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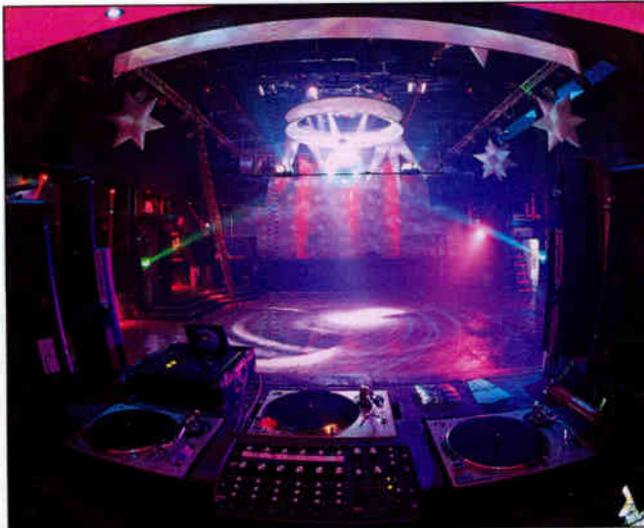
PROFESSIONAL AUDIO AND MUSIC PRODUCTION

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Mix magazine is published at 6400 Hollis St., Suite 12, Emeryville, CA 94608 and is ©2000 by PRIMEDIA Intertec Publishing Corp. Mix (ISSN 0164-9657) is published monthly. One year (12 issues) subscription is \$46. POSTMASTER: Send address changes to Mix magazine, P.O. Box 11039, Marion, OH 43306. Periodical class postage paid at Oakland, CA, and additional mailing offices. This publication may not be reproduced or quoted in whole or in part by printed or electronic means without written permission of the publishers. Printed in the USA. Canadian GST #R129567951; Canada Post: International Publications Mail Product (Canadian Distribution) Sales Agreement #0478733.



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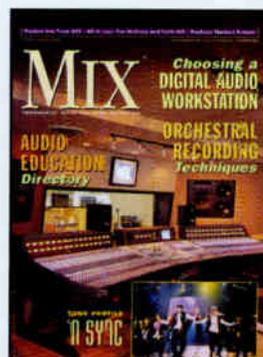


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On the Cover: Engine Studios is making a name for itself in Chicago's hip "Bucktown" district. Situated in the rooms once occupied by Idful Studios, Engine was recently fitted with an Amek 9098i console. For more, see story on page 38. **Photo:** Michael J. Kardas. **Inset Photo:** Steve Jennings.



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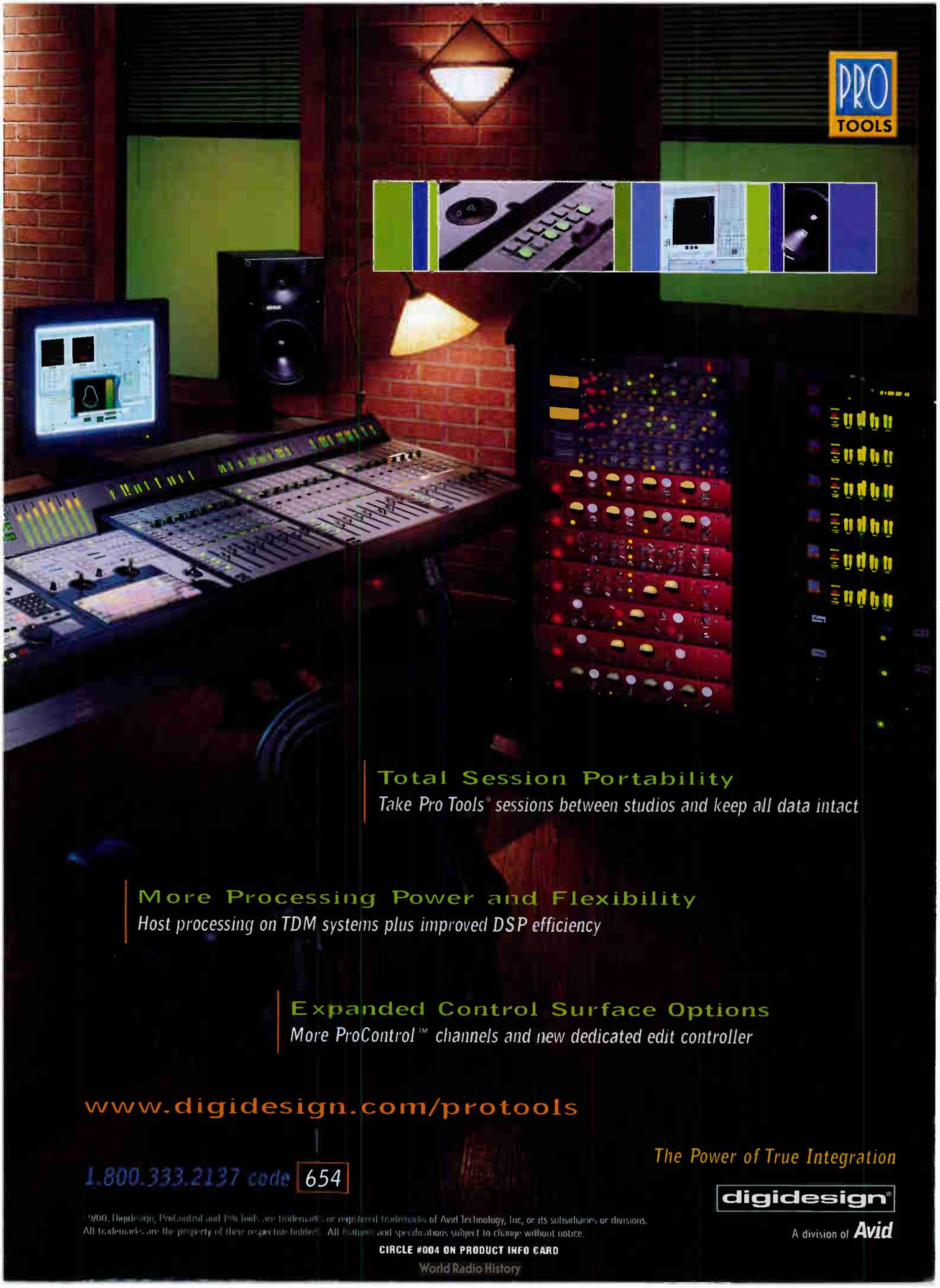


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CIRCLE #004 ON PRODUCT INFO CARD

World Radio History

FROM THE EDITOR

INNOVATION IN EDUCATION

Perhaps it's a natural progression, but a sizable percentage of people working in audio began their sonic journeys with musical training. Unfortunately, cutbacks in public school funding for the arts comes at a point when kids are increasingly drawn to non-musical, afterschool activities. There's a good dose of reality here—does practicing violin or clarinet scales really compare with playing video games or surfing the Web on a rainy afternoon?

Dealing with budget issues and indifference to traditional music programs presents a formidable challenge for educators today. However, with some community support, a number of public schools in neglected urban environments have succeeded with innovative approaches to music education. Faced with dwindling attendance, low test scores, parental apathy and a lack of school pride, these educators have improved overall performance by emphasizing the arts.

Two years ago, Larry Cocco at Henry Snyder High School in Jersey City, N.J., developed a Media Arts High Tech Program, offering students the chance to create and broadcast their own TV and radio shows, produce music CDs, design computer animation and author Web pages. The program's ability to reach and inspire students who do not respond well to traditional academic programs has proven itself, and the community has been supportive, with MAHTP's new on-campus 12,000-square-foot digital television/radio/Internet/multimedia facility going online earlier this year.

Three years ago at Hillsboro School in rural Lieper's Fork, Tenn., local parent/entrepreneur/hobbyist musician/*Mix* reader Aubrey Preston met with school officials and offered a bold proposal: to turn the school into a music, technology and arts-based curriculum, where putting the K-8 kids onstage is a daily occurrence. A radical part of the plan was giving kids a voice in what kind of music and instruments they learned. No surprise, they picked the pop/rock music they listened to rather than Strauss or Souza.

The path to developing this "Kids on Stage" program wasn't easy, requiring community fundraising, donated equipment from several manufacturers (including Mackie and Epiphone) and talking the local establishment into trying something new.

Today, what was once a run-down school has become the pride of the community: No graffiti. No litter. No vandalism. The KOS program is fun and keeps kids on track: Bad grades in core subjects and students are out of the band. So test scores are up, and local property values have soared, as newcomers move into the area to get their children into Hillsboro. Meanwhile, a neighboring community is now building a KOS-themed middle school from the ground up.

There are probably a hundred *Mix* readers like Larry Cocco or Aubrey Preston and millions of kids who can benefit from a successful formula like KOS. Manufacturers—look around and find that school or program that could use a couple pieces of discontinued gear or B-stock. And if you're an engineer, producer, tech or studio owner, see if you can take a little time out to give something back to the industry. Sometimes a little effort can go a long way, and one individual can make a difference.

Make an investment in our future.



George Petersen

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FEEDBACK

THINK BEFORE YOU BUILD

Thanks for the article "Building Your System" in the July 2000 issue. Since you recommended Digidesign's Digi001 for lower-budget studios, there's a major shortcoming of the system that I'd like to share with readers who are setting up their own project studios.

The Windows version of Pro Tools LE is incompatible with the rest of the Pro Tools product line. It can't read files created on any TDM version of Pro Tools. Nor can any TDM version open up Windows Pro Tools LE sessions. As powerful as the software is, this seriously reduces its value.

Let's say you work in a recording studio, and Client A has the studio booked. Want to take home the session you've begun with Client B, do some rough mixes on Pro Tools LE for Windows, and bring them back? No can do.

Let's say you're me, the keyboard player in House of Usher. You and the guys in the band bought two brand-new Windows 98 systems and a brand-new Mac G4, each with a Digi001 interface. Want to share files back and forth, each adding overdubs on a different track on your own time? Wrong again.

Digidesign does suggest a crude workaround: Export your session with each track as a single, continuous .WAV or .AIFF file that can then be imported into another Pro Tools platform. As I see it, there are two big down sides: any mix, mix group, effects, locate points, etc. are lost; and depending on how you work, you may wind up with enormous .WAV files padded with 0s just so you can have that drum loop drop in during the fade-out of your track. While it will work, this solution sounds pretty lame to me.

*Richard Kaczynski
Troy, Mich.*

Let me begin by addressing the idea behind the "Building Your System" article. The article was written as a personal "wish list," if you will, of products that Roger Maycock, Randy Alberts and I would consider purchasing. The idea was to give the reader some ideas and to get you thinking. That said, I'm a Mac guy through and through, and thus I

based my DAW purchases accordingly.

You do, however, bring up some very interesting concerns regarding Pro Tools LE for Windows and cross-platform compatibility. I contacted Digidesign, and they concede that P-T LE 5.0.1 does not support MacOpener, which is required to mount Mac-based HFS and HFS+ drives on a PC and share files accordingly. This is something that Digi plans to have cleared up with the 5.1 release. As far as sharing files between Windows-based TDM and LE systems, Digi insists that the two systems are compatible if, and only if, a FAT 16 drive is used. I hope this helps and good luck.

*Robert Hanson
Editorial Assistant, Mix*

MORE THAN ONE DRUMMER

I read your "Classic Tracks" article on Boston's "More Than a Feeling" in the September issue with great interest, being a fan of the first album and the band. However—and not to nit-pick here—I would like to point out that even though Sib Hashian was brought onboard around 1975 as the live drummer, the picture you included on page 194 actually is of a later version of the group, which featured Doug Huffman on drums. Huffman joined the band in 1987. I do not claim to be an expert on Boston, but I have worked with Doug here in my studio in the hills of Arkansas, and I know that Doug always plays barefooted (as in the picture). Just trying to set the record straight.

*Bob Ketchum
Cedar Crest Studio*

NAPSTERING REVISITED

This is regarding Paul D. Lehrman's October 2000 Insider Audio Column, "Caught Napstering." A crucial point that Lehrman and others seem to overlook frequently in the Napster/MP3 debate is that this issue affects people other than just recording artists and record labels. Songwriters (many of whom are not recording artists) and publishers (many of which are not monolithic record companies) stand to lose serious money from digital theft, unless some method of fair compensation is put into practice. Every time a college kid downloads a

song from someone else's computer using Napster, that student has stolen a piece of intellectual property. He has not borrowed it from a library (or a friend) with the promise to return it. He has not copied it from a CD that he has already purchased. He has not taped it off the broadcast airwaves. He has stolen it, plain and simple. And, by doing so, he has deprived a songwriter (or two, or three) and a publisher (or two, or three) of income, regardless how small, that was legally owed them.

I appreciate the fact that the technology genie cannot be put back in the bottle. Artists, writers, record companies and publishers are all going to have to learn to accept and deal with the ever-changing landscape that is the music business. And I have no problem with the legitimate concept of "fair use." But stealing music via Napster is not "fair use" as Lehman implies. He also makes a huge false assumption when he supposes that only recording artists and their record labels are in this particular fight. Those of us who write music for a living, and who depend on the sale of other people's products (and the subsequent collection and disbursement of royalties), have a great deal of genuine concern about this issue.

*Robert Sterling
Franklin, Tenn.*

PREVENTING RSI

Regarding Paul Lehrman's Insider Audio columns on avoiding RSI (July and August 2000 issues), one of the best things that I have done is get a Wacom tablet for stylus input (12x18 inches). It is so natural and relaxing to hold it, not to mention fluid motion and high resolution. I would not consider using a mouse for any length of time ever again.

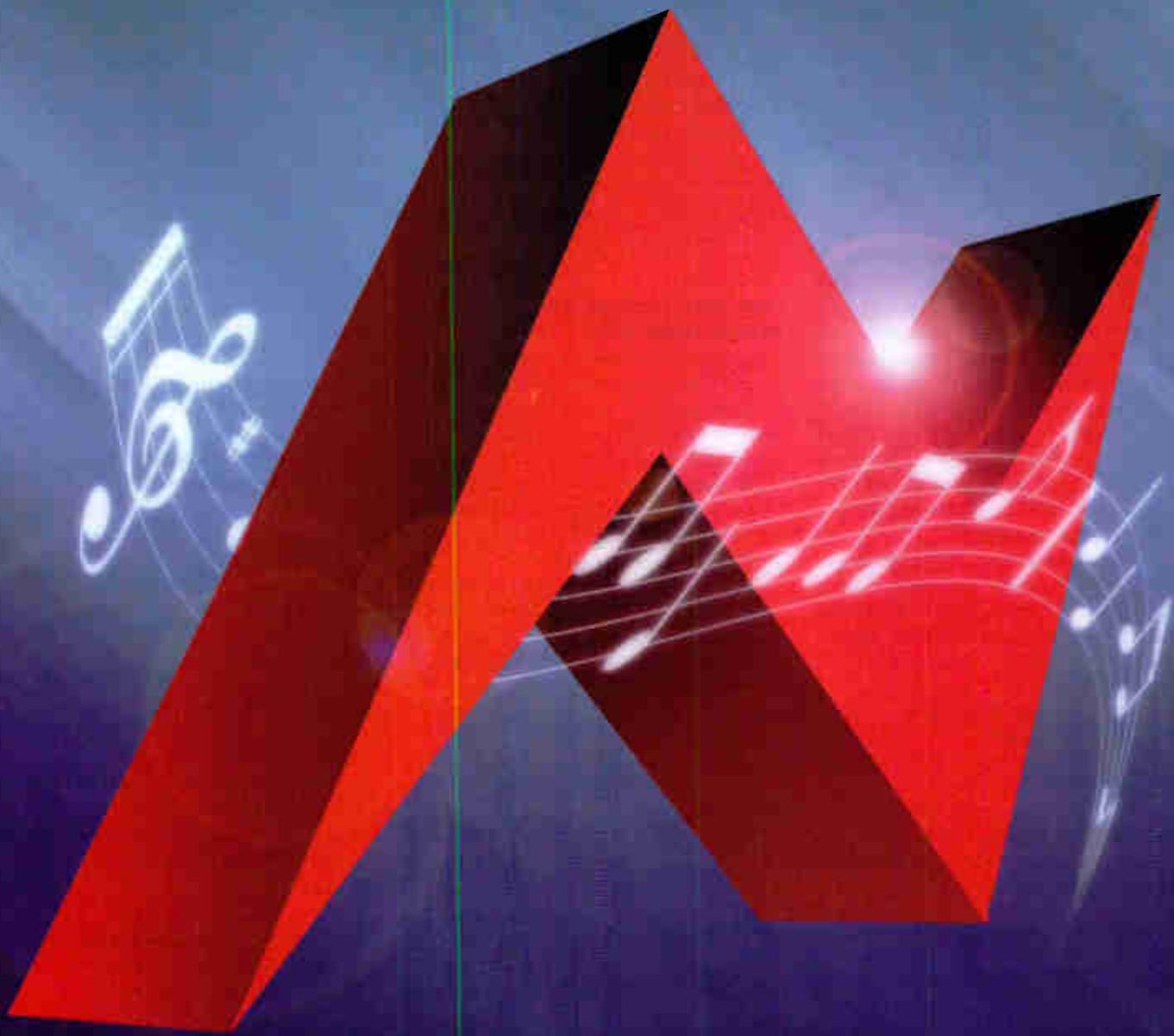
I still leave the mouse plugged in, and because of USB, I could also add a trackball for more variety.

*Chris Adams
Via e-mail*

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CURRENT

MIKE PATTEN, 1947-2000

Mike Patten, co-founder, chief technology officer and chairman of Graham-Patten Systems, died from a stroke at the age of 53. Patten was the principal design engineer and architect for the company's ESAM and D/ESAM edit suite audio mixers.

After receiving a Bachelor of Science degree from the University of Birmingham, Patten joined Standard Telecommunications Laboratories and assisted in the development of the first high-fidelity audio digitizers. Patten left STL and joined Grass Valley Group in 1975, where he contributed to the design of video production switchers and digital video effects systems. He helped form Graham-Patten Systems, an audio mixer-based business, in 1980, and in 1991, The Academy of Television Arts and Sciences recognized Patten with a Technical Emmy award for the company's D/ESAM product.

Howard Mullinack, CEO and president of Graham-Patten Systems, says, "He was a brilliant engineer and a great friend, liked and admired by everyone with whom he came in contact."

COURT ORDERS MP3.COM TO PAY DAMAGES

A federal district court in Manhattan ruled in September that MP3.com willfully infringed on copyrights held by Universal Music Group and ordered the company to pay up to \$250 million in damages. MP3.com plans to appeal the ruling.

Judge Jed S. Rakoff said MP3.com must pay \$25,000 for each Universal CD accessed by the online service, My.MP3.com. This service allows a user to upload a CD into an online locker after indicating that they own it. The user can then listen to the stored music via a computer or other digital devices.

"We built technology that lets people listen to their own CD collections," says Michael Robertson, MP3.com's chief executive. "We think the law needs to accommodate consumers' need to listen to their own CD collections online in a digital form."

However, Judge Rakoff argued that Internet technology is not immune to

copyright laws. "[Internet companies] need to understand that the law's domain knows no such limits."

The ruling comes after MP3.com reached agreements with Sony Music, Time Warner, EMI Group and Bertelsmann AG earlier this year, though the settlement amounts were not disclosed.

This month, the court will determine the number of CDs involved. Universal has said 5,000 to 10,000 copyrights are at issue; MP3.com has set the number at 4,740.

FAIRLIGHT, SOUNDTRACS REACH AGREEMENT

Soundtracs and Fairlight USA have announced an exclusive distribution deal, whereby Fairlight will be the sole seller and supporter for Soundtracs digital consoles in the United States.

Soundtracs' "increased commitment... is reinforced by our joint distribution venture with Fairlight USA," says Todd Wells, CEO of Soundtracs.

According to John Lancken, senior VP at Fairlight USA, the Soundtracs product line fits neatly into Fairlight's current U.S. sales and marketing infrastructure.

For further information, visit www.soundtracs.com or www.fairlightusa.com.

AAC CODING AGREEMENT

Dolby Laboratories announced that Bertelsmann Music Group (BMG) and Universal Music Group are using the Advanced Audio Coding compression standard for digital music delivery.

AAC is the latest audio codec standardized by the International Organization for Standardization (IOS) as part of an MPEG specification. Compared to an MP3, AAC is said to provide higher-quality audio but requires less storage space and bandwidth.

AAC is also used with Digital Rights Management technologies to control the unrestricted copying and distribution of music.

TIMELINE DROPS SYNC PRODUCTS

TimeLine Vista, makers of MicroLynx and Lynx, announced that it is discontinuing the current line of synchroniza-

tion products and related technical support. The affected products include the MicroLynx, MicroLynx option cards, Lynx-2, Keyboard Control Unit, System Supervisor, Console Control Unit and Remote Motion Controller.

Michael Newman, director of marketing, says that the feature sets no longer meet the needs of current digital production environments. The company's Web site, www.timelinevista.com, will include a bulletin board service so customers can exchange information about the discontinued products. The company is now working on a new synchronizer, TL-Sync, which will be distributed by Tascam.

For more information, visit www.timelinevista.com.

SONIC FOUNDRY ACQUIRES INTERNATIONAL IMAGE

Sonic Foundry Inc. announced that its acquisition of Toronto-based International Image is complete, and the offices and functions of Sonic Foundry's two Santa Monica locations have been combined.

According to chairman and CEO of Sonic Foundry, Rimas Buinevicius, the acquisition will create a media and Internet infrastructure so that "our customers will now have a single source that provides total solutions in what has been an extremely fragmented marketplace."

For more information, visit www.sonicfoundry.com or www.internationalimage.com.

LUCID, WAVEFRAME AGREEMENT

Lucid and WaveFrame have entered into a partnership to distribute the Lucid line of I/O converters with WaveFrame/7 and FrameWorks/DX digital audio workstations. WaveFrame dealers will offer Lucid's ADA 8824 I/O for use with WaveFrame's 16-channel optical I/O. Lucid converters will be available for WaveFrame/7 when it is released this month.

For more information, visit www.lucidaudio.com or www.waveframe.com.

SURFING THE WEB

Hafler, makers of amplifiers and moni-

—CONTINUED ON PAGE 16



CAPTURE THE DETAIL OF THE MOMENT

Whether it's a huge explosion or the tinkle of shattered glass, no other microphone captures the essence of an event like a Neumann. That's why the major studios rely on Neumann mics for every phase of production: from foley to music scoring, from dialog to the soundtrack album. When you need to start with real, start with Neumann.



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Unit is 19" wide and will not fit in a mixing console.

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It's Time to Change the Channel...

In the digital world, you're only as good as your weakest link or channel. So, why settle for any less than the warmth and integrity offered by the new **dbx 376 Tube Preamp Channel Strip with 96k Digital Outs**? For more than 25 years dbx has been setting the standard, and the 376 is the culmination of those years of innovative success.

With a feature list that includes a vacuum tube preamp section, three-band parametric EQ, compressor and the *real* kickers: built-in De-Essing and AES/EBU and S/PDIF digital outputs, make the 376 an all inclusive Channel Strip toolbox that's just as much at home in a conventional analog mixer application as it is in a state-of-the art digital workstation. With the 376 you can bypass the mixer all together, while producing warm and rich tube mic preamp tones in the digital domain by using dbx's proprietary Type IV™ A/D conversion system. Stop by your local authorized dbx dealer and tune into all that is available on the next channel.

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INDUSTRY NOTES

The Society of Broadcast Engineers (Indianapolis) awarded Fred Baumgartner, James T. Bernier, Jr. and Edward J. Miller a membership grade of Fellow in the Society...AKG Acoustics (Nashville) announced numerous appointments: Kevin Madden Eastern regional sales manager; Tom Stotler Central regional sales manager; Doug Kittle Western regional sales manager; Cindy Carroll Eastern sales administrator; Sara Anderson Central sales administrator; and Christi Heard Western sales administrator...Recording school SAE (New York) announced the appointment of Udo Hopenworth as VP SAE USA NY and director of SAE Institute in New York...Lightfactor Sales (Middlesex, UK) will now be the distributor for Apogee Sound (Petaluma, CA), and KEM Electronics (Athens, Greece) will be the sole distributor in Greece. In other company news, Nissa Hess is the new national sales coordinator, and Doug McCombs was added to customer service...Retired General Dennis J. Reimer was elected to DRS Technologies' (Parsippany, NJ) board of directors...Ron Bradshaw joined Symetrix in the newly created position of product development manager...Furman (Petaluma, CA) announced new management additions: Margarita Gorokhovskiy, VP of operations; Steve Rose, VP of marketing and international affairs; and Bruce Seifried, director of new market development. Furman also named Pacific Systems Group (Torrance, CA), Burhans and Burhans (Crystal City, MO) and Metro North (Edison, NJ) to the newly formed rep council...BGW (Hawthorne, CA) welcomed Steve Lyle, new chief engineer, to its family...Group One (Farmingdale, NY) expands with the appointments of Michael Puehse as display market manager for lighting division, Jimmy Kawalek to market development manager of Western audio division, Brian Quinn to operations manager for audio and light-

ing divisions, and Kevin Gibbons as primary contact for customer service for audio division...Rick Cannata joins Fostex (Norwalk, CA) as pro products manager...iZ Technology (Burnaby, BC), inventor and manufacturer of RADAR hard disk recorders, introduced a support and service hotline at 800/776-1356. The company is also now the sole distributor of RADAR products...Philip N. Sanders, principal consultant, Jason R. Duty, principal consultant, Brian M. Brustad, senior consultant, join design firm Charles M. Salter Associates, Inc. (San Francisco)...Crown Audio (Elkhart, IN) presented David Glass, field service specialist, and Leslie Kruse, domestic sales agent, with awards for Technical Support Employee of the Year and Sales Administration Employee of the Year, respectively...Atlas Sound (Phoenix) is joined by Steven Young, new director of marketing and technical sales for the company's domestic and professional divisions...Maxwell (Fair Lawn, NJ) announced the appointments of Pamela Barber district sales manager for Florida and Brian Cox sales representative for professional blank media products in Michigan, Indiana and Ohio...Post Perfect (New York) president Dean Winkler announced his resignation, and co-founder Patrick Howley assumed the role of general manager...McKay Conant Brooks Inc. (Westlake Village, CA) hired Kyle Ridenour as a media system design consultant...GLW (Nashville), makers of Harrison consoles, moved its offices to 1024 Firestone Parkway, Laverne, TN 37068; 615/641-7200; fax 615/641-7224...Megatrax Production Music (North Hollywood, CA) promoted Leisa Korn to the newly created position of director of publishing and administration...Nexo (San Rafael, CA) has moved its office and warehouse to 2165 Francisco Boulevard E, Suite E2, San Rafael, CA 94901; 415/482-6600; fax 415/482-6110. ■

—FROM PAGE 12, CURRENT

tors, introduces a new component to its Web site, www.hafler.com. The Web site now supports 360-degree views of the company's product line.

QSC amplifier owners can now order products at the company's online store at www.qscstore.com. The online order center allows customers to access descriptions and photos of signal processor modules, bus card adapters, and input and output transformers. Symetrix also added an online store to its Web site at www.symetrixaudio.com. Los Angeles-based Apogee added an online store to its redesigned Web site at www.apogeedigital.com/store.

A new database was added to Line 6's Web site, www.line6.com. The browser, FAQTRAQ, guides users to information about the company's gear. dbx DriveRack users can now access information about the product line on a dedicated Web site, www.driverack.com.

Skokie, Ill.-based MacPherson has a redesigned Web site at www.macpherson-inc.com.

WORKSHOPS AND CONFERENCES

Sonic Solutions is in the midst of its 42-city seminar series, "eDVD—Making DVD and the Internet Work for You." The seminar began in September and will run through December in cities worldwide. To find a seminar near you, visit www.sonic.com or e-mail the seminar coordinator at dvdseminar@sonic.com.

ATR Service Company will offer in-depth analog alignment seminars on March 9, June 11 and October 15 of 2001. The series will cover issues about recorder alignment procedures, including the fundamentals, choice of tape format, tape formulation, tape speed and use of noise reduction. For more information, call ATR at 717/852-7700.

CORRECTION

The September "What's New in Plugins?" feature listed incorrect prices for the Antares Microphone Modeler. The TDM version is \$599; VST, RTAS and MAS versions are \$399; and the DirectX version is \$299. In addition, the Antares Web site was listed incorrectly. The correct URL is www.antarestech.com. ■

CHECK OUT THIS MONTH'S
MIX ONLINE!
<http://www.mixonline.com>

"REASONS NOT TO BUY A MACKIE D8B...ZERO."

—Roger Nichols, EQ Magazine

PLUS 3 MORE REASONS TO GO FOR IT.

1 FREE UPGRADE! NEW OS 3.0 ADDS OVER 30 NEW FEATURES!

Our Programming Department has been chugging the double lattes to create Mackie Realtime OS™ Version 3.0, packed with more new features and enhancements than you can shake a mouse at. Here's just part of what 3.0 adds to the already amazing D8B.

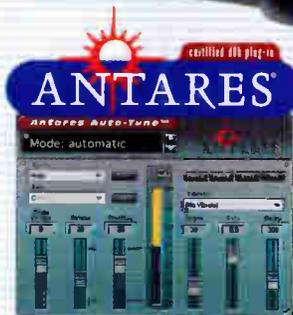
- **New key (sidechain) inputs** for all 48 onboard dynamic processors featuring soft knee architecture and single band 20-20k parametric EQ for frequency dependent processing such as de-essing
- **3rd-party plug-ins** via our new UFX card. Up to 16 simultaneous plug-ins on the first 48 channels, pre or post DSP, pre-fader via up to 4 UFX cards. Each plug-in is available twice — once when tracking, and again at mixdown!
- **Multiple Undo List** — 999 levels!
- **New Snapshot libraries.**
- Externally or internally accessible **inserts across Mains and Buses** plus **channel inserts pre and post DSP**
- **Updated GUI** including 48-channel fader bank view screen.
- **Time Offset** (delay) adds a delay of up to 999 samples to the signal at the pre-DSP (dynamics / EQ) point in the signal path.
- **New surround capabilities** including depth-of-center control (LCR mixing with divergence), multiple surround panner window, individual LFE channel level control.
- **Multiple direct outs** per channel.
- **Optional level to tape** fader control.
- **Assignable, bidirectional MIDI control** of all parameters.
- **Cross patching** allows substitution of channels between various banks.

The list of top engineers and producers who use the award-winning Mackie Digital 8 • Bus is growing daily. For info on the D8B, new UFX and Optical • 8 cards, 3rd-party plug-ins and how D8B owners can get their free OS upgrade, visit www.mackie.com or call your local D8B dealer.



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2 DSP PLUG-INS!

Antares' Auto-Tune for the D8B uses advanced DSP algorithms to detect the incoming pitch of a voice or solo instrument as it's being tracked and instantly pitch-correct it without introducing distortion or artifacts. Fully automatable.



Massenburg Parametric EQ. MDW 2x2 High-Resolution Parametric Equalizer plug-in from Grammy-winning engineer/producer George Massenburg. Mono/stereo EQ at 96kHz sample rate for unprecedented clarity and high frequency smoothness.



Drawmer offers two dynamics packages for the D8B: ADX100 includes their industry standard frequency conscious gating, plus compression and limiting; ADX200 adds variable "Peak Punch" and further Drawmer innovations.



IVL Technologies' VocalStudio provides real time vocal doubling, multi-part harmonies and pitch correction in an easy-to-use interface. A free demo is built-into the Digital 8 • Bus. Just add a second MFX card to own this innovative plug-in from a world leader in vocal processing.



TC Electronic Reverb (bundled with the D8B UFX card) provides Reverb 1 and Reverb 2 algorithms from the renowned TC Electronic M2000 Studio Effects Processor. TC FX upgrade package contains an expanded set of M2000 reverbs plus Delay, Chorus, and Pitch. TC 2000 adds the TC M2000's Reverb 3, de-essing, tremolo, phasing, and panning.

3 1999 TEC AWARD WINNER!



Normally we don't name competitors in our ads. But in this case, Mix Magazine published the other nominees for the 1999 TEC Award for Outstanding Technical Achievement in Small Format Consoles: Allen & Heath's GS-3000, Digidesign's ProControl, Panasonic's WR-DA7, Spirit's Digital 328 and Yamaha's O1V. Thanks to all who helped us win this prestigious award.

CIRCLE #008 ON PRODUCT INFO CARD

World Radio History

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DIGITAL MACKIES
AT OUR FACTORY IN
WOODBRIDGE, VA, USA

TEN YEARS AFTER...

DEJA DAW

In 15 years with *Mix*, Stephen St.Croix has never missed a month in the Fast Lane. But the Rumanian gymnastics team called from Sydney, and Stephen was soon on a plane to another time zone. So, we bring you Fast Lane Classic. Ten years ago, Stephen penned a two-part series on file format interchange, proving once again that, no matter what you might think of his opinions, he is often way ahead of his time. What follows could have been written yesterday.

—The Editors

Okay, now, what if we all—that is, if everyone on the entire planet—could actually get together and come up with a standardized protocol for telecommunication by voice? Just think about it. The voice part is pretty easy: Just keep it analog and only go digital within your own closed subsystems.

It's the hand-off and management of the routing that's the problem. We would need one standard set of voltages (or agreed-upon translators) with compatible hardware, routing designs and key signals across the world! Why, people in Kuala Lumpur could actually pick up a phone and dial you up in New York or L.A., and without too much trouble, talk to you!

Just imagine. A standardized format. What a concept. People and companies all over the world working together to improve the state of communication of man.

No, wait a minute...We already *have* that. Sorry. Yes, now that I think about it, there already *is* a kind of worldwide standard in effect. And what's more, it basically works.

Today I can drive along the back roads in the woods of Maryland, feel the urge to get into some

serious trouble, push a couple of buttons on the dashboard, speak into the visor and find out that the project going on in L.A. or Germany has totally fallen apart since I left there three days ago, and they need me back instantly.

A worldwide network of cooperating companies and governments waiting 24 hours a day to help me get depressed...and it *works*. Of course, it is also pretty nice when you can reach out and wake up someone you miss from six kilometers away.

Okay, okay, so we already have that. Well, what about, let's see now...pictures?

Yeah, that's it, pictures on the same existing phone system. If I miss my woman while I'm on the

and protocol translation where needed, in use, now, here on Earth. Fine.

What else? You can drive from the East Coast of the United States to the West Coast and be relatively assured that you can go up to the nearest fossil fuel dispensing station anywhere on the way, and the nozzle will fit your machine's input port.

Sometimes the level of cooperation between people is inspirational (or at least relational).

Let's bring this a bit closer to home. You can take a 24-track analog tape from Fred's Music Emporium in New Orleans to Electric Lady in New York, and if Fred properly uses a good calibration tape, then it will *actually play*.

Compatibility is crucial for the health of the digital recording/editing market.

Customers will actually be more willing to take a chance and try out your new

digital Wazoo 700 workstation if the most

they can lose on a bad purchase

decision is time and money, but not the

actual work they've done on it.

road, I can call her and tell her, but if I miss her too much to explain on the phone, I can send her *pictures* and technical diagrams showing exactly how badly I miss her.

And some people can even do all of this from their cars. (I refuse to have a fax in any of my land vehicles.)

So what do we have here? A standardized telecommunication system with nearly invisible format

Or this: A DAT's a DAT, of course, of course, unless that DAT is being forced to play on a dirty head. Standardization again. Competitors (in this case, some serious arch-enemies) got together and hammered out a standard so it could at least get started, right or wrong. Copy-code stupidity tried to kill the entire concept, and time will tell if it *did* (but that's another story).

CDs (and other government bond investments), AES/EBU, S-PDIF,

BY STEPHEN ST.CROIX

the complete picture



hard disk recording
midi sequencing
audio interfaces
midi interfaces
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midi system management
automated control surface integration
the most complete integrated system available

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SDIF-2, 110 VAC, 220 VAC, +24 dBm, -10, even MIDI (sorta): successful standardizations, all done for the betterment of humans. (Or was it the almighty buck?) Who cares what the *reason* was, just so they work?

Now, boys and girls, we leave that old, familiar physical world and enter the scary, powerful realm of the virtual digital environment. We *have* to. How else can we get the type of work that needs to be done today accomplished in the little time that we have to do it?

So we all buy digital editors and disk-based recorders. We buy the ones that best fit our needs (though some will buy the ones that best fit the plans of the salesperson or reps). In any case, it is remotely possible that we might not all end up with the same machines. Hard to believe, but true.

We do, however, all share a couple of key views. We all got into this for the advantages of living in the digital (and more so, daily), virtual world. We all want to convert sound to a stream of binary numbers as soon as possible and preferably *never* leave that world, all the way to the end-consumer product. We want to do all our editing, mixing, EQ, compression, limiting, reverb, time fitting, conforming, looping in the mystical digital domain.

This quantum leap in recording technology carries with it inevitable new standards: 44.1, 32, 48, RS-422 transport protocol. You know, the kind of standards that make our jobs and our lives a little more rational, a bit easier.

Simple, basic standards, the bare minimum, like, let's say, being able to transfer sound files from one company's machine to another's. Like that time a few months ago when I wanted to take a file out of an AMS AudioFile and put it into a WaveFrame.

Let's see, now. Exactly, *how* did I do that? Well, first I...No, that's not it. Oh, yes, I...No, that didn't work either... Now I remember; I didn't do it at all. It couldn't be done. I abandoned the file and started over.

Now *that's* definitely what standardization is all about.

Sometimes it takes a little naïve voice in the wind to start the unrest needed to force manufacturers to overcome their insane paranoia and grow the hell up!

Yes, I know that nobody wants to be the first to reveal the wonderful, magical secrets of their internal file management. And I know that nobody else wants to

change theirs to adapt. The problems are insurmountable. The conceptual and logistical incompatibilities are beyond the scope of mere mortals to resolve.

Yes, yes, manufacturers, I hear you! I am one myself.

Why should you share with your competition, or as some of you seem to see it, your *enemies*? Or, how about this one: Once you get 'em hooked, why let them go when you can keep them locked into your system? The answer is, if not for the betterment of mankind, for the bucks.

**If not standardization,
then at least give us
serious compatibility,
or even realistic
compatibility with file
format converter utility
programs that preserve
edit information.
Don't tell me you can't
do it, or that you can,
but the other guy won't
cooperate. Just do it!**

Compatibility is crucial for the health of the digital recording/editing market. Customers will actually be more willing to take a chance and try out your new digital Wazoo 700 workstation if the most they can lose on a bad purchase decision is time and money, but *not* the actual work they've done on it.

Yes, your machines are really cool, but they are nowhere near as important to me as the work I have done on them. Hear me now and believe me later. I know. I hear the customers. I am one myself!

If not standardization, then at least give us serious compatibility, or even realistic compatibility with file format converter utility programs that preserve edit information. Don't tell me you can't do it, or that *you* can, but the other guy won't cooperate. Just do it!

As a customer, I don't give a damn how many phone calls and meetings (or how many R&D hours) it takes to

get this to happen. I do, on the other hand, feel a growing resentment that you expect me to give you large amounts of money to get into one of your machines, and actually give up the hard-earned compatibility I enjoyed in the analog days.

As a manufacturer and designer of such machines, I cannot be dismissed as being so naïve that I don't grasp the problems in attempting this type of standardization or even compatibility.

The end-users need this, and perhaps my little voice in the wind, made a bit louder with all this ink, can help.

About a year ago, I was invited to host a shootout of the then major players in the digital "workstation" arena. Interestingly, they did all manage to agree vehemently on one, and *only* one, point: That they would not agree on a standard in the foreseeable future. Nice, huh?

Be aware there is a currently active dialog among several of these manufacturers on the subject of attempting to arrive at some sort of bridging file transfer concept. This would be based on the Exabyte 8mm tape cartridge system currently used for archiving and backup.

Let's see. I am hoping for some results on this at the SPARS shootout on May 19 in Nashville. I will be there, and I will let you know.

Open Message to Manufacturers: Hi. If *you* do it, *I* will. If you don't do it, I will anyway.

Editor's note: And he did... read on.

Hello, boys and girls. If you will think back to last month, you will remember that our hero, the recording industry, was left poised on the edge of disaster—the very event was the horizon of the black hole of standardization. It was then that I promised to report on the SPARS shootout on May 19 in Nashville.

WARNING ONE

Warning, Warning. Another automotive analogy is approaching out of the east.

If your digital disk recorder/editor hits a brick wall at 55 miles per hour, you can get it fixed or even replaced. Pretty much the same thing as when your car crashes.

It's the data in your machine (or the passengers in your car) that you can't afford to lose.

Let's see now. You can back up the data in your recorder, and you can airbag the passengers in your car. Both of these moves are meant to ensure survival of what is important: the software (or firmware if the passengers go to the

NOW SHIPPING!

Record 24 tracks of 24-bit audio*. Edit from the front panel or on your computer. Interface with your DAW system. Backup to your favorite media. Make records. Be famous. Have fun.

With the TASCAM MX-2424™ 24-Track Hard Disk Recorder/Editor, you might get more than you expected. Though it's hard to imagine getting much more from a recording system. Any system.

Start with 24 tracks of 24-bit/48kHz digital audio. Take your choice of 24-bit analog, TDIF, ADAT™ or AES/EBU optional I/O modules...digital and analog interfacing available simultaneously, of course. Use the front-panel drive bay and fast/wide SCSI port to extend recording time with external hard drives and create backups with tape drives and DVD-RAM. Get file format and drive compatibility with your favorite DAW system on Mac® and PC.

Time to edit? No computer required. All the controls you need are right there on the front panel. Or get visual editing and transport control with the included ViewNet MX™ graphic user interfacing software. Need more tracks? Chain up to 32 machines for a huge integrated system with true single sample accuracy.

Surprisingly affordable, incredibly powerful, feature-packed and (most importantly) unbelievably great sounding. And (alas), far too cool to give you everything you need to know on this page. So go to www.tascam.com for the whole story. Because the more you find out about the MX-2424, the more likely you'll be to, well, uh...buy one. Available today at your authorized TASCAM dealer.



The MX-2424 (shown with optional IF-AN24 analog I/O and IF-AE24 AES/EBU multichannel digital I/O) features built-in SMPTE Sync, MIDI Time Code, MIDI Clock, Video Sync, stereo AES/EBU and SPDIF ports and much more.

* 12 tracks @ 96kHz recording available later this year

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a whole world of recording

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gym a few times a week) and not the hardware.

There is, however, an important difference here. Your saved passengers can simply get into another car, of a different make, while your saved data can only be put right back into the very same machine it came from, or another exactly like it.

This, along with obvious other reasons, is why we need real file transfer capability, or at least intelligent file translation shells, and not the simplistic, "oh, you can get the 2-track final product off our Exabyte, I think" that we hear now.

WARNING TOO

Remember that I am personally involved in developing one of the more elaborate digital recorders/editors. I designed the operational concepts and human interface (including screens and motorized fader hardware control surface) for the new Symetrix 40-track machine.

While some of you might feel that I should refrain from any and all discussion within the arena of digital disk recorders/editors due to my potentially biased position, I have thought it over, and I don't think so. If I clearly state my position up front, explain that I am involved and then tell you what I think, then you can sort it all out without too much trouble.

At least you know that I am definitely interested in, and very involved with, the entire subject. Being a systems designer for such machines (the Symetrix is *not* my first one) and an end-user who operates a digital multitrack facility, I *am* involved. If you read my stuff, you probably read it because I am a bit off the wall, and because I am actively involved in what I write about.

So...

The Symetrix digital recorder/editor won't be shipping until the September AES. So as I write this column in May, we are officially still in the coveted vaporware status. You can see this makes it very easy for us to blatantly vocalize our desire that every effort be made to come up with some sort of functional standard for intermachine file transfer.

On the other hand, while most other manufacturers claim that they also wish for this to take place, they get very quiet when asked to actually *do* something about it.

Very quiet.

Well, once again, the major players met at the same place, at the same time, for a variety of reasons, at the May SPARS conference. On Saturday, we all showed our stuff, either shipping or coming attractions. We all gave our speeches, each carefully explaining why we were clearly the best and the only suitable answers to the user's needs. We each demonstrated our respective systems.

Some of these demos were awesome, some interesting, some reruns and a few were actually embarrassingly

It is a very dynamic world. Things like storage technologies sometimes change as fast as you can learn how to implement last week's hardware.

inept, stupid and off-base. Grade school science projects have been presented with more authority and professionalism than a couple of these demos were. It was *almost* funny.

On the other hand, at least three companies showed stuff that really made you feel that the future had arrived. Some of these demos made you feel like rushing right out and doing a couple of difficult projects on these machines later that same night, just for the thrill of solving age-old problems in minutes.

On Sunday, we all sat at a round table and fielded questions. One of the questions was...file transfer. I was on this panel at the round table, and as I had been told a month ago by another *Mix* editor to watch for significant advances in this area at this meeting, I waited for the others' responses with baited breath.

Raw 2-track digital file transfer is not the question here, of course. Almost all these machines can be forced to listen to any other machine in some way or form, by AES/EBU or S-PDIF, or something. The problem arises when you try to transfer eight, 16 or 40 tracks, and maybe even the *edit and automation* information along with these tracks.

I am sorry to report that not much has changed. Evolution, *not* revolution. Maybe even backward evolution. The

appearance of increasing numbers of optical storage alternatives may have actually slowed the approach of real intermachine file transfer. Now some are talking about magneto-optical or other laser storage schemes for backup and archiving, instead of the almost-be-came-the-standard Exabyte.

This is one reason why standardization is so difficult: It is a very dynamic world. Things like storage technologies sometimes change as fast as you can learn how to implement last week's hardware.

Anyway, several of the manufacturers hissed and moaned (neat, huh?) about the same old problems of file transfer, and they didn't even seem too interested in the concept of a standard "lowest common denominator" type of standardized translated file transfer.

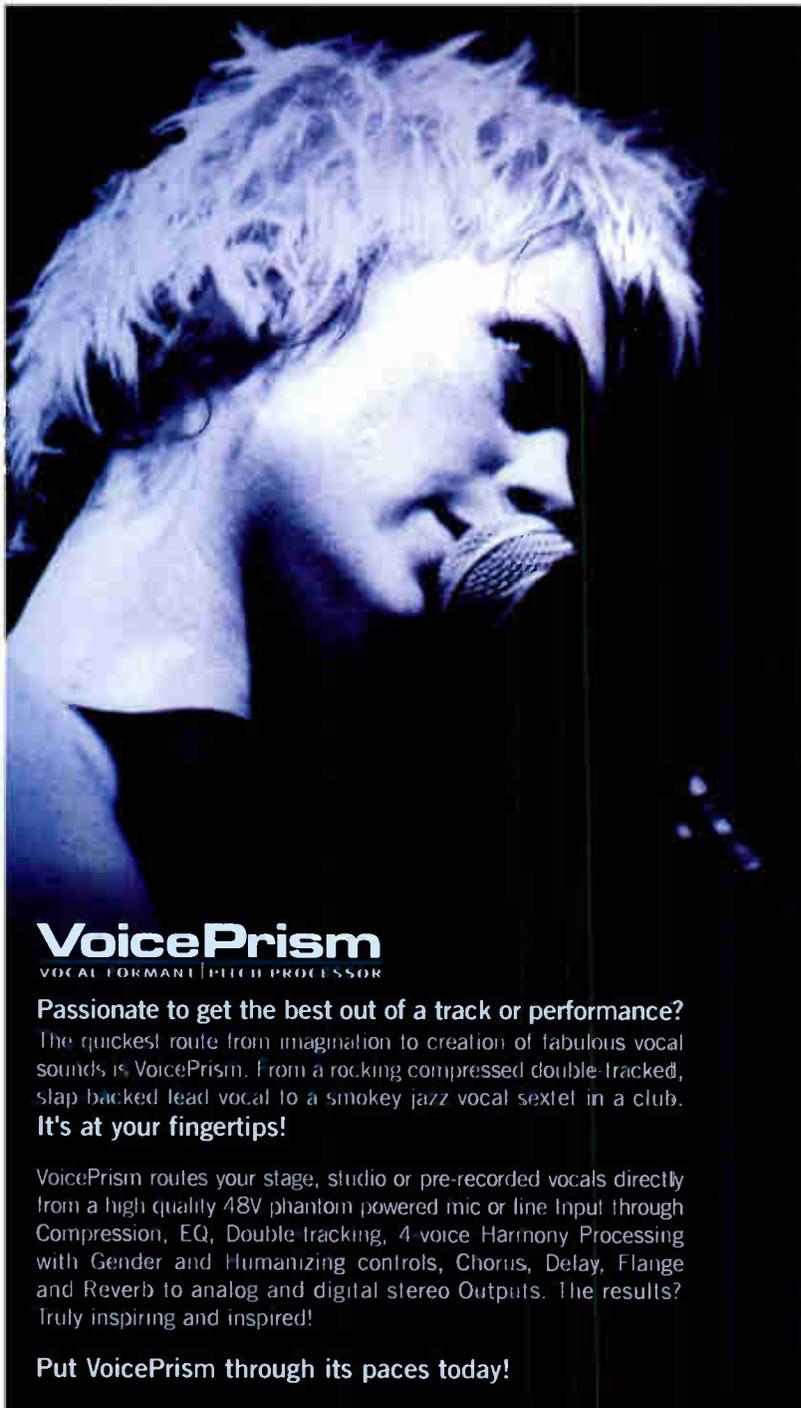
This idea of a standard format for file transfer works very well for CAD files and many other situations that are actually quite similar to our industry's problem. I, frankly, have trouble seeing what the problem is.

While it is true that machine A's automated EQ data may not be supported by machine B, and machine C's crossfade files may be scaled differently than machine D's, this concept of a file translation program could deal intelligently with all that. If B can't read A's EQ stuff, then the translation shell should know this and ignore it. If D has a different crossfade approach than C, then the shell (the D *input* subsection of the shell, of course) should give the user doing the import a choice of ignoring the data and flagging the crossfades so they may be redone by hand once the file is imported, or rescaling the data automatically for a best-fit translation to the target (D machine).

A slightly complex solution for a very complex problem, but at least it is a workable answer, which can evolve as it needs to. Come on, guys, let's do something. We have been talking this over since the day when the *second* manufacturer sold its first machine and incompatibility was invented, again.

Joke: Hey, boys and girls, if you read this column out loud and backward at 78 wpm, you will hear a hidden secret message just for you special cult types; mainly you DEVIL (Digital Editors Virtually Insure Leadership) worshippers. Have fun and buy bonds. ■

Oh, yes, in no way does Stephen St. Croix endorse satanism or any other twisted perversion where living things are tortured for amusement.



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SCHOOL'S IN!

A GUIDE TO CHOOSING A RECORDING EDUCATION



ILLUSTRATION: DAVE EMBER

“Does anyone know the best recording school west of the Mississippi? I’m only interested in the best!”

“I’m looking at going to school A, but now I hear school B has newer gear. Should I go there instead?”

“My parents want me to go to college, and it’s okay with them if I study audio engineering, but really all I want to do is mix live bands. Can’t I just take a six-month course and get on with my career?”

These are the kinds of questions that the writers and editors at *Mix* and other magazines get daily. Young people entering the recording business are convinced that a good education will give them a leg up on the competition, but they are confused by the many options available and want us to steer them to that *one* right program.

They’re correct that education is important for a career in recording, but they’re wrong if they think there is only one “best” way to get it.

Just a few years ago, there were a couple of ways to go about finding that entry-level job. You could have spent your first year or so cleaning ashtrays and getting coffee, while you looked over the shoulders of the engineers at the local 24-track studio. Or you could have signed up for a course at a private recording school—more often than not a commercial studio with time on its hands—or enrolled in one of the handful of college programs usually associated with music conservatories then available.

But today there are more than a hundred institutions that offer

courses in music recording and production, live sound, studio and equipment design, studio management and music business. They encompass six-week quickies, six-month certificate courses, two-year associate’s degrees, four-year colleges and even graduate programs. Recording schools are now often dedicated, stand-alone facilities, some with multiple rooms that would do a commercial facility proud. Recording programs in colleges operate within engineering, business, art and communications departments, as well as music curricula and can be found at rural community colleges, large urban commuter schools and Ivy League universities.

Why the boom? A number of reasons: Audio has become a high-profile, glamorous, big-bucks in-

BY PAUL D. LEHRMAN



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dustry, and lots of young people who want to get into it are looking for an edge. Baby-boom parents, who grew up loving music but were warned that it was a tough field to enter, now see that music (or at least the tech side) isn't the risky business it was when they were choosing a career, and they are encouraging their children to try it. The industry itself has matured enough to produce a generation of veterans who are interested in teaching, perhaps to supplement their income, or to allow them saner work schedules or simply

because they enjoy imparting their wisdom to the next generation. And finally, the old, self-teachable skill sets that used to qualify someone for a job in the audio business—a good set of ears, knowledge of basic electronics, resourcefulness and the right attitude—just aren't enough any more. Thanks to computers, DSP chips, new delivery systems and a host of other technological developments, the bar has been raised too high for most people to negotiate solo.

So how do you decide which school is right for you? The good news is that there are likely to be many good choices.

The bad news is there are no quick answers. So rather than ask me or some other self-appointed sage, you need to start the process by asking yourself: What do I want to do? What training do I need in order to do it? What can I afford to spend to get that training?

Is your dream to mix heavy metal? Do you want to score television shows? Do you want to design sound systems for clubs, make house records, go on the road with bands, produce radio spots or record symphony orchestras? If you can define what your goals are, then it will help you find the right place. If your love is sound reinforcement, then don't go to a conservatory with a four-year music-theory sequence. If you want to produce classical music, you don't need a course that's heavy in DSP design. Even if you don't know exactly where you'd like to end up, if you can identify what you *don't* want in a school, then that will eliminate a lot of choices.

Also keep in mind that your goals may very well change. You may decide halfway through your schooling that doing field recordings of indigenous folk music or spec'ing sound systems for football stadiums is *exactly* what you want to spend the next 10 years doing. So you need a school that will be flexible enough to help you no matter where your interests take you. At the very least, you want one that won't lock you into an expensive contract or make it impossible for you to transfer credits should you decide to go elsewhere.

Do you need a college degree? If you've just graduated from high school, then, if you ask my opinion, the answer is yes. College programs are more comprehensive and will give you much more background—technical, artistic, historical—than you'll find in a short commercial program. In an industry that's changing as fast as ours, knowing where the tools come from and how they got to be the way they are is as important as knowing how to use them. The well-rounded education that colleges demand of all students—where you are taught not just specific skills, but also how to *learn* new skills—will stand you in good stead should you ever change careers. Which you will probably do several times during your lifetime, according to many studies. A solid background in music, engineering principles, business and computers, not to mention writing and presentation skills, is going to prove valuable no matter where you end up, five years from now or 20.

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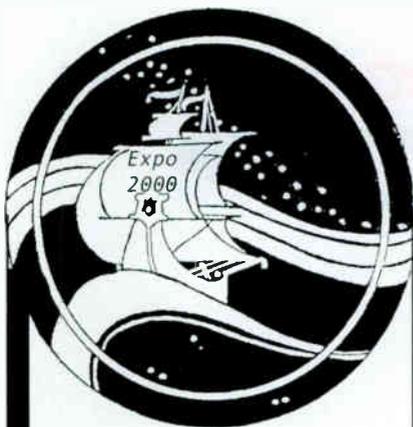
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I'm surprised how many people say to me, "Well, I've got my college degree, but I don't think I'm really ready to go out there and find a job. Should I get a graduate degree?" Generally speaking, in the audio production community, a graduate degree isn't what employers are looking for. For many specialized careers, like company management, facility design, software or hardware development, an advanced degree in business, architecture or engineering can be useful. If you want to teach at any level from grade-school music to college courses in multimedia, a master's degree in an appropriate field

with a four-year program, the credits you earn are transferable.

At colleges today, people realize that more students than ever are on their own financially and need to make money while they are in school. At the last school where I taught, almost every student had a job that occupied him or her from 20 to 40 hours a week—frankly, I don't know how some of them did it. This means that many schools have become flexible about scheduling classes or letting students stretch their degree program out for more than four years, giving them time to handle outside jobs in addition to their studies.

Don't forget to look for financial

So how do you decide which school is right for you?

**Rather than ask me or some other self-appointed
sage, you need to start the process by asking
yourself: What do I want to do?**

What training do I need in order to do it?

What can I afford to spend to get that training?

is fast becoming a requirement. But if you've graduated from college and still don't know what you want, you're probably better off getting out into the real world for a while and seeing what turns you on. Perhaps you can identify a specific lack in your education that you want to overcome and find a short commercial course that can help you do that.

Don't think you can afford a four-year college? Don't give up just yet. When I started teaching, the number of recording programs at public colleges could be counted on one hand, but today there are dozens. The tuition at any public college—even for out-of-state students—is much lower than at private schools. In some parts of the country, agreements are in place that allow you—if you live in one state whose public college system doesn't offer a specialized program but a neighboring state's does—to go to the other state's school and pay the residents tuition of that state. There are also two-year associate's degree programs at many private and public colleges that are very worthwhile. And in most cases, should you then decide to continue

aid. Although there aren't as many "free rides" as there were 20 years ago, colleges are still willing to work hard to attract good students, and scholarships, low-interest loans, work-study programs and paid internships are some of the ingredients that they can throw into the mix to help a prospective student. Tax credits, known as Hope and Lifetime Learning credits, are available to students (or their parents) who are attending accredited institutions, and they can help offset some of the costs. (Many noncollege programs also offer attractive financial aid packages.)

All right—let's say you've figured out what kind of program you want and how you're going to pay for it. You've got a list of potential schools you've gleaned from the "Mix Audio Education Directory" in this issue (see page 97) or from www.mixonline.com. Now how do you choose the right one? A good place to start, as you consider each school, is to prepare a set of questions, just as you would for a job interview. I've prepared a few examples.

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How prepared am I for this course of study?

Do you need to get a solid background in electronics, math, physics and audio theory, or do you already have that, and what you really need is to get right into the recording and production courses? If you need to improve your basics, it might be less expensive to take those at a local community college or adult education program before you enroll in a pricey commercial school. (If a school assures you they can put you right into advanced courses without any

background at all, you might want to think twice about it.)

What do I want to get out of it?

Are you looking for a broad education that will allow you the most flexibility in the future? In that case, you want to make sure you get electronics theory, musicianship, basic recording techniques, some history of the medium and exposure to a wide variety of applications that you might consider as a career. Or do you have a narrow, immediate goal? Maybe you only need a little refresher on mic technique, or you know all about recording but want to learn about Web audio, film mixing,

synchronization or how to get the most out of that new, all-in-one, digital workstation you just picked up. If that's really the case, don't lock yourself into a long program where the stuff you really want only comes at the end.

Does the school offer opportunities to learn different areas of the field?

As I mentioned earlier, you may think going into a program that all you want to do is make records, but the audio business is much more than that, and you may well find as you progress that your interests will change. You may want to try your hand at theme-park sound design, or music editing for TV, or producing Web sites or running live sound systems. Make sure classes in those areas are available—and not just to those who intend to concentrate in one of those areas.

Is the equipment the right stuff?

Having the very latest equipment is not a guarantee that the school is any good. It just might be that they have connections with certain manufacturers who are eager to get their equipment in front of as many students as possible, or they may have someone with deep pockets financing their equipment purchases. What's more important is that the equipment be reliable, that it not break down under heavy use by inexperienced hands and that the instructors know it *really* well. If you're learning to mix music, working on an 8-year-old Amek board isn't really all that different from learning on a brand-new SSL; and if the teacher isn't familiar with all the many layers of functions on some fancy new board, then it's actually a lot *less* valuable to you as a student. Similarly, if the school has a bunch of hot, new workstations, but they're always down because of upgrading or interfacing problems, they're of less use to you than an old WaveFrame or 4-channel Pro Tools system that's clunky but works.

Is there enough gear to go around? Is it well-distributed, and does it cover a variety of platforms?

There needs to be sufficient workstations and studios so that students can get all the hands-on time they need. Again, a fancy new room with tons o' gear isn't much good if 80 students are all competing for time to use it every day. While a 128-input console looks great on a brochure, a bunch of different rooms with 24-track boards and a small but intelligent collection of gear makes a lot more sense for a learning situation. For teaching theory and critical listening, classrooms are invaluable

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Above Right:
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(especially if they're equipped with good audio-visual presentation systems). But most of us learn best by doing, and if there's not enough hands-on time, much of what gets copied from a blackboard or read in a text will not be retained. Having different types of equipment on hand is always a good idea, because it means you can practice applying the principles you're learning on different platforms. Because it's almost guaranteed that whatever gear you learn on in school will be different from what you'll find at your first job, the ability to move easily between platforms is crucial.

Are the faculty members genuine, working professionals? And do they also know how to communicate with students?

Teaching in a recording school is a specialized art. To be successful, a teacher needs to have real-world experience (i.e., useful wisdom to offer to the students), but he or she also needs to have good communication skills and feel comfortable working with younger, less-experienced people. A producer of 100 Platinum records is worthless in a

classroom if he or she mumbles and can't put a complete sentence together, has no lesson plan (or constantly ignores it) or is condescending or arrogant. Conversely, a great classroom teacher, if he or she doesn't have any practical experience to draw on, can only take students so far. So the school you choose should emphasize both qualifications equally in their faculty members.

Is the school accredited?

There are a number of organizations that accredit vocational and trade schools, and it can help your peace of mind if the school you're looking at (assuming it's not a college) is accredited by one of these bodies. (It's also easier to get financial aid and tax credits.) If it's not, it still might be a good school, but you'll have to dig a little deeper to make sure it's on the up-and-up—and that it won't suddenly go out of business while you're midcourse.

How well is the school going to prepare you for the real world and real clients?

Are there courses in running a business, planning project budgets, dealing with banks and loan companies and billing and collecting from clients? Whether you're planning to work for a large fa-

cility or opening your own one-person shop, you need some business skills. Is there training in maintenance and troubleshooting of hardware and software? It's rare that a prospective employer asks an applicant, "Can you mix a 12-piece funk band?" More often, they want to know if you can upgrade all of the Pro Tools systems in the house during the next five days. Does the school bring in professional musicians for sessions so you can learn how to communicate with and conduct yourself around the folks who will someday be your clients?

Are there job placement services and internships?

Does the school keep an active file of potential employers looking for new hires, and will they help you contact them, or will they just tell you to look up names in the *Mix Master Directory*? Internships, which allow you to spend a predetermined amount of time in an entry-level position at a studio or a company, are incredibly helpful in understanding how the business works and how to behave in a real work environment. Sometimes internships are paid, but if they aren't, it makes them no less valuable. Occasionally, intern-



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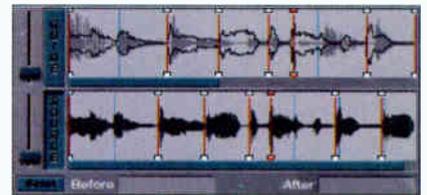
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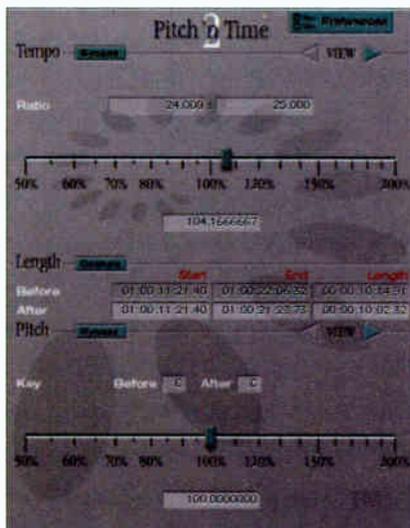


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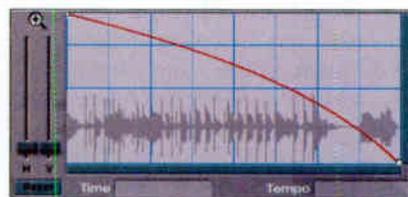
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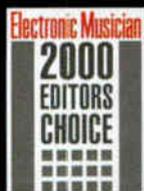
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ships can even lead to a job with the same company—but if you make that an expectation of your internship, you may well be disappointed, and it could end up backfiring. Often enough, internships will show you what kind of job you *don't* want—and that's an important part of your education, too.

Is the school in a geographical area where you would like to end up?

With more of the music industry becoming "virtual," this is somewhat less of a concern than it used to be. A studio in Albuquerque looking for new talent may be just as likely to fax a job description to a school in Boston as to one in Santa Fe. As it happens, some of the best schools are in areas where there is little going on, production wise. But going to school in a city where you'd like to live afterward certainly has advantages. You get to know the area and what it's like to live there. The faculty members are generally part of the local scene, and if you make a good impression on them, they can help you make contacts. You'll make friends in school (hopefully), so you'll have a social network to draw on—not to mention a potential roommate pool—which can be really helpful in those first few underpaid months. While you're in school, you can go out and learn about the local studios, clubs and dealers, and they'll know who you are when you come back looking for a gig. Sometimes starting fresh in a new city after school works great, but comfort and familiarity can be important, too.

Just how good is the school, really?

Every school will tell you it's the best, the biggest and the most successful and has the latest, greatest and coolest facilities and faculty. There are full-time PR people cranking that message out, which means you have to work hard to find the real story. Unfortunately, there's no *Consumer Reports* or even *U.S. News* guide to recording schools, not even in *Mix*, so there's no easy source of info. For starters, ask about the school's job-placement ratio—and not just how many of their graduates are working (presumably all of them are doing *something*), but how many are in careers for which the school trained them. Try to find out the dropout rate. If a lot of people leave in the middle of their studies, then it could mean something's wrong. And you also want to know the faculty turnover rate. If there is a whole new crop of teachers every year, then that's also a bad sign.

