helps to respect each other, too. Like José. He's one of the finest guitar players *ever*. He plays a gut-stringed guitar, which I like pretty much like any standard acoustic guitar. The thing to keep in mind is that in Flamenco-style playing, the [picking] hand tends to spike the meters, especially José, who has these long fingernails. You have to balance the amount of limiting you put on the microphone. Also, since he's blind, as a singer, he tends to, what we call, "eat the mic"—getting really on top of it. The way we got around that was to put a microphone right in front of him that he could work off, but put the real one about eight inches back from him. We just never told him.

Because you were brought up in such an analog environment, how do you feel about digital recording?

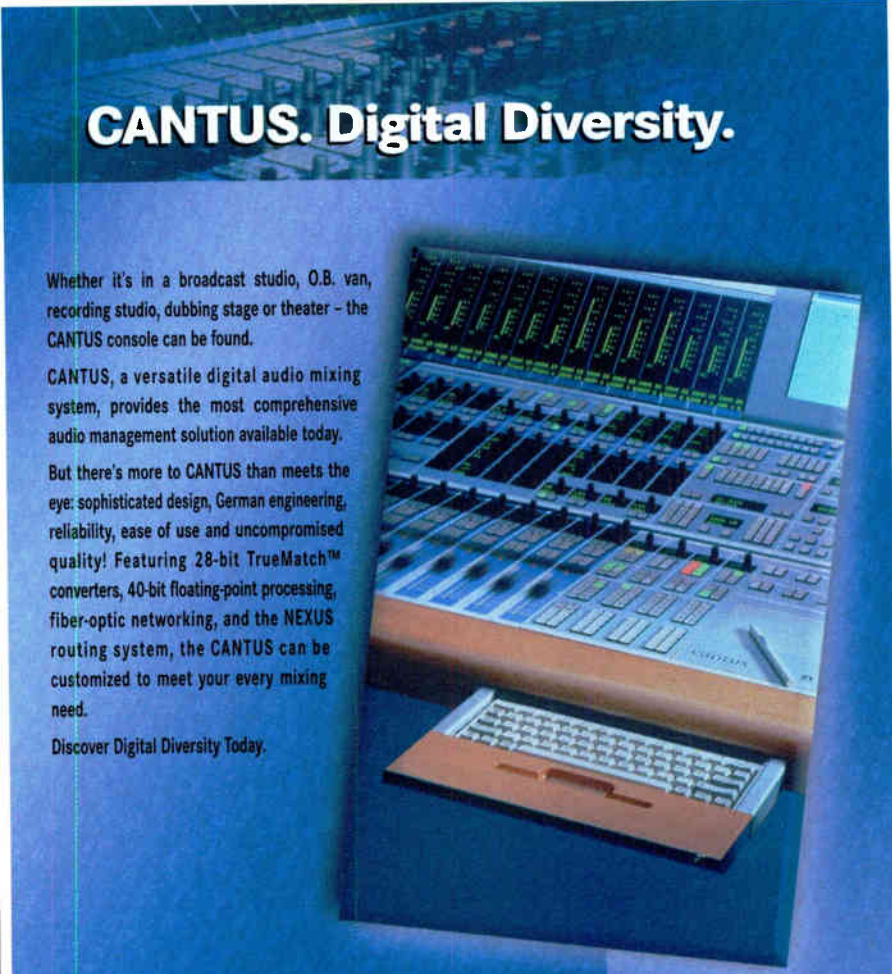
I like to start a session analog, but I'm not

an "analog to the death" kind of guy. I believe in technology going forward. I do like to work with an engineer, but I know how to run Pro Tools, and I have a system in my own studio. But, ultimately, my ears won't fool me. Even when I do a session on digital, we still warm it up somewhere in the process, in mastering or mixing, running the signal through some tubes somewhere. Where digital works against music is that it breaks the music down too much [in the process of sampling it]. It takes the harmonic distortion out of it.

Stax went out of business in a bankruptcy in 1976, and the masters after the 1968 deal with Wexler and Atlantic were bought by Fantasy Records. Does any of the old Memphis exist anymore?

Not really. The McLemore Avenue building was torn down, and the contents were all auctioned off. But there is a development in progress to create a Stax museum, which would re-create the old studio, too. And I'm playing a role in that that I'm really looking forward to. ■

Dan Daley is Mix's East Coast editor.



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Larry Klein Is Doing It All

Renowned Bassist Carves out a Successful Production Career

Producer/bassist/songwriter Larry Klein has had a broad and successful musical career, yet he feels as though he's constantly working to avoid being typecast. As a first-call jazz bassist in the '70s, he worked with such icons as Freddie Hubbard, Carmen McRae and an up-and-coming singer named Dianne Reeves. But Klein grew tired of constant touring and mainstream jazz's restrictions. Eventually, he started drifting into the pop world and again thrived as a player.

But when listening to his work on records and CDs, he often became frustrated, feeling that they were sometimes bad sonic representations of himself. This led him to involving himself much more in studio matters, and it wasn't long before he made the transition to working as a producer, where he could exert the kind of sonic control he wanted. His first major project was ex-Cars bassist Benjamin Orr's *The Lace*, with Mike Shipley engineering. It was cut in Bath, England, in 1985, and released the following year. Around the same time, he played on Peter Gabriel's much-heralded *So* and produced his then-wife Joni Mitchell's CD *Dog Eat Dog*.

He and Mitchell have continued to collaborate since then, completing a total of eight projects thus far. However, as a couple, they broke up in 1994, in the midst of the sessions for Mitchell's 1995 Grammy Award-winning *Turbulent Indigo*. The success of that album led to a steady stream of female singer/songwriters coming to Klein to produce. He's helmed projects by notable artists, including

Shawn Colvin, Bonnie Raitt, Mary Black and Julia Fordham. All of these were projects Klein wanted to do, but he feared he was now being typecast as the "female singer/songwriter guy," while he wanted to produce in many genres.

Analytical, inquisitive and restless, Klein is always on the prowl for new challenges in music and in the studio. These days, his approach and attitude is fairly Zen-like, with producing, playing and songwriting/arranging in perfect balance. Each satisfies different creative urges.



PHOTO: MAUREEN DRONEY

What qualities in your personality make it easy for you to work with female singer/songwriters?

I think there's something about my manner that's kind of steered toward working with them. Possibly because I'm a little less defensive and protective about the creative process than some other men might be. I think it's a big asset when working on records with women to be able to provide a climate in the studio where it's supportive. As a generality, female artists are more delicate in that sense. So that the endeavor is thought of as a joint venture that's exciting and creative, rather than, "Okay, this is how it's going to be. You're going to listen to what I have to say," which is the auteur kind of approach.

You're a producer, bassist and songwriter/arranger. What do you think of yourself as foremost?

I love the sculptural and creative process of making a record. That probably is my favorite thing to do, but at the same time, I love playing bass. And I'm still excited by playing for other people, especially artists I really respect and enjoy working with.

Because you're not known as a big hit-making, blockbuster producer, what's your objective when you're working with an artist?

It never has been [my objective to make a blockbuster hit]. My philosophy is that I'm always trying to, A) help the artist I'm working with make the best record that they can possibly make; B) make something that I'm going to be proud of, and that I'm going to be able to listen to on the radio or anywhere else, and not have to hide my head; and C) stretch the sensibilities of the artist that I'm working with to a way of conceiving music that's going to push *them* forward. Basically, I try



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to open them up to new territory in their own talent.

I'm also aware of the pragmatic concerns of singles and having something that can get on the radio. But it really is more important to me to make something that holds up on an artistic level, because the business area, such as sales and airplay, hinge on so many fickle and unpredictable elements.

The relationship you have with Joni Mitchell is very provocative and highly personal. What would you say you've learned from it?

Through the records I've worked on with her, I think she kind of groomed me. I had to be slapped around a little bit, in respect to certain ways I dealt with her toward the beginning of our creative collaborations. I had to acquire a sense of syntax, how to say things that aren't critical, demeaning and dismissive. Also, knowing *when* to say something is such an important thing in the creative process. You have to stay aware of the spirit in a room and not hammer down someone's enthusiasm when it's in a delicate state. Also, realizing that there's an element of mystery and serendipity involved with making records; it's not always a ra-

tional and linear process. All these things she helped a lot with me learning, and some of them I had to learn the hard way. *What are you currently doing with Joni?* I'm preparing all the music for a two-record set of her songs that we're recontextualizing for orchestra. It's sort of a retrospective examination of her works, through up to her now 18th record. It'll be looking back through all this work

I try to change
the methodology of what
I'm doing as much as I can
from record to record.

she's done with orchestra and 10 different instrumental groups. The goal is to make people more aware of the compositional innovations she's done through her career. It'll be a lot of music, 24 songs. We'll be tracking it in London with the orchestra and finish it in the studio here [Santa Monica, Calif.], adding Wayne Shorter as

the featured soloist. I'll also be working with Vince Mendoza. He's a very talented orchestrator/arranger and composer in his own right, and we've teamed up for about four other projects previously.

What's the craziest Joni Mitchell story you tell can me without her getting mad?

She's always had a serendipitous, mystical sense of timing, which has always astounded me. There was one incident where we were working on a song we'd written together for a record of hers. At a certain point, she wanted to go down the street to this American Indian antique convention at the Santa Monica Civic Auditorium. I said, "Oh no, you can't go down there. You'll be there for hours and we're on the clock here." Then all of sudden, BOOM! Lightning struck somewhere around the studio and the power went out. So everything had to be reset, and there were some problems with the console. So she said, "Okay, I'm going down to the Indian event."

I started dreading that she would be there for hours, but almost about the same time that we got everything up and running, she returned. With her was an Indian movie actor, Iron Eyes Cody, who had

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been in all these John Wayne movies and other westerns. So we ended up incorporating him chanting over this song ["Lakota," from *Chalchakmark in a Rain Storm*], which ended up working out really well. But it was this chain of weird, synchronistic, serendipitous events that led to her coming back with this Indian chief.

Was it difficult to make the transition from playing jazz to rock and pop?

No, because I've always been very eclectic in the music that I played and was a fan of. I always loved country music, was in rock bands from the time I was in sixth grade, and I was always interested in pop and rock music. I was part of the generation of musicians that was equally interested in pop music and jazz. So it wasn't that big a switch for me.

Do you feel you have a particular style of producing?

I would say that I try to approach things from an individual standpoint. From project to project, I try as much as I can to break the palette of colors that I'm using. Essentially, I'm trying to do new things that can even involve using a different engineer or a whole new situation. For instance, on these Joni records I'm working on, I'll be using a guy named Jeff Foster to track the orchestra in England. He's just an amazing orchestral engineer and does a lot of work at AIR Lyndhurst over there. Then I'll be using my engineer that I work with most of time—Helix Hadar—for overdubs, and I'll be mixing the record with Alan Thymes over at Ocean Way. I try to change the methodology of what I'm doing as much as I can from record to record.

Who are some of your influences as a producer and as a musician?

There are so many people I've learned a lot from. In the pop world, it's Mutt Lange—he's a tremendously talented guy, and I learned quite a bit from him. I worked on Lindsey Buckingham's album *Out of the Cradle*, and I was quite impressed with his sense of adventure as a producer/artist. Also, I certainly respect Daniel Lanois as a producer.

As a musician, my heroes are Wayne Shorter and Miles Davis, who have always been looking to stretch the boundaries. That's what I have a real passion for.

You're also working on a solo project.

It's my own music and it's electronic-based. One of the songs is built around samples of a Claus Ogerman orchestral piece that I was religiously in love with when I was 17 years old. That kind of thing is fantastically exciting to me, to take

the genre of electronica and introduce the sophistication of jazz, without making it sound like an unnatural hybrid.

What did you hear in Julia Fordham's songs that were different from her past work?

She played some of them that she already had written, and they almost felt like "soul" songs. They had a tempered R&B thing about them, which was a new element I hadn't heard in her music before. So I presented that to her and explained how I was thinking of putting her CD together. Some of it would be programmed

with the drums and even some of the bass, but also braided with organic aspects. I wanted the clarity that a programmed drum provides, but then having blood on top. So, from the beginning, I was emphatic about using Billy Preston and felt that he would be an important element to make it a "blue-soul" kind of thing, which she really loved.

Do you have a special approach to songwriting?

The compositional process of writing within the context of making a record is really a vital and important part of what

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my dynamic with artists is. Raymond Carver, the short-story writer, said the best time to write something is right after you finish something. Because there's no pressure and you're not *trying* to write something.

It's always different with every artist. Some need something to force them to get in motion. That was the case with Shawn Colvin; when we started, she only had four songs written. We wrote a couple together, and she took a break to finish writing. With Julia, she had more songs than we needed. So we ended up deciding which songs to set aside. We wrote one ["Roadside Angel"] together that ended up on the record.

Even though you're always trying to have a fresh approach to projects, are there any tried-and-true methods you employ?

Yeah, I do. Especially with technical aspects and an aesthetic sense in regard to sonic considerations. I always like the bottom end to have a really full roundness that tape provides. I just like the way bass sounds off tape. And there are certain microphones that you just love the way they sound. And that holds true for differ-

ent devices and boxes that you use for similar situations you encounter from project to project.

What are some of the mics you really like?
It depends on the singer and the project, but there are a lot of different ones I really like. I got an AKG C-12 that I love. The mic we're using on Joni for this record is an old Telefunken 251; it's a

I always like
the bottom end to have
a really full roundness
that tape provides.

beautiful-sounding mic. There's also the Neumann 149, a new version of the old M49 tube mic, that I use on a lot of things. *Do you consider yourself a hands-on person when it comes to engineering?*
Ideally, I'd like to not have to deal with that end of things. I function better when I can just think about the musical aspects of projects. I do like to experiment and

fiddle around with different plug-ins to stay abreast of what the possibilities are. There are so many that are coming out for Pro Tools that are fantastic, and quite a few of them I've been using like crazy.


Is it essential for you to play on a recording that you produce?

It depends on what the situation is. There are times when it's very liberating to *not* have to be playing, because you can be sitting, listening and thinking about things during a take. You can already be considering what changes need to be made. Whereas, obviously if you're playing, you've got to take the time [after] to sit back and listen. You can do both, but sometimes it's quicker to just be listening. But I have to say I tend to play quite a bit on things that I produce.

Who have you learned the most from since you started producing?

I think I've learned more from the artists that I've worked with than from other producers. I have to say more than anyone else Joni—she taught me a lot about producing. She's sort of my philosophical/production mentor. ■

Chris Walker is a contributor to Mix.



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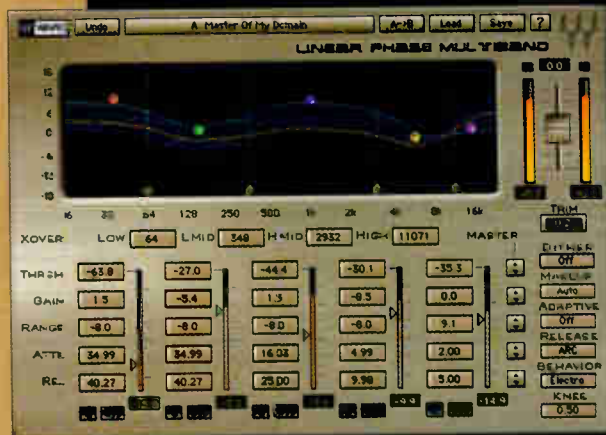
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World Radio History

Randall Cunningham's Studio 7

Tackling the Audio World

It's a scenario that rears its head over and over again: A famous athlete or entertainer lends his or her name to a business as a marketing ploy, or perhaps to connect to a clique of interest.

In a way, it's akin to saying out loud that someone's heart isn't really into a given craft. But let's get square about the role of NFL great Randall Cunningham at Studio 7, his new-ish venture: He's not standing on the sidelines.

Okay, no more cute analogies. The Baltimore Ravens' quarterback's vision of his future is clear. It's in a \$1.5 million, 5,800-square-foot recording studio that he designed with Chris Pelonis in a new industrial park just south of McCarran International Airport in Las Vegas.

If you enter the studio looking to be reminded of Cunningham's storied career, then you're in the wrong place, perhaps aside from spying his 20-year-old UNLV helmet on his desk.

In fact, the born-again Cunningham has been attentive to various musical mentors he's encountered while negotiating this new path, including famed producer Terry Lewis. "I asked him what equipment he thought I should buy," Cunningham recalls. "The first thing he asked me was if I was going to hire an engineer. If I'd answered no, he was going to suggest I purchase the RADAR digital system, which is fine at a certain price point. But my idea, from the outset, was to hire an engineer."

But Cunningham said yes. So Lewis suggested he opt for the Pro Tools Mix | 24 system in both suites. Studio A, which rents for \$125 an hour, comes with 40 channels of Digi I/O and 32-fader Pro Control. Studio B runs \$85 an hour, and includes 2-channels/8-fader, with 24 channels of Tascam DA-78HR. Engineers Kevin Santos and Mark Mattson, whom he calls the "top two Pro Tools engineers in Nevada," round out the mix.

The equipment roster at Studio 7 also includes a MIDI room; Ayotte and DW drum kits, a Brian Moore MIDI-ready guitar and a Peavey bass; a vintage Hammond B3 organ; Korg and Roland keyboards; and Manley VoxBox and Avalon VT737P mic pre's. "So I have the best of both worlds with the mic pre's and Pro Tools," he notes, adding, "People rave about our sound."

Another key feature of the facility is the 30x60-foot live rehearsal hall geared toward bands on tour, as well as local performers. "It's like an aerobics room to practice choreographed routines," he says.

Cunningham, unlike many of his peers, says that the economy hasn't hurt Studio 7, which could be due to some thoughtful marketing. "I've been developing relationships with CEOs and producers," he explains, not-



Randall Cunningham at the 32-fader Pro Control system in Studio A, designed by Chris Pelonis (standing) with Tannoy 215 mains and Mackie HR824 near-fields.

ing that the company is careful about who comes in to record. ("There's no derogatory stuff here," he says.) But, being in an entertainment hub like Vegas is a benefit.

"Wayne Newton comes here a lot," Cunningham says, adding the likes of gospel singer Helen Baylor, rapper Nas and Big Three Entertainment among the clientele during the company's first year. Also in at Studio 7 is a new Orange County, Calif.-based group Cunningham is executive producing called Set Free.

Why Cunningham, who amusingly mentioned a brief stab at trumpet lessons as a child as his sole prior musical venture, would suddenly decide to open a studio may seem puzzling. After all, this is someone who ran a marble and tile company in Vegas during a one-year retirement from the NFL in 1997. And he knows that a stigma often accompanies athletes who switch fields as they segue to other chapters in their lives.

"My desire is to see people record who don't get the chance to record to do it here. People hear I have a studio and think it's in my house," the laid-back native Californian says, with a laugh. "They typecast me. But I'm an entrepreneur. This is a professional studio, a clean place and we have a good thing going."

Feeling that his new business is off to a good start, is expansion on the horizon? "Not anytime soon, but a new facility could arise with the proper need," he concludes. "We take the money and bless people. We want the best atmosphere. That \$125 an hour is not the point. The point is the best equipment, best engineers and making sure people are happy." ■

Mark R. Smith has been a freelance writer for a decade. He hangs with his CD collection and his cocker pup, Dusty (as in Ms. Springfield), in Odenton, Md.

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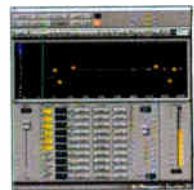
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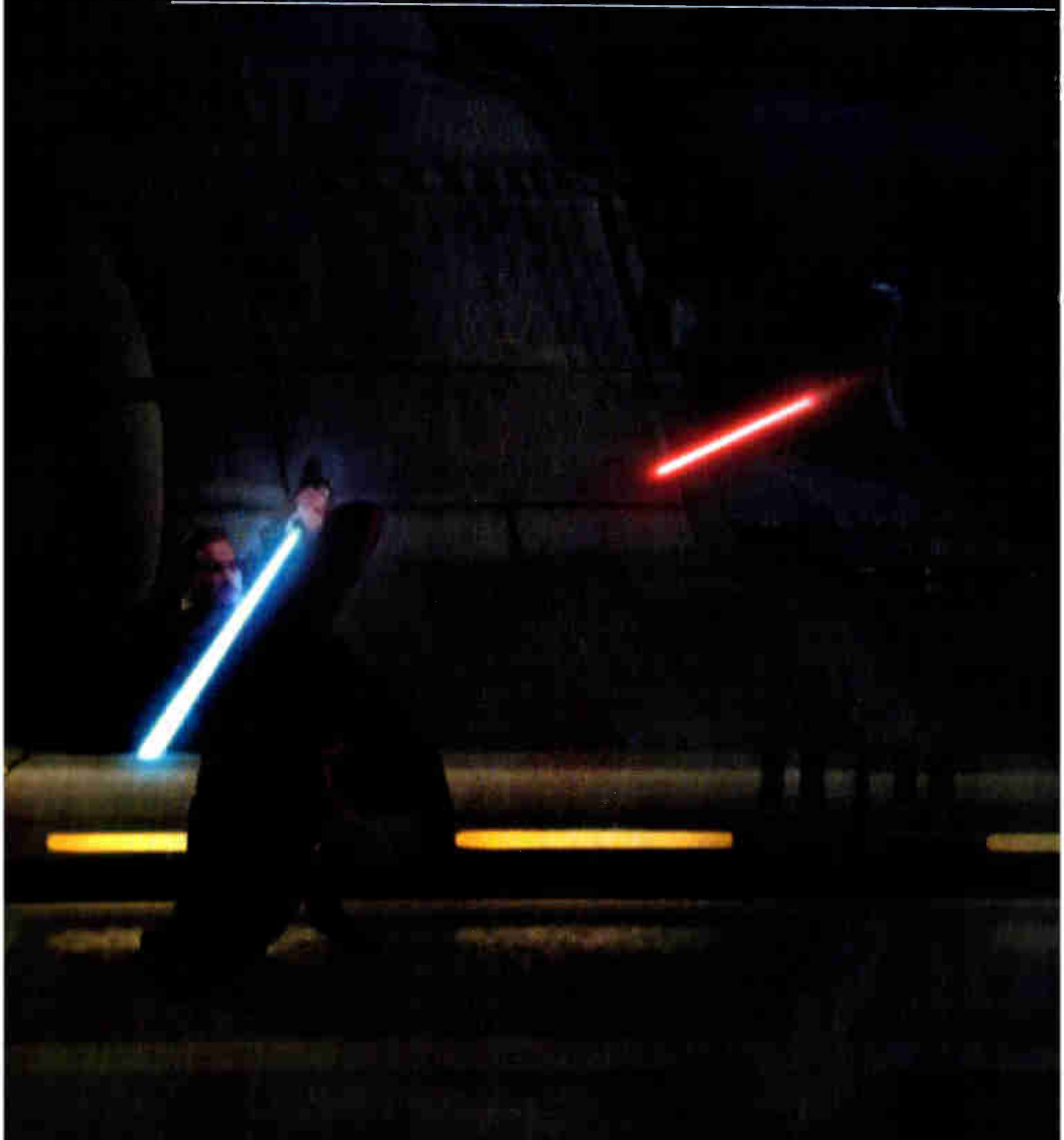
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STAR WARS





EPISODE II

ATTACK OF THE CLONES

Other films may have bigger budgets, bigger stars. They may even have bigger opening weekends. But no film series has gripped the imagination of moviegoers worldwide, decade after decade, like George Lucas' *Star Wars*, which accounts for four of the 13 most popular films of all time.

While the latest installment would have the attention of moviegoers were it shot on Super 16mm film, this summer's *Star Wars: Episode II Attack of the Clones* will forever be known as the film, er, movie, that brought stem-to-stern digital cinema to the public's mind. It's not the first film to be shot on high-definition tape, not the first to feature totally digital characters, and not the first to be exhibited widely in theaters digitally. Then again, neither was *Star Wars* (1977) the first film mixed in Dolby Stereo or the first to use motion-control photography. It only *feels* that way in our collective memory.

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BY LARRY BLAKE

EPISODE II

ATTACK OF THE CLONES

Work started on *Episode II* while its predecessor (*Episode I: The Phantom Menace*) was still in theaters back in 1999, and it followed a similar schedule—long pre-production, followed by a three-month shoot, followed by a 20-month post-production schedule, which included planned reshoots. Back again with Lucas behind the camera were producer Rick McCallum, composer John Williams, re-recording mixer Gary Rydstrom and sound designer/picture editor Ben Burt.

PRODUCTION

Although the previous four *Star Wars* films have used soundstages in England as their home base, this time McCallum and Lucas assembled their forces at the new Fox Studios Australia in Sydney.

Comments from Lucasfilm that *Episode II* would be shot on high-definition video notwithstanding, there were Panavision 35mm film cameras in Australia as backup. However, after much testing, it was decided before the start of principal photography in June 2000 to shoot on 24p high-definition tape utilizing Sony/Panavision CineAlta HDW-F900 cameras. And, indeed, not a frame of film was shot.

CineAlta cameras record in the 16x9 HDCAM format (1,920x1,080), although



PHOTO: STEVE JENNINGS

The Skywalker Sound Episode II crew. Back row, from left: Eleanor Beaton, Steve Morris, Kevin Sellers, David Acord, Ronald G. Roumas, Jana Vance, Frank "Pepe" Merel, Brian Magerkurth, Kent Sparling, Jurgen Scharpf. Middle row: Steve Slanec, Dennie Thorpe, Marilyn McCoppen, Coya Elliot, Matthew Wood, Travis Crenshaw, Mary Helen Leasman, Brandon Proctor, Juan Peralta, Sean England, Tony Sereno. Front row, seated: Bruce Lacey, Chris Scarabosio, Michael Semanick, Gary Rydstrom, Teresa Eckton.

the image was cropped to a 2.40:1 widescreen ratio. The area above and below the 2.40 extraction area was available for Lucas to reframe the picture as necessary in post-production.

During shooting, they would record two tapes for each hi-def camera (and most of the time there were two), one in the camera and one in a deck. Clones were made during lunch and at the end of

the day, resulting in triple redundancy. A Digital Betacam downconversion, for the picture department to load into their Avid, was made at the same time as the clone.

The disadvantage of filming high-definition, or at least the way that it was implemented on *Episode II*, was the amount of noise-producing equipment added to the set: plasma screen monitors, HDCAM decks, hard drives, associated

BEN BURTT ON SOUND DESIGN FOR EPISODE II



I call Matt Wood the "digital architect," and he only reluctantly takes on that term privately. I rely on him to keep me up with the technological present or future. [When we were starting work on *Episode II*], we were unable to get the support from the [New England Digital] Synclavier that we wanted, and the files did not interface comfortably with the rest of our system. Matt wanted me to get off of it and "update myself" to

Sample Cell. I could essentially do the same things I did with the Synclavier, but simpler. This was especially true for taking sounds from Pro Tools into Sample Cell and then back into the Pro Tools session. We used to have to digitize them into the NED format, and if I made a sequence or made loops, we had to use S-Link to translate over and batch-digitize.

The Synclavier was a performance-based instrument—I would put samples on the keys and then play with it. Coming from an older sound design and technical school, I don't like to think out ahead of time that I want a sound to have this amount of delay, in that kind of an echo chamber. I just want to touch something, hear it, and react. A large part of the sound design job is making the right choice of a sound, and not really

your technical knowledge. I like accidents and spontaneity, and I pick takes out of my performances that often lead to new ideas that I wouldn't have been able to objectively reason out ahead of time. It's a very subjective process for me.

I may have a sound I recorded that I need to digitize from an original DAT. I may want to make samples out of pieces of it and play with it. Try it on the keyboard in different pitches, chop it up with the modulator on the keyboard and listen to it. Try it with different plug-in settings that I've made in Pro Tools. I don't want to stop and think about how I'm going to do it—I just want to be able to synthesize with it as spontaneously as I can. To me, that's the most direct and satisfying creative process. Out of those experiments or performances, I can select what's good.

Often, I'll start out in the morning intending to make the sound of a certain vehicle pass-by in the film. As I experiment, I'll come up with different sounds that I realize will work for something completely different—a door that I need in reel 11, say.

From a strict library standpoint, I entered about 600 sounds in the library for this film. At the end of the film I make sure that everything that I've made, even outtakes, is given a name and label, so on the next *Star Wars* film I can access a database of everything that was done. That's where I'll pick up and start on the next one. ■



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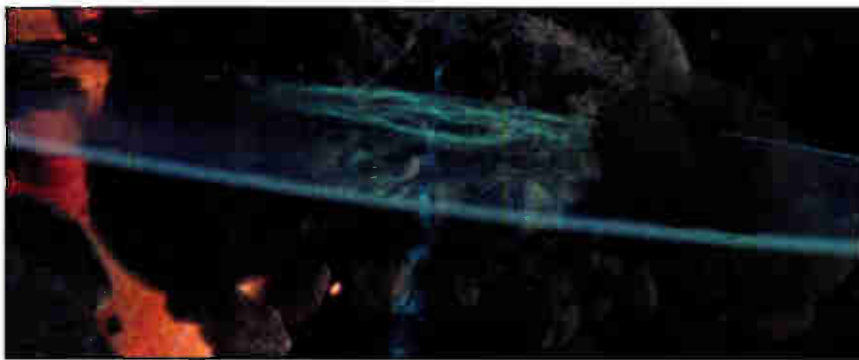
World Radio History

EPISODE II ATTACK OF THE CLONES

video testing gear, etc. Supervising sound editor Matthew Wood says, "There was a constant drone. I brought [dialog re-recording mixer] Michael Semanick in early to see how much of the noise we could get rid of. Most of it we could, but sometimes we had to loop lines because the noise was dynamic and broadband. As the 24p technology evolves, I am sure it will become more like a broadcast HD setup, with the equipment in trucks parked outside the set."

PRODUCTION SOUND FOR HI-DEF

Wood decided from the start that he wanted to do the whole show in 24-bit, including the dialog and sound effects units. (*Episode I* was mixed from 16-bit sources, except for the music.) This raised many issues, based mainly on the fact that Avids do not support 24-bit audio and that they would be shooting at the 23.98 frames per second rate. (The 23.98 rate allows for all of production and post-production to occur on the same "timebase": A minute



Jango Fett's seismic depth charge, destined to become a signature Ben Burtt sound effect.

during shooting would be the same length as a minute during sound editing or mixing to NTSC picture.) In addition, Wood investigated file formats (Broadcast .WAV, .AIFF or Sound Designer II), the handling of file metadata and how to import the data into Pro Tools.

After testing various 24-bit nonlinear field recorders, Wood decided on the Zaxcom Deva II, which was used in conjunction with a Zaxcom Cameo digital mixer.

Production sound was recorded by Paul "Salty" Brincat, best known to *Mix* readers for his work on *The Thin*

Red Line. In order to provide a level of comfort and backup, he actually used two complete production systems—his old faithful Audio Developments 409 mixer



Paul "Salty" Brincat, left, and Rod Conder with two complete systems, the Deva-Cameo being 24-bit.



GETTING THE IMAGE TO THEATERS

Standard film printing procedure starts with the edited original camera negative, from which a handful of interpositives are made. These IPs are then used to produce multiple internegatives to make the thousands of release prints needed to cover worldwide release. Although it would have been much easier for Lucasfilm to film out, from data, one IP that would be the master from which INs and release prints would be made, Lucasfilm decided to go an extra step and film out six "original negatives" from data for the U.S. print order.

Because of the long time it takes to film out a 2,000-foot reel (60 hours on ILM's ArriLaser Recorders), work started on this as soon as reels were locked in mid-February. A seventh negative was used as a source for interpositives, from which the international internegatives would be made, putting in subtitles as necessary. ILM also made 22 versions of the signature *Star Wars* title scroll.

Lucasfilm technical director Mike Blanchard says, "Almost all of the resolution that's lost is through the printing process. It's really funny about technology and the film business right now. People get caught up in these numbers games that are flat-out ridiculous. They say, 'Film is 4k,' but it's not 4k. It's 4k on the camera negative, but no one has ever seen a camera negative projected. Countless studies have shown that what is shown in U.S. theaters [via the interpositive/internegative photochemical printing process] is between 700 and 800 lines of resolution when you get to the release print. We get that easily.

"And with digital picture [on a server], we have random access, we can go slow or frame-by-frame—the picture looks so much better than

film. It's made it hard for us to [color] time the film portion because you never get neutral prints, it's either a point green or a point dark, and is totally up to the alchemy of the photochemical process.

"For George, it's always been about what people would see. You can shoot with a film camera or a digital camera—that's just another choice that is out there for people—but you can't argue about the digital projection part. People would be getting a better experience at the end of the day. We didn't have to film out each reel as a negative—it wreaks havoc on our schedule, and we have to work a little bit harder—but since we can't get digital projection in every theater, this is something that we can do to make our prints just a little bit better."

Blanchard notes how smoothly the digital timing of the film was at ILM, which took place in Theater C, with Natasha Leonnet at the controls of the Pandora Pogle. "George would say, 'That face is a little red.' Natasha would pull up the matte, take a bit of the red out and say, 'Do you like this better?' and we'd move onto the next shot. You could time the film in the course of five days, easily. But doing the film side has been a really nasty process for all of us. We see how George wants the movie to look, and it would look that way in every theater if we were projecting digitally."

Busch says that assistant editor Jett Sally would go through a down-conversion (to an Avid 14:1 Meridian file) of every frame after final color timing, as a final check; ILM did the same on the full-resolution DPX files. This check was invaluable, and some small mistakes were caught. "You no longer have a negative cutter to rely on," Busch says. "The final version of the movie is coming out of the cutting room I don't know how these new procedures will shake out in the end."

—Larry Blake

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EPISODE II

ATTACK OF THE CLONES

feeding a Fostex PD-2 timecode DAT deck, plus the Zaxcom combination. The rates on both decks were 44.1 kHz, while the Deva was recording 24-bit .BWF files. The master clock for the film was provided by ILM, whose 29.97 fps nondrop timecode was used to jam both recorders and the Denecke timecode slates.

The 409 provided microphone powering and preamplification, with post-fader direct outputs on all faders feeding the eight inputs on Cameo. This enabled Brincat to separately bus and combine microphones across the Deva's four tracks. The 2-track mix from his 409 fed the high-def video cameras and decks and the Fostex. The Deva would download to the backup DVD-RAM during breaks, a process that Brincat says went smoothly.

Brincat notes that the noises on the set, including wind machines and mechanical devices, made it "a difficult film to record sound on. George shooting wide and tight [simultaneously] makes it almost impossible to use boom micro-



George Lucas at the CineAlta 900, with the crew, on location in Italy.

phones. You can only do so much before getting in the way of the picture."