Your best source of information, and you can't get too much of this, is to talk to people who have already been through the program. Ask the school to give you names of both current students and graduates. But recognize that from those carefully chosen names, you will probably get only good reports, and you will be doing yourself a favor if you find some people who have had negative experiences, as well. Ask the alumni and students you initially talk to for the names of students who *didn't* make it all the way through, or who ended up leaving the field entirely after graduating, and find out what happened. Did they learn all they needed to know the second semester and hit the road with a major tour? Did they realize the audio industry wasn't for them and figure that day-trading or painting houses was more their style? Or were they turned off by something about the school and decided to go elsewhere for their education? There are a number of Web mailing lists and Usenet groups (not to mention the Education section in *Mix Online's* Helpfile forum) where people talk about their experiences with audio schools, and you should check them out. Of course, as always, when dealing with the Web, take most of what you read with a grain of salt.

If you've made it this far, I hope you've been able to narrow down your search and feel confident you're making the right decisions. After 25 years in the education business, I know that the purpose of education isn't really to provide you with answers, it's to teach you how to ask the right questions. And I also know that regardless of where you go to school, your *real* education starts the moment your schooling is finished. Good luck! ■

CORRECTION

Due to an editing error, two paragraphs were deleted from last month's Insider Audio column, "Why We're Missing the Real Problem With Digital Downloading." The complete text of that column can be found on *Mix Online*, www.mixonline.com. We regret the error.

Paul D. Lehrman has been teaching music and audio since 1975 in summer arts camps, adult education courses, private recording schools, public universities and most recently at Tufts University. He is the editorial director of Mix Online (www.mixonline.com).

Digital Patching

(pun Intended)

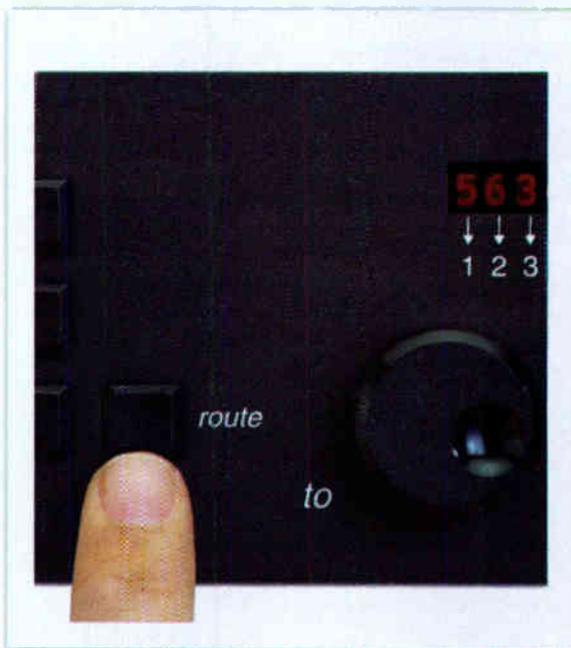
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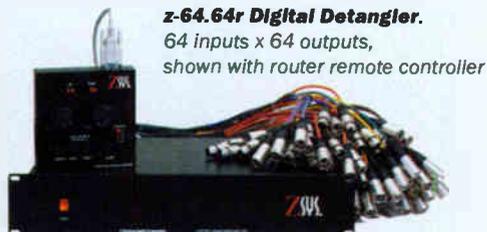
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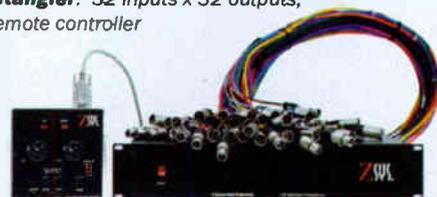
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z-32.32r Digital Detangler. 32 inputs x 32 outputs,
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ENGINE MUSIC STUDIOS

BY SARAH BENZULY

Nestled in Chicago's booming, funky "Bucktown," a studio has emerged from the landscape of Generation X clubs, bustling restaurants and the screech of taxicabs. Engine Studios planted its roots in a three-story loft to develop local talent and replenish the music scene.

In March of this year, Engine Studios opened the doors that once belonged to Idful Studios, which Brad Wood owned and operated from 1988 to 1997. Toward the end of '97, John Humphrey took over as studio manager and serves in the same capacity at Engine Studios. "Brad used to record a couple of bands that I was in way back in the late '80s and '90s," Humphrey says. "He was a freelance engineer who ran a studio, and we had mutual acquaintances who turned me on to him as producer.

ON THE COVER



L-to-R: John Humphrey, Brad Wood and Jep Thornton at Engine Music Studios in Chicago

He ended up making four records for my band [God in Texas] back then, and we just started up a friendship that way."

It seemed a natural step to join forces and create a larger studio. "That is where Jep [Thornton, owner of Engine Studios] had come into the picture to help us build this facility," Humphrey says. Longtime Chicago-area studio designer John Peluso, owner of Custom Engineering, designed the studio. After some time, Wood stepped out, and Thornton and Humphrey went ahead and built the studio, though Wood is not entirely out of the picture; he still works as a freelance producer and contributes ideas. "Essentially, Jep is the owner and I'm the manager," Humphrey says. "It just started out as one other studio, and it kind of morphed into this much larger facility over three years and a series of events."

Engine Studios, like its predecessor, works mainly with local talent. "The music scene here is as fickle and unpredictable as anywhere else in the country," Humphrey explains. "But I think that there is a really large underground—as in not major label—scene here that we gen-

erate a lot of business from. We do a lot of independent label projects."

And Bucktown is the place to do it. This area began its transformation from industrial community to hip neighborhood only five years ago. "Bucktown, Chicago, is like *the* neighborhood," Humphrey says. "If you were a musician coming in from out of town, this is the place to go. You can walk out of here and you're 25 feet away from 30 restaurants and nightclubs."

The studio consists of a control room, live room and two other studios, B and C. The main control room is just as large as the "A" studio, housing two Studer 820s, a fully loaded Pro Tools 5.0 system, Genelec 1039 wall monitors, Genelec 1030 near-field monitors, and a variety of new and vintage outboard gear. "We wanted to create a control room that had a lot of space, was really comfortable to work in for long periods of time," Humphrey says. "There are actually three rooms that incorporate the 'A' room. There is the main tracking room, with another smaller tracking room that also doubles as a sound lock, but is capable for drums and guitars. There is a third room that is also a pretty large isolation booth, where you can get a full drum kit in there."

The entire studio was wired so that an artist can record from any studio to any control room, with eight mic lines that can be cross-patched through the facility. "We've got three studios inside this 6,200-square-foot map," Humphrey says. "We really tried to maximize the use of the space." The studio also has a wide variety of mics. According to Humphrey, one of their silent partners is a microphone collector, whose closet contains more than 100 vintage and new models. "We've got three Neumann 367s here, and there were 105 of them ever made," Humphrey says.

"We just recently installed the Amek 9098i," he continues. "We were looking for a console that was modern but also provided all of the things we liked about old analog consoles. I just basically like the tone; passing audio through it creates a certain characteristic that I think you don't get from a lot of other boards."

Engine Studios recently wrapped up a recording session with local act Gaza Strippers (Lookout Records), one of their bigger projects this year. "It was pretty exciting to go in there and see [the lead singer] do an old-school, straight-up analog rock recording that just sounds killer," Humphrey says. "For me, it is just interesting to see that stuff going on when a lot of people in this day and age are kind of getting away from that type of recording. Just going in live and just doing straight to analog tape.

"We've got analog tape machines in all the rooms," Humphrey says. "For our genre stuff, the people we're aimed at, analog tape is still really viable. We still really love the sound of it. Of course, we're ready to go to digital, but we like to keep both around. I have to see what the future dictates." ■

Who Needs Another Mic Preamp?

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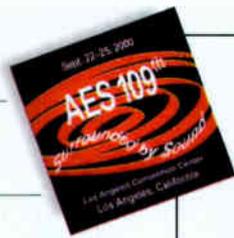
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AES 2000



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Tascam DM-24 Digital Mixer



SADiE Edit Slate

From September 22-25, thousands of audio pros converged on the Los Angeles Convention Center for the 109th convention of the Audio Engineering Society. There was no shortage of cool new products to check out—here are a few that caught our attention.

In terms of fun potential, the most talked about product at AES was the \$249.99 airFX from Alesis (www.alesis.com). airFX processes incoming audio or generates sound effects in reaction to hand movements and offers 50 preset programs that modify any audio signal in real time. "Playing" airFX involves pressing a knob to select, engage, bypass, freeze and release a given effect and then moving one's hand(s) in three dimensions, along the x, y and z axes of an invisible infrared sphere, to create sounds or to alter the incoming audio signal. Hey, mister DJ...

TC Electronic's (www.tcelectronic.com) new Triple-C compressor was on display in single- (\$699) and dual-channel (\$999) configurations. TC was also touting a cooperative effort with Helicon Vocal Technologies (www.tc-helicon.com), which has produced the VoicePrism, a voice formant and pitch processor. The unit includes compression, gating, dual fully parametric EQ, four-voice harmony (with individually adjustable gender controls and humanizing parameters), fifth lead doubling voice for automatic double-tracking and two separate post-effects blocks that include chorus/flange, delay and reverb, and harmony libraries.

Lexicon (www.lexicon.com) wowed audiences with its Version 2 software upgrade for its flagship 960L Digital Effects System. Version 2 supports an additional DSP reverb card, provides mappable I/O, support for 16 channels of I/O, additional pre-

Neumann M150



New Products, New Technologies

BY THE MIX STAFF

sets, dual LARC2 controller support and enhanced input metering. New hardware includes the digital-only version of the 960L—with a considerably lower suggested price of \$11,995 (compared to \$15,000 for the model with A/D conversion).

Sony (www.sony.com) showed new DASK-S704 Sampling Function Software for its DRE-S777 Digital Sampling Reverb. With the S704 software, DRE-S777 users can sample their own spaces and store them on Sony's ubiquitous Memory Stick media. Two new CD-ROM discs ("American Spaces" and "Japanese Acoustic Spaces") were also introduced. Each disc retails at \$930.

Never to be left behind, Yamaha (www.yamaha.com) demoed its SREV1 Digital Sampling Reverb (price TBA). The SREV1 includes the RC-SREV1 Remote Controller and DB-SREV1 DSP Expansion Board. The unit operates in 2-channel (up to 5.46 sec/channel), 4-channel (up to 2.73 sec/channel) or 2-channel x 2 (up to 2.73 sec/channel for each processor) modes. With the addition of the DSP expansion board, reverb time in each mode is doubled, producing reverbs of up to 10.92 seconds.

Quantec returns! HHB (www.hhbusa.com) will distribute Quantec products for the U.S., Canada and Latin America, so expect to see more products such as Quantec's Yardstick 2402 Room Simulator and its Quancom line of AES and clock distributors and digital audio peripherals.

XTA Electronics (www.xta.co.uk) was showing its new SIDD (Seriously Intelligent Digital Dynamics). The single-rackspace unit provides compression, expansion, delay, gate, limiting and dynamic equalization. SIDD is a 2-in, 2-out device with two assignable aux outputs.

CEDAR (www.independentaudio.com) offers the DNS1000 Dynamic Noise Suppressor, a free-



Tannoy Prestige Supertweeters



Lawson L251



Steinberg Nuendo 1.5 for the Mac



Shure KSM44



Yamaha SREV1 Digital Sampling Reverb

standing unit for audio post, live broadcast and forensic audio. Designed for removing unwanted noise—such as rumble, hiss, whistles, broadband noise, camera sounds, etc.—from location sound, sound effects and dialog, the DNS1000 features virtually zero latency, 40-bit multiband processing and an elegant, fast user interface.

New from Rane (www.rane.com) is the RPM 26i multi-effects processor (\$2,295), featuring EQ, crossover, compression and delay, plus splitting and level control. Of particular note, the new model provides an AES3 digital interface.

**ANALOG PROCESSORS:
WARMING UP!**

Optimized for Internet broadcasting, the Model 2020 dynamics processor from Aphex (www.aphex.com) features analog I/O, a leveler, a 4-band compressor, split-band peak limiter and remote control software; options include AES/EBU I/O and stereo generator, plus pre-emphasis limiter. The unit is already in use at many Webcasting facilities—including Westwind Media.com, Christian-PirateRadio.com, GratefulDead.com and Comedyworld.com—in front of data-



GT Electronics VIPRE

compression systems for streaming audio and video content.

Focusrite (www.digidesign.com) emphasized its MixMaster Digital Stereo Dynamics, EQ and Image Processor (\$1,690). Further, the company announced an across-the-board price reduction on all Red Series processors.

GT Electronics (www.groovetubes.com), a division of Alesis, debuted the VIPRE (Variable Impedance PREamp), a mic preamp combining variable input impedance control (steps from 300, 600, 1,000 and 2,400 ohms) and adjustable rise-time in a monoblock design. The all-tube circuit has no transistors, ICs or electrolytic caps, and both fully-floating differential inputs and outputs are switch-selectable. Retail is \$2,199.

Behringer (www.behringer.com) touted the U.S. availability of its Vintager

Line products sporting tube technology. The line includes the Magician T1950 8-channel tube interface, the Tube Ultra-Q T1951 4-band parametric tube EQ and the Tube Composer T1952 tube processor (for adding a warm analog sound to digital recordings).

The Origin STT-1 from Millennia Media (www.mil-media.com) is a mono-channel strip offering mic pre, line input, opto-compressor/limiter, parametric EQ, DI instrument input and opto de-essing. Each function is switchable to provide Class-A, all-discrete J-FET topology or Class-A, all-triode tube circuit, along with switches for choosing transformer-coupled or transformerless audio paths.

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(www.oram.co.uk) Al Schmitt Pro-Channel. Designed expressly for tracking, the all-analog unit combines an optical compressor, 6-band EQ (5 Hz to 32 kHz), A/B/C switching for comparing three connected microphones, phase reverse and mic transformer bypass.

At the JoeMeek (www.pmiaudio.com) booth, the hot ticket was the Trident A-Series Dual Discrete Channel (\$3,499.99) rack module. Derived from the original A-Series design, the unit features a mic preamp, highpass/lowpass filtering, plus series and parallel inductive tuned EQ circuits controlled by linear faders.

Empirical Labs' (www.empiricallabs.com) FATSO is a Full Analog Tape Simulator and Optimizer with classic knee compression. This digitally controlled analog unit's 2-channel audio processor features four types of processing: Harmonic Generation and Soft Clipper; High-Frequency Saturation for warmth; Transformer and Tape Head Emulation; and Classic Knee Compression.

CONSOLES, LARGE AND SMALL...

Tascam (www.tascam.com) created a major buzz with its DM-24 (previewed in last month's *Mix*), a 24-input, 8-bus

automated digital console that offers full 24-bit performance throughout the signal path and can be switched for 12x4 full 24-bit/96kHz operation. Two consoles can be linked for more inputs, but the DM-24's most remarkable feature is its \$2,999 price tag.

German company Klotz Digital (www.klotzdigital.com) showed Paradigm, a cost-effective, compact digital console featuring voice processing on its mic inputs, SRC and machine control on all line inputs. Since it's designed for on-air radio use, we wondered whether Paradigm's technology could be adapted for edit suite, DAW front-end or project studio applications. Hmm...

As reported in last month's *Mix*, Studer's (www.studer.ch) D950 M2 is an upgraded version of its D950 flagship digital production console, featuring 24-bit ADCs, 40-bit floating-point processing on a 32-bit bus, Studer's proprietary Virtual Surround Panning (VSP) and a new central control section with large FFT display.

After impressing attendees at AES Paris, the Trimension-1 Surround Sound Mixing System from Scarab Technology (www.scarab-technology.com) has added "Maitre D'" support for Dolby's

new DP570 Audio Tool with integrated remote control of Dolby E and Dolby Digital, expanding the system's capabilities from 5.1 mixing to include pro surround mastering applications.

Soundtracs (www.soundtracs.com) entered a distribution deal with Fairlight (www.fairlightesp.com) under which Fairlight will distribute Soundtracs digital consoles. Given Fairlight's success in the post market and Soundtracs' emphasis on boards for post applications, this should work out well for both sides.

Digital consoles keep coming, but there were plenty of new analog boards at the show. AMS Neve (www.ams-neve.com) launched the 88R analog desk that combines the attributes of the

Claude Sahakian of Plus XXX Studios in Paris will get the first AMS Neve 88R.



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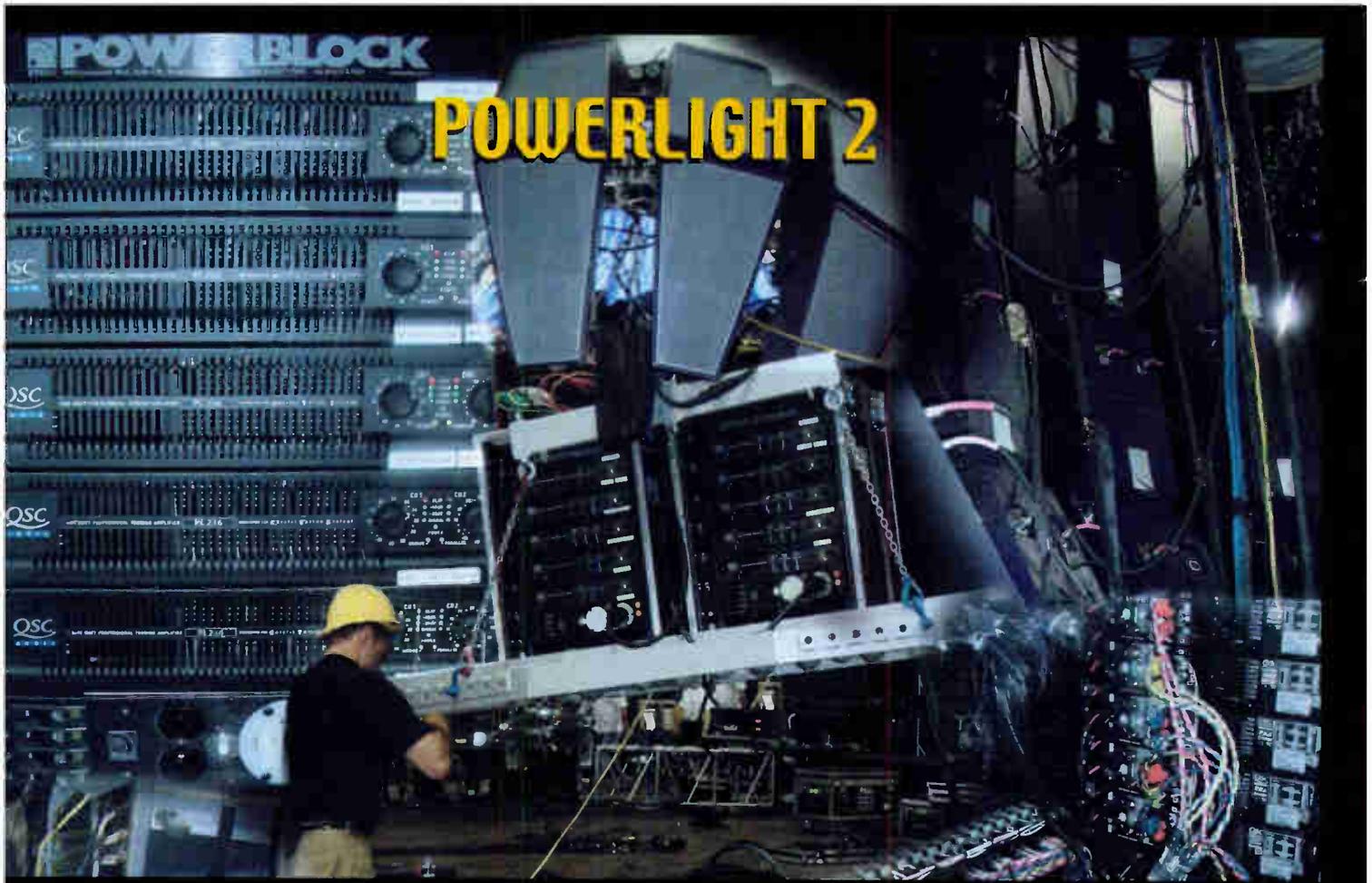


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— Carl Taylor, owner & president of CTS Audio.

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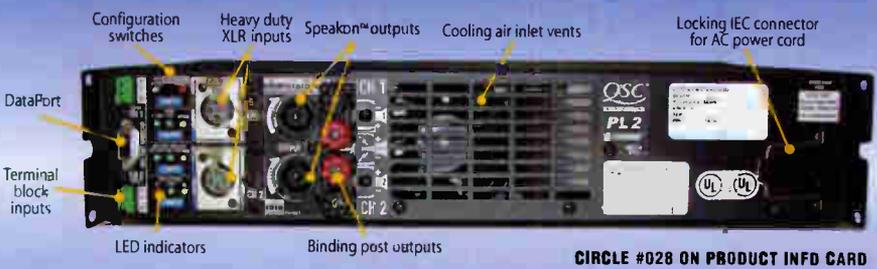
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Rear view of PowerLight 2"A" amplifier



Hear the Power of Technology.

popular V Series music desks with advanced Encore automation and the multiformat surround mixing flexibility of AMS Neve's DFC film console. For more details on the 88R, see *Mix*, October 2000.

New from **Oram Audio** (www.oram.co.uk), the \$36,000 BEQ Pro24 is a professional 5.1 analog 8-bus console with a direct output on each channel for full 24-track recording. The 60mm monitor fader can be used, together with the large fader, to provide LCR outputs; a sub-bass output with built-in crossover can feed a center sub-bass speaker; and the center section features a stereo Hi-Def EQ and a stereo Soni-comp compressor.

Audient's (www.audient.com) ASP510 surround sound monitoring controller adds comprehensive 5.1 monitoring and mix capabilities to any stereo console. The ASP510 supports three 5.1 and three stereo sources, features eight inputs from console bus sends, and provides eight outputs to recorders (5.1 and stereo). Additional features include switchable encoder/decoder insertion connections, six speaker outputs, individual speaker cut/solo function and individual speaker level trims.

RECORDERS!

Have you considered putting Direct Stream Digital capability on your studio's shopping list? Tascam (www.tascam.com) announced plans to develop a DSD recorder based on a modified DA-98HR deck that supports the DSD format for Super Audio CD (SACD). The 24-bit Tascam DSD Recorder could be configured as a 176.4/192kHz 2-track; an 88.2/96kHz 4-track; or as a 44.1/48kHz 8-track. Up to 16 units can be interlocked for true 32-track DSD production.

Mytek Digital (www.mytekdigital.com) showed its D-Master DSD Digital Master Recorder. Housed in a single-rackspace chassis, the unit has four balanced analog inputs/outputs with high-performance converters operating at 64x/128x sampling, and stores DSD streams to DVD-RAM-2, AIT/DLT tape or any SCSI disk. Other features include 2- or 4-channel recording (multiple units can be linked for more tracks), full DSD SDIF digital I/O, 16/20/24-bit and 44.1/88.2/96kHz PCM outputs with noise shaping/downsampling, Sony 9-pin control and an affordable \$6,995 price tag.

HHB (www.hhbusa.com) debuted CDR830 BurnIT, a low-cost (\$699 list) desktop pro CD recorder featuring 24-

bit converters, a fast 2-minute finalize process, RCA analog I/Os, S/PDIF (coax and optical) digital I/O, and a facility for naming discs, artist and track names up to 120 characters per title, for display on CD Text-compatible players.

Don't count analog out yet. **ATR Service Company** (www.atrservice.com) announced its upcoming Aria Reference Electronics. Compatible with most professional recorder transports, including Studer, Ampex, MCI/Sony, Otari and Tascam, Aria is an advanced all-discrete, Class A record and playback circuitry package for upgrading existing analog decks for improved performance, especially for surround mixing/mastering applications.

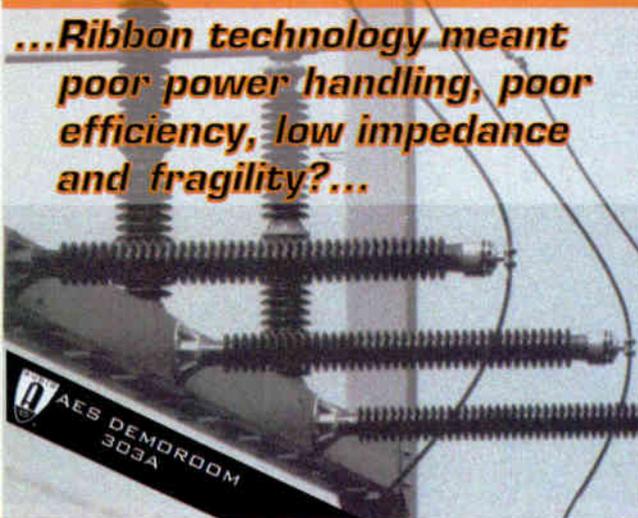
And with all this high-resolution recording going on, **Tannoy** (www.tannoy.com) unveiled the Prestige super-tweeter (\$1,995/pair), a slick set of add-on tweeters that extend the range of your current speakers out to 54 kHz and beyond, by means of a 1-inch titanium dome driver and adjustable internal crossover.

COMPUTER-BASED AUDIO

Berkley Integrated Audio Systems (www.bias-inc.com) showed a signifi-

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Wave Mechanics

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cant upgrade for PEAK: Version 2.5 VST supports—you guessed it—VST plug-ins (25 are included for free!), and has a revamped interface, supports ultra-wide SCSI and has improved metering and guess tempo functions. BIAS also announced development of Peak and Deck for BeOS on the PC, and for Mac OS X. Eventually, BIAS Peak and Deck will be platform-independent.

At Digidesign (www.digidesign.com), the big news was the announcement of Pro Tools 5.1, featuring surround mixing, editing and processing on Pro Tools | 24 MIX/MIXplus systems, with support for all popular surround formats, up to 7.1. Tracks provide multiple output assignments for simultaneous creation of multiformat mixes and independent multichannel panning. Digidesign also introduced Reverb One, a



Digidesign Pro Tools 5.1 Surround Panning Window

cross-platform TDM plug-in for Mac and Windows NT systems.

There were plenty of new goodies from Digi development partners, too. Prosoniq introduced the Orange Vocoder, a real-time AudioSuite effects processor featuring an integrated 8-voice virtual analog synth, graphic EQ, filter-bank reverb effects and more. Line6 showed Echo Farm, a new vintage echo effects processing plug-in based on the same modeling technology used for Amp Farm. DUY showed SynthSpider, a modular synth for TDM. Check out Digidesign's Web site for information on these and other products from third-party developers.

Fairlight (www.fairlightesp.com) announced the new QDC Technology platform, which dramatically improves the speed and audio performance of Fairlight recorders and editors. QDC Technology is standard on all new Fairlight editors and recorders as of September 2000 and forms the core of Merlin, FAME2 and the new Prodigy2 and

TOP 10 LIVE SOUND PRODUCTS AT AES

By Mark Frink

With only a week off from my current touring schedule, I was less than enthusiastic about spending time at the L.A. Convention Center. Fortunately, several manufacturers showed new products that made the trip worthwhile. Here are my picks:

Allen & Heath's (www.allen-heath.com) ML4000 is a VCA-equipped, 12-aux, 8 audio group FOH/monitor live console with eight mute groups, 4-way matrix, enhanced LCR and IEM facilities, and an "engineer's toolbox" master section including intercom, pink noise generator, assignable talk-back/headphones and local and wedge monitor feeds. It's offered in 32-, 40- and 48-channel frames; optional 24-channel sidecars can expand the board to 96 channels.



Allen & Heath ML4000

Beyer (www.beyerdynamic.com) introduced the first five models in a new Opus line of microphones. The Opus 69 hypercardioid dynamic (\$299 list) employs low-mass Hostaphan™ diaphragm material, which Beyer has already used successfully in the TG Series dynamic mics. Other new Opus mics include the Opus 81 cardioid hand-held condenser (\$425 list), the Opus 65 kick drum mic (\$345), the Opus 83 pencil condenser (\$339) and the Opus 51 boundary layer microphone (\$425).

BSS (www.bss.co.uk) introduced the affordable MiniDrive™ loudspeaker management system in two models: the 2x4 FDS-334 (\$1,250) and the 2x6 FDS-336 (\$1,500). Something of a cross between BSS's OmniDrive Compact and JBL's DSC 260, the new MiniDrive units lose the OmniDrive's graphic display but retain many features from the Compact Plus. Additionally, the MiniDrive's crossover and EQ functions can be

controlled from SIA Software's Smart program.

Cadac (www.cadac-sound.com), now represented in North America by Group One Ltd., introduced the modular R-type touring console (about \$100k for 40



The Group One and Cadac crew unveil the R-type mixer.

mono and 11 stereo inputs). Utilizing slimmer (1.4-inch) "plug anywhere" modules and 24-slot modular subframes, users can construct any configuration of up to 16 stereo aux/group sends and up to 200 inputs. The R-type was developed with much input from touring engineers, and its flexibility and expandability are expected to excite interest from rental houses.

innovaSON (www.innovason.com), French manufacturers of the digital live desk distributed by Sennheiser, introduced the 32-input, 12-auxiliary Compact Live, which has a list price of about half that of the standard model, and the 96- (or more) input Large Scale. The Compact has all eight A/D and D/A cards built right into the back and has an integrated flip-up screen, making the console a single lightweight piece with no additional parts. The Large Scale uses 48 input faders and three pages to cover all its inputs. All innovaSON desks use the same software and interchangeable parts.

JBL (www.jblpro.com) introduced its VT 4889 VerTec line array at the Wiltern Theater, where the new system was demonstrated with a live band. Employing

—CONTINUED ON PAGE 52



InnovaSON Compact Live

STUDER



Photo: Sam Bergmann by Madsen and Stehr

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MF3.48 systems. QDC enhancements include seamless, gapless punch-in and punch-out on all 48 tracks simultaneously, built-in networking, instantaneous screen redraws, background Exabyte Mammoth 2 tape backups at over 40x mono play speed, and more.

Look for upcoming broad-based media applications from WaveFrame (www.waveframe.com). The company has acquired certain assets and trade names of Diaquest Inc., maker of software tools for image networking, animation and video device controls used in the broadcast television, desktop video production and special effects markets.

Rocket Network (www.rocketnetwork.com) was in full force. Digidesign announced that future versions of Pro Tools would be Rocket-compatible via virtual "DigiStudio" workplaces. Meanwhile, WaveFrame announced plans to implement the RocketPower API into future versions of its FrameWorks DX and Waveframe/7 DAWs. Euphonix (www.euphonix.com) demonstrated use of Rocket interconnectivity for collaborative, long-distance production using the Euphonix R-1 multitrack and its TEC Award-winning System 5 digital

console running under new eDeck software. eDeck was also proposed as a means of simplifying file transfers between the R-1 and Sonic Solutions systems for DVD authoring applications.

iZ (pronounced "is") Technologies (www.recordingtheworld.com), creators of RADAR technology, announced direct distribution of the new-generation RADAR products, including the RADAR24 and RADAR48. RADAR24 is a 24-track disk recorder with the same technology, options and features as its predecessors, RADAR and RADAR II, but at a dramatically reduced price: configurations start at \$4,995. RADAR48 is a complete 48-track disk-based recorder with the same features as the RADAR24. iZ also introduced the RADAR M8 Surround Sound Master Recorder, a 192kHz, 8-track hard disk recorder. Other iZ debuts included the Eclipse full-feature remote controller for RADAR24, and the new Paradigm studio remote control for RADAR24 and RADAR48, which includes a TFT flat-screen display with touch-matrix control.

The Edit Slate integrated LCD work surface display from SADiE (www.sadie)

—CONTINUED ON PAGE 151

—FROM PAGE 50, LIVE SOUND TOP 10

axial symmetry, dual-coil drivers, a new compression driver and a composite enclosure, the 152-pound VT 4889 VerTec synthesizes some of the best in contemporary technology and design and is sure to be a quick addition to riders and bids.

McCauley (www.mccauley.com) showed its three-way SM950-2 floor monitor (\$3,480), which employs a 15-inch woofer and a 10-inch coaxial mid with a 2-inch compression driver. Offering two angles for wedge applications, the SM950 can also be stood upright to serve as a full-range P.A. or fill enclosure.

Radian (www.radianaudio.com) introduced the RMW-1152 coaxial 15-inch MicroWedge™, priced slightly higher than its first MicroWedge offering, the RMW-1122 12-inch co-ax (\$1,900 list). Both monitor cabinets contain a 2-inch compression driver, are rated for 500 watts RMS, and can be switched between active or passive crossover. Coaxial wedges take up less floor space than traditional floor monitors, while ensuring smooth response from a single point source. Additionally the MicroWedge's floor-loading port allows a mic stand tripod base to be placed with one leg inside the cabinet, putting

stand and performer closer to the source.

Rapco (www.rapco.com) premiered a 200-pin version of the LK multipin connector, the LK-200. It provides 66 channels of audio in rugged, round, military-spec connector that mates with a quarter-turn, bayonet-style ring-lock. Locking confirmation is threefold: audible, tactile and visual. Rapco also offers a 66-pair snake wire that fits the new connector backshell; if your last snake didn't have enough channels, here's a solution. The next size down is the LK-150, which offers 50 channels. Pin for pin, these connectors cost only about 25 percent more than an Elco.

Sound Devices (www.sounddevices.com) introduced the paperback-sized USBpre (\$695 list), a 2-channel preamp for USB-equipped computers. The unit has dual XLR, ¼-inch and RCA connectors on one end, and headphone and RCA line outs on the other. Controls include input level pots, 48V phantom power and a mix control for panning between the preamp and the computer audio from the USB bus. The USBpre draws less than a half-amp and can be hot-plugged. Whatever your laptop's remote audio application, this little 24-bit charm needs to be in your gig bag. ■

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Sam Phillips with Stevie Wonder

With more than 800 people packing the Biltmore Bowl in the Biltmore Hotel, downtown Los Angeles, it was standing room only at the 16th Annual TEC Awards, held on September 23. Along with awards in 28 categories, original Sun Records bandleader Ike Turner helped induct Sam Phillips, founder of Sun Records and Sun Studios, into the TEC Awards Hall of Fame. Stevie Wonder accepted the Les Paul Award on behalf of Sir Paul McCartney.

Next month we will have a complete photo wrap-up. Meanwhile, here are the winners:



16th Annual TEC Awards Winners

I. OUTSTANDING INSTITUTIONAL ACHIEVEMENT

Acoustics/Facility Design Company
Russ Berger Design Group
Dallas, TX

Sound Reinforcement Company
Clair Brothers
Lititz, PA

Mastering Facility
Bernie Grundman Mastering
Hollywood, CA

Audio Post-Production Facility
Skywalker Sound
San Rafael, CA

Remote Recording Facility
Record Plant Remote
Ringwood, NJ

Recording Studio
Record Plant
Los Angeles, CA

II. OUTSTANDING CREATIVE ACHIEVEMENT

Audio Post-Production Engineer for Film
Ben Burt

Audio Post-Production Engineer for Television
Sue Pelino

Remote Recording Engineer
Kooster McAllister

Sound Reinforcement Engineer
Robert Scovill

Mastering Engineer
Bob Ludwig

Record Producer
John "Mutt" Lange

Recording/Mixing Engineer
Mike Shipley

III. OUTSTANDING TECHNICAL ACHIEVEMENT

Ancillary Equipment
MOTU MIDI Timepiece AV-USB

Amplifier Technology
Bryston 14B Pro

Mic Preamplifier Technology
Summit MPE-200

Computer Software & Peripherals
Sonic Foundry Vegas Pro

Microphone Technology
Neumann KMS105

Sound Reinforcement Loudspeaker Technology
Meyer Sound UPM-1P

Studio Monitor Technology
Genelec 1036A

Musical Instrument Technology
Kurzweil K2600

Signal Processing Technology/Hardware
TC Electronic System 6000

Signal Processing Technology/Software
Antares Microphone Modeler

Recording Devices/Storage Technology
Tascam DA-78HR

Workstation Technology
Digidesign Pro Tools 5.0

Sound Reinforcement Console Technology
Midas Heritage 3000

Small Format Console Technology
API 7600/7800

Large Format Console Technology
Euphonix System 5

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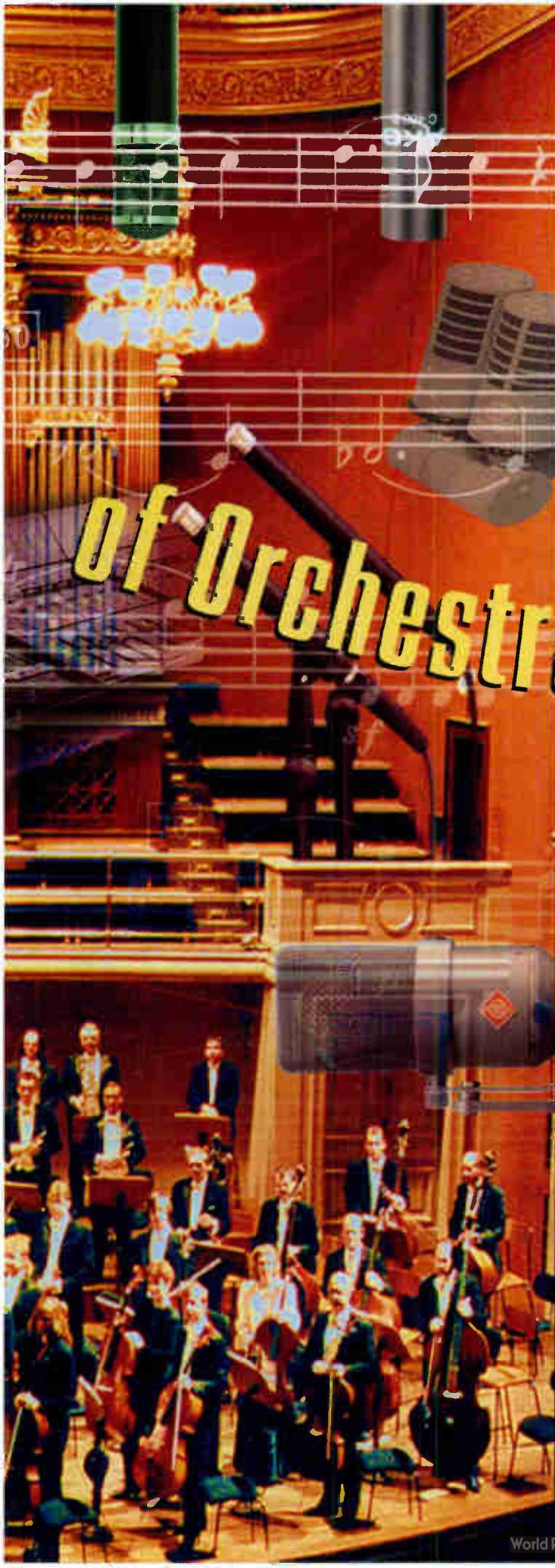
Clarinet, Bassoon

Violins

Violins, Clarinet

THE Changing Landscape





O

nce upon a time, orchestras were recorded

BY PAUL VERNA

using two or three microphones. No mixing was ever done after the fact, so the entire production hinged on the performance, the choice and placement of the microphones, and the quality of the recording medium.

of Orchestral Recording

These days, orchestral recording takes almost as many forms as pop recording, with spot mics, multichannel arrays, post-production and editing among the techniques employed to deliver the final product to the home. In most cases, the object is the same: to convey as realistic a sonic image of the orchestra as possible. However, the means by which producers, engineers and label owners arrive at their final goal vary widely.

At one end of the spectrum, producers such as Michael Hobson of Classic Records and Tam Henderson of Reference Recordings rely on simple mic setups to capture live orchestras playing classical repertoire. Their use of spot mics is limited, as is their after-the-fact alteration of their recordings. For all practical purposes, they are what the industry labels "purists."

PHOTOMONTAGE BY TPOALLAS

"As far as I'm concerned, classical music in a concert hall is what it is," says Classic's Hobson, who recently produced the Moscow State Symphony Orchestra's performance of Shostakovich's Fifth Symphony and Rimsky-Korsakov's *Scheherazade* for release next year on DVD-Audio. "It's inherently an acoustic event, unamplified, except for some 20th-century composers who use amplification as part of their work. I'm not a fan of classical records that have 40 or 50 mics and everything microscopically recorded and massively mixed."

And the other extreme, producers Kurt Munkacsi and Michael Riesman—who are best known as the recording team behind contemporary composer Philip Glass—break all the rules of classical music. They use click tracks and headphones and capture the orchestra section by section rather than as an ensemble. Furthermore, they approach the mixing process the way a pop producer would—as an art unto itself, almost separate from the recording of the music. And the Munkacsis and Riesmans of the world don't even pretend to render realistic sonic tableaux of the performances they produce. They are admittedly in the business of creating their own aural landscapes.

"The true classical recordist is making a sonic photograph, and they're not even using a multitrack machine. They're using a stereo pair of microphones and catching the true performance," says Munkacsi. "There's something to be said for that. But that's a different kind of artistic expression from what we do. In a traditional environment, the piece of music has to be conceived for live performance. You can't say, 'This flute is going to solo over an entire orchestra,' but Philip has the freedom to say, 'Okay, I want everyone to hear the solo flute, even though the orchestra's playing full-out.' We can make music that can't be performed live."

In between the purists like Hobson and Henderson, and

The Changing Landscape of Orchestral Recording

ald Sutherland.

"All my stuff is soundtrack-oriented," says Smith. "It's different from a classical orchestra in that the composers always want some sort of after-the-fact control over the balance. That's why we have spot mics."

Smith's setup varies from project to project, but typically he uses a Decca tree—three omni mics arranged in a triangular pattern, with the center mic forward of the left and right ones—supplemented by various additional mics. For the main mics, Smith tends to use a set of Schoeps CMC-6s that he acquired from Wes Dooley at Audio Engineering Associates. To convey more width, Smith employs pairs of B&K 4003 omnis in the front and back of the hall. Closer to the source, Smith might use Neumann KM184s on the first and second violins, Neumann TLM193s on the violas, Soundelux U95s on the basses, Royer ribbon mics on the woodwinds and low brass, a single Neumann TLM170 on the trumpet, and a pair of Audio-Technica 4050s on the French horns. On a recent production, Smith miked the percussion with a TLM170 over the timpani, a pair of AKG 460s on the mallet percussion, and another TLM170 on a low bass drum that was used for a special effect. Ultimately, Smith uses the spot mic signals only sparingly in the mix. "You try to get everything off the main mics, but if the composer says, 'I want some more first violins,' you've gotta be able to do it," he says.

FORMATS

From the standpoint of recording formats, the choices are much broader than they were even a few years ago, when producers faced a simple decision between analog and digital, without much nuance in each category. Today, the prevalence of high-resolution digital formats presents recordists with an embarrassment of riches—and a sometimes overwhelming range of options.

In a traditional environment, the piece of music has to be conceived for live performance, but Philip [Glass] has the freedom to say, 'Okay, I want everyone to hear the solo flute, even though the orchestra's playing full-out.' We can make music that can't be performed live. —Kurt Munkacsi

the mavericks like Munkacsi and Riesman, are realists who render live-sounding documents of orchestral performances but employ tactics often reserved to the pop producers. For instance, Steve Smith of Seattle's Music Works Studios (formerly Xtreme Studios) uses extensive microphone setups and post-production processing in his work, which consists almost exclusively of orchestral recordings for soundtracks. His credits include the sci-fi epic *Battlefield Earth* (featuring John Travolta), the IMAX extravaganza *Everest* and the recent thriller *The Art of War*, starring Wesley Snipes and Don-

Smith prefers cutting to 2-inch analog tape at 15 ips with Dolby SR noise reduction. He has recently experimented with a Euphonix R1 hard disk recorder, but otherwise has shunned digital formats. On the other hand, Munkacsi and Riesman are among the few classical producers/engineers who have wholeheartedly embraced the Digidesign Pro Tools platform—the leading digital audio workstation of the pop world. Others use tape-based digital systems like the Sony 3348 or the Tascam DA-88.

Sometimes, the format decision is dictated by the multi-

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World Radio History

channel needs of the project. For instance, a producer wishing to record six channels of 24-bit, 96kHz signals without using compression is likely to opt for a high-resolution hard disk recorder like the Genex, rather than tape-based systems like the 3348 or DA-88, because the latter are not designed to operate at high sampling rates. Many orchestral recordists also choose to work in the multichannel domain even if their final releases—at least for now—are only in stereo.

Tom Lazarus, a partner in the New York mastering studio Classic Sound and a freelance recording/mixing engineer, has been working predominantly in surround sound formats over the past three years, but he admits that most of his multichannel work has yet to see the light of day as commercial album releases. So far, Lazarus' efforts can be appreciated only in HDTV or in other special projects.

Lazarus and other multichannel pioneers like Hobson and Henderson plan to release titles in the DVD-Audio format—when it arrives—because it would be the only commercially available sound carrier that would deliver up to six channels

The Changing Landscape of Orchestral Recording

ny recording with the idea of having a DVD-Audio disc made from a project that was ideal for the format. It's an acoustic record that was meant to convey the realism of being in an orchestral hall during a live performance. We're trying to convey to the home theater listener the full 24/96 experience."

As one might expect, the aesthetic approaches to multichannel recording vary as widely as the repertoire itself. Lazarus says, "Most of my classical work is done in surround, and there isn't much involved in it. The rear speakers are just the ambience of the hall, and I don't use the subwoofer unless I'm doing a film score. However, I really believe in the center channel for surround stuff, to give the listener a much wider sweet spot."

For the Moscow State Symphony recordings, Hobson chose a six-microphone array for the multichannel signals. "We had a main pair of left and right microphones on the stage," he explains, "in rear of the conductor, plus spot microphones to the left and right." In addition, Hobson used a rear stereo pair to capture reverb and ambience and used the subwoofer channel for a band-limited mix of all five main signals.

He says, "We routed the main left and right microphones from the stage to the DVD-Audio left and right channels and added the output from the far-right spot microphone favoring the celli and bass to the right channel only. The left-side spot microphone, which was aimed at the concert master and first violin, was routed and level-balanced to both the left and right buses for the DVD-Audio mix. We blended the various onstage sources to produce a center-channel output."

Besides the multichannel master, Hobson and his team—session engineer Eric Bickel and location engineers Marc Aubort and Joanna Nickrenz—recorded a 24/96 stereo version for compatibility with DVD-Video players.

From the stage, the signals flowed from six mic preamps to 24-bit A-to-D converters, which fed a PC-

based hard disk recording system based around three 2-channel cards controlled by Samplitude software from SEK'D. The tracks were later transferred at full resolution to a Euphonix R1 hard disk recorder and mixed at Emerald Sound Studios in Nashville on a Euphonix System 5 console, which operates at 24/96.

As illustrated by the Moscow Symphony project, even when the goal is to create a multichannel master, producers almost invariably make a stereo mix as well. Sometimes, the need for two different master formats entails double-miking at the sources; other times, the stereo signal can be extrapolated from a mic array designed for surround sound capture.

Lazarus says, "I try to record in surround and stereo simultaneously. Your mics are usually farther back with stereo than with surround, so that requires double-miking." On the other hand, Reference Recordings creates its stereo and multichannel masters from the same mic sources, ac-

The rear speakers are just the ambience of the hall, and I don't use the subwoofer unless I'm doing a film score. However, I really believe in the center channel for surround stuff, to give the listener a much wider sweet spot.

—Tom Lazarus

of 24-bit, 96kHz audio.

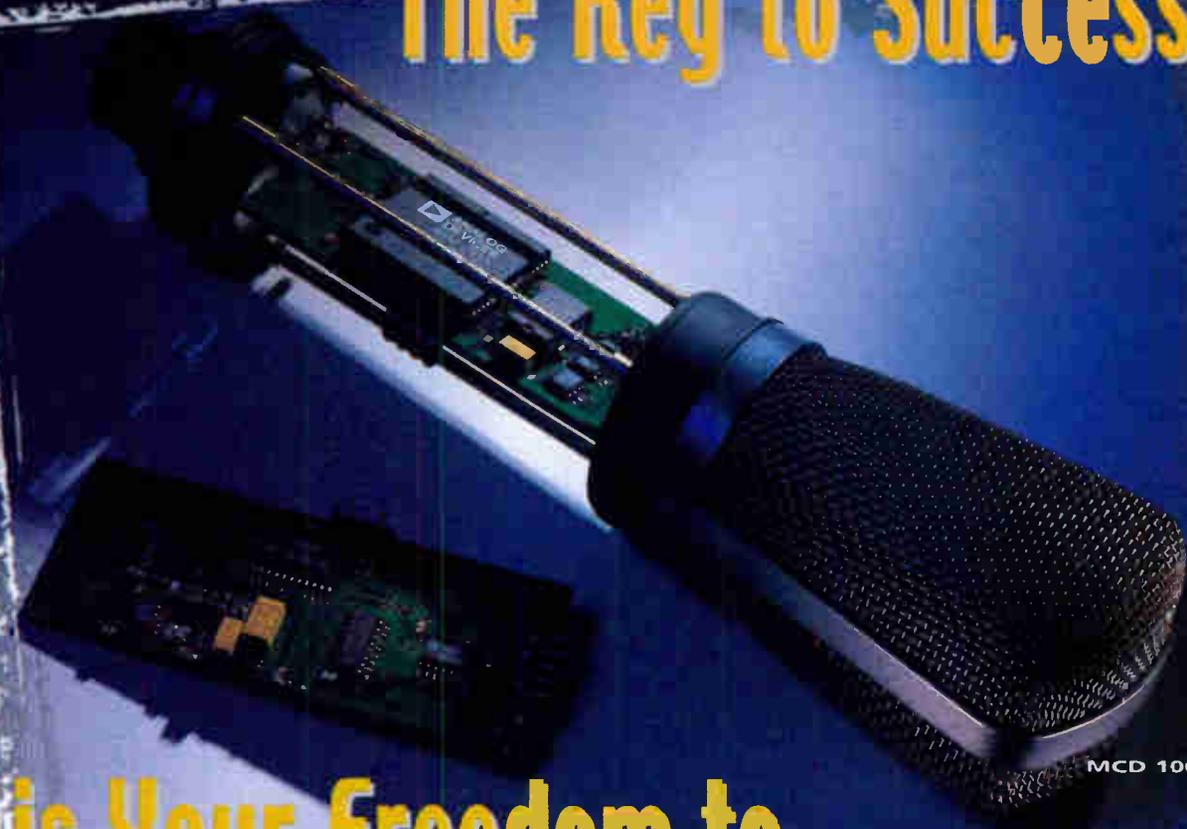
For now, though, classical producers who cater to discriminating music fans feel that their hands are tied when it comes to multichannel. "I hadn't done much 5.1, mainly because the 5.1 options that have been out there have all involved some means of compression, whether it's DTS or AC3," says Hobson. "The market I appeal to is the audiophile market, and lossy compression is just not something we can talk about, no matter whether it sounds good or not."

SURROUNDED

The lack of a release medium has not stopped classical producers from recording, mixing, editing and archiving their masters in various surround sound media, however. "These days we're recording everything in 5.1-channel surround for DVD-Audio when and if it gets off the ground," says Henderson.

Hobson adds, "We did all of the Moscow State Sympho-

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cording to Henderson.

If classical recording specialists agree on one aspect of the multichannel experience, it's the fact that almost all orchestral music makes discrete use of rear speakers, at least when compared to contemporary 5.1 pop recordings.

Lazarus notes, "If we're monitoring in surround in our listening room or in a control room backstage at some venue, the first thing people usually say when they come in is, 'Turn the rears on.' What they don't realize is that those speakers are actually on, but because they're not creating any special effects people think they're not on. However, if you turn the rears off, you really notice it. It's more of a relative difference than a special effect."

Hobson adds, "When something is so far out of context as to be distracting as opposed to enhancing, that's where I draw the line. I've heard a lot of things that were more for theatrical value, like a movie, as opposed to an enhanced musical experience."

One reason classical producers take a conservative approach toward the multichannel medium is that, in most cases, their mandate is to reproduce the ambience of a hall. In a perfect world, a hall sounds good enough to capture with a few well-placed mics. However, in most real-life scenarios, the venue must be "helped along" with additional mics and artificial reverb.

EFFECTS AND CLICKS

"Halls are a bitch," says Henderson. "Finding a good one that has proper acoustics and doesn't have traffic noise is really difficult. Sometimes I envy people who just walk into a studio and set up their mics in a soundproof room. But we can't work our magic that way, especially not with large orchestras. Even large studios and scoring stages that are big enough to accommodate 100 musicians just don't have concert hall acoustics."

Because of the difficulty in finding good-sounding venues—especially in the U.S.—producers and engineers tend to hone in on the few that they like. For instance, Henderson says the Myerson Symphony Hall in Dallas is "marvelous in its basic characteristics" and has "tremendous flexibility" for adjusting reverb times. Smith, for his part, has discovered that St. Thomas Chapel at Bastyr University in suburban Seattle is a great-sounding venue for his purposes.

In most cases, however, the characteristics of the hall leave much to be desired, and there isn't much that producers and engineers can do about it other than try to enhance their recordings after the fact. That means adding equalization or artificial reverb—practices as controversial as they are widespread in classical circles.

Smith readily admits to using a Lexicon 480L reverb unit to touch up the ambience on his mixes, and Munkacsi and Riesman apply EQ, reverb, compression, and various other processes as liberally as a pop engineer might. In fact, Munkacsi and Riesman are so far afield of standard classical music recording that they have alienated many members of the old guard.

Munkacsi recalls an anecdote that illustrates the tenuous relationship between the Philip Glass team and the classical mainstream:

"We were playing in a music college somewhere, and I happened to be standing in the back of the hall while the ensemble was performing onstage. There were two music professors in the back who had been introduced to me earlier,

The Changing Landscape of Orchestral Recording

but they didn't see me walking around. So I was standing behind them, and I heard part of their conversation. They were saying, 'And you know, what bothers me the most, is the audience actually seems to be enjoying it!'"

Similarly, Riesman remembers a Glass opera release that contained information in the liner notes about the method of recording. "We referred to things like click tracks and artificial reverb, so people came down on the recording just because of the way we had done it," he says. "So, for the next opera recording, we did it exactly the same way, but we didn't say anything about it in the liner notes, and everybody liked it."

Munkacsi and Riesman's use of click tracks is a technique that clearly sets them apart from their mainstream counterparts. "We use a click, but the click track is dynamic," says Riesman. "It's not just one tempo from beginning to end, even if Philip wrote one tempo. The click track is based on a performance."

For a studio recording of Glass' Symphony No. 5, cut at Looking Glass Studios in Manhattan and due for release this fall on Nonesuch Records, Riesman mapped out the tempos of the various movements based on a recording of the premiere performance of the piece. "I made a list of all the tempos and went over them with both Philip Glass and Dennis Russell Davies, the conductor, and discussed each instance where the tempo changed—either that it wasn't marked or that the tempo differed from the tempo that was indicated in the score," says Riesman. "Then we made musical decisions on a case-by-case basis. So each of these issues got resolved, but when we got to the recording session I still had the flexibility to change something, because I didn't print the click to tape; it ran live, so I was able to make changes."

Munkacsi adds that, in pieces where he and Riesman do not have recordings to work from, they hire a conductor and a pianist to record the piece from beginning to end; the tempi are then derived from that performance.

Like many producers and engineers working in an orchestral milieu, Munkacsi and Riesman were afraid that symphony players would bristle at the notion of playing to a click, or even wearing headphones. Surprisingly, they found that most musicians actually appreciated the rhythmic reference.

Munkacsi says, "When we first started doing this, classical musicians weren't used to doing overdubs, let alone playing with clicks and wearing headphones. So when we went to record an opera in Germany, using a real German opera orchestra with real German classical musicians who didn't do jingles and stuff on the side, we were really worried that they were going to flip out and walk out of the room. So the session started, we gave them the headphones, put the click in, and it turned out the German musicians loved the click. They couldn't get enough click! They kept wanting us to turn it louder and louder!"

The Glass team's experiences with click tracks underscore the changing landscape of the orchestral recording industry. For all its adherence to tradition and its strict aesthetic guidelines, the classical world is increasingly open to new ways of recording, editing and mixing. Even those who fall in the purists' camp admit that the appearance of realism is more important than realism itself. As Henderson says, "Our objective is to get a realistic, 3-D picture of the orchestra in ideal form—maybe more ideal than the real thing." ■

Paul Verna is a New York-based freelance writer.

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Illustration: Adam McCauley

CHOOSING A

Digital CONSIDERATIONS Audio FOR GETTING IT RIGHT Workstation THE FIRST TIME

Digital Audio Workstations (DAWs) have become the Swiss Army Knife of professional audio. In the past 18 to 24 months, the availability of fast, relatively inexpensive hard drives and the arrival of ever-faster host processors and data bus speeds have created a market in which the benefits of random access, such as advanced editing functionality and ability to rapidly locate to any point within a project, are now within reach of more musicians and audio professionals than ever before. DAWs now come in an astounding variety of packages and at an equally confusing number of price points—knowing what to look for before you part with your hard-earned cash can go a long way toward ensuring that your purchase is right for your application.

BY ROGER MAYCOCK



really care about the OS? Probably not.

File compatibility, on the other hand, is a very important issue—particularly if you work in audio post-production where material is routinely transported from one facility to another. As Digidesign's Pro Tools is the de facto standard in audio post, will your DAW generate compatible files? What about disk formats? Is the DAW able to read and write to Mac and PC-formatted media? Is OMF (Open Media Framework) supported? How about broadcast .WAV? Depending upon who you typically exchange files with, these questions need to be addressed in advance of your purchase.

Though file and disk-format compatibility may be handled more easily via computer-based systems, this is not to say that dedicated hardware is less capable. According to Mike Newman, director of product management at TimeLine Vista, Tascam's development partner on the MX-2424, "Recognizing that the MX-2424 could not be an island unto itself," Tascam talked with numerous manufacturers to develop and install file-conversion utilities and additional software.

Signal processing is another area where the term "native" frequently arises. While dedicated hardware typically enjoys a distinct advantage in the user interface area, computer-based DAWs frequently offer more versatility in signal processing. There is now an incredible number of signal processing and synthesis plug-ins that can be tightly integrated into a DAW's feature set—particularly if that DAW is computer-based.

Some plug-ins rely on the computer's CPU, or host processor, to provide reverb, delay, compression or other DSP functions desired by the operator. This dependence on the host CPU is commonly referred to as native processing. While you may hear that such applications can be a "drain" on the computer's resources, this is less likely to be an issue with the 866MHz, 933MHz or 1GHz processors found on newer computers—similarly for the higher-end PowerPC processors in the Macintosh camp. These processors, combined with a healthy dose of RAM, will take you a long way.

There are, however, digital audio

cards (such as Korg's OASYS PCI) that integrate synthesis, effects processing and audio I/O into a single entity—complete with onboard DSP capability that does not rely on the host processor. Such signal processing functionality is considered nonnative. Whether native or nonnative DSP functions are better depends on the computer, the amount of onboard RAM, the number of tracks you're running and a number of other factors. For the most part, there is no definitive answer here.

WHAT BUS ARE YOU WAITING FOR?

The pipeline responsible for moving the vast amounts of data in a DAW is referred to as the data bus. There are essentially two architectures for moving this information—EIDE (Enhanced Intelligent Drive Electronics) and SCSI

**Regardless of whether
your DAW is
computer-based or
uses dedicated hardware,
always use
a dedicated hard drive
for your audio.**

(Small Computer Systems Interface). EIDE and SCSI are found in both computer and hardware-based DAWs—understanding a bit about them can help you decide which data transfer method suits your requirements.

Most off-the-shelf computers (both Mac and PC) now use EIDE. While an EIDE-based system will save you money up front, it is likely to prove less flexible in terms of system expansion, and the data throughput rate of such systems is generally less than that of a SCSI-equipped system.

If you examine the throughput rates of these two environments, you will find that EIDE systems (now known as Ultra DMA33 and Ultra DMA66) can transfer data at up to 33 MB per second (66 MB/sec for UDMA66) as opposed to 80 MB per second for LVD (Low Voltage Differential) Ultra2 SCSI. This difference in the data throughput rates may have a direct impact on your system's ability to handle crossfades, punch recording and other common recording

tasks when a large number of tracks is involved. Then there's the issue of adding devices.

Regardless of whether your DAW is computer-based or uses dedicated hardware, always use a dedicated hard drive for your audio—not the same drive that houses (in the case of a computer) the OS. On an EIDE system, the controller ports are embedded on the motherboard. Generally, there are two such controllers, each with their own IRQ and each capable of communicating to a master and slave device—resulting in support for a maximum of four devices.

With today's multimedia computer systems, it's common to have two of these ports assigned straight out of the box—severely limiting your ability to add much more. By comparison, a SCSI-equipped system will cost you more up front but will generally be more adaptable to your expansion requirements.

With SCSI, you'll start with a host adapter card and be able to hang upwards of seven devices from that card on a single IRQ. The host adapter will probably default to a SCSI ID of seven, with each additional device having its own unique SCSI ID. LVD SCSI is commonly used in Internet servers, high-end digital audio workstations and film dubbers.

So can you purchase an off-the-shelf computer? Of course, but plan on adding a SCSI card so that you can incorporate a dedicated audio drive and, perhaps, a tape drive or some similar device for backup. This is not to say that EIDE systems should be avoided—it merely points out the ability to expand your DAW with a disk array (for large projects where massive amounts of storage are required) or some other device may be more limited.

SO NOW WHAT?

A DAW can significantly enhance your ability to deliver better work faster and can prove invaluable to the legions of recording facilities that continue to track with MDMs, DASH, open reel analog or a combination of these formats. Having an understanding of digital I/O options, how these systems write and save data, how they process DSP functions and how they handle data throughput, will better position you to make an informed purchase. Doing your homework up front can save both money and disappointment. ■

Roger Maycock is Mix's technical consultant.

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STEVE DAHL AT HOME AND ON-AIR

To Chicagoans, Steve Dahl is a classic radio personality. An irreverent guy in a Hawaiian shirt who makes a living poking fun at things on-air. The perpetrator of the infamous 1979 "Disco Demolition," a conflagration of disco records that lost the White Sox a game by scorching the field at Comiskey Park. One of radio's original "shock jocks."

More than just a radio prankster, Dahl has always peppered his schtick with his own music. He creates parodies of popular songs and writes original material, all of which he broadcasts on his daily show and performs with his band for live audiences. To support his own creations, he has assembled a project studio in his suburban basement, linking music-production tools with the broadcast world.

Back in the '70s, Dahl's musical ventures consisted mainly of mocking popular songs to spice up his radio show. For concocting classics such as "Do You Think I'm Disco," his only tools were a cassette player and a legal pad. He would play back the original song and work out his own tongue-in-cheek lyrics on paper. His producer took care of the rest, re-recording the songs in some local recording studio. Now, Dahl can produce complete, finished recordings in his own home.

After starting with an entry-level Pro Tools system, Dahl upgraded to Pro Tools/16 for more DSP power. New songs begin with riffs he's worked out on guitar. He then sits down at his Korg i4S workstation, lays down a basic track and builds from there. Rhythm and additional synth tracks come from a Yamaha MU90R tone generator, guitar tracks get recorded direct and enhanced with the Line 6 Amp Farm or Pod, and finally he'll lay down vocals. His Mackie Human User Interface helps with the mixdown.

Somewhere along the line, Dahl got tired of only doing parodies of other people's songs and started working on his own material.



PHOTO: PATRICK JOLIAT DAHL

Much of his work is still comedic in its subject matter, although he has done some "serious" songs, including his recent collaboration with Brian Wilson; he contributed lyrics to "Your Imagination" on Wilson's latest album, *Imagination*. Dahl's Pro Tools system made cowriting easier, because he could fly in a rough mix and record vocal tracks, adding and editing until the lyrics worked just right.

For Dahl, whose main vehicle is the airwaves, perhaps the most important aspect of his studio is that it connects him directly to Chicago's WCKG-FM, which broadcasts his show every afternoon. He transfers his music beds or songs via ISDN directly to the station, where he can tweak them upon arrival downtown. "If there's something I want to get done in the morning, but I don't want to go in there three hours early, I can just do it [at home], and it sounds perfect."

He often puts together his own music beds using Sonic Foundry Acid, which he carries with him on his laptop. What he doesn't get done at home before going to work he can do on-the-fly during his show. "I can literally make a

bed for something during a break," says Dahl, "and that's kinda cool."

Dahl can even host his radio show from home, although he doesn't do so too often. "I like to get out of the house," he says, "and my family doesn't think I have a real job anyway, so when I just sit there in the basement doing it, they really think it's not a real job."

The Steve Dahl Show also Webcasts straight from Dahl's basement, launched through his Web site. Dahl plans to cater to the online audience with his current project, "basement tapes" of previously unrecorded songs that he's been playing live, which will be available at www.dahl.com as MP3s.

Having begun his career as an audio engineer, Dahl's paid his dues editing the old-fashioned way. He was thrilled when he got his first taste of editing *sans* razor blade and has gone on to do things he never would have dreamed up in the analog days. "I suppose I could get by without it, but I enjoy having the technology available," he says. ■

Carolyn Engelmann, formerly an assistant editor for Electronic Musician, is a freelance musician based in Chicago.

BY CAROLYN ENGELMANN

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World Radio History

NORBERT PUTNAM

MEMPHIS MAGIC



Norbert Putnam (left) and Tommy Peters founded the Internet business Cadre Entertainment. Housed in a turn-of-the-century bank building, the new venture was created to develop and market new music from Memphis artists.



Norbert Putnam has enjoyed a long and successful career in music and audio. His incredible career has included playing bass as a session musician, to founding and owning legendary studios, to credits as a multi-Platinum producer for artists including Joan Baez, Jimmy Buffett, Dan Fogelberg and many others.

Putnam grew up outside of Florence, Ala., and fell into playing the bass in the mid-'50s at the urging of a friend who was forming a band covering the music of Elvis Presley and Carl Perkins. The friend knew that Putnam's father, a part-time bluegrass musician, had an upright Kay string bass. After being told that "anybody can find three chords," Putnam decided to give it a shot.

In time, Putnam began working with a group of players who would also go on to great success: pianist David Briggs, drummer Jerry Carrigan and singer/songwriter Dan Penn. Their group, Dan Penn & The Pallbearers, along with members of another band called The Fairlanes (which contained future producers Rick Hall and Billy Sherrill), formed the nucleus of the early hit-making scene in Muscle

Shoals, Ala. During the early '60s, Putnam played bass on classic hits by Arthur Alexander, Joe South, Tommy Roe, The Tams and others, and his band opened for The Beatles at their first concert in Washington, D.C.

In 1965, the promise of greater money and opportunity lured Putnam and some of his bandmates to Nashville. Putnam quickly became one of Nashville's most in-demand session bassists, particularly for the more pop, rock and R&B-oriented material. His credits include thousands of records by artists including Elvis Presley, The Monkees, Linda Ronstadt, Tony Joe White, the Beau Brummels, the Manhattan Transfer and Henry Mancini.

In 1970, Putnam and David Briggs started Quadraphonic Recording, and, within three years, Quadraphonic became one of the hottest studios in the country. Sessions recorded at Quadraphonic included hit records like Neil Young's *Harvest*, Dobie Gray's *Drift Away* and Putnam's very first production, the million-selling version of "Night They Drove Old Dixie Down" by Joan Baez. A long run of successful

Putnam-produced projects followed.

By 1980, Putnam and Briggs had sold their interest in Quadraphonic, which continues to be a successful operation. Putnam then acquired a large Victorian home in Franklin, Tenn., called The Bennett House and built a studio in it. Like Quadraphonic, it became so successful that people lined up to get in.

Tired of running to New York and L.A. for mastering, Putnam hooked up with Nashville mastering engineer Denny Purcell, and they started Georgetown Mastering, which, to this day, is one of the finest mastering facilities in North America.

Putnam eventually sold his interests in the still-successful Bennett House and Georgetown Mastering and took a break, pursuing his passion for restoring Victorian and antebellum homes, perfecting his golf game and taking on the occasional project. He eventually settled in a

BY RICK CLARK

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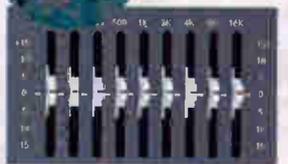
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both felt I should do it. I asked her, "Would you do it in my new studio?" "Sure," she said. I called David Briggs and said, "Wow! We've got a star coming to our new studio."

She had warned me, "I've got 24 sides to record, and we need to do it in five days." I said, "That means we are only doing a song-and-a-half per session, and we are used to doing four." [Laughs.]

I remember during the Baez sessions going out into the hall and there were guys like Dave Loggins, Guy Clark, Jerry Jeff Walker, Jimmy Buffett, Mickey Newbury all sitting out swigging beer and swapping songs. They were also hoping for a chance to hand Baez a cassette of a new song. When we got to "Night They Drove Old Dixie Down," I said to Baez, "Wouldn't it be great if we had a sing-a-long unison kind of chorus, like you would have in a concert?" She said, "Let's try it." So we went out into the hall, and I called in all of the hangers-on. We had about 20 people, and when all of those drunks started singing "Night They Drove Old Dixie Down"—which I think was the most emotional part of that record—it became magical.

So the record goes to Number One, and it sells over a million copies in a very short period of time. I get a phone call from Clive Davis, then president of CBS: "Norbert, I want you to fly up to New York, I'd like to talk to you about producing for CBS." I thought, God has spoken! I'll never have to play bass again. I can be a record producer!

So I go to Clive Davis' big office and I sat down, and he starts off with something like, "Norbert, you are a great genius." That threw me off, because I knew better. He said, "Do you realize that Joan Baez has never sold more than 100,000 on any album in a 10-year career. You have just sold a million-and-a-half and given her a Number One record."

I said, "Well, Clive, don't you think I just got lucky?" He said, "No, you know something, and I want you to produce all of the folk music on CBS." I thought, oh God. Folk music was not my favorite music. My favorite music was Memphis music—Sam and Dave, Otis Redding, Bobby Blue Bland, James Brown and Motown.

I said, "Clive, you know I'm from Muscle Shoals, and in Muscle Shoals we do black acts that like to use horns and the bass lines that move around. You don't do that in folk music. You go dumb de dumb de dumb."



Joan Baez found a rare moment to nap, while Putnam kept working at Quadraphonic.

He said, "Norbert, I have someone to do R&B. I have Gamb'le and Huff and Thom Bell in Philadelphia. But I don't have anyone who can sell a million records on a folk singer. You need to be that guy."

I remember Clive reached around and grabbed this 7-inch, reel-to-reel tape. He slid it across his desk to me, and it had "Dan Fogelberg Demo" written on it. Clive said, "This is a kid from Peoria, Illinois, and he's 19 years old, has a good voice, and he writes good songs, and he is a great player. I would like you to produce him."

So I was sitting there staring at this tape and thinking about it. He noticed my reticence: "Norbert, listen, if you do this for me, I will make you a very, very, very wealthy young man." I quickly replied, "Mr. Davis, that appeals to me." [Laughs.] That is how I became Nashville's "folk rock" producer for the next 10 years. I did Dan Fogelberg's first album, *Home Free*, and later on, *Netherlands* and *Phoenix*.

You also did Jimmy Buffett's biggest records. How did that come about?

I had met Buffett when he came to interview Jerry Jeff Walker, during one of the albums I recorded bass on—songs like "Pissing in the Wind." You see, young Buffett was a part-time journalist. He did concert reviews for *Billboard*. So, I was in a restaurant one night with a party of friends, and Buffett comes to

my table and whispers he needs to talk to me after dinner. At this point in time, Buffett had just recorded "Come Monday," a Top 20 chart record. So after dinner I went down to the bar, and he said, "My record label thinks I'm ready for a Gold record, and they would like you to take a shot at it. Would you consider producing me?"

I said, "Sure." I was always looking for acts to produce. He said, "I want to tell you about my band. The records I've been making with Don Gant are not at all like my stage show. I've got a band called the Coral Reefers, and Norbert, they are more like the Rolling Stones. We come out and hit big power chords, and everyone jumps up and down.

You've got to come and see my band, because that is what I need to be doing. It needs to be the Coral Reefer band sound and not this soft, Nashville shit." It was getting late and I'd had a lot of wine and I was having trouble trying to imagine how "Come Monday" would sound, as performed by the Rolling Stones. [Laughs.]

So that weekend I went and saw them play, and when Buffett came out it was like a rock 'n' roll show, and the crowd went crazy. Buffett was tremendously charismatic, and I thought: This is totally different than the records he has been making.

When we met up a few days later, I said, "You need to get the hell out of Nashville. All of your songs are about the ocean. I've done some work down in Miami at Criteria Studios. Let's take you, your songs and the band down to the ocean." We had been in Miami only a few days when Buffett came in with this song. He said, "This is autobiographical. It is a true story about coming home from a bar one night, I cut my foot on a pop top. It is a story about cooking up shrimp and not being able to find my salt shaker. It is called 'Margaritaville.'"

I think as soon as he played it, we all knew it was a hit. It was a little movie, a complete scenario. A few months later, a million-and-a-half records were sold, and it was in the Top

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PRODUCER'S DESK

10, heading for the Top 5. That began my run with Buffett. I did five albums, including the live one. Buffett came up with the album title, *Changes in Latitudes, Changes in Attitudes* to reflect the change from Nashville to Miami.

Jimmy had a 33-foot Choy Lee ketch that he had just moved to the harbor at Coconut Grove. We would record from 11 to 5, grab a cassette of the rough mix and blast down to the marina, throw off the ropes and motor out past the markers. We would throw up the sheets and put in the cassette. We'd pay careful attention to the rhythm of the waves as they hit the bow, and when we went back to the studio the next day we tried to remember how that rhythm of the sea felt. The music we recorded that week became part of the required provisions for all sailing vessels.

I guarantee you—and it is 25 years removed—but you can still go down to the islands today and board any vessel down there and you'll find "our music." Jimmy and I invented Caribbean Rock during the making of that album, and Jimmy went on to personify it. He became that character. Buffett had only

one Top 10 record, yet he has had a career that spanned 25 years. He still sells out every venue in the country.

You have a knack for starting music industry ventures that have a history of doing very well. Now you're in Memphis with what may be your biggest project yet, CDMemphis.com. How did this come about?

I was in Memphis, consulting for Gary Belz [House Of Blues and Ocean Way] when I bumped into Tommy Peters. Tommy is a music aficionado and one

part of the revitalization of Beale Street. Tommy said, "How would you like to come and try something in Memphis?"

I said, "Let's start an Internet record label. It is a way around the major-label-controlled radio airplay. We can sell music to the end-user at full retail and skip distribution costs." So as we talked about putting the label together, we thought, "If we can succeed, we can afford to pay the artist more money than they have ever been paid before."

Traditionally, a major label might give the artist \$100,000 to make a record and, roughly, pay a dollar a record, but [the artist] has to recoup the \$100,000 as a loan. If the artist sells 100,000 records, the artist hasn't made a dollar, but the record label has realized tremendous cash flow.

So we thought, the artist shouldn't pay the cost of making the record, the label should put up the money. We pay our artists from record one. Not only that, at other labels, the artist usually pays the producer out of his own share. We don't do that. We pay the producer separately, and we pay the producer royalties from record one.

Another thing I wanted to do was to include the musicians in the royalty

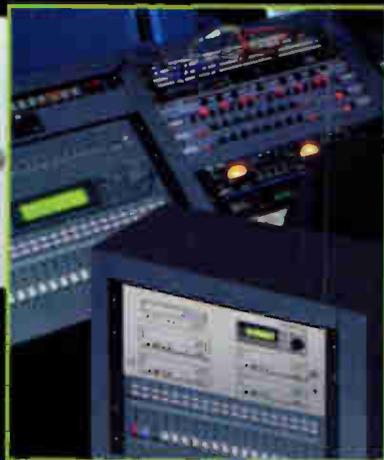
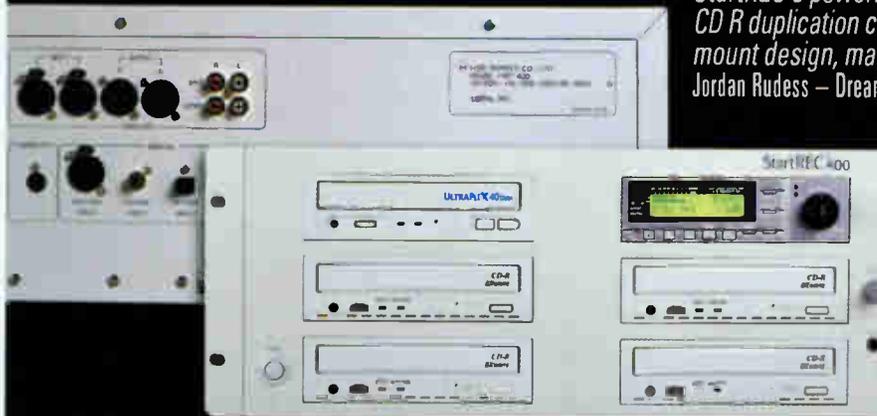
Al Green and Elvis could sing the phone book, and I would love it. It's not the lyrics. It's the artist's emotion, the timbre of the voice.

of the most successful venture capitalists in Memphis. It is very easy for Tommy to put money together because of his passion for music. Tommy built the first B.B. King Club and is a major

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base. So with that in mind, our studio rhythm section will not only get paid union wages, but they will also be in the pot for the royalties. And if we are lucky enough to have success, and people are still buying our music in 30 years, they'll still be getting a nice check. So basically what we are trying to do down here is to re-invent the economics of the music industry using the Internet. Hopefully, CDMemphis.com will also help revitalize Memphis/Delta music in its present and original forms. *So the Internet is enabling you to paint outside the traditional lines of marketing music and rethinking compensation for talent, but why Memphis?*

I really think that there is something here that is magical and special regarding the music of this part of the world. I know when our Nashville rhythm section came to Memphis to record with Presley at Stax, it was a more soulful-sounding section.

When I go up on the roof at the Peabody Hotel, I often hear this beautiful trumpet in the distance coming from Beale Street. There is a wonderful gentleman over there that plays in the

street, and he has the most amazing tone and power. It's like W.C. Handy all over again.

Ever since I listened to those first Stax Records, I've been trying to get to Memphis. In Muscle Shoals, we liked to do R&B music with horns, and so much of that came to us through Memphis music. *One of the major components in creating this Memphis operation concerned the ability to do this all in-house. You found quite a location for a studio in the process.*

I spent about six months looking for a large room. At last, I found this old bank building at the corner of Second and Monroe in downtown Memphis. I walked through this thing, and it was ornate and beautiful, and it was huge. It reminded me of a small Vienna church. So we bought this 32,000-square-foot building, with the big room being 70 feet by 100 feet. The ceiling is 24 feet high. The control room on the mezzanine level is 20 feet by 32 feet. And it is quite moving to look out over the giant Neve VR console, down the marble staircase, into that 100-foot-long tracking space with 11 iso booths and a Yamaha grand resting on a lovely oriental rug.

We are also recording to the new Tascam 24-bit, hard disk system—no tape machines. I think we've seen the last of tape—we haven't been able to crash the Tascams yet. Downstairs we have two Mackie D8B rooms locked to two more Tascam 24-bit, hard disk machines. They work perfectly with the Mackie digital consoles. Studio A has 48 tracks available at all times.

The main studio has a natural reverb of more than two seconds. Singers and horn players love to walk around the room warming up and listen to the reverb. It reminds me very much of Abbey Road Number One. And it is the first really big Memphis recording studio that has the capability to do sound-stage scoring for film, jingles and commercials, as well as that giant "only in a large room" drum sound. The studio was created for CDMemphis' own projects, but we have now agreed to rent available down time.

You've been doing some pretty serious A&R work, checking out the talent in the region.

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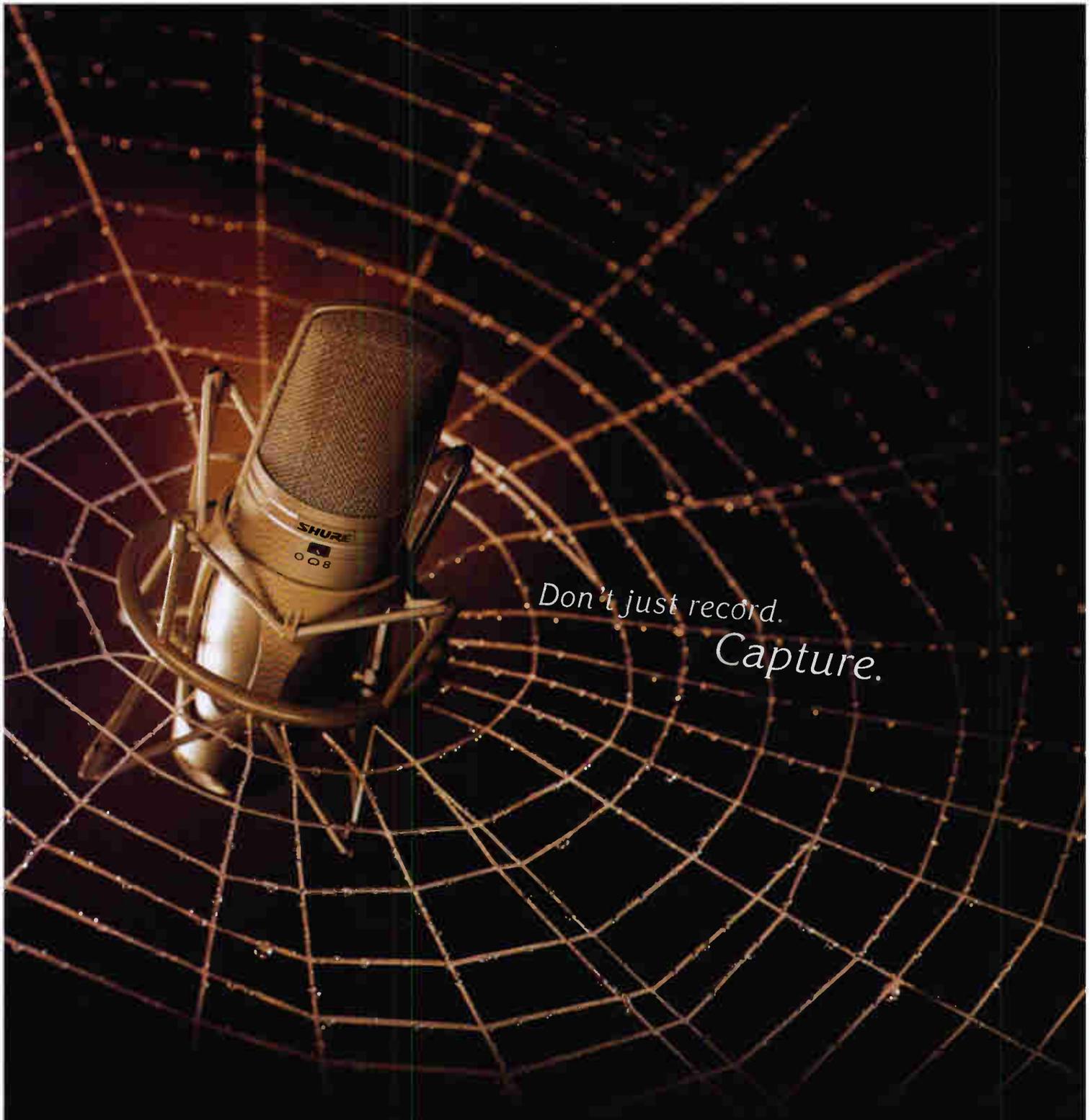
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few people here trying to make hip hop records to sell to New York and L.A., most people who come in here and play songs for me seem to be totally unaffected by the trends of those cities. Most people here follow their own direction. It is all intuitive stuff.

I could never really say that about Nashville. In Nashville, I was constantly besieged with young people coming in and saying, "I want to be a country music star." I would sometimes ask, "So you just walked in here, and you want to be a country music star. Is that because you happen to be in Nashville? If you were in New York, would you walk into a music office and say, 'I want to be a country music star?'" Often the response would be, "Oh no! I grew up listening to rock, but the country music industry is here." People would drive into Nashville who grew up listening to The Beatles and buy a cowboy hat and say, "I'm country." That doesn't happen here in Memphis. People don't walk into Memphis and start to pretend to be Al Green.

When I lived in Nashville, they used to always talk about "the song," but to me, it has never really been "the song." A great song is a wonderful thing, but Al Green and Elvis could sing the phone book, and I would love it. With Presley, you could give him a very trite lyric, and he could inject such emotion and power that would give you goose bumps. It's not the lyrics. It's the artist's emotion, the timbre of the voice.

The music business markets emotion. And when you have a purveyor of emotion, like Al Green or Elvis Presley, then you have magic. That is the beginning and end of it. The young engineers like to think it was the vintage tube gear, but it was never the equipment. It was the emotion of the musicians, the artists and the great balance engineers that made those records timeless. It was the unique touch and feel of the individuals making that sound. There's the story about a stupid remark made [by an onlooker] as the great Chet Atkins was finishing a guitar overdub: "Damn, that's a great sounding guitar!" Chet promptly ceased playing and after silence had engulfed the room, said, "Well, how do you think that guitar sounds now?" ■

Rick Clark is a producer and freelance writer raised in Memphis, now living in Nashville.

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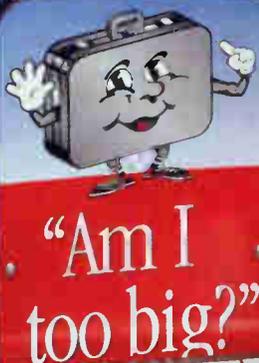
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Let's be blunt: In the American audio education world, Tom Misner is viewed as the Big Bad Wolf—the outsider intent on blowing away the competition as he methodically builds an empire of SAE Institute of Technology schools around the world. Success does sometimes breed contempt, and Misner has been very successful: There are currently 30 SAE schools teaching more than 12,000 students in such far-flung ports-of-call as London, Paris, Sydney, Munich, Singapore, Stockholm, Kuala Lumpur, Athens, Madras and several other locales. What frightens other U.S. recording programs—and this has



Tom Misner

become a very competitive business—is Misner's plans to set up shop across the United States. So far, there are two SAE schools here—in New York and Nashville—and Misner says he hopes to eventually have a dozen dotting the American landscape. Misner claims a fortune of about \$900 million (he made most of his money in real estate), so SAE programs don't have to worry much about capitalization, and one imagines that the organization could expand at will. Former SAE students already populate hundreds of studios worldwide, though so far their inroads in the U.S. have been modest.

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BY BLAIR JACKSON

Misner isn't just some rich businessman dabbling in audio. He's a working engineer, producer and studio designer with some 30 years experience in the field. In the mid-'70s, he built SAE up from nothing, opening his first school in Sydney (though Austrian by birth, he moved to Australia when he was 14), then eventually expanding to London, Munich and beyond. He builds studios on property he owns, and he fills them with gear that he gets at good prices, because he is certainly one of, if not *the*, largest single purchaser of audio equipment in the world. Though his home base is Sydney, where he owns *much* real estate, including 301 Studios, a multimillion-dollar multimedia facility, he considers himself a citizen of the world; indeed, it seems as though he's been traveling almost constantly for much of the last three decades. Appropriately for a man of the world, he has an accent that is part German, part Australian with a few American- and Britishisms thrown in.

We spoke by phone—Sydney to Oakland—during the summer.

Tell me a little about your own education in recording. Were you technically inclined as a youth?

Not at all, no. I was a musician. I was always playing guitar. I had much more music training than technical training. I guess you'd say my education in recording was the traditional route. I was a tea-boy and did things like painting the studio and being a general assistant of nothing, which is one reason I gave up on engineering initially.

I left it, because I thought, "I'm painting walls. This is ridiculous." So I went and joined the major television here in Sydney, which is Channel 9. I came from Germany and obviously had a pretty heavy German accent, and when I went to Channel 9, and they asked me what I knew about television, I said I have some experience in television. They gave me a test about a week after my initial appointment. And during that week, I bought myself a book about TV, a little handbook that explained what a cathode ray tube was and all that, and then I went in and took this multiple-choice test, and I passed quite well and ended up being a technician grade A, which was a very good position.

I worked there for about eight months, and during part of that time, I used to drive past the record company



Students in SAE's New York studio



in Australia called Festival Records, and one day I decided to walk in there and see if they had any jobs. They said, "What are you doing now?" And I said, "I work for Channel 9," which was like working for NBC or something. So they said, "We've installed this new console called a Neve. Have you seen it before?" I said, "Oh yes, yes, yes." At Channel 9 we had a Neve that was like a 6-channel into two. So they showed me this new Neve, and it was this 30- or 40-channel monster; it was the biggest thing I'd seen in my life. But they gave me a job, virtually on the spot. I had one month to get my act together, and I was working with other people there, assisting, and then I started engineering, without the knowledge of what a compressor is, what any of those things were. From then on, I progressed the traditional way.

Did you have anyone shepherding you?

No, because the other engineers assumed I knew all about things. I wasn't going to ask them what a compressor was!

You were living a lie!

[Laughs.] I was living a lie. But I learned quickly, and I started mixing some bands; luckily, most of the bands didn't know much more, either. We're talking 1970 here. From there, I left Australia, because I had a job offer back in Germany. Then I went to England, and my traveling started.

Were there engineers or producers in England you looked up to?

Yes. I always looked up to Alan Parsons, who was just five or six years older than me; he was around my age. I also used to read *RE/P*, *Recording Engineer and Producer*, which was a very good magazine then; it was great for me. Actually, you might not know that I did an interview with *Mix* when it was still a newspaper.

From then on my education was basically practical, doing a lot of engineering and a lot of mixing. To cut a long story short, it ended with me last year earning a doctorate from Middlesex University. So now I have a Ph.D., which was based on my work in both education and acoustics.

When you were moving around as you did, going from Australia to Germany to England and America, is there anything you learned then that set you on a path that made you think you could teach this?

Everywhere I went I picked up little things. One place I'd learn about how someone used a compressor. At another it might be miking techniques. But more importantly, all that traveling taught me how to deal with people. That was the key. It's a *people* business. It taught me a lot about communication. The Germans would talk to me differently than the British or the Americans would talk to me. The Americans were always looking for the shortest way from point A to point B. The English tend to talk around things a bit.

How did SAE actually get its start?

Well, at one point, I was feeling a little burned out from working in studios for so long, and I thought about it, and I decided that there was a shortage of real information about audio anywhere in the world. So I thought it would be a good idea to try to put together a practical course about it. I had no business experience whatsoever, but I thought I'd teach a few people and that maybe I'd do it a couple of times, teaching maybe ten or 20 people, and then I'd go back to the studio. So that's how

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World Radio History

SAE started—more or less as a sideline before I went back to work.

Basically, I taught what I'd picked up. At first, I thought the course would be about six months long, but after less than three months, I'd taught everything I knew, because I had no idea about speed or time. [Laughs.] So then I started to get friends in to teach more about electronics and things of that nature, which wasn't part of my original plan. It took the better part of a few years to really sort out the curriculum, because with SAE it's never been only what we teach—yes, we teach you about microphones and speakers and consoles like everyone else—but it's the order in which we teach it and how it all fits together.

How important is it to be up to date?

Totally. I think that's one of the strengths of SAE.

But isn't the basis of so much of the knowledge unchanging? The theoretical constructs underlying a lot of the material? I mean a compressor is still a compressor.

That's true, but that sort of material probably only represents about half the course, and the other half does change. Look at how different it is than just a few years ago. So many people now,

At first, I thought the course would be about six months long, but after less than three months, I'd taught everything I knew, because I had no idea about speed or time.

for instance, are Pro Tools-oriented, which is a different way of working. It's still a multitrack, but it's a different way of working. So things do change, and being the owner of the company and still being totally involved in engineering, I'm on the edge of it all the time.

When did it become clear to you that this could become a successful business for you, as well as a valuable tool for others?

Not for five or six years. In the beginning,

it wasn't a successful business. I needed money from my mother, I needed money from everywhere to keep going the first five or six years. The growth was not that planned out really. Someone said one day, "How come there's no school in Melbourne," so I went down there to check it out, and I started a school there without thinking too much about the consequences of it. SAE never had a business plan, because the banks didn't understand what we were doing; they didn't know why there *should* be a school for audio engineering. And the banks could never find an example of another school. "How come you're the only one doing it? It can't be a good idea if no one's done it before."

Did you look at other programs in the U.S. or England?

There weren't any, really; or not that I was aware of. The only one I had heard of really was the College of Recording Arts. I got some information from them, but they were more classically oriented and more electronics oriented. There was also a German program that was a four-year program.

How has the program evolved? How do you bring in new technologies?

We have a meeting every year. I wrote

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LINE 6

longer it seems. My target is to eventually have a dozen schools in the U.S.

How important is hands-on training? Some schools have impressive facilities of their own, others make arrangements with studios in town...

If you work with other studios it usually doesn't work, because you don't get the time, and you'll never be their primary customer. To me, hands-on is everything, because I can talk to you about compressors and compression, and you're looking at me going, "Yeah, yeah." But until you've actually worked with a compressor, you won't fully understand it. So I place huge emphasis on the practical aspects. We guarantee our students lots of time in the studio. Not just once or twice, but all during the program in various different stages.

That's where the size of SAE matters, because we're able to have more purchasing power, and we get better prices for things. We place a very high value on studio time, and that's also helped by the fact that we usually only have about 250 students in a location, whereas some other schools have many more.

Do you make deals with certain manufacturers to get equipment, and does that then unfairly influence people to go in a certain direction with their technological skills?

Yes and no. We make deals with many manufacturers. For instance, we have a deal with AKG, and we will have AKG microphones and maybe a few less Neumanns, but the students are never told that AKG is the best or whatever. The students are smart. They know that. At the same time, the manufacturers know that the exposure is good for them. We might have an arrangement with Mackie for digital consoles or the Mackie multitracks, but the students are still told about Yamaha 02Rs, for example. Will students later want to buy a piece of equipment they know better? Possibly. That makes sense, and that's part of the manufacturer's benefit for entering into deals with us.

So I imagine you haven't had much trouble finding manufacturers wanting to get involved with SAE...

Well, it's been half and half. Some manufacturers see the value in it and others not at all. It's fairly black and white. I couldn't really tell you why those companies don't see the value at all.

Where's the most surprising place that SAE is that Americans might not know about?

Probably India. I didn't look at India initially, but it's a billion people now, and 10 percent of them are extremely

wealthy or middle class, which is something like a hundred million people. They have a huge, self-contained entertainment industry.

What's interesting, though, is that Indians have traditionally loved overseas education, so you see a lot of them going to England, Australia and America for the degree parts of their programs.

Where's the place you would most like to have a school that you don't currently?

L.A. But that's coming. In Europe, the one we don't have yet is Brussels, which is a major center for hip hop and dance music.

It must be exciting to sort of be populating the world's studios. It's a good legacy to have.

Yes, it is. The last few years my other business interests, such as real estate investments, have overtaken SAE, but this is still where my heart is. I love the studio. I just finished producing two records [at 301 Studios in Sydney] that are just coming out, one artist called Grace Knight and the other is a country-rock act, Tina Martyn. I engineered, mixed and produced those.

What do you do to keep your own chops up and keep up with technology? Do you go to AES shows?

Yes, I go to AES shows, and I travel a lot and visit studios all the time. I consider myself very much a global citizen, and I try to take the best from everywhere. I talk to engineers. And 301 has been a great avenue for staying on top of things.

For some reason, there's a perception out there that SAE is a giant monolith that's trying to take over the world. It might be Americans' suspicions about chain operations in general...

Well, we're providing a service, and whoever provides the best service, wins. That's really the bottom line. We are aggressive in terms of our marketing and our strategies, but there's no great plan for world domination or anything. But what we're doing *works*, and I know we provide a better product than most. There's no such thing as "the best" product in this field, because it all depends on what you're looking for as a potential student, a potential customer. I always look at my students as customers. Some schools have the attitude, "You are lucky you're allowed to be here." To me, a student is a customer that's got to walk away happy with an education. Fifty percent of our students come because it was recommended by other students, so we must be doing something right. ■

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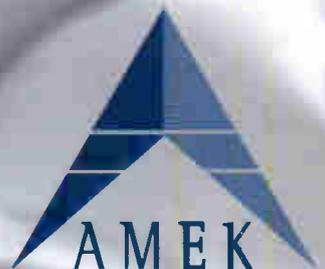


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CIRCLE #057 ON PRODUCT INFO CARD

World Radio History

The Sheffield Institute

A FOCUS ON THE BASICS

by Blair Jackson

Over the past three decades, Sheffield Audio-Video Productions has quietly grown into one of the most successful multimedia production operations in the mid-Atlantic region, with excellent recording and post facilities at their base outside Baltimore, and a nationally renowned remote operation centered around its impressive, SSL Axiom MT-equipped recording truck. The company stays busy with a combination of high-profile clients and smaller regional work; its growth has been steady as its reputation has increased. Less well-known is the fact that Sheffield also has its own audio-video school—the Sheffield Institute for the Recording Arts (SIRA)—which was certified by the Maryland Higher Education Commission six years ago.

“We’re not trying to be a big school like Full Sail or SAE or any of those,” comments Richard Van Horn, Sheffield’s president. “But we’re a good size—about 60 students—and it’s working out real well for everybody. We mainly draw from the Baltimore-Washington market.”

As befits a company that specializes in both audio and video engineering work, the Sheffield Institute has two distinct learning tracks, with a third just getting started as we went to press: “AudioWorks is a recording and sound engineering program, and VideoWorks is about video production and editing,” says Sal Chandon, director of education for SIRA and Sheffield’s general manager of in-house audio facilities. “Right now we’re in the process of getting approval for a MaintenanceWorks program, which will be component-level troubleshooting and repair for professional audio and video equipment. It’s going to be similar to going to an ITT technical school or something like that for electronics technology, but specifically geared toward this industry, which we see as a big, big deal.”

All three tracks are intensive five-and-a-half month programs (or can be spread over a year, at night) and take place in Sheffield’s working studios, “so students are learning on the same equipment that’s being used for outside clients. Also, the instructors are people who are doing engineering for outside clients,” Chandon notes. “We don’t have anybody on staff who is just an instructor. Every one of our staff people are engineers first and foremost and have an interest and talent for instruction as well.” A new studio being built primarily for use by the school, but still featuring an SSL console, is currently under construction.

“We’re trying to give students a well-rounded introduction to the industry,” Chandon comments. “We’re trying to have graduates who are ready for entry-level into a number of different areas. What we focus on in our training is getting down to the root of things—understanding signal flow, for example. If we can teach them signal flow in its most basic form, it won’t matter that they learned on an SSL. They can go to a



Studio B at Sheffield Institute.

Below: Sal Chandon, director of education for SIRA



Neve or a Mackie or a Yamaha and they’ll get it. The same with the camera technology on the VideoWorks side: If they understand the video signal and how it’s supposed to get from point A to point B, they’ll be able to take that camera out in the field and gather news or work on documentaries, whatever the case may be.”

The AudioWorks track consists of six courses: three on recording—Basic, Advanced and Advanced Level 2—and classes on Non-Linear Digital Audio Editing (Pro Tools), MIDI and Live Sound/Remote Recording.

“People used to take these kind of programs primarily because they wanted to get out into the work force and they wanted to land a job in a studio or a post-production house and do that for a living,” Chandon says. “We’re still getting those, but we’re starting to see a different kind of student—we’re getting people who want to educate themselves, because they have already purchased or are planning to purchase equipment for a project studio. That’s a tremendous growing segment of our industry.”

“We also get people who are expanding their skills, because they’re already in jobs and maybe they’ve been promoted to a certain level, and they need to learn a bit more,” he continues. “You’d be surprised how many corporations have sophisticated recording and video production facilities. We’ve also done some retraining. In our area, Bethlehem Steel had a major plant where production had declined and they had serious layoffs, and part of their concession with the union was that they would retrain people who got laid off, so we got quite a few students that way.”

Chandon says that SIRA is happy with its regional orientation and has no designs on continually expanding its operation. “We have a real commitment to technology and how it’s going to help shape what we’re doing in the coming years. That’s what we’re about.”

For more info: www.sheffielddav.com.

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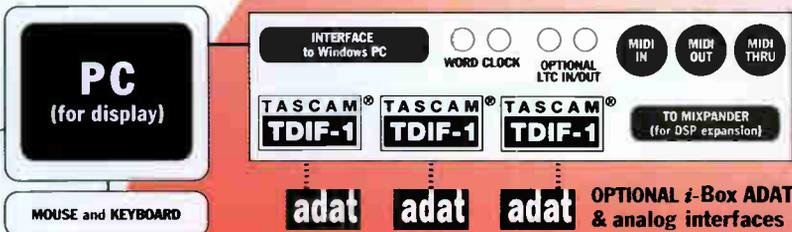


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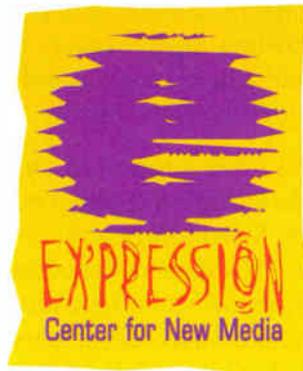
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AUDIO EDUCATION PROGRAMS

CHOOSING THE RIGHT SCHOOL

Welcome back, prospective students. It's been a year since *Mix* last published a directory of audio education programs. This year's guide includes more schools and programs than we've ever offered before, and we hope you find it useful in your school search.

Every month, the editors receive dozens of phone calls from prospective students (and their parents) asking how to find a suitable program. As we've told many of you on the telephone, *Mix* can not recommend specific education programs. This is partly because in order to choose a school, the applicant must research the programs in-depth. That means visiting schools, checking out their facilities and finding out all you can about what the program offers. And the main reason we can't tell you where to apply is simply that we're not you. The school that's right for you will be the one that fulfills your needs, teaches what you want to learn, costs what

you can pay, etc.

What we've tried to do by offering this audio education directory is to provide a starting point for doing that research, so that you can find the school that suits you. In addition, our Insider Audio columnist, Paul D. Lehrman, offers his informed advice on choosing a school in his column this month, so check that out on page 24.

After you review the directory, we strongly suggest that you then request brochures and course catalogs from the schools that interest you, and visit the ones you're seriously considering. Schools may also be able to get you in touch with former students who can give you a first-hand account of their experience.

As you wade through all of this material, keep in mind the following 15 points; these have appeared in *Mix* before, but we find that, like our directory, they warrant repeating.

Good luck!

—The Editors

1. Length and purpose of program. Will you be in school for seven weeks, three months or four years? Are you committed to earning a degree, or will a certificate do?

2. Accreditation. You most likely can trust a school that's accredited by a reputable body—a state or federal Department of Education, the National Association of Schools of Music (NASM), the National Association of Trade & Technical Schools (NATTS) or the National Trade School Congress (NATC). But just because a school isn't accredited doesn't mean it's a "fly-by-night" operation.

3. Prerequisites. Entry to in-depth electronics courses often requires a solid, formal background in math and physics. A short program may require some recording experience.

4. Program philosophy. Does the educator first teach the academic, theoretical side of recording, or head right for the faders? Does the school offer a balance of book/lecture teaching and hands-on training? What's the ratio of studio time to class time, and how often does the school let you use the equipment? Does the school expose students to audio's past, present and future? Does the school teach equipment maintenance and troubleshooting techniques?

5. Interdisciplinary opportunities. Does the school delve more into music composition and production, or

music recording? Audio for video? Radio production? Soundtracks for film? Multimedia? Live sound and location recording? Corporate and industrial uses of audio? How much time is devoted to each area? The more facets of audio covered, the better your chance of finding a job in this age of studio diversification.

6. Job placement opportunities. Does the school assist the student in the agonizing weeks following graduation—offering help with résumé writing or providing real job leads or the names of facilities that have hired other graduates?

7. Track record. What percentage of graduates have found work in recording, production or a related field? Will the school provide names so you can call them to discuss the program?

8. Real-world exposure. Does the school provide students with the chance to record live sessions, for instance, where you meet with local musicians, set up in the studio, record basics, do overdubs, mix and premaster?

9. Teaching devices. Do educators use "the real thing," textbooks, technical audio journals and/or audio-visual aids? Do they teach theory using a book or using a book and equipment? Does the school have its own multitrack studio, or do students travel to professional facilities where the school buys session time?

10. Internship program. Does the school require

students to work in a studio as an intern (great experience, no pay)? Few studio managers will hire graduates who haven't enjoyed the real-life experiences offered by an internship. If the school requires an internship, must you find your own internship—which gives you job-hunting chops—or does the school set it up?

11. Financial considerations. Will paying for your education leave you bankrupt? Does the school grant scholarships, offer loans or otherwise help students secure financial aid?

12. Business and management courses. Does the school expose students to the business of recording or economics of studio management?

13. Private or public institution? State-owned schools are sometimes better funded than private ones, but it takes longer for them to acquire new equipment: Red tape and magnetic tape don't always mix very well.

14. Location. If the school or program is close to a thriving audio/music or video/film production marketplace, the employment potential will be relatively high if you choose to stay in the area.

15. Reputation. A well-known, well-connected school tends to attract the attention of equipment manufacturers who are willing to set up mutually beneficial relationships with the school, thereby allowing students to learn the ropes on specific (and usually popular) types of systems and gear.

THE SCHOOLS

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

EASTERN SCHOOLS

AMERICAN UNIVERSITY

4400 Massachusetts Ave. N.W., Washington, DC 20016-8058 Phone: 202/885-2746 Fax: 202/885-2723 E-mail: benji@american.edu Web site: www.american.edu/physics Degrees/Certificates Offered: four-year B.S. in Audio Technology. Program and Facilities Description: Housed in the Department of Physics, the Audio Technology program concentrates on the technology of electronic recording and reproduction of sound, using both the technical expertise of faculty and the hands-on professional experience of adjunct professors. The main control room features a 24-track analog studio with hard disk recording capabilities. Mixdown is to DAT with the ability to burn CDs on-site. The electronic music lab has various analog and digital synthesizers, samplers and MIDI controllers.

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4525 Vineland Rd., Suite 201B, Orlando, FL 32811 Phone: 407/543-2784 Fax: 407/423-2784 E-mail: arti@digital.net Web site: www.audiocareer.com Degrees/Certificates Offered: forty-five-week audio engineering certificate. Program and Facilities Description: Students prepare for employment in the audio production industry, including music sequencing, hard disk recording, editing sound for video and film, Internet advertising design, sound design, sound effects design, radio and TV audio production, project master engineering, CD mastering, multitrack recording studios, audio for video, broadcast and post-production facilities. Emphasis is on hands-on training. Class size is limited to five students.

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Barton College Station, Wilson, NC 27893 Phone: 800/345-4973 Fax: 919/237-4957 E-mail: grose@barton.edu Web site: www.barton.edu Degrees/Certificates Offered: B.S. in Recording Technology. Program and Facilities Description: Hands-on training in a 32-track digital recording studio and 12-workstation computer music lab. Curriculum includes acoustics, electronic music, sound synthesis, music business management, sound reinforcement, live and studio recording. The studio has a Soundcraft Sapphire LC console with Optifile Tetra automation; four Tascam DA-88s; Mac with Pro Tools, Sound Designer, Master Tracks Pro 5 and Finale; Kurzweil K2000S with VAST system; Yamaha SY-88; and Roland JV-80. Each workstation in the lab has a Mac with Master Tracks Pro 5 and Finale and Yamaha SY-35 synth. There is also a Yamaha Disklavier in the lab.

BELMONT UNIVERSITY CURB SCHOOL OF MUSIC

1900 Belmont Blvd., Nashville, TN 37212 Phone: 615/460-5504 Fax: 615/460-5516 E-mail: hamiltonp@mail.belmont.edu Web site: schlbus.belmont.edu

Degrees/Certificates Offered: Four-year Bachelor's degree in Business Administration focusing on three major areas: general education core; a business base, consisting of basic tool and core subjects; and four music business emphasis specialization areas: product development, recording technology, marketing and managing. Program and Facilities Description: The 9,000-square-foot Center for Music Business provides music business students with facilities reflecting the advances in music industry technology. The Center currently features three state-of-the-art recording studios and control rooms, four iso booths, a MIDI pre/post-production room, four writer rooms, a digital/analog (hybrid) 16-track project studio, a studio-equipped classroom, an engineering shop and offices for the Intern and Placement Coordinator and manager of the Center.

BERKLEE COLLEGE OF MUSIC

1140 Boylston St., Boston, MA 02215 Phone: 800/421-0084, 617/747-2222 Fax: 617/747-2047 E-mail: mp&e@berklee.edu Web site: www.berklee.edu Degrees/Certificates Offered: four-year Bachelor of Music Degree or Professional Diploma. Program and Facilities Description: The Music Synthesis and Music Production and Engineering departments provide hands-on experience in engineering, production and use of synthesizers and computers in sound design and multimedia productions, as well as composition and performance. Our faculty members are active music industry professionals. Classes, studios and labs are supplemented by year-round lectures and clinics by visiting artists. Facilities include 10 multitrack acoustic/project/post-production studios, three synthesis labs with 34 digital workstations, two MIDI-equipped ensemble rooms and one multimedia recital hall for mixed media instruction and student/visiting artist presentations.

CAYUGA COMMUNITY COLLEGE

197 Franklin St., Auburn, NY 13021 Phone: 315/255-1743 Fax: 315/255-2117 E-mail: keeler@cayuga-cc.edu Web site: www.cayuga-cc.edu Degrees/Certificates Offered: two-year A.A.S. in Audio Production, two-year A.A.S. in Telecommunications Technology, two-year A.A.S. in Radio/TV Broadcasting. Program and Facilities Description: Cayuga is a unit of the State University of New York. The college's facilities include a 32-track audio recording studio, FM radio station, television studio and remote truck and a digital media lab. Industry internships are required. In-state tuition is \$2,500 per year.

CITY COLLEGE OF NEW YORK—SONIC ARTS CENTER

The Sonic Arts Center at the City College of New York, Shepard Hall Room #72 West 140th and Convent Ave., New York, NY 10031 Phone: 212/650-8288 Fax: 212/650-5428 E-mail: sonicart@crow.admin.cuny.edu Web site: <http://sonic.arts.cuny.edu> Degrees/Certificates Offered: four-year Bachelor of Fine Arts in Music (Audio Technology Concentration) Program and Facilities Description: Seven-studio facility including one 32-

track studio, four 24-track studios, one Sound Lab and one Isolation Room. In addition, two adjacent sound stages for acoustic recording are available. Six hours of lab time per course, per week.



FINGER LAKES COMMUNITY COLLEGE

4355 Lakeshore Dr., Canandaigua, NY 14424 Phone: 716/394-3500 Fax: 716/394-5005 E-mail: admissions@snyflcc.fingerlakes.edu Web site: www.fingerlakes.edu Degrees/Certificates Offered: two-year A.S. Music Recording Technology degree. Program and Facilities Description: The recording facility contains two recording rooms and a spacious control room. Single instruments to a full symphony orchestra can be accommodated in the 2,000-plus-square-foot recording room. Installed in the control room are a Mackie digital 8-bus console and 24 tracks of Tascam DA-88s. Editing and mastering are done on hard disk via a Mark of the Unicorn 2408 using Samplitude Studio. Final mixes can be recorded onto DAT, MD or CD-RW.

FIVE TOWNS COLLEGE

305 North Service Rd., Dix Hills, NY 11746 Phone: 631/424-7000 Fax: 631/424-7008 E-mail: admissions@ftc.edu Web site: www.fivetowns.edu Degrees/Certificates Offered: Bachelor of Music degree in jazz/commercial music, with major areas of concentration in performance, composition/songwriting, musical theater, audio recording technology, music business and video music. Bachelor's degree program in music education. Bachelor of Professional Studies (B.P.S.) degree program in business management, with major areas of concentration in audio recording technology, music business, video arts and theater arts. Program and Facilities Description: The College is equipped with 8-, 16-, 24- and 48-track world-class recording studios. The College is also equipped with a television production facility and soundstages of various sizes. The Dix Hills Center for the Performing Arts has been described as "acoustically perfect." The Five Towns College library consists of over 30,000 print and nonprint materials and has a significant collection of recorded music.

FULL SAIL, RECORDING ARTS

3300 University Blvd., Winter Park, FL 32792 Phone: 407/679-0100 E-mail: funk413@people.pc.com Web site: www.fullsail.com Degrees/Certificates Offered: Associate of Science, Recording Arts. Program and Facilities Description: Full Sail



The University of Memphis

Concentrations in Recording Technology & Music Business

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URL: <http://www.people.memphis.edu/~cmusweb>



Studio B features the AMS NEVE Libra Digital Music Production console, the first educational installation of this system in the world.

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AUDIO EDUCATION PROGRAMS

EASTERN UNITED STATES



offers hands-on training in a world-class 33-studio multimedia complex. This complex includes consoles such as the Neve VR with Flying Faders automation and Recall, an 80-channel and 160-input Solid State Logic 9000 J with Total Recall and Ultimatum and the Neve Capricorn digital console. The curriculum includes courses in Sound for Motion Pictures and Television, Recording Engineering, Audio for Post-Production, Sound Design, Sound Reinforcement and Concert Lighting, MIDI, Digital Audio Workstations and Advanced Recording. Career placement assistance is provided, and financial aid is available to those who qualify.

FUTURE MEDIA CONCEPTS

305 E. 47th St., New York, NY 10017 Phone: 212/888-6314 Fax: 212/888-7531 E-mail: info@fmc-training.com Web site: www.fmc-training.com
Degrees/Certificates Offered: Manufacturer's Certificate of Merit. Courses range from five days, for the two-part introductory course, to ten days for the master class. **Program and Facilities Description:** Future Media Concepts is New York's, Boston's and Philadelphia's premier digital media training center, providing manufacturer-authorized training in non-linear audio and video editing, 3-D animation, Web page development, 2-D compositing and desktop publishing. Quality is monitored by the software manufacturer to ensure the highest level of training. Trainers are certified, award-winning professionals. FMC is the authorized training center for Digidesign ProTools, Avid, Softimage, Adobe, Discreet, NewTek and Macromedia. Small class size, state-of-the-art equipment and weekday, weekend and evening class schedules. Financing available.

HAMPTON UNIVERSITY

Department of Music, Hampton, VA 23668 Phone: 757/727-5237 Fax: 757/727-5084.

HARRIS INSTITUTE FOR THE ARTS

118 Shesbourne St., Toronto, Ontario, Canada M5A 2R2 Phone: 416/367-0178 Fax: 416/367-5534 E-mail: harris@interlog.com Web site: www.ampsc.com/~harris Degrees/Certificates Offered:



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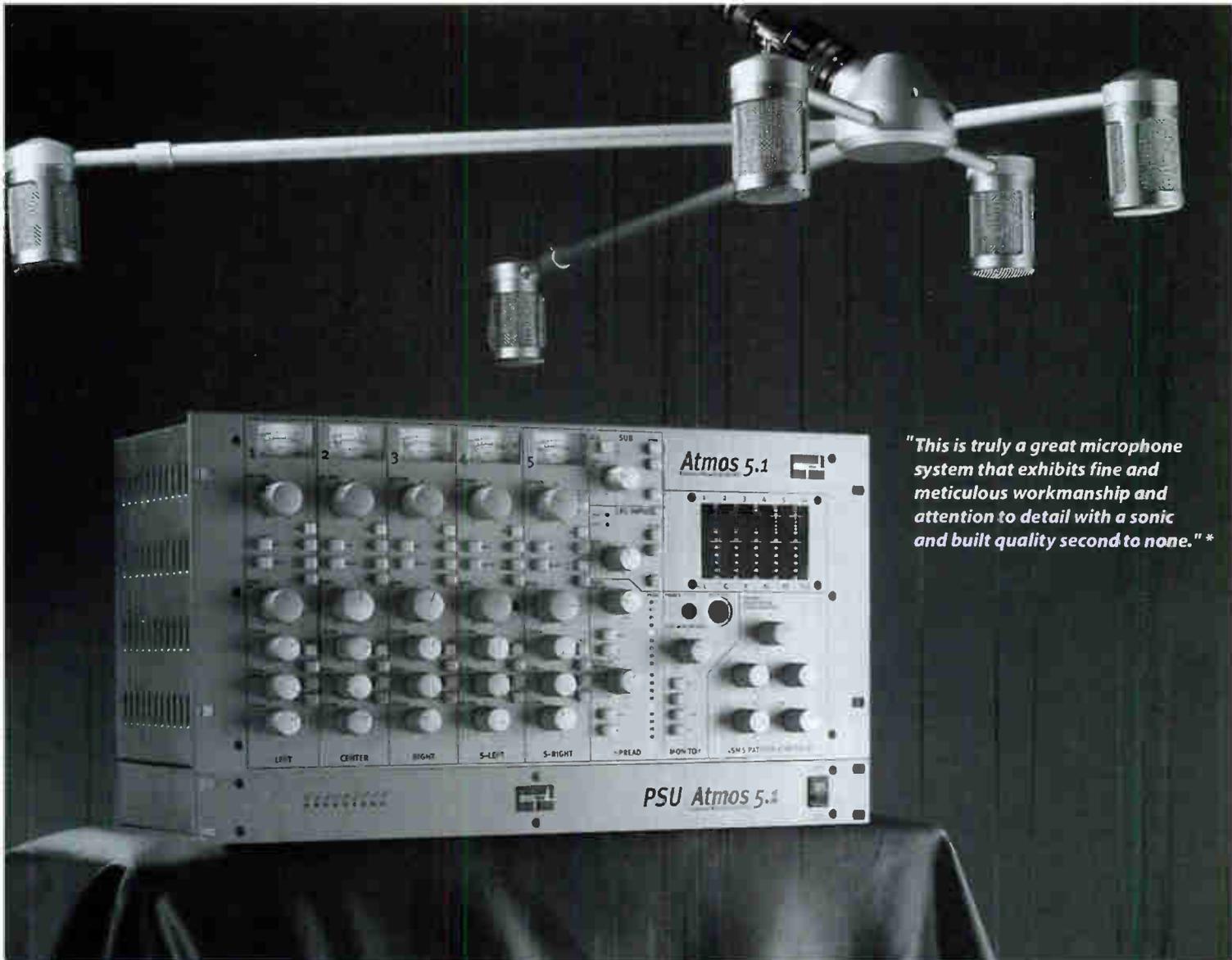
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The feature set includes:

- The ATMOS 5.1 controller offers state-of-the-art mic preamps with motorized master/slave mic gain controls, built-in matrix for front/surround and LCR panning with divergence controls, sub bass generation matrix, 6-channel monitor level controller.
- ASM 5 "star frame" array with LCR, SL, SR layout using matched large diaphragm capsules
- Each of the 5 mic elements has remote, fully variable pattern control on the ATMOS 5.1
- Four times 6-channel discrete outputs, compatible with all formats from DVD to SACD
- Requires no special decoding or processing in post

The SPL Atmos 5.1 system is designed to put you in the surround recording business the very day you open the case. Elegant, easy to use and set up.

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SPL

AUDIO EDUCATION PROGRAMS

EASTERN UNITED STATES

one-year Producing Engineering Diploma, one-year Recording Arts Management Diploma. **Program and Facilities Description:** Harris Institute offers 76 courses on the business, technical and creative aspects of the music industry. The Diploma Programs, Recording Arts Management (RAM) and Producing Engineering Program (PEP) are taught by a faculty of 54 active industry professionals and a wide range of guest lecturers. The 2,500-square-foot facilities include Pro Tools in the audio post-production suite, Apple and PC computers in a MIDI/multitrack suite and 24-track digital multitrack in a music recording control room.



INSTITUTE OF AUDIO RESEARCH

64 University Place, New York, NY 10003 Phone: 212/777-8550, 800/544-2501 Fax: 212/677-6549 E-mail: iarny@aol.com **Degrees/Certificates Offered:** Diploma in Recording Engineering and Production. **Program and Facilities Description:** Program transfers as approximately one year toward Bachelor's degree. Intensive six-month program exposes students to every facet of state-of-the-art audio and recording technology. Course-work includes acoustics and sound, editing techniques, music business, sound reinforcement, loudspeakers and microphones, audio signal processing, analog and digital tape storage, digital processing technologies, recording workshops, mixing techniques, post-production, MIDI and music synthesis. 20,000-square-foot Greenwich Village facility. Professional industry internships and graduate job placement assistance provided. Financial aid for eligible students. Licensed by NYS Education Department, accredited by ACCSCT.

LEBANON VALLEY COLLEGE OF PENNSYLVANIA

Department of Music, Annville, PA 17003 Phone: 717/867-6285 Fax: 717/867-6390 E-mail: hill@lvc.edu **Web site:** www.lvc.edu **Degrees/Certificates Offered:** four-year Bachelor of Music in Music Recording Technology and B.S. in Music Business. **Program and Facilities Description:** LVC combines a strong, traditional music curriculum with industry-related courses and experiences. Studies include traditional and jazz theory, history, performance, studio production techniques, digital audio recording and editing, MIDI, post-production and multimedia. NASM accredited. Facilities include a 24-track analog studio, a digital multitrack studio/classroom and computer labs with Macintosh/Windows NT workstations for digital audio and video, CD mastering, Web page design, CD-ROM development and MIDI.

MIAMI-DADE COMMUNITY COLLEGE SCHOOL OF FILM AND VIDEO

11380 N.W. 27th Ave., Miami, FL 33167 Phone: 305/237-1185 Fax: 305/237-1367 **Web site:** www.

mdcc.edu/dfvbeta **Degrees/Certificates Offered:** Associate Science degree in Radio, Television, Broadcast Programming; Associate Science degree in Film Production; Certificate in Television Production; Associate Arts degree in Mass Communication. **Program and Facilities Description:** The program is designed for students who intend to seek employment in radio, television and film production. The curriculum provides introductory and advanced courses essential to the profession program. It stresses hands-on equipment use in both the radio, television and film laboratories. Students have access to high-end cameras, editing suites and video graphics animation facilities, and complete portfolio-quality production.

MCGILL UNIVERSITY

Faculty of Music, 555 Sherbrooke St. West, Montreal, Quebec, Canada H3A 1E3 Phone: 514/398-4535 Fax: 514/398-8061 E-mail: wieslaw@music.mcgill.ca **Web site:** www.music.mcgill.ca/mmt **Degrees/Certificates Offered:** two-year Masters of Music degree in sound recording; Ph.D. degree. **Program and Facilities Description:** The graduate sound recording program combines practical and theoretical training in studio techniques, microphone selection and placement, digital sound processing and related subjects. Also included are technical ear training to improve auditory perception and hands-on experience working with musicians, ranging from solo performers to full symphony orchestras. Three fully equipped control rooms, four performance venues, three post-production editing studios, a separate four-studio suite for electro-acoustic music, multichannel audio research lab and two computer labs.

MIDDLE TENNESSEE STATE UNIVERSITY

PO Box 21, Murfreesboro, TN 37132 Phone: 615/898-2578 Fax: 615/898-5682 E-mail: record@mtsu.edu **Web site:** www.mtsu.edu/~record **Degrees/Certificates Offered:** Bachelor of Science in Recording Industry with two emphasis choices: Production and Technology or Music Business. **Program and Facilities Description:** The curriculum includes 43 courses covering all aspects of the industry. Minor options in Music, Electronics, Business Administration, Entrepreneurship, Marketing, Film Studies, Computer Science, Electroacoustics, Theatrical Design, Mass Communication and Entertainment Technology. Facilities include three studios, all with automated consoles and 24-track digital and analog recorders. One studio is equipped with 5.1 surround sound mixing. Facilities also include a hard disk/post-production studio, a MIDI lab, a maintenance lab and a 5.1 channel screening room.

MUSITECHNIC EDUCATIONAL SERVICES INC.

1717 Rene-Levesque East, Ste. 440, Montreal, Quebec, Canada H2L 4T3 Phone: 514/521-2060 Fax: 514/521-5153 E-mail: info@musitechnic.com **Web site:** www.musitechnic.com **Degrees/Certificates Offered:** Computer Assisted Sound Design one-year, Attestation of Collegial studies. **Program and Facilities Description:** The program is designed to familiarize students with computer-assisted music technology. A thorough exploration of the technical and artistic facets of current hardware and software will permit students to create, perform and record artistic projects using the latest technological tools. Moreover, the program seeks to provide knowledge of data processing principles, MIDI synthesis, digital sound reproduction and computer-assisted sound design, enabling students to work in contemporary studios and MIDI workshops.

NASSAU COMMUNITY COLLEGE

One Education Drive, Garden City, NY 11530 Phone:

516/572-7446 Fax: 516/572-9791 E-mail: musoff@sunynassau.edu **Web site:** www.sunynassau.edu **Degrees/Certificates Offered:** one-year certificate in Studio Recording Technology. **Program and Facilities Description:** This three-semester program is designed to introduce students to music and recording technology, provide a broad perspective of the music industry and to acquaint students with musical structures (both intellectually and aurally). Technical skills and internship training will be acquired in a professional recording studio (at an off-campus location). The program is designed for those wishing to establish independent recording studios. It can also prepare students for degree programs that enable them to gain entry-level positions in the recording industry.

NEW YORK UNIVERSITY

School of Education Department of Music and Performing Arts Professions, 35 West 4th Street, Room 777, New York NY 10012-1172 Phone: 212/998-5422 Fax: 212/995-4043 E-mail: kp3@scies.nyu.edu **Web site:** www.education.nyu.edu/music **Degrees/Certificates Offered:** four-year B.A. in Recording Arts; two-year certificate in Music Business; four-year Bachelor of Music; two-year Master of Music in Music Technology. **Program and Facilities Description:** NYU's premier Music Technology program teaches composers, performers, recording engineers and others to use tools of technology to realize their ideas. The program's breadth supports applications to film scoring, multimedia, computer music, tonmeister studies, interactive performance and collaborations involving experimental and traditional music. Our intense musical approach supports research and artistic production around the world. Facilities include 12 sophisticated recording and computer music studios. Special programs: Scoring for Film and Media, Tonmeister Studies (summer only) and internships.

NORTHEASTERN UNIVERSITY

Department of Music, 351 Ryder Hall, Boston, MA 02115 Phone: 617/373-2440 Fax: 617/373-4129 E-mail: bronkin@lynx.neu.edu **Web site:** www.music.neu.edu **Degrees/Certificates Offered:** four-year B.S. in Music Industry; four-year B.S. in Music Technology; four-year B.A. in Music Literature and Performance; four-year B.S. in Multimedia Studies.

NY INSTITUTE OF FORENSIC AUDIO

PO Box 189, Colonia, NJ 07067 Phone: 732/574-9672 Fax: 732/381-4523 E-mail: owlmax@aol.com **Web site:** www.owlinvestigations.com **Degrees/Certificates Offered:** Video Authenticity Certification, Audio Authenticity Certification, Voice Identification. **Program and Facilities Description:** Fully equipped lab that enables hands-on experience for all participants. Audio enhancement and authenticity, video enhancement and authenticity, voice identifications are all offered. Evidence procedures, legal questions and courtroom testimony related to the above specialties will also be discussed.

OCEAN COUNTY VOCATIONAL TECHNICAL SCHOOLS

Audio Recording for Electronic Media Career & Technical Institute NAWC, Lakehurst, NJ 08733-1125 Phone: 732/657-4000 Fax: 732/657-4500 E-mail: Dbourke@mail.ocvts.org **Degrees/Certificates Offered:** one- and two-year Audio Engineering certificate **Program and Facilities Description:** This program was started three years ago and was offered to high school and post-secondary students—the first one of its kind offered at the high school level in the state of New Jersey. 450-hours per year, emphasis on hands-on recording by students. Upgrading program facilities to three control rooms (two 24-track MDM and one hard disk

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AUDIO EDUCATION PROGRAMS

EASTERN UNITED STATES

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5609 Fishers Lane, Rockville, MD 20852 Phone: 301/230-9100 Fax: 301/230-9103 E-mail: omega@omegastudios.com Web site: www.omegastudios.com Degrees/Certificates Offered: Certificate programs approved by the Maryland Higher Education Commission. Program and Facilities Description: The Omega Studios school functions within the facilities of Omega Recording Studios (a four-studio complex). Omega offers five separate and innovative programs, including Recording Engineering and Studio Techniques; Electronic Synthesizers and MIDI; Sound Reinforcement for Live Performance; Audio Production Techniques; and Essentials of Music Business and Artist Management. A free brochure is available upon request at 800/93-OMEGA.

ONTARIO INSTITUTE OF AUDIO RECORDING TECHNOLOGY

502 Newbold St., London, Ontario, Canada N6E 1K6 Phone: 519/686-5010 Fax: 519/686-0162 E-mail: inquiry@oiart.org Web site: www.oiart.org Degrees/Certificates Offered: one-year, college-level diploma in Audio Recording Technology. Program and Facilities Description: North America's

first and longest-running integrated immersion program (since 1983). A full-time faculty and a 5:1 student/instructor ratio allows well-qualified students from around the world to thrive on creative development while acquiring a genuine skill set. Within five studios equipped with professional-level gear, students learn problem-solving through signal flow, in addition to how and why things work. The 1300-plus hours are all in-studio with more than 50% dedicated to student hands-on.

PEABODY INSTITUTE OF THE JOHNS HOPKINS UNIVERSITY

1 East Mount Vernon Place, Baltimore, MD 21202 Phone: 410/659-8110 Fax: 410/659-8102 E-mail: apk@peabody.jhu.edu Web site: www.peabody.jhu.edu/recording-arts Degrees/Certificates Offered: five-year Bachelor's degree in Recording Arts, two-year Master's degree in Audio Recording and Acoustics. Program and Facilities Description: Comprehensive math/science/music-based degrees in recording arts. Fully automated digital facilities. See Web site for additional information.

RECORDING ARTS CANADA, ONTARIO

PO Box 11025, 984 Hwy. #8, Stoney Creek, Ontario, Canada L8E 5P9 Phone: 888/662-2666 Fax: 905/643-7520 E-mail: admissions@recordingarts.com Web site: www.recordingarts.com Degrees/Certificates Offered: one-year Audio Engineering & Multimedia Production diploma. Program and Facilities Description: Recording Arts Canada is a unique school that offers students the opportunity to learn and work in a creative and progressive environment. By studying in one of the best-equipped audio schools, you will learn the skills and technologies about audio, music and multimedia production professionals use every day. Our internationally renowned

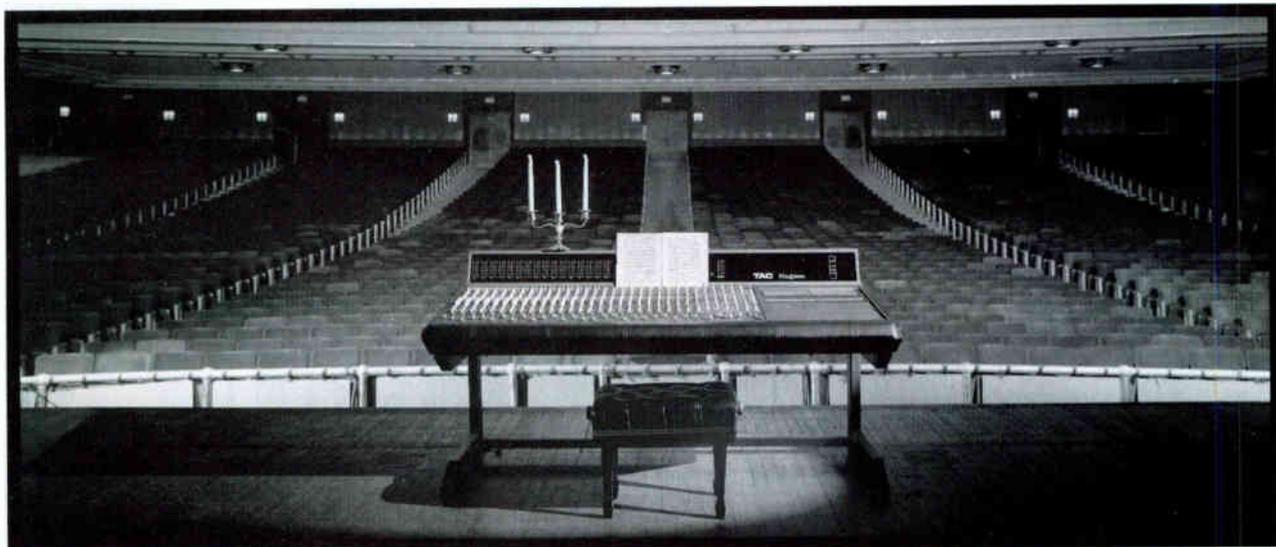
facilities feature classic Neve recording consoles. We provide sophisticated technology, quality theoretical instruction and extensive practical activity within a small group format.