His primary stage microphones were Sennheiser MKH-50s and 60s, while on exteriors he used trusty Sennheiser 416s or 816s. Working with Brincat were his boom operator, Rod Conder, and Ben Lindell, cable man.

The decision to record 44.1 kHz during production allowed Wood to import

the 24-bit Broadcast .WAV files from the Deva's DVD-RAM backup without any sample rate conversion. Brincat's Cameo mixer would encode disk name and scene/take numbers into the metadata, and Gallery Software's Sample Search enabled Wood to export the Broadcast .WAV files from DVD-RAM to Sound Designer II files in Pro Tools, using the metadata as file names.

DAY-DATE WORLDWIDE RELEASE

Publicity, piracy and cash flow have all factored into the recent trend of releasing films overseas on the same date as the U.S./Canada premiere. Lucasfilm planned to release *Episode II* simultaneously in

15 dubbing territories on May 16, with another three to follow soon after. In addition to the standard FIGS (French, Italian, German and Castilian Spanish), *Episode II* was dubbed in French Canadian, Latin Spanish, Catalan Spanish, Thai, Cantonese, Hindi, Hungarian, Russian, Czech, Slovak, Polish, Turkish, Japanese and Portuguese (for Brazil; Portugal is subtitled). Worldwide release will entail going into another 30 countries with either a combination of English-track-only or subtitled prints.

This "day-date" worldwide release requires a great degree of coordination during post-production to get foreign-language dubbed versions translated, adapted, cast, recorded and mixed. Having locked reels starting in January, *Episode II* post-production supervisor Jamie Forester was able to have Masterwords in Santa Monica create the dialog list, which is the transcription of the original dialog, with definitions to clarify idiomatic expressions—many unique to the world of *Star Wars*. These were then passed on to the individual territories for the translations and adaptation process, where words are tweaked to fit mouth movements more closely.

Dubbing (this term is used overseas for voice recording only, and not as a synonym for mixing) began in March. Initial tweaking of sync was done by sound editors in each territory, to take advantage of their "native tongue" ears. Consultants followed their version from voice recording to

the mix at Skywalker Ranch, because "you might get into a case where you want to edit for lip sync, but you don't know where you can cut into a word because it might change the meaning," Forester explains.

The M&E mix was done during the last days of the final mix, April 11-13, as reels were being finished. Gary Rizzo of Skywalker worked closely with Dennis Ricotta of Twentieth Century Fox in creating the M&E and the crucial optional track that allows for selective material, such as vocal grunts, to be used (or not), depending on the dubbing.

On Monday, April 15, mixing began at Skywalker Ranch on the four principal—Parisian French, Castilian Spanish, German, and Italian—foreign-language versions of *Episode II*. In order to finish all 18 dubbed versions by May 2, five stages at the Ranch were running simultaneously. The schedule allowed for three days of a dialog pre-mix, plus one day of printmastering. On the fourth night, the Dolby MO discs were played back and verified before being sent to L.A. for optical transfer. Optical negatives for the foreign-language versions were made at NT Audio in Santa Monica, while all the English-language negatives were shot at Walt Disney Studios in Burbank.

Digital cinema dubbed versions were expected to be shown in FIGS and Japan. There are six subtitled digital versions in addition to FIGS.

In addition to re-recording mixer Michael Semanick's extensive notes on processing of voices, the foreign mixes were also aided by standardization in the track layout. Character track placement in the Pro Tools sessions was redone at the Ranch to ensure that Anakin would always appear on track 1, Padmé on 2, etc. This would allow the mixers, who would be doing up to three versions each, to re-use console automation such as sends levels. The five mixers of the foreign-language versions were Tom Myers, Gary Rizzo, Lora Hirschberg, Jurgen Scharpf and Kent Sparling. —Larry Blake



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EPISODE II ATTACK OF THE CLONES

Because picture assistants used the same nomenclature for takes in the Avid, when Wood received EDLs from the picture department, it was easy to link the 16-bit file digitized into the Avid from the Digital Betacam downconversion and the 24-bit file in Pro Tools. Wood and first assistant sound editor Coya Elliott created a Filemaker Pro database to link the two. First they gearboxed the Avid files into Pro Tools (from the 16/47.952 standard to 24/44.1), phased them, and then trimmed and AudioSuite-duplicated the Deva files in Pro Tools so that they were the same length. When the sound department would receive OMF compositions from the picture department, Wood and Elliott used Gallery's Session Browser to re-link, using the Filemaker database. ADR recordings underwent the same treatment, so that any editing by Burt in the Avid could be traced back to the 24-bit Pro Tools files.

PICTURE EDITING

Ben Burt's assistant picture editor Todd Busch went back to Skywalker Ranch from Sydney in September 2000, while



Anakin and Obi-wan chase an assassin through Coruscant. Root sounds for the Zam speeders came from an assortment of musical instruments, which helped to create the sense of magnetic propulsion.

production continued in Italy, Spain, England and Tunisia. Joining Busch on the crew were Jett Sally, who had worked on *Episode I*, and Cheryl Nardi, who had met Burt on the *Young Indiana Jones Chronicles*. The *Episode II* Avid Film Composers were in the Main House at Skywalker Ranch. They shared cuts with the visual effects division, Industrial Light & Magic, by consolidating media to removable drives, or via shared drives over the Ranch T3 network.

Outside of Burt's obvious contribution to the *Star Wars* films via his sound

effects, Busch notes that "it's so hard to imagine anyone else cutting picture. George and Ben have a unique relationship. They've been at this for over 25 years. When they start working on a scene, Ben references his huge library of movies to assemble the various scenarios George comes up with. When I go back and look at Ben's first pass on the speeder chase or the platform fight or the arena battle, it's like getting a little lesson in film history." (Lucas first used this technique 26 years ago when making what we now refer to as *Episode IV*, cutting World War



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EPISODE II ATTACK OF THE CLONES

really specified to the editors each laser hit and each explosion; here, I tended to work more on giving them menus to choose what they liked from this set of materials. They would then go through the library and make choices that they would audition for me."

Throughout his 27-year involvement with the *Star Wars* films, Burt has been depicted to the public recording sound effects, from striking high-tension wires in the mid-70s to moving an electric

razor in a bowl for *Episode I* on the TV show *60 Minutes*. He says that "those examples are harder to come by on this film because I didn't record or create as many things that were relatively simple examples of what you can do at home in your kitchen! Much of what I made was complicated composites on the [Symbolic Sound] Kyma and on the [Sample Cell] keyboard—techno-based rather than the old tabletop of sound effects devices." (See "Sound Design," p. 86.)

Having said this, Burt does note that much of the Zam speeders, in the reel 1 chase in nighttime Coruscant, were made from musical instruments, including elec-

tric guitars, cellos and violas. The infamous electric razor was also brought into play to vibrate viola, harp and bass strings. "I was thinking that it was traveling magnetically, it was being pulled along the streets with changing magnetic fields rather than by self-propulsion."

Because Burt was in the "danger zone" of making tonal sound effects for the speeders, he had to be careful of the interplay with John Williams' music. "I originally did a temp version of that mix, using nothing but musical sounds for the speeders. My thought was that the music score would be percussion-based, along with tones for the ships. I temped it that way, but John Williams didn't quite do that, and his heavy orchestral piece necessitated rethinking the tonal aspects of the vehicles. In some cases, the musical tones that I made conflicted with the orchestra. Which was a disappointment for me, because I wasn't able to push it into a new area. My reasoning was that we've done an awful lot of high-energy chase scenes, and I wanted this to be offbeat and strange. But it didn't really happen."

During this project, Burt went back to original *Star Wars* library and redigitized some of it yet again, this time at 24-bit resolution. Although Skywalker Sound has upgraded the facility to a shared FibreChannel system in which sounds are pulled from a centralized server both in edit rooms and on mix stages, Wood and Burt organized *Episode II* editorial around "sneakernet" local drives, primarily for security purposes.

PRE-DUBS

In December, re-recording mixer Semanick took a look at the initial dialog tracks on a mix stage at Skywalker with Matthew Wood and Lucas, in order to help them prepare for ADR recording. Semanick wanted to be sure to get everything that they might possibly need, just to be safe. "My philosophy is, 'You can always throw it out,' and George would say, 'If you're going to throw it out, I don't want to do it.' But you don't know that until you get into it. The dialog tracks haven't been built yet. Maybe the backgrounds or the music will mask the noise. In this day and age, it's better to be safe." Semanick estimates that about 45% of the dialog in *Episode II* is from production, perhaps an all-time high for the *Star Wars* series.

When it came time to start his dialog predubs in early February, Semanick was able to put Rydstrom's background predub in the monitor as a guide to how far to go with processing.

Once a reel was premixed, Semanick

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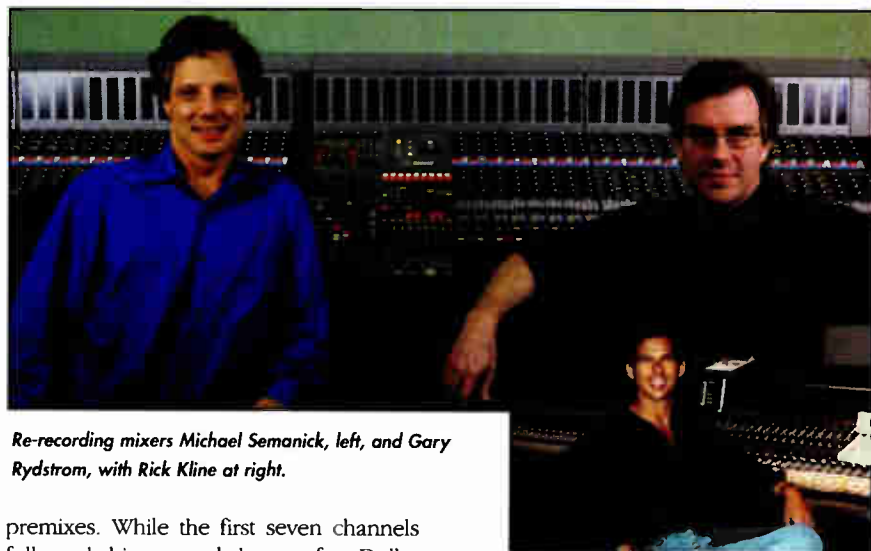
EPISODE II

ATTACK OF THE CLONES

made a separate pass for dialog reverb, and he would pick and choose among Lexicon 480, TC 6000 and even worldizing courtesy of speakers and mics in the basement of the Tech Building and outside on the grounds. Semanick took note of the programs and settings that he used to aid his fellow mixers in the foreign-language mixes (see "Day-Date Worldwide Release," p. 90). Notes were also kept for pitch changing, although that would be more language-dependent. While acknowledging that he could be "giving away secrets," Semanick says that in the long run, "there aren't any. You just do to taste what you think sounds great. People's tastes are different, and if George likes it, and Ben and I like it, then it's good. If everyone hates it, it's bad!"

All told, he spent approximately 15 days on the dialog, recorded as five 8-tracks: one for production dialog, one for ADR, one for creatures, one for loop group and another (split as separate 5-channel and 3-channel [LCR] groups) for the reverb returns to allow for flexibility during finals.

Rydstrom split his sound effects among ten 8-channel premixes, plus two Foley



Re-recording mixers Michael Semanick, left, and Gary Rydstrom, with Rick Kline at right.

premixes. While the first seven channels followed his normal layout for Dolby Surround EX mixes (L/C/R/LFE/LS/CS/RS), the eighth channel was a recent development that Rydstrom made with Skywalker engineer Jerry Steckling. Steckling designed a matrix to pick off frequencies sent to the three surround channels below a certain point and record them on a separate boom channel during premixing. Rydstrom says: "By keeping the low frequencies from hitting the surrounds, this made for a cleaner surround track. We could regain some of the low

end [that would be lost with small surround speakers]. The big benefit is that it keeps surrounds from overloading, from reproducing information that they can't handle. For a film like *Star Wars* with a lot of spaceship-bys, it's good to have something doing that automatically for you." During final mixing, Rydstrom folded the eighth track into the LFE track as necessary. This surround/sub band-splitting is, of course, similar to the way DTS splits the surround (and was indeed used as far

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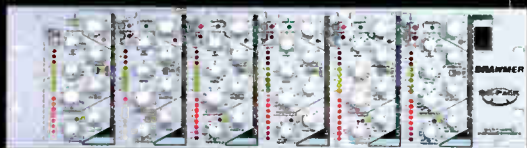
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back as 1980 for select engagements of *Altered States*).

ILM composed a high-definition version of the film off of their server to give Mix A at the Ranch the best of both worlds: nonlinear playback but at highest resolution. The conformed picture was output from the data files to Sony HDCAM tape, which was then transferred at the Technical Building on the Ranch to the Avica MotionStore. The HD image was only available for reels 1 through 5 during the mix, because reels 6 and 7 were undergoing so many changes.

The only downside to the HD projection that Rydstrom could come up with was that it was like mixing to a beautiful answer print the whole time. "You never had the step in going from an ugly picture to a beautiful picture, where you say, 'This sounds great!' It was wonderful for lip sync, to see all that detail."

FINAL MIX

The final mix of *Episode II* started on March 4, at which point Rydstrom and Semanick were joined at the Neve DFC by veteran L.A.-based re-recording mixer Rick Kline, who would be handling the music. This schedule was in contrast to so many movies these days, where final mixing and premixing overlap, and multiple stages are working simultaneously at the last minute. "They schedule enough time so we don't have to do that," says Semanick. "George locked the picture



Boba Fett, the leader of the Geonosians and Jango Fett observe the arena battle in the climactic reel 6.

early enough so that we're not beating our heads against the wall trying to finish it up at the last second, which I think is pretty smart if you can plan it."

Lucas was not able to be there for the predubs and began each reel at the final mix (after a play-through with faders at zero) by soloing the dialog. He would then make ADR and reverb selects, often asking for more worldizing. "Although there are great programs available for both the 480 and the TC [6000], sometimes worldizing is more noisy and raw. A little grit never hurts," says Semanick.

Lucas would then have Kline solo the music and would pick through it, commenting on transitions and places to drop or change cues. Effects did not, as a rule, undergo this "solo microscope," presumably because Lucas had heard effects throughout the picture editorial and temp

dub process.

Excepting one playback of the first four reels, the first screening that Lucas and the crew had of the whole movie was only days before the end of the final mix on Saturday, April 13. This and another screening that week for friends produced 12 pages of notes from Lucas that were addressed over the last days of the mix.

Many of these notes revolved around dialog intelligibility issues. Lucas had asked those attending the second screening to let him know if any dialog wasn't clear. Semanick, being the dialog mixer, remembers with glee Lucas' mantra during the final mix: "Everything is subservient to dialog."

Music was recorded by Shawn Murphy at Abbey Road Studio One in London, the site of the *Episode I* recordings three years earlier. With 14 sessions from January 18-



DIGITAL CINEMA RELEASE

About a month after its U.S. premiere in May 1999, *Episode I* was exhibited digitally in a handful of theaters in Los Angeles and New York. It had been shot on film, scanned in as digital 2k files, and then filmed out on a shot-by-shot basis, with the negative cut in the stan-

dard fashion. This procedure required a telecine of a timed interpositive (as is standard for home video release) to high-definition videotape prior to compressing the image onto the hard drives in the theaters. The digital path from camera to theater was more direct, of course, on *Episode II*, with much of the work handled in-house at ILM.

Mike Blanchard, Lucasfilm technical director, says, "Because we were in this other domain, and there was no HD editing up here, if we wanted to conform the picture, we had to find a way to do it. ILM's video engineering group, under the direction of Fred Meyers, built a conform system that would use the Avid EDLs as a guide to take the files off the server in editorial order." This would be necessary to create all masters, be they 35mm anamorphic negatives for release printing, or source elements for digital cinema compression. (The reduction for the 142-minute *Episode II* is from approximately 1.6 terabytes of digital files on ILM's serv-

er to 60 gigs on the digital cinema server.)

As of press time, Lucasfilm hopes to get as many as 115 digital theaters worldwide for the release of *Episode II*, with 70 theaters in North America, 26 in Europe and 12 in Asia (mostly Japan). All of the major digital cinema servers are represented: EVS (used exclusively in Europe), Q-Bit, Qualcomm (via Technicolor Digital Cinema), and Boeing Digital Cinema, which primarily uses Avica servers. This was Avica's third "appearance" in *Episode II*, the first two being on the set, as still-store frame reference, and at Skywalker Sound for HD playback.

Many of the Boeing installations are delivered via an encrypted satellite link to theaters, where an Avica server stores and embeds the audio as part of the MPEG-2 standard, as opposed to the two separate sets of files used by other servers. (The MPEG encoding is similar to HDTV, but at a much higher bit rate.) Because of this, many of the Boeing installations will have Dolby AC-3 encoded 5.1 Surround EX mixes (at the DVD rate of 448 kbits/sec), as opposed to the 24-bit/48 kHz linear digital audio that has been standard. Blanchard notes that this will undoubtedly change in the future, "as soon as the remaining coding issues are solved."

In all instances, worldwide, the projectors are the Texas Instruments DLP format, manufactured either by Barco, Christie or Digital Projection.

—Larry Blake

EPISODE II ATTACK OF THE CLONES

26, Murphy recorded to two 2-inch Dolby SR-encoded 24-tracks. The mix was done simultaneously to Pro Tools via a 2-inch 16-track, including a 5.1 main orchestra and 3-track (LCR) groups of synth, percussion and choir. Kline says that the music was "wall-to-wall-to-wall," absent for only a few minutes and playing "full tilt" for most of the time.

As to the challenge of weaving all of this music around dialog and effects for 142 minutes, Kline says that his work was made easy not only because of the composing of John Williams, the masterful editing of his longtime associate Ken Wannberg, and the excellent recording by Shawn Murphy, but also because of Rydstrom's deft handling of sound effects. "Gary is such an incredible mixer. He has a real sense of the music and is very tuned-in. He's forever creating space to allow textures of the music to come through. It was such a treat to work with his and Michael's talents. I think it came out to be a very good blend [of dialog, music and sound effects]."

Williams had composed the film to the



Civil war begins in reel 6, one of the most action-packed and sound-intensive sequences ever put on film.

edit as of last December, and as a result extensive editing was required to conform the tracks for the final mix. The smallest number of fade files in Wannberg's Pro Tools sessions for a reel was 7,000; most reels had from 12,000 to 14,000. Kline remembers assistant music editor Steve Galloway asking him for some heads-up to reel changes, since sessions sometimes took 20 minutes to open!

AND THEN THERE'S REEL 6

Rydstrom says that *Episode II* was organized so well in post-production that, by the time they got into final mixing in March, most reels were "almost 100 per-

cent complete and never changed." The one exception was reel 6, which was 1,812 feet and 6 frames full of some of the most intense and busy action sequences ever put on the screen. Reel 6 is traditionally the big action reel in the *Star Wars* series, but Rydstrom says that this one was so big "it was as if you had taken the previous four *Star Wars* movies and projected them on top of each other. I would be crawling through the film frame-by-frame and asking, "Which laser did you mean this one for, Terry, the 15th on the left of this frame?"

Todd Busch remembers that reel 6 didn't exist in anything resembling its current

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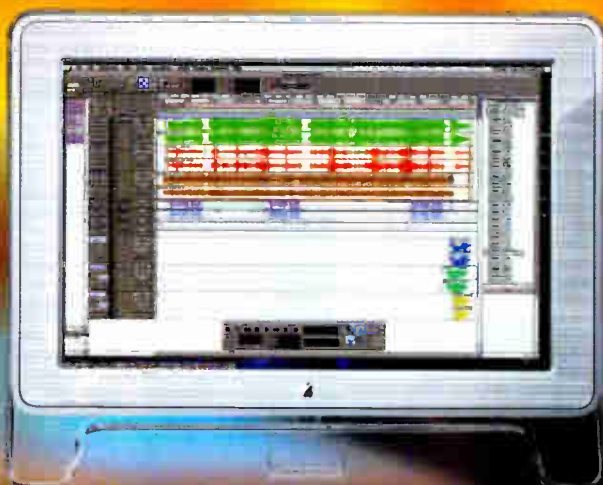
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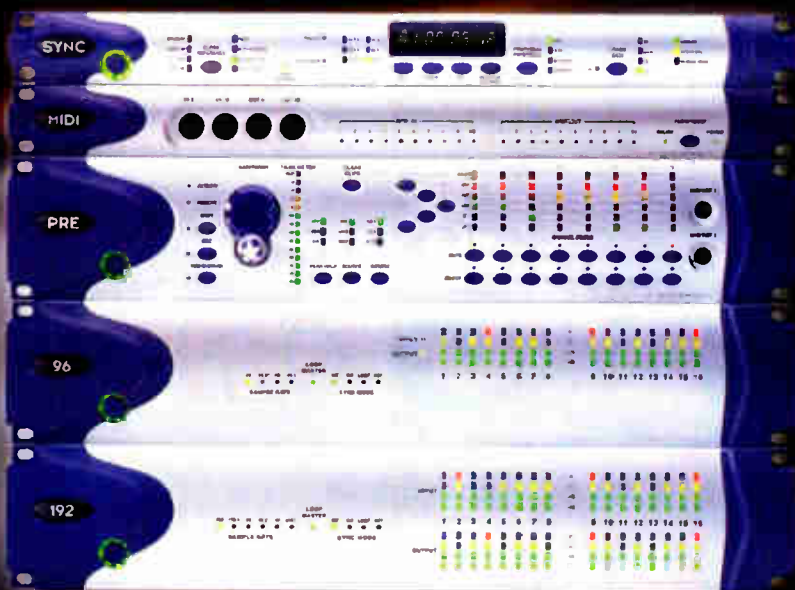
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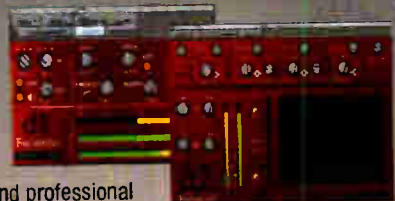
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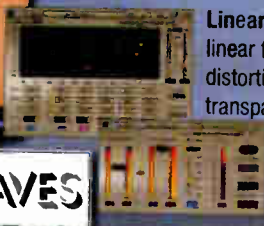
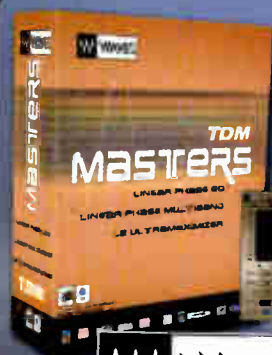
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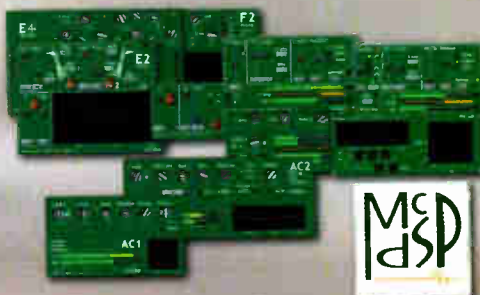
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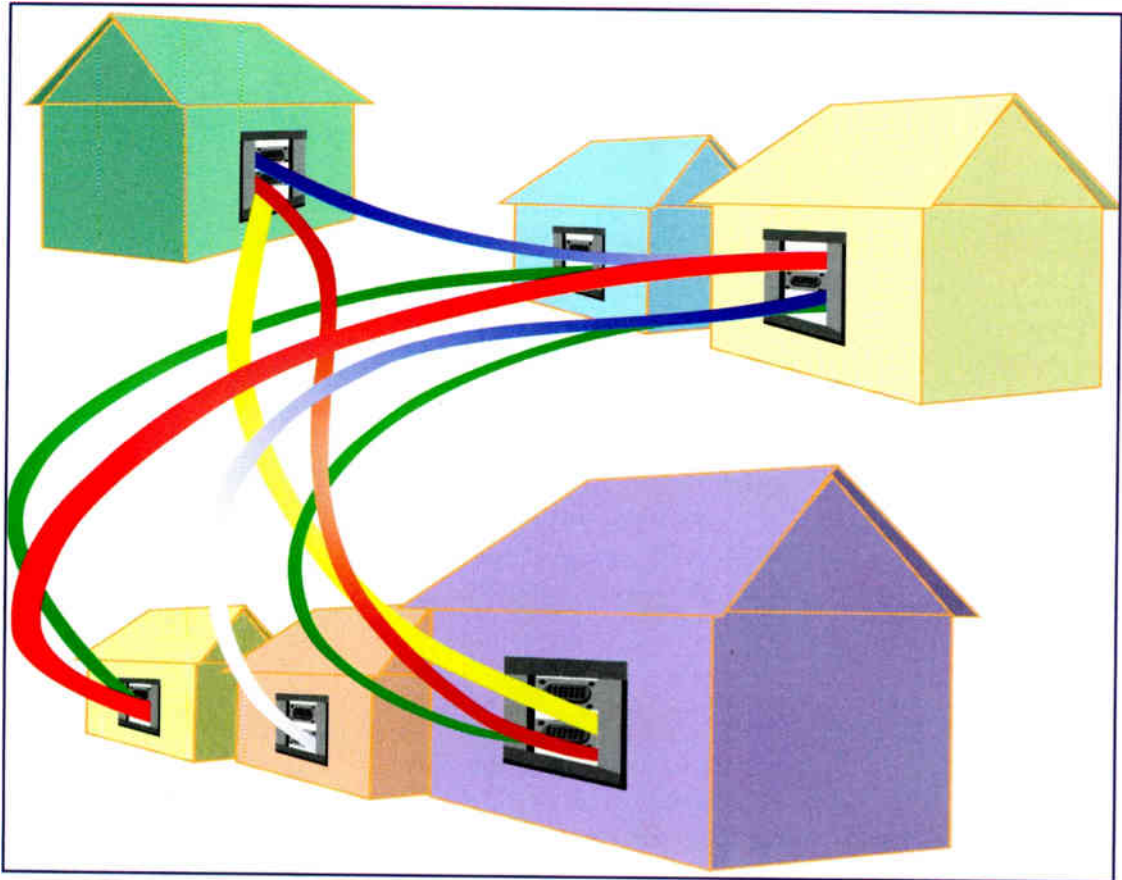


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For a moment, cast your mind back to high school physics, where we learned that there are three basic electrical components: resistors, inductors and capacitors. (If you were on 420 patrol during that period of your life, refer to the sidebar.) Anyway, wire is a great conductor at low frequencies but exhibits increasing impedance as signal frequencies rise. That's why long

runs of wire, such as for tielines, should employ better grades of low-capacitance cable.

Signal frequency is important when connecting digital devices because, unlike analog audio, where the highest frequency of interest is about 80 kHz on a good day, digital audio requires at least 100 times the bandwidth to ensure safe transmission of the data. As an example, the folks at Gepco spec their AES/EBU-specific, wide-bandwidth, extended distance, multipair products at a 12.3MHz bandwidth, "compliant with the 1999 revision of the AES3 standard for transmission of digital audio at sampling rates up to 96 kHz." Also, any product intended for AES/EBU, whether from Belden, Canare, Gepco, Mogami, Mohawk or West Penn/CIDT, must also provide the controlled 110Ω impedance that megahertz bandwidth requires.

"So," you may ask, "what'll happen if I use Billy Bob's El Cheapo brand of mic cable instead of AES-spec cable?" Maybe nothing, or maybe the signal won't arrive at the receiver with enough strength to be decoded reliably. If you're desperately in need of a temporary run of wire, a good rule of thumb is to

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RIDGEMONT HIGH, PART DEUX

Resistors, capacitors and inductors are all the components you need to build a passive equalizer, a box that changes the amplitude of an analog signal based on frequency. These three building blocks are also present, to some degree or other, in every piece of commercially manufactured wire. This is especially true of cable with two or more conductors, because those conductors have insulation between. So, cable inherently behaves differently to AC signals of differing frequency. Since the birth of "hi-fi," this fact has allowed consumer audio manufacturers to sell some laughably goofy products to uninformed consumers. Though the effect is very, very small in short lengths, it makes a difference in long cable runs or when multiple connectors are present.

Resistors: All room-temperature electrical conductors have some amount of "resistance" to electron flow. A substance with massive amounts of resistance can be thought of as an "insulator." Gold, silver and aluminum are good electrical conductors, while most plastics, glass, dry air and dry paper are all good insulators. Pure water is a good insulator, but dissolved impurities improve the conductance considerably.

Theoretically, resistors are frequency-blind. A good conductor acts as a "short circuit" for the easy flow of electrons, and an insulator blocks electron flow, regardless of frequency. Complex signals like analog and digital audio are "alternating current," or AC signals. This means that electrons flow back and forth in opposite directions at some instantaneous frequency. For instance, the wall outlets here at Seneschal nominally provide 110 volts of electrical potential or pressure and about 10 amperes of current or flow rate before the circuit breakers trip. Now for a key point: All real-world electrical circuits behave differently when AC signals are applied, providing different resistance relative to their DC behavior. This differing, frequency-related AC resistance is referred to as "impedance."

Capacitors: When two conductors are separated by a small amount of insulation, they act as a "capacitor," capable of storing electrical potential or voltage. Imagine a "jelly roll" of two sheets of aluminum foil (the dough) separated by plastic food wrap or waxed paper (the jelly). If you hook a wire or "terminal" to each sheet of foil, you can store electricity inside the jelly roll. The better the intervening insulation, the longer it will hold the "charge." This capacitive effect is produced when opposing charge, polarity-wise, builds up on each "plate," the foil in our jelly roll. Because the electrons are prevented from flowing across the insulated gap between plates as voltage is applied, the electrons pile up along the outer surface, unable to jump across the chasm of low electrical conductivity.

You (a "bag" of salty water) act as a capacitor when you shuffle around in your slippers (an insulator) on a rug, pulling charge off of the carpet fibers, across the insulator and onto your outside conductive surface (your salty skin). Touch a good conductor and...Ouch! You allow all those spare electrons to flow away in a momentary spark.

When an AC signal is applied to a capacitor, the amount of charge stored varies depending on the frequency. At 0 Hertz or DC (direct current), a capacitor will charge up quickly but not let any electrons flow once it's full. So, for DC, it basically acts as an insulator after a momentary spike to charge it. For AC, however, capacitors act more and more like a conductor as frequency increases. At some relatively high frequency, a capacitor will act as a good conductor or "short circuit" as if the insulation weren't even there. So remember: For capacitors, impedance drops as frequency increases.

Inductors: On to inductors, which are nothing more than a length of wire wound into a coil. All conductors have magnetic fields that wrap around them whenever electricity flows through them. That's why voice coils move relative to the permanent magnet in a loudspeaker when signal is applied. When you coil a wire, the individual magnetic fields of each strand reinforce each other to collectively produce a larger magnetic field—that old "greater than the sum of its parts..." thing.

Impedance-wise, inductors are the complement of capacitors, acting opposite to them when you apply AC signal. At low frequency, it's just a wire so it exhibits low or no resistance. As signal frequency increases, it's harder and harder to build a magnetic field of one polarity, then collapse it and build another of the opposite polarity. So, at relatively high frequencies, inductors act as an "open circuit" or insulator. Remember: For inductors, impedance rises as frequency increases.

—OMas

try a double-length of the cable in question, and if that appears to work, then using half that length should serve reliably. Again, only in a pinch, because, unless you apply test gear to the wire in question, you have no idea how close you are to the cliff where digital stops working. Also, as AES/EBU decreases in signal strength, jitter rises proportionally, which is not a good thing.

If you find that you often need ad hoc audio wiring around your facility, a good alternative to "patch and pray" is AES baluns or impedance-matching transformers in conjunction with standard 75Ω video cable. Baluns, available from Canare, ETS and Graham Patten, are passive widgets that match the impedances between the AES/EBU Type-I PHY or balanced physical interface and the unbalanced coaxial cable. They also provide the necessary XLR-to-BNC connector conversion; Canare offers one that provides level-matching as well. Because co-ax is designed for the much wider bandwidth of analog video, it works well in a pinch for digital audio. The issue of controlled impedance also means that you should never use connectors or patchbays for digital audio that were designed for analog applications, because the screwy impedance through such old-school assemblies will seriously compromise the signal integrity.

For networked data transmission, requirements are even more stringent. With Gigabit Ethernet becoming increasingly common, especially in Mac-centric shops where their towers all ship with it standard, the issue of cabling is rather significant. The most common Category 5 cabling choice is UTP, or unshielded twisted pair. Old-school UTP works fine for 100BaseT runs within most studios. However, 100BaseT requires new restrictions on crosstalk and loss to ensure full throughput, so new patching and wiring systems have been developed for the latest network standards. For short runs, enhanced Category 5, or Cat5e, works great, but Cat5e cable isn't designed for GigE on long wire runs, and cannot support multiple patchbays or other impedance discontinuities. For those situations, Category 6 is needed, and that stuff cannot be installed by a DIY type. For new installs, I recommend that you look into having a contractor provide your data-cabling infrastructure. They can assess your needs, specify and install the stuff, and then test, benchmark and document the whole lot before you sign off on the job.

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I should mention here that, because TCP/IP is designed to traverse a hostile path where packet loss is a routine fact of life, you can hook up any old UTP and get some data through your system. What you won't get is the specified data throughput, and I'm not even talking about managed switches vs. dumb hubs or any such high-level stuff. In the world of high-speed data carriage, less-than-spec means poor performance.

All this copper we've been discussing has to go somewhere, and though dedicated wiring troughs in or under the floor are common for new build-outs, not everyone can take that route. These days, wiring troughs designed for retrofit installs have gotten much better than the two-piece, bent, sheet metal crap that I contended with in Ye Olden Days. Companies such as HellermannTyton, with their InfoStream raceway, and Hubbell, with their MediaTrak products, are less expensive, install faster and make changes more easily than you can with older, two-piece designs. Modern raceways are designed to maintain the minimum bend radii required for copper and fiber and are available in multichannel configurations, so you can lay your audio and data cables in separate channels. When you lay, pull or dress your own cable, be sure to go easy on the wire ties. They should not be so tight that they dent the cable jacket—this will cause impedance discontinuities, reflections and reduced throughput.