RECORDING ARTS CANADA, QUEBEC

34 Chemin des Ormes, Ste-Anne-des-Lacs, Quebec, Canada J0R 1B0 Phone: 514/224-8363 Fax: 514/224-8064 Web site: www.sympatico.ca/inst.enreg Degrees/Certificates Offered: one-year diploma programs in Audio Production, Computer-Assisted Sound Design. Program and Facilities Description: A private college, offering two collegiate programs of study in audio production and sound design. School-owned, world-class facilities with three classic Neve consoles and all the latest digital and multimedia tools from Digidesign, Avid, Focusrite, Adobe, Director, etc. Located in the beautiful Laurentian Mountains, 40 minutes north of Montreal.

SAE INSTITUTE OF TECHNOLOGY

269 W. 40th Street, 2nd Fl., New York, NY 10018 Phone: 212/944-9121 Fax: 212/944-9123 E-mail: saeny@cybernex.net Web site: www.sae.edu Degrees/Certificates Offered: nine-month/18-month Audio Technology Diploma (full-time/part-time), seven-and-one-half-month/12-month Multimedia Producer Diploma. Program and Facilities Description: SAE Institute of Technology is the largest audio and multimedia institute in the world, with more than 12,000 students in 28 schools in 15 countries on four continents. SAE is now in the United States, with campuses in New York City and Nashville and more to come! Our students have the advantages of 25 years of audio and multimedia education experience, state-of-the-art equipment, and a paid internship in Audio Technology with Walt Disney Entertainment.



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AUDIO EDUCATION PROGRAMS

EASTERN UNITED STATES

the Hartt School of Music; the Mechanical Engineering B.S.M.E. with Acoustics Concentration program. Graduates have been employed at Bose Loudspeakers, QSC Amplifiers, Steinway & Sons, LucasFilm-THX Sound and numerous acoustical consulting firms or graduate schools in acoustics. Facilities: Anechoic chamber, B&K dual-channel FFT/RTAs, Modal Analysis/CADP2 software, DAT, portable SLMs, three studios with 4-, 8- and 16-track analog/digital recording, Pro Tools.

UNIVERSITY OF MAINE AT AUGUSTA

46 University Dr., Augusta, ME 04330 Phone: 207/621-3267 E-mail: richard@mail.caps.maine.edu Web site: www.uma.maine.edu/academics/ucad jazz&contemporarymusic.html Degrees/Certificates Offered: Bachelor of Music in Jazz and Contemporary Music (audio concentration). Program and Facilities Description: UMA has the only music program in Maine with a state-of-the-art recording studio. Recording commercial music and advertisements is a significant part of the music industry in Maine. Our internships are a student's best link to employment. This concentration integrates the studio into other music concentrations.

UNIVERSITY OF MASSACHUSETTS-LOWELL, SOUND RECORDING TECHNOLOGY

One University Ave., Lowell, MA 01854 Phone: 978/934-3850 Fax: 978/934-3034 E-mail:



william_moylan@uml.edu Web site: www.uml.edu/dept/music/srt Degrees/Certificates Offered: Bachelor of Music in Sound Recording Technology. Program and Facilities Description: The primary program, the B.M. in SRT, prepares students for production-related careers in the recording industry through studies in music, EE, computer science, math and physics and a minimum of nine courses in the art and technology of recording. SRT minors prepare students for technology-development career paths. Supported by eight control rooms: 24-track, MIDI/synthesis, 8-track, video/post, maintenance/repair, critical listening, hard disk recording, entry-level room.

UNIVERSITY OF MEMPHIS, COMMERCIAL MUSIC PROGRAM

232 CFA Building, Campus Box 526546, Memphis, TN 38152-6546 Phone: 901/678-2559 Fax: 901/678-5118 E-mail: cmusinfo@memphis.edu Web site: www.people.memphis.edu/~cmusweb Degrees/Certificates Offered: Bachelor of Music in Commercial Music with concentrations in Record-

ing Technology, Music Business. Program and Facilities Description: Programs stress thorough understanding of fundamental concepts, yet place equal emphasis on developing student's ability to adapt to new practices, technologies and creative directions. Instructors actively involved in industry. Studio B extensively renovated and now features an AMS Neve Libra digital console and improved acoustics. Students enjoy generous lab access where hands-on training is stressed. Memphis community offers diverse cultural opportunities, rich internship possibilities. A commitment to personal attention and quality instruction requires enrollment be limited. NASM accredited.

UNIVERSITY OF MIAMI, SCHOOL OF MUSIC

PO Box 248165, Coral Gables, FL 33124 Phone: 305/284-6913 Fax: 305/284-6475 E-mail: kmoses@miami.edu Web site: www.music.miami.edu Degrees/Certificates Offered: Bachelor of Music in Music Engineering with minor in Electrical Engineering, Bachelor of Music in Music Engineering with minor in Computer Science, Master of Science in Music Engineering. Program and Facilities Description: The Music Engineering program accepts undergraduate musicians who desire careers in music recording, audio engineering, audio equipment hardware and software design, sound reinforcement and broadcasting. By combining music and music engineering studies with a minor in electrical engineering or computer science, students enjoy diverse professional opportunities. Graduate students who have completed their undergraduate electrical engineering degree engage in research in DSP programming, psychoacoustics and synthesis. Our facilities and faculty are known for their excellence.

"For sheer tube magic, a realistic vintage vibe, and superb craftsmanship, the L47MP takes top honors."
EM, Brian Knave, Feb. 98

"... this is the microphone of choice for the project studio owner who wants to buy only one microphone. And at the given asking price, it is the biggest bargain in microphones today."
PAR, Dr. Fred Bashour, Feb. 97

"When you tuck vocals recorded with an L47MP into a mix, something magical happens. . . I cannot praise this microphone enough. Don't wait-- buy it."
Mix, Michael Cooper, May 98

"This mic is my first choice for any vocal, reed instrument, electric guitar, or organ overdub, and for any source that would benefit from the thick low mids, creamy highs, and richness that only a tube mic can deliver."
EM, Myles Boisen, April 99



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There are two ways you can relive that magic. If you have a small fortune and can find a classic mic that works--that's one way.

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Pulse's switched mode power supply reduces amplifier weight by as much as 70% compared with ordinary amplifiers, as well as helping them run cooler. The power supply is very stiff, so Pulse amps also sound better, especially when driven hard at low frequencies.

STRONGER

Pulse amplifiers are built with a steel chassis, with rigidity added by the heatsinks. Together with low component weight, these make them inherently stronger than ordinary amplifiers. A host of design features contribute to reliability and maintainability: not least Pulse's unique microprocessor control system.

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2x650 watts into 4 ohms. Bridgeable to be 1 x 1300W.



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AUDIO EDUCATION PROGRAMS

EASTERN UNITED STATES

UNIVERSITY OF NEW HAVEN

Music and Sound Recording Program, 300 Orange Ave., West Haven, CT 06516 Phone: 203/932-7101 Fax: 203/931-6097 E-mail: menelaos@charger.newhaven.edu Web site: www.newhaven.com **Degrees/Certificates Offered:** four-year B.A. in Music and Sound Recording; four-year B.S. in Music and Sound Recording; four-year B.A. in Music Industry; four-year B.A. in Music; minor in Multimedia Authoring. **Program and Facilities Description:** The Music and Sound Recording Programs instruct students in three interrelated areas: music history, theory and aesthetics; musicianship; and sound recording methodology and technique. Music Industry adds courses in copyright law, contracts, accounting, marketing and management. The multimedia curriculum integrates graphic design, audio production and video. The new professional recording facility features 4-, 8-, 16-, and 40-track studios and workstations, as well as a digital mixing room and multimedia studio.

UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE

Music Department, One University Heights Asheville, NC 28804-8510 Phone: 704/251-6432 Fax: 828/251-6841 E-mail: cmcknight@unca.edu Web site: www.unca.edu **Degrees/Certificates Offered:** B.S. in Music Technology, B.A. in Music with a Concentration in Jazz Studies, B.A. in Music (general music studies). **Program and Facilities Description:** The B.S. in Music Technology was established in 1982. It is a small and highly selective program taught in UNCA's recording studio featuring 24-track analog and 16-track digital capabilities. Our MIDI production facilities and computer labs give students hands-on experience with the latest audio technology.

UNIVERSITY OF SOUTH CAROLINA

School of Music, Columbia, SC 29208 Phone: 803/777-4371 Fax: 803/777-6508.

YALE UNIVERSITY SCHOOL OF DRAMA

222 York Street, New Haven, CT 06520 Phone: 203/432-8825 Fax: 203/432-1588 E-mail: david.budries@yale.edu Web site: www.yale.edu/drama/academics/AdmissionsReq/sound.html **Degrees/Certificates Offered:** three-year M.F.A. in Sound Design and one-year internship. **Program and Facilities Description:** The Sound Design Program trains eligible applicants in the theory and practice of professional sound design. Course work covers the fundamentals of sound technology, sound delivery systems, advanced digital sound and music technology, script interpretation, compositional elements of design, introductory sound design theory and practice, advanced problem solving, thesis and master class. Qualified students will have numerous opportunities to design for student and Yale Repertory productions.

CENTRAL SCHOOLS

ASPEN MUSIC FESTIVAL AND SCHOOL
2 Music School Rd., Aspen, CO 81611 Phone: 970/925-3254 Fax: 970/925-3802 E-mail: school@aspenmusic.org Web site: www.aspen.com/musicfestival **Program and Facilities Description:** The Edgar Stanton Audio Recording Institute is an intensive

four-week, full-time seminar/workshop. The goal is to provide a background in the basics of audio production and prepare students for a career as a recording engineer. A wide range of recording and guest lecturers are noted representatives of the recording and broadcasting industries. The session is limited to 10 students to ensure maximum individual attention.

AUDIO ENGINEERING INSTITUTE

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

BROWN INSTITUTE

1440 Northland Dr., Mendota Heights, MN 55120 Phone: 612/905-3400 Fax: 612/905-3550.

CLEVELAND INSTITUTE OF MUSIC

11021 East Blvd., Cleveland, OH 44106-1705 Phone: 216/791-5000 Fax: 216/791-1530 E-mail: cimadmission@po.cwru.edu Web site: www.cim.edu **Degrees/Certificates Offered:** Bachelor of Music in Audio Recording as a four-year degree or a double major (along with an instrument or Composition major) in five years. **Program and Facilities Description:** Courses cover digital audio; DSP/editing systems; audio-for-video post-production, surround sound, CD-ROM and Web-based multimedia; microphone techniques; synthesis/sampling; and acoustics. Equipment includes Tascam DA-98, Pro-Tools, Sonic Solutions, Yamaha 02R digital multitrack recording/mixing; Lexicon, TC Electronic, Yamaha, etc.; DSP; Macintosh and Sony computers; Audio-Technica, Neumann, Sennheiser, Schoeps microphones; Millennia Media preamps. Professional faculty features multiple Grammy winner Jack Renner (Telarc International), Dr. Peter D'Antonio (RPG Diffusor Systems), Thomas Knab and Mark Tessi (CIM and Telarc) and Timothy Callahan. Program emphasizes hands-on experience, music and digital media production.

COLUMBIA COLLEGE CHICAGO

600 South Michigan, Chicago, IL 60605-1996 Phone: 312/482-9068 Fax: 312/482-9083 E-mail: bkanters@popmail.colum.edu Web site: www.colum.edu **Degrees/Certificates Offered:** four-year accredited Bachelor of Arts degree with a major in Sound Technology. **Program and Facilities Description:** The Columbia College Chicago Sound Program includes extensive course offerings in the fields of music recording, concert sound reinforcement, sound design for video and film, sound contracting and acoustics. Columbia's Audio Technology Center includes multitrack music and voice-over recording and mix studios, film/video post-production suites digital audio production suites and classroom laboratories for analog/linear and digital/nonlinear production, audio system analysis and acoustical design and analysis.

CROS-LEX AUDIO-VIDEO CLASSES

5580 Peck Road (M-90), Crosswell, MI 48422 Phone: 810/679-8149 E-mail: Cgfitzpatrick@

webtv.net **Degrees/Certificates Offered:** high school classes. **Program and Facilities Description:** Teaching of using audio and video machines for recording music and for movies with camcorders (hooking up an audio studio).

DEPAUL UNIVERSITY SCHOOL OF MUSIC

804 W. Belden Ave., Chicago, IL 60614 Phone: 773/325-7444 Fax: 773/325-7429 E-mail: rbecraf@wppost.depaul.edu Web site: music.depaul.edu **Degrees/Certificates Offered:** four-year Bachelor of Science degree in Music. **Program and Facilities Description:** The DePaul Sound Recording Technology program is designed to prepare students for a career in the rapidly expanding audio industry. SRT students take classes in analog and digital microelectronics, computer science and calculus, in addition to the standard undergraduate music curriculum. Recording classes and student practicum take place off campus in a 48-track SSL studio where students have access to state-of-the-art equipment. On campus, students develop their skills at Studio DePaul, a fully digital 24-track facility featuring video, synthesis and surround sound capabilities.

ELMHURST COLLEGE

190 Prospect, Elmhurst, IL 60126 Phone: 630/617-3500 Fax: 630/617-3738 E-mail: kevin@elmhurst.edu **Degrees/Certificates Offered:** B.M. in Music Business, B.S. in Music Business, B.M. in Music Education, B.A. in Music. **Program and Facilities Description:** Elmhurst College is a nationally accredited institution that offers both a B.S. and a B.M. in Music Business. In addition to classwork in music, business and business of music, students get hands-on industry experience through internships, industry speakers and course tours. Resources include a state-of-the-art 24-track digital studio, courses ranging from music theory to MIDI, recently expanded practice and recital facilities and an artist faculty of over 50. Industry support is provided in the form of scholarships from trade organizations such as NAMM and NARAS, corporate sponsorship, a student chapter of MEIEA and an intern/job bank.

GRAND VALLEY STATE UNIVERSITY

1 Campus Drive, Allendale, MI 49401 Phone: 800/748-0246 Fax: 616/895-2000 E-mail: go2gvsu@gvsu.edu Web site: www.gvsu.edu **Degrees/Certificates Offered:** Electrical Engineering with Music minor. **Program and Facilities Description:** Grand Valley State University has a unique program for students that have the talent and interest to combine engineering and music. This program has the potential for a career that can span the entire audio and music industries from hardware design and manufacturing to performance.

HOUSTON COMMUNITY COLLEGE

1060 West Sam Houston Parkway North, Houston, TX 77043 Phone: 713/718-5621 Fax: 713/718-5635 E-mail: gehman_s@hccs.cc.tx.us Web site: www.hccs.cc.tx.us/nwcollege/audt/main.htm **Degrees/Certificates Offered:** Certificate in Audio Engineering,



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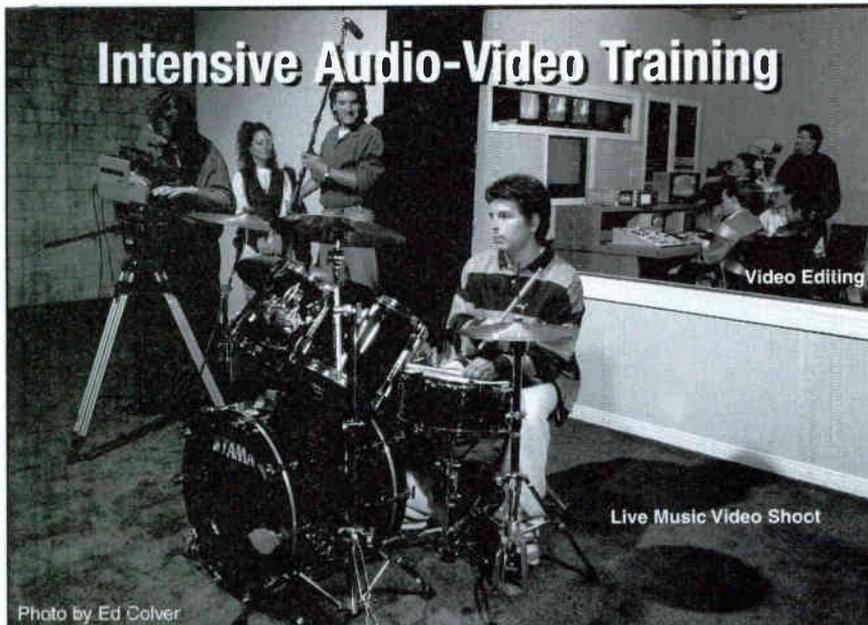


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AUDIO EDUCATION PROGRAMS

CENTRAL UNITED STATES

one-year; Certificate in MIDI/Electronic Music, one-year; Certificate in Video Production, one-year; two-year A.A.S. Degree in Audio Engineering; one-semester Enhanced Skills Certificate in MIDI/Electronic Music or Video Production. **Program and Facilities Description:** Unlimited hands-on experience via eight fully equipped studios. Studio IV: Foley stages, Pro Tools 24 Mix Plus, Panasonic DA7 for tracking, mixing, video post and scoring. Studio V: 48-track DA-88s/2-inch, Sony 3036 console, UREI, Lexicon, Eventide, ADR, Aphex processors; Telefunken, Neumann, AKG microphones. Studios II, III, IV: Alesis X2 consoles, ADAT XT20 recorders, CDRs Akai, Alesis, E-mu, Korg, Peavey, Roland, Yamaha synthesizers. Studios I, VII: 30 Power Mac/Korg workstations. Studio VIII: linear and nonlinear video editors.

INDIANA UNIVERSITY SCHOOL OF MUSIC

Bloomington, IN 47405 Phone: 812/855-1087 E-mail: bejrober@indiana.edu Web site: www.music.indiana.edu/som/audio Degrees/Certificates Offered: A.S. in Audio Technology, B.S. in Audio Recording. **Program and Facilities Description:** Training in audio recording, reinforcement and media production, multitrack studio techniques emphasized (A.S.), classical music engineering and producing emphasized (B.S.). DAT, SC-88, hard disk editing and 16-track analog, full range of professional microphones. Students record CD projects and performances ranging from solo and chamber music through symphonies, jazz ensembles and opera. Twelve-hundred performances produced annually in four concert halls. University financial aid and some work scholarships available. Departmental assistance offered in job placement.

INTERNATIONAL COLLEGE OF BROADCASTING

6 So. Smithville Rd., Dayton, OH 45431 Phone: 937/258-8251 Fax: 937/258-8714 Web site: www.icbroadcasting.com Degrees/Certificates Offered: Associate Degree program in Applied Science of Communication Arts in Television and Radio, Associate Degree program of Applied Science in Video Production/Recording, Audio Engineer Diploma Program in Recording Audio Engineering, Diploma Program Broadcasting I. **Program and Facilities Description:** ICB is a small, private college. Enrollment invitations are based on prospective students touring the facility and demonstrating commitment and desire to be part of the broadcasting and recording fields. Smaller class sizes ensure more individualized attention. Programs offer combine theory and hands-on training.

MADISON MEDIA INSTITUTE

One Point Pl., Ste. 1, Madison, WI 53719-2809 Phone: 608/829-2728, 800/236-4997 Fax: 608/829-2661 E-mail: mmi@madisonmedia.com Web site: www.madisonmedia.com Degrees/Certificates Offered: Recording and Music Technology, Multimedia Technology, Radio and Television Broadcasting. **Program and Facilities Description:** The objective of the recording and music technology program is to train students to acquire skills in engineering and sound production. The program is equipped with 15 MIDI/synthesizer work stations, 16-track Digidesign Pro Tools. Fully equipped 48-track digital and 2-inch analog.

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- Pro Audio Review
April 2000

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-Recording Magazine
February 2000

"The LynxONE is an excellent mastering card in terms of sound quality and flexibility. Suitable for today's professional studio."

AUDIO QUALITY: 5 [out of 5]

-Electronic Music an
August 1999

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World Radio History

AUDIO EDUCATION PROGRAMS

CENTRAL UNITED STATES

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1184 W. Main St., Decatur, IL 62522-2084 Phone: 217/424-6254 Fax: 217/424-3993 E-mail: swidenhofer@mail.millikin.edu Web site: www.millikin.edu.

MUSIC TECH COLLEGE OF MUSIC AND RECORDING ARTS

304 Washington Ave. N., Minneapolis, MN 55401 Phone: 800/594-9500, 612/338-0175 Fax: 612/338-0804 E-mail: lsabin@musictech.com Web site: www.musictech.com **Degrees/Certificates Offered:** Associate of Applied Science Degree in Music: Emphasis, Music Production (four semesters); Associate of Applied Science Degree in Recording Technology (four semesters); Diploma programs in: Recording Engineer Course/Engineer Major and Production Major (three semesters). **Program and Facilities Description:** Highly selective, in-depth courses for career-oriented students. State-of-the-art facilities in the heart of Minneapolis music industry. Nationally recognized faculty. Accredited institutional member of the National Association of Schools of Music. State-of-the-art recording studios, SSL, Studer, Pro Tools. Waiting list for some programs. Please apply early.

NORTHEAST COMMUNITY COLLEGE

801 East Benjamin Ave., Norfolk, NE 68702 Phone: 402/644-0506 Fax: 209/254-8282 E-mail: northeastudio@yahoo.com Web site: www.northeastaudio.org **Degrees/Certificates Offered:** two-year



Audio Recording Associates degree. **Program and Facilities Description:** Located in Northeastern Nebraska, Northeast Community College's Audio Recording program combines thorough academics and hands-on training in both live and studio environments. Facilities include two control rooms, recording studio, concert stage and isolation rooms. Equipment includes Otari, Soundcraft, Yamaha, Digidesign Pro Tools and MOTU MIDI. Northeast Community College offers quality education at a price you can afford.

OBERLIN CONSERVATORY OF MUSIC

TIMARA Department, Oberlin, OH 44074 Phone: 440/775-8413 E-mail: Gary.Nelson@oberlin.edu Web site: www.timara.oberlin.edu/ **Degrees/Cer-**

tificates Offered: four-year Bachelor of Music (major in Technology in Music & Related Arts); four-year Bachelor of Arts in Visual Arts with an emphasis in Digital Media. **Program and Facilities Description:** Based at one of the nation's top-ranked conservatories of music, the TIMARA Department has excellent facilities for computer music, performance technology and new media. There are seven studios, including a recording studio (16-track digital tape, 16-track ProTools); two computer music studios; a digital media room with a Media 100 system; and a computer music lab with multiple Macintosh-based workstations/samplers. The program is highly competitive and admits fewer than 10 students per year.

OHIO UNIVERSITY SCHOOL OF TELECOMMUNICATIONS

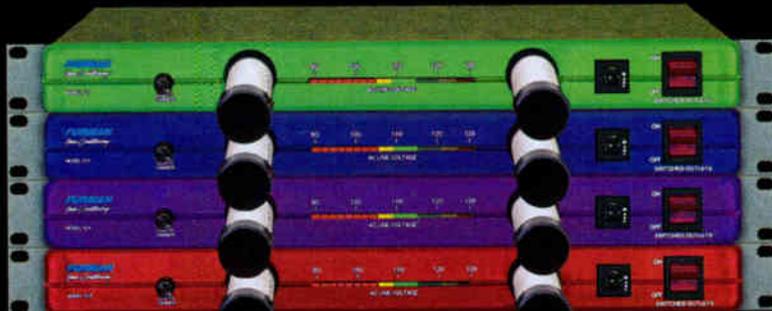
9 South College St., Athens, OH 45701 Phone: 740/593-4870 E-mail: redefer@ouvaxa.cats.ohiou.edu Web site: www.tcomschool.ohio.edu **Degrees/Certificates Offered:** Bachelor of Science in Communications. **Program and Facilities Description:** The Audio Production Sequence incorporates coursework in multitrack recording, music production, theater, music, electronics, film, business, among others. Facilities include an Amek Big 28x24 console with SuperTrue Automation, 24 tracks of ADAT, several Digidesign Pro Tools digital audio workstations, a wide assortment of mics and processing gear. The school is also equipped with both Avid and Media 100 video workstations, as well as a 13-station Macintosh MIDI/digital audio lab.

RECORDING INSTITUTE OF DETROIT

14611 9-Mile Rd., Eastpointe, MI 48021 Phone: 800/683-1743 Fax: 810/772-4320 E-mail: recordingi@aol.com Web site: recordingeq.com **Degrees/Certificates Offered:** Recording Engineer/Producer

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CIRCLE #074 ON PRODUCT INFO CARD

World Radio History

AUDIO EDUCATION PROGRAMS

CENTRAL UNITED STATES

Certificate: 60 weeks/513 clock hours; Recording Engineer Certificate: 36 weeks/305 clock hours; Associate Recording Engineer Certificate: 7-19 weeks/109 clock hours. Program and Facilities Description: Operating since 1975 with extensive training in recording, music composition and production. Students attend 12 hours per week for 39 weeks, completing two recording courses, two music courses and an internship, with lab, video viewing and in-school study as needed. We have three major studios, dedicated student control room and four student workstations. Equipment includes SSL and 02R consoles, PC/Mac hard

disk recording, DA-88, ADAT and 48-track analog recorders. Small classes, relaxed and comprehensive.

RECORDING INSTITUTE OF DETROIT SAGINAW ANNEX
707 Federal Ave., Saginaw, MI 48607 Phone: 888/683-1743 E-mail: recorderq@aol.com Web site: www.wagnermusic.com/rid.html Degrees/Certificates Offered: Recording Technician Certificate 7-19 weeks/83 clock hours. Program and Facilities Description: Open since 1997, the Annex offers initial training in recording and music. Students can complete RID full programs by transferring to the main campus for complete advanced training. Facilities include a complete 40-track, all-digital control room with DA-88 format and cascaded 02R consoles and large studio room. A student lab station and video viewing facilities round out the facilities.



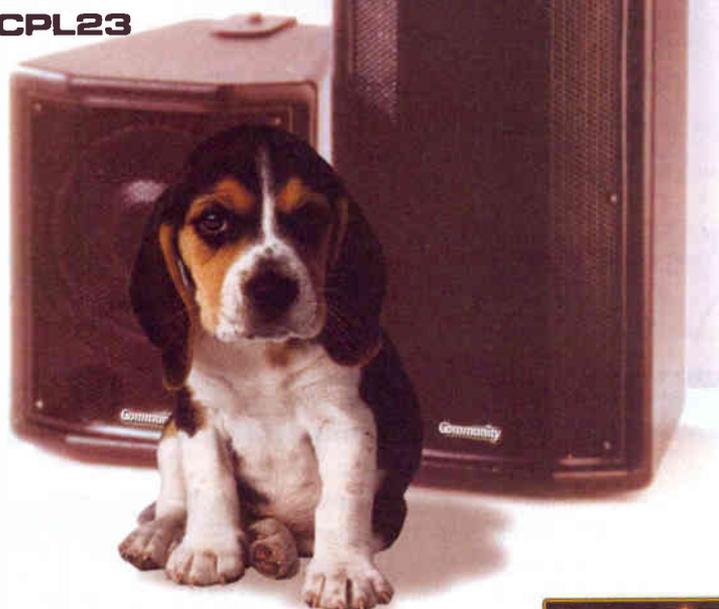
THE RECORDING WORKSHOP
455 Massieville Rd., Chillicothe, OH 45601 Phone: 800/848-9900 Fax: 740/663-2427 E-mail: info@recordingworkshop.com Web site: www.recordingworkshop.com Degrees/Certificates Offered: Certificate, five weeks, Recording Engineering and Music Production Program. Certificate, one week, Studio Maintenance and Troubleshooting Program. Certificate, one week, Advanced Recording Engineering and Music Production Program. Certificate, one week, NewTech Computer-based Audio Production Program. Program and Facilities Description: The Recording Workshop offers programs that are effective, affordable and time-efficient. Since 1971, thousands of students have participated in this intensive, hands-on training. Many have gone on to very successful careers with the Recording Workshop as their only formal audio education, continuing their growth through on-the-job experience. A well-equipped, 8-studio facility features rooms specialized for music recording and others designed for commercial production. Affordable on-campus housing is available within a one-minute walk of the studios.

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RIDGEWATER COLLEGE AUDIO TECHNOLOGY PROGRAM
2 Century Ave., Hutchinson, MN 55350 Phone: 800/222-4424 Fax: 320/587-9019 E-mail: digl@ridgewater.mnscu.edu Web site: www.ridgewater.mnscu.edu/ Degrees/Certificates Offered: two-year diploma in Audio Technology, two-year A.A.S. Degree in Audio Technology. Program and Facilities Description: The Audio Technology department offers a diverse program in audio ranging from studio recording to live sound, system design and installation. Students also achieve a strong electronics and computer applications background, which makes our graduates extremely valuable to future employers. Students will work with ProTools, Mix Plus and DAL V8 Digital Audio Workstation, Renkus-Heinz Ease and Ears, Smaart Pro, BSS Soundweb, B&K Acoustical Test Equipment and many other specializations.

SOUTH PLAINS COLLEGE
1401 College Ave., Levelland, TX 79336 Phone: 806/894-9611 x 2276 Fax: 806/894-5274 E-mail: smoodyspc@spc.cc.tx.us Web site: www.spc.cc.tx.us Degrees/Certificates Offered: Associate Degree in Sound Technology. Program and Facilities Description: Two 24-track recording studios, one 16-track demo studio. Consoles include Sony MXP-3036 36-channel, AMEK Mozart 34-channel, Mackie 8-bus 32-channel, fully equipped MIDI lab with Vision/ProTools, MOTU Digital Performer/Macintosh C4 Digital Audio Workstation, complete video production facility. The Sound Technology Program at South Plains College was founded in 1980 and modeled after the program at Belmont University in Nashville. South Plains College offers a professional audio education at an extremely affordable price.

SOUTHWEST TEXAS STATE UNIVERSITY
601 University Dr., San Marcos, TX 78666 Phone: 512/245-8451 Fax: 512/396-1169 E-mail: me02@swt.edu Web site: www.swt.edu/music Degrees/Certificates Offered: Bachelor of Music with an

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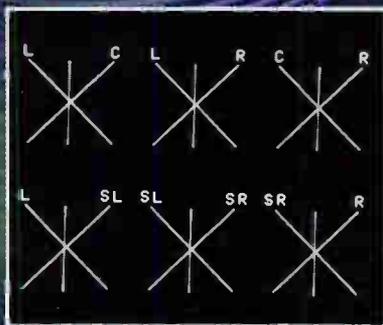
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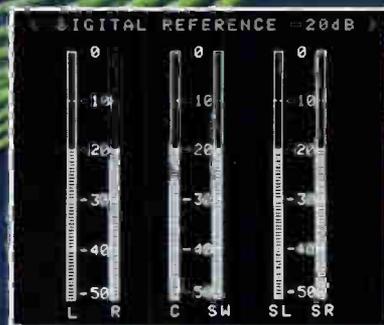
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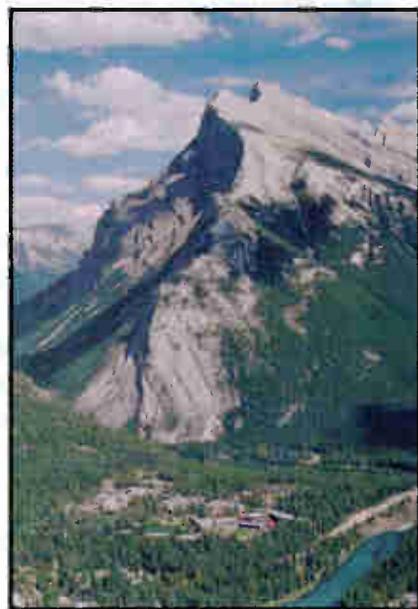
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The Banff Centre for the Arts

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digital techniques open employment opportunities ranging from music production to positions in high-tech communications. The 1300+ hours of the program are all delivered in-studio, about half of which is dedicated to hands-on lab time. If you want to pursue a professional career in audio and are wondering how to get there, please visit our web site.

www.oiaart.org

Ontario Institute of Audio Recording Technology
502 Newbold Street, London ON, Canada N6E 1K6
phone 519.686.5010 fax 519.686.0162
inquiry@oiaart.org

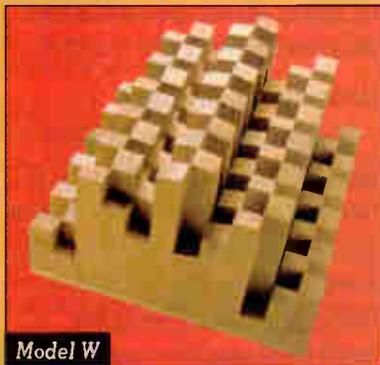
CIRCLE #078 ON PRODUCT INFO CARD

Phone: 403/762-6180 Fax: 403/762-6345 E-mail: studios@banffcentre.ab.ca Web site: www.banffcentre.ab.ca/music **Degrees/Certificates Offered:** Audio Assistant and Associate Work/Study programs. One to three terms. **Program and Facilities Description:** Financial assistance and weekly stipend available. Audio engineers refine their skills in an international, multidisciplinary environment. The audio program runs alongside internationally renowned music programs with prominent faculty and musicians. Guest audio faculty have included John Eargle, Bob Ludwig, George Massenburg and Dr. Wieslaw Woszczyk. Activities include learning equipment, software and advanced recording techniques, involvement in CD, concert and studio recording, individual research and experimentation, and audio-for-video. Facilities include recital hall with adjoining control room, digital multitrack recording studio, Pro Tools audio-for-video post-production suite, Sonic Solutions editing suite.

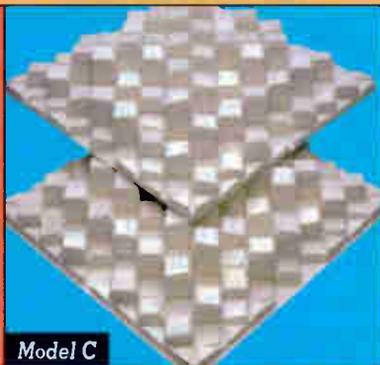
CALIFORNIA RECORDING INSTITUTE
1137 Howard St., San Francisco, CA 94103 Phone: 650/324-0464, 800/9000-MIX Fax: 415/861-1613 E-mail: virtmixr@hooked.net Web site: www.CaliforniaRecording.com **Degrees/Certificates Offered:** two-year Audio Producer Associate Degree Program; three- or nine-month Recording Arts and Technology Certificate Program. **Program and Facilities Description:** Hands-on intensive program with a wide array of complementary classes. Four studios (24-track 2-inch, ADAT, MIDI), Pro Tools 4, Digital Video Editing Suite and The Virtual Mixer) per 18 students. The program also utilizes "The Virtual Mixer," which uses 3-D visuals of the mix to teach "Mixing Theory." Gibson's book The Art of Mixing is used as the primary text. Serious internship

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CALIFORNIA STATE UNIVERSITY, CHICO DEPARTMENT OF MUSIC
Chico, CA 95929-0805 Phone: 530/898-5500 Fax: 530/898-4082 E-mail: kseppanen@oavax.csuchico.edu Web site: www.csuchico.edu/mus/rcrd Degrees/Certificates Offered: four-year B.A. in Music with an option in Recording Arts; four-year B.A. in Music with an option in Music Industry.

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS
1000 E. Victoria St., Carson, CA 90247 Phone: 310/243-3543 E-mail: dbradfield@dhvx20.csudh.edu Web site: music1.csudh.edu/Music. Degrees/Certificates Offered: four-year B.A. Audio Recording; four-year B.A. Music Synthesis; Certificate Audio Technology. Program and Facilities Description: CSUDH has a fully equipped analog and digital studio in addition to its synthesizer studio. Completely renovated in 1999, the new equipment includes: Mackie and Panasonic Digital 5.1 mixing consoles, 48 tracks of DA-98 and ADAT format multitrack recording, Pro Tools and Sonic Solutions DAWs and hi-res mastering equipment.

CONSERVATORY OF RECORDING ARTS & SCIENCES
2300 East Broadway Rd., Tempe, AZ 85282-1707 Phone: 800/562-6383 Fax: 408/829-1332 E-mail: cras@crass.org Web site: www.audiorecording



school.com Degrees/Certificates Offered: Master Recording Program. Program and Facilities Description: The MRP-II is a 37-week-long comprehensive audio engineering program. Classes are limited to 12 students. This is the only accredited recording school in the U.S. authorized by Avid/Digidesign to certify its graduates on Pro Tools courses 135 and 235, and it is the only program that requires and procures an internship for its students. The program utilizes state-of-the-art gear, including SSL, Tascam, Otari, Lexicon, TC Electronic and Neumann. Financial aid available to those who qualify.

EX'PRESSION CENTER FOR NEW MEDIA
6601 Shellmound St., Emeryville, CA 94608 Phone: 510/654-2934 Fax: 510/658-3414 E-mail: Doreen@xnewmedia.com Web site: www.xnewmedia.com, www.expression.edu Degrees/Certificates

Offered: 14-month (four-year) diploma program in Sound Arts, Animation and Modeling, Web Design and Development. Program and Facilities Description: The Sound Arts Program at Ex'Pression Center for New Media is a total immersion, educational experience designed to bring the graduate's level of knowledge to the professional level. The 14-

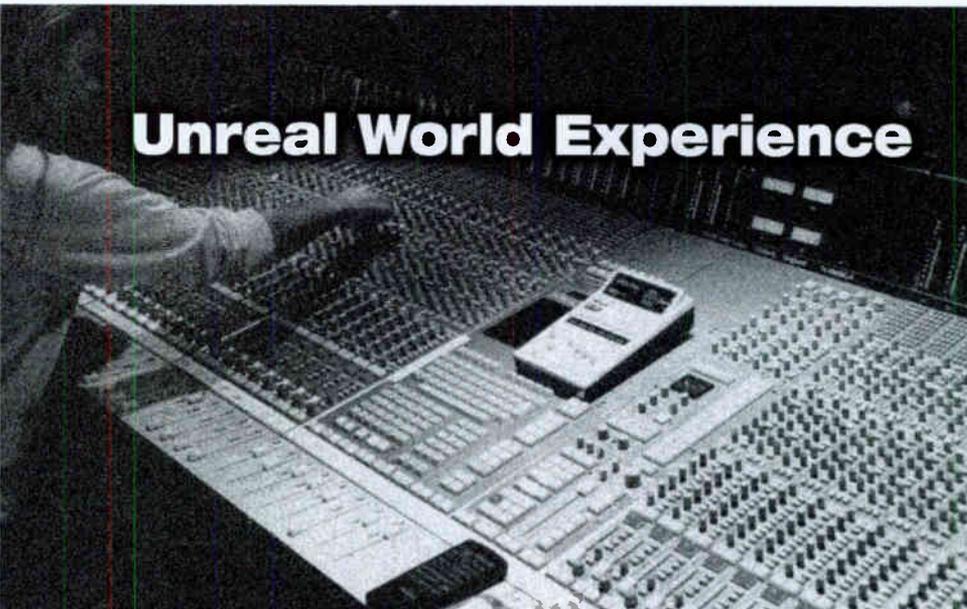




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site: www.losmedanos.net Degrees/Certificates
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sociate Degree. Program and Facilities Descrip-
tion: The most comprehensive community college
recording program in the country. Courses in digital
and analog multitrack formats, sound reinforce-
ment, jingle production, music business, session
producing, employment strategies, MIDI, audio-
for-video, digital editing and related subjects. Two
well-equipped multitrack studios, ten MIDI stations.

MILLS COLLEGE

Phone: 510/430-2191 Degrees/Certificates Offered:
B.A.s can specialize in composition with an emphasis
on technology. M.F.A. degrees in composition can
specialize in electronic music and recording media.
Program and Facilities Description: Mills College is
an undergraduate women's college and a co-educational
graduate college. Our studios include 24-track analog
(with Dolby SR) and Pro Tools workstation.

MIRACOSTA COLLEGE MUSIC DEPARTMENT

One Barnard Dr., Oceanside, CA 92056 Phone:
760/757-2121 x6527 Fax: 760/795-6817 E-mail:
ccoobatis@mcc.miracosta.cc.ca.us Web site: www.miracosta.cc.ca.us/info/acad/music/default.htm
Degrees/Certificates Offered: A.A. in Music. Program
and Facilities Description: All certificates are two-
year programs: Recording Arts/Record Production
Certificate; Sound Reinforcement Certificate; Certifi-
cate of Achievement-Guitar; Computerized Audio
Production Certificate; Certificate of Achievement-
Music Technology; Certificate of Achievement-
Performance Technician. Programs in commercial
music, choral, piano, guitar, as well as general trans-
fer-level courses.

MT. SAN JACINTO COLLEGE

1499 North State St., San Jacinto, CA 92583 Phone:
909/487-6752 x1577 Fax: 909/487-1452 E-mail:



music@msjc.cc.ca.us Degrees/Certificates
Offered: Audio Technologies Certificate (18 units)
Associate Degree, Audio Technologies. Program
and Facilities Description: The MSJC program fea-
tures both hands-on and theoretical instruction.
Plus, the MSJC program uses the same professional
equipment the audio industry does with names like
Soundcraft, Yamaha, Pro Tools, Lexicon, Otari and
QSC. Additionally, we offer both digital and analog
recording. The \$2 million facility features five studio
floors and three independent control rooms. Also

computer music lab. California resident enrollment
fees are \$11 per unit. Out-of-state fees are higher.
Financial aid is available.

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9030 Eton Ave., Canoga Park, CA 91304 Phone:
818/709-5809 Fax: 818/709-7846 Web site:
www.musicvideoproducts.com Program and
Facilities Description: Music instruction videos for
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8064 E-mail: musicbiz@earthlink.net Web site:
www.recordingconnection.com Program and Fa-
cilities Description: Recording Connection is a 15-
year-old accredited program that has a worldwide
network of over 5,000 recording studios through-
out the United States and Canada. The company
signs on new affiliates each month. We provide on-
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donyg9999@aol.com.

SAN DIEGO CITY COLLEGE

1313 12th Ave., San Diego, CA 92101 Phone: 619/
230-2522 Fax: 619/230-2212 Web site: www.sd.ccd.net Program and Facilities Description: See
Web site.

SAN FRANCISCO STATE UNIVERSITY

1600 Holloway Ave., San Francisco, CA 94132
Phone: 415/338-1111 Web site: www.sfsu.edu
Degrees/Certificates Offered: Broadcast & Elec-
tronic Communication Arts Dept.: B.A. and M.A.
four-year degree program; Music Recording Indus-
try program, College of Extended Learning; Certifi-
cate Program. Program and Facilities Description:
Facility is a fully equipped studio with 2-inch analog
multitrack, automated console, misc. signal pro-
cessing equipment and digital audio workstations;
B.A. program includes multitrack recording for
music, audio-for-visual media and sound design
components.

SANTA BARBARA CITY COLLEGE

721 Cliff Dr., Santa Barbara, CA 93109-2394
Phone: 805/965-0581 Fax: 805/963-7222.

SANTA MONICA ACADEMY OF ENTERTAINMENT AND TECHNOLOGY

1900 Pico Blvd., Santa Monica, CA 90405 Phone:
310/434-3700 Fax: 310/434-3709 E-mail: cook_maria@smc.edu Web site: <http://academy.smc.edu>
Degrees/Certificates Offered: two-year Computer
Animation certificate; two-year Interactive Media
certificate. Program and Facilities Description:
The Academy of Entertainment and Technology
trains students in interactive media, traditional ani-
mation and computer animation. A program in
audio engineering is in development. We offer
hands-on training with industry standard software
including Maya, Dreamweaver, Director, Flash, Pro
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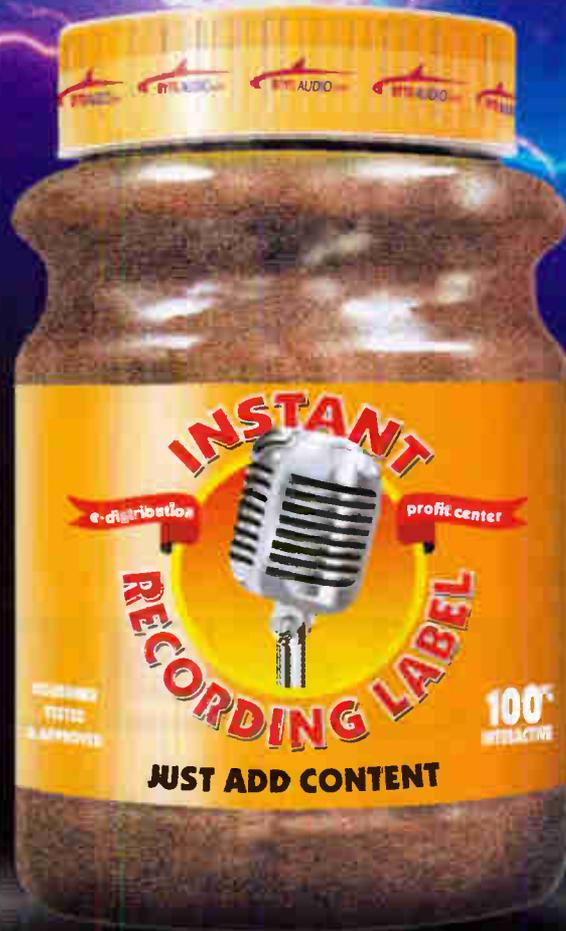
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39 Gilbert St., San Francisco, CA 94013 Phone: 415/863-6883 Fax: 415/863-8419 E-mail: info@SFAudio.net Web site: www.SFAudio.net Degrees/Certificates Offered: two-month Music Production certificate; 10-week Post-Production certificate; non-degree granting status registered with the California State Bureau for Post-Secondary and Vocational Education. Program and Facilities Description: SF Audio Net provides a combination of training and hands-on experience in an immersion-style educational program. Training sessions are held in a commercial facility and taught by working professionals in the industry. Commercial projects are used as training tools to demonstrate the practical applications of the skills and theories being taught. These workshops provide an educational and networking resource for both professionals and students in the field of digital audio production for both commercial post-production and music recording applications.

SOUND MASTER RECORDING ENGINEER SCHOOL AUDIO/VIDEO INSTITUTE

10747 Magnolia Blvd., North Hollywood, CA 91601 Phone: 213/650-8000 Web site: www.engsrnd.com Degrees/Certificates Offered: Recording Engineering Certificate, 10 months (720 clock hours). Program and Facilities Description: Recording Engineering and Audio/Video Post-Production

taught in a state-of-the-art facility. Among the many subjects taught are analog and digital recording techniques, synchronization using both SMPTE and MIDI, equipment maintenance and audio/video post-production. All subjects are reinforced by hands-on workshop classes in a professional studio environment. Student grants and loans are available to those who qualify. Job placement assistance is given upon graduation.

TREBAS INSTITUTE, BRITISH COLUMBIA

112 East 3rd Ave., Vancouver, BC, Canada V5T 1C8 Phone: 604/872-2666 Web site: www.trebas.com Degrees/Certificates Offered: one-year diploma programs in Audio Engineering, Recorded Music Production, Music Business Administration, Film/Television Production, New Media Development and 3-D Animation; B.A. in Sound Technology (two-years, following one-year diploma in Audio Engineering) in partnership with the Liverpool Institute for Performing Arts. Admission to B.A. Degree program highly competitive. Program and Facilities Description: Established in 1979 to help students acquire knowledge and develop skills and professionalism for entry into fields of music business, audio, record production, film/TV production, post-production, interactive multimedia and computer animation. Outstanding instructors. High-tech studios and labs. Focus on preparing grads for real-world careers. Government loans. Internships. Lifetime national job search assistance. Grads with major entertainers, studios, companies worldwide. Resource center. Authorized training center for Cubase and Macromedia.

UCLA EXTENSION ENTERTAINMENT STUDIES

10995 Le Conte Ave., Room 437, Los Angeles, CA

90024 Phone: 310/825-9064 Fax: 310/206-7435 E-mail: espa@unex.ucla.edu Web site: http://espa.unex.ucla.edu Degrees/Certificates Offered: Certificate Program in Recording Engineering takes approximately one year to complete. Program and Facilities Description: A rigorous training program that prepares the student in both the art and science of sound recording. Drawing on the talent and studio facilities of Los Angeles, UCLA Extension has created a curriculum of required and elective courses that cover both theory and practice in audio technology, equipment, musicianship and business practice. All classes are taught by working professionals. The objective of the program is to enable future engineers to acquire vision and problem-solving techniques that meet the challenges of rapidly evolving technology and a dynamic sound recording market. State of California-approved program of significant educational accomplishment in a professional field.

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MUSIC

Music Industry/Recording Department, Los Angeles, CA 90089-0851 Phone: 213/740-3224 Fax: 213/740-3217 E-mail: scmusind@usc.edu Web site: www.usc.edu/schools/music Degrees/Certificates Offered: four-year B.S. in Music Recording; four-year B.S. in Music Industry; Bachelor of Music in Music Industry. Program and Facilities Description: All classes taught by full-time faculty and local L.A. professionals. Music industry class lecturers/instructors include Jay Cooper, Mark Goldstein, Jeff and Todd Brabec, Donald Passman, Mark Isham, Kevin Kolloff. Recording arts class taught in SSL/Studer-equipped classroom by instructors/guest lecturers Richard McIlvey, "Benjo" May, Ed Cherney, Steve Krause, George Massenburg, Tim Boyle. ■

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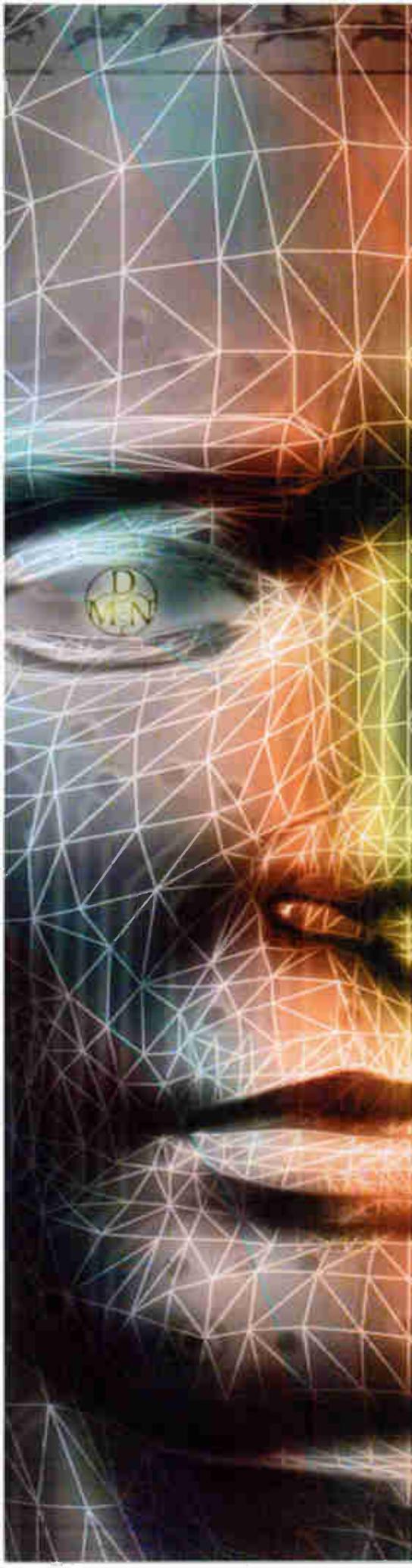
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International HQ

Todd-AO scores immaculately with SL 9000

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Rising stars .



Marc Gebauer, supervising engineer for the scoring stage, and Kirsten Smith, studio manager, pictured at Todd-AO Scoring, Los Angeles.

SSL 9000 J scores for Todd-AO

Todd-AO Scoring, a division of Todd-AO Studios, a premier audio post-production facility for feature film and television in Los Angeles, has upgraded its scoring stage with a 96-input Solid State Logic SL 9000 J Series SuperAnalogue™ console. The console was immediately employed to record a massive 123-piece orchestra performing the music soundtrack for the upcoming Jim Carrey feature release *The Grinch*.

"After extensive research, Todd-AO Scoring chose the SL 9000 J Series because of its incredible sound and SSL's capability to customise the console and the recall automation," says Marc Gebauer, supervising engineer for the scoring stage at Todd-AO. "We are using it for one of the largest orchestras we have ever recorded to handle the tracks for *The Grinch*. This is an especially interesting project as the composer has invented a lot of instruments for the movie so the music tracks can almost be thought of as special effects. The 9000 came through with flying colours, elegantly capturing the orchestra. The sound quality was immaculate."

The SL 9000 J Series at Todd-AO is a 72-input mainframe with a 24-input sidecar, yielding a total of 96 inputs with full surround sound mixing capabilities.

"We worked closely with SSL on customising the 9000 with extra mix buses and patching facilities that we specified," describes Gebauer. "We needed to add wiring support for the four mix machine panels, which are 32 channels wide, to accommodate the 33-bus mixing scheme we devised to handle the way we work. SSL did a great job working with us at every step to come up with alterations while maintaining that great 9K quality."

Of particular importance to the engineering staff is the recall automation on the 9K. The policy at Todd-AO is to document every show that comes in, which used to mean long hours of manually writing down all the settings. "I can't tell you how happy the staff is not have to do that any more," adds Gebauer. "The 9K is really well thought out and, because of the custom features we put in giving us extra facilities, we already see that it will bring in a lot of business. I am glowing over this console. Everyone is very happy."

Chris Puram is a rising star among that current crop of hot young engineers who adapt with ease to new formats and technologies. Best known for the hardhitting, punchy sound he's contributed to mixes for Snoop Dogg, DJ Quik, Tony! Toni! Tone!, and Queen Latifah, Puram is usually found ensconced behind the SSL Axiom-MT digital console at Skip Saylor Recording in Hollywood.

Although he's thoroughly modern in sounds and attitude, Puram came up through the engineering ranks in the traditional way, logging untold hours as an assistant engineer. And, although his biggest credits are in hip-hop, he first moved up to the engineering chair doing heavy metal. Puram recognises that his experience in rock gives him an edge in hip-hop. "My first freelance gigs were all in metal," he recalls, "with producer Max Norman who worked with Ozzy and Megadeth – stuff like that. I really didn't do much hip-hop until I hooked up with DJ Quik. There are similarities; not so much musically, but in the attitude, and in the age group that the music is targeted to."

It was studio owner Skip Saylor who introduced Puram and artist/producer DJ Quik. These days, Puram is a client of HitMixers, Saylor's engineer management company. The two have a long history; Saylor gave Puram his first real studio job and Puram became Saylor's first management client. The studio owner/engineer manager fit is a natural one for Saylor, and the concept has proved so successful that HitMixers now boasts a roster of six busy engineers.

"I've known Skip since I started in this business," explains Puram. "So I really trust him. It's a great relationship. He's really good at what I'm not – the business end of things. Having a studio owner for a manager offers some unique advantages. And, because Skip is also an engineer, he really understands my job."

Originally from upstate New York, Puram was a self-described "music-loving technical geek" in high school. When his guidance counsellor's wife recognised his potential and got him an entry into Woodstock's legendary Bearsville Studios: the die was cast. Sold on a studio career, he headed to L.A. Fate again intervened and he hooked up with his future manager while attending a recording class taught by Saylor.

"Skip and an artist named Gary Taylor were teaching a class once a week at Saylor Recording," Puram recalls with a laugh. "They would purposely be hard on the students to show them what a real-life, difficult session could be like. I guess it was a pretty effective class, because nobody else stuck with it. I was the only one who kept coming back, and Skip ended up hiring me."

Puram honed his chops on the Ultimatum-fitted, SSL 4080 G-plus in Saylor's Studio A; when Studio B installed the first Axiom MT on the West Coast, he was quick to see its advantages. Projects he's mixed on the digital board include songs for Queen Latifah, Tupac and Japanese superstar producer Tetsuya "TK" Komuro, well as "Fine," Whitney Houston's current Raphael Saadiq-produced chartclimber.

"What I really like about the Axiom-MT," he comments, "is that everything is automated, and everything is quick. I find that I'll fix things that on another board I would just live with, or try to fudge around. Things like vocal pops, which either weren't possible to fix, or which would have taken way too much time. In a track with a lot of them, you'd have to set up who knows how many channels, and split them off for before and after what you're trying to fix. Now, it's just a simple fact of rolling off a little bit, with EQ or a filter, when the offending word comes around. You can go off-line and really fine tune moves, and you can do things on the fly, as you think of them. It's easy, because it's digital."

Puram is also a fan of the MT's sound. "It's great. The low end is nice and punch and the top end has edge. It's great for what my clients want to hear today. When I first started doing this, people only seemed to care that there was a ton of bottom; now I hear the words 'crisp' and 'punchy' a lot more than just 'fat'. They still want fat, but they definitely want higher fi than a few years ago. A lot of my clients who regularly work on SSL 9000 J boards tell me that they love the sound of the MT."

Multiple remixes are a fact of life in Puram's world and he especially appreciates the MT's recall capabilities. "I just finished a project for 4th Ave Jones," he notes. "And they were very picky, which is good. They lived with the mixes for a bit, then wanted to recall and make some little tweaks. With this board's complete instan-

First MT music mix goes platinum

Studio Arnold Mühren, the leading Dutch residential recording studio on the outskirts of Amsterdam, was the venue for the recording and mixing of 'Luid en Duidelijk,' the latest album from leading Dutch artist, Marco Borsato.

The album, the first project to be completed on the studio's recently installed Axiom-MT digital multi-track console, went straight to Number 1 on the Dutch charts and has sold more than half a million copies to date.

Owner Arnold Mühren explains, "We were looking for a console that would prove as good a long-term investment as our original 4K and the MT provided the ideal solution. We're a bit tight on space here, and the MT's 48-fader frame gives us 96 channels with more than 200 inputs to mix."

"Operationally, the console's great. Not only does it provide outstanding automation but it sounds amazing – with a level of warmth not normally associated with digital."



Mixer Patrick Mühren pictured at Studio Arnold Mühren

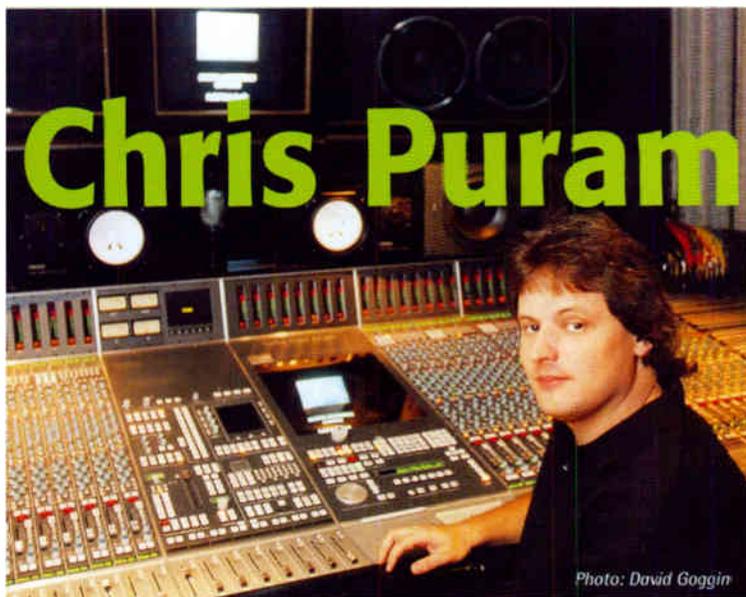


Photo: David Goggin

▲ Chris Puram at Skip Saylor Recording

reset, it was a breeze to do. When you want to insert something, you just hold down a button on the channel you want to insert it in, and pick your piece of gear from the list. One day we did ten or more recalls and it was easy. That just wouldn't be possible on an analogue board."

Most of Puram's clients still record to analogue 2-inch, and he mixes to both analogue 1/2-inch and to DAT. "I still mix to both," he says, "But a lot of times I like the digital better these days. Especially because with the MT, it stays digital to DAT. One of the advantages is that you don't need to go through the conversion process.

Although his hip-hop and R&B clients keep him busy, Puram tries to take on rock projects whenever he can. "I'm happy to do whatever," he says with an easygoing smile. "I'm not looking to make a big change, but I like to keep my hand in on rock. I always want to be able to do different things."

Rock or hip-hop, you can be sure that projects with Puram's name on them sound powerful. "People are usually surprised when they meet me after they've heard my records," he muses, "I guess they expect someone more wild or crazy looking." Puram should have no worries on that account: he's definitely "pretty fly for a white guy!"

Three Avants for Crawford Audio

Crawford Audio, a division of Crawford Communications Inc.'s premier post-production operations, recently opened its new audio studio complex in Atlanta. The 11,000 square-foot facility is centred around three 96-channel Solid State Logic Avant digital consoles, which are fully integrated through an SSL Hub Router system. This facility-wide, all-digital network forms a cornerstone of Crawford's all new 135,000-square-foot site.

"We are very fortunate to have the opportunity to build a new infrastructure from the ground up to house the Avants," says Steve Davis, director of Crawford Audio. "As the technology and marketplace shifts, a studio usually ends up constantly adapting rooms to those changes resulting in a real hodgepodge of equipment. By having all three main studios centred on the Avants, we achieved a uniform digital nucleus capable of interfacing with existing and future recording/editing systems. As the Avant is a digital system, the console is kept up-to-date primarily through software upgrades. This allows exceedingly busy facilities like Crawford to use the console's hardware interface and resulting studio layout well into the future while remaining on the cutting edge of technology."

► SSL Avant digital post/film console



Earlier this year, a crowd of more than half a million people gathered at The Eiffel Tower in Paris to witness an extraordinary concert from French legend Johnny Halliday. The concert was a one-off spectacular marking 40 years of success with a budget of more than 40m Francs and a display of pyrotechnics to rival those in Paris on the Millennium.

The live broadcast on TF1 was complemented with a stereo simulcast on RTL but this was just the beginning. Following the broadcast, old friends Thierry Rogen and Yves Jaget of Mega Studios and Le Voyageur respectively, had just five days to mix 25 songs for a CD and a VHS soundtrack which were due on the street exactly a week after the show. Luckily, they'd have a little more time for the DVD with 5.1 surround!

One of the many things Rogen and Jaget have in common is their preference for SSL's Axiom-MT digital multi-track console. As Rogen

explains, "Mega Studios was the first to have the MT in Europe – the first to take the risk – and I love it. When Le Voyageur wanted to build a big digital truck, I thought it was a fantastic idea to buy an MT because it's definitely the best console."

During the concert, Rogen took the helm in Le Voyageur 1 beneath The Eiffel Tower for recording, while Jaget concentrated on the live broadcast from a second OB vehicle. On the day following the concert, Jaget and Rogen convened at Mega Studio. It was Jaget's plan to overcome a seemingly impossible deadline by starting the project in Mega's MT-equipped Studio B, then copying the setups to the second MT, already drawn up outside in the Le Voyageur mobile. The street was closed and the two consoles linked for the following five days.

As the mix progressed, SSL's automation proved to be a blessing as Rogen confirms, "My feeling is that there is nothing more powerful than this automation system on a digital desk. SSL I think, has a feel for it after so many years, with the 4K and the 9K, and all the work they've done with engineers and producers – they listen to us, even if we are French! For me the MT's sound is not just the best digital console in the world, it's the best console in the world. And I never heard an EQ like this in my life."

Completed on time, the mix was duly delivered for mastering and appeared in the stores just one week after the concert as planned. As expected, the album was hugely successful in France and the subsequent DVD is now awaiting release.



▲ (L-R) Yves Jaget and Thierry Rogen ©George Sh

Mega Studios and Le Voyageur collaborate on MT marathon mix



Yamaha get surrounded

Yamaha Epicurus Studios has ordered a second SL 9000 J Series console for installation in its Tokyo facility. The new console, an SL 9064 J complete with surround-sound option, joins a 64-channel 9000 J Series, already installed in Studio 1.

SSL Japan's Managing Director, Takeo Asano explains, "The demand for 5.1 surround-sound production is now growing steadily in the region. Fitted with SSL's surround-sound monitoring panel, the SL 9064 J's SuperAnalogue™ processing makes it an ideal and proven tool for the re-creation of high fidelity audio for DVD-Audio and Super Audio CD production."



Medienhaus Mainz opens for business

Studio Tonmeister of Mainz, Germany has now completed the construction and equipping of Medienhaus Mainz – an all-new media centre on the outskirts of the city. At the heart of this new all-digital facility will be an Axiom-MT and two Avant consoles.

Studio Tonmeister will occupy 10,000 square feet in Medienhaus Mainz where SSL's Avant digital post-production consoles are installed in control rooms 1 & 2. Both rooms are fitted with Genelec monitoring and fully equipped for 7.1 Dolby surround sound.

Adjoining a 1,500 square foot recording studio, control room 4 houses the MT digital multi-track console and is similarly equipped for Dolby 7.1 surround and Genelec monitoring.

All three consoles are interconnected by an SSL Hub Router which handles up to 2,000 channels of audio, a powerful and important feature for larger facilities needing to access different machine and control rooms. Any available tape machine or other connected devices can be accessed without manual re-patching, and also the amount of wiring required during installation is minimal.

▲ Alfred Huff, owner of Studio Tonmeister

Oasis Studios will set the standard in China

An SL 9080 J Series SuperAnalogue™ console has been purchased by Oasis Studios in Beijing. Dindae Sheena, Chief Operating Officer of YYD Productions, explains, "We did a market study on the standard that was currently on offer in other private facilities in China – as we wanted to improve on what was available. We decided that the 9K was the way to go and Oasis will be the first private facility in China to own one."

Control room A (The Ocean Room) will house the SSL 9080 J console with monitoring by Genelec 1036As. The main 4,000 square foot studio – with stunning lakeside views – is large enough to house a 60-piece orchestra

comfortably. Considerable attention has been paid to acoustics throughout, with design by Sam Toyoshima.

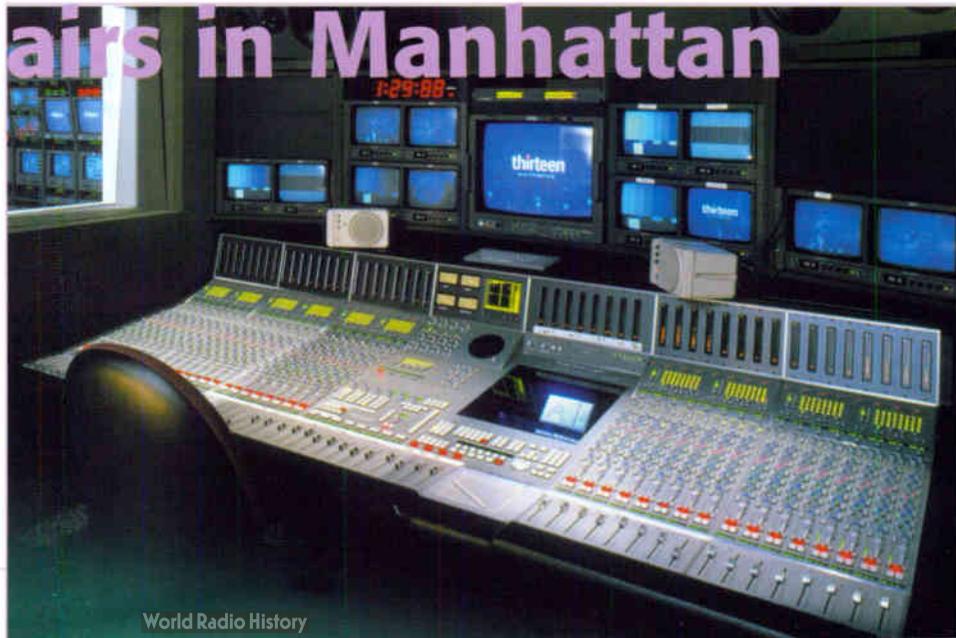
Sheena concludes, "Set to become the first large-scale commercial recording facility in China, Oasis Studios will concentrate mostly on working with artists in the Asia-Pacific region, with most of the focus on artists from Mainland China, Hong Kong, Korea, Japan and Taiwan. But, as a 9K equipped facility, our ambition is to join the global club of premier international studios and we look forward to working with artists from all corners of the world."

◀ Dindae Sheena, Chief Operating Officer YYD Productions, pictured with SSL's Regional Sales Manager, Tim Harrison

Aysis airs in Manhattan

Thirteen/WNET Public Television uses an Aysis Air console in its new all-digital production facility located in midtown Manhattan. The console is the centrepiece of the main production audio room, servicing live and live-to-tape studio production.

Mac Privette, Director of Engineering at Thirteen/WNET is delighted with the station's choice. "This console is an operator's delight. Any operator can walk right up to the board and make it fly. The Aysis Air is also super reliable – which is critical in achieving the successful day-to-day production of live and live-to-tape programs. Plus, it sounds great!"



techno *file*

feel the difference

SSL's new digital faders for Axiom-MT were introduced at this year's AES Convention in Los Angeles and add a host of new useful features including:

- Alpha-numeric message display (for grouping/automation and other useful information).
- Virtual detents (allowing the operator to feel null points/level matches).
- Individually hot-swappable for quick servicing.
- Digitally optimised accuracy and positional tolerance.
- Dedicated 'attention' button (for easy channel selection).

The use of a custom linear motor fader allows electronic control of the fader's friction and reduces the use of moving mechanical components, virtually eliminating maintenance requirements. The fader's display allows the operator to instantly see the grouping or automation status of any individual fader. When using automation, the electro-magnetic clutch feature allows the operator to sense null points and level matches, giving physical as well as the usual visual clues to the automation data under the fingertips.

Niall Feldman,
SSL Director of Product Management



Artist Beth Nielsen Chapman is currently recording her fourth album on the SSL Axiom-MT console at Backstage Studios at Sound Stage in Nashville. Chapman, who helps write, along with producer Anna Fehsel and Noble Lerner, the song "This Kiss" for another hit and will include a remake of the song on her new album, describes herself as "blissed to be working on the MT. The sound of the MT is legendary," says Chapman, and "working with Chuck Arjey at Backstage has been a great experience." Chapman, who co-produces several of her tracks with producer Tommy Sims, says that the vibrant feel of the console and being able to recall the mixes 100 years has made the project very easy. (Click here for the Chapman and Sims.)

Artist Beth Nielsen Chapman Mixes on SSL's Axiom-MT at Backstage Studio at Sound Stage



CCTV install second Aysis Air

China Central Television, (CCTV) the state broadcaster in the world's most populous country, has taken delivery of a second Aysis Air digital broadcast console.

Last year CCTV installed its first 96-channel Aysis Air in a 9000 square foot studio at the broadcaster's main national headquarters in Beijing. The second Aysis Air, a 64-channel console, will be located in a 5,400 square foot studio within the same building.

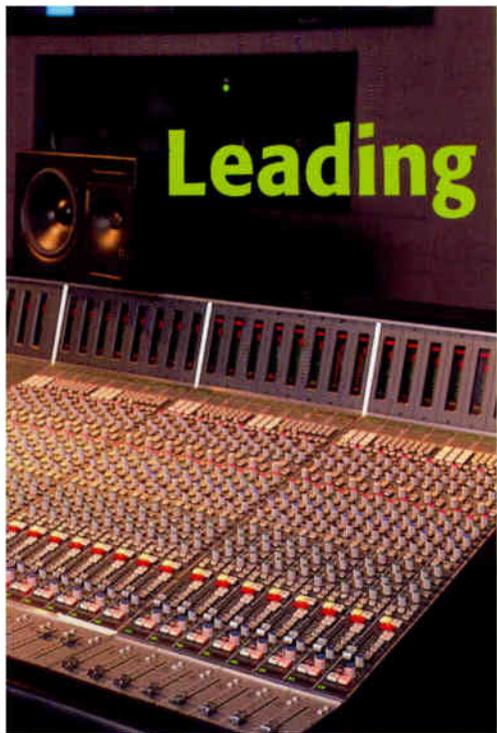
The main reasons cited for the second purchase are reliability and the familiar, easy-to-use control surface. According to SSL's Regional Sales Manager, Tim Harrison, "CCTV has had an SL 4000 Series console for some time and has been looking forward to investing in high quality digital products. The broadcaster was able to judge the important reliability issue on their own experiences with SSL consoles – hence the second order."



Leading U.S. engineers love

7

Axiom-MT



Claudio Cueni prefers working on the Solid State Logic Axiom-MT digital console at Skip Saylor Recording in Los Angeles above all other digital consoles. Says Cueni, "I've worked with other high-end digital consoles before, but the MT is the first one that produces a killer sound. This board is simply the greatest. I told Skip [Saylor], don't tell anybody how good the MT is so I can keep booking the room."

Leading engineer Derek Bason recently teamed with producer David Malloy and used the 96-channel Axiom-MT at Backstage at Sound Stage Studios in Nashville to mix two songs for artists Jesse's Girls.

"For SSL to build a console that's fully digital and sounds great is such a blessing – I don't want to mix on anything else," says Bason, whose discography includes projects for artists Reba McEntire, Wynonna Judd, Vince Gill, George Strait and Faith Hill. "I'm a big fan of the 9000 J and didn't think anything would ever impress me as much. But the MT is very much like the J in its automation, which is excellent. Many of its features are familiar to 9000 users, and it has the added dimension of being able to automate the EQs, pans and compressors, which is great. The flexibility of the MT will ultimately save a lot of time and money on projects because you no longer have to run a ton of outboard gear."

Legendary producer/engineer Eddie Kramer successfully mixed two hours of music in 5.1 surround on Kampo Studios' Axiom-MT in New York, with 22 songs mixed in both stereo and 5.1 surround being completed in only four days.

"The Isle of Wight concert in the 70's is considered to be the British Woodstock," Kramer explains. "We took Jimi Hendrix's entire two-hour show and combined it with biographical footage to produce a two-hour film performance on DVD. I suggested to Jimi's family that this was an excellent opportunity to mix in 5.1 surround and, since the tracks were already digitally transferred to DA-88 to facilitate the picture editing in the Avid system, the logical choice was to stay digital and that led us to the MT at Kampo."

(L-R) John Davidson, lead mixer, and David Wainwright, post-production mixer at Maryland Public Television



The SSL Axiom-MT has become the console of choice for many of today's top engineers across the U.S.A.

Maryland Public Television puts Avant to the test

"We've really been putting our new Avant through its paces," says John Davidson, three-time Emmy Award winner and lead mixer for Maryland Public Television. "We looked at other equipment and the Avant is the only console that could handle the way we work."

According to Davidson, MPT's engineers like the ability to be in different automation modes simultaneously, even within faders. "Normally, your faders are all in one mode," he says. "But on the Avant, each channel fader can be in a different mode individually. To a post engineer, that's pretty impressive."

MPT, a major supplier of long-format PBS programming, is one of the very few audio post production facilities that sends directly to a broadcast tower with their productions.

"With MPT, the audio in the studio is final," explains Davidson. "The Avant is completely user-friendly because the output matrixing allows us to hear the Dolby Pro Logic mix, the AC-3 mix and our Dolby E decoded mix. We can bit-stream through the console while encoding, allowing us to route that Dolby E encoded signal to any destination. With the Avant we can make sure all our encoding and decoding delays are in sync with picture. This is no small task and it will save us much time in the future."

Mike Post opens private recording studio

Well-known scoring and TV theme composer Mike Post will open a private recording studio built around a Solid State Logic SL 9000 J Series SuperAnalogue™ console with a surround monitoring system for 5.1 mixing. "Mike came to me and said I want to build the best of the best," says Paul Wight, chief engineer for Mike Post Productions. "We looked at many different consoles, vintage and new, and came up with the 9K as the only real choice. The 9K delivers all the desirable sound quality of a vintage board in a well-designed modern package. The 9000 is the best of the best."

newsbytes



Colin Pringle appointed Group Marketing Director

Solid State Logic Group Ltd., the holding company for SSL and all its subsidiaries, announces the appointment of Colin Pringle as Group Marketing Director, responsible for worldwide marketing and market development. Pringle, who was a director of SSL between 1988 and 1995, had most recently been with United Business Media, where he was responsible for Corporate Development and Marketing of the company's International Music, Entertainment Technology and Electronics divisions. He also played a major role in developing a range of 'e' business initiatives as part of United News & Media's \$400 million investment in Internet technologies.

"SSL and its subsidiaries are uniquely positioned to leverage their digital and analogue audio expertise," comments Pringle. "The group's expertise ranges from digital audio encoding and communications to large-scale console design and manufacture. We aim to fully exploit this combination of skills to benefit the audio production community."

"This is an exciting phase of growth for SSL," said John Jeffery, Managing Director. "I am delighted that Colin is rejoining the group to help bring our plans to fruition."



John Andrews appointed Broadcast Development Director

John Andrews has been appointed to the new post of Broadcast Development Director at SSL.

Since his appointment as Marketing Director in 1997, Andrews has been responsible for the highly successful introduction of the 'A Class' digital console range, including Avant Focused on Film and Perfect for Post, Axiom-M1 'Made for Music' and Aysis-Air 'Born to Broadcast'.

"During this time, there has been increased activity in all key market sectors, but while SSL is naturally very strong in the music console market, with many of our staff having experience of it at the highest levels, the requirements of the expanding broadcast sector are different," said Managing Director John Jeffery.

"John Andrews is uniquely qualified in this area, with his operational and managerial experience at the BBC and his sales and marketing background in the audio broadcast industry," continued Jeffery. "I am therefore extremely pleased that John has agreed to take on the challenge of focusing parts of the company on this vitally important market sector."



Digital/Audio Alliance will serve SSL's German customers

SSL has formed an alliance with Düsseldorf-based Digital/Audio GmbH, the leading German systems integrator.

Explaining the new venture, Digital/Audio's Sales Director Rico Weber comments, "The Alliance will go far beyond the usual manufacturer/distributor relationship. Digital/Audio will help consolidate SSL's position in the German marketplace with its considerable experience in the field of studio integration. The combined skills of the Alliance now enable customers to enjoy a complete turnkey solution including consultation, planning, delivery and studio integration."

For this task Digital/Audio will activate its newly formed Digital/Audio Network - a group of 10 independent companies working together on studio projects.

SSL's commitment to customer training will be helped in Germany by The Digital/Audio Academy, already well known for seminars led by Bruce Swedien, Elliott Scheiner and many others. A range of training seminars and workshops based on SSL consoles is currently being planned.

For further information:

Rico Weber, Sales Director
Digital/Audio SSL Alliance
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Game, set and match to MT

The latest MT digital multi-track console to be installed in France made its debut appearance at the French Open Tennis Tournament where Digital Road Runner - Euromedia's new all digital OB vehicle - supplied the video and audio feeds for the major U.S. networks.

With a fleet of six mobiles, Euromedia is also one of the largest studio groups in France with over 720,000 square feet of shooting stages in various locations.

The specification for the new truck - which will be used for a mixture of live events, music and talk show - demanded a complete broadcast solution, eliminating the requirement for a separate, dedicated sound truck.

The 96-channel MT console in Digital Road Runner is designed to cope with large scale sound production, with 60 remote mic amps on fibre. For its first outing, the OB with 20 cameras and full digital video capability was used to cover the country's premier international tennis event at the recently refurbished Roland Garros Stadium at Port de Auteuil, Paris.



Swiss TV station airs with SSL

Television Suisse Romande of Geneva recently completed its three-year search for a suitable large-format digital broadcast console when it selected an Aysis Air from SSL.

Installed in a state-of-the-art news studio, the new Aysis Air console has been specified with 48 mono channels in a compact 24-ladder control surface.

According to Sound Supervisor Thierry Bonvin, a key element in their decision to select Aysis Air was due to its "analogue-like" control surface. "We produce three live shows every day and we wanted to have full instant access of the parameters at any time during the show. The console also provides us with many functions essential for live operation including source auditioning, grouping and particularly easy to use EQ."



Claire Hall joins SSL U.S.

Claire Hall has joined SSL in the role of National Sales Manager, Broadcast Products, in the J.S. Hall will report directly to Rick Plushner, President of SSL Inc., and will be based at SSL's New York office.

Hall has an extensive background in electronics and broadcast engineering and operations gained in the U.K. with Granada TV and Yorkshire TV, working in all technical areas including audio post. She was most recently U.S. sales manager for Calrec Audio.

Rick Plushner commented, "We are very pleased to welcome Claire Hall to the SSL team. In this demanding age of HDV and surround sound, her excellent reputation and vast experience in the area of professional digital audio for broadcast will further enhance our ability to respond to the needs of our customers."

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Guns N' Roses,
The Sex Pistols,
Elton John
and more...



From an AIR Studios brochure, 1970. Bill Price, center, at Studio One's 24-channel/16-group Neve console during sessions for Climax Blues Band's *A Lot of Bottle LP*. Producer Chris Thomas on the right, tape-op (and future Mix technical editor) Chris Michie at left.

The Bill Price Interview

PART 2

We continue our two-part interview with engineer/producer Bill Price. See October *Mix* for Part One.

As your career as an independent progressed, you often found yourself being called in to mix material that had been recorded by others. The one that sticks in my mind, rightly or wrongly, is a single by Sparks called "This Town Ain't Big Enough for Both of Us."

Yeah. I worked with [producer] Muff Winwood on Sparks a hell of a lot in AIR. We did quite a few songs. "This Town..." I remember, was one that happened to have been started somewhere else and never finished. I wasn't aware of it being a remix situation as such. We did quite a lot of recording on it, as well. They were great, Sparks. When I met them, I'd never seen anything like them before, or since. They were a real treat. I loved doing them.

What's your attitude to mixing tracks by others? You never set yourself up in the way that Bob Clearmountain has, who seems to do nothing but mixing—or maybe you have?

There is an attraction in mixing and not recording. Over the years, I think the time it takes to record a band has increased almost directly in proportion to the number of available tracks. I can tell you that one day after my 50th birthday, I realized an album I was working on was taking six months, and that represented one percent of my whole life, during which I had to give that band 100 percent of my attention. Not just during the day, but at 4 o'clock on the Sunday morning when somebody rang me up, or whatever. That's when I started saying, "Well, I don't think I can do the recording, but I'd love to mix it." I have done more mixing than recording of late, but I don't think anybody can really specialize in mixing without being totally grounded in recording. Even now, when I do record, I'm still learning stuff. If nothing else, the new technology that's in use. So, I wouldn't recommend anybody trying to specialize in one or the other, really.

BY CHRIS MICHIE

I've never really minded it when I've heard something I've done being remixed by somebody else. To be honest, it's always sounded completely different from how I could ever have imagined it, because somebody else has done it. By definition, to me, that sounds fantastic.

THE GUNS N' ROSES SAGA

How did you get involved with Guns N' Roses?

Oh, God, this is a long one. Originally, I was headhunted by Tom Zutaut, Guns N' Roses' A&R man, to make *Appetite for Destruction*, their first record. Negotiations were well under way to record at Wessex, in London, and I was really looking forward to doing it. I'd heard demos that sounded great. Then, all of a sudden, Geffen got cold feet. Guns N' Roses was growing a reputation for being quite wild in Los Angeles, and, probably quite rightly, Geffen didn't want them out of their sight. David Geffen himself insisted that the record was made in Los Angeles. Geffen asked me to go to Los Angeles to make it, and I turned him down. I had a young family at the time and also responsibilities at Wessex, and *c'est la vie*, mate.

But they came back to you how many albums later?

After *Appetite for Destruction* they had a 50 percent live record, a bit of a stop-gap record, because they hadn't done very much work. Then they started work on their huge *Use Your Illusion* project with the same producer/engineer, Mike Clink, that had done *Appetite for Destruction*. This involved about 40 songs, and it was going over budget, overtime, pretty much over everything, really, and Geffen wanted it finished. They got Bob Clearmountain to mix it in one studio whilst Axl was still doing vocals in another studio and Slash doing guitars in a third. Which was, quite obviously, a recipe for chaos. I think Bob mixed about 20 songs, but he had absolutely no contact with the band, because they were recording other stuff in other studios. And basically what happened, if Axl liked the mix, Slash didn't, and if Slash liked the mix, Axl didn't. So Bob never really had the chance to work with the band. Geffen was pressuring to get the album finished, so Tom Zutaut persuaded me to come out to L.A. and mix it. Not even actually to mix it, but to audition for mixing it.

How does that work?

Geffen pays my flight and my hotel, and I do a mix of something and wait

and see if anybody likes it or not, to find out whether I'm hired. So I did my "audition" on "Right Next Door to Hell." I think it opens the first CD of *Use Your Illusion*. It's a very straightforward, up-front rocker, so I did a loud, in-your-face, heavily compressed mix of the backing track and then added Axl's vocal on top, post the compressors, so that you could hear what he was singing. Everybody loved it, so they hired me. I then embarked on a very long period in Los Angeles working my way through this huge amount of material. I had fantastic help from Mike Clink, who'd produced the original backing tracks, and day-to-day support from Jim Mitchell, his engineer, who was very helpful. I had alternate visits

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from Slash, Axl and various other members of the band and sent everybody else DATs for approval. I happily worked my way through 20 or 30 songs.

Which were all finished, or were there still vocals coming in?

What happened was, having got my way through about 20 songs, I was then in the position of waiting for the next song to be finished. For example, on "November Rain," which was a bit of a baby of Axl's, I had Mike Clink's original 24-track master, which had just drums and maybe a bit of bass on it. I had a 24-track slave that had a load of vocal ideas on it and a 24-track slave that had a lot of guitar ideas on it and a Sony 48-track slave that had a *bell* of a



lot of vocal and keyboard work that Axl had been doing in his studio. I had another 48-track slave that Slash had been recording on in his studio. I tried a telephonic method of working out which tracks should be used and couldn't get anybody to agree on what of this huge amount was going to be used. I decided that the only way would be to run them all together. We were in Skip Saylor's studio in Los Angeles, which had, if I remember rightly, an 82- or 84-channel SSL. It was a pretty big desk. So we hired a bunch of tape machines in, and, of course, they didn't run in sync, but the Los Angeles hire companies have got some very good technical engineers, and some hairy bloke in shorts arrived with a homemade interface and managed to plug all the machines together and get them to run in sync. Then I could play every track that everybody had recorded on.

Then I decided that the only way to find out which tracks to use would be to get the entire band in the studio at the same time, which seemed like quite a normal thing to me. When I mentioned this to the band's management, they were totally horrified. The thought of Guns N' Roses all being in the same room at the same time was too much for them to bear. [Laughs.] They warned me against it, but I couldn't think of any other way of doing it. So they all arrived, and we got down to a mix. They were very gentlemanly. Axl walked in and said, "Good afternoon, Slash. I know it's your guitar, and obviously you have the main say in it, but I do love that lick there. Do you think we could have it a bit louder?" Total gentlemen. We finally got the mix done.

It must have taken many, many hours, if not days or weeks?

It was a very long process. That mix was on the board for a good week, ten days. DATs were going backwards and forth, and harmony lines were being changed and different guitar licks were being put in. You name it. That's about the most complicated mix, both musically, techni-

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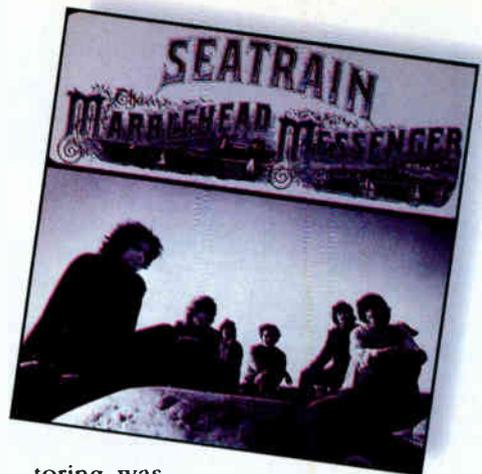
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cally and people-wise, I've ever done in my life. But what impressed the band when they walked in was that to get all of these machines synched—Saylor Recording had a separate machine room, which was just full of tape machines, and obviously there weren't enough tielines to get them all onto the desk—there was this elephant trunk of cable coming through the door and wending its way to the desk. Everybody just went, "Oh, my God. What's that?" It looked like something out of a science fiction movie where the machines take over.

So you mixed it all at once, but it was released as two albums [Use Your Illusion I and Use Your Illusion II]?

It was released as a two-album set, although they were packaged separately and sold separately for whatever reason. You could buy just one or the other, or both, whichever you wanted. But it was everything that they'd been working on and thinking about for the previous three years tied up into one huge project, in answer to the record company saying, "You haven't been doing very much for three years."

To continue the story a little longer, they still hadn't finished the album when their massive 18-month world tour started. So the last half a dozen songs were recorded, overdubbed, vocal'ed and guitar'ed, what have you'ed, in random recording studios dotted about America when they had a day off between gigs. My mixing mode then switched into flying around America with pocketfuls of DATs, playing it to the band backstage. Which was great fun, actually. I enjoyed that.

So you wouldn't actually do the recording sessions?

No. Mike Clink was on the road with the band, trying to get them in a recording studio wherever he could and whenever he could, and I was back in L.A. at the desk waiting for DHL to bring my next tape through the door.

Sounds like a lot of waiting around.

It was great fun. We were kept quite busy.

SEATRIN BY THE SEA

To record Marblehead Messenger with Seatrain in 1971, [George Martin producing] you went to Marblehead, Massachusetts, and set up a temporary studio in a house. Was that difficult?

It was great, the Marblehead studio. Was it hard to set up? No, it was actually a piece of piss. We got this, what are they called in America, *realtor*, however you pronounce it. She found us this beautiful house, and we hired an API desk and a 3M machine from a nice little company

in Rhode Island, and they trucked it up for us and set up the studio in a lovely, wood-paneled library in this big Colonial-style house in Massachusetts. We even had use of a private beach—very nice. That was until the next-door neighbor noticed that the keyboard player's girlfriend was black and complained to the real estate agent and tried to have us slung out. And this wasn't Alabama—this was the Northeastern United States in the early '70s. I was quite taken aback that that sort of business still existed. That was the last time we used the beach. I was quite shocked.

So what did you do? You recorded it all 16-track, and then you mixed in London?

No. In fact, for whatever reason, I was forced to mix it in a less-than-desirable New York studio in a bit of a hurry,

So the last half a dozen songs were recorded, overdubbed, vocal'ed and guitar'ed, what have you'ed, in random recording studios dotted about America when they had a day off between gigs. My mixing mode then switched into flying around America with pocketfuls of DATs, playing it to the band backstage. Which was great fun, actually. I enjoyed that.

rather than taking it back to AIR. Which is something I forever regret, because just playing the 16-tracks back at AIR sounded better than the mix I'd done on the early homemade desk at Electric Lady. They had that very strange desk that they built themselves, before the equally strange desk that they built in combination with Rupert Neve. That one they've got now works very nicely, but this other one was a pig, and the moni-

toring was

awful. For some reason we had to do three songs a day, or whatever it was. I was not happy, but I am very fond of *Marblehead Messenger*, and that particular piece of vinyl has got pride of place in my collection.

But you did come back to AIR with a bunch of tapes of the Paul Winter Consort. Which was mixed and released as Icarus.

Oh, my God, yeah, that Paul Winter thing that just went on and on and on.

It seemed like you whizzed through the mix fairly fast, considering what you had to do.

The stage of it at AIR was a tenth of it. Because we'd already done a hell of a lot of work—we spent more time in the Marblehead studio working with Paul Winter on an album that he'd already started elsewhere in New York—than we spent on the Seatrain album. And then he spent more time without George [Martin] somewhere else in America. We ended up with the whole mixture of it back at AIR Studios, which is where we got into this crazy business of editing together 16-tracks from different studios.

Not only were they from different studios, but they'd been recorded with different track layouts and different musicians playing different instruments!

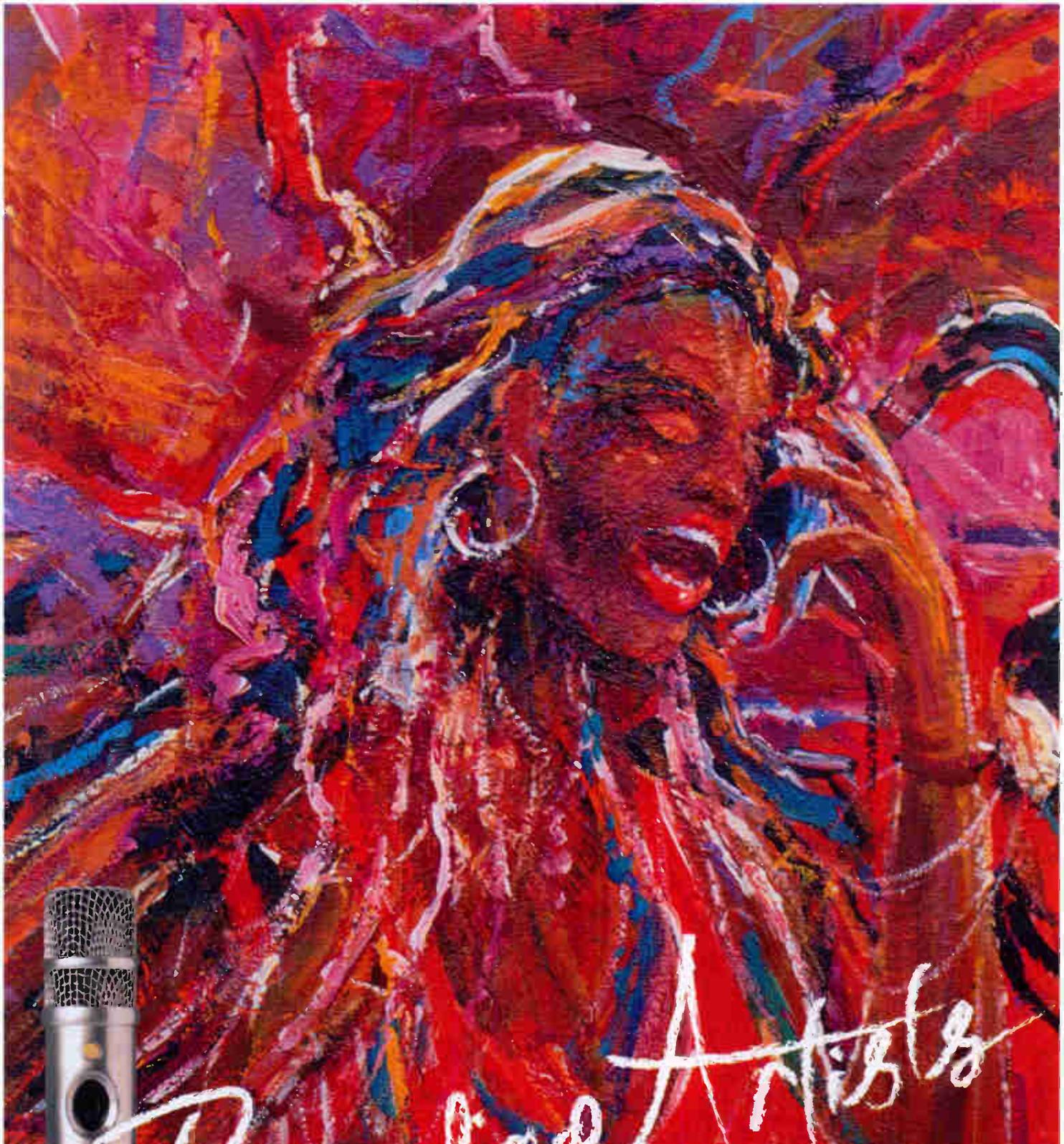
Absolutely. Paul Winter had tried the same song five times going, "Oh, well I like the middle eight from that version and if we could use the introduction from the Marblehead studio, but use the chorus we did last week." In fact, he was somebody who was after total control before the technology really quite existed to give him that control. So it was done with a razor blade.

FUN WITH THE SEX PISTOLS

I've got some better quality questions coming up, but here's a rather silly one.

Got any good Sex Pistols stories?

Yeah, I've got a good Sex Pistols story. [Laughs.] I tell you, the best stories aren't really printable. It was when I was mixing "God Save the Queen" at



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Wessex. I remember we were expecting the band, who were at the A&M head office signing their new contract at A&M Records. Have you seen *The Great Rock 'n' Roll Swindle*?

No.

There's a whole cartoon sequence which depicts this riotous event at A&M's head office, where Steve Jones has the pleasure of the managing director's secretary in the lavatory and breaks all the plumbing. It's a cartoon portrayal of it, but I think the cartoon was probably quite accurate.

Some time in the afternoon, the band arrived at Wessex in a Daimler limousine, the sort the Queen uses. Everybody had a bottle of A&M's vodka in their pockets. Unfortunately, it was just at the time when the primary school next door to Wessex was on a break. The combination of seeing Johnny Rotten in a Daimler limousine was just too much for these primary-school kids. They were literally hanging, 12 feet up in the air, off the wire fence that separated the studio from the primary school. The headmistress came out and started screaming at them to get in and get away from these dreadful Sex Pistols characters, and Johnny Rotten treated this lovely lady to quite a lot of verbal relating to right-wing dictators and farmyard animals. She started strutting around the playground screaming, "Call the police!" et cetera, et cetera.

I was working in Studio One, but I tucked the band into Studio Two, out the back, and awaited the arrival of the police in Studio One. Unfortunately, her call had been answered by a member of the SPG, the Special Patrol Group. They were a police unit that used to patrol London in the '70s in white Transit vans with wire mesh over the wind-screens and wearing riot gear. They arrived at the front door of Wessex, and I ushered them, complete with their body armor, into Studio One. Failing a better idea, I just launched into the standard, "This is how a recording studio works" lecture as if they were a group of Japanese tourists being shown around the Tower of London. Believe it or not, they were quite interested. A couple of coppers played guitar, one was a drummer, if I remember rightly. And I got into more and more detail. We were talking about Fender amps and miking up, blah, blah, blah. Eventually, the sergeant, who presumably was not a musician, got fed up and said, "Let's get out of here." They completely forgot about the Sex Pistols. I walked back into Studio Two, where

we'd put the band, and they were just sleeping like babies. Empty vodka bottles still in their hands. [Laughs.]

Sounds very sweet.

It was. You want an Elton story?

Yeah. You started with Elton on The Fox, or had you worked with him before?

No, the first thing we did was half of *The Fox*. And then we did *Jump Up!* and *Too Low for Zero*, both in Montserrat. I can't remember which of the two Montserrat albums it was, but we'd finished recording. Hadn't mixed yet, but we'd finished the bulk of recording. The band was going to leave in a couple of



days. Elton arranged a dinner for the whole crew in a small, local restaurant. Elton arrived absolutely impeccably dressed in a black dinner suit, sporting this diamante brooch the size of a dinner plate. I later found out that no way was it diamante, and he'd bought it in Cartier's in New York for so many hundreds of thousands of dollars.

Anyway, there were I think about 12 to 18 of us having dinner, and it's a small restaurant. There's half a dozen local customers in the restaurant as well. There's this young girl playing very subtle cocktail piano in the corner. Playing very nicely, actually, very quietly. Toward the end of the meal, she played a really beautiful version of Elton's "Our Song." Elton was quite visibly touched by this, and he left the table and joined her in conversation.

A few minutes later, the piano resumed, and we turned round and were quite surprised to see that the pianist was Elton—he was now the cocktail pianist in the restaurant. He started in cocktail style, but he slowly built up from the bass end up, as Elton does, until about half an hour later, he was singing "Saturday Night" at full volume. Enjoying absolutely every minute of it. He's completely unfazed by the other

half a dozen customers, who were actually quite appreciative. He'd been locked in the studio for six weeks, and he was just dying to give a performance. He had a real-live audience in front of him, and he couldn't resist it. That's the secret of Elton's success, the fact that he's an inveterate entertainer. Nothing makes him happier.

PARTY OUT OF BOUNDS

Is there any correlation between the enjoyability of a recording session and the subsequent success of the record?

Well, I've done a lot of sessions where there's been a bit of a circus—drugs and alcohol being consumed by everybody—and they've enjoyed themselves thoroughly, but we didn't even bother to play the tapes back the next day. That's one side of it. But the object of a recording session is to get the best performance out of an artist or a musician, and you can't do that if they're nervous or tense, or if you blind them with science. If you're working in a studio every day of your life, it's easy to forget that it could be the first time that the band has been in the studio. Or even if it's not their first time, it might be the most important day of their lives, to them. They might be just about to embark on recording the best song they've ever written that could make them famous. So you do have to show an artist that you're going about the job in a calm, unhurried way, and that nothing they want is too much trouble. You want them to be relaxed and enjoying themselves, and that's the way they can do their best.

Notwithstanding all that, have you ever had the experience of great art or great work being produced under unfriendly circumstances?

I've got experience of great art or great work being produced under *difficult* circumstances, but never unfriendly circumstances, no. On *All the Best Cowboys Have Chinese Eyes*, Pete Townshend was going through a lot of personal problems and was quite a tortured character throughout a lot of the recording, but he still managed to make a great album. But this wasn't in unfriendly circumstances, this was in very caring, quite supportive circumstances. Which is a bit different. It certainly wasn't necessarily a joyous time, but we were all battling for Pete.

I've been in recording sessions where there's been a decidedly unfriendly attitude, and they all got redone, because no matter how good the track or the mix was, whoever was involved in it just got

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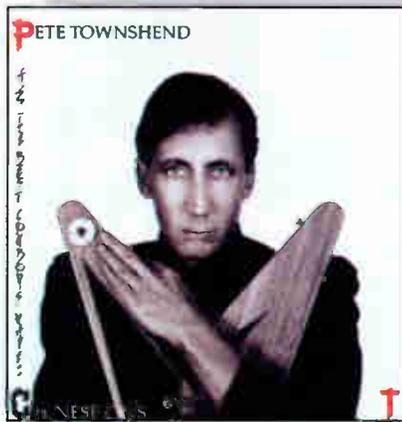
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a bad feeling about it. So everyone thought it could be better.

MIXING WITH ROYALTIES

How did you make money as an engineer? Or is it only possible to make real money as a producer? Can you charge points for remixes?

It's hard to survive in any business as a freelancer, particularly as you get older. You get married and acquire children and mortgages. Life gets harder. I used to find it impossible to book a family holiday because of the fear of turning work down and then getting home from holiday and sitting at home waiting for the phone to ring for a month. In fact, Pete Townshend helped me greatly with this. He got me to do the same as he does, and now I just tell everybody, "I don't work in August. No way. Not even a day. That's my family's time." I say that all year and it's worked really well. I'll be booked from September the first. That was a good way around that.

But in terms of making money, one of the most important things is to have a good manager. My manager is Joyce Moore, and she's sorted out loads of stuff for me. If nothing else, it's difficult to have a conversation with a musician one day about the emotional content of their performance, and then try and discuss with them the next day that you're increasing your day rate and you need a better hotel room, or what have you. So it's really important to have somebody working for you on the business side.

But it's all down to royalties, really. That's the important thing. I don't know if you've noticed, lately, in the film business, quite a few movies have been made where the whole crew has been working on absolute minimum wages, but they've been offered a small percentage of the profits. There's no reason why this shouldn't apply to records, whether you're a producer, engineer, remixer or even a tape op. I think if you

are working for somebody for a small day rate and an agreed royalty percentage, that's got to show the artist that you've got confidence in the project. Unfortunately, there is a bit of a problem with this that I've come across a couple of times. You can't really rely on a gentleman's agreement on a small royalty, because what you tend to find is if the album goes Platinum, they stop being gentlemen. You do have to have a contract, and unfortunately, as the law goes, this contract has to be negotiated by what's called an accredited music business lawyer. Otherwise, it won't hold up in court. These are the guys that charge \$200 an hour. I was once charged \$2,000 for negotiating the contract on a single that I never heard again after I finished mixing it. That's the downside. In fact, I think it would be very helpful for the business, and particularly for younger people working in it and trying to make a name for themselves, if there was some sort of standard, short-form contract that all the parties could sign to provide an engineer, tape op, mixer or producer a small royalty on that record without having to have a high-powered lawyer putting in a huge bill every time just to produce exactly the same contract with exactly the same clauses in it. But that's a small bee that buzzes around my bonnet occasionally. [Laughs.]

When was the first time you did get a point or a fraction of a point on a record?

Oh, way back while I was still at Decca. I used to do a lot of work for an easy-listening music company that wanted full attention, and the way they got this out of their engineers was to give them a small piece of the action. It made you work your bollocks off.

I've got one more question. Have you heard any good records lately?

Yeah, I'll give you one that's my favorite from yesterday. *Play* by Moby. I found myself really impressed by that. Somebody was telling me about it, and I thought taking those old blues vocal lines and looping them up to dance rhythm would completely take the soul out of them. But I heard it, and it's the exact opposite. Every time each of those vocal lines comes around in the loop, it gets more and more intense; you hear more and more in it. I think it's brilliant. I love it. ■

For an in-depth look at Bill Price's recording technique, see this month's Classic Tracks column, "London Calling" by The Clash, on page 198.

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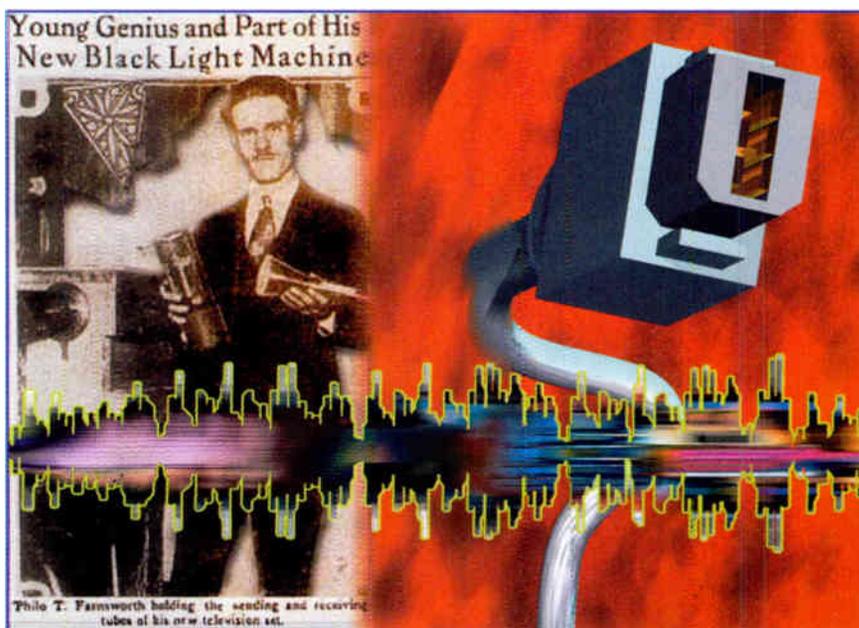
THE FIREWIRE "STANDARD"

MOVING TOWARD INTEROPERABILITY

BY OLIVER MASCIAROTTE

Once upon a time, in my City By The Bay, where Green Street hits Telegraph Hill, there was a warehouse. On the second floor, a fellow named Philo T. Farnsworth built what was arguably the first all-electronic television system. (Sincere apologies to Vladimir Zworykin.) Thirty years later, the NTSC created what was, again arguably, the worst color television standard to survive until the present. We've been stuck with it for over 40 years, and, despite all its problems, it seamlessly delivers "content" to our homes. That will all change when, six years from now, we close the door on analog TV and, hopefully, feel no need to look back. Ha, I laugh at my own optimism!

I say hopefully, because, as I mentioned in past columns, our upcoming "advanced" TV system is not without its problems, ignoring the fact that, at least in the short term, the audio and video quality will be worse than what we have now; ignoring another fact that if you live in an urban canyon as I do, then you may have to buy cable, because there's a good chance that over-the-air re-



ception won't work.

Right about this moment, you're thinking, "Hey schmuck, this is an audio magazine!" What DTV and this month's continuing saga have in common is the "i" word: interoperability, or lack thereof. Technology, pulled in diverse directions by special interests, makes for a chimera that can't get up and walk out the door of your local consumer electronics retailer. Sorry to mix my metaphors, but, as I remind you all

the time, it's the consumer, stupid! Or rather, it's the CE manufacturers and content holders that drive our audio industry. Like audio, as goes CE, so goes FireWire.

TOO MANY COOKS?

There are several camps working on "standards" for 1394 protocols. Several is, in my opinion, too many. For one, there's HAVi, an industry consortium trying to steer 1394 applications in the CE space (see sidebar for more information). For another, there's Yamaha proposing its mLAN protocol as *the* specification for "Audio and Music Data Transmission" to the 1394 Trade Association's AV Working Group. Strange that Sony, an early adopter of FireWire, hasn't used it yet on any audio gear...

The David among all these Goliaths is Digital Harmony (www.digitalharmony.com), a provider of tools, chip designs, software and product certification services. DH has come up with a bunch of stuff to address many of the issues facing a company wanting to mesh FireWire and audio. With a growing number of licensees, including

WHO'S HAVI?

HAVi is the Home Audio Video Interoperability collective. They're your basic monster CE vendors trying to reach consensus: Grundig, Matsushita, Philips, Sharp, Sony and Thomson, along with Hitachi and Toshiba providing chip-level support. HAVi states, "most HAVi-compliant devices will come with their own dynamic Device Control Modules. Updating functionality can be done by downloading/uploading new capabilities via the Internet" through any device on the bus with an Internet connection. Next year, progressive CE manufacturers like Samsung will have 1394-enabled DTV tuners, integrated HDTV sets and other set-top-boxes designed for use with displays. ■

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Harman/Kardon, Lexicon, Madrigal Audio Labs, JBL, Infinity, Meridian Audio Group, Denon, Onkyo, Boston Acoustics, Panja and Sensory Science Corporation, as well as semiconductor partners Cirrus Logic, Crystal Semiconductors and ARM, Digital Harmony has a good deal of industry support. Right after the 1394 DevCon, I talked to the head honcho, Bob Moses, about his company. Their dream of all data formats—multichannel and Red Book audio, MIDI, raw data files, even video—being transferred over the 1394 bus without burdening the user with complicated format transcoding and synchronization decisions may come to pass.

Moses is excited about the prospects of using FireWire in studios but also foresees potential problems. "1394's job really ends after you've moved a giant block of data from one device to another," he says. "It defines the basic data transport services in a system, but... not which audio and video formats or optional bus management services should be supported or how the equipment is controlled. This is left to developers to define, according to the intended application and requirements of their products." There, my friend, is the rub. With such a wide-ranging standard, capable of handling isochronous data like audio, video and MIDI that requires guaranteed latency, as well as asynchronous data like IP, SCSI and other computer babel, there's bound to be some confusion and duplication when vendors get around to implementing this stuff at the application level.

Try this FireWire test for yourself; it requires that you have a DAW and that the CPU has a 1394 spigot. (That, in itself, is a bit of a trick in many cases as Intel has steadfastly refused to support 1394: They've got USB, dammit, and that's the end of the argument.) Ask the DAW manufacturer whether, for the recording of audio data, it supports Micronet's SANcube or any other 1394-attached storage. The answer most likely will be, "Real soon now." It seems that most folks I've talked to can't get the disks they've tested to behave consistently. Drivers could be to blame, but no one will fess up.

Then there's the jitter issue. As FireWire is a packet-switched bus,

there's no synchronous clock carried along to convey timing. And there are a myriad of sources of jitter within the 1394 transport protocol, the main source being that you have a free-running oscillator in every node on the bus. Says design consultant and engineer Julian Dunn, "The IEEE 1394 format uses asynchronous clocks at each node. The interaction of these clocks with each other and with the sample (word) clock generates jitter." Given that, Digital Harmony has devised many tricks to bring the aggregate jitter down to something reasonable, like changing the nature of the jitter so psychoacoustically, the result is less annoying. Bob Moses says that Digital Harmony's new silicon should deliver something in the "100 pi-

to wind up with the same problem as with our computers." That is, poor compatibility at great cost in wasted time and frustration. That's where Digital Harmony comes in, trying to come up with a system and implementation guidelines so manufacturers can collaboratively ensure that all the boxes that have *that plug* on them work together. They're not the only ones worrying about this. Roger Siminoff, one of Apple's senior marketing managers, echoed the same sentiment. "We are committed to the best user experience for creative professionals, so they spend their valuable time creating instead of troubleshooting," he says. "Working toward one connector for storage, audio and MIDI can contribute

1394 AND COPY PROTECTION

Think that DVD-A's a nonstarter? You may be right, unless the CE manufacturers get their act together with maxi-players that handle DVD-A, V and R, as well as SACD. Many brains in the audio community are wondering why all currently shipping DVD-A and SACD players only have analog outputs. Relying on those manufacturers to get the critical digital-to-analog conversion right is not a comforting concept. The reason, though, is clear, and it's called Copy Protection. Though other methods have been proposed to move A/V data from one CE device to another, 1394 seems to be the logical choice. Now that the 5C standard is in place, manufacturers will be unshackled by the big content holders to start getting out the DVD-A product. However, the low cost, high speed and ease of configuration must be balanced against licensing, latency and those jitter issues that could upset the rapid adoption of this technology. ■

cosecond range." They've even managed to "hide" house sync on the bus. (By the way, Bob founded Wadia Digital, considered by many to make super-sweet converters. So, he's no tin ear.)

WORKING TOWARD COMPATIBILITY

"For pro audio applications, you don't have a protocol stack that goes all the way into the application layer yet, and so each company is looking at different ways of solving this; and we could have a real interoperability problem if we're not careful," says Bob Moses. "There's a lot of companies that want to be first to the street with new equipment, so they'd have bragging rights...The industry needs to pull together on this; otherwise, we're going

to that commitment."

According to figures predicted by industry maven Cahners, 200 million 1394-equipped products will have shipped by 2003. Sony's recent smash hit, Playstation II, has the dynamic duo of 1394 and DVD; it should ship more than 20 million of the little beasts by the end of next year. Though it isn't perfect, 1394 is here for the long haul, and as Bob Moses says, "It gets us 90 percent of the way to a universal standard" for media production and dissemination. Just keep your fingers crossed. ■

Oliver Masciarotte lives, works and plays in The West, yee-haw. To learn more about tech issues or to get links on what you've just read, click over to www.seneschal.net for more info.

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Berkley Integrated Audio Software Inc. announces BIAS Peak 2.5 VST, which now offers complete VST support. The new version will ship with more than 25 free VST plug-ins. Version 2.5 has an enhanced interface and adds IDR dithering technology from Waves, support for SMDI transfers using Ultra-wide SCSI devices, a more powerful Guess Tempo function, a Loop-It command for looping audio selections automatically, a Repair Click function and new metering algorithms with greater display precision. Peak 2.5 VST also offers fully integrated support for CDDB, which automatically names CD tracks via the online CDDB database during importing of audio CD tracks. A new links menu integrates the program with technical support, on-line documentation and other resources on the BIAS Web site, www.bias-inc.com. Peak's new authorization system no longer relies upon floppy key diskettes and challenge/response codes.

Two editions of BIAS Peak 2.5 are available: VST BIAS Peak, the standard professional version (\$499), includes support for Premiere,



Audiosuite and VST plug-ins; BIAS Peak TDM (\$699) adds TDM support. An entry-level edition, BIAS Peak le 2.5 (MSRP \$99) is also available. BIAS also offers three Powerbook editions, each bundled with the Digigram Vxpocket PCMCIA digital I/O card. See the Web site for upgrade information and pricing.

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M Audio's (www.maudio.com) Omni I/O Integrated Desktop Audio Station is a front end for the Delta 44

and Delta 66 interface cards, combining to build a complete desktop studio. The Omni I/O is a half-rack unit with a variety of inputs and outputs, built-in preamps and an internal mixer that emulates a split console routing design. The recording section features two mic/instrument and two line-level balanced/unbalanced analog ins, two XLR phantom powered mic/instrument ins, insert I/O jacks, individual gain controls and pad and signal/clip indicator LEDs. The mixing section includes four Delta outputs (that can be used simultaneously as independent balanced/unbalanced direct outs), plus four stereo

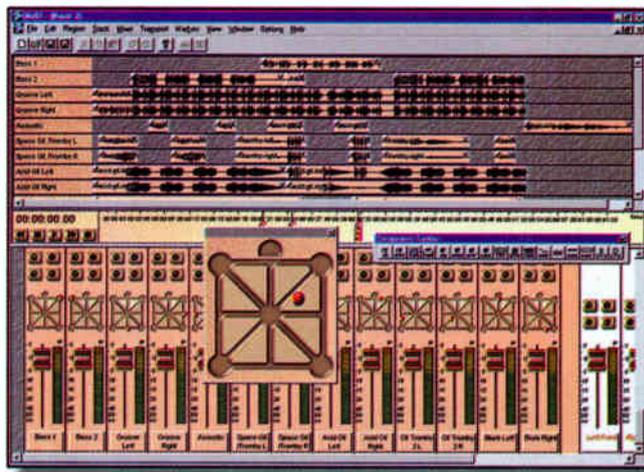
two headphone outputs and one mono effect send per channel.

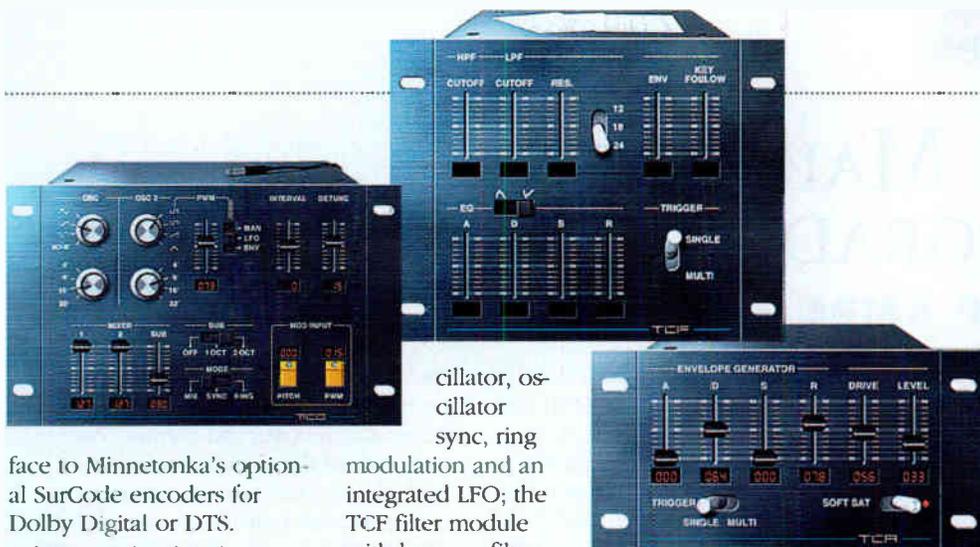
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MINNETONKA GOES NATIVE ▼

Minnetonka Audio Software (www.minnetonkaaudio.com) now offers native versions of its MxTrax multi-track editing system and Mx51 surround sound authoring software. The applications will run on Layla, MOTU 2408 and 1224 and other audio hardware systems that use ASIO or .WAV drivers. MxTrax features a drag-and-drop mixer architecture for creating custom mixer configurations, with automation, nondestructive waveform editing and a variety of effects (including DirectX plug-in compatibility), plus the ability to save tracks, custom mixer, control automation and edits as a Project file. Mx51 adds surround mixing capabilities with surround panners on each channel, a subBass crossover that can be dropped on any channel, automatic creation of a 5.1 bus and an integrated inter-

aux inputs for MIDI devices, Mix Out, control room outs,





face to Minnetonka's optional SurCode encoders for Dolby Digital or DTS.

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TC WORKS SPARK MODULAR ▲

Spark Modular from TC Works (www.tcworks.de) is a modular, virtual, analog synth, operating with Spark editing system or as a stand-alone, Mac-based, VST instrument. Spark Modular uses Spark's open-ended FX-Machine to create synthesizers using combinations of its built-in modules, which include TCO, a dual-monophonic oscillator with pulse width modulation, a sub-os-

illator, oscillator sync, ring modulation and an integrated LFO; the TCF filter module with lowpass filters with resonance, highpass filter, envelope and envelope follower, single and multi-trigger; and a TCA amplifier module with ADSR curve and more. A Drive feature employs TC's SoftSat processing; the package also includes TCSEQ, a 16-step sequencer plug-in that can sync to MIDI, change pattern direction and use multiple sequencers in the matrix at the same time. Spark Modular has a VST instrument version of FXMachine for use with sequencers sup-

porting VST instruments. Retail is \$99.

Circle 342 on Product Info Card

MICROBOARDS AUDIOWRITE PRO 8

AudioWrite Pro 8 from Microboards (www.microboards.com) is a portable, stand-alone, 8x CD recording system. Priced at \$499, the system enables direct connection to analog audio

sources, allowing users to record live events in real time directly into the system on standard 74- or 80-minute media. An optional AudioWrite Pro 8 Suite premastering/editing software bundle (\$649 with hardware) enables connection to a Mac or PC and burning audio, video or data CDs at 8x speed. The Windows AudioWrite Pro 8 software includes Sonic Foundry CD Architect and XP, Hot Burn, PlayWrite MP3 software (for creating audio CDs from MP3 files) and PCI SCSI card with cable. The Mac version includes Adaptec Toast and Adaptec Jam.

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UPGRADES AND UPDATES

Native Instruments' (www.nativeinstruments.com) new Pro-52 virtual synth can import Prophet-5 SysEx sound data and includes a multi-effects unit and preset sounds. It replaces the Pro 5, which has been discontinued... Digital Audio Research (www.dar.uk.com) introduced FXManager, a sound effects management interface for DAR's CDAdvance, 40x, fast-copying audio CD system. FXManager gives SoundStation Storm workstations access to database information on thousands of sound effects and displays detailed information on individual ef-

fects... The Digigram (www.digigram.com) NCX Network Audio Terminal distributes digital audio data over a standard Ethernet network; it is designed for a range of audio-over-Ethernet applications, including audio on demand, permanent playback and public access... CreamWare (www.creamware.com) released Version 2.01 of the Pulsar DSP system. The new version, for Mac and PC platforms, includes Mac support for the STS-3000 and STS-4000 sampler plug-ins, a series of Modular2 synthesizer patches and a revised manual... Yamaha announced a partnership with Sonic Foundry to provide software applications for Yamaha's ([\[www.proaudio.com\]\(http://www.proaudio.com\)\) AW4416 Professional Audio Workstation. The software bundle includes ACID Style, Sound Forge XP4.5 and Siren Xpress and will be packaged as a free CD-ROM with the AW4416. In other Yamaha news, the UX256 USB-MIDI interface \(\\$299\) is a new cross-platform, single rack-unit interface capable of controlling 256 channels of MIDI with software drivers for USB-equipped PCs and Macs... Korg released a software update for the D16 digital recording studio. The D16V2 OS update provides](http://www.yamaha</p>
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support for data back-up to CD-R/CD-RW, the ability to import and export .WAV files using PC-formatted media, enhanced MIDI support and more. In other Korg news, a Windows version of the OASYS PCI card is now shipping. Go to www.korgusa.com for more information... IBM's Electronic Media Management System offers secure music distribution and digital rights management. The system is designed to support a broad range of media types, beginning with music and audio content. Visit www.ibm.com. ■

ANALOG MAINTENANCE AND UPGRADE CONSIDERATIONS

SELECTING OP AMPS

Last month, I wrote about upgrading analog gear performance: "Caps and Op Amps—Analog Maintenance and Upgrade Considerations." I wanted to present more details on the subject, so this column will continue that topic.

Bad caps can be weeded out using a square wave oscillator and an oscilloscope. This month, those

and slew rate, which were detailed in Tables One and Two in Part One of this article. (Check out the September and October issues of *Mix* or visit www.mixonline.com.) One spec that I did not include was bandwidth, a close cousin to frequency response. Gain plays a role in the amount of usable bandwidth: High-gain circuits run out of usable

this warning: When considering an op amp upgrade, it is important to know and monitor the current consumption of the original component and those you are auditioning. Never assume that the power supply—for a piece of outboard gear or a console channel strip—will have adequate reserve! In too many cases, power supplies operate too close to capacity.

As mentioned, the tables in Part One included just a few dual and quad op amps, both old and new. One of the most common older quads is the TL074, which consumes 6 mA of current and has a slew rate (speed) of 13 volts (vertical scope deflection) per microsecond (horizontal deflection), abbreviated as V/ μ s. If it were incompatible, I might have stopped there and investigated how it might have improved performance.

The Motorola MC34084 is newer, about twice as fast and pin compatible (with the TL074); however, it requires nearly twice as much current. Ignore this warning and you'll be setting the house on fire in the most negative way.

PREPARE TO DUAL!

Because the LA-4's RC4136 does not have a modern pin-compatible quad alternative, I decided to use two dual op amps, increasing the options. The Analog Devices OP275 (6 mA) was the obvious choice, but as I also tried the 10mA Burr-Brown OPA2604, I was witness to the potential negative side effects. Even though the OPA2604 seemed to perform slightly better than the OP275, it was prone to oscillation. (This is not the fault of the Burr-Brown part.)

Circuit design, circuit board lay-

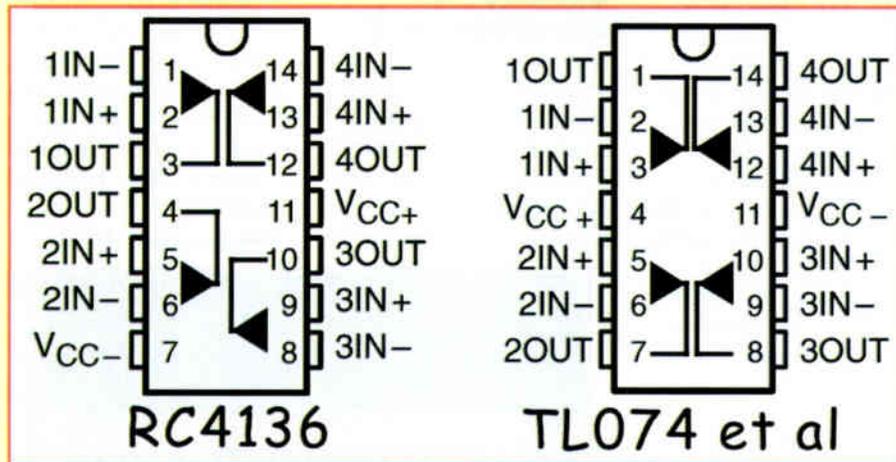


Figure 1: Pin-out comparison of the RC4136 and a more typical TL074

same basic tools will be used to demonstrate a technique for selecting op amps to upgrade a UREI LA-4 optical limiter.

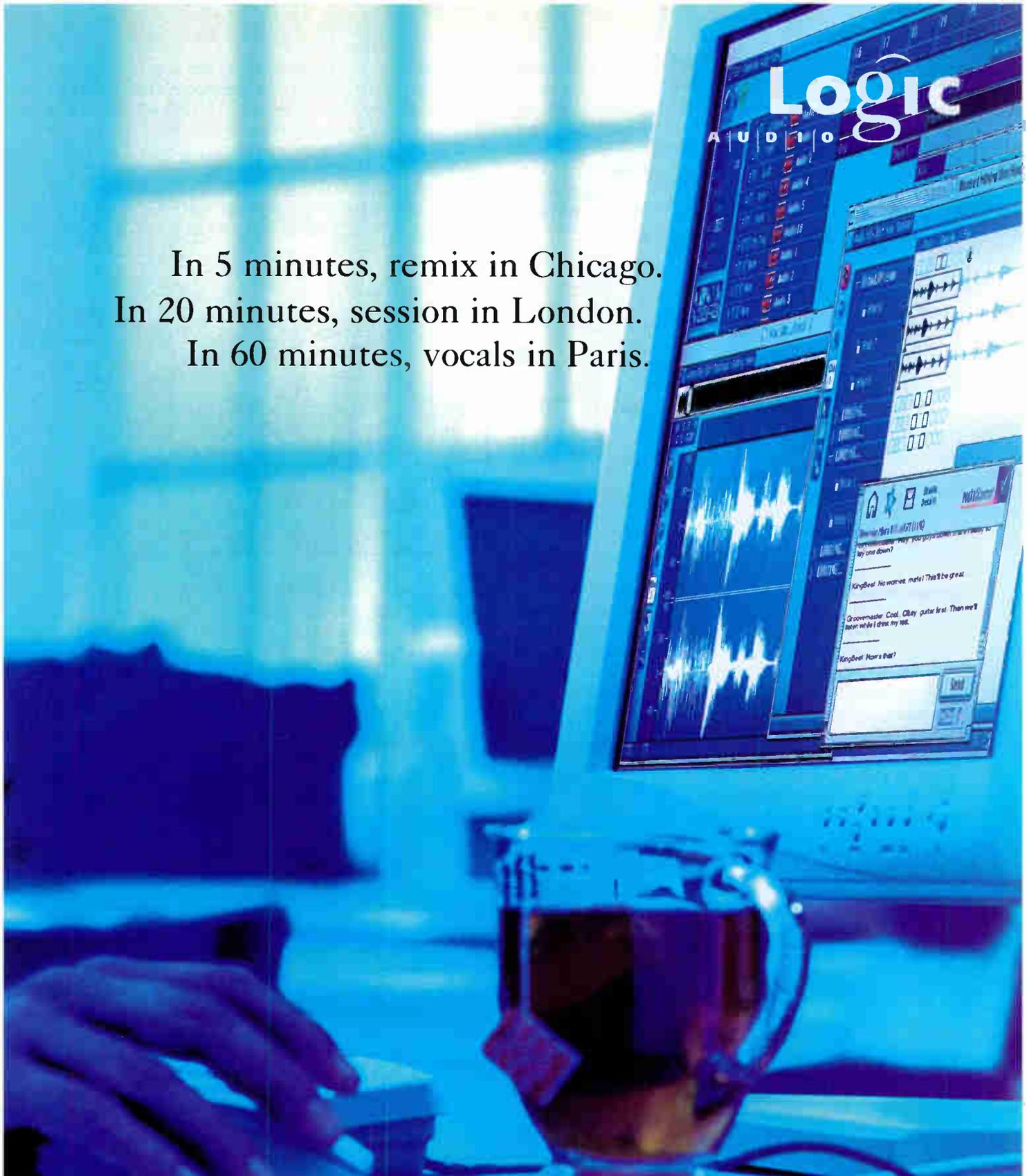
Unlike the LA-3A, which uses discrete transistors, the LA-4 is full of slow op amps—two or three RC4136 quad op amps, depending on the version. Early op amps left much to be desired: None could drive a 600-ohm load, many were noisy and, as I discovered, the RC4136 suffers from slewing-induced distortion or slew limiting. Translation: The op amp speed slows down as level increases. (See the left image in Fig. 4.)

OP AMP GEEK PARAMETERS

There are many *über*-geek parameters that detail op amps' performance, and ultimately, their sonic. I chose two: power consumption

high-frequency bandwidth, resulting in a visible roll-off as seen (via 'scope) by the slower vertical rise time of a square wave, shown here in Part Two. For more information about op amps and their many interactive parameters, both tables included links to the manufacturers to easily surf or download pages of data and application notes. What would normally be a simple upgrade is, in this case, hampered by the pin configuration—the RC4136 is not compatible with most standard quad op amps, such as the TL074. (Fig. 1 details the pinout variations.) Finding a good op amp with the same low current consumption—5 mA—is a challenge that requires

BY EDDIE CILETTI



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out, power and ground distribution issues (even the IC socket) all contribute to the excitement that prohibits you from simple plug-and-play. You've got to have a 'scope to see what's going on; otherwise, there's a damage risk to the IC and the parts around it, not to mention your monitors. But I am jumping the gun...