One last thing...if your remodeling plans call for a remote machine room/closet, you should consider smart power management, which will save you precious time and money. Modern "power strips" from Pulizzi Engineering, Server Technology and Western Telematic include an Ethernet port to allow remote management and sequenced power-up capabilities. So, when upgrading your creative crib, expend some time and spend a bit of cash on your wiring. You'll be happy you did! ■

OMas, heralding the return of the fog to his City by the Bay, now wonders what became of Adrian Barbeau. This column was created while under the influence of EMI Classics' DVD-Audio release of Holst's The Planets and Badly Drawn Boy's The Hour of Bewilderbeast, which I wish was released on SACD. Links and occasional commentary for "Bitstream" June are hanging out for your edification at www.seneschal.net.

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USB

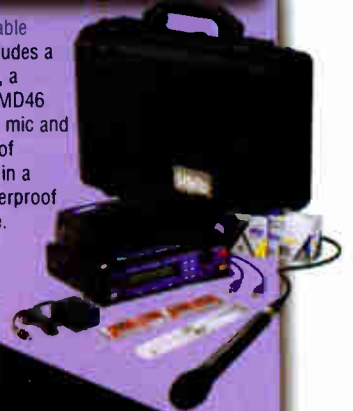
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Three separate powering options are all supplied as standard: Rechargeable Nickel Metal Hydride batteries, an AC mains adaptor/charger (that connects to the 12-15V DC input) and a spare caddy for 8 standard AA alkaline batteries.

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This unbeatable package includes a PORTADISC, a Sennheiser MD46 interviewers mic and a full range of accessories in a rugged, waterproof Pelican case.



The PORTADISC portable MiniDisc recorder combines exceptional sound quality, a rugged, dependable MD drive and a full complement of professional features including a 6 second pre-record buffer, 40 second memory buffer and lockable controls. Comprehensive connectivity includes balanced

XLR Mic/Line inputs, RCA/phono line outputs and coaxial and optical digital I/Os. An On-board sample rate converter is included and Mic inputs feature switchable attenuation, bass roll-off, limiter and 48V phantom power.

An intuitive menu structure makes it easy to configure the PORTADISC for your precise requirements. There are five user programmable set ups so you can switch quickly for different recording applications. The large illuminated display also provides clear metering, margin indication and track, time and battery information while working in the field.



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New Hardware/Software for Audio Production



HHB CDR830 BURNIT PLUS

The CDR830 BurnIT PLUS CD recorder from HHB (www.hhbusa.com) is based on the CDR830 but adds new connectivity features, including balanced XLR analog I/Os with line/mic-input gain switching, balanced XLR digital I/O, wordclock input (enabling sync playback at 44.1 or 48k sample rates) and parallel remote inputs. Housed in a 19-inch rackmount chassis, the BurnIT PLUS features 24-bit A/D converters and 24-bit multilevel Delta Sigma D/A converters. A CD Text facility stores and displays disc, artist and track names, and an SCMS-free digital input and built-in sample rate converter allow synchronous recording from CD, DAT, MD or hard disk. A digital record gain control allows level adjustment of digital inputs, and the unit can also record dynamic microphones direct.

digital audio recording and editing at up to 48 kHz. It includes a SADiE rack-mount PC with a 667MHz Pentium III processor, 128MB RAM, 10GB internal IDE drive, AGP video card with 8MB VRAM, and 48x CD-ROM drive. Other components include a 19-inch rack PC case, external SCSI interface, RADiA PCI processing card, balanced breakout cable assembly, and one removable 9GB SCSI audio drive, plus a new 15-inch LCD panel and the RADiA Master Control Panel. The Master Control Panel includes transport controls; scrub wheel; Edit, Locate and Function keys; motorized faders; and time displays. I/Os are balanced analog, AES/EBU and S/PDIF. List price is \$11,795.



BOMB FACTORY FUNK LOGIC MASTERIZER

Bomb Factory (www.bombfactory.com) announced the new Funk Logic Masterizer plug-in for MOTU Digital Performer and Digidesign Digi 001, Pro Tools|MIX and Pro Tools|HD users. Developed in partnership with Funk Logic (www.funklogic.com), this mastering processor features a 3-band "Peometric Aqualizer" for equalization, dual "Analogmic Needlators" for monitoring, an Ear Fry/Unloud switch, and an On/Moron selector. There are also hundreds of presets. Funk Logic Masterizer retails for \$1,695; a time-limited evaluation is available for download.

SYNTRILLIUM COOL EDIT PRO 2.0

Syntrillium (www.syntrillium.com) announced that Cool Edit Pro 2.0 is now shipping. New features include real-time effects, track EQ, MIDI and video playback support, MTC master generation,

new effects, loop-based composition and a compressed-loop file format. Cool Edit Pro users will also have access to thousands of free downloadable MP3PRO-based loops from Syntrillium's new loop library at www.loopology.com. Disk-at-Once CD burning is also available as a downloadable plug-in. Cool Edit Pro 2.0 can be downloaded from Syntrillium's Website for \$69.

GLYPH MBOX COMPANION

Glyph (www.glyphtech.com) introduces the Companion FireWire storage system designed specifically for Digidesign's MBox System. Available in 80 or 120GB sizes, the 7,200 rpm drive allows recording, editing and mixing of at least 24 tracks of 24-bit audio, handling 140-420 minutes of audio at a sample rate of 48 kHz. Glyph's ATA-to-IEEE1394 bridge boards have the ability to push the data ATA/100 (ATA-5) interface to

its limit of 50 MB/sec using the Oxford 911 chipset, specified by Digidesign for use with its systems. The Companion's S.M.A.R.T. (Self-Monitoring, Analysis and Report Technology) system monitors and predicts device performance, allowing users to detect potential drive failures before they happen and save files before they are lost. It also features composite metals and automatic thermal-sensing cooling, and physically couples with the MBox to maintain a small footprint.



SADIE RADIA PLATINUM

SADiE (www.sadie.com) has introduced the RADiA Platinum, which features updated editing software, a new 15-inch LCD monitor and a smaller footprint. The latest addition to the RADiA workstation line, the RADiA Platinum is a 4-in, 4-out system with 24 replay tracks and 24-bit

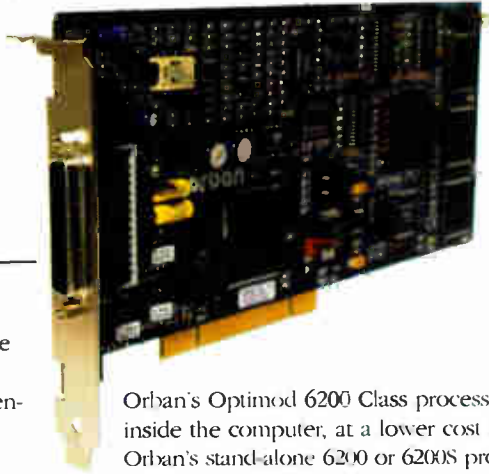
LIQUID AUDIO DISTRA

Liquid Audio (www.liquidaudio.com) recently debuted Distra, a hardware software system for Web-based delivery of digital audio that combines approval, reference, collaboration and distribution. The system, available for license, is an all-in-one hardware/software server designed for securely managing digital audio distribution, including relevant metadata. Distra supports multiple audio formats, and uses Liquid Audio's security and digital rights-management technology to protect files. Recipients can use the Liquid Player software to stream, download, organize and export audio files while en-

forcing the usage rules set by the sender. Liquid Audio's real-time tracking and status information are available so confirmation is automatic, and client billing can be generated electronically.

ORBAN OPTIMOD-PC CARD

Orban (www.orban.com) announced that Optimod-PC 1100 "Optimod on a PCI Card" is now shipping. Designed to run on Windows 2000 and NT, Version 1.0 of the Optimod-PC control software and driver can control Optimod-PC cards on a local computer or anywhere on a customer's network. Optimod-PC brings



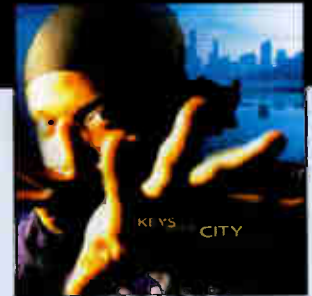
Orban's Optimod 6200 Class processing inside the computer, at a lower cost than Orban's stand-alone 6200 or 6200S processors. This processing is optimized for digital transmission channels that use lossy compression, like Internet streaming and digital radio, but Optimod is also a professional-quality sound card with analog and AES/EBU inputs and outputs. On-board Motorola 56362 DSP chips perform audio processing, freeing the host CPU. Suggested retail price is \$1,490.

UPGRADES AND UPDATES

BitHeadz is now shipping **Unity 3** Session, which combines and expands upon Bitheadz' Unity DS-1, Osmosis and Retro AS-1 applications. The new 3.0 plug-in architecture allows the combination of sampling, synthesis and physical modeling, with real-time audio manipulation. The upgrade can play back samples loaded into RAM, while simultaneously streaming larger samples off the hard drive and convert multiple sample formats. Unity Session will now detect MAS, VST, RTAS or DirectConnect setups automatically and configure itself. List is \$64; for a full feature list, visit www.bitheadz.com...**Steinberg** is beta testing Nuendo for OS X, and at press time, was preparing to start a public beta program for registered Nuendo Mac users; visit www.nuendo.com. In other Steinberg news, Steinberg and Wizoo have released the first titles in the **HALionized CD-ROM Series of factory libraries** for Steinberg's HALion software sampler. Check out *Techno Guitars*, which combines guitar, synths, processing and music by Craig Anderton; *Latin Percussion*, the HALion version of Wizoo's similarly

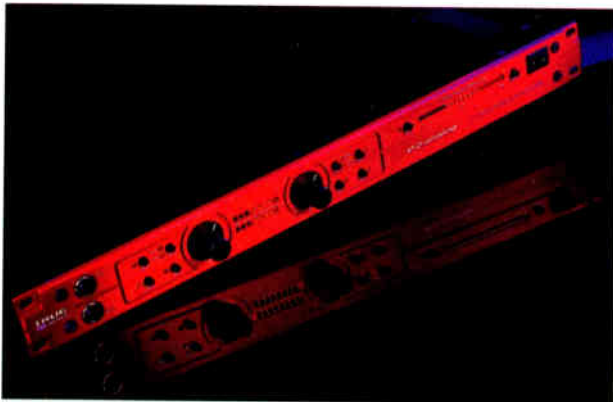
named *Platinum24* title; and *mixTended*, based on material produced by Bitbeats with five drum kits. All HALionized titles are two-CD sets and list for \$99.99...

Midiman Inc. (www.midiman.com) announces the M-Powered Artist program, which highlights the work of musicians—both signed and unsigned—who use Midiman and M-Audio products. The program's first release, *M-Powered Artists CD—Volume 1*, is a compilation of tracks from BT, Mark Isham, Jonatha Brooke and other well-known artists; future volumes will also include tracks from up-and-coming artists. The release is an Enhanced Audio CD with a multimedia component that includes artist bios and links...**GMEDIA Music** announces the release of a second set of sounds for the M-Tron VST plug-in instrument. *M-Tron Tape Banks Vol. 2* provides M-Tron VST owners with 24 rare sounds, including custom tapebanks recorded for Tangerine Dream, Frank Zappa and Yes, plus a tapebank faithfully re-creating Genesis' *Watcher of the Skies* string, brass and bass accordion pad. GMedia is distributed in the U.S. and in Canada by



Q Up Arts, www.quparts.com. *M-Tron Tape Banks Vol. 2* is available for \$59.00 USD...*Keys to the City* is a CD-ROM library of synth and keyboard grooves organized into multitracked compositions from **ILIO Entertainments**. The collection was created and produced by Michael Bearden and includes a variety of genres. Visit www.ilio.com for more information...**Yamaha** released free, downloadable **MIDI remote templates** for the industry's popular computer-based music recording and production software, specifically designed for the AW4416 and AW2816 Professional Audio Workstations. Downloads can be found on the AW4416 and AW2816 Websites at www.aw4416.com/e/download/download.html or www.aw2816.com/e/download/download.html, respectively. ■

Preview



TRUE SYSTEMS P2 STEREO MIC PRE

TRUE Systems offers the P2 Analog 2-channel microphone preamplifier, a hybrid, totally balanced, dual-servo, high-voltage design for improved transient response, headroom, imaging and noise performance. Distributed in the U.S. by Neumann (www.neumannusa.com), the P2 Analog features a selectable M-S decoder, active DIs with impedance-modification capability, dual gain-range selection and a multi-frequency highpass filter. In addition, the P2 Analog features a Stereo Phase-Correlation display that assists in optimizing microphone placement for stereo recording. The P2 contains many military-grade, hand-matched components, and signal switching is done via high-reliability, gold-contact relays in order to maintain a short signal path and eliminate distortion and noise.

CEDAR NOISE SUPPRESSOR FOR PRO TOOLS

CEDAR (www.cedaraudio.com) has introduced the DNS2000, an automated implementation of its noise-suppression technology designed specifically for Pro Tools users. Connected to a Pro Tools-host system via a USB cable, the DNS-2000 processor unit provides 24-bit AES/EBU and S/PDIF I/O for the system, plus the DSP necessary to process two independent audio channels simultaneously with virtually zero latency. DNS2000 Remote-Control Software pro-

vides a fast, intuitive user interface based on CEDAR's award-winning DNS1000 noise suppressor, and runs on all suitable Macintosh-based Pro Tools systems. Fully integrated within the Pro Tools environment, the software controls all aspects of the DNS-2000,

as well as automating all its operating parameters. The DNS2000 incorporates advanced timecode capabilities, and up to 126 processor units (252 channels of digital audio) may be processed simultaneously.



UNIVERSAL AUDIO MIC PRE

Universal Audio (www.uaudio.com) has released the 2108 2-channel microphone and instrument preamplifier. Designed around discrete, solid-state, Class-A circuitry inspired by the legendary 1176LN compressor/limiter, the 2108 emulates the warm sound and musical tone of the 1176LN. In addition to a balanced microphone input, each channel of the 2108 includes switchable input impedance, phantom power, switchable input and output signal metering via a 3-stage lamp, and front panel polarity reverse and power switches. I/Os are transformer coupled, and the unit also features dual, front panel, hi-Z instrument inputs. The Universal Audio 2108 is available at a special introductory price of \$1,695.

ROLAND MIC-MODELING PREAMP

Roland (www.rolandus.com) is now shipping the MMP-2 Mic-Modeling Pre-amp, a 2-channel desktop microphone

preamp that features 24-bit/96kHz A/D conversion and COSM Mic Modeling, which emulates the sound of vintage and high-end studio mics. The MMP-2's USB port can connect the MMP-2 to any Mac or PC with a USB port, enabling users to draw EQ curves and set compressor parameters via the included software's graphic interface. Users can also use the USB connection to download new effect plug-ins. Featuring the same analog circuits as in Roland's VS-2480 mic preamps, the MMP-2 also includes four bands of fully parametric EQ, modeled tube compression, an enhancer and a de-esser. Mic inputs (two) are XLR/TRS, and out-

puts are balanced XLR. The MMP-2 also has a coaxial digital input and S/PDIF and AES/EBU digital outputs.

ILLBRUCK SONEX CORNER TRAPS

New from Illbruck Inc. (www.illbruck-sonex.com), SONEX® Corner Traps provide up to 12 sabins of sound absorption below 500 Hz. Measuring 24 inches high by 12 inches deep, the triangular-shaped, gray, polyurethane foam Corner Traps absorb unwanted low-frequency sound waves in recording studios and other critical listening environments. Providing adequate sound control when stacked two high in each corner, Corner Traps may also be stacked from floor to ceiling for optimal sound control.



SOUNDTRACS DIGITAL CONSOLES

Soundtracs (www.soundtracs.co.uk) has introduced the D4 and DS-3B digital consoles. The D4 is based on Soundtracs' touch screen worksurface topology, and provides for up to 320 full-audio channels and 124 output buses, all controlled by automation. The D4 is available in various frame sizes (16-fader up to 96-fader) with optional rack expanders. Multiple consoles can be linked to create a surface with an almost unlimited number of faders and channels addressing 124 assignable output buses. The DS-3B console is a 32-bit, floating-point, digital production console that incorporates touch screen technology, and the system operates at 96 or 48 kHz with 24-bit conversion. Each of the 64 or 96 channels offers 4-band equalization and dynamics sections, and there are 32 output buses (each with limiters), and stereo, LCRS and 5.1 output formats. The DS-3B is supplied standard with 25 motorized faders, but a new version includes 33 faders and an extra TFT screen. A comprehensive 32x6 monitor matrix is also included. Both the D4 and DS-3B run Soundtracs' onboard digital FX package.

QUESTED STUDIO AMP

The AP500 from Quested (www.quested.com) is the smallest of the AP Series of power amplifiers. Like the AP800 and AP1300, the AP500 features complementary Class-A/B bipolar outputs with a floating drive stage, providing exceptional sonic performance. The design also provides for "soft start" power-on sequencing and sophisticated monitoring of load, temperature and other operating parameters to ensure safe operation at all times. Loudspeaker protection is provided by internal audio limiters that are inaudible during normal operation. The AP500 provides an output per channel of 300 watts into 8 ohms, and 500 watts into 4 ohms.

ADAM P-SERIES MONITORS

The ADAM P-Series powered Analytical Monitors from McCave International Inc. (www.mccave.com) are designed for professional project studios, broadcast facilities and post-production facilities. Featuring



the proprietary ADAM folded-ribbon HF driver, the new line of powered monitors includes the P11-A, the P22-A and a matching powered subwoofer, the Sub-P.

ADAM folded-ribbon technology is designed to provide a nearly 3:1 advantage in terms of effective diaphragm area, and a 4:1 improvement in transient air-pressure rise time when compared with conventional voice coil, electrostatic or magneto-static transducers. The result is significantly greater precision in imaging and high-frequency detail. Prices for the P-Series units are: P11-A, \$1,895 per pair;

P22-A, \$2,495 per pair; and Sub-P, \$1,695/each.

**HOT OFF THE SHELF**

Kangaroo Covers offers a line of custom-made amplifier covers featuring exterior pockets, double-stitched inside seams and leather logo. Made with 1,050-denier ballistic nylon or 32-ounce, heavy-duty, textured vinyl, covers are water-repellent and include nickel-plated, rust-resistant buckles. Typical price is \$149.95. Call 800/431-5537 or surf to www.kangarooampcovers.com...**E-MU®** has released **Version 1.31 Software** for its XL-7 and MP-7 Command Stations and Proteus® 2500 Command Module. Also new is E-Loader Version 1.1, a tool that enables users

to download/upload SMF sequences via USB and MIDI and troubleshoot any component of their MIDI setup. Both upgrades are free and can be found at www.emu.com...**Music 2 Hues** has released four new royalty-free music production and sound effects CDs; titles are *Somber Guitar*, *Groove-a-Holic*, *Nature* and *Global Pulse*. Also available is a new 10-CD *Sound Effects Series* that includes 1,000 natural indoor and outdoor effects. Call 800/821-7515 or visit www.music2hues.com... **The Live Sound Manual** from Backbeat Books is a comprehensive guide to

both the technology of live sound and the techniques to get the best results. The 256-page, large-format paperback, which includes a glossary of technical terms and P.A. jargon, lists at \$29.95. Visit www.backbeatbooks.com...**Mogami Cable** has introduced the "Mogami Gold Series," the first in a series of cables aimed at the broad consumer and semi-professional market. Offering lower noise, higher dynamics and superior audio quality, the Gold Series is competitively priced. For more information, call 800/800-6608 or go to www.mogamicable.com. ■

and 24-bit .WAV and .AIFF files, but unfortunately, no MP3s (at least not yet). Once you have a set of samples you like, Live can save these samples to load with the corresponding "Set" by saving the session as a self-contained project. This makes a copy of each sample in a folder automatically given the song's title—a well-thought out file-management tool! Next, I distributed a good mix of loops around Live's Session matrix and clicked on the right-hand row marker and, *voilà*, orchestration. All of the loops commenced at the same time and tempo. The synth bass and drum loops, which were previously not in sync, played perfectly in time together at 130 bpm. Live's default tempo setting. As I adjusted Live's project tempo, and the loops slowed down in real time, the overall sound quality was excellent. Also, Live allows for real-time transient editing to adjust how loops feel or how they are interpreted by the software time engine. This means that Live can put a snare that was originally played on the 2 on the 3, etc. And with one mouse click,

you can make Live play a given loop at double, half or quadruple the speed of the original tempo. One negative, at least for this version, is that Live won't allow you to

sient shaping (aka, sonic degradation) could be detected. Keep in mind that Live can also alter the loop's pitch independent of tempo. You owe it to yourself to download the demo and try playing your favorite synthesizer loop against itself, de-tuned by a few cents. Live can re-pitch a loop ± 36 semitones (half steps) or three octaves. The fine-tune range is ± 50 cents.



Here are Live's EQ (a 4-frequency parametric EQ) and the impressive, even outlandish, Filter Delay routed pre-fader on Track 1.

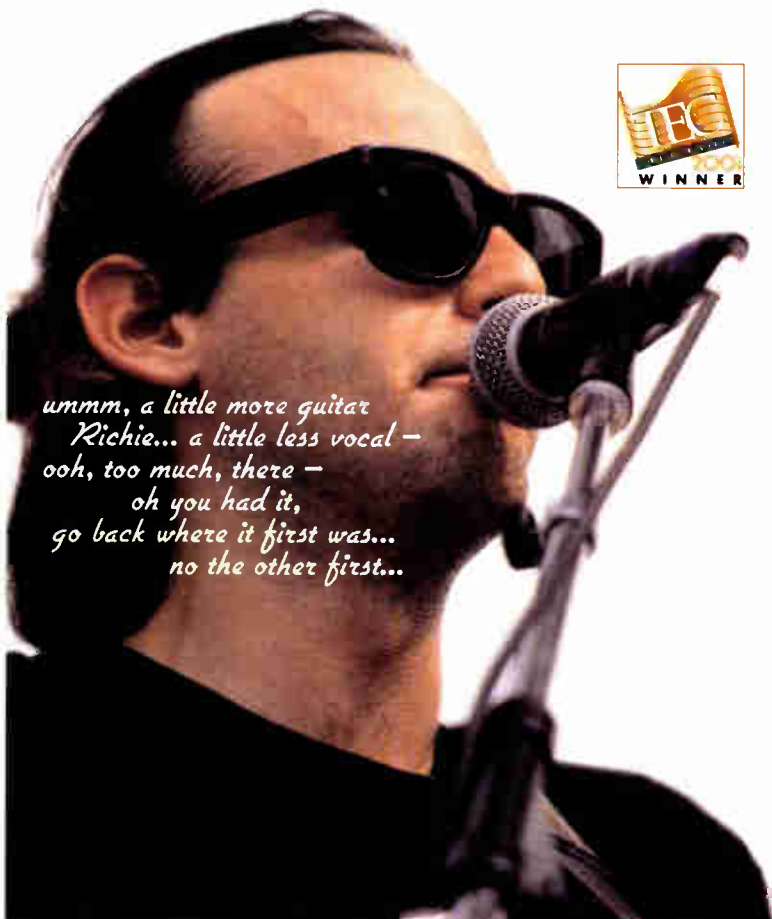
turn off this transient detection, allowing for the occasionally undesirable natural playback (sans pitch correction).

Compared to Sonic Foundry's Acid Pro 2.0, Live does sound better in terms of its ability to slow down loops. I found that a groove recorded at 120 bpm could be slowed to about 100 bpm before any tran-

"endless knobs" or motor faders to control Live in their own customizable way. I loved how Live can do this customization without arresting audio playback. You can assign a sample to a key by simply pressing the MIDI button (upper right-hand corner), selecting the desired sample with the mouse cursor and then playing the corre-

LEARN TO LIVE

While Live's screen size and windows are fairly set, even downright stingy at times, you can configure MIDI and even keyboard key commands to trigger samples, adjust parameters (like EFX send) and change volume. Version 1.5 promises to respond to controller boxes with



*ummm, a little more guitar
Richie... a little less vocal -
ooh, too much, there -
oh you had it,
go back where it first was...
no the other first...*



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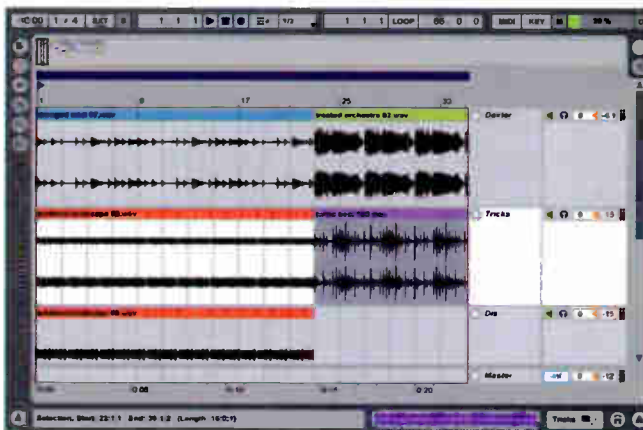
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sponding key, all while Live is playing. This is a great feature for bold laptop jammers who need to make changes on-the-fly. MIDI controls also can be mapped and re-mapped as much as you like, even within the same tune without you thinking about pausing the groove. Also cool is that the function keys act as channel mutes, so if you want to drop out the bass line or aux percussion section, you can do so quickly by pressing F1, F2, etc.

With Live's quantize setting on the whole-note setting, I found it easy to "play" or trigger row one, then row two, and back again while playing individual (one-shot) samples on top of the groove. I should point out that I first

had to adjust Live's latency settings (in Live's preferences) to ensure that the samples triggered were performance-accurate. While the analog Live manual does have a few holes (like the sparse index), this latency procedure is documented in step-by-step detail. Luckily for us, Ableton has also added a handy, integrated (and easy

to hide) Info window that flashes explanations about each icon, button or control the mouse moves over. Hey, learn while you rock!



The Arrange view is for tighter editing of Session view performances.

LAPTOP LOOP SHOP

Still not sold on the idea of Live loop music? Okay, check out the included effects. Each is automatable and, I'll say it again, innovative. Of course, you can continue to exploit any of your favorite VST plug-ins by simply copying them to Live's VST folder, but you'll be hard-pressed to find such

cool-sounding delays (there are four: filter delay, pingpong delay, grain delay and simple delay), along with well-designed sonic degradation effects, for less than the cost of this software package. Also included in the batch are a pretty good EQ, chorus and a tidy compressor. Additionally, Live 1.5 adds a new rich and lovely reverb to this group of 10.

Live's effects can be inserted pre- or post-channel (fader), assigned to an aux bus or applied to the overall (master) mix. This can be done smoothly during playback or in the editing process. Note: Ableton recommends testing all foreign VST plug-ins at home first in a variety of situations (before you drop them in at the gig) because of the wide range of developers, applications and situations beyond Ableton's control and testing budget. (I should point out in the name of VST that Live does not really support VST instruments. Though I was able to call them up and even play them within a song, you cannot create editable MIDI tracks nor save any VST instrument settings.)

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One application that does work well with Live is Propellerhead's Reason. If you open Live first and then fire up Reason, you can use the ReWire software-based interface to route Reason's virtual channels through Live's mixer. Not only is this a great way to record and edit your Reason tunes, but it is a clever method for using VST effects (something Reason can't do yet), Ableton's own track/effect automation and even record your own audio tracks for your Reason compositions. Keep in mind that running both programs can be processor-intensive. You may need to beef up your computer's RAM or upgrade your processor. To give you some idea, my 800MHz Athlon could barely keep up. This, too, is supposed to be improved in Version 1.5, which also promises that Live will be able to run as a MIDI sync master or client (slave). This could make Live the perfect partner for Logic or Cubase MIDI projects in need of synchronized loops.

OUTRO

So, who would have guessed that laptop computers would migrate from the briefcases of the business world and into the clutches of musicians? It seems like that only a couple of years ago, I was upgrading my desktop with a faster processor, adding more RAM and installing a third hard drive, only to find that by the time I got home, the price had dropped. Now, for less than a \$1,000, you can get into a PC laptop or Powerbook Ableton Live 1.0 Software and take your show on the road. So whether you are creating loop-based remixes or looking to add live audio tracks to your latest Reason jam, you owe it to yourself to at least check out the Live 1.0 demo. After a test drive, you just may agree that Live is one of those special applications that doesn't exactly fall into a category like "digital audio workstation" or "software synthesizer," but is better understood when described as next-generation software with state-of-the-art tempo matching and an inspiring group of effects, created with the performing artist in mind.

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Former Seattle multitasker Dave Hill Jr. is composing, drumming and writing in New York City. He is a regular contributor to Remix, Mix and Modern Drummer. Please see www.bannervision.com/davehill for more information.

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Eventide Eclipse

Harmonizer Effects and More

The Eventide Eclipse is the company's first single-rackspace effects processor, a must-have for those who need to fit Harmonizer® processing into a crowded outboard rack. The Eclipse is clearly based on Eventide's H3000 and DSP-4000, which created and dominated the Harmonizer category for two decades, and includes many of the Orville's algorithms. I had the opportunity to run the Eclipse while working on the Super Bowl half-time show (we used the Eclipse on Bono's vocal), and I also packed it for a trip to Singapore and Seoul for another project—the 12-pound Eclipse is only a foot deep and runs on all international electrical standards.

CONNECTIONS 'R' US

The abundance of connectors on the back panel attest to the generous I/O and control options available. Besides both ¼-inch and XLR connectors for analog signals, there are also AES and S/PDIF digital connections, as well as an optical connector that can be set up for 2-channel S/PDIF or 8-channel ADAT. Wordclock I/O is provided

At the far left of the gray front panel are dual 7-segment LED meters. A convenient Levels menu button for adjusting global levels is located just below, and alongside it are five LEDs that indicate the sample rate (44.1 to 96 kHz) and whether the clock is provided from an external source. Yes, you can put this baby in a 96kHz digital signal chain, and its field-updateable operating system and factory presets make it future-proof.

The large, green, two-line display has four softkeys below it, along with an LED that reminds the user when the currently loaded program has been edited. Beside it are Program, Hot Keys and Parameter buttons to navigate the Eclipse. A massive, chrome soft-knob offers parameter adjustment, while the adjacent numeric keypad allows for manual data entry. The large, green, blinking TAP key provides constant notification of tempo and the interface for quickly entering a new one. Naturally, the tempo can be tied to delay times and LFOs, scaled with values from ⅓ to whole notes, but it can also control reverb times.

bersome computer hook-ups. On the Eclipse, the work of dozens of hours and thousands of keystrokes can be easily archived on Compact Flash cards, affordable offline storage media that can be carried in a pocket. A front panel slot accommodates matchbook-sized Compact Flash cards; they show up as memory locations 500 through 999.

The explosion in digital photography and handheld devices has had a welcome effect on CF card pricing; most digital cameras come with smaller capacity cards, and users quickly upgrade to larger 64, 128 and even 512MB cards. An 8MB card, now priced at under \$10, easily stores 500 presets. We can only hope that this novel method for offline storage becomes a regular feature on other pro audio devices. It's worth noting that devices with PCM-CIA slots and Windows file structures can also make use of CF cards with a \$10 adapter.

The Eclipse ships with about 250 factory presets, with 0 through 99 reserved for user memories. The 100 Series are single-machine presets that represent the



ed on BNC connectors, and a 9-pin serial port provides PC connections.

The usual MIDI connectors include a 7-pin "In" port that can provide remote power to an appropriately equipped pedal board by plugging in its "wall wart" power supply at the back of the Eclipse. Two ¼-inch TRS jacks permit connection of foot pedals, voltage sources, or up to six footswitches to control parameters or trigger events. These features make the Eclipse a powerful platform for guitarists, and a review of its instrument-processing capabilities could easily fill another magazine. This is the Eventide product many musicians have been waiting for, but I'll focus on features for sound engineers.

As with any powerful multiparameter effects unit, figuring out how to quickly edit a preset on-the-fly can be daunting. The Eclipse solution allows eight parameters to be quickly addressed via hot keys, accessed by the four soft buttons below the display in two pages. Hot keys may easily be assigned by holding down the key of a parameter, and can even be renamed.

COMPACT FLASH

Creating customized user programs, either from scratch or by modifying presets, requires a substantial investment of time. Other powerful machines have failed to make programming efforts portable by requiring expensive storage media or cum-

range of individual Eclipse algorithms. Hey, it's all here: delays, eight kinds of pitch shift, reverbs, dynamics and EQ. There are even utilities like an oscillator, an instrument tuner and an algorithm for dithering. Presets with familiar names from the H3000 or DSP-4000 families produce the same effects, and names ending with a "2" are similar, but have minor sonic differences. Locations 200 and above include both Legacy programs and many new, double-algorithm presets. Users can also create their own dual-algorithm presets by loading individual algorithms into either effects block.

With so many presets to choose from, it can be a challenge to find a particular

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sound quickly, but the Program menu divides the presets according to several criteria to help sort them. Presets can be arranged either alphabetically or numerically. Second, they can be searched based on a sound source category (guitar, vocals, drums, etc.), by effect type (pitch, reverb, delay, etc.) or both. Each time you save a preset, you also can flag these categories. Third, and most important for the working mix engineer, there are 10 user groups that can be customized with the project's or artist's name. Finally, searches can be limited to internal memory or to the Compact Flash card.

THE POWER OF TWO

The Eclipse is a two-engine machine, and an algorithm may be loaded into either of the two effects blocks. Routing options, which are a component of each preset, include the usual choices of series, parallel, dual (shared stereo outputs) and dual mono, as well as "xfade," which allows smooth transitions from one effect to another and back.

Though higher sampling rates offer higher fidelity, some presets take advantage of the increased processing power available at lower rates for longer reverb and delay times. Some preset types are

written for both 44/48 and 88/96kHz sampling, and a small indicator at the beginning of preset titles shows when the higher sample rates are available.

The Eclipse is a powerful tool, and, as you'd expect, it requires some practice to get up to speed on all of its features. However, by loading and tweaking factory presets, something useful can be found in moments. Micropitchshift (296) is the traditional H3000 standby (519) and live sound favorite, with nine cents of shift up and down available to give vocals presence and dimension. Mshift+Reverb8 (184) is a compound preset that combines pitch shift and reverb into a single algorithm block, but because it's stored with 700 and 500 cents of shift and 10 seconds of reverb, it needs adjustment to be used in live sound applications. Alternatively, a separate reverb can be loaded into the second effect block of 296 to provide both doubling and reverb with a choice of routing options. Like other 2-channel, two-engine machines, dual inputs allow separate drives into two effects with shared stereo outputs.