In order to experiment with any modern ICs, it is first necessary to create a temporary, nondestructive socket, re-pinned in this case for dual op amps. After creating a "map" of the here-to-there, a wire-wrap IC socket submitted to my will, allowing its long legs to be twisted and turned, as seen in Fig. 2. (A wire-wrap socket is designed to accept tools that cleanly wind special [and thin] solid wire around legs that are long enough to permit more than one connection. I hope to have a retrofit adapter before 2001.)

COMP SENSATION

With two LA-4s on the bench, I could compare various "upgrades" with the "stock" version. The square wave oscillator fed both units, and both outputs were monitored with an oscilloscope. When no significant difference was noticed, I followed the signal path from stage to stage. (Fig. 3 is a schematic of the "front end.") The input stage of the LA-4 is transformerless, using two amplifiers followed by a third that can be switched for either normal or high (30dB) gain. Using the OP275 made a significant improvement to the first three stages as viewed at the output of U3.

U3 is then followed by a "build-out" resistor, R13, that, when combined with the photoresistor, creates a voltage divider/gain manipulator.

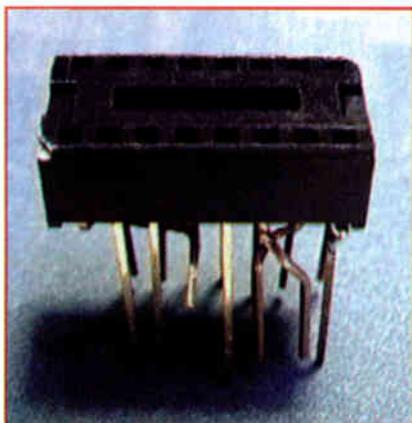


Figure 2: A wire-wrap IC socket modified to allow two dual op amps to retrofit the RC4136.

R13 is a rather high value—82k ohm—that is large enough so that any "stray" capacitance (from U4's input and/or the socket and the circuit board layout) slowed the rise time of the square wave.

Obstacle One: The value of R13 created a bottleneck that masked the speed gains achieved by the op amps in the

continue along the upgrade path. So far, at least one problem was solved by the upgrade. The left side of Fig. 4 shows two before-and-after square wave examples.

As a temporary fix (that stuck), I cut the value of R13 nearly in half, from 82k to 47k ohm. (A 68k ohm resistor was used in the LA-2A. In the LA-3A, the 68k

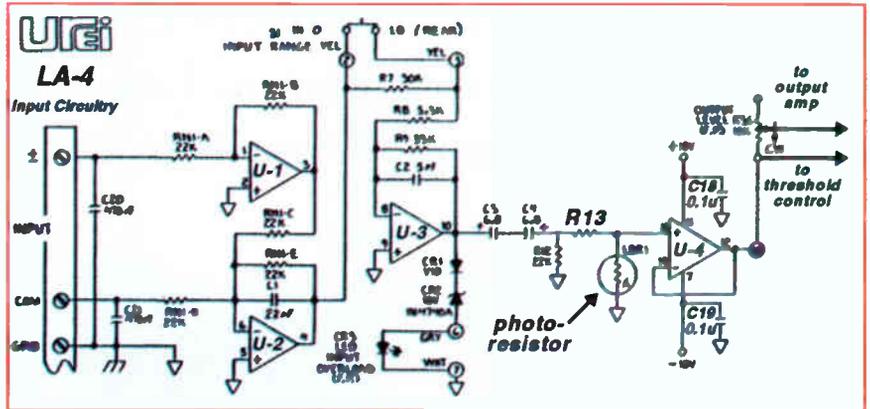


Figure 3: A simplified schematic of the LA-4's front end

first three stages. Because the output amp also needed improvement, I spent most of my time pointing the 'scope at the output of U4, just before the Output Level pot.

The Burr-Brown OPA2604 seemed better than the OP275 in the U4 posi-

ohm resistor is paralleled with a 100pF cap to improve high-frequency response.) I knew the gain reduction slope would be affected by the change to 47k ohm, but it solved the slew-rate problem while the output amplifier was being tweaked.

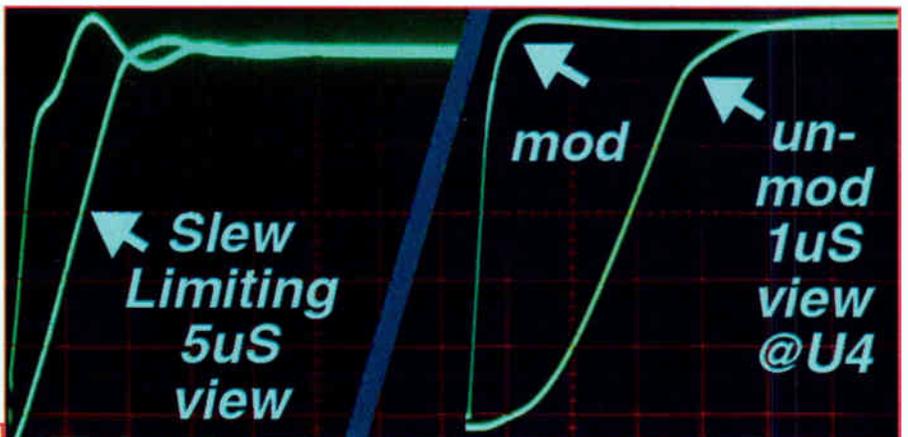


Figure 4: On the left, an example of slew limiting (viewed from the output amp, including the output transformer). On the right, a view of the output of U4, showing the difference between modified and stock, including the R13 change.

tion, but not by much. Increased gain reduction revealed two phenomena—improved speed in the modified circuit (good) and slew limiting (bad) in the reference unit. In the modified LA-4, the "activated" opto lowered the impedance of the circuit, making the signal impervious to any "stray" capacitance that might follow.

Obstacle Two: Increased signal levels reduced the slew rate of the RC4136—further convincing me to

THE MAKE-UP GAME

The output (or line) amplifier of any compressor/limiter is designed to recover "the lost gain of signal processing," as well as make the signal robust enough to re-enter the outside world. The newer LA-4 line amp combines one section from the RC4136 with discrete transistors. The earlier version used a single op amp (which I could not easily cross-reference) driving an unusual output-pair configuration.

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THE TECH'S FILES

The first thing I did was bypass the output amp, installing a temporary socket that would accept "large" op amps, like the John Harly 990, an API 2520, an RS 30-533 (a British FET op

amp) and a "bootleg" API using an NE5534 followed by a pair of discrete transistors. (Yes, I am guilty of temporarily ignoring my own rules about power consumption.) This brief detour defined the three challenges of Obstacle Three: The output transformer par-

ASK EDDIE

Have a question for our resident tech? E-mail your queries to edaudio@tangible-technology.com. Due to the volume of questions received, a personal reply may not always be possible, although Eddie will answer a selection of these in his column as time and space permit.

Eddie,

In your "Analog Tape 101" article (August 2000), you mentioned several 2-track machines, but not the Studer PR99 MkIII PRO, which I'm considering buying used for \$600. What do you think about this machine? Also, in the article you state that the ReVox A77 and B77 have three speeds. The ones I see for sale seem to run at 3.75 and 7.5 ips. Is there an internal speed change switch? Were these configured as consumer (quarter-track) or as professional (half-track) machines? —"G"

Dear G,

The PR99 is a fine machine, and \$600 seems like a reasonable price. I think \$750 would be too much in one respect, but you really can't go wrong with a Studer. If you buy it, I would order spare rubber parts now (pinch roller, counter belt, if applicable) and perhaps a set of brakes while the company still has them. The A77 and B77 machines were available as both quarter-track and half-track, typically 3.75 and 7.5 ips (and occasionally 1 1/2 and 3.75 ips), but 7.5 and 15 ips operations were available with the optional capstan shaft. Eddy Offord (of Yes and ELP fame) even had one tweaked for 15 and 30 ips.

—Eddie Ciletti

Eddie,

Your "Analog Tape 101" article was timely for my purposes. I'm a "non-

tech" with a Tascam 85-16B (1-inch, analog, 16-track w/dbx, circa 1985), and would like to raise my level of understanding so that I can at least calibrate my machine. My first attempt—following the original manual to the letter using an oscillator and the specified test tape—resulted in good sound without the dbx, but extreme level shifts of about 6 dB with the noise reduction switched in. Am I missing something?

—Gordon Grey

Gordon,

You failed to calibrate the levels to and from the machine relative to what the dbx wants to see, regardless of whether you use it or not. Even when bypassed, the levels are very critical; otherwise, the dbx will get confused. Also, I hope you never attempted to calibrate the dbx unit itself—this is a job best left to the pros with the right gear and knowledge.

The secret is to start by sending 1 kHz to the machine (in Input), then switching the dbx in and out, adjusting the oscillator from the console until there is no (or minimal) level shift. If you can accomplish this, you're giving the machine the signal it wants. This may not agree with the signal your console is sending or with the machine's VU meters (at the moment). If so, that's another issue.

Once you are sending the correct signal, switch the dbx Out and adjust the input cal for 0 VU. I'm assuming you calibrated the reference tape to 0 VU. If not, do that also. Then (assuming the bias is correctly adjusted) re-adjust record level so that output and input agree. Also, keep in mind that the meters, as I recall, reflect the dbx compression (when used). Switch the dbx "out" to check levels, then "in" to record knowing the meter will move less because the compression ratio is 2:1. Properly aligned, the dbx should work as intended, making the machine usable for something other than rap and speed metal.

—Eddie Ciletti



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PREVIEW

TLA VTC TUBE CONSOLE ▼ TASCAM MM SERIES V. 4.2

Distributed in the U.S. by HHB (www.hhbusa.com), the TL Audio VTC Tube Console is a fully modular, in-line, multitrack recording

Tascam (www.tascam.com) releases V. 4.2 software for its MMR-8 and MMP-16 disk-based, modular, multitrack



mixer. Available in 16- to 56-channel frames, the VTC uses tube circuitry in channel, monitor, group and master section signal paths for an open, musical sound. Input channel mic preamps include both solid-state and ECC83/12AX7A stages for low noise and rich, tube warmth. A 4-band EQ section offers two fully parametric mids, and the board includes six mono and one stereo aux sends. Main channel faders are 100 mm; monitor faders are 60 mm. Additional features include balanced internal signal buses and a massive steel frame with American oak sides. VU metering is standard; bar graph metering is optional. Further options include a patchbay and fader/mute automation.

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recorder/players. Offering plug-and-play compatibility with various DAW formats, the MMR-8 and MMP-16 now support Pro Tools 5.0 session playback. Edits can be performed on a Pro Tools 5.0 session using the MMR-8, MMP-16 or through the ViewNet graphic user interface, with edits saved into RAM without affecting the current EDL. A Pro Tools 5.0 session can also be exported to a Pro Tools 4.0 session via the Backup button on the MMR or through the Utilities menu in ViewNet.

Additional features include a Dual SCSI Mode, new volume and mute automation menus, eliminating extra recording time at the beginning of TapeMode projects, and the ability to capture larger blocks from a hard disk. Other key features include the ability to chase SMPTE, Biphase, Serial TC and Lynx/MMR Bus Sync.

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KLOTZ DIGITAL VADIS D.C. II ▼

The VADIS D.C. II production mixing console from Klotz Digital (www.klotzdigital.com) offers an open architecture, allowing customers to specify any requested work surface in combination with standard features to create a flexible, powerful mixing system. Based on VADIS 880, an audio/media platform for mixing console and control surface manufacturers, the modular VADIS D.C. II provides an efficient approach to audio routing, fiber-optic distribution, format conversion, including a wide range

of DSP functions, and machine control. Also available in split console formats, the VADIS D.C. II allows multiple control locations to share sources, area-wide logic control, signal routing, splitting and more. Klotz manufactures a variety of control surfaces and offers Vadis Partner members the freedom to manufacture control surfaces and develop serial interfaces particular to their markets and applications.

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BGW POWER AMPLIFIER

BGW Systems (www.bgw.com) has introduced the 3fL power amplifier, a 2-channel unit capable of producing 700 watts per channel into a 2-ohm load. The 3fL features BGW's innovative faastLink™ technology, which enables the user to monitor crucial performance parameters and provides a one-piece connection for signal inputs via an HD 15-F, 15-pin, D-type female connector. The 2-rackspace unit is priced at \$1,478.

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PREVIEW



M-40 handles 141dB SPLs and is supplied with a 9V battery or phantom-powered external preamp. AMT's S25B and S18C mics (\$677 each) are electret condenser models designed for acoustic bass and cello, respectively.

NADY SCM STUDIO MICS ▲ Both mics feature an adjustable clip and gooseneck mount for accurate positioning over the instrument's f-hole or bridge. Circle 332 on Product Info Card

SCM Series mics from Nady Systems (www.nadywireless.com) include the SCM-900, 910, 920, 980 and the top-of-the-line SCM-1000. Designed for studio vocals, acoustic instruments, orchestras, choral groups and live sound applications, the SCM Series feature a true condenser design with large, gold-sputtered, ultra-thin diaphragms and FET preamplifiers. The SCM-1000 includes a selectable low-cut filter, -10dB attenuator and multiple polar patterns (omni/cardioid/figure-8). Price of the SCM-1000 is \$499.95; other SCM models range from \$199.95 to \$299.95.

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AMT INSTRUMENT MICS

Applied Microphone Technology (www.appliedmic.com) offers the M-40, a \$399 cardioid condenser boundary mic designed primarily for recording piano, but useful in other recording/live sound applications. Featuring a frequency response of 18 to 20k Hz, the

TERRASONDE AUDIO TOOLBOX PLUS ▼

The next-generation portable acoustic analysis tool from TerraSonde (www.terra-sonde.com), the Audio Toolbox Plus features a screen twice the area as the original, a rechargeable SLA battery system, an external mic that can clip directly to the unit or connect via a cable and a rugged aluminum/steel chassis. Now included is the Contractor's Version software package (a \$150 option for the standard Audio Toolbox), providing a Sound Study Graph function, ANSI octave and ½-octave band fil-

ters, and improved resolution and performance. Additional features include a Sound Level Meter (measures SPL accurately to 125 dB), a Real-Time Analyzer, RT60 measurement and Energy/Time graphing. Test functions include a sweep signal generator, dB and VU meters, frequency counter, distortion meter, scope, cable tester and timecode analysis/generation. Price is \$1,699, with hard carrying case and computer interface cables.

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UA 2610 TUBE MIC PREAMP

The third entry in Universal Audio's (www.uaudio.com) "Classics" line—other products are the 1176LN Limiting Amplifier and the Teletronix LA-2A Leveling Amplifier—is the UA 2610 stereo tube mic preamp. Based on the mic pre module in the innovative Universal Audio 610 modular console, the rack-mount UA 2610 includes mic, balanced line and ¼-inch instrument inputs, and XLR and ¼-inch outputs. Each channel has a polarity switch and HF/LF shelving EQ with adjustable corner frequency and

boost/cut control. Additional features include a mic input attenuator stepped in 5dB increments, switchable phantom power and both 12AX7 and 12AU7 vacuum tubes.

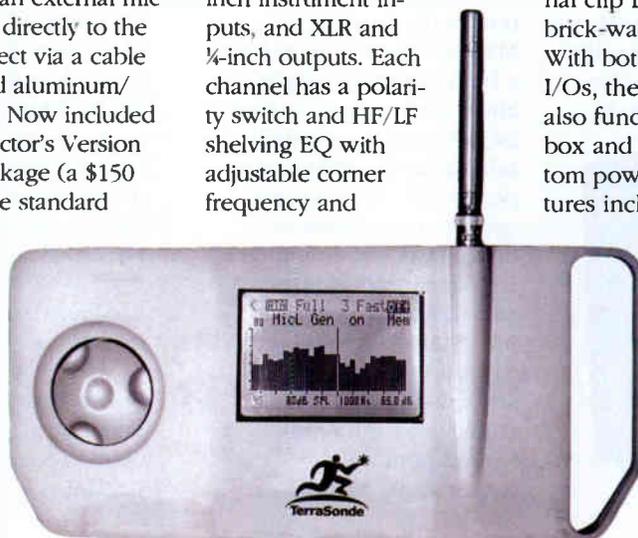
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ART TUBE MP STUDIO ▼ Applied Research and Technology (www.artroch.com) has introduced the Tube MP Studio Microphone preamp,



an upgraded version of the ART Tube MP. The new Tube MP Studio offers variable input and output gain controls. It also includes a VU meter and features a signal clip LED and selectable brick-wall limiter protection. With both XLR and ¼-inch I/Os, the Tube MP Studio also functions as a direct box and includes 48V phantom power. Additional features include 20dB pad, phase reverse switch, impedance matching/preamplification for line-level sources and a hand-selected 12AX7 tube. Retail is \$159.

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PREVIEW

ELECTRIX REPEATER ▼

Now shipping, the Electrix (www.electrixpro.com) Repeater is a loop-based, 2-rack-space digital recorder that enables MIDI se-

portable rack cases, incorporating built-in wheels and a molded telescoping handle. Built 18 inches deep to accommodate most rackmount equipment, Rack Porter models feature a synthetic



quencer-style control over audio loops with independent, real-time manipulation over tempo, key and track offset. Loops can be synched to any source using Repeater's MIDI clock or Audio Beat Detection, and Repeater uses CompactFlash media for easy memory expansion (up to 50 minutes of record time) and Mac/PC compatibility. Price: \$699.

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outer shell and padding over a solid fiber inner shell, steel rack rails, large accessory pocket and shoulder strap with pad. Rack Porters are available in 4- and 6-space models; the non-wheeled KRC Series is available in 2/3/4-space models.

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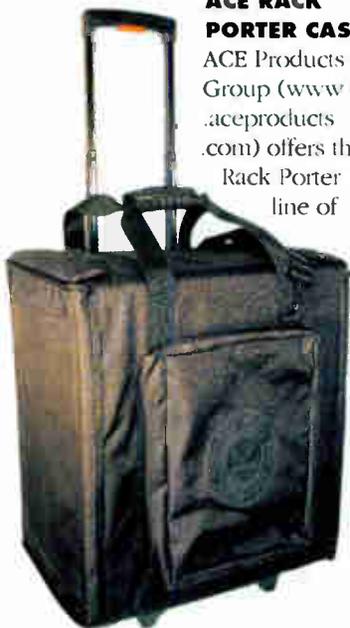
DK AUDIO STEREO DISPLAY

DK Audio (www.dk-audio.com) offers the new MSD200F/SA Master Stereo Display, an evolution of the existing MSD200/SA that includes a built-in power supply and on/off switch. Features include level meter with selectable VU/PPM scales, peak hold, audio vector oscilloscope (Lissajous display), correlation meter, FFT spectrum analyzer and signal generator. Inputs are both analog XLR and digital AES/EBU and a 9-pin, D-sub connector for the unit's RS-232 port.

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ACE RACK PORTER CASES

ACE Products Group (www.aceproducts.com) offers the Rack Porter line of



HOT OFF THE SHELF

Shure's DMK57-52 Drum Mic Kit includes three SM57s, one Beta 52 and three A56D drum mount mic clips for \$663. Purchased separately,

the kit components would total over \$850. In other

Shure news, a second frequency band

(with 100 channels between 692 and 716 MHz) is available for Shure's UC Series UHF wireless, so up to 32 UC systems can be operated simultaneously in a single installation. Call 800/25-SHURE, or visit www.shure.com...

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...The Math Fiber Optics Pure Digital, One Fiber point-to-point fiber-optic transmission system from

Communications Specialties uses digital processing to send any combination of analog video, audio and data signals over a single fiber-optic cable in either direction. Analog signals are converted to digital, transmitted over the fiber-optic cable and reconverted to analog. For more info, call 631/273-0404, or visit www.commspecial.com... Audio-Technica's ATW-20 UHF ground plane antenna was developed to enhance wireless reception in challenging RF environments. Featuring interchangeable, band-specific antenna rods, the ATW-20 is compatible with A-T's 7000, 1900, 1400 and U100 Series wireless systems and ATW-D70 and ATW-D90 antenna distribution systems. Price is \$180. For more info, call 330/686-2600, or visit www.audio-technica.com... Noted sound designer Frank Serafine has released "The Guns of Serafine," a 10-CD library with hundreds of vintage and modern gun sounds recorded indoors and out. Price is \$995. For more info, call 310/399-9279, or surf to www.frankserafine.com... "2 Step Garage" is a new sampling collection in CD-Audio format, with 120 minutes of house, dub, drums & bass, R&B, reggae and break-beat, including drum arrangements, backings, instrumental loops, vocals and complete mixes (for commercial film use)—all license-free. For info, visit www.ueberschall.com. ■

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DA 98HR HIGH RESOLUTION MODULAR DIGITAL MULTITRACK RECORDER

TC ELECTRONIC SYSTEM 6000

MULTICHANNEL PROCESSING PLATFORM

It must be said that mixing in surround can be a pain; it seems to require mounds of stereo reverbs in order to create 5.1 or 7.1 room ambiances, plus at least five of every piece of ancillary equipment used for equalizing, compressing, harmonic exciting, etc. Similarly, mastering in surround appears to require five times more outboard gear than a standard stereo job. It's not going to get better; as consumer surround sound gathers momentum, the need for a comprehensive multichannel audio processor becomes more pressing.

Fortunately, the System 6000 from TC Electronic is exactly the tool needed to simplify the complex task of mixing for surround.

The System 6000 includes the best of what TC Electronic offers. Programs from the M3000, M5000 and the Finalizer are represented. New algorithms—such as VP8 VariPitch™—control pitch shifting from a single channel to eight channels simultaneously, without any audible artifacts. Newly developed optional 5.1 programs and applications are fully functional for post and film, stereo to 5.1 breakouts, 5.1-to-5.1 processing, dynamics and equalization of multichannel source material and full 5.1 reverb programs. Do I have your attention yet?

HARDWARE SPECS

Priced from \$8,395 (base 8-channel unit with digital I/O), the hardware consists of three separate components—the Mainframe, the CPU and the “ICON” remote controller.

The two-rackspace Mainframe handles all the audio and DSP processing. The front panel sports a power switch, floppy drive, PCMCIA slot and a multicolor AC power LED that doubles as an activity in-



dicator when updating software. Input/output (I/O) connections are on the rear on a single DSP/digital I/O card that contains all the DSP hardware. The base I/O configuration consists of four stereo channels of AES/EBU, but there are also three slots open for various I/O card configurations.

Two cards currently available for the Mainframe include one that adds AES/EBU I/O connections (giving four more stereo inputs and outputs) and a 2-channel Analog to Digital to Analog (ADA) card. Each ADA card handles two channels of balanced I/O that sample at double rate (88.2 to 96 kHz), allowing the digital filters to do up/down conversions using local onboard DSP. A unique feature of TC's analog I/O is the ability to choose down- and up-sampling filter types. Under the Frame/System/I/O menu, there is a choice of filter types for each analog input: Linear, Natural, Vintage, Bright and Standard. Depending on the material, the filter-type selection can “warm” or “brighten up” the source.

The proprietary domain multi-

plexed (TDM) bus inside the Mainframe can carry 16 channels of 24/96k audio to the DSP at once. Card combinations bring a maximum of 16 usable channels of digital I/O, or eight channels of digital I/O and six channels of analog I/O (for a total of 14 usable channels). MIDI connectors, ¼-inch SMPTE jack, ¼-inch GPI jack and an Ethernet/LAN connector (to communicate with the CPU) are accessible via the rear panel.

The single-spaced CPU box contains an embedded Microsoft NT system that takes care of all commu-

nications between the Mainframe and the ICON remote. Rear panel connections include Ethernet/LAN, PS 2 connection for PC keyboard and mouse, VGA external monitor, 36-pin connector for the ICON controller, two type-A USB connectors and an option plate for upgrades. Connection between the CPU and the Mainframe is a simple local area network that gives point-to-point access. Adding a network hub to this configuration allows access to multiple Mainframes, ICON remotes and computers, and a multiroom facility can access and share multiple Mainframes or share resources on the same Mainframe. Currently, the ICON controller accesses up to eight Mainframes. PC/Mac software that allows for control of the 6000 without using the ICON has been promised.

BEHOLD THE ICON

The ICON is a streamlined, jet-black controller with six touch-sensitive moving faders on one panel and a 640x480, 16-bit, color, touch-sensitive screen on a sloping upper panel. This is a very heavy, well-constructed remote with a threaded mic stand mount on the bottom

BY MICHAEL DENTEN



version 3 It's All New!



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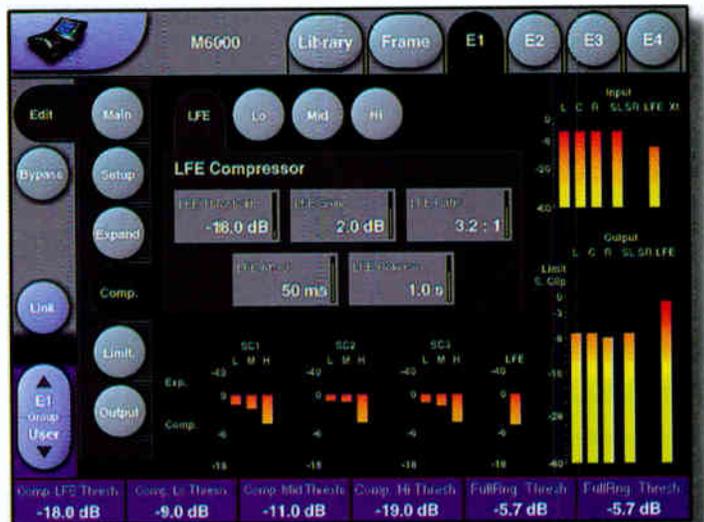
and a screw-on metal plate for tabletop use. Those of you who have used touch-sensitive screens in the past, let me dispel any fears about touchscreens' inferiority. ICON's touch-sensitive screen is stunning; all the buttons on the screen are finger-sized circular or rectangular images. Circular buttons are generally menu items, and the rectangular buttons are for parameters. There is a pop-up keyboard and numeric keypad for naming scenes, presets, I/O routings or other system functions that require its use. Above each Fader is a parameter box designating its function. These functions may change depending on the currently displayed editing page. When a parameter is selected on an edit screen, the far right Fader mirrors that setting as the default Fader for individual parameter changes. Navigating ICON is so clear and concise that other manufacturers are sure to take notice. The end-user is definitely the winner here.

A LITTLE HISTORY

TC Electronic's approach to an expandable platform began with R&D for the M5000. Stated earlier, the DSP for the System 6000 resides on a slide-in card. This carries forward the modular technology originally introduced in the M5000; the same 24/96k ADA cards work in the 6000 and 5000. As of this writing, TC Electronic offers an upgrade path from the M5000 to the System 6000, demonstrating TC's continued commitment to the growth of its products.

The M3000 was the first of TC's products to use VSS (Virtual Space Simulation™) algorithms, which began as AutoCAD dimensional drawings of the simulated space. The drawings are opened in TC's Silicon Graphics computers running Odeon (a Danish architectural acoustic program), which creates an acoustical simulation of what the space should sound like. In the listening room, all the parameters of the algorithm can be fine-tuned and perfected. (I have vastly oversimplified this meticulously painstaking process.) The VSS 5.1 simulations give natural-sounding acoustic spaces. These 5.1 reverbs are not adaptations of stereo reverbs, but are all new surround simulations. The latest update includes a simulation of the Musikverein symphony hall in Vienna. Using a laser-measuring device to re-create the acoustical space of Musikverein in an AutoCAD drawing, this 5.1 program's early reflection local-

Sample ICON screen shows compression parameters assigned to LFE channel, along with high-res multi-channel metering and round/oval touchscreen control buttons.



ization and reverb tails gave a vivid sense of direction and natural feel in surround. All the older Rev-2, Rev-3 and MD-2 programs from the M5000 have been improved to run in this 24/96k environment.

THE GOOD STUFF

The 6000 offers a varied selection of programs. In the first group of reverbs, 76 programs are derived from the M3000 using the VSS 3 algorithms. The second bank has new VSS 5.1 reverbs. The first group of 15 VSS 5.1 programs are stereo source to 5.1 output. A set of 16 programs allow for processing of 5.1 input source material to 5.1 processed outputs. This bank also has a 5.1 pan program that accepts eight individual inputs and pans them, individually, anywhere in the output surround field. The third reverb group includes most of the Film/Post M3000 patches. The fourth bank is comprised of 10 programs of VSS Surround (SR). These algorithms are specialized room simulators with new facilities for surround production. If these are used for surround production, a surround encoder is not needed, but monitoring should be done through a Dolby SR-compatible decoding system.

The Mastering bank option provides a combination of MD-5.1, EQ-5.1, MD-3, Finalizer and Toolbox-5.1 algorithms. All 5.1 programs offer full multichannel, multiband processing. In Toolbox 5.1, the user can take a previously recorded surround mix and do a fold-down to stereo. This process is unbelievably simple with a very respectable outcome. The Pitch & Delay bank has seven programs to choose from. Software revision 1.10 included the VP-8, 8-channel transposition program. I recently mixed a gospel album with 8-track orchestration stems and ran them through the trans-

position program and rocked all eight channels up and down at one time without any digital artifacts. This program will be a serious tool for post-production facilities needing to do pull up/pull down of surround stems. Finally, the M5000 bank includes 100 "best of" programs. There are far too many programs, routing patches and algorithms to properly audition for this article.

Navigating all this power could be a daunting task, but ICON's interface architecture is friendly and intuitive. On the opening page at power up, there are two choices in the top menu bar of "Select or Setup." Choosing "Setup" brings up a left-hand vertical sidebar menu to access the ICON system settings. The menu choices are Update, Devices, Joystick, UI, Color and Net. Settings for screen color, calibration of the touch-sensitive screen, setup of joysticks and network setups are all done here. In the main menu, you have six menu item choices in the top menu bar consisting of Library, Frame and four buttons representing DSP engine resources one through four (E1 through E4). These are the six main portals to access the scene and program banks, routing and editing functions.

The four DSP engine resources can load a single algorithm, or a single large algorithm can share engines. For instance, a Pro Tools card allows you to run multiple light algorithms on the same DSP chip. Because Digi's DSP structure does not include a high-speed, interchip communication bus, a single algorithm can't run across multiple DSP chips. Limiting size to a single DSP resource might compromise a complicated algorithm. This is why some System 6000 algorithms share multiple engine resources, reducing the engine count by as much as one or two.

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accurate highs and smooth
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C4000 B
virtual reality

CIRCLE #103 ON PRODUCT INFO CARD



Opening the Frame menu brings up the routing page. Selecting "Routing" in the left vertical menu opens up a graphical representation of the routing structure in the 6000. This complete diagram, along with level meters, shows inputs on the left, engines in the middle and outputs on the right. Selecting the engine snaps the moving faders into action. The two left faders display source and engine input in the lower menus, and the two right faders display engine output and destination. This routing paradigm allows total flexibility of assigning any input to any engine, any engine to another engine and any engine to any output. For example, you could run eight channels of AES/EBU audio inputs through a single engine to do pitch change, and then route them to the eight AES/EBU outputs. There will still be enough DSP power remaining to route the six analog inputs and outputs to the remaining three engines, using them as entirely separate reverbs or 5.1 sends.

The Library menu gives access to Scene, Routing and engine E1 through E4 program-assign functions. In this area, Recall, Store, Delete and Archiving of programs are accomplished. The Scene memory bank has the flexibility to save global machine setups. If you have a specific way of working in your mastering, post/film or audio recording studio, an entire machine setup can be saved and recalled in this preset area. Routing setups can be saved as individual patches, allowing inputs and outputs to be reconfigured in seconds. Selecting E1 through E4 allows you to load any engine presets or user presets to any block. In short, select Library menu, choose (engine) E1, recall preset, select engine E1 in the top menu bar and you're in the edit page for that program. Every menu item is just a tap away, obvious in function and design.

SYSTEM 6000 IN SESSION

I recently worked with a group of percussionists from Puerto Rico, Nigeria and India. The two channel mixes were recorded into Sonic Solutions HD, a 24/192k, high-density, hard disk recording system, running at 24/96k. Some mixes were run through the 6000 for processing to 5.1 surround output. First setting up the 6000 to run at 96k, the hardware connections were made to a PicMix surround monitor matrix controlling the Genelec speaker system in the studio. Going to the routing page, I was

able to connect the digital outputs from the Sonic Solutions system to the proper AES/EBU input connections and quickly designate the analog outs to the right LCRS assignments. Analog out assignments were also mirrored to the digital outputs to be re-recorded into Sonic Solutions for DVD delivery. A newly modified program, renamed as "Stereo to 5.1 hall," was loaded to E1 (digital 1/2 inputs to E1/LCRS output to E2). Program "5.1 Level Optimize" was assigned to E2 (5-channel input from E1/6-channel output to E4), and E4 was assigned "5.1 Monitor Matrix" from the Toolbox 5.1 algorithms (6-channel input from E2/6-channel mirrored digital/analog outputs to Sonic and Monitors).

In all engine editing pages, input and output meters are clearly displayed on the far right of the screen. E1's optional program "Stereo to 5.1 Hall" editing page is divided into six subpages displayed vertically: "Main" menu has global controls for reverb, reverb color and master levels; "Setup" menu with surround output modes for 5.1 Music, 5.1 Cinema, Stereo and global level options for dry signal and distance simulators; "View" menu is for source input position assignments in the surround field, choosing location algorithm types and listener positions; "Source" menu allows individual control of each import source; "Parameters" include low and high color, reverb position, early reflection start/stop, level controls of early reflection, reverb, dry signal and in level; "Reverb" allows complete LCRS control over reverb colors, surround channel colors and reverb decay with individual master decay; and "Modulation" menu allows selection of eight different reverb modulation settings. The setting I chose for this was "Front/Rear Subtle."

The program in E1 was able to define the width of the source program material, how dry or wet the signal would be in the sound environment and its placement. E2's optional program, "5.1 Level Optimize," allows for expansion, compression and limiting of the LCRS signal. The "5.1 Monitor Matrix" in E4 aided in controlling the signal to the direct digital LCRS outputs. The source material can be fine-tuned for delivery with level controls for individual input and output signals, based management (LFE) and extracting an LFE from any source or multiple sources.

The outcome of all this work was a nice sounding 5.1 representation of the stereo mixes. TC has been experimenting with a program that will extrapolate

M/S information for stereo source material and create a 5.1 representation. Truly mixing the songs in 5.1 with the System 6000 reverb programs offers the music a mix that's ultimately needed.

So far, I have provided an overview of the operational process. To some users, this may seem complicated, and to others, I may have oversimplified the process due to space limitations. But operating the 6000 was never complicated or confusing. In minutes, you can fly around from program to program without confusion.

Both MIDI and SMPTE are implemented in software version 1.10. MIDI patch change of individual programs on each engine, SysEx dumps and scene preset patch changes are possible. The only thing supported under SMPTE is a large SMPTE reader display—SMPTE snapshot patch changes are promised in the near future. The 6000 has a full NT-based CPU and will have the power to do full dynamic SMPTE automation. This will raise the 6000 to a whole new level of control when implemented. The SP-1 optional hardware joystick is available for external control of pan parameters.

I did find a few things that could be changed. First, in the Finalizer setting, the Digital Radiance Generator (DRG), as found in the stand-alone Finalizer 96k, was missing. Also, changing parameters would often be quicker if you could manually input the numbers without having to grab a fader and slide up and down to the correct value. Perhaps a numeric keypad could pop up if you hold down the selected parameter for a few seconds.

IN CLOSING

The System 6000 wears so many hats—a superb reverb in stereo and surround and a complete mastering tool with surround monitoring control—that it is difficult to describe. I rank the System 6000 as one of the best reverbs and the finest audio processing tools on the market today, and, when I weigh the cost of separate components to do what the System 6000 can do, my choice becomes pretty clear. Oh, did I mention how much I like this machine? The System 6000 will not leave my studio until TC Electronic comes to repossess it.

TC Electronic, 742-A Hampshire Road, Westlake Village, CA 91361; 805/373-1828; fax 805/379-2648; www.tcelectronic.com. ■

Michael Denten is a mix engineer, producer and owner of Infinite Studios in Alameda, Calif.

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FIELD TEST

like the rest of the sections, can be switched into either the Line path or the compressor sidechain path. Both the high- and lowpass filters are 18dB-per-octave designs with ranges of 2.5 to 25 kHz (low) and 22 to 300 Hz (high). I found these filters worked smoothly with no stridency or ring.

EQUALIZER

To the right is the 4-band equalizer. It is probably more proper to view this section as two, 2-band equalizers, because Rupert Neve considers the LF/HF as a single equalizer in series with a separate LMF/HMF EQ, a design that is familiar to Focusrite owners.

The manual erroneously depicts the HF section first in line, but the front panel confirms that the LF section is the first section of the equalizer. The LF section operates from 30 to 300 Hz, with 18 dB of boost or cut. The Peak button toggles between shelf and peak curves with a Q of 0.7. Shelving is at 12 dB per octave. The Glow button, as I determined by listening (and the manual shows graphically), broadens out the curve to end up sounding more like the bass tone control's action on my father's old Magnavox hi-fi. The LF section is switched between In/Bypass in tandem with the corresponding HF section. So, instead of the trio of buttons, LED's indicate routing status of the LF and its companion HF section, which is located to the right of the LMF/HMF equalizer.

The LMF and HMF equalizer is a fully parametric design with overlapping frequency selection, adjustable Q factors of 0.7 to 2 and boost or cut of 18 dB for each section. Both sections have x5 buttons that multiply the indicated frequency settings by five. The LMF's frequency range is 20 to 200 Hz, while the HMF's frequency section covers 500 to 5k Hz.

Finally, the HF section's frequency range is 2 to 20 kHz. As in the LF section, Peak toggles between bell-shaped and shelving curves, and Q is fixed at 0.7. The shelf is 12 dB per octave, and there is a Sheen button that also broadens out the curve and applies a high-end gloss reminiscent of old hi-fi tone controls.

COMPRESSOR

After the equalizer is the compressor section. All controls are continuously variable over an exceptional range. Ratio goes from 1:1 all the way to 40:1. Similarly, threshold can be set any-

where from -40 to +20 dB, while the attack control range is 0.3 to 300 ms. Release time also has a wide range, from 0.1 to 10 seconds. An "And Much More" button (marked &MM) changes the compression curve from hard to soft knee. Output or makeup gain is adjustable from -6 to +18 dB.

Normally, the compressor is in the Mic path with the mic signal presented to the sidechain input. Pushing the Line switch flips the compressor to the Line path with line signal presented to the sidechain. Pushing the Key switch reroutes the sidechain to whichever path is not selected for the compressor. All of this routing could get a little confusing, and I think Rupert Neve has done a good job of indicating what is going where through the use of lighted buttons. A Link button will link two or more CIBs together via a rear panel jack. Finally, an LED VU meter measures gain reduction only. It must have been quite a design problem to fit all of this on a single-rackspace panel, which might explain why the lighted Amek and Pure Path logos ended up on the rack ears!

OUTPUT SECTION

Both the Mic path and Line path have their own rotary output trim faders that range from off (mute) to +10 dB, with a detented 0dB point. It seems that Neve has done a few sessions in his day, because he knows that no engineer would be happy riding level using these necessarily small knobs. So, the CIB has a rear panel facility for connecting external faders (standard 5k or 10k linear law tapers) for both the Mic and Line paths.

Finally, three overload LEDs are set to light up 4 dB before clip at the following points in the signal chain: after the mic trim (Mic O/L), after the line trim (Line O/L) and in the Sidechain. Small as these LEDs are, they offer important cues for the optimal operation of all three signal paths.

IN THE STUDIO

Using the CIB as a microphone preamp, I found it easy to get levels (LEDs gave immediate indication of overload) and enjoyed super-low noise floors and no distortion. A good preamp for Foley work, the CIB never sounded bad, even when the clip LED blinked, and the mic gain rotary switch produced no clicks or pops while stepping up and down, which allowed for gain changes on-the-fly during recording. However, I'd recommend muting the output when switching in phantom powering. And wait about ten seconds.

When using the Line path, I had to remember to push not only the In button but also the Line button. For an acid test, I ran a hot, +10dBm SMPTE time-code feed into the Line path and then used 66 dB of mic gain on a Neumann U67 microphone through the Mic path. Though so much gain nearly caused acoustic feedback, I could detect no crosstalk from one path to the other.

My first line level job for the CIB's Line path was de-essing a prerecorded vocal track. A typical recording problem, the vocal sound was dull and lacked top end, plus the singer had a big "S" problem. First, I wound on some high frequencies with the HF section of the equalizer and then used two bands of upper midrange frequencies with the LMF/HMF section for de-essing. A little higher Q would have helped in this application, but being able to cover two different "S" frequencies put the CIB ahead of most dedicated de-essers. Another good sidechain application was a bass guitar track on which the "slaps" were too loud, especially after I got the sound up and pumping in the mix with the CIB. At first, I set the compressor to fast attack and release, which worked okay, though I got some distortion due to the fast release time on certain sustaining notes. However, by finding the center of the slap frequencies and routing them to the compressor sidechain, I was able to control them instantly and maintain a cleaner, overall tone by compressing the bass less. Because any signals in the sidechain are added to the main signal presented to the compressor, you may want to use faster attack times when using sidechain processing.

The Amek Pure Path CIB's clever design offers a unique approach to the mic preamp/equalizer/compressor combination, and its high-quality sonic performance and overall functionality will allow you to solve a wide range of recording problems. The Amek Pure Path Channel in a Box sells for \$3,250.

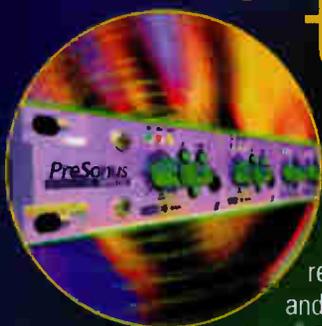
Thanks go to Lex Marasek and Dan Vacari at LAFX Rentals in L.A. for letting me use their studio for my evaluation. Also, thanks go to Rupert Neve, Kim Templeman-Holmes and Dave Rochester at Amek, Nashville.

The main Amek U.S. office is at 1449 Donelson Pike, Airpark Business Centre 12, Nashville, TN 37217; 615/360-0488; www.amek.com or www.purepath.co.uk. ■

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

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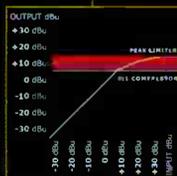
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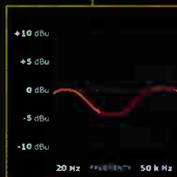


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CIRCLE #105 ON PRODUCT INFO CARD

World Radio History

DRAWMER 1969 MERCENARY EDITION

VACUUM TUBE DUAL COMPRESSOR PREAMPLIFIER



A collaboration between Ivor Drawmer and Fletcher at Mercenary Audio, the 1969 Dual Compressor Mercenary Edition is a “desert island” piece of audio gear. Actually, you can survive just fine with the original Drawmer 1960 that the 1969 is based on, as the 1960 has proven itself in many studios worldwide and is part of the sound of many recording artists who love its character. The 1969 might be the start of a trend of “boutique” versions of well-known studio products that are offered in alternate versions to reflect the specifications and preferences of audio industry personalities.

Like the 1960, the 1969 is a dual-channel compressor with two mic preamps and a single, tube-based instrument auxiliary input. The unit occupies two rackspaces and is housed in a road-tough, steel cabinet. All rotary and toggle switches have a solid action, and the two VU meters are backlit by yellow LEDs—no bulbs to change. Bypass switching is done by silver contact relays for reliable operation. The “Fletcherized” sections, the mic preamp and compressor, are easily identified on the front panel with yellow silk-screening lettering replacing the standard Drawmer white. As with the 1960, the 1969’s instrument input is available to either channel—or even to both channels at the same time for some interesting parallel processing possibilities.

FEATURES, FUNCTIONS

The aux input section is a tube-

based (12AX7/ECC83A), guitar/bass preamp with familiar guitar amp controls and operation. In fact, this section is voiced as a typical guitar amp with the ability to create immediate overdrive effects. The ¼-inch front panel jack has an input impedance of 2.2 megaohms and up to 30 dB of gain in low gain mode and up to 40 dB of gain in the high gain switch position. An EQ switch adds a simple high/low shelving equalizer that also works like a guitar amp—boost only—up to +15 dB at 40 Hz and +18 dB at 16 kHz. A Norm/Bright switch adds a 10dB boost in a broad shape centered at 2 kHz. This section is unchanged from the original 1960 unit.

A big change in the 1969 is the dual mic preamp section. The two identical microphone preamps for Channels 1 and 2 use Burr-Brown INA 103 op amp chips, and total mic gain has been increased to 66 dB. There is no mic input transformer: Drawmer chose to make the input high-impedance with little or no loading effect on any low-impedance microphone. Mic gain is now set using a detented rotary switch in 6dB steps with a clip LED indicating preamp overload.

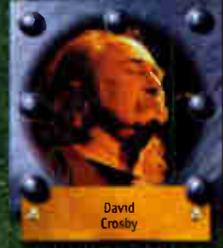
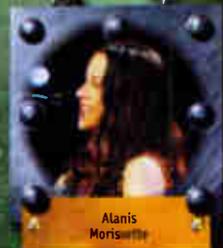
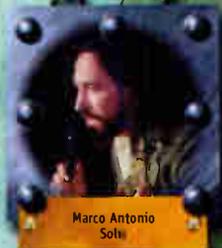
Like the 1960, the 1969 has both line level and XLR inputs on the rear panel with four-position rotary switches selecting the source (line, mic, mic with phantom or aux) that is routed to the compressor. In addition to the

source selector, there is a newly added phase flip switch with LED indicator. The 1969 also retained the original highpass filter ahead of the compressor, switchable to 50 Hz, 100 Hz or Off.

The 1960 used a tube stage at the front of the compressor, while the 1969 does not. The 1969 retained the J-FET (Field Effect Transistor) gain reduction circuit that operates faster than an optoisolator. The compressor uses a 12AX7 tube makeup gain amplifier where you can add, with the Output Gain control, up to 20 dB of additional gain. There is no ratio control as the compressor operates on the soft knee principle where the onset of compression is progressive. The 1960 had three preset attack setting choices and six release times available. The 1969 expands attack times to six choices: 2, 9, 15, 25, 30 and 50 ms. Release times come in three fixed times (100, 500 ms and 1 second) and three program-dependent choices—200 ms to 2 sec, 500 ms to 5 sec and 1 to 10 seconds—all program-dependent and automatic. Fletcher used the Fairchild 670’s time constant values as a starting point and then tweaked here and there to his own preferences.

The outputs of Channels 1 and 2 are monitored on two regular VU meters with a switch to check output level or amount of gain reduction. A three-position output switch selects normal compressor output, hard-wired bypass and sidechain listen. Drawmer pro-

BY BARRY RUDOLPH



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CIRCLE #106 ON PRODUCT INFO CARD

World Radio History

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vides full sidechain access (for connecting an external equalizer for vocal stressing or de-essing) and an insert path for each channel for the 1969. A set of rear panel jacks for an outboard EQ or other device provides a +4dBm send out of the highpass filter just before the compressor and a -10dBv return directly back into the compressor. The lower -10dBv return level offers new possibilities for connecting semi-pro gear, stomp boxes, etc. There are no front panel provisions for bypassing the rear panel sidechain/insert connections, so any connections you make will remain in-circuit.

In addition to stereo line or mic processing, the 1969 is capable of dual processing with, say, Channel 1 compressing a line level tape track, while Channel 2 works on a separate microphone input. Linked for stereo operation, Channel 1's compressor controls serve as stereo master for both channels. There are two link modes: regular stereo link and Big mode. Big mode is the same as stereo but adds a highpass filter in the sidechain path to prevent

low frequencies below 100 Hz from affecting the rest of the program. This lets the operator use more compression on an overall mix with less pumping action caused by the kick and/or bass instrument.

IN THE STUDIO

The 1969's microphone preamps proved to be better than a lot of recording consoles—even some with discrete mic amps. There is plenty of gain and no noise. Although I like the resettable feature, the 6dB gain increment steps are fairly coarse, and there is no fine-adjust control, although you can set the recording level at the output controls.

Using the instrument preamp, I liked the 1969 for direct guitar best, with keyboards a close second. The gain control provides as much "hair" as you like on whatever you plug into the unit. I wish there was a level input control just ahead of the compressor input to get more level into the compressor. The only way to get more level to the compressor is to wind up the gain control in the preamp section, causing more overdrive. After I got the right amount of distortion at the pre-

amp stage and turned the compressor threshold lower to get my desired gain reduction, I had to make up a lot of gain with the output control to drive my 24-bit Pro Tools I/O.

When compressing an overall stereo mix, I liked the sound of the 1969. It is smooth and clean—even when heavily squashing the sound. The Big switch is the greatest for keeping bass-heavy mixes loud without bass pumping. I found I used a little more compression than I would normally and loved it. Under bigger gain reduction settings, the different attack and release settings become much more important, and I experimented to arrive at the right ones based on the music.

At \$2,950 MSRP, the Drawmer 1969 is a versatile recording tool with an especially good stereo compressor you'll use every day.

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

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CONNECTIONS AND CONTROLS

All I/O are found on the rear of the 3-rackspace chassis. Transformer balanced I/O are via XLRs (pin #2 hot) or barrier strips. It was no problem feeding unbalanced I/O signals to the LA-2A using custom cables with pins 1 and 3 shunted together. While few studios use barrier strips for input/output audio these days, it's nice to have such historical details presented on the reissue. Maximum input/output levels are specified as +16 dBm, which is a bit weak by today's standards. But UA made a conscious decision to be true to the LA-2A's original design and to not "improve" what has stood the test of time.

The rear panel barrier strips also provide facilities for strapping together two units for stereo processing applications. A three-prong IEC receptacle and detachable AC cord round out the rear panel. There's no need to delegate rack-space above or below the unit—all tubes are mounted horizontally on the outside rear panel, keeping the top and bottom chassis relatively cool.

The LA-2A's Spartan front panel controls speak to the unit's ease of use. A switch toggles between compression and limiting modes. Compression is soft knee, fixed at a 4:1 ratio. Limiting provides an infinity:1 ratio. The LA-2A can provide up to 40 dB of gain reduction. In practice, I found the differences between compression and limiting modes to be rather subtle. But, I always had a preference for one mode over the other for every application.

Like many opto-compressors, the LA-2A offers only two continuously variable control knobs. Turning the Peak Reduction knob clockwise increases gain in the sidechain circuit (*not* in the audio path), which effectively lowers the threshold. Simply turn the knob clockwise for more compression, or counter-clockwise for less. The Gain knob sets post-compression output level, or make-up gain. No bypass switch is provided, making instant A/B comparisons problematic. But at the risk of sounding ironic or indiscriminate, once you hear the processed sound you probably won't care to hear what choice "B" sounds like! It is so easy to dial in a gorgeous sound with the LA-2A.

A third knob switches the large VU meter to show gain reduction or output level, the latter referenced to either +4 dBm or +10 dBm. A beefy power switch is also provided on the front panel.

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IN SESSION

My first task was every engineer's nightmare: compressing a very undisciplined female vocalist who had a cutting attack, glaring tone and wildly fluctuating dynamics. Even a fat AKG C-12VR tube condenser mic, with its inherent upper bass reinforcement, could not warm up this banshee! But the LA-2A made it easy, providing completely transparent gain reduction and a velvety tone. The result was a vocal track that sounded dramatically smoother and warmer. And it took well under a minute to dial in the sound.

I got similar, if not quite as extraordinary, results compressing a trumpet. The LA-2A's dynamics processing was smooth as could be, and the tone was slightly warmer and less piercing.

Limiting a kick drum track with the LA-2A, the dynamics were once again reined in tightly, yet so smoothly. Instead of providing a warmer, rounder tone, however, the LA-2A gave the kick a snappier sound—somewhat like the old trick of taping a quarter to the drum head where the beater strikes. The rigorously consistent output levels the LA-2A provides, along with the extra "point" on the sound, was just the ticket for this techno pop mix. I could crank the kick drum track to where it rocked hard without any need for rolling off excess bottom end or adding top.

Finally, I used the LA-2A to limit a DI'd electric bass guitar. As always, the dynamics processing was completely transparent. And the LA-2A put some much-needed "hair" on the relatively lean-sounding track, making it beautifully round and lush.

CONCLUSIONS

It's easy to dial in great sounds with the LA-2A. Operation is so straightforward you'd have to be in a coma to get stumped.

The LA-2A's uniquely transparent processing makes it incredibly effective for treating vocals. When you need to warm up a piercing or thin vocal and smooth its uneven dynamics, the LA-2A can work miracles. It also sounds awesome on bass guitar and, for a certain type of sound, on kick drum. And did I mention that it looks beautiful, too? If I were a mutant, I'd give the LA-2A *three* thumbs up!

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Michael Cooper is a Mix contributing editor and owner of Michael Cooper Recording. The studio is located outside the beautiful resort town of Sisters at the base of the Oregon Cascades.

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Over the years, Roger Qusted has been a leading designer of high-quality monitoring systems that have been a popular choice with studios, broadcasters, mastering facilities and remote recording vehicles throughout the UK. Qusted's latest model is the VS3208, a three-way, active design with 440 watts of onboard tri-amplification, making it the company's largest self-powered system. Retail is \$3,700 each.

TECHNICAL DETAILS

The VS3208s contain dual-proprietary, 8-inch woofers (each housed in its own internal driver chamber), a 3-inch, soft dome, midrange driver (also enclosed within its own chamber) and a 1½-inch, soft dome tweeter. The rear-mounted amplifier unit supplies 230 watts to the woofers, 110 watts to the mid-driver and 100 watts to the tweeter (all ratings RMS continuous). The system's rated frequency response is 40 to 18k Hz (± 2 dB). An optional VS1115 subwoofer is available for use in 5.1 surround applications, large rooms or for bass-heavy musical styles.

The front-ported 19x24.25x16.5-inch (WxHxD) enclosure weighs in at a hefty 104 pounds, and its 19-inch width allows it to be mounted in a standard rack. For installations where soffit mounting is desired, an optional remote mounting kit allows the amplifier section to be located separately from the monitor to ensure adequate cooling. In free-field use, I found that cooling was never an issue. The long heat sinks that run the length of the amplifier unit are highly effective in dissipating heat. Even after long periods of use, the amps were only warm to the touch and never became hot.

Hookup is simple. In addition to an AC power switch and removable IEC power connector, the rear panel features a balanced XLR input connection (Pin #2 hot). If desired, the speakers can also be driven by an unbalanced source. Input level matching controls are also provided, and three-position switches (cut/flat/lift) allow the user to tweak the system's response to match room requirements or a listener's taste. The HF switches adds ± 2 dB boost/cut above 5 kHz, and the MF switch engages at either 500 or 3k Hz. The LF switch engages either an 80Hz boost or a 100Hz cut. The 100Hz cut position is intended as a highpass filter when the VS3208 is used with an external



subwoofer.

The sensitivity control is a recessed, 10-position rotary switch calibrated in 2dB steps from +4 dBu to -14 dBu, allowing users to interface the VS3208s with any system. Lately, I've seen too many monitors with continuous sensitivity controls that make precise left/right matching difficult, so the VS3208s' stepped attenuator is an appreciated touch.

An LED centered in the front

logo is a multifunction device, glowing green when the system is powered up, flashing red when the input reaches -0.5 dB of clipping and turning solid red when the VS3208s' thermal protection switches the amplifier to standby. The VS3208s are capable of maximum SPLs of 112 dB—more than adequate levels for all but the largest rooms, and it's unlikely that users would see any red LED action under sane listening conditions.

THE SOUND

Having heard both small and large monitors from this company for years, I am well acquainted with "the Qusted sound," and there's little wonder that Qusted has been a popular choice among classical engineers. However, with the VS3208s, Qusted has managed to create a monitor that not only offers sonic finesse and purity, but is more than capable of keeping up with the demands of hard-driving rock.

After experimenting with the contour controls, I ended up keeping everything in the "flat" settings except the HF boost, which rather than a huge bump, is actually an extremely gentle shelving slope and provided a slight high-end sheen that I found natural and never overbearing or shrill.

Placement of the VS3208s is not overly critical, as long as the tweeters are kept at ear level and the distance between the monitors is roughly equivalent to the distance to the listener. The speakers offer a wide sweet spot, with gradual roll-off at extreme listening angles. You don't get a feeling that the sound disappears or changes in character when you need to reach to EQ a kick drum. However, the VS3208s are designed as mid-field speakers, and the listener really needs to be

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and the listener really needs to be at least six to eight feet back from the speakers for coherent imaging. The monitors sound best on stands behind the console or would do nicely in soffits in a smaller room or recording truck. Quested offers 37-inch-tall stands as a \$290 option.

Quested has managed to create a monitor that not only offers sonic finesse and purity, but is more than capable of keeping up with the demands of hard-driving rock.

As would be expected from all-cone-based monitors, the VS3208s' response is extremely smooth. The 3-inch, soft dome mid does a wonderful job of providing flat, uncolored response in the critical vocal band, but is also able to keep up with the dual woofers. The bass was full and nicely balanced, yet capable of reproducing well below 40 Hz. The tweeter needed a bit of help maintaining balance with the mids—particularly at high levels, and this is where the +2dB boost setting on the HF contour control came in handy, putting the highs into proper perspective.

Without a doubt, the VS3208s' strongest attribute is their ability to reflect their input precisely. This is not a monitor that's designed to sound "nice." Far from one of those "Emperor's New Clothes" speakers, the VS3208s tell it like it is: Great mixes sound great on these, while less-than-great mixes are reproduced with all their flaws intact. While this isn't always what the artist or novice producer/engineer wants to hear, such ruthless accuracy is exactly what pro users need from a monitor, and the Quested VS3208s deliver just that.

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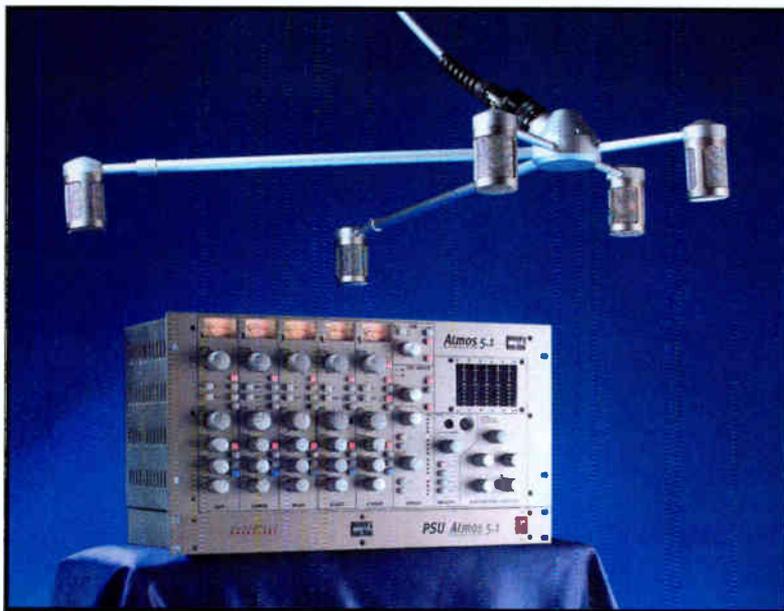
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SPL ATMOS 5.1/ASM 5

SURROUND RECORDING SYSTEMS



A new product based on “innovative microphone technology” all too often turns out to be just a low cost knock-off of a classic studio condenser. For that reason alone, we should all take notice when something truly different and special comes along. Different and special, the Atmos 5.1/ASM 5 Surround Recording System certainly is. Much more than just a microphone, the Atmos system pairs a specialized rackmount 5.1 recording console from SPL with Dirk Brauner’s ASM 5 Adjustable Surround Microphone.

Both SPL and Brauner are German manufacturers, and both are known for high-tech, high-performance products. SPL has found success in the analog, tube and digital domains with devices such as Vitalizer, Transient Designer, Loudness Maximizer, Machine Head and Charisma. Brauner is established as a top-end microphone maker and is responsible for the VM1, considered by many as one of the best studio mics in production today. The ASM 5 uses five VM1 capsules in an array designed for surround recording. Though the Atmos 5.1 console and ASM 5 mic

array are available separately, the combination of the two creates a powerful, yet easy-to-use package.

THE ATMOS 5.1 CONSOLE

Housed in a five-rackspace chassis (with an outboard 1U power supply), the Atmos 5.1 is essentially a 5-channel mixing console with five XLR mic inputs, plus a large multi-pin input connector for the ASM 5 microphone array’s 12-pair cable. It should be noted that though the Atmos is designed for use with the ASM 5, the user is free to use any combination of other mics with the system. However, the ASM 5 provides excellent performance right out of the box, with minimal experimentation.

The Atmos 5.1 front panel features backlit mechanical VU meters and gain controls for the five mic inputs (left/center/right/surround left/surround right). Input channels may be fed from either the ASM 5 or the five discrete mic inputs, and each channel has switches for mic pad, polarity reverse, +48 VDC phantom power, insert in/out, a choice of 50Hz or 100Hz highpass

filters. Bus switches route each signal to the center, L/R, Surround Left/Surround Right or direct output buses. Each channel also has a rotary fader and controls for determining divergence and Front/Surround and LCR positioning. A pair of stereo aux inputs—with their own peak LEDs and level pot—can be routed directly to the L/R, SL/SR and center buses. The Atmos 5.1’s rear panel has balanced XLR and unbalanced ¼-inch connectors for the five channels (direct outputs), monitor and master outputs and insert point send/returns on every input.

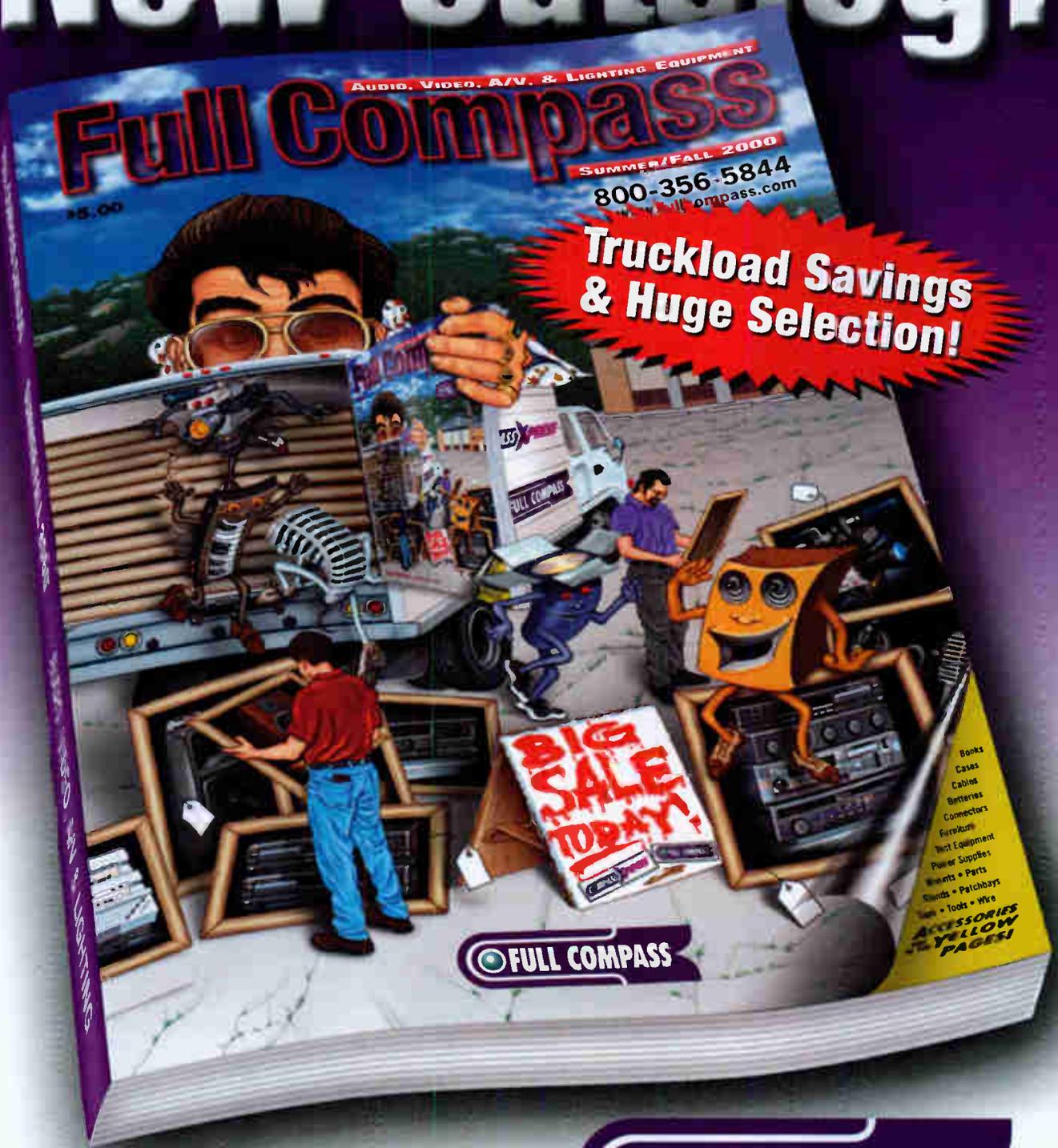
A slick feature puts the (servo motor-controlled) trim pots of all five channels under a single control. This mode, which is engaged via a small pushbutton near channel five’s gain switch, comes in handy when the band plays at a softer level during soundcheck, but cranks it up during the actual take. Precise level matching is essential for maintaining a coherent soundstage when multimiking for 5.1, and the motorized fader control is a real plus.

Spread controls for the front and surround channels allow users to tweak the stereo soundstage of the fronts and/or surrounds and also dial in the distance separating the front and surround mics. Thoughtfully, both spread sections include mono and bypass switches for making quick A/B comparisons or checking for any possible compatibility issues when either the fronts or surrounds are summed to mono. Two 9-LED phase meters indicate the relative correlation between the L/R and SL/SR channels, and six 20-segment LED meters show 5.1 output levels.

The monitor section has a large, ganged volume control that simultaneously drops the level of all six (5.1) channels evenly. Speaking of outputs, the Atmos 5.1 includes balanced analog out-

BY GEORGE PETERSEN

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puts for the six outputs—control room (varied by the monitor pot), as well as the main outs, which may be routed to the multichannel storage medium of your choice. Besides the six discrete monitor outputs, a stereo headphone jack and a 6-pin DIN connector for Sennheiser's Surround headphones are provided. One of the Atmos 5.1's most distinctive features is a set of five pots that remotely determine the polar pattern of each of the VM1 capsules; all are continuously variable from figure-8 to cardioid to omni, and anything in between. Also, it should be emphasized that the system's discrete outputs are designed to route directly to a recorder/workstation, etc. No surround encoders are included so the user can select whatever is necessary (AC3/SDDS/DTS/etc.) or nothing at all, depending on the job at hand.

Interestingly, the ASM5 mic system has no dedicated sub-bass mic element. Any LFE or subwoofer information is derived from the L/R bus, the SL/SR or center channel bus. Here, a 130Hz low-pass filter can be switched in-line with the rear panel XLR sub output.

IN THE STUDIO

As noted above, the ASM5 offers remote pattern selection for each mic element. The large, pentagonal array also allows each capsule to physically swivel 180° ($\pm 90^\circ$) along a horizontal axis, allowing for an almost inexhaustible number of array variations. The ASM5's LCR (front) mic heads are placed in a triangle with each capsule 17.5 cm from the center. They can be electronically "moved" using the Front Spread and Divergence controls on the Atmos. The further two SL/SR capsules are about 60 cm to the rear with a 60° adjustment range. The custom multipin snake cable that attaches the ASM5 array to the Atmos 5.1 mixer is 25 meters long, and longer cables can be ordered.

Having used these VM1 capsules before (albeit connected via tube electronics in the Brauner VM1), I was anxious to hear how they'd perform in a multimiking application via discrete solid-state electronics. I was not disappointed. Obviously, SPL made a major issue of performance when designing the Atmos 5.1 system. The mic preamps are triple gain-stage, low-noise designs with Lundahl input transformers, illuminated switches and relays with gold-plated contacts. The preamps are an excellent match for the mic capsules.

Noise was nonexistent, and even under highly dynamic conditions, such as when miking a four-piece percussion group, the Atmos 5.1 was up to the task, offering ample headroom and tight transient response, while preserving low-level detail in quiet passages. One thing that intrigued me during this session was the system's ability to capture extremely diverse frequency ranges and delivering thunderous low end—despite the fact that there is no dedicated LFE mic element—while capturing all the upper harmonics of the crotales and stacked bells.

Before using the system, I expected that placement would be critical. However, I found that using the system is fairly instinctual and even fun, especially with all the variable parameters (continuous polar patterns, arm placement adjustments and capsule rotation on the mics, while experimenting with the spread, pan and divergence controls at the console).

In later sessions, I used the Atmos system to mike an acoustic guitar/man-dolin ensemble and a standard, five-piece, rock 'n' roll drum kit. I became even more comfortable with the system, and in both cases was rewarded with a natural sound. The mic array is consistent at different distances, and there really is no magic "sweet spot" to be concerned with. Certainly, the imaging becomes more "in-your-face" (or perhaps more accurately "in-your-ears") when the array is placed directly over the source and becomes less pronounced as the front of the array is drawn back to a distance from the source. In cases where a tight overhead placement is employed, the aux inputs on the Atmos 5.1 can come in handy to add a pair of preamped stereo ambience mics to pick up additional room character. Yet, at any configuration during these dates, I was impressed by the lack of phase anomalies—there were no frequency roll-off or pattern dropouts when the 5.1 tracks were collapsed to stereo.

The SPL Atmos 5.1/ASM 5 is an extraordinarily powerful tool for the creative recordist. Priced at \$27,990, it's definitely a significant investment, but one that could be promoted as a major hook for drawing certain clients into a commercial studio. And to encourage users to try Atmos out, distributor Group One also offers the system on a rental basis.

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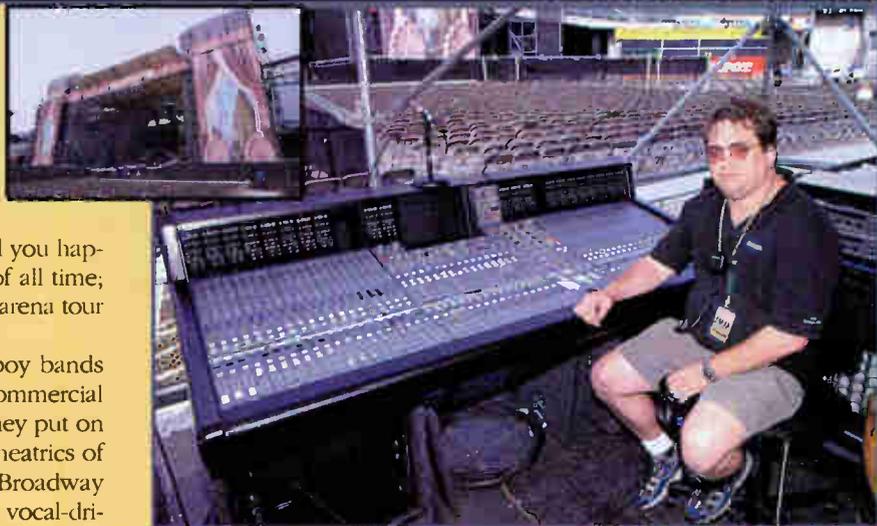


ALL PHOTOS BY STEVE JENNINGS UNLESS NOTED

Not many acts can fill a stadium these days. It seems that unless the Rolling Stones or U2 head out, or three or more headliners share a bill, the summer stadium season is all but dried up. Until you happen to have the fastest-selling album of all time; then you can sell out a 30-city stadium/arena tour in 40 minutes.

Drop your preconceptions about boy bands and the ever-present rush to knock commercial success. 'N Sync is the real deal, and they put on a dynamite show, complete with the theatrics of Las Vegas, the pacing and staging of Broadway and the pure energy of bigger-than-life, vocal-driven pop 'N' roll. These guys can sing. These guys do sing. Every word.

Mix caught a June 11 show at the Oakland Coliseum in the midst of the first leg of their North American tour. After a September break, during which there were promotions overseas, the Video Music Awards, the Latin Grammys and countless other commitments, the group headed back out for a two-month run through December. It's a Showco tour, with a massive 144-box/72-sub Prism[®] system powered by Crown

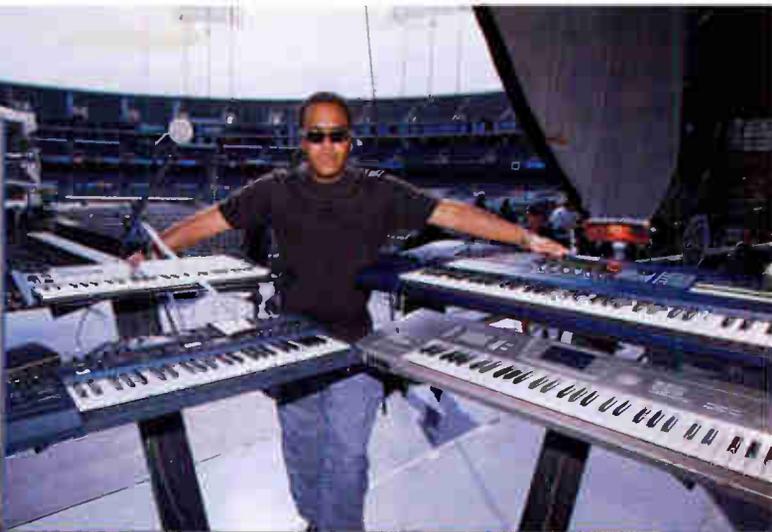


Above: FOH engineer and production manager Tim Miller

Macro-Tech 1200s, and it provided the best opportunity yet to test the digitally controlled ShowConsole, which was developed in conjunction with Harrison.

"I've been mixing live for 19 years now and have used almost every sound company out there," says Tim Miller, production manager and FOH mixer. "I just can't say enough

BY TOM KENNY



Musical director and band leader, Kevin Antunes. Left: Antunes sequences and programs key musical elements in the show using his MOTU rig, which travels from rehearsals to the shows

about this Showco system and the support we've had from M.L. Prociase and Leon 'Bone' Hopkins at Showco. It sounds good every day, and it sounds the same every day. When we go into these domes, the local promoters say that it's the best-sounding show they've heard inside. I don't say that to boost me. You get compliments, and they're to be shared. This show is put together well musically, set up correctly by the guys who fly the P.A., designed magnificently by Steve Cohen and Jim

Davis—everything just works. You can hear the vocals, you can hear what they're saying between songs. It's loud, it's clear, and we cut over the top of all these screaming kids."

Find a friend who actually saw the Beatles live, and you may get some sense of how loud the house can be for 'N Sync. According to Miller, the average crowd noise is about 116 dB SPL right before "the guys" take the stage, and it can peak at 122 dB, right in the 3kHz range. That doesn't make for an easy mix, but Miller's long road record, outside of his more than four years with 'N Sync, includes a stint with New Kids on the Block (hired by Dinky Dawson and Johnny Wright) in the late '80s and



double-duty as director of production for Britney Spears.

"It's just another part of the equation," he says. "You set up with the room empty, and then you think about how it will sound when you add the people, then you take it the next step and ask how it will sound when it's filled and the kids are screaming. And they scream throughout the show."

While humbly stating that he knows how to cut through screams simply from experience, Miller did allow that he doesn't take things out of the EQ that he might normally want to. Essentially, he says, it's about establishing good gain staging and fundamentals. "You don't stray from your gain structure," he says. "You just do it differently, and you have to finesse it. I end up taking more from the output side of the gain staging, as opposed to the mic input, because there's a fine line between good gain and pushing too much of the audience noise through the P.A. when all the mics are open."

THE BAND

Miller has been with 'N Sync since August 1997, beginning with the group in Europe before they came back to the States and made a splash with "I Want You Back." Soon after, he hired long-time colleague and friend David Brooks to mix monitors for the "Ain't No Stoppin' Us Now" tour. At the same time, pop impresario Johnny Wright called in Kevin Antunes, whom he had known since their days together on New Kids, to be musical director and band leader. For the past two-and-a-half years, the core crew, which includes "Bongo" Bob Longo on backline, hasn't changed.

While no one will dispute the appeal of the group's five-part harmonies and fluid choreography, a large chunk of their live energy comes from the first-rate band that moves in and out of conventional pop, funk and electronica with ease.

Around March of this year, while Miller was busy advancing the tour and working out production issues, and the principals were working on choreography, the band assembled in a small town outside of Orlando for rehearsals. Antunes, who also is musical director for Britney Spears and Enrique Iglesias, had started a month earlier, locating as many sounds and master recordings as he could, "to make these songs sound the way the producers envisioned them, but with a little more live edge and a lit-

tle more twist to it."

"The band had been given the CDs from Jive Records," says Antunes, who co-wrote "I'll Be Good for You" with Justin Timberlake on the album. "So by the time we got to rehearsal, everybody knew the songs, and we could work on the sounds. That gave me the freedom



Left: Monitor engineer Dave Brooks at the Midas Heritage 3000 and with his wireless rack.

to stretch with the sequencing. As the band was playing, I would be editing drum sounds, cool stereo sound effects, and I could focus on the arrangements. I'm very rhythm-section oriented, so I start everything with the drum sounds, the drummer, then the bass. That's where I find the edge. If you make the bass a little more active, that's what will push the song out live.

"For example, when we do 'Makes Me Ill,' a song by She'kspere, that track has a nice keyboard bass patch. I was listening to the soundtrack for *Romeo Must Die* at the time, and I heard this cool sound that my cousin Troy [bassist] has been using for a while. It's a Q-Tron pedal, and we had him set the filters so that it maintained the resonance but had that Bootsy Collins feel, like the bass was chewing this big stick of bubble gum. We used that throughout the song instead of just in one part, and it gave it a whole new character onstage."

Antunes sequences and programs in a MOTU rig that he carried through rehearsals and takes with him everywhere on the road. He uses Digital Performer 2.7 religiously, with a 2408 and MIDI Timepiece A/V. For additional drumbeats and sounds, he uses his Akai MPC2000 and S6000. Onstage, he has a Yamaha EX5 and Korg Trinity to his right and a Roland JP-8000 to his right.

A Yamaha DX100 is used specifically for his "voice box," a Bongo-designed processor used when Antunes sings into a plastic tube on "Digital Get Down." Also in his rack are a Roland JV-3080, a JV-2080 and a Novation Supernova module.

"When we had our full-on rehearsals with the stage, Tim [Miller] and I spent a lot of time going through my sequences to see how they translated to a big front-of-house system," Antunes says. "You have to make sure certain snare

sounds that I set up as a trigger for Billy, the drummer, are really going to cut through. Then you have to make sure the keyboard patches, like bells and triangles that exist in drum loops, are not too loud, because high-end information will just blast through this system. We went through a four-day process, and I would go in and filter out a lot."

Antunes' sequences, seven tracks that include effects such as fingersnaps and knife-cuts, some shakers and a couple of percussion doodads, are split three ways—to the drummer, to monitors and to FOH.

SHOWTIME

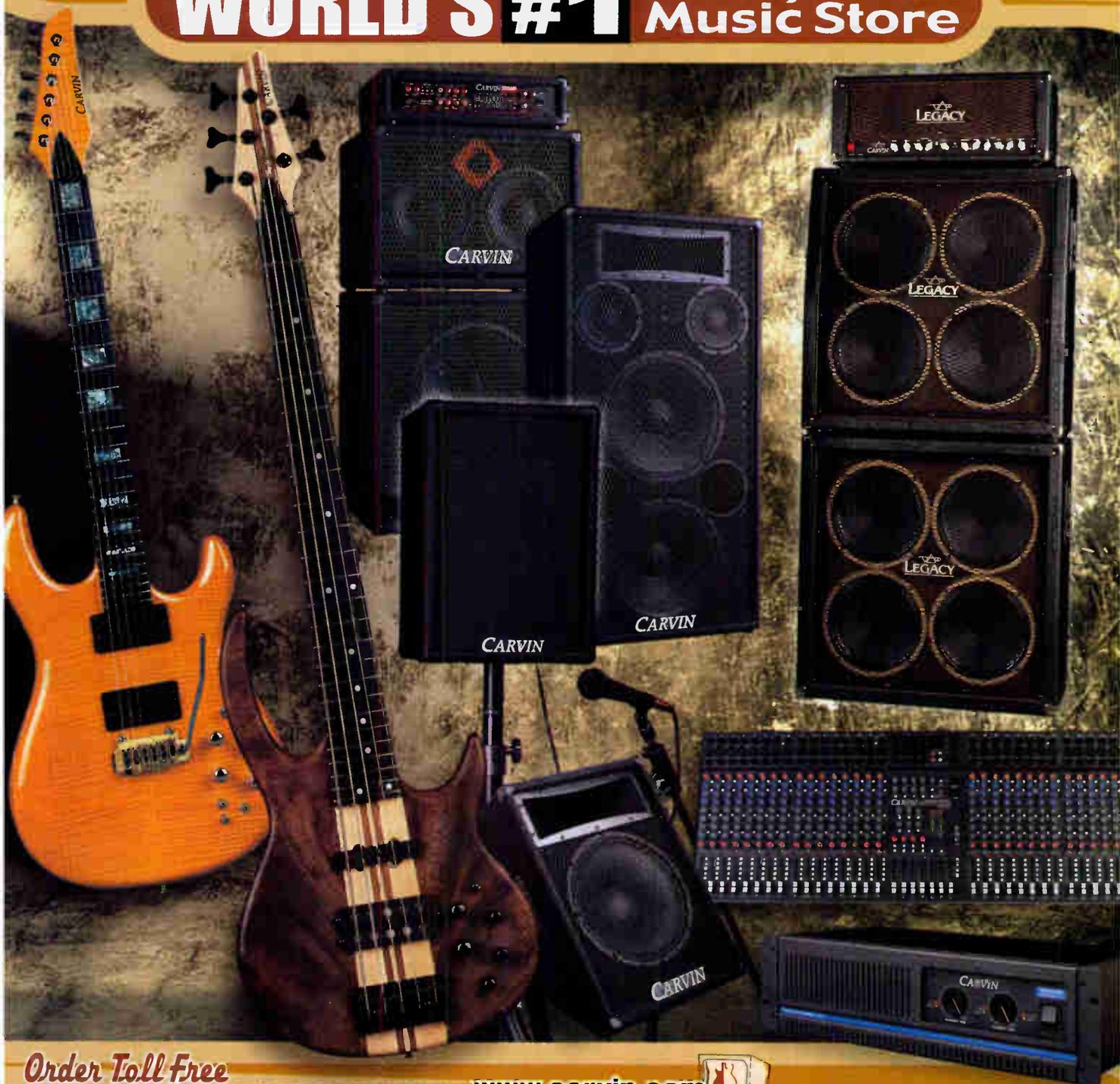
Being production manager as well as FOH mixer, Miller does not have a lot of time to himself during the day. Yes, he has to handle catering and tickets, but he walks the room each day, and he does line check and soundcheck. Right before the show, he tosses off his PM cap, walks up to the ShowConsole, plugs in the Rolling Stones' *Still Life* and enters mix mode.

The 80-input ShowConsole, one of only five in the world right now, was formatted according to Miller's input list by systems crew chief Dave Moncrief. (Miller has also developed three basic modes: arenas, domed stadiums, outdoor stadiums.) Because it can

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W#1

CIRCLE #120 ON PRODUCT INFO CARD
World Radio History

CLUB SYSTEMS

Outfitting a club system differs in many ways from other live sound installations. Clubs are seldom built from the ground up; thus, they must often inhabit spaces that were originally constructed as storefronts or warehouses—spaces that were never designed to foster proper acoustics. Club systems, unlike touring P.A.s that are somewhat customized to a particular act or sound, have to accommodate a diverse number of applications: touring bands, DJs, spoken word, etc. Additionally, some have realized that clubs don't have to stop making money once the bar closes, integrating its performance spaces with in-house recording and multimedia capabilities. To get a better idea of the sound issues facing club owners, the *Mix* editors have taken a look at three very different venues: the B.B. King Blues Bar and Grill in New York City, Hollywood's Knitting Factory and Ten15 Folsom in San Francisco.

B.B. KING BLUES BAR AND GRILL, NEW YORK

by Chris Michie

B.B. King is not your average 75-year-old blues guitarist. Now entering his seventh decade as a recording artist, King marked the new millennium by opening his third B.B. King

Blues Club, the latest addition to his already extensive portfolio of business enterprises. The newest club, the B.B. King Blues Bar and Grill (www.bbkingblues.com), is located on New York's 42nd Street in the E-Walk complex between Broadway and Eighth Avenue and joins a chain that already includes similar establishments on Beale Street in Memphis, Tennessee, and in Universal City, California.

Featuring a 600-seat main room and an adjoining café, the B.B. King Blues Bar and Grill is outfitted with a sound system designed to cope with the wide range of blues, jazz and reggae artists booked to appear on an almost nightly basis. Designed by Amit Peleg and installed by his Peltrix company (Baldwin, NY), the sound system is based on speakers and amplifiers from the Dutch company, Stage Accompany (www.stageaccompany.com). For the main room, Peleg specified a total of 13 SA Champ Series C27 cabinets, supplemented by six Entertainer Series E24s, two SA Bass Series XL-bin and two SB 45 subwoofer cabinets. Monitors are SA Leader Series L27, L24 and L26 models. All speakers are powered by SA Efficiency Series ES 20 amplifiers.

As in many clubs, the stage is located in the center of the rectangular room, facing across the shorter dimension. Not only is the audience seating area all around the front and sides of the stage, calling for a 180-degree coverage pattern, but a significant part of the audience is seated at the two ends of the room, which brings up the need for a "long throw" configuration, or a delay system. Another complication common to clubs is a ceiling height of 15 feet, effec-



B.B. King performing for the opening night crowd at the new B.B. King Blues Bar and Grill in New York in early June. The club features a Stage Accompany sound system designed and installed by Amit Peleg of Peltrix (Baldwin, NY).

tively reduced to 12 feet over the stage by beams above and the 30-inch stage height.

To achieve the required coverage, Peleg designed three clusters hung above the stage with SA Uni-Rig™ flying components. The center cluster comprises three Champ C27 cabinets arrayed in an arc, each C27 loaded with a single SA 1502 15-inch woofer and an SA 8535 Compact Ribbon Driver. Below these are hung two Entertainer E24s, each featuring the same ribbon HF driver and a single SA 1205 12-inch woofer. Side clusters consist of five C27s on top and two E24s below. Subwoofers are under the stage with the two XL-bins facing the front, each cabinet containing two SA 1513 woofers in a “tunnel-loaded” configuration. Two SB45 subwoofers, each containing three front-loaded SA 1513s, face down the longer sides of the room.

According to Peleg, who previously designed and ran the sound system at the Blue Note jazz club in New York, the SA clusters cover the entire room, eliminating the need for any delayed speakers. “In fact, the system has a much greater power capacity than will be ever be needed, but the rather large number of speakers was necessary for optimal coverage,” he notes. “The SA Ribbon Compact Driver puts out as much as a conventional compression driver but without the distortion. The system sounds great, and you can run it very loud all night, yet when you leave the club you have no ear fatigue—because there is no distortion.”

Apart from the subwoofers, which are fed an actively filtered signal via crossovers that plug into extension slots in the ES20 amps, all of the house speakers contain passive crossovers. The 13 SA ES20 power amps feature Dynamic Damping Control (DDC), which effectively reads the impedance at each speaker terminal in real time and feeds that back to the amplifier. DDC circuitry in the amplifier measures the return signal and compares it with the original signal at output stage of the amplifier, automatically compensating for any differences. The result is much tighter and more accurate mid and bass response and the elimination of “time smear,” thanks to improved cone excursion control.

To complete the installation, Peleg specified a Yamaha PM3500 for the house console and a Crest LM20 monitor console. System EQs are SA1310 (center cluster) and SA2310 (L and R clusters) models, and there are dbx 266XL stereo compressor and dbx 166XL compressor/gate models available for dynamics control. Microphone selection includes Shure SM57s and SM58s, Sennheiser MD-441, MD-431 and MD-409 models, an E-V RE20 and pairs of AKG 414 and AKG 460 condensers. Four Klark Teknik DN360 graphic EQs are on hand for monitor tweaking, and additional outboard gear includes Lexicon PCM 81 and Yamaha SPX990 reverbs.

“We also have a very extensive patch panel system,” notes Peleg. “There a lot of tie lines between monitor mixer and house console, and touring bands can patch their own control gear into the house system with ease. The company I contracted to do all the wiring, Manhattan Wiring, did a marvelous job.”



Russ Cole, production manager at the Knitting Factory in Hollywood

KNITTING FACTORY, HOLLYWOOD

by Maureen Droney

Hollywood has experienced numerous renovation attempts over the past few years. Finally, in the wake of a healthy economy and with the long-awaited Metrolink subway stations operational, those attempts are becoming a reality. One sign of the neighborhood's resurgence of energy is the new Knitting Factory. Set smack in the middle of the urban renewal on Hollywood Boulevard's Walk of Fame, the venue is contributing a much-needed touch of class to the neighborhood.

Billed as the world's first “Smart Club” and sporting the catchphrase “Downtown is more than just a zip code,” Knitting Factory is a sleekly elegant two-performance-space venue constructed from the ground up with both recording and the Internet in mind. From the mahogany, brick and glass entrance/bar area to the acoustically isolated stages, KF is wired and ready for anything.

“The most basic element of Knitting Factory has been always putting on a show—being the platform for the artist to connect to the consumer,” explains KF founder and CEO Michael Dorf. “We became a record company 12 years ago, but it was really just expanding on that basic formula. Everything has been built around the recording of the performance, then getting it to as many people as possible. Obviously, the Internet, new media and technology are a perfect fit for us.”

To that end, Knitting Factory Hollywood has Ethernet, DSL and T-1 lines running throughout, aiming for full bandwidth, broadcast-quality audio and video recording, webcasting and interactive programming. In the bar area, four kiosks fitted with parabolic mics are set for interactive webcam connec-

tions with Knitting Factory New York (and soon, Knitting Factory Berlin). An "Interactive Table," set between the bar and restaurant, provides video and audio teleconferencing for 12 participants, and one of the hallways is lined with computer monitors wired for direct connection to companies such as Much Music, Soundbreak.com, Launch.com and Digital Club Network.

Recording, both audio and video, was central to the design of the facility. The performance spaces are constructed to be acoustically isolated from each other, with both rooms floating on rubber pads. The central recording booth, with sightlines to both the Main Stage and the cozy AlterKnit Lounge, is itself a design feature of the club. It looks out over both stages and is visible from the bar and dining areas. All performances can be webcast live, including feeds from backstage camera locations for interviews and commentary.

"Everything happening in the club can be routed through the recording booth," explains production manager Russ Cole. "We have a fully isolated transformer split from both stages. Both rooms have great acoustics: the AlterKnit Lounge is very intimate, and the Main Stage is extremely flexible, somewhere in between dead and live. The Main Stage sounds so good, in fact, some of the acts have run without monitors, because they could hear themselves so well onstage."

Las Vegas-based Pro Sound, Inc. served as sound contractor, with design by Larry Spurgeon and Rod Sintow. Systems for both rooms are built around Meyer Sound Labs equipment, utilizing all self-powered speakers. The two-level Main Stage, with a total capacity of 450, has mains comprised of two MTS-4As, four USW-1P subwoofers and a center cluster of four UPA-2Ps. Rear and side delay speakers consist of five UPM-1Ps, the Meyer cabinet often used as front fills in large arenas. There are also two under-balcony UPA-2Ps for use as surround speakers. Onstage are seven UM-1P monitor wedges and two larger, 15-inch USM-1P cabinets. The FOH console is a Crest X 8HS40, the monitor board a Crest X 8-32.

The AlterKnit Lounge, with a seated capacity of 60, is fitted with a Crest X 4-24 console. Mains consist of two Meyer CQ-1s, with four UM-1P stage monitors. In-house recording equipment includes a Yamaha 02R and three Tascam DA-78s.

Knitting Factory is known for booking an eclectic roster of cutting edge artists, in genres ranging from jazz and pop to alt rock and spoken word. That booking policy will continue at the Hollywood venue where the sound system, like the artists who will be using it, is considered to be a "work in progress."

"Meyer Sound Labs has been incredible," notes Cole. "They did our New York facility and will do Berlin as well. They are very personally involved. Our deal with them is that if adjustments need to be made down the road, they will swap things out for us.

"What's great is that we have built-in capability for all the new technology," he concludes. "You'll be able to see what's going on in the other clubs and communicate with people there; we'll be able to have a band playing in New York with musicians here joining in for a simultaneous performance. All of this ability was designed in from the ground up."



PHOTO BY STEVE JENNINGS

TEN15 FOLSOM, SAN FRANCISCO

By Robert Hanson

Inconspicuously posed as a plain, windowless building in San Francisco's achingly hip South of Market district, Ten15 Folsom has long been synonymous with the world's biggest names in electronic music: a must-stop for international celebrities like Sasha, Jon Digweed and Paul van Dyk. The club's reputation and inherent popularity aside, the owner of Ten15, as of late, has found himself in a precarious position: The warehouses and vacant lots surrounding the club have been swallowed up by the Bay Area technology boom and resulting housing crunch. Faced with a two-fold problem of working with the concerns of its new neighbors and catering to world-class acts, the club's crew of technicians and independent engineers were forced to invest a great deal of time and money in order to adapt the space and keep a world-famous night spot alive.

"A big problem we've had is sound issues with our neighbors," explains Ten15 technical director Scot Peterson. "We've spent literally close to 2 million dollars soundproofing this building so far. And we still really have quite a bit that could be done. We just finished a new concrete wall behind the main stage, and we did the whole wall along the alley three or four years ago. We end up soundproofing areas of the building which are leaking the most sound to nearby neighbors. The problem is that they keep building housing around us, and we keep having to contain it more and more."

The facility itself, beyond the main performance/dance space, houses five separate rooms, each complete with its own DJ setup and sound system. "There's a lot of interesting things that can happen, especially when you're running multiple rooms," Peterson continues. "With the bass, you can actually get an interaction between the multiple systems. Structures all have harmonics where they resonate, and if you get two or three DJs in the building that are just inadvertently aligning the bass beats, you can get to the point where the whole building really starts to take off, and the neighbors can actually feel it. That's sort of an interesting little challenge to deal with."

The main system consists of ten EAW cabinets and twelve Bag End double-18 subbass cabinets. The four mid-high cabinets have been retrofitted with TAD compression drivers on

the high horns. Six EAW triple-15 bass cabinets are flown at the four corners of the dance floor in arrays with the mid-high cabinets. The 12 Bag End sub cabinets are located in a single array, encased in the concrete under the main stage. Everything is driven by Crest amps: 3301s for the high horns, 6001s for the mid-drivers, 8002s on bass, with 10001s sending 20,000 watts to the sub array. The entire system is capable of putting out just over 45,000 watts. Rackmounted gear of note includes a TC 9600 Finalizer (used for its frequency-selective compression) and BSS Varicurve and Omnidrive units. Guest DJs have the option of using a Rane MP24-X slider-style mixer or a Rane MP2016 rotary mixer with the 2016 effects unit. The DJ monitor setup comprises two Bag End Sapphire cabinets and an EAW double-15 cabinet, powered with over 3,000 watts of Crest amplification.

PHOTO BY STEVE JENNINGS



In addition to the extensive soundproofing, the crew also sought to improve the overall sound of the club, beginning with one of the larger rooms, known as the "Blue Room," and moving on to the main dance floor. "One challenge is just room acoustics in the different rooms," states Peterson. "The 'Blue Room,' even though it's actually really more red [laughs], has about 5,000 square feet of custom-made acoustic panels all on a hanging system. We had an acoustic engineer. [Bob Skye of Charles Salter and Associates] engineer the panels, and then we built them and installed them. It was a very expensive, time-consuming,

difficult project. And that was, of course, the first room that we really did that extensive of a treatment to. We learned a lot about the whole hanging process for the panels. And we learned a lot that we wouldn't do again, which really changed the approach we took to the main room when we did that. Instead of trying to do the panels as a solid thing, we actually did a grid of panels so that we wouldn't have

all the alignment issues and access issues.

"There is still an old skylight over the main room, and obviously glass is a very bad thing to have over a dance floor," he continues. "It reflects a lot of high frequency really well and gets you phase cancellation and all sorts of stuff. So we wanted to go ahead and put in panels under that ceiling. On that one, we took just a much better thought out approach to it, because we'd done it before. We'd learned what had made this other installation such a nightmare."

Also in the works is a remodeling and acoustic treatment of the front rooms and VIP lounge—improvements that the hordes of "regulars" are certain to enjoy. "Ten15 exhibits a unique combination of attributes. In addition to its size and multiplicity of rooms, it offers the possibility of vertical, sectional space—open vistas across two or more levels—while maintaining an almost 'double-helix' circulation. The redesign for Ten15 will allow the patron to experience these things to their fullest effect," concludes Ten15 architect Jeff Burris. ■

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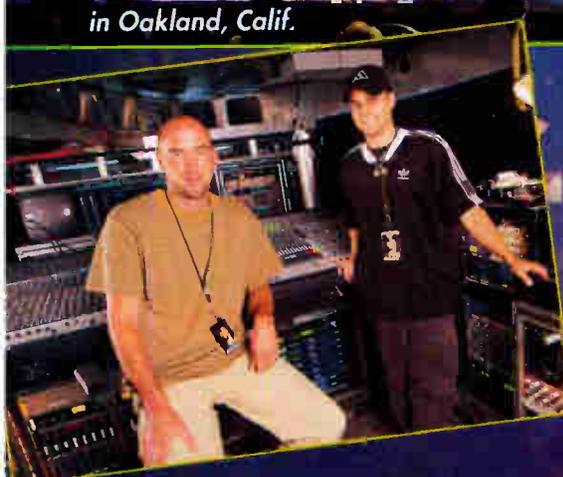
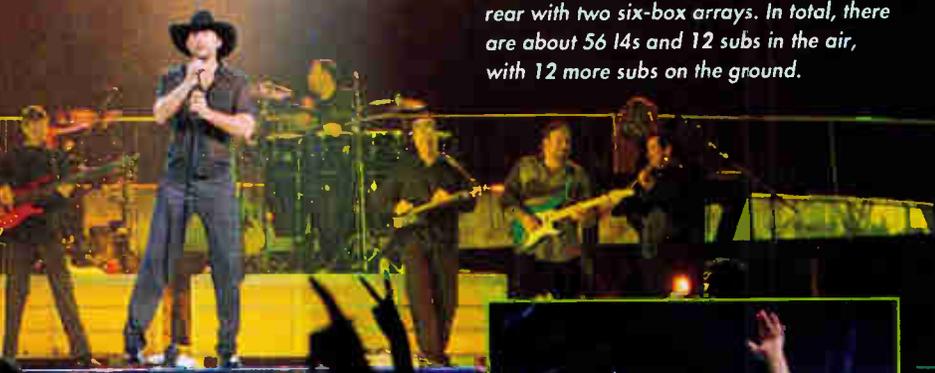
CIRCLE #122 ON PRODUCT INFO CARD

Country's First Couple Play Arenas In the Round

Tim McGraw and Faith Hill are a golden couple: Both have had chart-topping singles, and both have had Gold and Platinum albums throughout the '90s. On their joint "Soul 2 Soul Tour 2000," each of them presents a full solo show, followed by a show-closing set of duets. Mix caught the show at the Oakland Coliseum New Arena in Oakland, Calif.

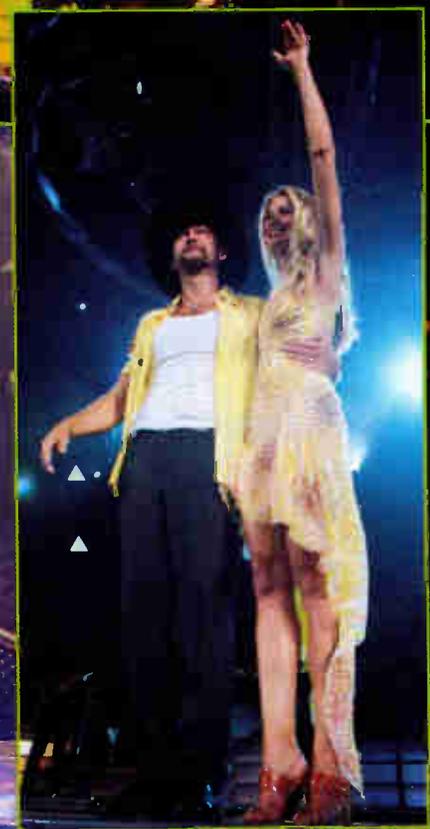


The Clair Bros. 14 system is hung for 360-degree coverage in most arenas and, being a line array, requires only 18 hanging points. Typically, the front system consists of 14 cabinets per side with six S4 subwoofers flown beside them. Side seating areas are covered with eight-cabinet clusters, and the rear with two six-box arrays. In total, there are about 56 14s and 12 subs in the air, with 12 more subs on the ground.

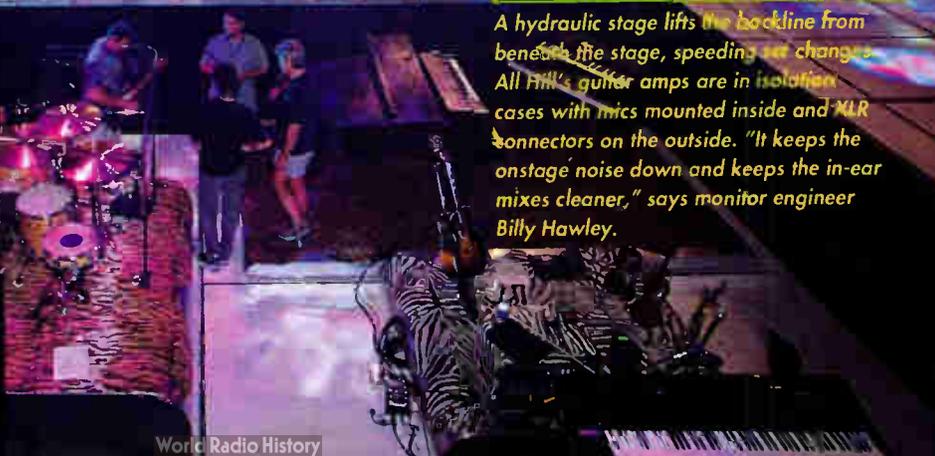


When not out on the road with Hill or Celine Dion, monitor engineer Daniel Baron (left) can be found in his own recording studio, Studios Piccolo in Montreal, Canada. For this tour, Baron is using the same 92-input, 34-output **SSL Series S** console that he had custom built for the **Michael Jackson** tour.

Searchlight in-ear systems. Baron distributes mixes to 10 Shure PSM-600 W1 transmitter/receivers. For reverbs, Baron is using 14 Lexicon MXP-1s and two Lexicon PCM-91s. Compressors include dbx 160 and 900 models, an Aphex 9000 rack and a Summit DC 200. Additional processors include a NightPro Air EQ, two Focusrite SA 430s, a Midas XL-88, a BSS DPR-404, and 10 Aura "shakers" to supplement the in-ear mixes. Assisting Baron is monitor tech Jeffrey Pripot (right).

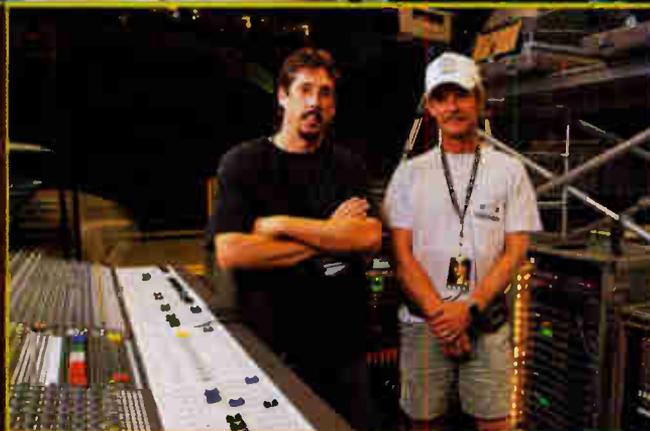


A hydraulic stage lifts the backline from beneath the stage, speeding set changes. All Hill's guitar amps are in isolation cases with mics mounted inside and XLR connectors on the outside. "It keeps the onstage noise down and keeps the in-ear mixes cleaner," says monitor engineer Billy Hawley.



Tim McGraw & Faith Hill

Tim McGraw and Faith Hill in performance. Both McGraw and Hill use Sennheiser 5000 wireless mics with 5005 condenser capsules. In-ear monitors are also by Sennheiser, 3000 series with Ultimate Ear UE5 earpieces. The show uses up to 58 wireless frequencies—wireless equipment is supervised by Clair wireless tech Wally Bigbee.



▲ Tim McGraw's FOH engineer, John Ward (left, pictured with Faith Hill's FOH mixer Buford Jones) is using a Soundcraft Series Five console to manage about 65 inputs and 10 outputs, including the delay system feeds. "I like the headroom and the warmth of the Soundcraft," says Ward. "For this band it's very fitting." Jones has been a live sound mixer for 30 years, and past clients have included Pink Floyd, Linda Ronstadt, Don Henley, David Bowie, Eric Clapton, Jackson Browne and ZZ Top. Jones is using an ATI Paragon. "It's very accurate, and I like the layout and design," he says. Jones uses a Focusrite ISA 430 Producer Pack on Hill's vocal and dbx 566 tube compressors on bass and the spare vocal channel. For general reverb, Jones is using a Yamaha Pro Orb R-3.



◀ Billy Hawley (right), Tim McGraw's monitor engineer, is using an ATI Paragon II with Uptown flying faders automation. "With 40 outputs, the ATI Paragon is saving our lives," says Hawley. "When Tim and Faith come out together for their duets, we have 13 stereo mixes and about 95 inputs. I deal with Tim and Faith, assistant engineer Martin Santos [on left] mixes the band, and then Jeff Prieplot comes over from Faith's monitorworld to mix the background vocals."

NEW SOUND REINFORCEMENT PRODUCTS



SENNHEISER E865 VOCAL MIC ▲

Sennheiser (www.sennheiserusa.com) has released the e865, the first electret condenser microphone in the company's Evolution Series. The e865 features a supercardioid, pick-up pattern with an uncolored, off-axis response, and it can withstand sound pressure levels of up to 150 dB. Contained in a rugged, all-metal housing, the e865 reportedly excels at feedback rejection and offers a frequency response of 40-20k Hz. The mic ships with a pouch and mic clip and is priced at \$399. Sennheiser is also now shipping the Kick-Pack for drummers. The \$415.95 Kick-Pack includes an e602 mic, cable and mini mic stand. Optimized for high-sound pressure levels and extended, low-frequency response, the e602 features a cardioid polar pattern.

Circle 314 on Product Info Card

ATI PARAGON II PRODUCTION CONSOLE

Audio Toys Inc. (www.audiotoys.com) intros the Paragon II Production console, a comprehensive, large-scale mixer that includes Distributed Intelligence technology, which allows the console to route and remember Group, VCA and muting assignments without the need for a central computer. In standard configuration, the Paragon II console offers 64 mic inputs and eight stereo line inputs, all routable to groups or mix buses, plus four stereo line inputs routable to stereo master or matrix outputs. Each input channel features 4-band parametric EQ, gate and com-

pressor, and true LCR panning with LCR subgroup capability. All input channels also offer a stereo direct out and insert send, each with level control. Outputs include eight stereo audio groups with inserts, two main mono mix outs and two main stereo mix outs, controllable via eight VCA groups and two VCA grand masters. Paragon

II also features eight stereo matrix outs with inserts and eight mono and four stereo aux buses. Options include channel and aux mutes, snapshot fader recall and dynamic moving fader automation.

Circle 315 on Product Info Card

HAFLER CINEMA AMPS ▼

Hafler (www.hafler.com) debuts a series of fixed install amps with cinema-specific features. The new Hafler GX Series is one of three new amp series based on the C Series platform; the new series differs only in cosmetics, input processing and output capabilities. For the GX Series amp, two optional plug-in Cinema Cards provide the crossover features needed for the typical cinema installation. Users may select from 500 or 800Hz crossover frequency and 4th-order lowpass, highpass or full-range operation. DIP switches select from six time delays, and the crossover includes a phase inversion switch and a continuously variable CD horn equalization function. In Bridged Mono mode, both channels may be configured with a single Cinema Card. GX Series models are available with 300/600/1,200-watt power ratings. The two-rackspace, 300- and 600-watt units

feature new Class G circuitry based around the patented Trans•nova platform; they also include switching power supplies and use surface-mount and MOSFET technologies. All are fan-cooled and 115V/230V-adaptable.

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World Radio History

RECORDING SESSIONS

JOE JACKSON

BACK TO NEW YORK FOR "NIGHT AND DAY II"

by Robyn Flans

You've got to hand it to Joe Jackson for having the guts to invite critics to compare his current release to his classic 1982 album, *Night and Day*. Journalists always summon up the ghosts of artists' past work anyway, but Jackson was bold enough to actually title this new project *Night and Day II*. And if it weren't enough to represent this as a sequel to the most successful album of his career, he actually incorporates that unforgettable bell riff from the hit "Steppin' Out" into this current album, which seems extraordinarily courageous when it comes to the potential wrath of the journalistic pen. Wasn't Jackson worried that he might be accused of ripping himself off?

"It occurred to me, because it's the kind of stupid thing people say," Jackson replies with a laugh. "I thought it was appropriate, and it works for me, and I think I am entitled. It's my music. I think I'm al-

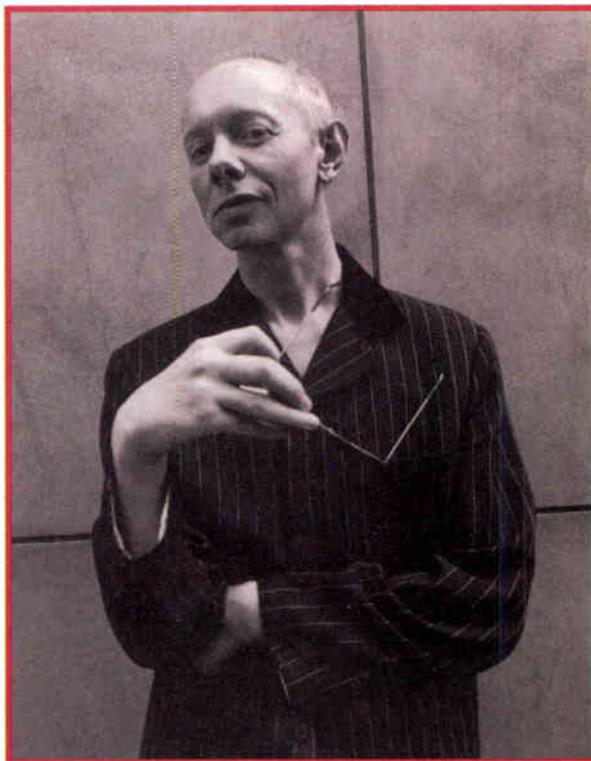


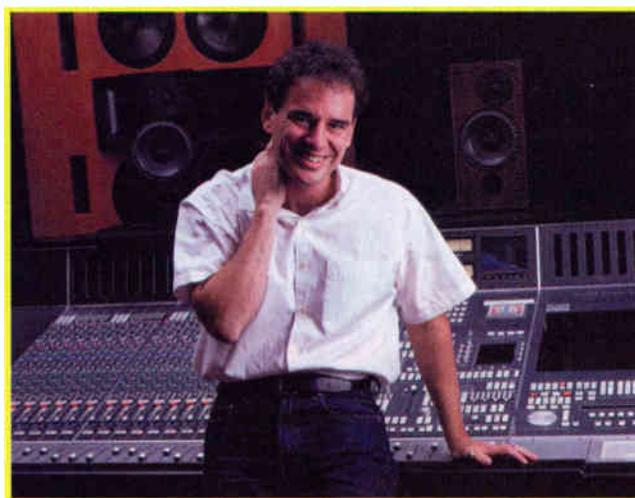
PHOTO: NITIN VADUKUL

lowed to quote myself. It's not as if I've done 20 albums that are all the same. I have never quoted myself before, but I think it's really appropriate musically and thematically, and because I've paid my dues. I've been doing this for 20 years, and if I want to quote myself, I'm allowed."

The idea for the "spin-off"

project didn't come to Jackson until he was ensconced in the creating of this current record. "It started to evolve very loosely as a project about New York City, because I've been here for quite a long time, and I had so many observations of characters and situations that I wanted to write about. It's been building up in the back of my mind, I suppose. Usually, if there is an overall concept to an album I do, it takes shape as I go along. I don't really start off with a concept. It was the same thing with *Heaven and Hell*. It started with certain ideas and then grew. Somewhere along the line, I start to see the shape of it more, and that starts to influence how I work. In this case, once I had two or three of the songs written, I started to think of it as 24 hours in New York City from the point of view of several different characters.

—CONTINUED ON PAGE 202



Engineer Dan Gellert at Avatar Studios

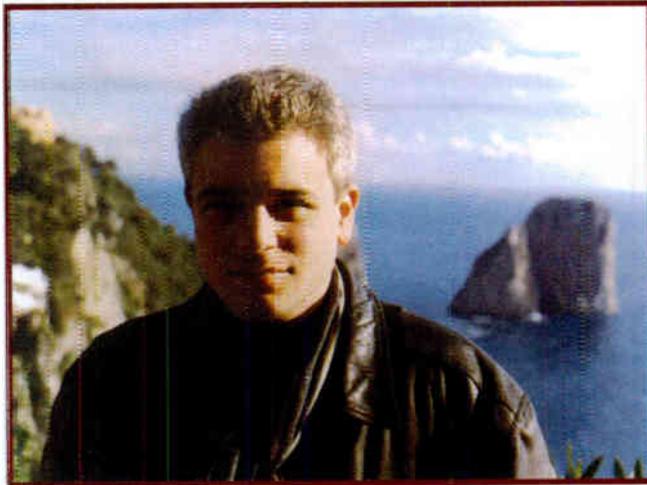
IN THE GROOVE WITH NICK SANSANO

FROM PUBLIC ENEMY TO GALACTIC

by Blair Jackson

New York-based engineer/producer Nick Sansano has forged a solid career out of working away from the mainstream—out on the edges where creativity thrives without the constraints that commercial considerations impose. The irony of his situation is that in toiling in the studio for so many forward-looking acts during the late '80s and through the '90s, he's also unexpectedly been part of a number of popular albums that were, rightfully, discovered by a public eager to hear something new and different. Sansano's impressive resume includes engineering, mixing or production on groundbreaking albums by Public Enemy (*It Takes a Nation of Millions...*), Ice Cube (*AmeriKKKa's Most Wanted*), Bell Biv DeVoe (*Poison*), Sonic Youth (*Daydream Nation*, *Goo* and *Dirty Boots*), Rob Bass (*It Takes Two*), Manic Street Preachers (*Generation Terrorists*), the Grassy Knoll (*III*) and this year's fabulous New Orleans funk-feast *Late for the Future*, by Galactic. Toss in CDs by the likes of the Jon Spencer Blues Explosion, the Getaway People and a host of unknown (at least in the U.S.) European acts, and you've got a broad and fascinating career that's still accelerating.

Sansano was born in the Bronx (N.Y.), but his formative years were spent in New



Nick Sansano at Capri Digital Studios in Italy.

Jersey, where he played keyboards in a succession of mostly new wave-ish bands in high school. He went to the Berklee College of Music (in Boston) on a musician's track (performance, theory, composition, etc.) but ended up in the engineering program. "As I was finishing up an arranging degree at Berklee, I realized there was still something missing, and I found myself being more attracted to the studio and all the trappings of the studio, and that's where I found myself being



really comfortable," he says. "But it's not like I was very technical or anything. And I'm still not. When it comes to the actual construction of equipment or maintenance and knowing how to change a capacitor, I can't help you with that, I'm afraid. But I

like using the technology creatively, and that's kind of what got me interested in getting studio experience. It was like a big instrument to me.

"My first job out of Berklee was at Newbury Sound in Boston," he continues. "I had recorded demos there with bands I was in and as I was finishing up at Berklee, they were looking for some assistants, so I would go over there and work there a couple of days a week. I moved on to doing sessions very quickly. I don't think it's because I was particularly good, but circumstance always seemed to follow me. At Newbury, they needed people to do sessions, and they were simple sessions, and I did them. Then, when I moved back to New York, I worked at a studio called Eras Sound, on 54th Street between First and Second Avenue. It was two big rooms, and it was a very popular studio in the disco era. This guy, Boris Midney, who owned the studio, produced all these dance classics. I wasn't involved with that, but they needed people to do other kinds of sessions, so I did that."

From there, Sansano moved to Greene Street Recording (in Manhattan), and that became his home base for a number of years. "That was a great studio," he recalls. "The whole hip hop thing exploded down there, along with lots of other things. That's where I started to get involved with the Bomb Squad, who produced all the Public Enemy stuff, and Ice Cube and Bell Biv DeVoe. I engineered and mixed on *Fear of a Black Planet*, *It Takes a Nation of Millions*, *AmeriKKKa's Most Wanted*, some Run-DMC stuff, Slick Rick, 3rd Bass."



Did Sansano know that these projects would be so important and influential? "Not initially," he says, "because it was a very comfortable situation. The Bomb Squad, before they were officially the Bomb Squad, would come in and work on a lot of Def Jam R&B-type stuff, so we all knew each other really well. But they never would bring Public Enemy stuff to Greene Street at first. They would do all that at a place in Long Island. Then they started to bring it down to Greene Street, and that's when I started to get a lot of those sessions and started a real relationship with the production team. We had all sorts of

—CONTINUED ON PAGE 206

"LONDON CALLING" BY THE CLASH

by Chris Michie

Every now and again a particular place and time is witness to the birth of a social/cultural/political revolution. In 1976, the place was London, and the new movement, which changed the course of popular music, youth fashion and the lives of hundreds of thousands of disaffected teens and 20-somethings, was punk. Led by a stunning series of singles from the Sex Pistols, the English punk movement quickly spawned a rash of exciting, new bands and many memorable, if not always listenable, records. Parents were horrified; the British Establishment predictably overreacted, banning airplay, clubs and concerts; and both tabloid and "serious" newspapers trumpeted the latest real or imagined misdeeds of the new celebrities. A good time was had by all.

By the time the smoke cleared, the Sex Pistols had disbanded, and The Clash was firmly established as one of England's most important bands. But despite having been one of the first punk bands to get a record deal and having enjoyed largely positive coverage in the music press, The Clash had not actually sold the number of records that their elevated status might indicate. Epic had refused to release the first album in the U.S. (though it sold an unprecedented 100,000 copies as an import), and the second album, *Give 'em Enough Rope*, produced by Blue Öyster Cult mastermind Sandy Pearlman in a conscious attempt to capture a more commercial sound, had also failed to set the U.S. market alight. In fact, it was the band's cover of Bobby Fuller's "I Fought the Law," taken from a 4-track EP titled *The Cost of Living*, that made a bigger impact, becoming an airplay hit on college radio.

All that changed with the release of the band's third album, *London Calling*. A double album sold at the single album price, it entered the UK album charts at Number 9 in December 1979, and the title cut reached Number 11 in the UK

singles chart the following month. By March 1980, the album was on the U.S. charts and a single, "Train in Vain (Stand By Me)," reached Number 23, the band's highest U.S. chart placing at that point. Today, the album is hailed as a classic and features prominently in every rock critic's list of significant records.

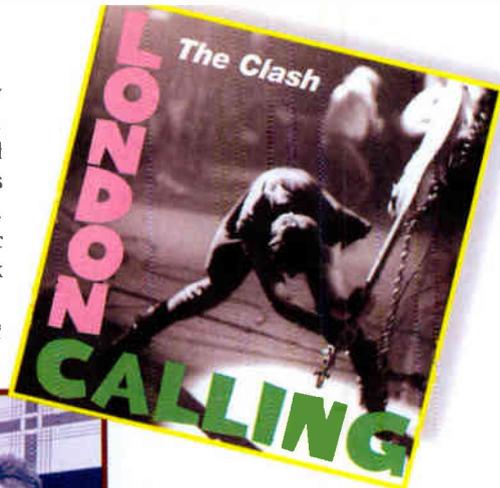
The Clash recorded *London Calling*



The Clash (L to R): Joe Strummer, Mick Jones, Paul Simonon and Topper Headon.

at Wessex Studios, where they had previously recorded *The Cost of Living* EP with engineer Bill Price (see separate interview feature in this issue and Part One in the October 2000 issue). Located in a former church in the Highbury district of North London, Wessex had already been the site of a slew of hit recordings, including singles and albums by the Sex Pistols, The Pretenders and the Tom Robinson Band. Chief engineer and studio manager Price, who took over at Wessex in about 1975, had developed a repertoire of recording techniques suited to the room and the bands that recorded there.

"Before I moved from AIR to Wessex, I used to work a lot with producer Chris Thomas in AIR's Studio One," recalls Price. "That room was so live that you had to put screens around everything just to keep out the ambience. When I started working with Chris at Wessex, he pushed me to find ways to get every ounce of



ambience out of what was a large, but quite dead, room. Some of those techniques were sort of special to Chris' sessions, and others were more general, and I did use some of them on *The Clash*." One particular technique involved placing a pair of Neumann U87s about 15 feet up and 10 feet in front of the drum kit as ambience mics and mixing them in with a pair of STC 4038 ribbon mics placed behind the kit at floor level. (STC 4038s are visible in many photos of The Beatles' sessions at Abbey Road, as Geoff Emerick typically used them as overhead mics. Originally designed by the BBC, the STC 4038 is essentially identical to the current Coles 4038.)

On the song "London Calling," Price recorded the stereo ambience mix on tracks 17 and 18 (see track sheet) and recorded the same ambience mix to tracks 7 and 8, but gated through Kepex gates and triggered by the snare mic. "The original Kepexes didn't work very well," says Price. "They had these neon lamps that indicated how much they were gating, and when the lamps switched on and off it put a click on the signal—they were pretty lousy devices. In those days, if I managed to get them working, I used to record it on tape. If I was doing it now, I would apply the gates on the monitor and then reproduce it on the mix, but in those days, if you could get it to work, it was well worth recording it."

Having a gated ambience track gave Price complete control over the snare ambience. "Depending on how loud the snare was, I could balance the snare in the overall ambience by using the gated ambience," he explains. "If the snare was too ambient, I could reverse the phase of the gated ambience tracks

and reduce the amount of snare ambience, which I've done on occasion. It works very well."

For the close mics on Clash drummer Topper Headon's kit, Price used both a Shure SM57 and a Neumann KM86 on the snare, Sennheiser 421s on the toms and AKG 451s on the cymbals. Headon's kit had two hi-hats, which were miked with Neumann KM84s, but because he only played one hi-hat on "London Calling," the one on track 9 was subsequently wiped. On the bass drum, Price used both a dynamic AKG D-12, placed inside the shell, and a Neumann U47 tube condenser placed just outside.

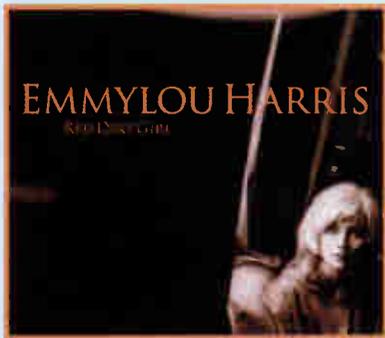
Using a tube condenser to mike a

kick drum was, at one time, unheard of and would definitely have been frowned on at Decca Studios, where Price first began his engineering career. "The older guys at Decca, the people that I learned from, used to laugh at me for putting a mic on the bass drum at all," recalls Price. "They used to say to me, 'the object of the bass drum is to keep the band in time—it's not meant to be heard.' They did teach me a lot, but that was one of the things they told me that I didn't believe."

In 1979, Wessex was equipped with 3M M79, 24-track recorders and the house standard was Ampex 406 tape with Dolby A, but Price recorded the drum tracks for "London Calling" without

Cool Spins

The Mix Staff Members Pick Their Current Favorites



Emmylou Harris: Red Dirt Girl (Nonesuch)

Harris' first studio CD since the acclaimed 1995 opus *Wrecking Ball* is both a departure and familiar. This time around, rather than cherry-picking songs by great songwriters—her specialty—she's written or co-written (with the likes of Guy Clark and Rodney Crowell) 10 of the 11 tunes; it's her biggest burst of songwriting since the under-appreciated *Ballad of Sally Rose* in 1985. Sonically, the CD has much in common with *Wrecking Ball*—not surprising because the engineer of that disc, Malcolm Burn, produced this one, and he and *Wrecking Ball's* producer, Daniel Lanois, seem to share a similar aesthetic. There are layers of eerie, atmospheric guitars, tons of different reverbs and a variety of simmering drum-box grooves; it's Lanois School all the way. Usually this is a good thing—Lanois and Burn have helped Harris escape the country pigeonhole that she found so confining. But there are a few tracks where the beauty of Harris' melody has to fight

with what to my ears is inappropriate noise and dross, and a quieter acoustic setting would have served her songs much better. There's an air of melancholy that permeates much of the album, but the writing is uniformly strong and always character-driven; in this regard, she has obviously learned much from some of the writers she's covered through the years, such as Bruce Springsteen—who sings backup on one song—and the late, great Townes Van Zandt. *Red Dirt Girl* is a mature meditation on mortality, loss and loneliness, and like everything Emmylou Harris does, it rings true through and through. And "Michelangelo" is the strongest song she's written since "Boulder to Birmingham" on her first LP 25 years ago.

Producer: Malcolm Burn. Engineers: Jim Watts, Malcolm Burn (mixing, with Watts). Studio: Clouet Street Studio (New Orleans). Mastering: Joe Gastwirt/OceanView Digital Mastering (LA).

—Blair Jackson

Orgy: Vapor Transmission (Elementree)

When I look at the guys in Orgy, I can't help but think of them as the headlining band at some trashy, lunar-colony

—CONTINUED ON PAGE 208



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Dolby. "When I was working at Wessex within just the one studio or even going between the two rooms at Wessex, I never had any problems with Dolbys," he recalls. "But as soon as I started being more independent, doing backing tracks in one studio and then going to another studio and doing overdubs, things were just horrendous—things just sounded wrong, particularly transient things like the drums. Sometimes I'd get the technical department in, and they would say 'plus four,' and I would say 'minus six,' and they would say 'are you talking dBv or dBu,' and I would find these people didn't speak the same language as me. So I never really got to the bottom of whether it was to do with alignment or whether there was something more subtle going on. The only reason I used to use Dolby on bands like The Clash is that I used to do a lot of composites. If I did a vocal on three or four tracks and mixed it down to another track, obviously the tape hiss got much worse, so it was a good idea to Dolby it. But I wasn't going to do that with the drums, because they would be recorded on however many tracks and would stay there until the final mix. So I used to switch the Dolby off on the drums."

For Paul Simonon's bass, Price mixed an instrument DI with a Neumann U87 on the cabinet, recording the chosen blend on track 1 and the components on tracks 23 and 24 for safety. The scribbles on the track sheet around tracks 19 to 22 indicate that Simonon made a further two passes on the bass, which Price then composited with the original bass tracks from 23 and 24 onto track 1. The electric guitars of Mick Jones and Joe Strummer were both miked with an Electro-Voice RE20 mixed with a Neumann U87 and recorded to tracks 11 and 12. "Mick's live guitar on track 11, a mixture of lead and rhythm, was kept for reference," explains Price. "But he then did two passes of lead on 23 and 24, which were composited back over 11. The tape was then turned over, and Mick did some backwards guitar that ended up on 23 and 24." Jones also overdubbed his rhythm part, with a double, on 21 and 22.

"Mick is an amazingly accomplished guitar player," says Price. "Whenever I worked with him, he was always coming up with melodic lines and neat rhythmic accents. And he's always been very into discovering what he could get out of his guitar. He's always gone out and bought the latest effects and experimented with them—on 'London Calling' he was using a Roland Space Echo."

Strummer's original guitar track on

"LONDON'S CALLING"		WESSEX
1	BS mix PAUL	X = NOT DOLBY
2	BID	
3	KEY	
4	SWR	
5	DRUM MIX	
6	KEY ARR.	
7	XXXXXXXXXX	
8	XXXXXXXXXX	
9	XXXXXXXXXX	
10	XXXXXXXXXX	
11	(GTR) (MICK) + (GTR) (JOE) (MICK)	
12	JO GTR	
13	TO VOC MIX	
14	MICK D.T. BASS	
15	TO B.	
16		
17	DIRECT MIX	
18		
19	1) MICK	
20	2) MICK	
21		
22	MICK D.T. RYTHM	
23		
24	LEAD GTR. 50 BMS + (BACKWARDS) 30	

Thanks to Richard Bowe of the Sony archives department for tracing the original lyric and track sheets.

track 12, which he played while singing a guide vocal, was not replaced. "Joe's more of an intuitive guitar player," says Price. "He used to bash the living daylights out of his guitar when the song demanded it. He also had a sort of unconscious way of damping the chord with his right hand, which used to produce this incredibly urgent, clanging and clashing sound, which I've never heard any other guitarist ever produce. Joe always played a Fender, unless it was broken, and then he'd play anything. Joe's strumming was so intrinsic to him that we used to do his vocals with him strumming an unplugged Fender, because it was the only way he could get into it. And if he didn't have a guitar there for some reason, Joe would beat his chest with his right fist."

For lead vocals, Price would normally have used a tube Neumann U47 but decided not to in this case. "Joe has a very bassy voice and at that time was also undergoing a lot of dental work," explains Price. "This meant if I used the 47, I had to put so much high-frequency EQ on that Joe's sibilance turned almost into a distorted lisp. The answer was an SM58, which gave punch and clarity without needing too much EQ."

Another important factor in Strummer's vocal delivery was the often physical intervention of producer Guy Stevens. "Guy was a very unusual record producer," recalls Price. "He believed that the record producer's job

was to maximize the emotion and feeling that an artist revealed on mic in the studio when doing the song. And Guy did this by what I call 'direct injection'—he would challenge the artist verbally and physically, tackle him and bring him to the ground and punch him and stuff, in order to get more emotion out of him when he performed. Funnily enough, this worked better on some people than others. It worked very well with Joe, actually."

According to Price's handwritten notes on the original lyric sheet, the lead vocal was made up from three passes recorded on tracks 15, 16 and 20, which were then composited to 13. The switchover points are marked on the lyric sheet, and the cryptic line at the end of the lyric—"less LC out got not"—refers to specific words on a particular pass. Strummer, Jones and Simonon each did backing vocals separately, all of which were doubled.

Finally, Mick Jones reinforced the bass theme that starts the song ("Mick DT bass") on track 14, either on guitar or possibly on bass. The overdubbed tom-tom on track 10 crops up in the same part of the song.

"London Calling" was recorded and mixed on one of the two Cadac consoles that Price had originally ordered in 1975 to replace Wessex's aging and under-specified Neves. "The Cadac, to my ear, is still probably the best audio signal chain I've ever heard," says Price. "It had tiny

talking about profit, talking about how much the sleeve cost, talking about the songs of their lives, and there had been absolutely no meeting point. But the fact that Guy Stevens lay down in front of the limo and had to be carried back into the studio by myself and Jeremy Green—when he finally stopped fighting us—I think made a big impression on Maurice.”

Though the album sessions were originally booked on a sensible Monday to Friday schedule, the band ran out of time toward the end. “After about five or six weeks of recording, the band was booked to play gigs in New York, which might have been the start of a short American tour,” recalls Price. “Needless to say, we were still recording 18 hours a day, seven days a week, up to about two hours before they had to get on a plane to New York. So what actually happened was once the band got to New York, I had a few phone calls with Joe and the rest of the band about how they wanted it mixed—I remember asking if it was okay for ‘Jimmy Jazz’ to sound like a live recording from a smoky old jazz club. So basically I mixed it totally on my own, apart from some very able help from my assistant at the time, Jeremy Green. And

I finished the album and flew to New York with it. I was very nervous at the time, I must admit. I met up with the band, who were about to do a gig, and we played the mixes backstage at The Palladium, and basically they were happy with them.