There are a half-dozen different reverb algorithms to choose from (174 to 180), but, as with most effects used in live sound, the stock presets can benefit from some tweaking. Most of the reverb algorithms are better than on the old H3000, but Legacy presets, like Rich Plate (336), can also be found. Dense Room 16 (178) offers the most tweakability, with separate adjustments for early reflections and diffusion. All of the reverbs have simple high- and low-cut filters for EQ, but you can always patch a 4-band parametric into the second effect bank.

Who should buy one? With a list price of \$2,999, the Eclipse is no more expensive than the H3000 when it first came out. While there are other more powerful digital mastering products, the Eclipse's pristine sonic quality, plethora of connectors and high sample rate make it a versatile tool for tweaking, fixing and basic sweetening of digital or analog tracks.

The Eclipse is destined to become a classic, and anyone with an open rack-space who's been waiting for their next Harmonizer should get in on the fun. And guitarists might as well cancel their cable TV for the next several months while they try it out.

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NEW XL 9000 K SERIES CONSOLE LAUNCHED

Studio owners and users at the European launch of the XL console at SSL's Oxford headquarters ▶



At a series of product launches in the U.S., Europe and the Far East, SSL unveiled its first analogue console in eight years, the XL 9000 K Series. The new console is the first ever to provide the dual benefits of full 5.1 surround architecture and the increased bandwidth and resolution needed for DVD-Audio.

The many new features incorporated in the XL have been designed in response to input from users of the world's most popular large format console for music recording and mixing – the SL 9000 J Series. Niall Feldman, Director of Product Marketing for SSL affirms, "Studio owners are aware that emerging higher resolution recording formats and surround production present a huge opportunity. Consequently, we believe the time is now right to further the potential of our flagship analogue console in the form of the XL."

XL 9000 K KEY FEATURES

- Ultra-high quality signal path optimised for DVD-A and SACD
- Full 5.1 mix bus, master fader, mix compressor, monitoring and metering
- 6-channel monitor insert, plus support for three external 6-channel sources
- UltiPan™ automated surround panning system
- LCR panning on every channel
- LCR focus control and surround routing on echo return
- Full, simultaneous fader access to all busses
- 5.1: stereo downmix function
- K Series automation computer with on-line mix compare feature
- Advanced photo-realistic Total Recall™
- Remote SuperAnalogue™ mic amps (option)

Audio Excellence for DVD-A and SACD

The XL console offers unprecedented audio performance to meet the advanced, higher sampling frequency formats that consumers will soon be enjoying with DVD-A and SACD, with an audio bandwidth extending nearly two octaves beyond a 96kHz recorder.

Supreme Surround Performance

In addition to audio quality, the XL provides the ultimate in surround efficiency within the analogue domain. A full 5.1 mix bus, master fader and mix compressor, combined with LCR panning, add to the state-of-the-art specification, while the console also provides full simultaneous fader access to all busses. The K Series monitor insert point and the three external sources have all been expanded to six channels for maximum flexibility.

K Series Automation Computer

Based on the HS Control Processor in SSL's successful digital consoles, the K Series Automation Computer provides high-speed control of all automated functions. Complex mixes can be handled with breathtaking speed, while loading and saving projects is also much faster.

Remote SuperAnalogue™ Mic Amps (option)

In addition to the XL's outstanding on-board microphone amplifiers, the console can be optionally fitted with remote mic amps, which are controlled directly from the XL channel module. The remote-powered DC mic amps are designed to be located as close to the original signal source as possible, ensuring the best signal input quality. A revised circuit design further improves the SL 9000 J's mic amp sonic performance, producing results of astounding clarity.

Distinctive Styling

The XL's new Raven Sparkle livery, new frame design and consolidated centre section makes for a highly distinctive yet instantly familiar console. Input control from either pen or 'puck' can be switched at the press of a button to control PC-based editors, as well as the new infrared keyboard.



XL 9000
K · SERIES

LEADING STUDIOS gear up for the future with XL

The new XL 9000 K Series SuperAnalogue™ console has received rave reviews and has already been purchased by several high-profile recording studios throughout the U.S., Europe and Japan. Larrabee Studios, Los Angeles' largest recording facility with seven studios in three locations, purchased the first XL console. Slated for an April 2002 opening, the XL will be the centerpiece of the newly refurbished Studio A at Larrabee West in West Hollywood. Quickly following in Larrabee's footsteps was the Hit Factory, which purchased two XL consoles for its soon to be completed Studio 6 and Studio 7 in its main headquarters in New York City. Once the word was out about the Larrabee and Hit Factory XL console sales, another LA-based studio, Pacifique, and Chicago's Pressure Point Recorders followed suit with purchases of their own.

"We know our clients would be excited about a new analogue console using proven technology from the J Series, but we couldn't have anticipated a better market introduction for the XL," describes SSL North America president Rick Plushner. "It is quite a statement to have two of the world's largest recording facilities purchase the XL prior to its formal public introduction."

Larrabee's 72-channel XL console will see duty for both mixing and tracking the industry's leading recording acts. As owner Kevin Mills explains, "We are completely redoing Studio A specifically for the XL. We are leaving the monitoring system as stereo for now, as we offer a complete surround mixing studio in our Larrabee North location. However, the XL has a full implementation of surround mix options, so, depending on the demand of our clients, we are prepared to move in that direction. We also re-worked the live room to address the tracking needs for the types of music we do. We believe the combination will be very popular."

As for the Hit Factory, CEO Troy Germano best describes the XL as a J Series console on steroids, which is exactly what he wanted for the two rooms in New York. "The XL has the power and flexibility to go back and forth between regular stereo mixing and 5.1 for DVD audio and SACD," he states. "We feel that these multi-format options are what we need to continue growing within our industry, especially since they are being set up with 5.1, just like we did in our Miami rooms."

(l-r) Larrabee owner Kevin Mills with Phil Wagner, SSL senior vice president, western operations



(l-r) Don Wershba, SSL senior vice president, eastern region with Hit Factory CEO Troy Germano and SSL North America president Rick Plushner



The Hit Factory's XL's are identical 80-channel consoles with the focus of the larger Studio 6 on tracking and mixing, while Studio 7 addresses mixing and overdubbing.

Pacifique's XL is scheduled for delivery in May, while Pressure Point's XL is scheduled for delivery in July. Both studios look to build on the tradition of quality analogue recording with the world's leader in analogue console technology.



▲ HD3 on its way to the Rice-Eccles Stadium, Salt Lake City

NMT's HD MOBILE TRUCKS PROVIDE LIVE AUDIO FEEDS AT WINTER OLYMPICS

National Mobile Television (NMT) provided numerous live audio feeds during the 2002 Salt Lake City Winter Games using its Aysis Air digital broadcast consoles. Broadcasts were handled from NMT's HD1 and HD3 High Definition mobile trucks. HD1 broadcast audio for the opening ceremony at the Rice-Eccles Stadium as well as hockey games from the E Center, while HD3 broadcast the ski jump, luge, nordic-combined and bobsled events from the Utah Olympic Park and the closing ceremony from Rice-Eccles Stadium.



◀ Rob Jacobs and Alanis Morissette pictured at Scream Studios

ALANIS
swept
away

Alanis Morissette recently finished recording her current Maverick Records release with engineer Rob Jacobs (U2, Eagles, & Don Henley). Pictured working on the SL 9000 J Series SuperAnalogue™ console at Scream Studios in Los Angeles, Morissette self-produced 'Under Rug Swept,' her third studio album with Maverick Records.

SNL MAINTAINS CUTTING EDGE

Saturday Night Live (SNL), which has been on the cutting edge of U.S. late night entertainment TV for nearly 30 years, is now also leading the way in technology with its recent purchase of an MT Production (MTP) digital console. The 96-channel console, in NBC's newly renovated studio, Mix 1, streamlines SNL's work-flow and enables greater creative treatment for the leading musical acts that frequent the show.

"One of the big benefits of the MTP is its incredible flexibility and versatility," says Stacey Foster, SNL technical consultant and project co-ordinating producer. "In a typical Saturday Night Live production week, we might pre-record some music for the SNL band, remix those tracks for the actual show, then jump to pre-show setups for the guest acts with their particular mixes. The MTP's high-speed control processor simply brings all the setting information back instantaneously, so it makes that part of any project much faster. We find ourselves concentrating on the creative part of a mix rather than spending precious time on getting a mix back, and then trying to make it better as with an analogue console."



▲ Pictured in Mix 1 from left to right are: J. Vicari, music engineer for SNL; Joseph Glock, engineer; Barry Bongiovi, engineer; and Stacey Foster, SNL technical consultant and project co-ordinating producer.

On SNL, the musical acts usually perform two songs that can vary greatly in terms of sound and mix. Often, an act will start with a hard-driving rock and roll piece for the first song, then switch gears and perform a ballad. In this instance, according to Foster, the group sheds its electric instruments (and with it the mix settings), in favour of an acoustic approach that requires an entirely new EQ and dynamics treatment. SNL's use of the MTP allows for a quick change to the levels that were previously established.

"Another area that makes the MTP stand out from other consoles is its exceptional-sounding mic pre's," states Foster. "We are one of the first MTP installations to get Super-Pre™ and I can't believe the phenomenal sound. They give us all the sound expected from a high-end analogue console, integrated into this fantastic digital system. The MTP adds another dimension to our mixing capabilities."

J. Vicari, music engineer for SNL, appreciates the flexibility he now enjoys with the MTP. "With the MTP, I am more apt to make changes because the console remembers everything I do. I can recall settings for more reverb, or change and choose different sonic treatments, whereas before I was reluctant to stray too far from the initial mix because I wasn't sure I could get back to where I started. This is a major benefit for SNL."

World Radio History



NYPD Officer Daniel Rodriguez Lights Up Right Track's A509

One of the highest profile sessions to hit Right Track's new A509 studio since its opening in October was the joint effort by Angel and Hollywood Records for 'The Spirit of America,' by Daniel Rodriguez, the NYPD officer whose voice has been heard on numerous national television appearances including the World Series and the 2002 Winter Olympics. Some of the patriotic anthems that are featured on the album include 'God Bless America' and 'America the Beautiful,' the traditional favourite 'Danny Boy' as well as Broadway standards 'Bring Him Home' from Les Miserables and 'You'll Never Walk Alone' from Carousel. Pictured in the A509 control room in front of Solid State Logic's SL 9000 J Series SuperAnalogue™ console from left to right are: Barry Bongiovi, general manager and director of operations for Right Track; Michael O'Reilly, engineer/mixer; Rodriguez; and Tom Scott producer/conductor.



▲ Studio A at Front Page Recording Studios

SL 9000 MAKES FRONT PAGE

Front Page Recording Studios of Glendale, California, services a music and film client list ranging from Alanis Morissette, Backstreet Boys and Bruce Springsteen to the scores of 'Shrek,' 'Charlie's Angels' and 'We Were Soldiers' When it came time to upgrade Studio A with 5.1 surround mixing capabilities, the recommended console from both camps was an 80-channel Solid State Logic SL 9000 J Series SuperAnalogue™ console.

"We needed to expand Studio A to meet our growing client list," explains Biff Vincent, owner of Front Page Recording Studios. "We already do a great deal of film mixing in our other rooms, but we wanted the new room to attract film score recording as well. We canvassed the field and noticed that scoring engineers are embracing the SL 9000 as their console of choice, while the rock and pop music world has already voted in the SL 9000 as the best, especially for mixing. The J Series is the perfect system to bridge the gap between the two worlds."

"In addition to the expansion of the room, having high-level 5.1 surround mixing capabilities was a necessity," states Vincent. "We handle quite a bit of music for films and DVD versioning, so this room was mandated from the start to be a surround mixing environment. The SL 9000 has an integrated surround monitoring system and excellent automation that allows us to take on any recording or mixing project that comes through the door."

AVANT STUDIOS REIGN CATS AND DOGS

'Cats and Dogs' the Warner Bros. feature, one of the Top 20 box office hits of 2001, had the majority of its European foreign language versions dubbed on SSL Avant film consoles across the continent. The complex surround sound dialogue mix – with in excess of 90 character voices on different channels with a multitude of different reverbs and voice effects – was completed with the help of veteran foreign version specialist, Ray Gillon.

Avant Studios of Copenhagen used their Avant console to mix the Norwegian, Swedish, Danish, Icelandic, Finnish and Dutch versions while the French version was mixed at Dubbing Brothers in Paris. Tecnison of Madrid was responsible for mixing in Spanish, and the Portuguese version was completed by Anvil in the UK.

To assist the foreign language recording and mixing process, and to ensure that the highest quality and version consistency was achieved; Ray Gillon of UK-based S-Minor provided comprehensive mixing notes to all participating studios.

The notes, in addition to providing dubbing studios with essential character background information and references, incorporate a foreign version mixing approach based on pioneering work by Gillon in the mid-nineties with Tascam Hi 8 recorders. Each character, in all versions, is allocated its own track. This utilises the automation benefits of the Avant, as Gillon explains.

"In the 'Cats and Dogs' mix, the advantage of having 'Mr Tinkles' on Track 1 in every language and 'Lou' on Track 3 means that we can automate all the sends, pans, inserts, and some EQs, and use the template for every mix. You don't have to repeat the reverb sends every time, or pan to Left Surround, as the automation looks after it, in the right place at the right time, every time. This method helps to deliver higher quality mixes, consistency between mixes and economy of scale – you turn the mix round 'aster'."

Using this method, any number of characters may be allocated to any of the 8 tracks, as long as they do not overlap. Automated outboard, for reverb and other FX, also help to streamline the mixing process. In the mix notes supplied, a list of FX and reverbs used in the original are included for application in the foreign language version.

▼ Mr Tinkles. Cats and Dogs – image courtesy Warner Bros.



Aysis Air's a big plus for WETA

WETA TV 26 and 90.9 FM, the leading public broadcasting stations serving Virginia, Maryland and the District of Columbia, installed a 32-channel Solid State Logic Aysis Air Plus Digital Broadcast Console in the recently re-designed Production Control 2 (PC2), servicing a variety of programming needs including 'Washington Week' and 'The NewsHour with Jim Lehrer.'



Lew Zager, vice president of technology, WETA

According to Lew Zager, vice president of technology for WETA, the purchase of the Aysis Air Plus was the first step for the future development and integration of an all-digital facility. PC2 was totally rebuilt including new panelling, monitors and acoustical treatments on the walls to take advantage of the console. This included changing the interface of the video inputs and making the room slightly bigger.

"While the Aysis Air Plus is a digital console, SSL designed it with the analogue user in mind," says David Gillette, audio technician for WETA. "The layout and organization is very similar to its analogue predecessors, so our engineers had a very easy time upgrading to the Plus, especially in light of the stressful events that overwhelmed everyone in September. At that moment we had only had our console for a week."

Now that things are back to normal, the staff at WETA has had time to reflect on the Aysis Air Plus purchase, and, according to Gillette, everyone is astounded with the console. "All of our operators, producers and directors have been really happy with the results – we couldn't have made a better purchase."

POP IDOLS CONTINUE OLYMPIC TRADITION

London's legendary Olympic Studios, host to some of the greatest rock recording sessions in history, including albums from The Rolling Stones, Jimi Hendrix and Led Zeppelin, was chosen as the studio of choice to mix and record three singles for the finalists of 'Pop Idol,' the UK TV ratings winner with a programme format that has been exported throughout the world.

The three double-A sided singles, from finalists Will Young, Gareth Gates and Darius Danesh, were recorded and mixed in an intensive five-day session at Olympic, and the whole process filmed and broadcast to an audience of over 10m who watched the penultimate 'Pop Idol' show.



Olympic Studios, Studio 1

When more than 8 million telephone votes - an all-time UK record - were cast by viewers in the final on February 9th, Will Young was declared the eventual winner. His debut single featuring a cover of Westlife's 'Evergreen' and 'Anything is Possible' by Cathy Dennis, immediately topped Amazon's pre-order chart and became the fastest selling UK single ever, claiming the No 1 spot with over a million sales in three days.

For recording, the finalists used Olympic's Studios 1 and 2, both designed by Sam Toyashima.

The recently refurbished Studio 1 has one of the largest live areas and control rooms in London, and features an SL 9072 J Series SuperAnalogue™ console. Studio 2, equipped with an SL 4056 G Series console, is similarly spacious – an essential attribute in this instance as the television crews needed room to work.

Studio Manager Siobhan Paine worked hard with the team at Olympic to make sure that the experience for the budding stars was a positive one concluding, "It was great fun, the session went without a hitch."

"It was fantastic," confirmed Will Young. "I've always wanted to record a single and even if mine is never released, it's still an experience I'll cherish. I'm now even more determined to have a career as a singer. It's a great way

Worlto earn a living."

UltiPan™

Automated Spatial Positioning

The XL offers revolutionary creative possibilities for multichannel audio production.

UltiPan™ provides two discrete types of pan control across 2, 3, 4, or 5 outputs. A conventional X/Y pan mode allows precise panning of signals within a two dimensional soundfield. Centre focus/divergence control allows simple bleeding of signals across LCR outputs, enabling accurate mixing of discrete and phantom centre signals.

As well as a 'Freehand' mode, which enables location of signals anywhere within the soundfield, a number of constrained modes allow dynamic panning of signals across specific axes, providing far greater control than conventional joystick panners.

ThetaPan™ elegantly moves a point source between adjacent speakers without requiring complex multiple divergence controls, enabling signals to be passed throughout the boundaries of the soundfield in a circular motion, with width control to enable the point source to be spread across multiple speakers.

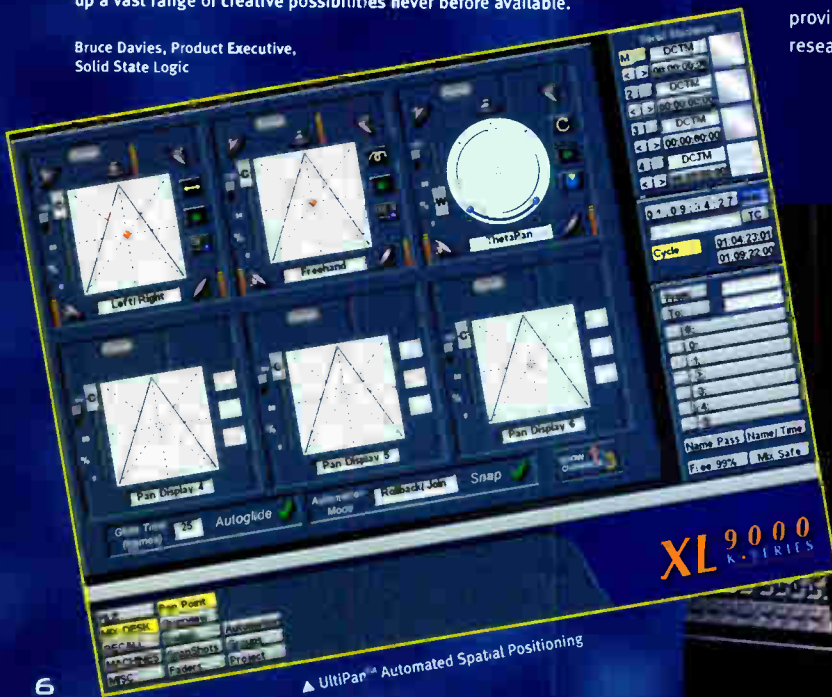
In both Freehand and ThetaPan modes, signals may also be moved instantly from one location to another, without passing through points in-between, and power level indicators accurately display the contribution to each speaker that a signal makes.

Up to six independent UltiPan systems may be simultaneously operated, each with separate automated controls for signal location, divergence/width and speaker mutes, and the XL's advanced bussing allows automated routing of signals to any set of UltiPan inputs.

In addition to UltiPan, the XL's AutoPan system provides conventional point-to-point automated panning between all busses from all console modules directly.

Such extensive functionality enables the XL to provide simple access to highly advanced 5.1 mixing techniques, and opens up a vast range of creative possibilities never before available.

Bruce Davies, Product Executive,
Solid State Logic



▲ UltiPan™ Automated Spatial Positioning

Onkio Haus comes back for more

One of Japan's longest established music recording studios, Onkio Haus, was home to the first ever SSL console to be installed in the country. The original 64-channel SL 4000 Series, in daily use for nearly 20 years, has recently been replaced with an identically specified console as part of the major refurbishment of Studio 2.

Today, in the Chou-ku district of Tokyo, the Onkio Haus studio complex has grown into one of the largest and most successful in the country, encompassing music recording and mastering, film scoring and comprehensive video post production facilities. And, as Onkio Haus has grown over the years, the number of SSL consoles has increased accordingly.

Now with five studios and two mastering rooms all housing SL 4000 Series consoles and with an SL 9000 J Series SuperAnalogue™ console in Studio 1, Onkio Haus has an outstanding reputation for the production of Japanese hit music. Recent successes include albums from Ryoko Hirosue, Puffy, Chie Ayado, Misato Watanabe and a popular a capella group, The Gospellers.

New sales in France

French post house Auditel has ordered a 48-channel Avant Plus digital film and post production console for its facility in Paris. The new console, due for delivery in the spring of 2002, replaces an SL 5000 Series in Audi B and will be used primarily for film mixing.

Auditel is part of the Teletota group, the leading French communications conglomerate founded in 1971. The decision to purchase the two-operator Avant Plus stems from the console's success in another Teletota operation, Jackson in St. Ouen. There, a 40-channel, two-operator Avant, together with a 32-channel version, have been widely used for posting high-profile television programmes and drama series.

The Institut National de l'Audiovisuel (INA), is a national research institute founded in 1975 and based at Bry sur Marne. In March 2002, the INA is to install an MT Plus digital multitrack console in Studio 238. The new console besides being deployed commercially, will also be used for the Institute's research programme into multichannel mixing. No strangers to digital technology, INA's decision to purchase the MT Production was due in part to the institute's positive experience with its OmniMix post production system over the last six years.

The INA was originally established with a mission to conserve and document the nation's audio-visual inheritance and to exploit the commercial potential of archived materials. Additionally, the Institut provides a valuable resource for students and undertakes scientific research in the area of audio and video production.

MT Production



SOUND CHOICE FOR SOUND DESIGN

Sound Design Studios of Rome is expanding into the area of surround sound film dubbing and to that end recently installed a 48-fader, 96-channel SSL Avant Plus digital film and post production console. Shown with the Avant is owner Elio Gualfucci who commented, "With the Avant Plus we now have the capability to meet the creative demands of the film dubbing industry with a truly great-sounding console. The excellent local support was also a key factor in our decision."

▲ Studio 2 at Onkio House where the new SL 4064 replaces a 11 identically specified console, originally installed nearly 20 years ago.



Songwriter/Producer Steve Mac in his private studio at Rokstone

THE MAN BEHIND THE HITS

With eight number one UK hit singles in the last eighteen months, and a wallfull of platinum for his work on all three Westlife albums, producer/songwriter Steve Mac is understandably in demand. The busy workload at his company Rokstone, which encompasses music publishing in addition to production, bears testament to an enviable track record stretching back a little over ten years.

As part of a programme of expansion, Mac has added a second room to his private facility in London's Parson's Green, complementing his original Otari-based room with a John Flynn designed studio housing an 80-channel SL 9000 J Series SuperAnalogue™ console.

While his successes with Boyzone, Westlife and the American band O-Town, make him a key figure in the development of the boy band phenomenon, Mac's musical and production talents extend considerably beyond this field. He wrote, produced and published Kate Winslet's debut hit single, 'What If,' and is similarly credited on recent hits from Atomic Kitten, Samantha Mumba and Trace Adkins – the list goes on.

At the heart of what is incidentally one of the most spacious control rooms in London, the new SL 9080 J Series console now takes pride of place. "It's inspirational," Mac enthuses, "music is still my hobby as well as my job. I chose the console after talking with producers who convinced me that the SL 9000 J was the right choice to get the sound I wanted. I don't use a lot of outboard gear – or even a lot of EQ. With this console I can simply stay focussed on the music, I've got more creative control and I know the quality will be exceptional."

In addition to the large control room, a new live room has been added, sizeable enough to accommodate everything but larger string sections. Mac's successful approach to recording, which he shares with Rokstone's engineer/programmer, Chris Laws, "My old mate from school," stems from creating a relaxed atmosphere for artists. "We spend a lot of time in here," Mac explains, "and to get the best from artists – and make them want to come back – it's important to create a calm, professional atmosphere. You can't do that in cramped surroundings."

One advantage of success, Mac freely admits, is the ability to be a bit more selective in the projects that he takes on. With his remarkable many-faceted talent, and the creative possibilities afforded by his new studio, it's evident that Wood Steve Mac's success is only just beginning.



Fifth Aysis Air for HD studio

Chinese state broadcaster CCTV has ordered a fifth Aysis Air digital broadcast console which is to be installed in an experimental HDTV studio under construction at its Broadcast Television Centre in Beijing.

The new console, a 32-fader, 64-channel Aysis Air Plus, will be supplied with 24 mic amps, and 24 channels each of digital and analogue I/O. Installation and commissioning will be undertaken by SSL's regional distributor, Digital Media Technology. The Aysis Air was selected due to its proven performance in two TV production studios in Beijing and two OB trucks – and its popularity with operators.

In 2001, the Chinese government unveiled its latest five-year plan for technological development which formulated an ambitious strategy to create a new broadcast network that will give priority to HDTV and broadband access, utilising a national digital cable TV network.



Seoul Music

Two SL 9000 J Series SuperAnalogue™ consoles are to be installed in new studios currently under construction in the Korean capital Seoul, where they will be used for music recording and mixing for widely differing purposes.

The first console, an SL 9056 J, has been ordered by T-Entertainment, a new consortium of Korean artist management and music production expertise, building a new two-studio complex in central Seoul. T-Entertainment will use the 56-channel SuperAnalogue console primarily for working with in-house pop and rock music artists, but will also operate commercially.

By contrast, the second SL 9000 J has been ordered by the Korean Cultural Industry Promotion Centre (KCIPC), a Seoul-based government agency with a brief to develop traditional culture in the areas of music, film, television and publishing, and make them key factors in the economic health of the nation.



Polished performance

Polish regional station Radio Gdańsk has installed an MT Plus digital multitrack console in its new broadcasting centre in the provincial capital. The 32-fader, 64-channel console is housed in a newly completed studio that will be used primarily for music production. An audience area has been created within the studio for live performances.

The project has been underway for three years and the digital MT was not the broadcaster's first choice of console, as Regional Sales Manager Damir Begovic explains. "Originally Radio Gdańsk had planned to build an analogue studio based on the SL 9000 J Series console. However, as its plans evolved to include live performances, the automation advantages of digital, as incorporated in the MT, became more attractive. When they saw the Plus version, launched last year, they finalised their decision."



Grammy nominated mix on MT at Kampo

Top recording and mixing engineer Josiah Gluck has been creating mixing magic on Kampo Studios' MT digital multitrack console for several years. Gluck appreciates the MT's ergonomic familiarity which allows him to concentrate on his creative art rather than spending time overcoming technology.

"I mixed the 'Ballads: Remembering John Coltrane' project on the MT at Kampo and the results were stunning," exclaims Josiah, who earned a Grammy nomination for the work, and has been nominated twice in the past. "The artist was the singer Karrin Allyson with the album released on Concord Records. I prefer a 'work flow' wherein I just turn the automation on and start mixing. I continue to mould and shape the sounds until I can sit back and say, 'that sounds like a record.' The MT definitely assists my process because I know the console can perform anything I want it to."



MT Production at core of new mobile

Core Digital Technologies has purchased an MT Production digital multitrack console for installation in its all-digital, dual-broadcast live truck based out of Phoenix, Arizona. Core Digital chose the console for its expanded capabilities and enhanced routing, as well as its range of features that will enable the truck to handle simultaneous High Definition (HD) and Standard Definition (SD) broadcasts.

"We have a long-term contract with a major network to handle sports and live entertainment, so we needed to build a new vehicle that would meet all the requirements of today's market, while providing seamless capability for tomorrow," says Shawn O'Shea, director of engineering and operations for Core Digital Technologies.

With more than 290 million people in the U.S., a very small percentage of the population is actually watching HD-originated broadcasts. "However, the HD percentage will grow in the coming years to dominate broadcast," O'Shea adds. "That's why the new truck is a cost-saving venture because we don't need to put an SD and HDTV truck side-by-side at an event."



Double-first for SL 9000 J

December marked an amazing double feat as Solid State Logic celebrated both an award for the technical achievement of its product technology, and its clients were recognised as producing the most hit records on the U.S. charts.

At the 111th AES Convention in New York, SSL received a Technical Excellence and Creativity (TEC) Award for the SL 9000 J Series Scoring System.

At the same time it was also announced that SSL consoles were the number one choice for both recording and mixing chart-topping music across Hot 100, R&B and Country formats in Billboard's Studio Production Credit Charts for the year 2000 - 2001.

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Antares Vocal Producer AVP-1

A New Take on the Channel Strip

You see plug-in versions of hardware products all the time, but it's almost "man bites dog" for a company to come out with hardware versions of their software processors. Veteran plug-in developer Antares is one of just a couple of companies to have branched out this way.

Antares' latest unit, the AVP-1 Vocal Producer, packs a large number of processes into a shallow, 1U enclosure: Antares' mic and tube modeling, its famous Auto-Tune pitch correction, dynamics (variable-knee compression, downward expansion/gating/de-essing) and 2-band parametric EQ. You can use it live on a variety of instruments, and it's particularly optimized for use as an insert device on vocals during mixdown.

HARDWARE

The single-channel AVP-1 is designed to work as an insert effect; thus, the mic preamp that is standard in conventional channel strips is replaced with ¼-inch unbalanced -10dBV, line-level I/Os. (Actually, its lack of provision for interfacing with +4 equipment can be an issue.) A second output, labeled Double Track, carries the dry signal when Auto-Tune is switched on in the main signal path, or an Auto-Tuned signal when the main signal isn't being pitch-corrected.

Antares has done an excellent job of making the AVP-1 largely self-explanatory and easy to operate, with minimal button pushing and slogging through menus. Each process in the signal chain has a lighted on/off switch that is surrounded by from two to five parameter selection buttons.

A total of five 4- or 5-segment meters display input and output levels, gain reduction, pitch correction and de-essing. That's in addition to the more refined metering that can be called up in the 2x20-character LCD, complete with a superimposed indication of the threshold setting when applicable.

MIDI I/O lets you store/retrieve presets, select program numbers and adjust a variety of parameters using assignable



controllers. You can also use a footswitch to scroll through presets or bypass any number of processing sections (or the whole unit) with a single stomp. Real-time parameter changes using a MIDI controller are generally glitch-free.

In round numbers, the time through the unit is 6 ms with processing activated, and about 1 ms with it bypassed. You can always hear the effect of AD/DA conversion, but subjectively, it's pretty benign in this case. Inherent noise was not a problem. Power is supplied by an external transformer.

MIC MODELER AND TUBE SATURATION

A few years ago, Antares had a product for Pro Tools called SST (Spectral-Shaping Tool) that would send out and record short bursts of noise, analyze the frequency content, and generate a FIR plug-in filter to compensate and/or copy the response and apply it to something else. Those algorithms are at the heart of Antares' Mic Modeler.

Start by selecting the mic you're using from a list of 20 choices, made up of several popular models and several generic descriptions ("large-diaphragm condenser," "handheld dynamic," etc.). The Mic Modeler uses this to apply an inverse frequency-response curve.

Then, select one of 10 target models. Unlike the plug-in versions of Mic Modeler, which have an ever-expanding list of downloadable source and target mic models, these are all unspecified descriptions on the AVP-1: A few different generic mic types, plus three drum mic settings (kick, snare, overhead—if you're using a

mono overhead) and "telephone." There are settings for low-cut roll-off and proximity effect (specified in distance); the latter is very effective.

Mic Modeler doesn't replace a collection of mics, but it certainly puts a lot of extremely interesting possibilities within easy reach. Most importantly, the mic models do their work without messing up the sound. The AVP-1's generic descriptions of target mics set up a realistic expectation for what it can accomplish, although some of the plug-in version's emulations aren't half bad. There are people who say you can do the same thing with EQ, but this really has a different effect.

Next is the tube-saturation modeling, a very nice-sounding soft-distortion/transient-smoothing effect. Usually, a little bit goes a long way, but on one particularly gravelly, hard rock, male vocal track, it sounded incredible turned all the way up.

PERFECT PITCH

Auto-Tune has become as common in studios as compression, so it needs no introduction. The AVP-1 (and the hardware ATR-1a) includes the plug-in version's Auto mode, which works in real time.

There aren't many settings required to make Auto-Tune work—you tell it what it's looking at (instrument or vocal), the scale and retune speed. The latter is the most important parameter. At too fast a setting, it yanks the note into tune, eventually resulting in the Cher "Believe In My Vocoder" effect; set to too slow, you hear the note glide into tune.

It can help to ride the Speed and Bypass controls, which is where MIDI remote control can help. Another trick for way-off tracks is to run them through

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twice at conservative settings. If the overall pitch reference is off, then you can tune the output by a constant amount.

DYNAMICS, DE-ESSING AND EQ

Just recently, Antares' JVP compressor may have been the only digital offering that could give you that loud, hard-limited, pumping, rock sound. You could—and can—also soften the knee and slow down the attack and release for a well-behaved and unobtrusive sound, but it was the fast attack/hard-knee really fast release distorted sound that made it unique.

The AVP-1 version's fastest release time is 20 ms, just fast enough to get you into trouble (in a good way). My first audition of the compressor was through the presets, and even in this instance, its prowess at smoothing out vocals without pumping impressed me. (Of course, all parameters can be tailored to your needs.)

It's best to think of the downward expander/gate in this section as another set of controls over the dynamics curve rather than another processor in the chain. While this one isn't intended to be a drum gate, it does a fine job of quieting down noisy input.

The de-esser in this unit is rather gentle. With an adjustable highpass filter in its sidechain rather than a notch (which would require a key listen feature), you'd have to work hard to mess up the sound. That comes at the price of reduced precision and range, but this comes as close as possible to the elusive auto setup de-esser.

The two bands of EQ are very flexible. Every EQ type is available (peaking, shelving, notch, etc.), and you can adjust everything—the slope of the shelves, the Q (.1 to 10) and so on. Not every frequency is available—for example, it jumps from 52 to 63 Hz—but each band covers the spectrum.

FINAL THOUGHTS

If you're concerned that the AVP-1 is so inexpensive and does so much that there must be something wrong with it, don't worry—Antares was simply able to pack a lot of their high-quality signal processing into this box. If the -10dBV, line-level hardware format fits your project studio, the AVP-1 covers a lot of ground.

Antares Audio Technologies, 231 Technology Circle, Scotts Valley, CA 95066; 831/461-7800; fax 831/461-7801; www.antarestech.com. ■

Nick Batzdorf was the editor of *Recording* for more than 10 years.

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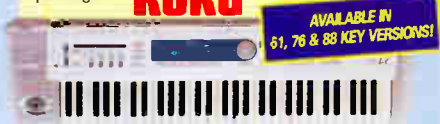


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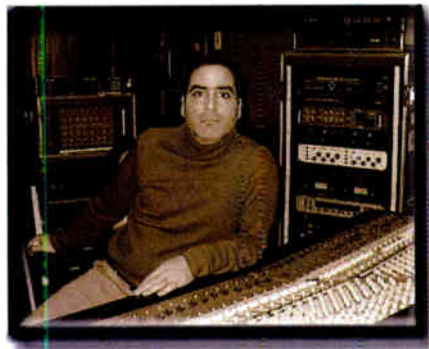


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DPA Microphones 3532-T

Stereo Microphone Kit

The DPA Microphones 3532-T stereo microphone kit is a great introduction to recording with spaced-pair, omnidirectional microphones. Packaged in a spill-proof, foam-lined Samsonite attaché, the kit includes two omnidirectional DPA 4041-T mics with MMP-4000-T tube preamplifiers, the HMA4000 high-voltage mic amplifier/power supply, a UA0836 stereo boom bracket, mic holders, windscreens and cables. The kit is also available as the 3532-S, with 4041-S solid-state mics and packed with the same capsules but with the MMP4000-S discrete, solid-state preamps. Extra slots in the carrying case are provided for adding these FET preamps—they are interchangeable and are also powered by the HMA4000.

Danish Pro Audio was set up 10 years ago by former B&K (Brüel & Kjær) employees, and since February '98, all B&K microphones are branded as DPA and built with the same dedication to wide bandwidth, dynamic range and high son-

ic quality as B&K's audio measurement gear. With 24/96 (and higher) resolution digital fast becoming the standard, engineers and producers are becoming increasingly concerned with dynamic range, low distortion, frequency bandwidth and the wide-band phase integrity of the entire recording/mixing chain—all starting with the microphone.

THE TYPE 4041-T MIC

The 4041-T microphone uses similar technology as DPA's flagship 4040 Special-Edition Hybrid Microphone. Only 100 of these \$10,000 glass and metal-cased microphones were made using the MMC4041 capsule and a cylindrical body that contains both tube and solid-state preamps. The MMC4041 capsule is housed in a stainless-steel shell for environmental protection and is one inch in diameter. The 2-micron-thick diaphragm is also stainless steel. With its larger capsule end, the 4041-T resembles a small flashlight be-



cause the black, anodized, tubular preamp body is smaller, with a 3/8-inch diameter and 6.7-inch length.

The mic's 200-volt capsule polarization allows for a higher capsule sensitivity at 90 mV/PA and a higher SPL rating due to the greater diaphragm-to-back plate distance, which allows larger diaphragm excursions before "bottoming out." The mic's SPL is rated at 144dB SPL before clip; the dynamic range is 113 dB.

The mic's MMP4000-T tube preamp body runs warm to the touch and requires 130 volts for the 7599 miniature pentode running at unity gain as a Class-A cathode follower. The 3532-T kits are delivered with both mics matched within 1 dB for fre-

SECOND OPINION

Engineer/Producer Bruce Botnick Takes the Type 4041-T and 3532-T Stereo Kit for a Test Drive

I use a wide palette of mics for their color, clarity and imaging. My favorites are the classic tube models: the Neumann M50, Sony C37 and AKG C-12. I recently had the chance to listen to DPA's 3532-T tube mic stereo kit under battle conditions.

For this test, I used a matched pair of 4041-Ts in the 3532-T Kit in various configurations for a motion picture score that I recorded with David Newman at the Fox/Newman scoring stage in L.A. First, I mounted the two mics about 20 feet apart and 12 feet over the percussion section. Next, I used the mics as overalls on a trap drum set. The third test involved hanging the 4041-Ts on multibrackets in a Decca Tree configuration along with my classic Neumann M50s. Lastly, I used the 4041-Ts as my main mics for recording a vocal chorus in some very dead (and sonically unfriendly) rooms.

Overall, the DPA 4041-Ts are wonderful. In comparison to my M50s, they exhibited excellent imaging and reach—the ability to hear sonic details coming from all the way back in a room—to hear the room's reverberation. With transistor microphones, "openness" and "reach" are not in the vocabulary. Switching back

and forth between the 4041-Ts and the M50s, I found the differences slight when listening to a click track coming from an open pair of earphones. The 3-D image in the room, even in mono, was excellent. The sound isn't flat or boring. It is open, smooth and beautiful. Above the percussion section with timpani, shakers, vibes, marimba and grand cassa (bass drum), the DPAs had great dynamic range and could deliver an explosion of percussion with plenty of headroom to spare. Indicative of a great tube omni mic, the 4041-T's bottom end goes cleanly through the floor while its high end is silky and musical. When applying shelving or peaking EQ, the mics responded well, without unflattering ringing or peaking. With a great equalizer, the sound just opens up even more.

Over the drum set, I found the same results as over the percussion section, except that, now, the mics were only two feet over the drums. When the drummer played loud, they didn't fold, and during softer playing, all detail and sounds were picked up beautifully.

I still have more testing to find out how they respond to individual acoustic and electronic instruments, but for now, I know the DPA 3532-T Stereo Kit has a home as a new color on my palette of acoustical paints. ■

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HMA4000

All voltages are provided by the 2-channel HMA4000 mic amp/power supply over 10-meter cables using 6-pin XLRs. The HMA4000 is also the mic's output amp, because these mics put out line-level. There's no need for mic preamps, and these balanced line-level outputs eliminate many mic preamp issues—such as

noise, distortion and limited dynamic range—not to mention cost. Buyers should remember these built-in mic preamps when considering the \$8,000 MSRP.

For each mic, the HMA4000 provides an XLR output connector and a three-position gain switch for a choice of -20dB, 0dB or +20dB operating levels. The mic's standard output reference level is 0 dB, not the "+4dB/0dB" studio reference level. It is also best to start with a 0dB position when you are first setting up the mic. Able to drive lines up to 300 meters, the HMA4000 uses Analog Devices op amps for input stages and electronically bal-

anced, transformerless, Class-A line output drivers using only a single high-quality, polycarbonate capacitor in the signal path.

Connecting mics into line inputs is a whole new ball game of gain structure for me. Your console should have a line trim pot. Because the three switch positions are a little too coarse to "dial-in" superexact recording levels, a rotary wafer switch with finer 5dB increments from -20 dB to +30 dB seems like a good modification for the HMA4000. I also suggest a power-on/off switch, as cables must be connected before plugging in the AC cable.

IN THE STUDIO

My first session with the mics was a drum kit overdub at Noise Club Studios with songwriter/producer Oliver Leiber playing his vintage Gretsch kit. We were using a Pro Tools Mix Plus rig, and I just plugged the mic cables right into Leiber's Apogee AD8000 I/O for a minimum signal path.

I recorded drum room tracks about 10 feet in front of the kit, spacing the mics about 10 feet apart. The room is small and wood-paneled, and room mics help to take "boxiness" out of the overall sound. Using omnis when overdubbing is best—they just sound more like what you hear in the room. These room tracks turned out to be the best I have ever recorded (given the room's size), with huge dynamics, a more diffuse sound and no noise at all. The top lift of the mics was just the right amount so that cymbals didn't get overly loud.

For drum miking, I put the mics on the UA0836 stereo boom bracket. This is a black, anodized aluminum bar that screws on a single mic stand and rigidly holds both mics. The mics can be adjusted and then fixed anywhere across the bar according to a calibrated scale. Each mic can be individually aimed and locked down using the recticle markings on swivel mounts. This precision makes it easy to recall the exact distances and aiming angles later.

Standing three feet in front of the drum kit, I had both mics on the "11" markings (9.5 inches apart) and aimed slightly outward, with the left mic looking toward the floor tom side and the right mic looking right toward the hi-hat side. The center of the bar was directly in-line with the kick drum, about five feet off the floor. Omni-directional mics do have an on-axis point for higher frequencies, so, in that sense, they are slightly directional. When I soloed the DPAs, I could hear each physical position of each drum in a natural way, as though I were standing right where those mics were. I did use a mic on the kick to get more low-end boom

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and another for the snare, but the majority of the drum sound was captured by the two unequalized, uncompressed 4041-Ts.

Next, I recorded producer/artist Greg Mathieson playing his Yamaha C7 grand at L.A.FX Studios. I used the stereo bracket with the mics about 12 inches apart, positioned looking at the harp from midway down the piano's right side, with the left mic aimed toward the hammers and the right mic at the far end of the harp. With the lid fully opened, the mics were halfway between the piano's edge and the underside of the lid. One word: Fabulous! I had the HMA4000 set to 0dB gain and had instant, full peak recording levels when Mathieson played his hardest. The sound was high-resolution and clear—full, not overly bright—and you could hear everything, including the room's anomalies, even though the mics were three feet from the strings.

GEE-TARS!

Next stop was Hollywood's Icon Recording for close-miked acoustic and electric guitars. Comparing and using omni condensers for electric guitars to the immediacy and midrange character cardioid dynamic microphones is like comparing "apples and oranges." There is no prox-

imity effect, none of the inherent dynamic mic compression and exact positioning is less critical. This mic offers a new sound choice to producers who layer many electric guitar overdubs.

I liked the mics for loud and clean/crunch rhythm guitar parts where sometimes dynamic mics (and preamps) compress too much for a clear sound. For heavily distorted guitar sounds, the mic holds up well and is able to take the level, although a lot of the subtleties the 4041-T captures are lost amid the compressed and distorted guitar sound itself. Suffice it to say, the 4041-T captures the sound of the whole guitar amp better than a dynamic aimed at an individual cabinet speaker. I began with the mics two inches from the grille and then four feet away. The mics performed flawlessly, with no complaints or overloading, and gave me a full, rich sound that was vastly different from what is typical with dynamic mics. It sounds like you are standing in front of the amp.

Recording acoustic guitars is natural for the 4041-T. I switched the HMA4000 over to a +20dB output level, and I was set to go. I liked the way the mic didn't hype the high frequencies, leaving that choice to me with EQ. For fingerpicking

or nuance/soft playing, this is definitely the mic to use. The sound was clear and showed exceptional detail. The 4041-T didn't blow up (distort) with loud, open E-string thumbing from the Martin D-16 I was recording, and even at one inch away, there was no bass buildup. I used both mics spaced about six inches apart, and at a distance of 18 inches, I got a stunning sound without EQ or compression!

At \$8,000, the 3532-T stereo microphone kit is a long-term investment in great sound. These are the first microphones I have ever used that were fantastic for *any* recording task, from room tracks to drums, piano and acoustic or electric guitars. You can also buy a single 4041-T with HMA4000 for \$4,195.

Thanks to Bruce Botnick, Oliver Leiber, Dan Vacari, Greg Mathieson, Aaron Kaplan and Chris Walsh for their help.

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

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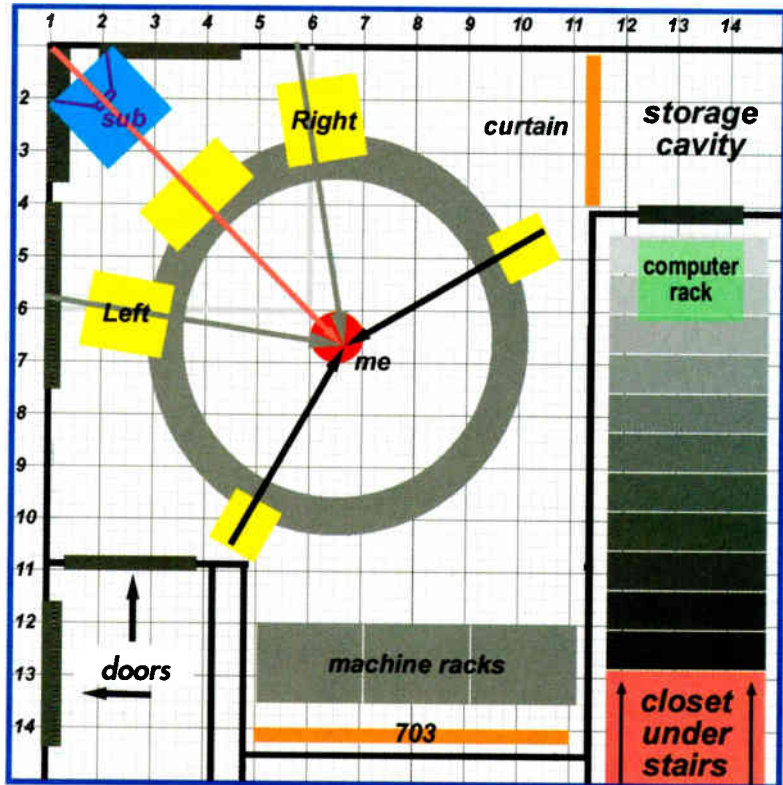
Back in March, *Mix* asked three writers to outfit project studios in the \$10k, \$25k and \$50k price ranges. In his opening paragraph, Robert Hanson started off by saying, "Obviously, [\$10k is] not enough for lavish acoustic treatment." Of \$50k, Paul Verna allotted \$1,000 for materials, hardly "lavish."

Few project studio owners start at the very beginning with room design. Project studio budgets are all over the map, but there is a good chance that acoustics take a back seat to gear. Don't worry; I am not going to scold you. As an engineer and technician, I've seen it all, from the funkiest Civil War-era factory installation (in Brooklyn) to those glam, *chi-chi* places where all the big records and broadcasts are done. Everybody skimps somewhere.

One glaring error in most "thrown together" control rooms is the lack of symmetry. Monitor placement should be symmetrical within the room, and the space from the monitors to your ears should be as equitable from left to right as possible. Often, equipment gets "temporarily" piled up on top of racks, only to live there indefinitely, sometimes nearly blocking one monitor. If this sounds (or looks) familiar, then it's time to plan a cleanup. Plus, work flows more efficiently and with less fatigue when the room works with you and not against you. This becomes more important if your personal project studio starts taking on outside business and engineers. For a refresher course on monitor placement, absorption and room modeling, check out the three sidebars to this article.

DRAWN FROM LIFE

The first step is to draw the space in question with as much detail as possible, including floor-to-ceiling dimensions. This simple exercise alone will provide a visual perspective that you may have missed. If you are geek-inclined, there are various online programs that will calculate reverb time at critical frequency bands, allowing construction materials and wall coverings to



Eddie's preliminary control room layout (in a spare bedroom) using the "Kimm" approach 45° off-axis. Note the use of Type 703 Fiberglas (in orange).

be factored in to see the difference they can make.

The ads in this magazine combined with a good search engine (like www.google.com) are resources for locating people and literature. Nothing replaces a "house call," but now it is possible to find someone who communicates at your level and price range via e-mail. Your room image, once in e-form, plus experience with the space in question can provide valuable feedback to the online sonic doctor.

One acoustic design site emphasized the importance of honesty, for which I could find no formula. But, seriously, when advice is given that doesn't jive with your gut, get a second or even a third opinion.

CLAP YOUR HANDS

Building a room from scratch allows every detail to be addressed, from shape to isolation, power to air conditioning. A symmetrical space without parallel surfaces is the optimum shape, something in the ballpark of a pentagon or a modified diamond. More often than not, however, we are dealt a difficult hand—such as the small office space with four parallel walls, which

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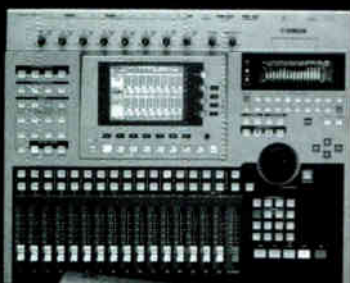
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Ceiling: 2 x 1/2" Gypsum with 1/2" Acoustic tile between Gypsum Boards.													
Room Volume: 5,471 cubic feet													
Materials	SqFT	125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz	
		a	Sa	a	Sa	a	Sa	a	Sa	a	Sa	a	Sa
Concrete Floor	510	01	5.1	.01	5.1	015	7.65	02	10.2	02	10.2	02	10.2
Primary Gypsum (double 1/2")	1541	50	770.6	.15	231.2	.06	96.5	.04	61.6	.07	107.9	.09	138.7
TOTAL SABINS		775.6		236.3		104.15		71.8		118.1		148.9	
RT60		.35		1.14		2.68		3.74		2.27		1.80	
a = absorption coefficient (material dependent) per one octave frequency bands													
Sa = S (sabines) x a (absorption) in total sabines. <i>formula: RT60 = $\frac{0.049}{Sa} \{V\}$</i>													

The typical RT60 (reverberation time) for a "bare" room consisting of a concrete floor and gypsum (sheet rock) walls, where 0.049 is the constant when calculating in feet. In this example, RT60 is calculated for six frequency bands; the goal is for each band to be as close as possible. Multiply "a," the absorption coefficient (different for each frequency band), with the surface area, then add them all up to determine the total Sabins for each frequency band, and then use the formula as shown to determine the RT60 for each band.

can be sonically challenging. You know what such a room can sound like empty—clap your hands and "boing," it's like the inside of a basketball. Fortunately, when a room is filled up with gear, the acoustics can settle down somewhat. But it's not always that easy. Controlling reflections is one of the primary acoustical tweaks that can make a space work. The smaller the space, the greater the challenge.

Many control room pictures have graced the cover of *Mix*, and, over the years, architectural drawings of control rooms have occasionally appeared between the covers. Some may have inspired an idea or two for your own facility. Looks

can be deceiving, though, as these 2-D images do not reveal all of the secrets on or behind the walls.

A rigid, flat surface is sonically reflective across the spectrum; bare walls in the front of the control room should be avoided, because high frequencies can bounce around. You want only direct sound from the monitors to reach the engineer's position. Sculpted foam, carpet, curtains or covered Fiberglas will tame the early reflections that can mess up the stereo image. Behind the engineer's position, diffusion via irregular surfaces like bookshelves, rough stone or an "engineered" diffuser can do the trick. An

MONITOR REPLACEMENT

By Terry Hazelrig

"Quality" speakers alone do not guarantee accurate reproduction. All are subject to the laws of physics, especially those relating to boundaries such as walls, ceilings and floors.

A speaker placed in the middle of a room effectively radiates low frequencies equally in all directions or into "full space." Bass waves are mostly nondirectional and radiate everywhere, but when placed near a wall, a speaker's "apparent" low-frequency response will increase by as much as 3 dB. This boost results from half of the speaker's low-frequency output being reflected off the wall into "half space." A speaker placed in a corner (quarter space) will get up to a 6dB boost in the low-frequency region.

A loudspeaker can also transmit energy indirectly through the room's structural members. Because the speed of sound is faster through a denser medium than it is through air, a monitor that's in contact with a surface can create comb filtering in the low-mid region: Sound transmitted through the wall and/or floor will reach the mix position before the direct signal through the air. To de-couple the speakers from the structure, isolate the speakers using rubber, Fiberglas or some other resilient material. (www.diyacoustics.com).

acoustician can diagnose some aspects of a room fairly quickly and tell you where to put this stuff.

A few months ago, I attended an Audio-Technica microphone demo at Flyte Time Studios (www.flytetime.com), home to producers Jimmy Jam and Terry Lewis. My good friend Ted (who was coincidentally building a studio below his two-car garage) came along. All along, I had been nudging Ted to excavate as deep as possible to gain some extra ceiling height. During the studio tour, Ted noticed the low ceiling in the control room. Chief engineer Brad Yost pointed out that there was an additional 20 feet above the acoustically transparent ceiling, a luxury for sure, but one that encourages us to "think outside the box."

HOW LONG HAS THIS BEEN GOING ON?

The speed of sound is 1,130 feet per second at room temperature (72°F), so the formula reads: wavelength = 1,130/frequency. A guitar's low "E" string is 165 Hz, and, when reproduced through a loudspeaker, it generates a wave 6.8 feet long! So, it only stands to reason that the low "E" on a bass guitar will generate 41.25 Hz and 82.5 Hz (fundamental and harmonics) with wavelengths of 27.3 feet and 13.65 feet, respectively. I hope it is becoming clearer how room size and the reflections therein become obstacles to the accurate reproduction of low frequencies.

Luca, my 2-year-old, might describe mid- to high frequencies as "really cute and tiny." Although he has no idea what sound looks like, it is an important concept to grasp for those of us who play with audio. All frequencies take up physical space, and several Websites offer online calculators to help us visualize them, including www.eatel.net/~amptech/elecddisc/disc/frequency.htm and www.mcsquared.com. And by the way, here are some cute and tiny wavelengths: 2,500 Hz is 0.452 feet (5.4 inches); 5 kHz is 0.226 feet (2.7 inches); 10 kHz is 0.113 feet (1.3 inches), and 20 kHz is 0.0565 feet or 0.678 inches. (See also www.contrabass.com/pages/frequency.html, and Research in Guitar Acoustics at www.phys.unsw.edu.au/music/guitar/.)

As you can see, low-frequency wavelengths are rather large. From the sound source to one reflective surface—in just one dimension—a single bass note can create a wave of additive peaks and destructive dips, making notes hard to judge in a small, untreated room. Put up

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THE CHIEFTAINS



by Candace Horgan

THE SOUND OF
IRELAND HEARD
'ROUND THE WORLD

PHOTO: PAUL NATHAN

After 40 years of recording and touring the world, The Chieftains have become an institution in Irish music, a musical idiom otherwise known for impermanence. The Chieftains' stature is such that they can record and tour with almost anybody: Previous collaborators have included Roger Daltrey, Nanci Griffith, Van Morrison, Joan Osborne, Loreena McKennitt, Natalie Merchant, Joni Mitchell, Bonnie Raitt, Sinéad O'Connor, Sting and the Rolling Stones. On The Chieftains' winter 2002 tour of the United States, they were joined by Cape Breton, Nova Scotia, fiddle great Natalie MacMaster, guitarist Jeff White (who has also played with Vince Gill and Alison Krauss) and sultry songstress Allison Moorer.

The Chieftains are Kevin Conneff on bodhrán and vocals, Derek Bell on harp and keyboards, Matt Molloy on flute, Seán Keane on fiddle, and Paddy Moloney on uilleann pipes and tin whistle. FOH engineer is Mark Horton, who has worked with the band since 1998. *Mix* caught up with Horton at the Paramount in Denver, Colo.

As Horton relates it, he originally started doing sound because no one else could do it. "I played guitar in bands when I was a kid, and I always had to set up the sound system because no one else could figure it out," he explains. "When guitar gigs started drying out, the sound gigs started

to appear. I started doing sound professionally in 1995. Ashley MacIsaac, a great fiddler from Cape Breton, hired me as his engineer in 1995. I'm from Nova Scotia, and I knew Ashley's management people, so that's how I got that gig. In the summer of 1996, Ashley toured as the opener for The Chieftains and I met Dan Cleland, who was doing sound and also acting as tour manager. Shortly thereafter, he hired me to do sound for The Chieftains. I did my first tour with them in the winter of '98."

TRAVELING LIGHT

After touring the world for decades, The Chieftains are welcomed back to many of the same venues year after year. What the band carries with them for sound depends on where they are. Explains Horton: "We rarely ever carry a console. In the UK we do, and sometimes in Canada we do, and in those countries we also sometimes carry our own P.A., but we go to the same venues in the States so often that we've gotten to know the sound companies very well, so we know what to expect. We have great relationships with the sound companies in most major cities, and we get to work in some beautiful halls, like Carnegie Hall in New York. Here in Denver, we usually play the Paramount, and we work with Bret Dowlen from Dowlen Sound, who has done the sound at the Paramount since 1984. He always brings out a Harrison

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Live mix



PHOTO: PAUL NATKIN

The Chieftains in concert. Left to right: Derek Bell (harp and keyboard), Matt Molloy (flute), Paddy Moloney (uilleann pipes and tin whistle), Séan Keane (fiddle) and Kevin Canneff (bodhrán and vocals, at rear). Joining them onstage is guest artist Natalie MacMaster (fiddle).

or a Gamble [console] to keep me on my toes. For this Denver show, I'm working with a Harrison SM4. When we carry a console, I like to work with the Midas Heritage 3000."

Because the band doesn't carry their own console on their U.S. tours, Horton has become familiar with many different mixing consoles. "You have to make sure you spend enough time with the P.A. [ahead of time], because the band's soundcheck is so fast that you have to have the P.A. the way you want it or you will get in trouble," he notes. "I've used pretty much every desk that's out, so that really helps."

Horton keeps effects to a minimum. "I like all of the Lexicon stuff, and a lot of TC Electronic stuff. The M5000 and the M2000 are both great. You can get by with a Yamaha 990, but it doesn't sound as rich. As far as effects, I usually go for a nice overall hall sound. A lot of the places we play, the halls sound beautiful already, so if I can get away with it, I don't use any. Sometimes, I put a little chorus on the harp and the fiddles. Once in a while, I use delay with a guest vocalist, but I try to keep the effects to a minimum to keep that natural sound. Volume is a big issue; you have to keep the volume as low as possible."

Horton uses little EQ. "I go for an overall hall sound," he explains. "When I do use EQ, I set it by first playing the Sting CD, *Mercury Falling*, that I've had for years, then fine-tune it with my voice through an SM58, then I do a few more adjustments during soundcheck. The idea with the show is to try and make the peo-

ple in the audience feel like they are in a living room with the band playing. I try to make it very natural-sounding."

CHANTER, DRONE AND WHISTLE

The microphone choices and setups are various, reflecting the unusual instrumentation. "Sean's fiddle has an ATM 35 clipped onto the bridge; it has a goose-neck, and he points it where he wants to," explains Horton. "With Paddy's pipes, we usually throw a Shure SM81 right at the chanter to get the best sound, about six to eight inches away. The drone is close-miked with an AKG C408. Paddy also plays his accordion into his pipe mic, and when he plays the whistle, he uses the pipe mic, except for one number when he stands at a vocal mic, a Shure SM58."

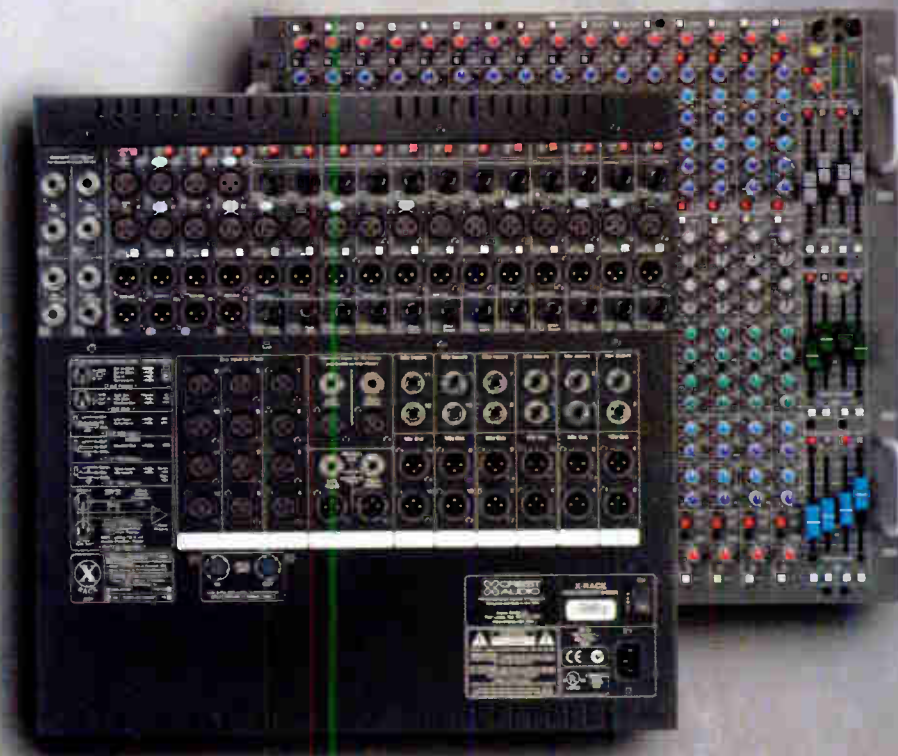
"For the flute, Matt plays into an SM58. Derek's keyboard setup is the most complicated. We have a little Korg XD5; we are taking a stereo feed from it this year. The past few years, we ran a mono signal, but this year, he is using more sounds, so we went with a stereo feed to the DI. Then



PHOTO: PAUL NATKIN

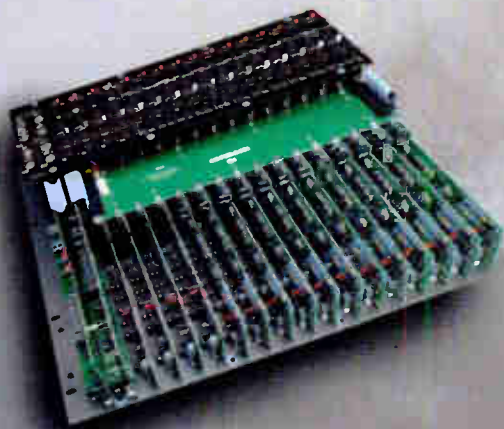
The Chieftains' FOH engineer Mark Horton

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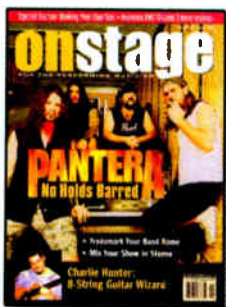
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Live mix

the promoter provides a Yamaha P200 at every show that we also take a stereo feed directly into a DI. For the grand piano, which is used for Derek's solo and the finale, we use an AKG 414 over the hammers. The harp has a little AKG 419 inside the bell and pointing at the soundboard. It's not ideal, but it's the only way to get it up to volume in the monitors.

"On the bodhrán, we use a Sennheiser 421. Kevin uses three different sizes of drums. We like to have a space heater for the drums, especially if it is moist, to keep the skins tight and in tune. His bodhráns can't be cranked with an Allen wrench like the newer drums; they are very old-fashioned. When he sings, he is using an SM58. Actually, all the vocal mics are SM58s."

Because the pipes are naturally tuned to A447, the rest of the band tunes to the pipes. "When I was with Ashley's band, the A was actually tuned to B to play with Scott's pipes," Horton recalls.

In contrast to The Chieftains' traditional approach to amplifying acoustic instruments, the special guests—fiddler Natalie MacMaster and guitarist Jeff White—avail themselves of technology. "Natalie has an LR Baggs bridge pickup, and she runs that into a Shure wireless unit," says Horton. "I take a direct XLR from that box into the P.A. Jeff has a pickup, and I also mike Jeff with an SM81."

STEPPING OUT

The Chieftains like to have stepdancers at each show, and Donny Golden, a champion stepdancer, has toured with them for several years. For the 2002 winter tour, the band also brought two Canadians, Jon and Nathan Pilatzke. "We have Shure SM91s taped down on the stage to pick up Jon and Nathan," explains Horton. "Sometimes, we use a Crown PCC instead. Donny Golden is wearing a wireless microphone, an inexpensive Shure system. We tape a really cheap omni lavalier from Shure to the sole of his shoe right in front of the heel; because it's an omni, it picks up both feet really well. We run the wire up his leg, and he clips the unit to his pants."

The Chieftains typically welcome local musicians to sit in with them during the encore, giving the end of the show the feel of a traditional Irish session in the local pub. Horton doesn't do anything special for getting the guests in the P.A. "We have a spare vocal mic for the guest singer, and we put that in front of some people, and we might throw down



Tour manager Dan Cleland also assists FOH engineer Mark Horton with The Chieftains' monitor mix.

Kevin's vocal mics. Some years, we had choirs and we had two condenser mics of them, and if it's friends of the band or name musicians, we might throw out an extra DI or a special mic; but, normally, we don't bother. It's just a fun thing for people to get up and play with The Chieftains."

Essential to a good overall mix is the balance of fiddle and flute. Explains Horton, "Sean's fiddle is very bright, and Nat's is a little fatter. When they play together, I pan them slightly to give them their own space; Sean goes left, and Natalie goes right. Her gain is set a lot lower than Sean's to balance her having a pickup. That's why I have them play together during soundcheck—to check their levels and make sure both are even and clear in the mix. The real trick is to make sure that you can hear the flute when the fiddles are playing the same line. I know the set, so I know when the fiddles come in and when I will have to turn the flute up or down to compensate. Sometimes when we play outside, it can be difficult to get the volume of the instruments up in the P.A. The louder the show, the more you have to gut the lows. The instruments resonate at those low frequencies, so you end up gutting all the warmth out of the P.A."

MIXING MONITORS FROM FOH

Horton also runs the monitor setup from FOH, with a little assistance from tour manager Cleland, who did sound for the band before Horton joined. Of the four monitor mixes, the first goes to two outside wedges and is made up of an overall band wash. "It has everything in it except for Kevin's drum, which is loud enough onstage," says Horton. Mix two is dedicated to guest singer Alison Moorer and has only her voice and "a lot of the guitar." Mix three is Kevin Conneff's bodhrán and vocals mix, and is similar to mix one except that he has his voice very

loud in it, along with his drum and lots of guitar. Mix four is the guitarist's, and is an overall mix with some drum in it.

"For the next tour, I think we are going to get a hot spot monitor for Derek, because he sometimes has trouble hearing the organ," adds Horton. "The piano has a built-in speaker so it's fine, but he sometimes has trouble hearing the organ. The harp is in the monitor mix, and he is closer to the monitor when he plays the harp. Derek is brilliant; he could probably do the entire show without hearing anything he plays,

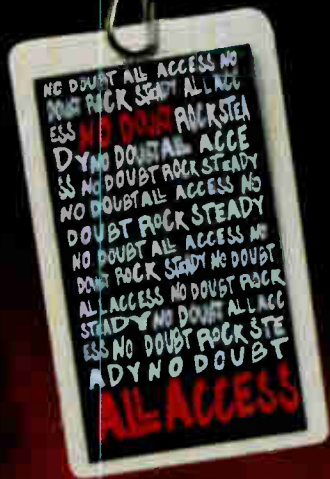
but it's better that he knows what's going on. I can listen to the mixes on headphones; they aren't very loud, so we generally don't run into any feedback problems. If the guys need any more, they signal—Dan is at the side of the stage and he gets me on the radio. They are really very traditional; they barely like having microphones, so they see no need for in-ears [IEMs] or anything fancy as far as the mix." ■

Candace Horgan is a freelance writer based out of the Denver area.

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NO DOUBT



Touring to promote their fourth album for Interscope, *Rock Steady* (2001), No Doubt has been on the road since last fall and will be heading to Europe for the summer. For this tour, the four-piece band has added Gabe McNair and Steve Bradley (keys/horns/vocals), seen above flanking singer Gwen Stefani. *Mix* caught the sold-out show at the Event Center in San Jose, Calif.

JBL's VerTec line array sound system



Monitor engineer Dave Tobias (left, with audio tech Matt Fitzgerald) is mixing for both wedges and in-ear monitors (IEMs) on a Midas Heritage 3000. "The Heritage is the only thing I spec anymore," says Tobias. "It sounds marvelous; it's got every bell and whistle you'd want, and it's got lots of outputs and I'm using almost all of them." Tobias likes to use compressors and is "a big fan of the Summits." His rack also contains Lexicon and Yamaha reverbs, a TC Electronic 2290 for vocal delay and Drawmer gates.

The bandmembers are using Ultimate Ears IEMs with the new Sennheiser 3050 Series wireless system, which the band came across when opening for U2. "Gwen used one of Bono's spare packs for a number she sang with U2, and came back raving about how good they sound," recalls Tobias.

The main sound system for the tour is a JBL VerTec line array, provided by Audio Analysts. "It sounds real good, and I can get [a VerTec system] anywhere in the world," explains FOH engineer John Kerns (center, with audio tech John Muldowney, left, and Schubert Systems' Bryan Clements). In this particular venue, Kerns supplemented Audio Analysts' system with additional VerTec cabinets from Schubert Systems. Kerns uses BSS Varicurves for EQ'ing the system. "I can get tighter notches on them, and I find I do a lot less EQ'ing with them than if I have a graphic," he explains.

Kerns is mixing on a Midas XL4, his favorite console. His rack includes Drawmer gates and limiters, four Distressors, a Summit limiter across the guitar subgroup and an SSL limiter across the stereo bus. "The SSL is one of my all-time favorite pieces of gear; Nigel Green turned me on to it," says Kerns, who also carries "a bunch of old PCM-70s, old Version 1.0 models, which I've used for years. I still love 'em." Additional effects are provided by an Eventide Harmonizer and TC Electronic delays.

"It's why you get into this business," says Kerns of mixing for No Doubt. "They're a great, fun band to mix. You can tell that they've been playing together for 15 years."

Gwen Stefani sings into a Shure Beta 58A wireless.

Guitars are miked with a combination of Audio-Technica 4060s (main mic), Shure SM57s and Sennheiser 409s. The bass is taken direct and is also miked with an A-T 4047 run through a Distressor. Drum mics include a Shure Beta 57 on the snare top and a regular SM57 on the snare bottom. Kick mics are a Beta 52 and an SM91, with SM58s on toms, an A-T 3031 on the hi-hat and A-T 3035s on overheads. "I really like the way that A-T mics are coming about now in terms of both sonic quality and value," says Kerns.

Adrian Young: drums

Tom Dumont: guitar/keyboards

Tony Kanal: bass/keyboards

New Sound Reinforcement Products

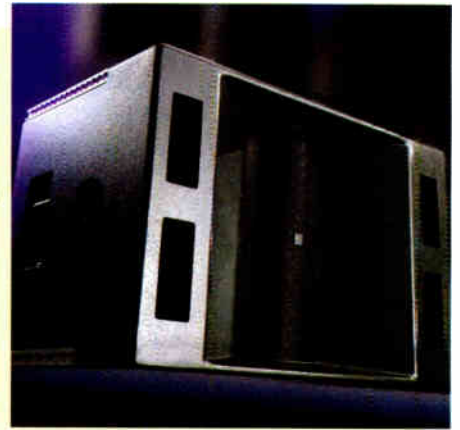


MEYER COMPACT LINE ARRAYS

Meyer Sound (www.meyersound.com) adds two new self-powered models to its family of line array loudspeaker systems. The M1D Ultra-Compact Curvilinear Array Loudspeaker is designed for small venues, and for single-cabinet applications such as under-balcony fills. The M2D Compact Curvilinear Array Loudspeaker is designed for mid-sized venues that need long throws. The M1D has a frequency range of 60-18k Hz and a max peak output of 123dB SPL (@ 1 m). The M2D has a 60-16k Hz operating frequency range and outputs a 136dB max SPL at 1 meter. Both offer tight vertical pattern control for smooth midrange, and employ a complex crossover that feeds mids to only one of the two low/mid-cone drivers, eliminating interference between the drivers and maintaining optimal polar and frequency response characteristics. Both arrays are compatible with Meyer's RMS Remote Monitoring System, for remote-system monitoring over a network from a laptop or desktop PC. Weather-protected versions of the M1D and M2D are available, as is a companion sub for the M2D that extends power bandwidth/frequency response down to 35 Hz.

MIPRO MODULAR WIRELESS SYSTEM

Mipro's (www.mipro.com.tw) ACT Series of modular pro wireless systems feature ACT (Automatic Channel Targeting) for quick, precise frequency assignment, and receiver modules are hot-swappable. With up to 961 available UHF frequencies, up to 64 wireless channels can be remotely monitored and controlled from a PC positioned up to 3,280 feet away. Model ACT-707S is a half-rack, single-channel receiver; model ACT-707 is a 4-channel receiver in a single-rackspace chassis. Both receivers operate with the ACT-707H handheld transmitter and ACT-707T bodypack transmitter. Accessories include a color LCD, integrated antenna divider, summing mixer and detachable universal power supply. The system also provides comprehensive RF spectrum analyzer and RF-recorder functions.



QSC ACTIVE SUBWOOFER

QSC Audio Products Inc. (www.qsc.com) debuts the 215PCM active subwoofer, the core module of QSC's ISIS (Integrated, Self-Powered, Self-Processed Industrial Systems) speaker line. Featuring dual 15-inch drivers and an integral 3,000-watt amp, the 215PCM can also provide two channels of power amplification and processing electronics for full-range or bi-amp "top box" speakers. Both processing units offer eight presets, user-configurable via QSC's Signal Manager software. Frequency response of the 215PCM subwoofer is 35-115 Hz (-3 dB). A passive model (the 215SB) has the identical enclosure, minus the amplification and DSP.



PEAVEY FREQ-OUT

The FREQ-OUT 116 Anti-Feedback Processor from Peavey's Architectural Acoustics division (www.peavey.com) includes a powerful DSP engine, allowing the installer to reduce feedback easily and improve system gain without compromising sonic performance. Designed to eliminate feedback in sound system applications, the FREQ-OUT 116 couples powerful "seek and destroy" software with 16 precision dynamic-depth notch filters. The front panel interface provides easy access to the processor's controls and operational modes. A three-state LED indicates current activity for each filter, and a Pre-Show mode rings out the sound system during the initial tuning process. A Performance mode ensures that feedback reduction continues during normal system use. Additional features include the Panic Filter and Wide Filter modes, four preset memory locations and a tamper-proof front panel.

A complete 1000 watt system!

Whether it's for your band, church or school, Carvin's PA800/PA1200 package systems allow you to run the whole group in stereo while powering your monitors! The lightweight mixer pumps out 1000w RMS from three amps delivering 333w each. You also get two built-in 24-Bit digital multi-effects processors with over 256 effects each!

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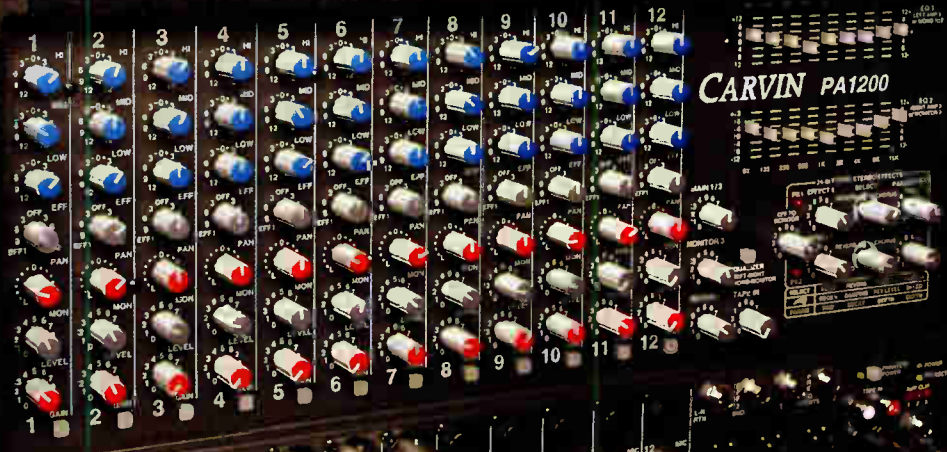
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optional SS20 stands

optional MS13 stands



CARVIN PA1200



722 Monitors

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Martin Audio's new Wavefront W8L line array system

ROB ZOMBIE

Rob Zombie is out on tour with a brand-new Martin Audio Wavefront W8L line array system, supplied by Delicate Productions of Camarillo, Calif. "The system delivers constant coverage, and it has that signature Martin bass punch—something that I've always loved," says FOH engineer Ted Keedick. "It's everything I'd hoped it would be. I'm happy to be the first guy to try it out."

Keedick is mixing 40 input channels and eight stereo effects returns on a Midas Heritage 3000. For effects, Keedick is carrying an Eventide H3000, with TC Electronic 2290 and D•Two delay units, a Lexicon 300 and four Yamaha SPX-900s for reverbs, plus a dbx 120XP Subharmonic Synthesizer. For dynamic control, Keedick chose a Summit TLA 100 and a BSS DPR 901 on lead vocal, BSS DPR 502 gates on drums and dbx 160 compressors.



FOH engineer Ted Keedick

Rob Zombie's vocal mic is a Samson UR5 wireless handheld with an Audix OM5 capsule. Guitars are miked with Audio-Technica AT 4050s, while the drum kit gets all Shure models: Beta 52 and SM91 on kick drums, SM57 on snare top, SM98 on snare bottom and rack and floor toms, and KSM 32s on hi-hat and overheads. The bass cabinet is miked with a Shure Beta 52.

Currently on his Demon Speeding Tour 2002, Zombie will appear on the main stage at Ozzfest 2002, now slated to tour from July to September. —Steve Jennings

INSTALLATION NEWS

West Austin, Texas' 300-seat One World Theatre has installed a 40-channel Soundcraft Series TWO console, and is using it to run both FOH and monitor systems for most productions. The house P.A. system, which includes flown EAW loudspeakers and QSC amplifiers, will be used by such artists as Al Di Meola, America, José Feliciano, Little River Band, Pharoah Sanders Quartet, Stanley Jordan, the Zapolski String Quartet and others...The Pallas Theatre in Athens, Greece, recently upgraded its house system with 48 channels of Shure UHF wireless. Designed for the 1,700-seat historic theater by Jens Stellmacher of Shure Europe's Applications Group, the new system includes 24 dual-channel U4D receivers, 48 U1 bodypack transmitters, the UA888 networking interface system and subminiature WL50T lavalier microphones. The system is currently being used by the 55-member cast of a hit mu-

sical starring popular Greek actress and singer Anna Vissi.

NOTES FROM THE ROAD

Sydney, Australia-based Jands Production Services now owns 200 Crown Macro-Tech 5002VZ amplifiers, collectively capable of delivering over 1 million watts of power. Jands uses the Crowns to drive its JBL and L-Acoustics line array systems, and has taken the amplifiers out on recent tours for Ricky Martin, KISS and Bon Jovi...Scottish rock band Travis has been using a Meyer M3D Line Array loudspeaker system, supplied by London's Capital Sound, for a month-long UK arena tour. At the 12,000-capacity Wembley Arena, 11 M3Ds were flown each side of the stage, with three MSL-4 speakers per side in an under-hung cluster. Low-end reinforcement was provided by M3D-Sub Directional Subwoofers, and six MSL-4s were flown each side as side hangs, with UPM-1Ps as frontfills. ■

HEY, HEY, WE'RE THE MONKS!

The first tour for Meyer Sound's new M2D line array system is with the exiled Tibetan Buddhist monks of the Gyuto Tantric University Choir, who are appearing at venues ranging from intimate college recital halls to New York City's Cathedral of St. John the Divine. The Gyuto Choir tour is carrying 12 M2D main array cabinets, with deep bass augmented by four M2D-Sub subwoofers. Additional speakers include Meyer UPA-1P and UPM-1P self-powered loudspeakers. Exiled from Tibet, the Gyuto monks have rebuilt their Tantric University in Dharmasala, India. More information is available at www.gyuto.org.



OPERA IN THE BARN

A general-purpose "old barn" that first opened in 1928 as a hockey arena is now a temporary home for both the Seattle Opera and Pacific Northwest Ballet. To provide sound reinforcement for both companies while the Seattle Center Opera House is being transformed into the new Marion Oliver McCaw Hall, the Seattle Center Sound Department, headed by Richard Erwin, has installed a new sound system in the aging Mercer Arts Arena. Based around a Yamaha PM-1D, the system includes speakers from JBL's Custom Shop, Yamaha 01V digital mixers, Crown Macro-Tech amplifiers and dbx DriveRack digital processors.

DB SOUND PICKS X-LINE

db Sound recently provided an Electro-Voice X-Line line array loudspeaker system for radio station Q101's eighth annual alternative music festival at Chicago's United Center. A sell-out crowd of 18,000 turned out to see Blink 182, Bush, Puddle of Mudd, Alien Ant Farm, Sum 41, Pete Dinklage and Crystal Method. The main P.A. system consisted of two front speaker hangs of 16 E-V X-Line Xvls, six Xvlt, and two Xfil loudspeaker models. Two columns of 11 X-Line Xsub loudspeakers were also flown.



“Awesome. But isn’t that a bit much for the Acapulco Room?”



M1D

22" w x 7" h x 8 9/16" d
 (582 mm x 178 mm x 216 mm)
 < 40 lbs (14.1 kg)
 Max Peak SPL > 123 dB
 Companion M1D-Sub available



M2D

39" w x 12 1/2" h x 47 5/8" d
 (991 mm x 317 mm x 445 mm)
 < 120 lbs (54.5 kg)
 Max Peak SPL > 136 dB
 Companion M2D-Sub available



M3D

54" w x 20" h x 30 3/8" d
 (1372 mm x 508 mm x 762.5 mm)
 415 lbs (188 kg)
 Max Peak SPL: 145 dB
 Companion M3D-Sub available

Note (1) M1D specifications are preliminary and subject to change.
 Note (2) All Meyer Series Loudspeakers are Self-Powered.

If you're working smaller venues, you've got all kinds of considerations no large-scale system can address. So where does that leave you? From now on, exactly where you want to be. Introducing the M2D and M1D CurviLinear Array Loudspeakers from Meyer Sound. With the same uncompromising sonic excellence you've come to expect from our M3D Line Array, but in a new, more compact form. To find out how these could provide the ultimate, totally awesome solution for your next conference, theater production or small- to medium-sized concert tour, check out our website. www.meyersound.com/mseries



“One thing I learned from Bill Graham is that collectively, our ultimate goal is to please the audience. No matter how big, no matter how small.”



LOS LOBOS TURNS 25

INSIDE THEIR NEW CD

By Blair Jackson

It's never been easy to get a handle on Los Lobos. On the surface, they seem like a band that mixes good-time rock 'n' roll with festive Mexican tunes; try as they might, they'll never completely escape "La Bamba." But as their large and devoted following knows, they've always been much more than that. Guitarist/singer David Hidalgo and drummer lyricist Louie Perez have evolved into one of rock's most interesting songwriting partnerships, with a catalog of tunes that range from impressionistic portraits and contemplative musings about fate, faith and death, to cryptic, dream-like sound poems. And guitarist/singer Cesar Rosas has carved out a niche of his own with his songs: rough-and-tumble rockers, charged R&B, and those spry Mexican waltzes and polkas. Live, the two guitarists can kick up a squall worthy of the heaviest metal band, yet it's never too long a wait for the next delicate Hidalgo ballad. They also have quite a repertoire of cover tunes, which they render with tremendous authority and personality: songs such as Traffic's "Dear Mr. Fantasy" and "40,000 Headmen," the Grateful Dead's "Bertha," Neil Young's "Cinnamon Girl" and "Down by the River," Bob Marley's "Exodus," Jimi Hendrix's "Are You Experienced" and "Spanish Castle Magic," and Fleetwood Mac's "Oh Well."

This is a band that has never been afraid to take chances, especially on their albums, which have been unfailingly adventurous since their landmark *Kiko* CD in 1992. That album marked the first full-length collaboration between the band and the producer/engineer team of Mitchell Froom and Tchad Blake. Together, they have made four Los Lobos albums, and Hidalgo, Perez, Froom and Blake have also made a pair of thoroughly bizarre CDs as the Latin Playboys. That

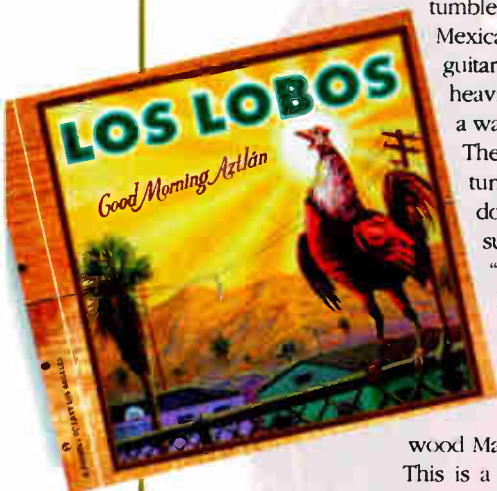


partnership was marked by plenty of sonic experimentation and unusual instrumental arrangements; more often than not, they hit the mark, but they also alienated some of their longtime fans in the process. Can you squash one too many vocals, with odd compression? Maybe.

Los Lobos' latest CD, *Good Morning Aztlán*, takes a slightly more straightforward approach than their last couple of albums, not coincidentally, it was made without Froom and Blake onboard. This time it was helmed by British producer/engineer John Leckie (XTC, Stone Roses, Radiohead, The Verve), with additional engineering by longtime Los Lobos associate Dave McNair. (He recorded the two Los Super Seven projects, featuring Hidalgo and Rosas and produced by Lobos reedsman Steve Berlin.) The result is stunning: The band's eclecticism is still very apparent, and clearly there is still some Blake/Froom influence (McNair was partly schooled by Blake). But there's a power and passion to the performances that feels new, more akin to the way the band sounds live. Whether or not this CD betters the group's commercial stature, which has been in decline for some time, is anybody's guess—they're probably still too cool for most radio stations—they've made an album that easily stands with their best. If there was any justice in this world, the incredibly catchy title track and the sultry, Curtis Mayfield/Marvin Gaye-influenced song "The Word" would be enormous hits.

"We spent about 10 years with Froom and Blake, and I wouldn't trade a second of it," says Steve Berlin. "I love the records we made together."

—CONTINUED ON PAGE 161



BOB MARLEY

LIVE CDS ARE ON THE WAY!

By Blair Jackson

During his lifetime, Bob Marley was the undisputed King of Reggae, selling millions of records and becoming one of the most recognized musicians in the world, up there with Madonna and Michael Jackson—a true icon. His magnetic personality, emotive voice, solid songwriting, and universally appealing anthems of peace, love, solidarity and fighting oppression made him a hero on every continent. Incredibly, his popularity and his legacy have only *grown* since his untimely death from cancer in 1981 at the age of 37.

The Marley estate—spearheaded by Bob's widow Rita (herself a talented singer)—and his record label, Island Tuff Gong, have managed to keep a fairly steady stream of material coming out over the two decades since his passing. Two hits collections—*Legend* and *One Love*—have sold many millions, and now Island has embarked on an ambitious program of “Deluxe Edition” CDs, featuring remastered versions of Marley's albums with bonus tracks. It was somewhat surprising, however, that precious little live material from this incendiary performer has come out through the years.

That is about to change. For the past several months, a team has been working to archive, clean up and mix a huge cache of Bob Marley live tapes from the 1970s, with an eye toward releasing many of them to the public, either as bonus tracks on remastered studio albums, or as live CDs unto themselves. “Bill Levinson is the producer of this project,” notes Jeff Glixman, director of studio operations for Universal Music Group, the parent company of Island Records (and a zillion other labels). “Bill has been heavily involved with the Marley family for quite some time. He's in the process of remastering and re-releasing 15 Marley albums. But he's also been aware of these tapes of previously unreleased live shows, so we've been tracking them down. Some of them are in Jamaica, and some of them



are in England. We've worked on the ones in England; they were assembled with the help of our library team there. And we have a studio facility there and they did a lot of the cleaning up and restoring of these tapes. A lot of them had to be baked, and a lot of them were in the condition where if you got one good play, you were lucky and you were satisfied.”

“In doing some research,” adds Bill Levinson, who's known industrywide for his fine reissue projects, “we discovered that there was an assortment of tapes from November '73, done live at Leeds [Polytechnic College in England]; there's live at the Lyceum, July '75, which yielded the *Live* album—two shows were recorded for that, but not all the songs were used. There are five shows from June '76 at Hammersmith Odeon [in London]. There's live at Manchester, England, June '76. There's one that was done July '76 live at the Roxy in Los Angeles. There are four shows at the Rainbow in London, June '77, and three shows in Paris in '78, which yielded most of the *Babylon by Bus* album. And there's live in Boston, June '78. We know we have these tapes. The trick is to get to London, get to Jamaica, copy them and collate them so we have a full set in both locations. That's the first chore, which is actually harder than it sounds because you're dealing with different file systems and locations. Once that's done, I can work wherever I need to go—get a

team together and start mixing these for review and, ultimately, release.”

The tapes are mostly 16- and 24-tracks, “but there's also a whole slew of 2-tracks,” Glixman says. “Some were on BASF tape, some was Ampex, some was Scotch.” To archive the tapes, Glixman chose the Euphonix R-1 with the optional AES 31 TransferStation, digitizing at the high-resolution 24-bit, 96 kHz, and backing up on both DLT and ExoByte. Martin Kloiber of Euphonix was the technical lead at Battery Studios in London, and notes, “We played around with different sample rates—there was the question of doing it at 192k and I think that's nice, but at the end of the day, you don't gain that much sound quality. Maybe if you have a microphone going directly into the machine you might, but when you're coming over from analog tape, you don't gain much. So I think this was plenty.” Another critical member of the setup team from Euphonix in England was artist relations contact Steve Smith.

“The library team and Bill had logged the tapes we were going to use, so I had files on the tapes and I actually had Xerox copies of the tape boxes, so I knew what I was looking for,” Glixman says. “There was very little information on the boxes, but I tell you, I'm a record producer by nature. I started when I was very young, had some early success with

—CONTINUED ON PAGE 164

THE ROLLING STONES' "START ME UP"

By Blair Jackson

The 1970s was a schizophrenic decade for the Rolling Stones. Their 1971 re-release *Sticky Fingers*, cut in Muscle Shoals, was one of their best records ever, clear evidence that with The Beatles broken up beyond repair, the Stones truly were the greatest rock band in the world. They staged a triumphant tour the following year, and released the dense, murky masterpiece *Exile on Main Street*, recorded mostly at Keith Richards' villa in the south of France. But all was not well in Stones land—Keith developed a nasty heroin habit, guitarist Mick Taylor (who'd replaced original member Brian Jones, who died in a swimming pool mishap) was increasingly on the outs with his mates, and Mick Jagger had come to embrace the lifestyle of an international jet-setter, hanging out with the rich and beautiful people in various European and American cities, much to Keith's dismay. The group's mid-'70s recordings lack some of the focus of the group's best work, though certainly there are nuggets to be found on *Goat's Head Soup* (1973), *It's Only Rock 'n' Roll* (1974) and, especially, *Black and Blue* (1976; it's the first Stones record to feature ex-Faces guitarist Ron Wood). And though none of those records achieved the commercial stature of *Sticky Fingers*, each hit Number One in the U.S. and Britain—proof of the band's amazing power and appeal, even when they were mainly coasting.

The group's next creative triumph was just around the corner, however. *Some Girls*, released in June 1978, was a return to form—a hard-rocking, ass-kicking album that showed the Stones were still at the top of their game and not ready to be dismissed

as irrelevant dinosaurs in the age of punk and new wave. Okay, the album's first big hit single, "Miss You," was more New York disco than London buzz-saw punk, but the album as a whole was full of raw energy and vitality. The sessions for *Some Girls*, too, produced this month's Classic Track, "Start Me Up"—though the finished song didn't appear on a Stones album until 1981 on *Tattoo You*.

By the time the sessions for *Some Girls* came around, the Stones were emerging from their mid-decade malaise. Keith Richards had been busted for heroin possession in



© GARRY HUIST/MICHAEL OCHS ARCHIVES

Toronto during 1977 and made a sincere effort to clean up his act. Ron Wood was fitting in well with the group; he was a marvelous musical foil for Keith, and his puckish spirit made him a good fit. Mick had all but extricated himself from his troubled marriage to his Nicaraguan socialite wife, Bianca, and was happily on the prowl again. And there's no question that The Clash and the Sex Pistols and the other great bands who emerged from the London and New York undergrounds in '76 and '77 really did light a fire under the Stones; after all, the Stones were the spiritual ancestors of many of those bands, before the decadence and ennui crept in.

Mostly for tax reasons, the Stones had taken to recording outside of England whenever possible—*Goats Head Soup* was cut mainly in Jamaica, *Black and Blue* in Munich—and the plan for the album that became *Some Girls* was to write songs in a giant rehearsal room in Paris' Pathé Marconi studio (which was owned by EMI) and then move to one of that facility's conventional recording rooms. To engineer the sessions the band brought in Chris Kimsey, a one-time assistant engineer at Olympic Studios in London (where they'd cut a number of their greatest albums). Kimsey had gone on to engineer successful albums with Peter Frampton, Ten Years After and others. He had assisted Glyn Johns on *Sticky Fingers*, "and that was a period when Glyn was sort of weaning himself away from the Stones," Kimsey says. "And there were times when he wouldn't be around so I'd end up engineering for him, which was fine—I knew the tracks, and I knew the band. I did a lot of vocals and overdubs on that album, and that was my introduction to working on the band." He believes that it was Ian Stewart, the veteran pianist whom Kimsey describes as "a guiding force to the band at that time in terms of production and engineering," who suggested the band enlist Kimsey for the project. It probably helped, too, that he had recorded Stones bassist Bill Wyman's 1974 solo album, *Monkey Grip*.

Once the Stones were all in Paris, initially staying at the



PLM Hotel, they'd convene at Pathé Marconi to work out song ideas as a band. "It was a vast, huge room, as big as Abbey Road Number One, but with a tiny control room that could only accommodate about three people max," Kimsey remembers. "The speakers went off at right angles, about 70 degrees from the board—the most bizarre setup. The console was an old EMI 1962-era desk with quadrant faders that just had treble and bass on them; very basic 16-track, no outboard, nothing. Mick had done this deal where he got the studio for a pittance to rehearse in, but when we got in there, the sound that was coming through that desk was so good—they had amazing microphones; a collection of wonderful [Neumann] 47s and anything you could imagine—I didn't really want to move, and Keith agreed. We were supposed to move next door to the studio with a giant Neve desk, but we didn't; we stayed in the demo studio, and that's where we remained pretty much for the next two years."

In keeping with Stones tradition, the band always recorded as a group, live in the studio, for basic tracks. "I set the band up in a sort of semicircle, with Charlie [Watts, drummer] in the middle, Ronnie to the left of Charlie, then Keith, and then to the right of Charlie would be Mick's amp, and then Bill would be on the end. Then there were the keyboards—organ and piano or Wurlitzer. At that time, Chuck Leavell [formerly of the Allman Brothers] had just been introduced to the band—he and I were like the new kids on the block; we used to hang out a lot.

"When I first got to Paris," he continues, "I was eager to get working and I wanted to make a good impression, of course, so I'd show up at the studio at about 7 o'clock every night...and then end up waiting five hours for anyone to show up! I thought, 'Screw this, I'll wait till someone calls me!' In Paris, they were hugely popular. They had dinners to go to, people to see. Mick was at the tail end of his relationship with Bianca and beginning his relationship with Jerry [Hall]. There was a lot of stuff happening—social appointments—so, really, we never got started until midnight or 12:30. And then they'd get down to the nitty-gritty: Mick or Keith would have a riff or some fragment of something and they would jam, and the songs would gradually develop from that. That was the luxury of having a studio where you weren't paying much. I recorded pretty much everything, so the tape budget was huge, but

the cost of the studio time was not." The sessions were recorded on a 16-track using Ampex 456 tape.

As for the specifics of how Kimsey recorded the Stones, he recalls that on Charlie Watts, "I'd use a U47 tube over the top as an overhead, the bass drum mic would have been an AKG D-25 or D-30, the snare would have been a Shure 57, hi-hat would have been a [Neumann] KM84, and the rack tom and the floor tom would have been a [Sennheiser] 421 or a [Neumann] U67.

"An interesting thing about Charlie is

that though you think of him as this big, loud drummer, in essence he was a jazz drummer and liked to play very quietly. Charlie really taps his drums rather than smashes them—he has such finesse and a wonderful touch. So to get a body of sound into this huge room in Paris, I put up a little Shure P.A. and put the bass drum and the snare drum through the P.A. and pumped it out for the rest of the band. I didn't mike the P.A., but it did bleed a little into the overhead sound of Charlie, and it created a very special sound. I put Mick's guide vocals through

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the P.A., as well; not as loud as Charlie, but on some tracks, you can hear the ghost of a vocal in the background where it's bled through the overhead."

Kimsey used a U47 for Jagger's lead vocals. Guitars were recorded with a single U67 augmented with a 10dB pad inside the amp. Bill Wyman's bass parts were a combo of direct signal and U67 on his amp. "It was important for them to feel like they were playing together in a room, almost like a club date," Kimsey says. "Keith never wore headphones, Ronnie never wore headphones. Mick would usually be in there even if he didn't have lyrics written—he'd be getting a feel for where words would go, maybe mumbling or throwing out little phrases. And, eventually, these songs would come out of it."

How long it would take for a real song

to emerge from the riffs and jams varied greatly; it might be a matter of hours, it could be days, or something might *never* materialize from a given direction. In the case of "Start Me Up," recording began on the same day that the band finally nailed a solid rhythm track for "Miss You," after several days of struggling to find the perfect groove for that song. The clanging guitar riff for "Start Me Up" was pure Keith, of course, and Jagger at least had the phrase "Start It Up" on that first day. "It came together very quickly," he says, "and then I remember Keith coming into the control room, which he only did when he was very interested in hearing something, and playing back 'Start Me Up.' And he said something like, 'Bin that [i.e., throw it away]—sounds like something I heard on the radio today.' He was very

down on the song. And that was pretty much the end of it until *Tattoo You* came up." Actually, the band then tried taking the song in a reggae direction at that session, but it never amounted to anything, and it was all but forgotten.

Some Girls, which earned Kimsey a co-production credit, was a huge hit for the Stones, and the accompanying tour—the group's first American stadium tour—was also a colossal success. The down side of all this is that the tour left them a little ragged around the edges, and as a result, their next album—again with Kimsey engineering and co-producing at Pathé Marconi—was a step down in every respect. The 1980 album *Emotional Rescue* was a laid-back, slightly disjointed affair, memorable only for the title track, with its strong echoes of Prince, and the fierce "She's So Cold," which sounded like an extension of the *Some Girls* vibe. By that time, the Stones were spread out at different hotels and apartments around Paris, and they seemed to relish their time *away* from each other.

When, in late 1980, it came time for the Stones to think about recording yet another album, they were in a bind: They weren't really together as a band, and the prospect of churning out more songs on short notice was not very appealing. This is when Kimsey sprang into action: "It was the beginning of the ugly time," he recalls. "Mick and Keith weren't getting on well, there was an album that had to be delivered, and I suggested to their business manager and to Mick and Keith, 'I know of several songs that are kicking around that you've forgotten about that I recorded with you. Let me go through and see what else is knocking about. I'll go through it, put it into shape, edit it and see what's there.' So I spent about two or three months doing that and going through earlier sessions they'd done before *Some Girls*. I was in London, mostly working at Olympic. The tapes were all over the place, but I had log books covering every minute I'd recorded with them."

Kimsey selected more than a dozen tunes he felt could be developed into workable songs: "They were all incomplete, but some of them were only missing vocals and guitar solos, so they were pretty far along." The next stage of work on the album took place in Paris, but not at Pathé Marconi; instead, Kimsey rented a warehouse on the outskirts of town—what's known as the *peripherique*—and shipped in the Stones' mobile truck to act as control room.

Cool Spins

The Mix Staff Members Pick Their Current Favorites



Megadeth: *Rude Awakenings* (Sanctuary Records)

The live, 2-CD *Rude Awakening* is the culmination of an extensive world tour the band undertook to promote its 2001 release, *The World Needs a Hero*. In keeping with the band's long-standing commitment to its rabid following, this tour's set was chosen by fans, who could cast their votes on the band's Website, www.megadeth.com. The set is sonically perfect; you can even hear Dave Mustaine's incessant grumbling (especially about Metallica, as on "Mechanic," where he tells the crowd that they can play the song our way or *their* way) amid thrashing guitars and savagely beaten drum heads. Crowd-pleasers such as "Bread and the Fugitive Mind," "Angry Again," "Reckoning

Day," "A Tout Le Monde," "Sweating Bullets," "Almost Honest" and "Trust" show the band at their hard-rocking best. And the accompanying DVD is absolutely fabulous—you can see Megadeth in action and behind the scenes. If this is indeed the last breath of Megadeth—they've announced they're disbanding—that makes this release all the more thrilling, if bittersweet. Their heaviness will be sorely missed on the metal scene.

Producers: Megadeth, Bill Kennedy. Engineered and mixed by Bill Kennedy. Mobile Recording by Studio on Wheels. Mixed at Enterprise Studios (Burbank, Calif.). Mastered by Tom Baker and Precision Mastering.

—Sarah Benzuly

Patti Smith: *Land (1975-2002)* (Arista)

The word "goddess" comes to mind. More than a quarter-century after she started



making punk/poetry recordings with the Patti Smith Group, Smith has lost none of her power, and none of her brilliance. And though her poetic nature can make her

—CONTINUED ON PAGE 165

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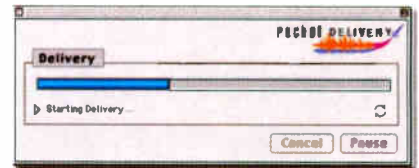
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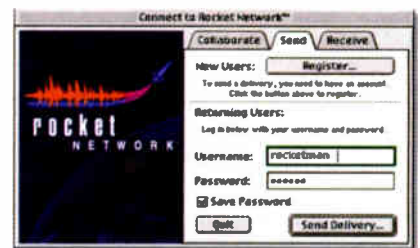
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"[The songs] are all from different periods," Jagger noted of the songs on *Tattoo You*. "Then I had to write lyrics and melodies. A lot of them didn't have anything, which is why they weren't used at the time—because they weren't complete. They were just bits, or they were from early takes. And then I put them together in an incredibly cheap fashion. I recorded in this place in Paris in the middle of the winter. I recorded some of it in a broom cupboard, literally, where we did the vocals. The rest



Chris Kimsey

of the band were hardly involved."

The oldest songs on *Tattoo You*—"Tops" and the poignant "Waiting on a Friend"—dated back to the *Goat's Head Soup* sessions and even featured Mick Taylor (uncredited) on guitar, while others were plucked from the *Black and Blue*, *Some Girls* and *Emotional Rescue* sessions. The hauntingly beautiful track "Heaven," featuring Kimsey on Wurlitzer piano, was cut specifically for *Tattoo You*.

"Start It Up," take two, was one of the tracks that Kimsey salvaged from the *Some Girls* sessions, and this time around, everything clicked: Jagger came up with words that matched Keith's powerful, off-kilter main riff, and three years after it was started, the song became a keeper. The final overdubs and mixing took place at the Power Station in New York: That thump and sheen on "Start Me Up" is partly the work of mixer Bob Clearmountain, who first worked with the Stones on the single mix of "Miss You." It was on "Start Me Up" that he first used his famous "bathroom reverb"—pumping some drum and vocal tracks through a miked speaker in a small reverberant bathroom downstairs in the studio building. It was also in New York that Jagger changed the lyric from "start it up" to "start *me* up."

"I remember he came in the control room and said, 'What do you think of this?' and he sang it right in my ear," Clearmountain says with a laugh. "Up to that point, I never realized how *loud* he could sing. He was shouting over the track, and I was leaning backward, saying, 'Yeah, yeah. That's great! Why don't you try doing it out in the studio, on the mic?'" He was amazing; I have so much respect for him."

"Start Me Up" became an instant smash when it was released in the summer of 1981, just in time for another mammoth world tour. The song peaked at Number 2 in the United States, but it helped propel the *Tattoo You* album to Number One for nine weeks—the most ever for a Stones album—and eventual worldwide sales of more than 6 million copies. And, despite the album's motley origins, *Tattoo You* stands as one of the Stones' finest middle-period records. I've always particularly liked the dreamy, hypnotic quality of what used to be known as side two of the album, and, of course, it's hard to beat those bookends: "Start Me Up" and "Waiting on a Friend." "Start Me Up" has remained a staple of "classic rock" radio stations, and it has also become a favorite of American football crowds: You can often hear it blaring over the P.A. at packed stadiums before kick-offs. Microsoft also paid a reported \$8 million to use the song for its Windows '95 launch campaign.

Kimsey and the Stones went to make the underwhelming *Undercover* in 1983, then took a break from each other when the group cut *Dirty Work* with Steve Lillywhite in 1986. After a major falling out between Jagger and Richards, with much sniping in the press, they kissed and made up and, with Kimsey again in the co-producer's chair, cut the strong *Steel Wheels* album (1989), which Kimsey declared was "definitely one of the most exciting albums I've worked on since *Some Girls*." Kimsey also recorded two songs on the excellent 1995 live album *Stripped*. Outside of the Stones, he's enjoyed a very successful career as an engineer and producer, working with such diverse acts as Peter Tosh, The Cult, Soul Asylum, Psychedelic Furs, Killing Joke, Marillion, Duran Duran and The Chieftains, among many others.

As for the Stones...well, this year marks their 40th anniversary together, and that's quite a feat in itself. Every few years, they get together and make a new album, and there's usually a song or two on there that shows us how great they can be; and that's often followed by a tour that re-

minds us how great they *always* have been. In fact, if I cock my ear a certain way, I can almost hear the opening riff of "Start Me Up" echoing through my local football stadium. The crowd surges forward, arms outstretched. Mick dances and preens, stripping off his overshirt. Keith lurches forward, ciggie dangling from his lips, his axe practically at his shins. Ronnie playfully bumps into Keith as he slashes a counter-line. Grey-haired, stoic Charlie bangs out the beat one more time...And for that moment, the Rolling Stones are, without question, the world's greatest rock 'n' roll band...again. ■

LOS LOBOS

FROM PAGE 156

But it was time to do something new. We have a new label, and we wanted to approach this album in a different way. In no way would I ever disparage Mitchell and Tchad's work, but it had become almost too comfortable working with them. We'd gotten to a place where we didn't have to work very hard, frankly. They covered so much ground and were able to make any idea sound brilliant, even if it was a crappy idea. And I mean that with all the love in the world. But to a certain extent, working with John [Leckie] revealed how much we counted on Mitchell and Tchad to cover many, many bases and to do some of the work that we probably should do as a band."

Leckie says he has known Blake for quite awhile and thinks very highly of him: "He works here at Real World [Peter Gabriel's studio in England] a bit, and I've met him a few times there. So I told Tchad I'd been asked to do Los Lobos, and he said, 'I'm not surprised. They're always talking about you.' They said they liked the Radiohead record I did [*The Bends*]. But David Hidalgo also said he really likes The Dukes of Stratosphear [the psychedelic alter-ego of XTC]. He said, 'That's what we're going for.' I thought, 'Oh Christ! What am I getting into?'" he laughs.

Neo-psychedelic Los Lobos? "Well, that's a bit like what we've ended up with, actually," Leckie says. "Each track is quite different from the others; each one stands on its own. It's not a live record at all; it's not like the live band playing. In fact, they're a bit reluctant in the studio to all get together. I had this dream that they'd all be there and we'd do three tracks a day

and they'd all be sitting there playing. But it turns out they like doing things one at a time!" And he laughs again. That said, the album *sounds* like a band playing together.

Good Morning Aztlan was recorded at Cesar Rosas' home studio east of L.A. Four or five tracks had already been recorded by Dave McNair when Leckie was brought in late last fall. "We were there for about five weeks on and off," Leckie says. "He's got a really large house near Roland Heights. And they all live within 10 minutes of each other. The studio worked fine, really. It was a studio that's been kind of lashed together, but everything worked, and it's a large enough space. There's a drum booth, and we put the amps in another room.

"He's got a nice broadcast Neve desk in there with 36 inputs. All the channels are there; they're all working. I think it's got 33129 modules. He's got an MCI 2-inch 24-track; one of the last ones made by Sony. He's also got an Ampex 16-track, which we never fired up. No Pro Tools."

"There were a couple of times when things stopped working, and that was frustrating for John," Berlin says, "but it ended up being a good place to record. Any time you work in a home studio, things are going to come up: We're all ready to go and someone has to take the gerbil to the vet; that was a little annoying," he says with a chuckle. "But it was very comfortable for Cesar, which was important." (Rosas has been raising his children alone since his wife's death a couple of years ago.)

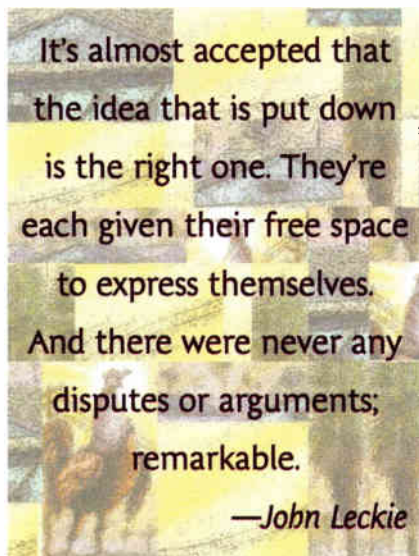
Berlin says that Leckie was a good choice for the album because he's an "extremely normal, patient and even-keeled guy, which is a big part of the job, because we tend to be pretty hard to corral. It's hard to get everyone in the room, hard to get everyone pulling on the same side of the rope, hard to get everyone focused on the same thing at the same time. No one is obstinate or trying to hog the spotlight or any of that. But we're like kittens in a respect—a little piece of dust flies through the air and we'll chase it around the house for an hour! We'll go out on a [musical] tangent without much urging.

"What we realized early in the process is that John being John—and not Mitchell and Tchad—is the kind of guy who said, 'This is your record; *you* do it. *You* figure it out. *You* play the parts; I'll make it sound as good as I can.' And, at first, that was a bit of a shock, but everyone snapped to it pretty quickly. We had to work a little harder and maybe even play a little better, which is a good thing. I think some of the

performances on this record are among the best we've ever done."

The songs fell together in an assortment of ways. Typically, Cesar Rosas' tunes came in fully demo'd, with him playing all the instruments, "and Dave [Hidalgo] would bring in these scrappy guitar-and-voice versions of songs; they wouldn't even have lyrics; Louie [Perez] would do those later," Leckie says. Perez doesn't play drums on the band's albums these days, though he and Victor Bisetti handle the percussion at the group's shows. (Perez also played some guitar on the album.) This time around, the drum duties were split between Pete Thomas, who's been on the last few albums, and Cougar Estrada, who also plays with a band called the Conga Punks. Bisetti added various percussion textures.

A number of the tunes began with just



Hidalgo on guitar and Thomas or Estrada on drums, with a click, "and then we'd start overdubbing," Leckie says, including Conrad Luzano's bass lines. "You really didn't need more than one mic most of the time, because so many of the parts were put down individually. But they didn't really tie themselves down to one strict way of doing things. They were open to ideas, and they gave me really free reign to do things—they deferred to me." Still, he noted that all the bandmembers took great interest in the proceedings and voiced their opinions freely, particularly Berlin, whom Leckie describes as "sort of the brain behind the band, with the others maybe a little more the heart and soul.

"They've been together for so long that a lot of what goes on is unspoken; they simply know what to do and what their

role is from song to song," says Leckie. "For instance, Cesar and I would be working on one of his songs and he'd say, 'Well, Dave needs to sing a backing vocal on this.' Then Dave would come in later, Cesar's not there, and I'd say, 'Dave, you need to sing a backing vocal on this, though I'm not really sure what the part is.' He'd listen to it once and then put down this amazing counterpoint melody where he wraps himself around Cesar's voice. Where the idea came from I don't know. There's a lot of that going on with these guys, and it sort of takes you by surprise a bit because there doesn't seem to be that much feedback and mingling like with normal bands, where they discuss a part and pull it apart, and someone tries something, and everyone listens and analyzes it and makes suggestions. Here, it's almost accepted that the idea that is put down is the right one. They're each given their free space to express themselves. And there were never any disputes or arguments; remarkable."

And then there was the case of the Rosas tune "Luz de Mi Vida." "It had five or six different little parts that were all these crazy Spanish rhythms and things," Leckie marvels. "They spent a few hours putting them all together whilst sitting around Cesar's living room watching TV and playing their guitars. Then Cougar came in to play drums, and he knew *exactly* what the parts were. I don't know how he did it; he just seemed to understand it immediately. I was quite amazed, because it was very intricate music. But the whole thing was almost telepathic; nothing was really said."

The album was mixed at Sound Factory Studio B (where the band has worked often in recent years) on the custom API with Flying Faders. "It was a relief to get to Hollywood," Leckie says. "Cesar's studio is nice, but it's not near anything. There's nowhere to eat but Denny's, unless you like Korean food for breakfast. Even the Starbucks is about 12 miles away." A few overdubs went down at Sound Factory, too, including some Bucky Baxter steel guitar parts; the occasional Bob Dylan cohort was working with Ryan Adams in one of the other studios in the Sunset/Sound Factory complex and was drafted by Los Lobos. And the producer availed himself of the studio's famous collection of analog outboard gear during the mixing stage—one of his principal reverbs of choice was an EMT plate.

After Leckie was back in England, believing that the album was done, the band decided on a few more changes and overdubs, which were engineered by Dave

McNair. Martha Gonzalez of the band Quetzal added some effective backup vocals on a few songs—a first for the band. “She’s amazing!” Steve Berlin says. “She is *badass!*” And, at the eleventh hour, the group decided to add one more song, which turned out to be the title song.

“That last track is my favorite right now,” Berlin enthuses. “It was funny; we thought we had the record finished and we lived with it for a couple of weeks, which is something we rarely get to do, because usually we’re running late. I think we all felt in the back of our minds that the record lacked one more rock song. There’s all this great textural stuff and nice psychedelia, but we felt the balance needed to tip more toward the rock side.

“So it’s Thursday and it’s due in the Mastering Lab on Monday morning. Historically, Los Lobos doesn’t work on weekends. Louie, Dave and myself were at Sunset Sound and we’d just done a mix on a song, and we thought, ‘Well, if by some miraculous chance a song comes together in the next 18 hours, we’ll do it.’ It was the weekend of the NAMM show; it was crazy. One thing we did have was this really, really rough demo that Dave had; you could barely make out the chord changes. Usually, his demos are absolutely exquisite, but this one, for whatever reason, was really murky. He’d say, ‘That’s the chorus!’ ‘What, how can you tell?’

“We were stumped, and we started talking about childhood memories. And I said that one of my oldest memories growing up in Philadelphia was going to my grandma’s and then going across the street to the Automat and having mashed potatoes and scrambled eggs. And there was something about this memory that rang a bell with Louie, and he went home and then called me at 5 o’clock on Friday and said, ‘I think I’ve got something really, really good.’ I’m thinking, ‘Okay, this is going to have to happen *really* quick.’ Dave was at the NAMM show, I was at the studio. We called Pete Thomas, and at 8:45, he and his drums show up, and by 9:30, we’d cut the track. And it’s a magical little song. It has all the stuff that Los Lobos has run fast away from in recent years, like a tambourine on the chorus, doubling the guitar, a shaker on the verse—all the Mel Bay Book One rock tricks, the you-can-sound-like-the-pros stuff we’ve never done. And we did all of them on one song! We had the most fun imaginable!”

It shows. This year marks the band’s

25th anniversary, but *Good Morning Aztlan* is as fresh and fun in its own way as their first album was. This is a group that’s also always displayed a social consciousness, and this album is no exception; yet, they are never heavy-handed about it. Fans of their Mexican side will love “Luz de Mi Vida,” which is a wonderful blend of Spanish and English; it sounds the way many Chicanos speak to each other—beginning a sentence in English, finishing it in Spanish, and back and forth that way. “The Big Ranch” moves easily from verses that sound like they came off a long-lost album

by The Band, to a chorus dripping with heavy guitars. “Round and Round,” which closes the album, has a dreamy, Hendrix-y quality that’s utterly intoxicating. All in all, it’s a very impressive outing by a band that refuses to rest on its laurels.

“As musicians and artists, we’re part of something that’s larger than ourselves,” Louie Perez said to an interviewer recently. “What really amazes me is that after this long, we’re not only becoming stronger as a band, we’ve been able to maintain a sense of enthusiasm and discovery about ourselves and our music.” ■

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Hugh Robjohns, *Sound On Sound*, March 2002



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BOB MARLEY

FROM PAGE 157

Kansas [including "Dust in the Wind"] and today you lose track of just how good the technique was back then. Forget the physical condition of the tapes as they exist now. The actual performances of the band and the quality of the recordings done by the engineers in the Island Remote Truck was just fantastic. So the tapes *sounded* great! Then it was a matter of getting the analog machine calibrated as well as possible, restoring the tapes and mak-

ing the transfer. Of course, I was doing some mixing as it went by because there was a nice SSL G Plus in the studio there. The rough mixes I have from the Hammersmith Odeon are just spectacular! Mixing that performance was really one of the great moments in my career."

The physical condition of the tapes varied widely; some were strictly one-pass jobs and even required cleaning the heads at regular intervals because there was so much shedding. "On one show, there was a long encore with medleys and segues where I couldn't make the

whole tape in a single pass, but I could back up and then cut it together in the Euphonix format. It's so simple: Let's say we ran eight minutes of the tape, and at that point there was too much oxide that was bleeding off, due to the condition of the adhesive. At that point, I'd just stop, clean the machine, back up to, say, 7:30, so I had a little bit of overlap, and then I let it run for another five minutes and edited it later; it was very easy.

"So what I have for Bill is the 96k, 24-bit archives in our vault, still in the multi-track format, plus I provided him with rough mixes on CD for easy reference.

"They also found four reels of tape that were logged as multitrack 2-inch tape, and when I actually got my hands on them, they ended up being 2-inch videotape masters of some shows."

Not surprisingly, there is talk of also putting out one or more DVD releases down the line. And producer Levinson says he'd like to investigate the possibility of re-releasing the mid-'70s *Live* album in surround. "Twelve songs were recorded but only seven tracks were used and they all came from one night, and a couple were edited. I think we could do a 12-track record, with unedited versions, in surround and really replicate the room sound, because the crowds really got into it, as you know. That could be a lot of fun. That's a classic album that could be even better. I'm sure we'll be doing some experimenting with both the SACD and DVD-A formats." Levinson says he'd also like to re-visit the later *Babylon by Bus* tapes, which he considers a bit too "wet." "I think that was more about the mix than the venue. I think it could be presented in a more honest setting."

It's still too early in the process to know exactly what the eventual fate of the tapes will be, but Levinson suggests, "It could be we'll put together a thematic series, where each release would be focused on one venue. It could also be bonus material for deluxe editions; for instance, we're starting to think that *Rastaman Vibration* deserves a deluxe treatment, with the second disc being the Roxy album. It's funny—I usually know what to do and how to get there, but in this case, we're just going to let the tapes talk to us, as they turn up, and depending upon the performance and the shape they're in, tell us how they want to be presented."

There's a chance that the first batch of material might be out before Christmas this year, but don't hold your breath: Levinson



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points out that he has three more remasters already awaiting release—*Talkin' Blues*, *Natural Mystic* and *Rebel Music*—“and that’s a lot of Marley for a year.”

Still, it’s nice to know that the tapes are now archived and together and at the very least in line for release. Stay tuned. And by all means, “lively up yourself!” ■

Cool Spins FROM PAGE 160

seem somewhat effete, there’s so much raw intimacy to her ideas and performances that she maintains a very personal connection to her fans...so much so, that she actually solicited online votes to choose the tracks on the first CD of this career retrospective. Favorites such as “Gloria,” “Because the Night” and “People Have the Power” are, of course, included, as are perfect songs such as “Dancing Barefoot” and “Rock ‘n’ Roll Nigger.” Another standout is a tender cover of Prince’s “When Doves Cry.” Songs on the second CD were chosen by Smith and include live recordings and demos, less famous album tracks, and the spoken-word anthem “Piss Factory.” It’s a magnificent collection from one of rock ‘n’ roll’s most consistently amazing voices.

Compilation producer: none credited. Original

producers: Malcolm Burn, John Cale, Jack Douglas, Jimmy Iovine, Lenny Kaye, Gil Norton, Todd Rundgren, Fred Smith. Original engineers: John Agnello, Malcolm Burn, Roy Cicala, Charlie Conrad, Jay Healey, Jimmy Iovine, Lenny Kaye, Kevin Killen, Bernie Kirsh, Scott Litt, Jay Messina, Jim Michewicz, Sal Mormando, Gil Norton, Thom Panunzio, Todd Rundgren, Gray Russell, Brian Sperber, Danton Supple, Shelly Yakus. Studios: too many to list. Compilation mastering: Greg Calbi/Sterling Sound (New York City).

—Barbara Schultz

The Best of Townes Van Zandt (Tomato)

The late Townes Van Zandt is better known as a songwriter than as a singer, having had his tunes covered by a galaxy of country and folk artists through the years—including Willie Nelson, Emmylou Harris and Waylon Jennings—and helping inspire a movement of Southwest songwriters that includes Joe Ely, Jimmy Dale Gilmore and many others. But as this fine compilation album drawn from his many years recording for the independent Tomato Records label shows, he was also an evocative and soulful singer and a pretty decent picker himself. Some of Van Zandt’s songs have a very visual, wide-open cinematic quality to them, while others are clearly interior meditations; all of



them talk in some way about the human condition, about relationships, about making it in a tough world. There’s a lot of loneliness and despair in these tracks, but also a lot of promise. “Pancho and Lefty,” “For the Sake of the Song,” “If I Needed You” and “No Place to Fall” (a duet with Willie Nelson) are just some of the draws here. It’s also interesting to hear what he does with other people’s songs, such as Bo Diddley’s “Who Do You Love” and the Stones’ “Dead Flowers.” An excellent tribute to one of the great contemporary balladeers.

Producers: Kevin Eggers, Jack Clement, Jim Malloy, Ronald Frangipane, Wolfgang Doebling, Earl Willis, Harold Eggers, Chips Moman. No recording information listed.

—Blair Jackson ■

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L.A. GRAPEVINE

by Maureen Droney

Even during advertising's recent down-market, Chris Bell & Co. Music and Sound Design has been thriving. Located in Santa Monica's hip Bergamot Station media neighborhood, the firm has expanded over the past six years from a three-person operation to 19 employees in four divisions: Chris Bell & Co., Mike Recording Services, Sky-Efx and Tone-dog.com.

Composer and sound designer Chris Bell has had a long history of success with commercials for companies including Sprint, Honda, Lexus, Budweiser and Taco Bell, for which he's won numerous MOMA, Clio and Belding Awards. A composer for picture since the mid-'80s, he's also penned music for television shows including *Santa Barbara*, *Hard Copy* and *Lifestyles of the Rich and Famous*. It was CB&Co.'s move in 1995 to its current 10,000-square-foot location that opened the door for diversification, something Bell credits as key to the company's continuing success.

The two-story facility was designed by Brett Thoeny at Boto Design, known for his work at Prince's Paisley Park Studios in Minneapolis and L.A.'s Pacific Ocean Post, among other projects.

"When we started here, it was a big, empty warehouse," Bell comments. "We spent a lot of time planning. Brett designed the layout, and our executive producer, Andrea Andrews, and I worked



Composer and sound designer Chris Bell in his personal composing studio.

with designer Jackie Fabritz on the colors, the cabinetry and the furniture.

"In our business of advertising, where the clients are so particular, you have to consider every little aspect," he continues. "How comfortable is the couch, how big is the table, where are the phones? A session can have nine people, with six of them on the phone; you need places for them and plug-ins for computers everywhere. Sometimes we'll be doing a session with a phone patch to New York and Chicago and everybody needs to listen; demands like that require very intricate systems."

Central to the complex is a live recording room surrounded by iso booths and shared by Bell's studio and three audio mixing bays, part of Mike Recording, a branch of the company started in 1996. "Recording for commercials goes quickly," Bell explains. "We only use the recording space for an hour or two per session. Sound-proof real estate is very expensive to build, so the savings is significant when it's shared between numerous bays."

Mike Recording's bays, staffed by mixers Bob Greemore, Bruce Bueckert and Tor Kingdon, use the same rooms for voice-over or ADR. The mix bays, which each have visual contact with the recording rooms, are almost identical. All are fitted with Pro Tools as well as Digidesign Pro Controllers and Yamaha 02R consoles, except for Bell's personal composing room, which houses a Sony DMX-R100 desk.

Mike Recording was the first outgrowth from the core music and sound design business. "I always had the concept of doing everything in one facility," says Bell, who began his music career as a bass player. "Typically, our jobs went

—CONTINUED ON PAGE 170

NASHVILLE SKYLINE

by Rick Clark

When you think of artists such as Nelly Furtado, King Crimson, Alicia Keys, Bruce Springsteen and Mark Knopfler, Nashville doesn't readily come to mind as a record-



Inside Emerald's Tracking Room (L to R): Chad Cromwell (drums), Richard Bennett (guitar), Emmylou Harris, Mark Knopfler, Glenn Worf (bass), Guy Fletcher (synths) and Jim Cox (piano, Hammond).

ing destination. Old stereotypes of Music City being only a center for country and roots music seem to die hard, but the increasing pop, rock, urban R&B and hip hop activity in area studios and mastering rooms bears out another story—Nashville has truly become a full-service destination for nearly every kind of music.

I talked with engineer/producer Tony Black, who recently engineered a vocal duet session with quintuple-Grammy™ winner Alicia Keys and rapper Nas for "A Woman's Worth (remix)" at Emerald. The session was produced by Krucial Keys, a production team comprising Alicia Keys and Kerry Brothers. "Alicia felt comfortable at Emerald," Black says. "We used the main room at Enterprise for vocals, because Alicia was more comfortable out

there than in a booth. The staff was really cool, and I liked the privacy. You can sort of hide out and do what you do and not get distracted by a million different things.

"Even though we were tracking to Pro Tools," Black continues, "I used a vintage Neve mic pre and a [Neumann] U47. I kind of warm it up with tube gear, like Manley, but we are still all-digital. I incorporate mixing with Pro Tools and with the SSL J."

Black feels that Nashville offers the same caliber of facility and talent found in New York or L.A., but is more conducive to uninterrupted creativity. "When you work in New York or L.A., you tend to work in these multiplexes where there are four other sessions going on and you are kind of running into people all the time. Sometimes, that's cool, but you really want to be able to focus on what you're doing, rather than playing your work for everybody and stopping to hear their stuff. Sometimes, you're really wanting to zone in on your thing, and I think that Nashville is good for that.

"More urban and pop acts are starting to come to Nashville, because it's getting more of a reputation as not just being all country music. You've got all of the amenities of L.A. and New York, and it's definitely less expensive," laughs Black, who is currently working with Canadian female artist Reilly Rowe.

Concerning Keys, Black points out that, while the artist has a studio in New York, they are "looking at doing her second album and seriously considering taking an exodus and hiding out in Nashville for a little bit" for some of the project.

Mark Knopfler has been cutting tracks for his third solo album at Emerald's Tracking Room with producer/engineer Chuck Ainlay. "We're tracking with dual 16-tracks locked up," Ainlay says. "It sounds amazing. We're transferring from analog to Nuendo at 24-bit/96k using the Mytek 8x96 converters. Nuendo's reproduction of the analog is so faithful; I really love it. Steinberg just keeps improving it. I just

—CONTINUED ON PAGE 170

NEW YORK METRO

by Paul Verna

A night at the studio: Champions of 5.1-channel sound have made significant inroads over the past few years, selling a growing and passionate consumer base

the likes of The Eagles, Van Morrison, Sting, Steely Dan and Queen.

Held at the Hit Factory's huge Studio 1 and moderated by veteran author/journalist Howard Massey, the event was attended by such pro audio luminaries as JBL Professional director of recording and broadcast Peter Chaikin, who oversaw



Shown at the NARAS event "5.1: The Future Meets the Past" at New York's Hit Factory are, from left, Kathy Sommer, NARAS Education Committee chair; moderator Howard Massey; featured engineer Elliot Scheiner; NARAS New York Chapter president Beth Ravin; and NARAS first VP Phil Galdston.

on the notion that music simply sounds better when mixed in a discrete surround medium. However, these multi-channel proponents still face a logistical Catch-22 when it comes to promoting the format to a large group of people: 5.1 sounds best in small, acoustically accurate environments like studio control rooms, which, by virtue of their size, can accommodate only a handful of folks.

Given these natural limitations, the National Academy of Recording Arts & Sciences (NARAS)—along with co-sponsors Audio-Technica, Dolby, DTS, Solid State Logic and JBL—staged an impressive and effective 5.1 demo titled "5.1: The Future Meets the Past," featuring surround pioneer Elliot Scheiner's captivating mixes of old and new material by

the setup of the company's new ScreenArray speaker system; DTS VP of marketing David DelGrosso; Lexicon VP of sales (North America) Buzz Goodwin; Solid State Logic North America president Rick Plushner and eastern region senior VP Don Wershba; Effanel Music owner Randy Ezratty; Hit Factory principal Troy Germano and studio manager Zoe Thrall; members of up-and-coming New York band Father Divine; composer/arranger Rob Mounsey; and engineers Mario de Arce and Rich Tozzoli. Among the NARAS brass in attendance were Education Committee chair Kathy Sommer, New York Chapter president Beth Ravin, New York Chapter executive VP Jon Marcus and first VP Phil Galdston.

—CONTINUED ON PAGE 172

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Sir Paul McCartney was in mixing his new single "Loving Flame" with engineer/producer David Kahne and mix engineer Dave Way at Scream Studios (Studio City). Alien Ant Farm were also in mixing a new song for the upcoming *Spiderman* soundtrack with producer/engineer James Murray (Papa Roach, Drowning Pool). Porno for Pyros stopped in to mix and record vocals for the song "Streets on Fire" for the upcoming *Dark Blue* soundtrack. Bob Ezrin produced while Brian Virtue (Korn, Jane's Addiction) engineered and mixed...Out at The Village (Los Angeles), Nelly, producer Kevin Law and engineer Greg Morgenstein checked in to Studio F to lay down vocal tracks for Nelly's forthcoming album, *Nellytown*. The new disc is slated for a June release on Universal Records...New band Blindside was in at Bay 7 Studios (Studio City) with producer Howard Benson (P.O.D.) putting the final touches on their Elektra debut. Blindside is Benson's first signing under his VP A&R position at Elektra records...Producer Rick Rubin and new band Palo Alto have been working with engineer Ed Thacker at The Steakhouse Studio (North Hollywood). The band have been tracking and overdubbing their debut Island/Def Jam release...Masterdisk (Los Angeles) was tapped to put the final coat of gloss on the latest Korn album, *Untouchables*. The effort was handled by mastering engineer Howie Weinberg...The Goo Goo

Dolls checked into the Record Plant (Los Angeles) to mix their new single with producer Rob Cavallo and engineer Ed Cherney inside Studio 3.

NORTHEAST

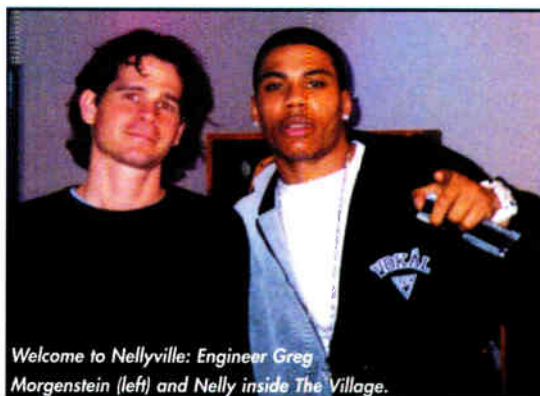
Recent happenings at Sound on Sound (NYC): Funk Master Flex was tracking with producer Joey IE and engineer Brian Stanley in Studio E, and Warren G. was busy mixing his next release with producer Brian Ressler and engineer Earl Cohen.

NORTHCENTRAL

Ted Nugent has started work on a new studio album with producers Drew and Chris Peters at 40 oz. Sound (Ann Arbor, MI).

NORTHWEST

Out at Studio 880 (Oakland, CA), former Megadeth guitarist Marty Friedman tracked drums for his upcoming solo record with producer Steve Fontano. The session was engineered by Tone and assistant Reto Peter. Also at 880, Dr. Funk mixed their record with producer and Tower of Power guitarist Jeff Tame-lier. Mark Needham engineered and Peter was tapped to assist. Gregg Allman & Friends guitarist Mark McGee brought his current project into Studio A for mixing. McGee produced and Peter assisted...Orbit Audio (Seattle) hosted a session with Alien Crime Syndicate. The



Welcome to Nellyville: Engineer Greg Morgenstein (left) and Nelly inside The Village.

band was cutting a track for V2. Kim Warnick (Fastbacks) contributed vocals and Duff McKagen (Guns N' Roses) played bass.

SOUTHEAST

Recently at The Sound Lab (Atlanta), E-40 put some finishing touches on his new album with engineers Taj Thilgam and Jan Nerud; Jonathan Cantrell was in to assist. Also at The Sound Lab, Lil Jon & The Eastside Boyz began laying down vocals for their nextTVT records release. Nerud engineered and Cantrell assisted...Toni Braxton continued tracking for her new album at Silent Sound Studios (Atlanta). Rodney Jerkins was in to produce. Engineer Fabian Maraciullo and assistant Craig Taylor checked the VU meters...Dreamworks artist Emerson Drive recently was in at Seventeen Grand (Nashville) with producer Richard Marx. David Cole was in from Los Angeles to engineer with the help of second engineer Chris Scherbak. Randy Travis spent some time working with longtime producer Kyle Lehning. Jason Lehning engineered with assistance from Casey Wood. ■



Producer Howard Benson (seated) inside Bay 7 Studios (Studio City, Calif.) with the members of Blindside and P.O.D.

Please submit your Sessions and Studio News for "Coast to Coast" and "Current" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primediabusiness.com; fax 510/653-5142 or snail mail: 6400 Hollis St., Suite 12, Emeryville, CA 94608. Photo submissions are always encouraged, and please include the name(s) of the artists, producers and engineers on the project, and the location of the studio.

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L.A. GRAPEVINE FROM PAGE 166

to a post audio house to be mixed, but there was no real reason not to do it all here. Now, our post audio facility has four rooms total."

The third division, Tonedog.com, is headed by Andy Snavley. Specializing in music and sound design for Websites and other Internet and interactive applications, Tonedog.com enjoys a symbiotic relationship with the Internet concerns of many of Bell's existing clients, and it has managed to keep busy, even through the dot-com crash.

Sky-Efx, the newest endeavor, is a video post suite where Flame artist Mark Leiss creates commercial graphics and visual effects. "Mark was already working with most of our Mike Recording clients," notes Bell, "so it made sense to bring him in under our umbrella. It all works together. We have a central machine room, and everything is tied together. All of the companies work to video; we use Doremi V1 Digital Video Recorders that track with Pro Tools for nonlinear video."

Bell was one of the first composers to offer both music and sound design to his clients, so a multimedia approach to business comes naturally for him.

"It's much more interesting to have so many different kinds of work going on around here," he says, "not to mention how convenient it is to have a great post audio facility to mix my own work in, just one door away."

Musical consoles: Hollywood's Music Grinder Studios has installed a 100-input SSL G+ desk into Studio A, and moved the 72-in SSL 6000 G-Series desk formerly in A to Studio B. "We were in the market for a new console for Studio B to replace the Neve 8108," explains studio co-owner and manager Ron Filecia. "But when we found a 100-input G+ available, we decided to get it. With so much Pro Tools work, people need more and more inputs. There aren't many rooms that can accommodate a 100-channel desk, but we're fortunate. Studio A has a very large control room, and it fit in nicely."

The new acquisition, originally installed at New York's Right Track Studios, was completely refurbished by Dave Malekpour's Professional Audio Design. "We were very happy with their work," comments Gary Skardina, Grinder's other co-owner, an engineer who has logged plenty of hours behind a desk himself. "We've already had a client in mixing



Inside Studio B at Music Grinder Studios during a session for Dreamworks artist Jessy Moss: (L to R, front) engineer Rick Aoyama and producer Camara Kambon. (L to R, rear) engineer Rafa Sardina, co-owner/manager Gary Skardina, co-owner Ron Filecia and assistant engineer Peter DiRado.

from Pro Tools who used 98 channels of the board. These giant sessions are becoming the norm."

Except for relocating the patchbay from beside the console to a convenient eye-level location in the wall, few changes were necessary in A to accommodate the new desk. Installation took a mere 10 days, with only Studio A shut down. Once A was back up and running at the end of October, work began on B, where a much more extensive remodel was required, including a new air-conditioned room for console power supplies. A dedicated, climate-controlled Pro Tools closet that provides noise insulation while maintaining meter visibility was added to the control room, and the main monitors were reconfigured to match up with those in Studio A.

Next up for the Grinder is a third room. Studio C, scheduled to be online this month, will be a small recording space and a dedicated Pro Tools suite, which will house one of the two Pro Tools rigs already available at the facility.

Although they almost can't believe it themselves, Skardina and Filecia have been in business together for 27 years, 12 of those at their current location. They attribute their longevity in the business to a bottom-line mentality that ignores trends and places a premium on value. "Music goes in cycles," muses Filecia. "Whatever is popular at the moment is what we're doing here. Right now, that's a lot of control room tracking. We've also just done several medium-sized string and horn dates. That's great because it's a change of pace and an opportunity for our staff to keep their live instrument chops up—to

remember how to mike an oboe!"

"I think something that's helped our business is that we've tried to avoid being enslaved by any particular equipment trends," adds Skardina. "Like, 'Oh, here's the latest console that you can get for almost nothing.' Because the accelerated payment schedule will kill you later. There are a lot of studio owners who bit on that carrot. But they were only around for three or four years, and then they were out of business. We've seen a lot of that come and go, and sometimes we've had to compete against it. Staying in business for a long time requires a lot of different things: the right location, the right personnel, wise purchasing decisions; there are a multitude of factors. And you have to listen to your clients. We've tried to make Music Grinder a studio where we give people an excellent value for their dollar." ■

E-mail L.A. news to MsMDK@aol.com.

NASHVILLE SKYLINE FROM PAGE 167

ordered a laptop so I can run Nuendo on my laptop. That way, I'll be able to do vocal comps on the airplane," he says with a laugh.

All the overdubs will be done in Knopfler's home studio with Nuendo and will be mixed at Air. "We love working at the Tracking Room, because it's so flexible, and it's an isolated situation where you don't have a lot of people coming and going. It's just us there," enthuses Ainlay.

Another project booked for Emerald is

the legendary progressive rock band King Crimson. Guitarist/vocalist Adrian Belew lives in the Nashville area and the band has rehearsed and performed in town regularly. In fact, I caught a powerful show last year over at 12th and Porter, a popular showcase club in town. The room was packed with players, many from the cream of the studio community.

In the world of Emerald and country music, the Dixie Chicks and Nickel Creek are wrapping up their latest efforts in mix-down with engineer Gary Paczosa working on the studio's Euphonix System 5 console. The Chicks album, co-produced by Lloyd Maines and the band, was recorded at Cedar Creek in Austin, Texas. Nickel Creek was recorded at 1700 Grand in Nashville, with Alison Krauss producing.

"The Chicks [album] was all done to Nuendo 24/96 on a PC," says Paczosa. "I love Nuendo, which we set up to work the same way that we use Pro Tools. To me, it definitely sounds better, and the layout makes more sense."

On the new Nickel Creek project, Paczosa comments, "This album seems to have flavors of The Beatles and Crowded House and some progressive vocal arrangements and string parts that are very wacky. Chris [Thile] got a lot of input and he had been listening to a lot of Radiohead," laughs Paczosa. "So it's acoustic, but there is this pop influence. It's outrageous. It is really phenomenal. It has gotten me more excited than anything I have worked on in a long time."

Although Emerald has been busy of late, it is still in entangled in a complicated Chapter 11 situation. To learn more about the studio's current status, I contacted Andrew Kautz, president and COO of the Emerald Entertainment Group. "As far as our Chapter 11 proceedings, I can say that we are pretty much at the other end of the tunnel and staring at daylight," he said. "As I am not sure many are aware, Chapter 11 does not get rid of debt—it simply allows you the breathing room to restructure it in a manageable fashion. I am pleased to say that our credit partners have worked with us and allowed us to put together a plan that gets us back on track. These proceedings have also allowed us to put a magnifying glass on our operations and truly evaluate what was and was not working."

Kautz pointed out that January was an all-time record month for Emerald, and that every month since has been very strong. He also noted that there is a lot of noncountry music business booking the rooms and mastering services. "The downturn in country recording has allowed us an opportunity to host many out-of-town

sessions and pop projects that, prior to now, would not have been able to be scheduled in. The response has been amazing once they come and work and find out how much Emerald has to offer in the way of facilities and service that was only perceived to be available in New York and Los Angeles facilities."

Emerald's mastering division, Masterfonics, is doing great business these days, not only with its usual load of Music Row country, but attracting a significant percentage of R&B and hip hop. "We don't just master country any more," says Andi Miller, division manager for Masterfonics Mastering/Emerald Entertainment. "I'd say more than 50 percent of our client base is now pop, rap, R&B and rock."

Benny Quinn, who has been mastering for 22 years, has a large hip hop and urban R&B client base from Memphis, Atlanta, St. Louis, including Rap A Lot Records, Hitman Entertainment and Raw Deal Records, to name a few. Jonathan Russell has made a name for himself working with many artists on the pop and rock side. And Tommy Dorsey has a large volume of clients in the alternative, rock, pop, techno and dance markets.

"Because each engineer has an ear for different types of music, we can focus on R&B, hip hop, pop and rock, and it enables us to really compete with L.A. and New York mastering facilities, not just Nashville," states Miller. "Music Row has dramatically changed, and I see things definitely moving in the right direction."

Down in Cool Springs, an area south of Nashville that is exploding with development, is The Sound Kitchen Recording Studios, a huge 27,000-square-foot facility located at 112 Seaboard Lane. Besides throwing great parties and providing some of the best Italian food anywhere, the Sound Kitchen has been going gangbusters with all seven studios for weeks on end. Recent clients have included Columbian folk/alternative artist Junaes and Nelly Furtado (producer: Anibal Kerpel; engineer: Joe Chiccarelli), Jewel (producer: Dann Huff), Bruce Springsteen (producer: Brendan O'Brien; engineer: Nick DiDia), and country artists Vince Gill (producer: Vince Gill; engineers: Justin Neibank, Steve Marcantonio and Steve Bishir), Brooks & Dunn (producer: Mark Wright; engineer: Greg Droman), SHeDaisy (producer: Dann Huff; engineer: Jeff Balding) and the legendary Ray Price (producer: Fred Foster; engineer: Billy Sherrill).

The Juanes and Furtado session happened during a rare window when Furtado had a day off and she happened to be

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in town, and so was Chiccarelli (Beck, Tori Amos, U2, Elton John), who happened to be producing *By the Tree* at Sound Kitchen. Chiccarelli worked on Jaunes' last Surco/Universal album, which won a Latin Grammy" for Best Rock Album.

The intriguing pairing of Bruce Springsteen and Brendan O'Brien (with engineer Nick DiDia) was for string overdubs in the studio's Big Boy room. Jennifer Rose, general manager of Sound Kitchen, says, "Nick paged me right before they left and said, 'Man we are blown away. We love the room and the console and the assistant!' Thank goodness it was a success. Nick liking the room was really important." The assistant was Melissa Matthey. ■

Send your Nashville news to mrblurge@aol.com.

NEW YORK METRO FROM PAGE 167

Although the large dimensions of the room gave the demo a necessarily "live" sound, the audio quality of the presentation was far superior to that of other events on a similar scale. The favorable acoustics of the Hit Factory's storied orchestral tracking room no doubt played a part in the clarity of the music, as did the JBL ScreenArray.

A white paper on the ScreenArray states: "Surround playback for audiences of 150 to 200 persons is often done via multiple systems that have been optimized for control room use, and such systems have dispersion characteristics that may not be ideal for playback in larger rooms. About two years ago, JBL embarked on a design project for high-performance systems intended for professional dubbing theaters and screening rooms...The result of this work is JBL's new ScreenArray line of products."

The five speakers used to play back Scheiner's mixes were variants of JBL's Model 3632 three-way system. They feature dual-LF 2035H drivers covering from 30 to 250 Hz; two MF cone drivers with waveguides covering from 250 to 1.6k Hz; and a uniform coverage HF horn with a JBL 2426H driver covering above 1.6 kHz. The system was complemented by four JBL 2242H LF subwoofer drivers.

Even outside of the sweet spot—or sweet "area," in this case—the JBL system did a great job of rendering the multi-



Dig It Audio founder Tom Efinger shown in the studio's new dubbing stage, featuring a Digidesign Pro Control console and Sharp XV-Z9000 video projection system.

dimensional soundscape of The Eagles' "Hotel California," which opened the proceedings. Similarly, Sting's "Desert Rose" sparkled within the Hit Factory's walls, with ambience and rhythmic nuances emerging artfully from the rear speakers.

In the middle of the room, the genius of Scheiner's surround craft was even more apparent. But the night's show-stopper was Queen's *A Night at the Opera*, which was played in its entirety to a wildly enthusiastic audience. Here, Scheiner's creative use of the rear speakers was as impressive as his respect for the sonic blueprint of the original mixes, which he faithfully reproduced.

Besides the irresistible material, the evening was memorable for its sense of community. Surround sound can still feel like an "inside" phenomenon, embraced by home theater enthusiasts and a segment of the pro audio universe. But on that night, it felt like everyone was in on it. It's one thing to *listen* to a good surround mix in a closed-in space; it's another thing to *experience* it "live."

Dig This: As the founder of Dig It Audio—a New York film/TV dubbing stage partnered with post-production studio Post 391—Tom Efinger was on a quest for the perfect audio console. His old Yamaha 02R was a great board for its time, but it had been left behind in the dust of technological progress. For a while, Efinger had his eye on the Digidesign Pro Control system, but had ruled it out because he felt it wasn't optimized for surround sound. Plus, back then, Efinger was not a big supporter of the virtual mixing concept.

However, the introduction last year of Pro Tools Version 5.1 convinced Efinger that Pro Control would be the way to go, and that the Pro Tools plug-in architecture would greatly enhance Dig It's ability to instantly recall mixes in progress. "In the five years that we've been partnered with Post 391, we've seen the Digidesign Pro Control system mature into a powerful, extremely efficient mixing tool absolutely on par with the big-ticket consoles," says Efinger.

In addition to the Pro Control, the new dubbing stage—Studio F—features a Sharp XV-Z9000 video projector and a surround sound monitoring system, using JBL's new 3632-T cinema speakers.

Concurrent with the Pro Control install, Dig It and Post 391 expanded into a newly acquired space at its downtown Manhattan headquarters. The combined facilities now offer the dubbing/mixing room plus five Avid Suites, including a recently upgraded, uncompressed online suite with digital beta and a newly outfitted Adobe After Effects graphics. At the same time, Post 391 founder and Dig It partner Jeff Levy-Hinte brought his Antidote Films production company in-house. "We're [now] capable of providing clients with almost every post-production service necessary to complete their film or TV projects," says Levy-Hinte.

Efinger's film credits at Dig It include the recent Jerry Garcia/David Grisman documentary *Grateful Dawg*, director Brad Anderson's *Happy Accidents*, Kate Davis' Sundance Festival-winning *Southern Comfort*, Todd Solondz's *Happiness*, Lisa Cholodenko's *High Art*, and various commercial and television projects.

In the new dubbing stage, Efinger's first project was writer/director Moisé Kaufman's *Laramie Project*, produced by Good Machine and starring Christina Ricci, Steve Buscemi, Laura Linney and Summer Phoenix.

Levy-Hinte's credits include editing the Academy Award-winning documentary *When We Were Kings* and producing and/or executive-producing such acclaimed independent features as *First Love*, *Last Rites* and *High Art*.

Furthermore, Antidote Films recently completed Larry Fessenden's *Wendigo* and *American Saint* in partnership with Michael Hausmans' Cinehaus production company. In addition, Levy-Hinte is currently producing Cholodenko's *Laurel Canyon*, which stars Frances McDormand, Christian Bale and Kate Beckinsale. ■

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—FROM PAGE 22, BUY HIGH, SELL LOW

handed a life-sized portrait of myself, printed on pin-feed paper, using only the letters of the English alphabet. I should have known.

And all of us really did know, but we did it anyway. We could hear how brittle and grainy digital audio was. We could hear that the process of A/D conversion came at the ultimate price: trading soul for power. And we did it anyway. We had to. The convenience, the speed, the stability, the endless potential. Sure, no music, but no noise! Sure, it hurt your brain, but it was stone-flat to 20 kHz! And, yes, it has a whole new kind of distortion that actually gets worse as the level goes down, but you "can make perfect copies forever." Remember that one? How does history report that little milestone 10 years later? Is it even about the technology itself anymore, or is it now about how the technology made Internet music swapping a reality and eventually "destroyed the record industry"?

A/D and D/A technologies have obviously improved. Significant analog advances have been made, and new and more intelligent approaches came from learning what humans do and don't hear in music that has been to hell and back. Those golden ears among us can still tell the difference, and some can even tell which converters were used on a recording, but the masses have now fully accepted The Bitstream as reality, and have even happily moved on to compress it 8:1, 12:1 and even 24:1 to fit more songs into their pitiful 64-meg MP3 players.

Again, as with all digital technologies that are developed to replace analog technologies, the early years suck. Features and promises appear first, and the technology is marketed on its potential power and convenience, while its actual performance plays catch-up for the next several years.

Actually, this is such an important historical pattern that I have painstakingly formulated...

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0) Never buy first-year technology. You don't know how much I wish that I had what it takes to heed my own advice. I have actually developed a program, however, that allows me to buy bleeding-edge and get all that sick satisfaction of being the first, while still being able to hold my

head up high and proudly look other gear-geeks in the eye years later. I will share this with you now.

1) Go ahead! Buy first year. Enjoy the hell out of it. Let them see you Bluetooth your cell on the plane. Let them see you display the Harley connecting rod, bottom-end diagram on a 50-inch plasma in your garage so that you can see it from the floor without getting grease all over the shop manual. It's also good if you have the drag races floating in a PIP window over on the right side as you do this. Fun for everyone. Let them hear your new Hy-

per-Sampler/Room Simulator/7.1-channel DAW/64-bit Mastering Compressor. Let them bask in the organic warmth of your brand-new, just released, 192kHz, 24-bit multitrack compact flash pocket recorder.

2) Then, skip the second year completely. Wait for the third generation to replace it. By then, so much stuff will have been ironed out that the technology will not only have everything you liked the first time, but it will actually work properly.

In the end, you will be so much better off than the guy who waited to spend his hard-earned on second-gen, and now has

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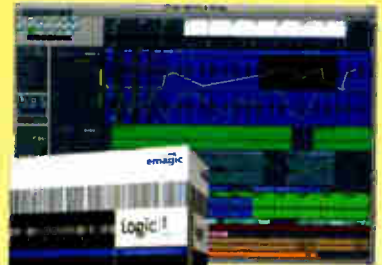
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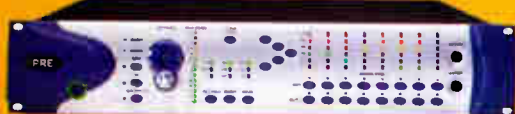
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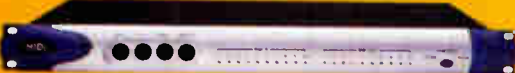
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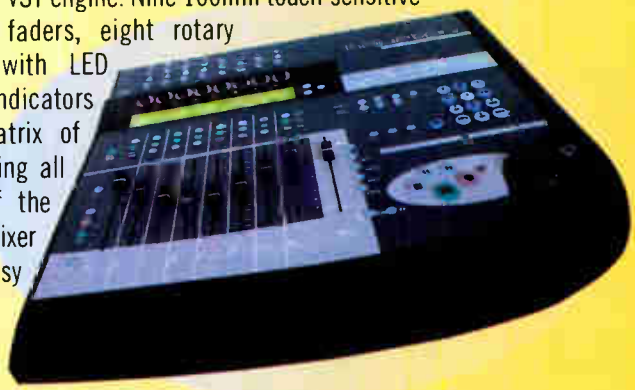


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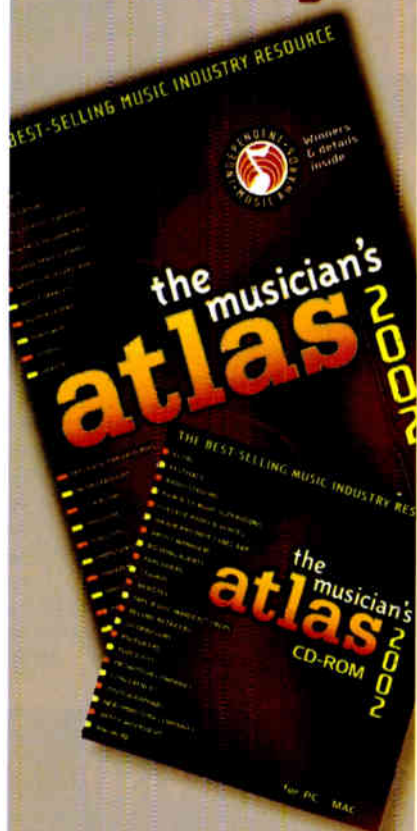


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INSIDER AUDIO

—FROM PAGE 175, LIKE A BROKEN RECORD
labels' strategy to keep people from copying their discs. They're also looking to new legislation. The 1998 Digital Millennium Copyright Act (DMCA), perhaps the most big-corporation-friendly, small-guy-screwing intellectual-property law in U.S. history, made it illegal to make or sell any device that could circumvent copy-protected works. It's an absurd law in that it means that any DVD player that just happens to be able to ignore the copy protection on any particular audio CD is in the same category as black-market cable TV descramblers. It would also outlaw video timebase correctors, thereby putting a total halt on television production everywhere on the grounds that these rather crucial components can also be used to copy Macrovision-encoded videotapes. Philips' new CD burners would, of course, be banned instantly. One congressman, Rick Boucher, R.-Va., has been trying to get the clause repealed, but he faces an uphill battle. More hopeful is that, as I write this, a federal judge is hearing final arguments that it is unconstitutional.

But there could be more to come: South Carolina Senator Fritz Hollings has proposed something called the Consumer Broadband and Television Promotion Act (don't you love the names of these things?) that would prohibit creating, selling or distributing "any interactive digital device that does not include and utilize certified security technologies." In other words, your computer, DVD player, game machine, television, cell phone and clock radio will all be required to have firmware that tells them when they're allowed to read a file and when they're not. Fortunately, this bill won't be going anywhere soon, thanks to the efforts of Vermont Senator (and well-known Grateful Dead fan) Patrick Leahy, who chairs the Judiciary Committee.

In another column, I'll talk about some ideas on how the record companies can get the most out of their assets—without stomping on your rights and mine, and without sounding like a broken record.

...

The world of audio mourns the loss of two giants, both from New England. David Blackmer, founder of dbx and Earthworks Audio, passed away on March 21, in New Hampshire, at the age of 74. George Petersen's appreciation of him appeared in last month's issue and can be found on mixonline.com.

On January 31, in Cambridge, Mass., inventor and entrepreneur Henry Kloss

died at age 73. For over 40 years, Kloss (pronounced "close," as in "near") was one of the most important figures in the world of consumer audio—what we used to call "hi-fi."

In the gear I've collected over the years, I can find almost every generation of Kloss-designed products. There is a speaker by Acoustic Research, the company he co-founded in 1954, which produced the first acoustic-suspension speaker system so that listeners could hear decent bass without a box the size of a refrigerator in their living room.

There are speakers by KLH, which he co-founded, that lived in several of my college dorm rooms. The other room where I spent all my time in college, the electronic music lab, also had KLH speakers, four big ones. And when I moved into my first apartment, my roommate had a KLH Model Eleven, the first "suitcase" stereo system, whose low price, good sound and ruggedness helped millions of folks participate in the musical explosion of the '60s. KLH also made a hi-fi table radio, which introduced many to the world of FM, and the very first product to incorporate Dolby B noise reduction: a reel-to-reel tape recorder.

There are Advent products (including the speakers that I bought for my father) that were also used as monitors in the first two classical radio stations where I worked; the cassette deck, which Kloss created by installing a Dolby B circuit into a Nakamichi transport, instantly bringing what had been a lowly dictation medium into the realm of high fidelity, where it has lasted for over 30 years; and the NovaBeam television projection system, which, although it was a commercial failure (among other problems, the video sources of the day looked pretty awful when they were magnified that much), won an Emmy Award and paved the way for the ubiquitous home theaters of today.

Finally, there are Cambridge Soundworks systems, the pioneering tiny-speakers-with-external-woofers design that millions of computers (including two of my own) are now plugged into, which have raised thousands of listeners' consciousness about surround sound.

Henry Kloss wasn't a "pro audio" guy, but without his contributions and the audience they created, very few of us would be doing what we're doing. ■

Paul Lehrman is the original, and not duplicatable. Read his previous Mix columns at www.insideraudio.com.

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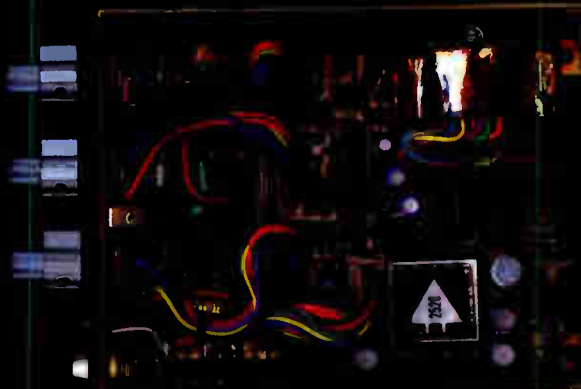
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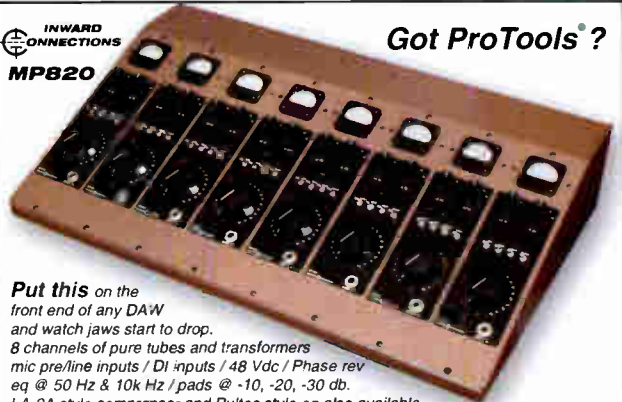
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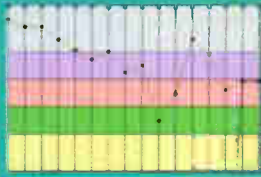
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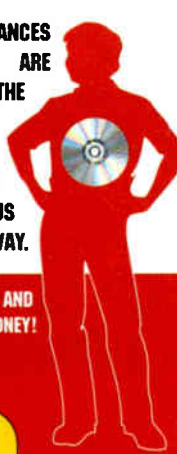
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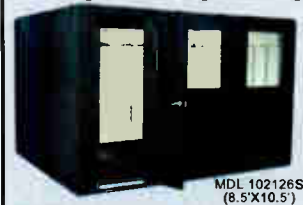
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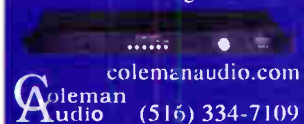
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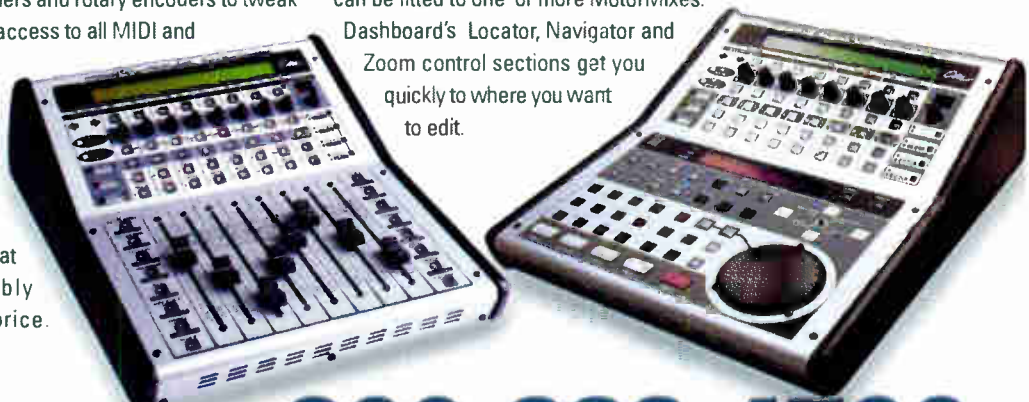
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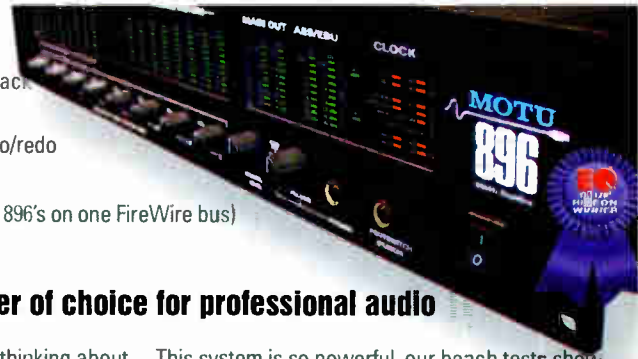
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Propellerhead Software Reason

Speeding Your Way Around

Although Reason is designed for speed, its versatility can at first be daunting. With all that virtual gear at your fingertips, finding your way around, choosing the right modules and following the signal path are not always no-brainers. Here are some tips to help you get the pedal all the way to the metal.

ERGONOMICS 101

Reason packs a lot of information into its virtual rack, but you don't need to see everything at all times. You've undoubtedly discovered that clicking the little triangle at the upper-left corner of any module collapses it to a small half-inch panel, but you may not have noticed that Option-clicking (Alt-clicking on the PC) collapses all panels. One panel that you can almost always leave collapsed is the Hardware Interface panel at the top.

When you're not using the Sequencer, you can size it by dragging its top border with the mouse, but there's also a key command for toggling its display on and off (Command-1 on the Mac, Control-1 on the PC). You can toggle its size between normal and full-rack with Command-2 (Control-2).

Other handy key commands include Command-L to suppress the cables in the back-of-the-rack view (press Tab to get there); Command-B to open the file browser for any selected module that can import patches or samples; and Shift-Tab to switch between Arrange and Edit views in the Sequencer.

MIDI REMOTE CONTROL

You can control virtually any module knob, slider or switch with MIDI controllers. (You can also do this with your computer keyboard, but you're limited to toggling between the minimum and maximum values of each parameter.) Each panel element that can be remote-controlled has a selection on its Context menu (right-click on the PC, Control-click on the Mac), which opens up a dialog box where you can assign a MIDI controller.

MIDI remote control can be turned on and off inside the Options menu, and it can

be cleared there so that you can start over. It's important to realize that the MIDI port used for MIDI remote control is assigned separately in Reason's MIDI Advanced Preferences. The MIDI port used for sequencer input and Reason's fixed MIDI remote assignments is set in the MIDI Preferences page. If the same port is used for both, then conflicts can occur. Obviously, the best solution is to use different ports, but if you have a one-port setup, you can still make your own assignments by either avoiding the fixed-assignment controllers or using a different MIDI channel.

MY FAVORITE REASON

Because three of Reason's four sound modules are sample-based, you obviously have a lot of flexibility in how you use samples. For standard sampled instruments, NN-19 is the logical choice. Dr.Rex plays only Rex2 format files, but if you have ReCycle 2, you can create your own Rex2 files from any sample material. You can also use ReCycle to save individual Rex file slices and a matching MIDI sequence for use in the other samplers.

One of my favorite uses of the ReDrum drum sampler, and its built-in pattern sequencer, is as a remix tool. Loading loops, hits and effects into its 10 pads gives you three sample-processing styles (corresponding to the three different types of pads), two effects sends per pad, and real-time keyboard muting and soloing. (When 10 pads aren't enough, remember you're not limited to a single ReDrum module.)

With loops, you need to ensure that their tempos match the current project tempo (another job for ReCycle), and you should set the pad to Gate mode with its length set to 100 to have each trigger from the pattern sequencer play the loop exactly once. Typically, low-resolution settings for the pattern sequencer are most effective. For example, 64 steps at half-note resolution give you 32 bar patterns to play with.

CV AND GATE PATCHING

Most Reason modules have "back panel" inputs for modulating and gating various parameters. Many also provide modula-



A few of Reason's panels

tion outputs. A little judicious re-wiring can provide a lot of additional sync and modulation possibilities. As just one example, you can use the gate output of a Dr.Rex module to trigger the envelope of an ECF-42 envelope-controlled filter that is processing a pad sound, thereby applying the Rex file rhythm to the pad.

The Matrix Pattern Sequencer module makes an excellent modulation source. In Curve mode, each sequencer step becomes a control value (rather than a gated note). That allows you to create and store 32-step control contours for controlling parameters like filter cut-off and resonance, oscillator phase, pan position, delay time, feedback, etc. Keep in mind that on the back panel, you can choose between Unipolar and Bipolar modes, depending on which best suits the parameter you're controlling.

STAY TUNED

Propellerhead's Website (www.propellerheads.se) contains an active user bulletin board, a growing supply of commercial as well as free Refills, many links to other Reason-related sites, and news on the release of Reason 2.0, which may be available by the time you read this. There is a new granular/wavetable synth as well as a new full-featured sampler with an orchestral sample library, and the sequencer has been enhanced and freed from the rack. ■

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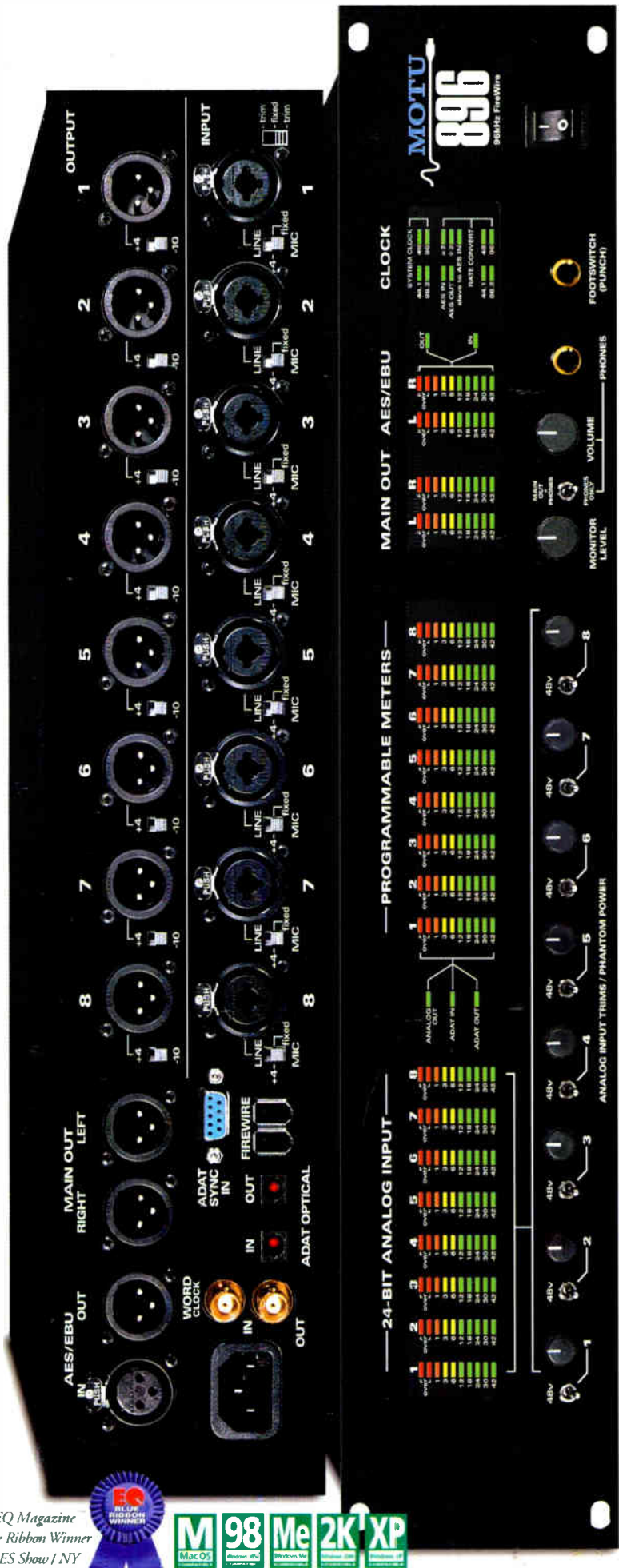
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- 8 Neutrik™ (TRS/XLR) analog inputs with mic preamps, front-panel switchable phantom power, front-panel trim, and 3-way level switch: LINE (+4/-10 with trim), MIC (with trim) and +4 / FIXED.
- XLR main outs and phone jack with front-panel volume control.
- 8 channels of ADAT optical input/output with sample-accurate ADAT SYNC IN.
- AES/EBU digital input/output with real-time sample rate conversion.
- Word clock in and out; sample-accurate ADAT SYNC input.
- CueMix Plus™ no-latency monitoring with front-panel level control.
- Connect up to four 896s (72 channels at 48kHz) with no FireWire hub required. Add more units via 3rd-party FireWire bus expansion.
- Can be combined with the MOTU 828 FireWire interface.
- 10-segment level meters on all ins/outs, including ADAT optical.
- Sound Manager, ASIO and WDM drivers for compatibility with virtually all audio software on Macintosh and Windows Me/2K/XP.
- Includes AudioDesk® sample-accurate workstation software for MacOS with editing, automated mixing & 32-bit effects processing.



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