“I think there were a couple of little changes,” continues Price. “‘Armageddon Time’ was definitely part of the album when we were recording it, but it ended up as a B-side. And ‘Train in Vain’ was the last song that we finished after the artwork went to the printers. If you look on a couple of the Web sites, it describes it as a hidden track, but it wasn’t intended to be hidden. The sleeve was already printed before we tacked it on the end of the master tape.”

The completed album was mastered by Tim Young at CBS Studios in Whitfield Street. “He reckoned it was the loudest vinyl he ever cut,” says Price approvingly. Though not their biggest seller (1982’s *Combat Rock* sold over a million copies in the U.S.), *London Calling* provided the platform for worldwide success, and, for better or worse, gave the band enough leverage with CBS/Epic to insist that 1980s *Sandinista!* be released as a budget-priced triple album.

By 1986, The Clash had disbanded, but “London Calling” made the UK charts again in 1988 when it was rereleased as a single from the first of several retrospectives, *The Story of The Clash, Volume 1*. And in 1989, *London Calling* placed first in *Rolling Stone*’s “Top 100 Albums of the ‘80s.”

—FROM PAGE 196, JOE JACKSON

The idea of calling it *Night and Day II* really came a lot later. In fact, I wasn’t sure it was a great idea, to be honest. The title sets me up for comparisons that may or may not be helpful.

“*Night and Day* really wasn’t a concept album about New York at all, and *Night and Day II* is much more so. The first one was the first record I made in New York, and it does have quite a lot of New York flavor but from the point of view of someone who was still relatively new to the city, whereas *Night and Day II* is obviously someone jaded and cynical,” he says. “I’m kidding, of course. I would hate people to think that was the main thrust of it, because I think it has a lot of humor and other stuff going on. I think it has a lot of

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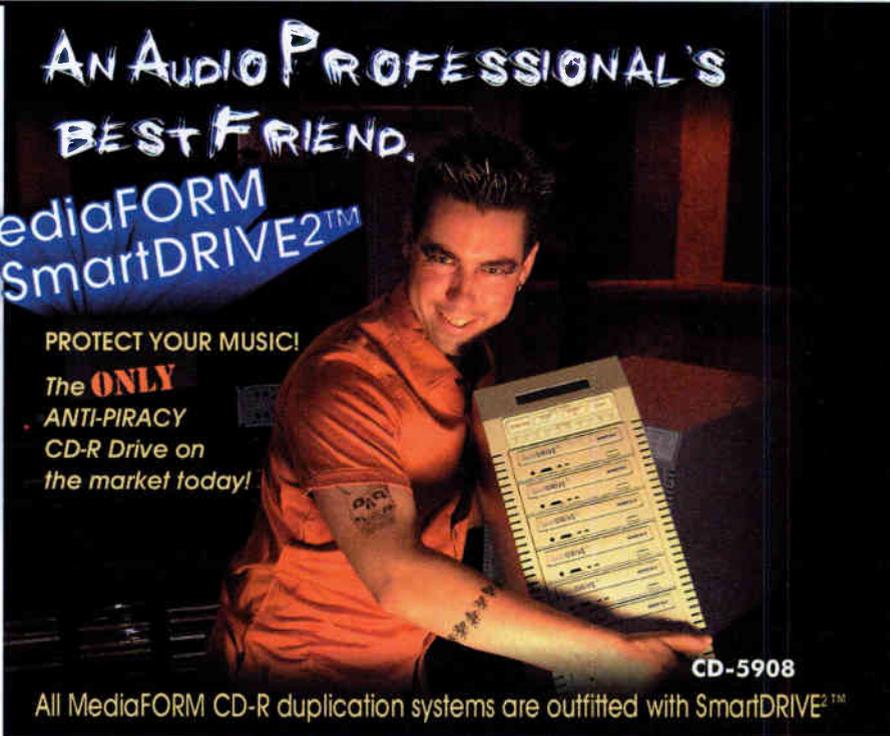
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different levels to it. It's more of a nuanced, mature perspective."

He can't recall how it came to him to re-use the "Steppin' Out" bell part, except to note that it has come to define a piece of the New York City vibe. "I like bright, tinkly sounds," Jackson ponders. "I know when I was writing it I was thinking of the city skyline at night and lots of lights, and I think all those chiming kinds of piano chords and bells conjure up those lights."

The new album, which was recorded to Sony 3348 at Avatar Studios and mixed on the SSL Axiom MT in their "D" room, opens with an interesting juxtaposition of classical cello and Latin rhythms that both mesh and conflict simultaneously. "I guess if I wanted to analyze myself, it would probably say something about the energy and excitement of the city, as well as a note of lyricism and melancholy, which is all mixed up," Jackson comments.

For Dan Gellert, engineer and associate producer, one of the greatest challenges—and loves—in Jackson's music is the combining of such different worlds: the acoustic instrumentation with the programmed synth parts, and the meshing of the sonic properties that involves.

"Probably the biggest challenge is in the mix, to make it something commercially viable, strong, aggressive and forward, meshing the two worlds and creating spaces with reverbs and delays that both work, instead of having one sound very electronic and techno and the other sound lush and beautiful. It's not particular to this album; it's particular to the way Joe hears music," says Gellert, who worked with Jackson on his *Heaven and Hell*, the instrumental *Symphony 1* and mixed the recent *Live in New York* album. "I use all the stuff everyone else uses—the Lexicon 480, Lexicon delays and a combination of vintage compressors and newer compressors. I've been using a new Sony reverb machine [S777], which is an amazing-sounding unit. It's this new technology that Sony has been dealing with. It's a sampling reverb, so somehow they sample actual acoustic spaces and make it into a digital reverb you can use. I guess it's the next generation of digital reverbs, because it sounds really great to my ears. I mixed this on a digital console, which adds a whole other level of detail available, because everything is automatable. You have to think of the digital signal path in a different way, and you really have to use your ears. It's not the

same thing as an analog signal path, but it can work.

"The biggest pro of using a digital console is the level of detail that is immediately available when you're mixing," says Gellert, who, as chief engineer at Avatar Studios (formerly the Power Station), actually had a hand in putting the rooms together. "To give you an example, on an analog console you can do everything. With automation you can do anything you want, but sometimes it's a bit of a negotiation. If you have 10 hours to do a mix, and you want to set up an effect, it can take 15 minutes to set it up to get it right. You can always do it,

given enough patch cords, but that's a negotiation. That's 15 minutes out of a 10-hour mix, whereas with a digital console, because everything is automatable, 15 seconds after you decide you want to do something, it's done. Of course, along with that comes a level of complication, but when you're at the level of knowing how, it's a great tool to be able to get to that detail instantly."

While the London Royal Academy of Music-schooled Jackson comes in with completely written charts and scores, he doesn't really demo his songs unless he needs to for another singer he may be using on the project. (Marianne Faithfull



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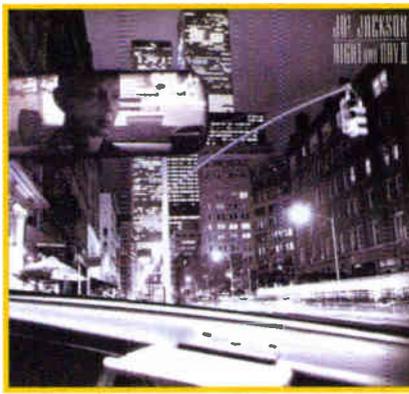
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sang lead on one track of this album, "Love Got Lost.") His own equipment, Jackson says, is pretty bare-bones:

"I have a few synths and a computer with a sequencing program. I've been using Studio Vision, but I think I'm going to be changing, because the company went bust. I don't have a home studio—I don't like the idea of it. I just have a writing setup, which is my laptop and Yamaha KX88 keyboard and a few synth modules. I have an E-mu Sampler E-IVx and a Roland JV-1080, which I like, an E-mu Orbit and a Nord Lead. Of course, I have a piano as well, which I do quite a lot on, and it is still the best."



He says while he has very definite sonic ideas, he is not at all a "gearhead" and leaves the technical decisions to his cohort, Gellert. "I find him good to

work with. I don't need a co-producer, as such, but it's nice to have someone who is a very good engineer, and who can take care of a certain amount of stuff that I don't really want to deal with on the more technical end of things. That's why he gets an associate producer credit—because he does take over a little bit of the production duties, yet at the same time, the end result is my idea of how I wanted it to sound. I just think he makes things sound good. And sometimes when you're working with a lot of keyboards and sampled stuff, as opposed to a band and a lot of guitars, it can end up sounding a bit thin or unsubstantial, but somehow it doesn't with Dan's engineering. I'm not very specific about how to get a sound, but I am quite fussy about how I want things to sound," notes Jackson, who adds that even though his studio savvy has definitely increased through the years, he still prefers not to become too involved in that respect. "I'm more aware of what can be done and how to do it, without really delving into the area of being an engineer, because I believe there's only so much you can do. You can't do everything well, so I prefer to put my efforts into being as good of a musician as I can be, rather than also trying to be an engineer. People diversify too much sometimes. I think I have done that in some ways in the past.

"I usually have a sound in my mind, because it's part of the arrangement to me if something has a delay on it, or a lot of reverb or none. So I leave it up to Dan to come up with something that sounds right to me. Sometimes I'm only able to express it in a vague way like, 'I'm standing in a back alley between two big buildings and shouting, and that's the kind of sound I want,' or 'I want to have a repeat that's going in time with the beat, but not quite, it's a little slow so it kind of rubs against the beat.' Sometimes I'll say, 'I want it to be kind of like this, but not too much,' and it might not make a lot of sense, but he seems to get what I'm talking about."

Although Jackson considers the vocals the toughest part of the process, requiring warm-ups and herbal teas, Gellert says he particularly enjoys the vocal recording with Jackson. "On this album, Joe decided instead of having all the [instrumental] tracks completed and sparkling clean, and then spending the last two weeks doing vocals—which is a lot of pressure for any vocalist—that the last couple of hours of every day he would go in and sing, and that became a habit. Things flow a little easier that

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way. It's a pleasure to do vocals with Joe, because he's such a pro at it. He knows his voice so well and what he wants to do and how to achieve it. There's a lot of experimentation involved, but immediately the level of where it's at before the experimentation begins is great already. So it's all about being creative when he's doing vocals, and he tries this and tries that and hears it and goes this way and goes that way, and in the end, it comes out great.

"It was a very creative atmosphere," Gellert continues. "For example, there were different attitudes he wanted to portray in the songs, different characters he wanted to be. One of the songs is called 'Happy Land,' which is about a club that burned down in Brooklyn, and people died in it. And the song is about that, and Joe sings it as a bit of a journalist, telling the story. So he wanted to get into that frame of mind. It was a result of Joe doing it, listening to it back, then adjusting. He has great ears that way. The process was fun, hearing the ideas come out of him and then having them be realized and have them come out of the speaker."

The toughest one for Jackson was the last track on the album, "Stay." "I wanted the vocal to have a sound that was sort of spacious, that was kind of floating in a lot of space, but without sounding distant or muddy," Jackson says. "I wouldn't have known how to get that sound, and I don't know how Dan did it. I know he combined two or three different effects, and I think it sounds great."

"I think that one sounds really good, too," Gellert concurs, going on to explain the process. "I basically used 'expensive' reverbs. [Laughs.] It's a combination of reverbs. A lot of time when you want something very complex when it comes to reverbs and something is very sparse, you need to use a couple of different ones that affect different things in the spectrum. So it's a combination of smaller spaces, of longer spaces, of delays all kind of combined into one, cohesive unit that makes it sound better than just one program. It kind of makes it into one big program using different devices. To be honest, I don't remember exactly the devices—probably Lexicon, probably the new Sony S777 reverb and delays; maybe a Publison delay. Again, the more important thing is what the music needed, because it's such a great vocal performance, and it just needed something to uphold it. It didn't need to be extreme in any way. It just had to be sitting in something really nice, and that's

what Joe described and what the music needed, so it was just finding the right combination."

Gellert mostly uses the Neumann U67 tube mic on Jackson's vocals. "It really sounds nice for his voice, kind of amplifies the right things for him. We've tried different ones throughout the various projects, and the U67 seems always to win. And we'll use different compressors depending on what tune it is and how he is singing, anything from a Neve compressor to an old LA2A, and that's about it."

"The tracks had different challenges," Jackson says. "Compositionally, the

hardest thing was 'Just Because,' the beginning, the fugue. I had this idea that there is supposed to be mounting paranoia with the string quartet fugue where it's gradually filling up space. It's a simple concept, but it wasn't easy to do. I wrote it a couple of times and scrapped it. I have a definite vision, but it doesn't come with every single note mapped out, so I have to work out the details. I had trouble working out the details on that one."

From Gellert's perspective, no particular track comes to mind as "a problem child," but there were a couple of harder tracks to mix. "There were a couple

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that weren't as obvious when I was working to mesh the two worlds together and create the right atmosphere for it to fit into the rest of the album," he says. "It was a matter of really getting into each particular sound and mixing it maybe a little differently or putting a different effect than what was originally thought of.

"It's really a pleasure to be involved in the entire recording, though, and do all the vocals and know the comps and then mix it," Gellert continues. "I've already been mixing it while I've been recording it, more figuratively than literally, but when it comes to the mix, it became a more creative environment rather than trying to learn the songs and figure everything out and then get to be creative. Because I was thinking about it all along, we started at a higher level in the mix, which is nice, and unfortunately that doesn't happen often these days, because projects are scattered. We don't always have the pleasure of working on a project all the way through, seeing a song from its infancy, become a teenager, then a young adult and have it evolve. It makes a difference." ■

—FROM PAGE 197, NICK SANSANO

celebrities and political activists coming down to check it out—people like George Clinton, Africa Bombataa, Spike Lee. That's when I knew something was going on there."

Working with Public Enemy and other rap and hip hop groups constituted quite an education for Sansano—technically, because the sonic approach favored by the Bomb Squad was consciously low-tech; and socially, as he was a white boy working on some of the most politically charged African-American music of that era. "It seems as though in the beginning everything I'd learned, [the Bomb Squad] wanted the opposite," he says with a laugh. "As I would work to clean things up and to get it to sound what I thought was presentable, I quickly learned that this was what they were about, and this is what the whole movement was about, and this is the way it should be, and I had to serve that. I had to forget about everything I knew and just serve what they needed. Then I came to realize that it was just as valid an aesthetic as a more conventional approach. We would go through tons of ways of doing things. It was about experimenting with sound and twisting sounds. And that would in-

fluence what I would do later with Sonic Youth. Between what we were doing with Public Enemy and Sonic Youth, by the time I had finished that string of records, I was completely twisted in the other direction.

"With Sonic Youth it was, 'What is the best way we can overload this preamp? How many can we chain together? If we press all the buttons in on the 1176 and chain it to some other compressor and then overload a preamp, what'll that sound like?' We were looking for ways to change the rules and include the dirt and to make the dirt as valid as spending \$3,000 a day at a top studio using

There was stuff that was accidental that came from just wildly experimenting, but there was always some thought behind it. Just playing, trying to find ways to make things a bit different. And I got that from working with Public Enemy and all those other groups.

—Nick Sansano

top-of-the-line microphones. I remember that when we did [Sonic Youth's] *Daydream Nation*, the H3000 had just come out, and by the end of the night, we had *everything* running through it.

"We were looking for a way to present a different picture. It wasn't like we didn't know what we were doing. It was conscious, we had a real direction and a certain quality that was undeniable. There was stuff that was accidental that came from just wildly experimenting, but there was always some thought behind it. Just playing, trying to find ways to make things a bit different. And I got that from working with Public Enemy and all those other groups."

As for the racial issue, "There were times when it would be a little tense," Sansano acknowledges, "but it was al-

ways with some extra bit player; never with the core of guys we worked with day-in and day-out. I still keep in touch with those guys. We had some problems when we did the Ice Cube record, and we had a whole bunch of L.A. people come. Then, with Bell Biv DeVoe, there was a posse, and there would be some hanger-on, some friend-of-a-friend that shouldn't have been there in the first place that makes you feel uncomfortable or says the comment about race you don't want to hear. It was unavoidable, I guess, but it never ever got in the way.

"But the musicians always stood behind me. I cleared out the posse a few times," he chuckles. "You could be the fall guy, because [the group] didn't want to be the ones to throw out their friends. But there would come a point sometimes when I could just say, 'Look, we've really got to get this done now,' and people usually respected that."

Though Sansano is no longer a staffer at Greene Street, he still does the majority of his work there while also nurturing what has become quite an international career. He produced The Bats from New Zealand, Hunters and Collectors from Australia, Ghosts of American Airmen from Northern Ireland, "and then I have a whole French thing going, and I also work a bit in Italy," he says, citing stints in such studios as Capri Digital near Naples, Studio Le Manoir in southern France and Plus XXX in Paris.

"What happened was the hip hop stuff I was doing attracted some of the French hip hop people, so I went over and mixed some French hip hop, and I realized there was this whole other world to discover outside of New York," he says. Evidently, French and Italian A&R people were excited about the prospect of landing an American with such impressive hip hop credentials, and this has led to considerable overseas opportunities for Sansano and his occasional partners-in-crime, Franck Rivaleau and Dan Wood. One group, I Am, "went on to become the biggest French rap act ever; we did two albums together and won all kinds of awards," he says. Sansano also had a major hit in France producing a rock/world music band called Zebcla.

Of differences between working with French and American artists, Sansano says, "The vocal is more important in France than in the U.S. The vocal is everything, and everything has to revolve around the vocal. Their whole musical heritage is based on lyrics more than anything. So a lot of attention to

detail is paid toward the choice of vocal microphones, the takes, the comping of the vocal. Everything is the vocal, where in America they're looking for that huge low-end thing to be happening. In France, they're not looking for maximum impact. They're looking for a vehicle to carry the vocal."

Stateside, the coolest disc Sansano has been involved with recently is the incendiary, ultrafunky Galactic album, *Late for the Future*. Regarded as one of the finest of the current wave of jam bands, Galactic has had some trouble capturing both the power and the nuances of their live shows in a recording studio. And initially, the band's label, Capricorn Records, invited several different producers to go down to New Orleans to meet with the band and try cutting a couple of songs. Sansano and the band hit it off in their two days together, and that led to him being offered the production gig.

"I tried to get across the idea that they should try to establish a recording identity," Sansano says. "I got them to think of the studio as another tool for them to use and to approach it song by song, instead of just going in and playing live, which is the way they'd done it. So we rehearsed and worked out arrangements and tempos, which is a pretty standard way for me to work. Then we went to the Egyptian Room [American Sector] and Magazine Street Sound, and I set up my Pro Tools, and we began to make all the loops and samples that we wanted. We knew that we were going to try to incorporate more loops and samples into the record, but none of us was ready to use found loops and samples. So we set up some drum kits and keyboards and guitar amps and started making loops. Then we proceeded to construct the skeletons of the songs with the loops we'd made. We had a few days doing this busy work, and then, once we had those laid out, we went to Kingsway [also in New Orleans], which I loved; it's one of the best studios I've ever worked at."

Kingsway is located in an old house and for these sessions, Sansano and the studio's Ethan Allen had the group set up in different parts of the building. With a collection of loops and samples for a foundation on some tracks, Galactic then recorded fairly live. Sansano cut the band straight to tape (Studer 24-track, Ampex 499), using the studio's vintage API console mostly for monitoring and two Neve sidecars for its mic pre's. Guitar and keyboards went through API mic pre's; drums used Neves.

"I also brought my rack with some MIDI stuff and Pro Tools, my computer, etc. I had a Pro Tools engineer, Danny Madorsky, helping me out, particularly at the beginning and end of the sessions. The good thing about that is he can actually be editing while a session is happening. I have a Mackie mixer built into the rack, and there are ties on the back of the rack so I can flick a switch and he puts headphones on and he's totally self-contained. It's almost like having two sessions going at once."

Sansano says that his approach to this recording was influenced by the fact that Galactic has a "very strong, straight-

up, jazz influence" combined with a drummer (Stanton Moore) and bass player (Robert Mercurio) who are great groove players. Their material ranges from free-wheeling, funk instrumentals to R&B rave-ups featuring singer Theryl de'Clouet. Keyboardist Richard Vogel, guitarist Jeff Baines and reeds player Ben Ellman are all top-notch soloists and ensemble players, conversant in blues and more "outside" styles.

"The band was looking to make a more produced record, but still have it be intimate and true," Sansano says. "Kingsway is an incredibly comfortable place that allows you to do anything

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you want and feel like you're in your own living room. And New Orleans definitely has its own feeling and pace, and you have to find it yourself. If you're going down there thinking you're going to run the show like you do at home, forget it; it's not going to work. You're going to piss people off, and you're not going to get anything done. You gotta get inside what they're thinking and bend to their schedule."

Still, for the mix, Sansano went back to his proverbial living room: Greene Street. Working in France and Italy and New Orleans is all well and good, but New York City is still home. ■

For more info check out nicholas.sansano.com.

—FROM PAGE 199, COOL SPINS

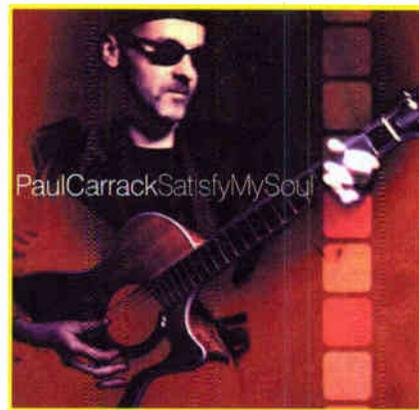
nightspot in the not-so-distant future, and their latest offering, *Vapor Transmission*, only works to push this idea further. Many like to dismiss Orgy as obsessively preened, TRL-whores, devoid of any real substance. Granted, image is key, but their music defies easy description and cleverly draws from things as diverse as *Aladdin Sane*-era glam to the twisting textures of Autechre to the proto-goth, synth-pop moodiness of Love and Rockets. On the first listen, the standout tracks are clearly "Fiction (She Dreams in Digital)" and "Eva." Both have the kind of sickly sweet, apocalyptic quality that makes girls in combat boots and boys in eyeliner swoon. Much of the rest of *Vapor Transmission* reveals its genius over time; songs like "Opticon" and "107" will work their way into your head without you even knowing it. The level of production is also top-notch, but not in a bland, overly pitch-corrected way. Orgy and producer Josh Abraham clearly apply to the Todd Rundgren/Brian Eno school and really used the studio to push the music, thankfully refraining from just filing off the edges and churning out more homogenized soundtrack filler. What has to be kept in mind is that Orgy is an act who has to be taken as a whole—the image, the music, the posturing, everything—and understood as being almost a parody of themselves. Maybe their detractors just can't handle the notion that the packaging can be as important as what's inside; obviously, they've never lived in Los Angeles.

Producers: Josh Abraham and Orgy. Engineers: Anthony "Fu" Voice, Abraham, Amir Derakh, Jay Gordon and James Murray. Studio: Orgy's project studio (Los Angeles). Mastering: Tom Baker at Precision Mastering (Los Angeles).

—Robert Hanson

Paul Carrack: *Satisfy My Soul* (Compass)

Thirty seconds into the first song on singer/songwriter/multi-instrumentalist Paul



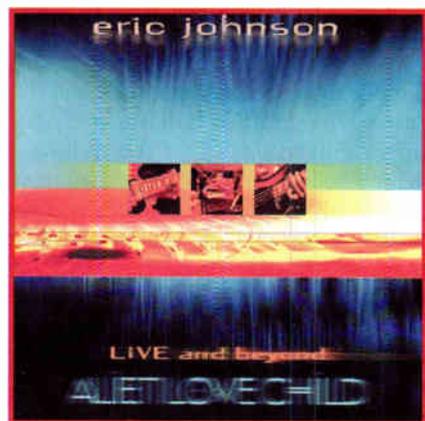
Carrack's new CD, you know exactly where he's coming from: "Satisfy My Soul," co-written with his ex-Squeeze mate Chris Difford, is the best song Sam Cooke never wrote. Carrack has forged a lucrative career writing and singing this kind of smooth "blue-eyed soul," with Ace, Squeeze, Mike & the Mechanics and on several solo albums. Nothing Carrack does is particularly original, but it must be said that he is very, very good at writing and singing songs with strong melodies and memorable hooks that bring to mind Cooke, early Al Green, Marvin Gaye and others. Carrack is not in that league (who is?), but he is a distinctive and consistent singer, and *Satisfy My Soul* showcases his strengths nicely. Carrack engineered the disc himself, and he did a fine job—there's plenty of air in the arrangements and pop in the rhythm tracks. The occasional string parts by Richard Crichton are appropriately subtle and tasteful, in the Stax and Motown mold. All in all, a pleasant soul strut.

Producer/engineer: Paul Carrack. Additional engineering: Graham Bonnet and Nigel Bates (mixing). Studio: Carrack's home studio. Mastering: Nigel Bates and Benedict Fenner.

—Blair Jackson

Eric Johnson: *Live and Beyond* (Favored Nations Entertainment)

Eric Johnson's sixth album, *Live and Beyond*, takes guitar playing to an entirely new level. Backed by his band, Alien Love Child (drummer Bill Maddox and bassist/vocalist Chris Maresh), Johnson produces an exquisite blend of fast-paced guitar solos, classic rock rhythm and jazzy tunes that keep your feet tapping.



The CD features live cuts from a club stint in Johnson's hometown (Austin, Texas), complete with onstage banter. On some songs, such as the heavy, driving "The Boogie King," Johnson rips out rockin' guitar lines; other times, he dips into a slow, smooth, jazz groove. "Last House on the Block" and "Don't Cha Know" take the listener into a Chicago blues bar with the fantastic, soulful voice of guest vocalist Malford Milligan hammering out a classic blues tune. But Johnson takes center stage throughout the majority of the album—only a few songs on the release have vocals; good news for the many fans of Johnson's torrid instrumental fretwork.

Producers: Eric Johnson and Richard Mullen. Engineers: Richard Mullen, Burke Hunn and David Hough. Mastering: Saucer Studios (Austin).
—Sarah Benzuly

Fontella Bass: Free (Fuel 2000)

Frankly, before I heard this reissue of singer Fontella Bass' work for the Shreveport, Louisiana-based Paula label, I knew her only from her 1965 smash "Rescue Me" on Chess Records. So for me, hearing these 14 tracks



from the early 1970s was quite a revelation. A formidable singer with one foot in Motown and the other in Aretha Franklin's gospel-soul, Bass was also a solid songwriter with a knack for penning catchy tunes and thoughtful lyrics, mostly about love, but some displaying a real social consciousness. Her producer/mentor, Oliver Sain, often surrounded Bass' voice with sumptuous strings (arranged by Gene Barge), horns that showed some Stax influence and the inspired vocal backups of the Olivettes, so there's plenty of drama and power in these songs. Who knows why *Free* never quite caught on at the time of its release? Perhaps Paula Records didn't have the clout to get Bass' music onto the radio. Maybe during the seven years between "Rescue Me" and this material the country had forgotten about Bass. Whatever the case, some dynamite music got lost in the shuffle. Until now.

Producer: Oliver Sain. Engineer: Not listed. Studio: Sain's studio (St. Louis).

—Blair Jackson

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COAST TO



PHOTO: LYNN CARY SAYLOR

L.A. GRAPEVINE

by Maureen Droney

I dropped in at Skip Saylor Recording's Studio B and found busy quadruple-threat Claudio Cueni behind the SSL Axiom MT console. Cueni, a producer, engineer, songwriter and musician, was mixing three new cuts (one of which he'd written) for England's A-1, the boy band currently ensconced in the Number one slot on the Brit charts.

Originally from Switzerland, where he got his start playing keyboards with rock bands, Cueni is a genial fellow who finds himself a bit bemused at the twists and turns of fate: These days, he's best known for his work with R&B and hip hop favorites like Immature, Shanice, Smooth and Boyz II Men.

"I started out at 15 as a keyboard player for hire," he recalls, "touring with rock groups who had keyboard parts on their albums but no keyboard player in the band.

Then I got a job with PolyGram Germany, where I moved to New York and babysat their groups who were recording there. They needed somebody to make sure the bands ate, had a place to live and were on a guest list if they wanted to go out at night. Again, they were rock groups without keyboard players, so I'd also play on their records. [Laughs.] I don't know what job description that would be—I've always seemed to do a lot of things."

Eventually, Cueni decided to try his luck in L.A., where he hoped to get work as a musician. Instead, he quickly found himself an assistant engineer position at Paramount Studios. "I still don't know why they hired me," he laughs. "I'd spent a lot of time in studios, looking over engineers' shoulders, but I hadn't engineered myself. I knew if you pushed a fader up it would

—CONTINUED ON PAGE 212

NY METRO REPORT

by Gary Eskow

Developing multiple skill sets can help musicians remain financially stable in the extremely competitive metropolitan music market. This month, we visited with a pair of artists who combine extensive digital workstation chops with impressive writing and performing skills.

Andy Snitzer must have been listening when his parents told him he needed a career to fall back on in case

when the phone rang. It wasn't a client—Arif Mardin was on the line! He was calling on a recommendation, and he asked me to show up at the old Atlantic Studios facility a half-hour later to play a solo on the Boy Meets Girl single "Waiting for a Star to Fall." I just happened to have my tenor sax with me and so I rushed over to the studio wearing my Brooks Brothers suit!"

The success of that record led to a succession of recording and performing gigs. Highlights of Snitzer's performing career include tours with the Rolling Stones in '94 and '97. This fall he will be



L to R: engineer Tim Boyle, NIN drummer Jerome Dillon and composer Zoë Poledouris at Blowtorch Flats. See page 219 for related story.

music didn't pan out. The Philadelphia native took an MBA from NYU and a broker's position at JP Morgan after receiving his degree in the late '80s. "The way I got my break in the recording business is actually a very funny story," he says. "I was trading at JP Morgan one day

heading out for a second time with Paul Simon. "I'm really looking forward to touring with Paul again. The level of the band and the artist is so high, and the material is deep and challenging. Michael Brecker did the gig for a long time, and so

—CONTINUED ON PAGE 214

COAST



L to R: Engineer Ari Rios, Jesse Harms, engineer Karl Derfler and Sammy Hagar at Laughing Tiger.

NASHVILLE SKYLINE

by Dan Daley

Waiting For Elvis—something very special and unique this month. I got a call from Tony Brown, MCA Records chief and one of Nashville's and country's most illustrious producer (and a TEC Award nominee again this year). Before Brown achieved all of the above positions, he was the piano player in a band that backed a small-time lounge singer named Elvis Presley. It seems that Elvis

was booked for a session in Nashville, at Creative Workshop Studios in 1976, and not uncharacteristically, The King never showed up. The assembled band, including Brown, James Burton, Ronnie Tutt, David Briggs and background singers the Sweet Inspirations, showed up night after night, learning songs and waiting for Elvis, who was holed up in the Sheraton Hotel on Harding Place, where the staff had walled off the entire top floor for him and his entourage. Elvis, however, kept finding excuses.

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SESSIONS & STUDIO NEWS

NORTH CENTRAL

The reigning poster boy for pale-faced musicians, Billy Corgan (Smashing Pumpkins) was in haunting Studio 4 at the Chicago Recording Company (Chicago), remixing tracks for the upcoming Pumpkins album, *Machina II*; Howard Willing was tapped to engineer. The object of Fred Durst's obsession, Christina Aguilera, was in at CRC with producer Ron Fair and engineer Chris Shepard to work on an upcoming Christmas release. Taking a break from the Bay Area fog, Carlos Santana also ventured to the windy city to work

with veteran engineer Jim Gaines. The two worked on a live performance that will be webcast by Starmedia... Not too far away at Darfin Studios (Minneapolis), Bernard Allison and producer Todd Gaines, who seems to get around, tracked new material with engineers Todd Fitzgerald and Brian Johnson. Universal Records artist Sister Hazel treated a group of radio contest winners at Darfin's Studio A when 104.1 The Point arranged to have the band play a private gig; Fitzgerald sat in to record the performance. J. Parker and his band stepped into ARS Recording Studios (Alsip, IL) to work on his new album *Whose That in My Yard*. Parker produced the album himself, and the effort was engineered, mixed and mastered by Larry Scara. Up-and-coming hip hop artist Robert Cox was also in at ARS. The as-yet-untitled release was produced by Cox and engi-

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FACILITY SPOTLIGHT

AND THEN CAME SLIPKNOT

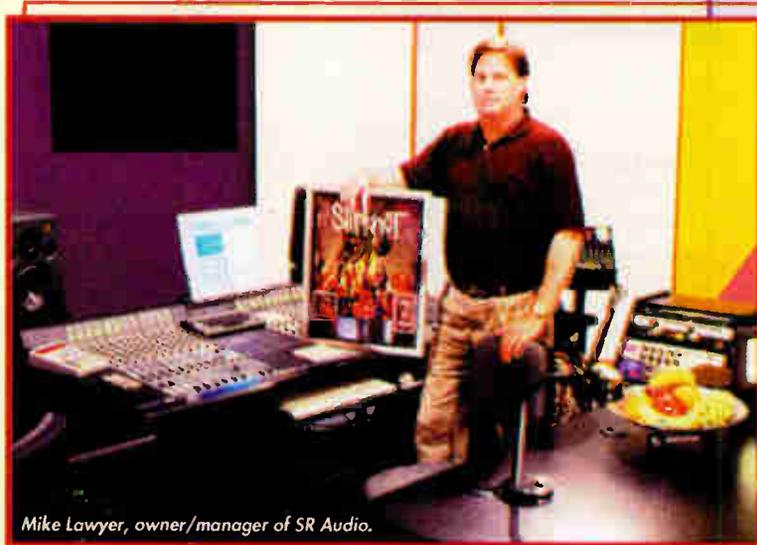
SR AUDIO'S CLAIM TO FAME

by Sarah Benzuly

By keeping its doors open 20 hours a day, almost every day, SR Audio has made a name for itself in the center of the Midwest, Des Moines, Iowa. Producing a Platinum album was the stepping stone for this studio. It's an especially impressive accomplishment, because this facility dedicates half of its day to commercial recording.

When *Mix* first met Mike Lawyer, studio manager and owner of SR Audio, six years ago, he was thrilled to be working on Walt Disney commercial recordings. Now, Lawyer talks about Slipknot, the new hard-

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Mike Lawyer, owner/manager of SR Audio.

PHOTO: STEFAN SESKI

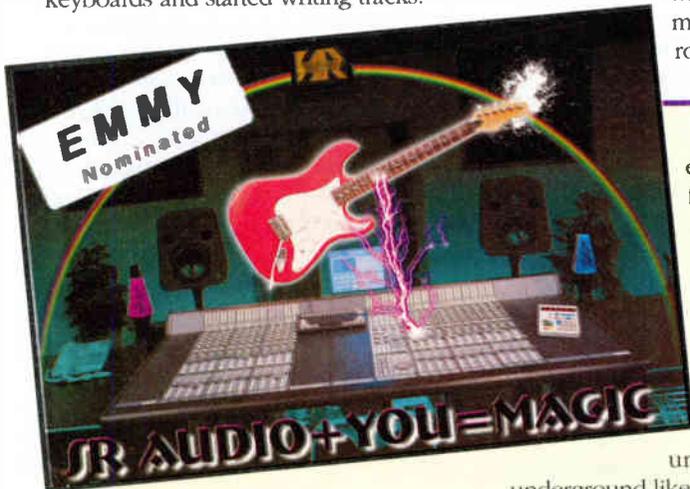
—FROM PAGE 210, L.A. GRAPEVINE

get louder, but that was about it."

Following was a year of on-the-job training. "I think the saving grace was that, at that time, a lot of the clients at Paramount were doing their first demos. They didn't know much more than I did, so we kind of learned together. Then, some of the people I worked with started getting deals and calling me to work on their records.

"It was a great place to learn. It was one of the only studios in town to have staff engineers, and you didn't have an assistant. You had to set up, align your own tape machines, figure out a way to work around any problems... And, there was every kind of recording you could imagine: storytellers reading children's books, heavy metal, rap and everything in between."

Throughout his travels as a musician and engineer, Cueni had always written songs. "I never had any hits, but I'd had a couple of placements on records and a publishing deal," he explains. "When I started working on R&B and hip hop, I said, 'I can do that!' I went out and bought myself an MPC60, a couple of keyboards and started writing tracks."



—FROM PAGE 211, SR AUDIO

core/rap band out of Iowa. The popularity and success of this band has flooded down to SR Audio, putting a spotlight on the Iowa music scene and clearly demarcating the line between commercial and music recording.

"Between nine and five, we appeal to our corporate clients, look like a corporate studio," Lawyer says. "After five, the lava lamps come on and the lights go down, and we turn into an artist studio. More or less, we try to close down the advertising site at five, gear up, and then the independent producers or our staff engineers begin the evening projects."

His first songwriting break came while engineering Immature's second album. Recording for the project was almost complete when the need arose for another ballad. Cueni volunteered to write one. "It was like three in the morning when it came up," he says. "They said, 'If you have something by tomorrow noon we'll try it.' I stayed up all night, they came back the next day, wrote some lyrics and we recorded it. A month later MCA called me to say, 'Congratulations, you've got the first single!'"

The song, "Never Lie," hit the Top 5. These days, Cueni divides his time about 70/30 between mixing and production and writing, with a goal of making the ratio 50/50. He has no plans, though, to give up engineering.

"I like to mix," he asserts. "You could lock me into a mixing room, preferably with an MT, and throw away the key. Just feed me once in a while, and I'll be happy."

Cueni has a definite penchant for digital consoles, which he attributes to the keyboardist side of his personality. "On a digital console," he says, "I can do whatever I want: automate EQs, do crazy routing, whatever. I've

The newly remodeled 3,500-square-foot facility handles a variety of music genres—hardcore metal bands like Slipknot, jazz and gospel. "Iowa has never really been known for a music scene,"

Lawyer says. "It is underground, but not

underground like you'd expect in a big city or a major music market. Because there aren't a lot of places to play and tour in Iowa, most bands who do tour are touring out-of-state. But when they're home, they're doing a lot of songwriting and a lot of recording.

"Because these artists are getting in to record their material," Lawyer continues, "they are rehearsing to record, as opposed to the amount of time that gets eaten up through just rehearsing to go perform live. It is just a lot of people writing and recording a tremendous amount of material. They may even be writing and recording without even having planned whether they are going to be shopping it or releasing an album."

always liked the flexibility of total automation that digital consoles provide, but pre-MT, I never thought they sounded as good as analog consoles. It was always a bit of a struggle between 'Let's make this not just a creative mix, but a good-sounding mix.'

"When Skip [Saylor] bought an MT, knowing how big an analog fan he was, I had to take notice. He was definitely at the top of the list of people in this town who I thought would never buy a digital console. So I had to check it out. I called him a couple of times, and he was always booked! But finally the opportunity came up to work on it, and I was like, 'Skip, put my name on the door, because I'm not leaving!' I truly think it's the first time digital has sounded better than analog. It's really phenomenal."

While Cueni didn't get that sign on the door and exclusive rights to Studio B, he has become a regular client. He's also now a client of Saylor's engineer management company, HitMixers.com.

When not mixing, Cueni often finds himself editing projects on his home system, a Digital Performer setup. "I use Pro Tools, I like it a lot," he says. "But for my home system I went with Digital Performer. Being a keyboard player,

Though Lawyer is forced to be creative about new projects coming in (Slipknot's record label wants to enforce the metaphor of the masks the band wears), he did say there are currently three members of Slipknot working on side projects at SR. Additionally, Lawyer says that Slipknot will be returning there to work on their new album. "This is the place they prefer to work. It's where they're comfortable and where the magic was originally created. We're guaranteed that we'll be doing the pre-production and demo work [on the next Slipknot release] here. That just lends a lot of credibility and brings more business to us."

Despite the new Slipknot-related projects, and the work that is coming into SR Audio as a result of Slipknot's success, Lawyer remains low-key in terms of promotional work. "I'm not a big schmoozer and not a big hypester. I don't like to say anything I can't back up that isn't the truth. I've traveled all over the world and worked in studios all over the world, and I still chose to live and put a studio together in Iowa."

Visit SR Audio at www.sraudio.com. ■

I already know the program, and it's so much cheaper. I don't miss anything; it does everything that Pro Tools does. I'm a little scared of spending 20 to 30 thousand on hardware that might be obsolete pretty quickly. Here I'm spending \$5,000. Performer with an 02R is a really cool combination."

Cueni is still writing on his MPC, but now it's a 3000. His home studio is also fitted with an Eventide H3000, Lexicon gear and a pair of Focusrite EQs. The gear he absolutely can't live without? "My Dynaudio BM15s. I'm not endorsed by them or anything," he says, a bit wistfully, "but I've been carrying them from session to session for the last two years. Now I'm getting ready to get a pair of the newer, powered ones, the BM15As."

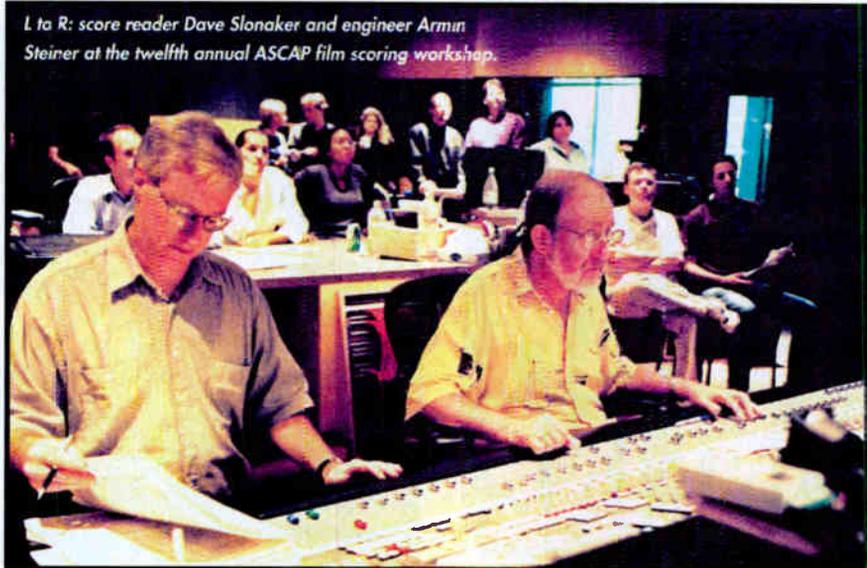
The freeway-close, eastern Hollywood space previously home to Music Box Studios has become Studio Atlantis. Now owned by engineer (and former Music Box manager) Jonathan Newkirk and managed by Michelle Moore, the facility has added a second, studio bau:ton-designed room. The new Studio A, outfitted for surround, features a MadLabs-upgraded Neve VR 60 console with Flying Faders automation, a George Augspurger monitoring system, two Studer A800s and Pro Tools MixPlus | 24.

Newkirk, who started his career as an intern at Music Box, had long envisioned creating a larger complex. When the opportunity arose to expand into adjoining storefronts, he enlisted the help of bau:ton's Peter Grueneisen. Skylights were added, and original walls of sandblasted brick are now juxtaposed with modern textures of Lumasite, brushed aluminum and Ardex-treated concrete. Base colors of ochre and blue, tall plush curtains, unexpected angles and exposed industrial elements combine to create an environment reminiscent of a theater's backstage.

"I let Peter run with it, and it came out great," Newkirk comments. "I wanted something different that got people's attention when they walked in, and bau:ton nailed it."

"Jon is not a guy to cut corners," notes Moore, an engineer and producer in her own right, whose career dates back to David Kershenbaum's Studio 55. "He wants things to be creative, comfortable and absolutely top-of-the-line."

A drummer since the age of 16, Newkirk's first recording studio experience was at Music Box, working for then-owner Mike Wolf. "I started here in '94, interned for six months and began assisting with no real engineering background," he recalls. "Then I took time off



L to R: score reader Dave Slonaker and engineer Armin Steiner at the twelfth annual ASCAP film scoring workshop.

to go to the L. A. Recording Workshop, came back and began firsting. When, in '98, Mike decided to sell, buying the studio was the logical step for me."

At the time Newkirk's intentions were to revamp the original studio, but he soon decided on a larger plan. "Mid-level studios are getting hammered these days," he says. "You need to either step down or step up, and I decided to step up. I purchased Music Box in January of '99, acquired two more spaces and started construction about five months later."

The MadLab mods to Studio A's VR console, often referred to as the "Conway" mods, include, extensive rewiring and new power supplies, as well as the audiophile CP-8 center section that provides eight buses and 6-channel surround capability. Newkirk decided on the purchase after he worked on one of the original versions at Conway Studios itself. "I heard it and loved it," he says simply. "It's just so clean and punchy."

The dual Studer A800s in Studio A are also highly modified for sonic upgrades by chief tech Tom Herzer. The facility's outboard complement includes Avalon, Manley, Neve, TC Electronic and Lexicon, including the Lexicon 960 L. Monitoring, besides the Augspurger surrounds, includes self-powered KRK E8s, Yamaha NS10s with Bryston amps and additional Bryston amps for the convenience of those clients who bring their own monitors.

Atlantis' original room, now dubbed Studio B, remains unchanged, an economical option that has played host to artists from Hole to Dishwalla to Wayne Kramer to The Temptations. It is equipped with a Trident Series 80-B console, modified by Herzer and fitted with Uptown moving fader automation;

Studer A80 24 and 2-tracks and plenty of quality outboard. The 40x16-foot live recording area houses a Yamaha C7 grand piano.

With Studio A complete, Newkirk is continuing on with plans for the future. In the works are gated, underground parking and further expansion into the complex to add a tracking room and more lounges.

ASCAP's 12th annual film scoring workshop held its final class at Fox's Newman scoring stage this year. Course participants had the opportunity to conduct their own cues, which were performed by 40-piece orchestra and recorded by top scoring mixer Armin Steiner.

This year's class totaled 17 members, selected from over 200 applications received from around the world. The intensive, month-long program was mentored and moderated for the third time by composer Richard Bellis. Guest lecturers included, among many other notables, recording and mixing engineer Alan Meyerson, composers Jeff Rona, Steve Bramson and James Newton Howard, music business attorney Steve Winogradsky, contractor Sandy DeCrescent of Sabron, Inc. and Recording Musicians of America president Brian O'Conner.

The curriculum for the class ranges from the musical to the practical. Through lectures, Q and A and supplemental material, it covers a wide range of topics, which include working with an agent and/or attorney, preparation for scoring sessions, conducting tips and that all-important subject, how to price one's services.

Sponsored by the ASCAP Foundation, the program also receives contributions of resources and talent from Fox Music and the Newman Scoring Stage, Hans Zimmer's Media Ventures,

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Studio Atlantis owner/engineer Jonathan Newkirk inside Studio A.

Sabron Inc., the Recording Musicians Association, Jo Ann Kane Music Services, SuperScore, Segue Music and *Mix* and *Keyboard* magazines.

"There are not many programs available for composers that offer the opportunity to be exposed to the realities of the film and television business," comments Michael L. Todd, ASCAP's associate director of film/TV music. "This program enables participants to record with a top Los Angeles session orchestra and to get first-hand points of view from industry professionals. We are very grateful to those individuals and organizations that contribute and provide assistance to the ASCAP Film Scoring Workshop. It's a great way of cultivating our next generation of rising composers."

Applications for 2001's workshop, scheduled for July and August, must be submitted by March 30, 2001. Submissions require a 10- to 15-minute CD of original music along with a bio/resume. For more information on how to apply, call ASCAP at 323/883-1000. ■

Fax your L.A. news to 818/346-3062 or e-mail Ms MDK@aol.com.

—FROM PAGE 210, NY METRO

there are a lot of great sax moments in the book that became mine."

Back in '93, Digidesign was looking for a horn player to blow into a mic as part of a Pro Tools demo at the AES convention in New York. The company was offering a grand or a Pro Tools 4-track system. Snitzer opted for the gear. Eventually, his mastery of feel and function would lead to some high-profile editing gigs, including the current Bon Jovi album, *Crush*.

"Pro Tools can be used in different ways, depending on a project's budget. I recorded and mixed my last CD on Countdown Records, *Some Quiet Place*, entirely within Pro Tools. Would it have sounded better if I spent 40 grand tracking and mixing in A room. Sure it would. But the benefits of being able to tweak a budget album on Pro Tools far outweigh the sonic limitations."

Bon Jovi tracked to 2-inch tape six days a week for four months at Jon Bon Jovi's South Jersey home. Snitzer's associate Graham Hawthorne was on hand at each session to transfer selected cuts into a Pro Tools rig that stayed in the studio. These takes were offloaded to DDS3 tapes and FedEx'd to Snitzer's Manhattan project studio. "I served as a time and feel policeman, making sure everything sat in the groove as perfectly as possible," he says. "These days there are two ways to make a great record. You can sweat out overdubs until every element of a live performance is perfect, or use the technology as your friend. Bon Jovi got performances that have great vibes. Tiko Torres is a very good drummer, and Richie's a great guitarist. If the fill going into the third chorus wasn't perfect, I'd correct the time. I listen and decide if various elements are contributing to the groove or conflicting with it, and then massage things around in time until things are killing. One tip to musicians who are just getting into editing live performances—you can't cut music by sight! Simply lining waveforms up with the kick drum doesn't make it. You have to use your ears."

Although he handled no final mixing chores, Snitzer needed to set up his project studio mixes in a way that was sonically pleasing: "Editing is totally psychoacoustic. How you're listening to

affects, how you edit in time. I use the Waves Gold Bundle regularly. Applying the C4 compressor across the main mix sets things nicely in place, and the Renaissance Compressor is fantastic."

Snitzer mixes entirely within Pro Tools with no mixer. "I have a pair of 1622 line-level input boxes that lets me route 32 channels of MIDI gear directly into my system," he says. "I monitor on Genelec 2029A near fields, using the 1091 subwoofer that goes with them. When I got my mixes where I wanted them, I'd bring in Phil Magnotti to come in and finish them. I'd send these mixes back down to Jon's studio, and they'd critique them. Bob Clearmountain ended up mixing the record."

Operating out of his project studio in the Flatiron district, Michael Bramon (aka Eddie Bastard to fans of his new group, City of Freaks) recently co-scored and contributed a pair of songs to the Courtney Love/Ben Affleck film *200 Cigarettes*. He also mixed his band's current R.E.D./Sony CD, *De-Programming the Masses*, at his facility, the DMZ Entertainment Group.

Back in the early '90s Bramon's band, originally Pleasure Head and then re-named Crush, sold over a million units of their self-titled Atlantic Records CD (yes, it really is a coincidence that we're speaking of two albums with the same name in one column). Using a combination of Pro Tools and Cubase, Bramon mixes all of his productions in-house: "I tracked drums and bass at Daydream Multimedia over in Williamsburg, Brooklyn, but mixed everything here."

Switching between Pro Tools and Cubase involves both, esthetic and practical considerations. "Cubase is warmer," he says. "Pro Tools has that crunchy, intense sound. If I'm working on guitars, keyboards or some of my vocals I'll process in Pro Tools. Cubase handles the rest. It's like the Neve SSL comparison, very much so."

For practical reasons, if Bramon is importing multiple tracks of drums or guitars into his system, he'll go directly into Pro Tools using a Digidesign 1622 interface. However, once tracks are inside his system, he runs all hardware and software on a Power Tower Pro 250; they freely move back and forth between the two platforms he favors.

"Plug-ins play an important role in my decision where to work," Bramon says. "I love the Pluggo VST plug-ins. The way they maximize native memory is extremely intelligent—multiple effects cascade together. So, if I've ported

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227	257	Crane Song
228	261	Crystal Clear Sound
232	285	D.W.Feam
231	280	Demeter Amplification
228	264	DigiDoc Productions
226	254	Digital Domain
231	278	Earth Disc
229	270	Fleetwood Multimedia, Inc.
227	259	Funk Logic
226	250	Gefen Inc.
229	266	Ground Support Equipment
227	256	Lonely Records
229	267	Marathon Computer
228	263	Markertek Video Supply
226	252	Marquette Audio Labs
230	275	Media Services
230	272	Neato, LLC
230	276	Pendulum Audio
231	281	Primal Gear
226	251	Progressive Music
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229	268	World Media Group Inc.

Product Information

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Issue: November 2000 Card Expires: February 1, 2001

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COMPANY _____

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03. Sound reinforcement

04. Video/film production

05. Video/film post-prdn.

06. Broadcast/radio/TV

07. Record company

08. Record/tape/CD mastering/manufacturing

09. Equipment manufacturing (incl. rep firm)

10. Equipment retail/rental

11. Contractor/installer

12. Facility design/acoustics

13. Educational

14. Institutional/other

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20. Other _____

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22. Make the final decision or give approval for purchase

23. Have no involvement in purchasing decisions

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25. \$50,000 to \$149,999

26. \$150,000 to \$249,999

27. \$250,000 to \$499,999

28. \$500,000 or more

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29. Immediate purchase

30. Files/future purchases

6 Where your audio-related work takes place (check all that apply):

31. Commercial (public) production facility

32. Private (personal) production facility

33. Corporate or institutional facility

34. Remote or variable locations

(02)

001	045	089	133	177	221	265	309
002	046	090	134	178	222	266	310
003	047	091	135	179	223	267	311
004	048	092	136	180	224	268	312
005	049	093	137	181	225	269	313
006	050	094	138	182	226	270	314
007	051	095	139	183	227	271	315
008	052	096	140	184	228	272	316
009	053	097	141	185	229	273	317
010	054	098	142	186	230	274	318
011	055	099	143	187	231	275	319
012	056	100	144	188	232	276	320
013	057	101	145	189	233	277	321
014	058	102	146	190	234	278	322
015	059	103	147	191	235	279	323
016	060	104	148	192	236	280	324
017	061	105	149	193	237	281	325
018	062	106	150	194	238	282	326
019	063	107	151	195	239	283	327
020	064	108	152	196	240	284	328
021	065	109	153	197	241	285	329
022	066	110	154	198	242	286	330
023	067	111	155	199	243	287	331
024	068	112	156	200	244	288	332
025	069	113	157	201	245	289	333
026	070	114	158	202	246	290	334
027	071	115	159	203	247	291	335
028	072	116	160	204	248	292	336
029	073	117	161	205	249	293	337
030	074	118	162	206	250	294	338
031	075	119	163	207	251	295	339
032	076	120	164	208	252	296	340
033	077	121	165	209	253	297	341
034	078	122	166	210	254	298	342
035	079	123	167	211	255	299	343
036	080	124	168	212	256	300	344
037	081	125	169	213	257	301	345
038	082	126	170	214	258	302	346
039	083	127	171	215	259	303	347
040	084	128	172	216	260	304	348
041	085	129	173	217	261	305	349
042	086	130	174	218	262	306	350
043	087	131	175	219	263	307	⬆
044	088	132	176	220	264	308	⬆

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29. Immediate purchase

30. Files/future purchases

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32. Private (personal) production facility

33. Corporate or institutional facility

34. Remote or variable locations

(01)

001	045	089	133	177	221	265	309
002	046	090	134	178	222	266	310
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015	059	103	147	191	235	279	323
016	060	104	148	192	236	280	324
017	061	105	149	193	237	281	325
018	062	106	150	194	238	282	326
019	063	107	151	195	239	283	327
020	064	108	152	196	240	284	328
021	065	109	153	197	241	285	329
022	066	110	154	198	242	286	330
023	067	111	155	199	243	287	331
024	068	112	156	200	244	288	332
025	069	113	157	201	245	289	333
026	070	114	158	202	246	290	334
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039	083	127	171	215	259	303	347
040	084	128	172	216	260	304	348
041	085	129	173	217	261	305	349
042	086	130	174	218	262	306	350
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tracks recorded elsewhere into Pro Tools and want to access these effects, I'll open up the Pro Tools tracks in SDII format within Cubase, line up the waveforms manually and proceed.

"Speaking of plug-ins, the WAVES package is extraordinary. Most of the sonic onslaught on my record [which he describes as a combination of trip-rock and electronica] comes from the way we used and abused the L1 to push bit levels up to and past the max. We went back and forth between the L1 and Spectral Design's Magneto, which is an amazing VST tube simulator. I also used the WAVES L2 as a front end for *all* of the recording I did here at my studio. The A to D's in the L2 are superlative. It's a fantastic front end for older DAT decks like the Panasonic 3700."

Besides singing, writing, engineering and producing his group (which features guitarist Glampire) and working in film, Bramon produces outside talent. He currently is working with singer Razzberry Nixon. ■

E-mail New York news to Gary Eskow at scribeny@aol.com.

—FROM PAGE 211, NASHVILLE SKYLINE

es not to make it to the sessions, the main one of which was the inability to find a particular microphone he wanted, an EV RE-15.

One was finally located, at Quad Studios, and brought over. On the fourth night, the band assembled once again and began running down a song in preparation for Presley's arrival after a call telling them that Elvis has left the hotel and was on his way. Then another phone call: The King had indeed left the building, and he just kept on going, all the way to the airport and on to Memphis and Graceland.

Joe Gregg was then the studio manager at Quad and something of a legend himself in the Nashville music industry as a publisher for Warner Bros. Music. He decided that the entire episode needed to be memorialized somehow and penned a poem. While it's not "Paradise Lost," it managed to capture a moment in Nashville's history with a sense of the playfulness and inventiveness. And it's perhaps the only piece of literature in poetic history told from the perspective of a microphone.

Tony faxed over a copy of the poem, still on the Creative Workshop stationery it was written on, from a scan

done by steel player and photographer Hank DeVito. It had been framed on the wall at Quad until the studio was sold the first time in 1980. So, here it is, for the first time in print. (English majors note: Annotations follow, and the spelling and punctuation are original...to say the least.)

A POEM BY IRVIN EV

I was born, as you can see, a simple-minded RE-15
 And as I rolled down that old assembly line
 Visions of grandeur flowed thru my mind.
 Ronstadt, James Taylor, a group called Orleans
 Or with a little luck, maybe even the "King".
 But where have I been for the last several years?
 In a hot, sweaty bass drum stuffed up to my ears
 With pillows and blankets and all kinds of crap.
 I've been thumped to and fro and sometimes slapped!
 But the other night a glimmer of hope I could see
 As a hot, sweaty hand plucked me free
 And out of Quad and to the Workshop I flew
 With whispers of "it's goin' to be Elvis and you"
 My elements quivered, my windscreen fluttered
 If I could speak, I would surely have stuttered.
 So up on a new shiny stand I arose, ready to rock, ready to roll.
 But for four lonely days, and four lonely nights
 I didn't do shit and got extremely up tight
 So take me back to Quad, my dear old home
 And bring on Londin, Buttrey, Carrigan and Malone
 And to hell with those stars, singers and clowns
 'Cause I'll still be thumpin' when they're not around.

Annotations:

Title: "Irvin" is the nickname given to the EV microphone.
 Line 4: Refers to the new wave of country-rock artists which clustered around Norbert Putnam and David Briggs' Quad Recording in the 1970s, providing a somewhat more fresh-faced counterbalance to the Outlaw movement of Willie Nelson and Waylon Jennings a block away on Music Row.



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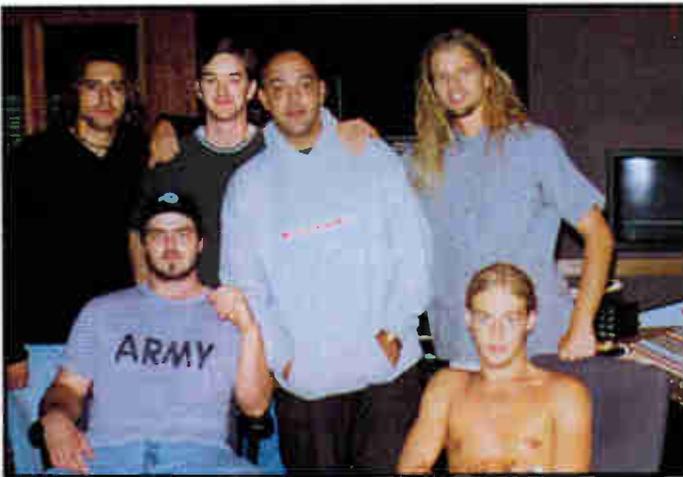
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Producer Toby Wright and C-14 at East Iris Recording Studios. L to R (sitting): bassist Jesse Vest, drummer Mat Taul. L to R (standing): vocalist Hugo Ferreira, engineer Mark Ralston, Wright, guitarist Todd Whitener.



SOUTHWEST

Gloom, despair, distortion and some dirty rock 'n' roll slithered into AMG Studios Recording (Houston, TX). Coal Chamber's Dez Farara got his first gig as a producer, working with the Houston band Dirt on their debut effort, *Industry Overload*.

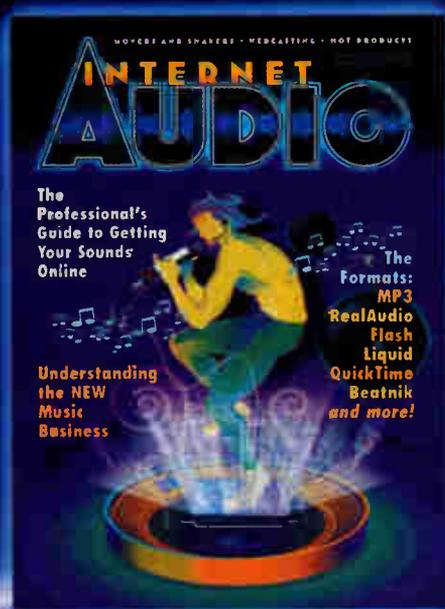
NORTHEAST

It was long, hot and sticky summer of studio work at Sound of Music (Richmond, VA). Artist Bruce Guthro stopped in to work with artist/producer/studio co-owner David Lowery (Cracker, Counting Crows) on an upcoming EMI-Canada release. Kock records artist LP laid down their debut effort with the Sound of Music house band and Lowery. Producer Brian Paulson worked with Drag City artist Royal Trucks, Merge Records artist Shark Quest and River City High of the Dog House/Big Wheel imprint. Producer/co-owner John Morand (Gwar, Sparklehorse) worked with TKO Records' Sixer on their debut EP, with a full-length effort planned for December...The final touches were put on number of new projects at Trutone Inc. (New Jersey). Engineer Phil Austin and assistant Aldo Marin mastered the new LP by Rico Mambo; the as-yet-untitled album is set for release on Cutting Records. Kurt Upper engineered the single "Cowgirl" by Underworld to vinyl. Austin also engineered the single "Summer Breeze" by Aphrodite...The Beastie Boys stepped into Soho's Greene Street Recording (New York City) to work on an upcoming Grand Royal release. The Beasties are co-producing the project with producer Bill; Jamey Staub was tapped to engineer. Also at Greene Street, artist/producer Pete Rock and engineer Rod Hui kept busy with a number of new projects. The two worked on an instrumental album for the UK label Barely Breaking Even. Rock worked on his own album, which will be released on his Soul Brothers Records. On the production front, Rock and Hui completed projects with artist M.O.P for Loud Records, MCA's Black Thought, Big L off Rawkus and Freddie Fox for Landspeed...Norwegian pop sensation Steinar Albrigtsen and American artist Tom Pacheco recently completed the album *Nobodies* at NRS Recording (Catskill, NY). Scott Petito engineered, produced and played bass on the record.

SOUTHEAST

The always lovely Faith Hill and pro-

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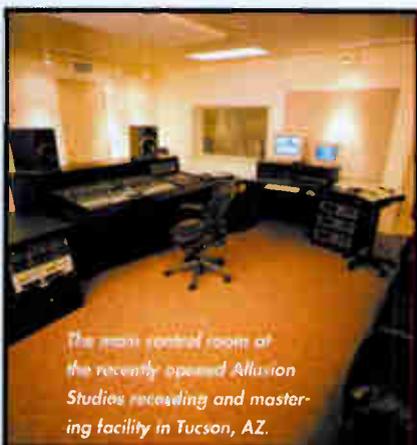
INTERNET
AUDIO™

ducer Chris Noll strolled into East Iris Recording Studios (Nashville) to track some new material. Ben Fowler engineered the project and Kevin Szymanski sat in to assist. Producer Toby Wright also camped out at Iris with Maverick Records artist C-14 to record their new album. Def Jam artist Kruna breezed in with producer Neal Jones and engineer Monte McDearis to do some mixing and overdubs for an upcoming release... An eclectic roster of artists to say the least at Seventeen Grand Recording (Nashville): Mindy McCready worked on some new material with producer Billy Joe Walker and engineers Chuck Ainlay and Dave Thoener; Travis Tritt also teamed up with Walker to produce his new album with Ainlay mixing and Amy Frigo assisting; Kenny Rogers was in producing his next album with engineer Jim McKell and assistant Bobby Morse; engineer Dave Thoener and assistant Matt Weeks mixed a Moby/Elton John duet for Moby's upcoming self-produced album.

STUDIO NEWS

Allusion Studios recently announced the official opening of a new facility in Tucson, AZ. The main room features a 32-channel Soundcraft Ghost, 24 tracks of Tascam DA-78, Mackie Ultramix Automation Console and Event 20/20 monitoring. The new multiroom facility also offers a separate audio restoration and mastering suite. Additionally, there is an artist's lounge and conference room... Redwax Audio Productions has opened a new post-production suite at RAW Media Technologies in Orlando, FL. Redwax specializes in the creation and production of original music, sound design, ADR mix-to-picture and audio layback. ■

Send your sessions and studio news, bribes and threats to robert_hanson@intertec.com or fax 510/653-5142.



The main control room of the recently opened Allusion Studios recording and mastering facility in Tucson, AZ.



Coal Chamber lead singer Dez Farara (far right) and the members of Dirt at AMG Studios Recording.

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World Radio History

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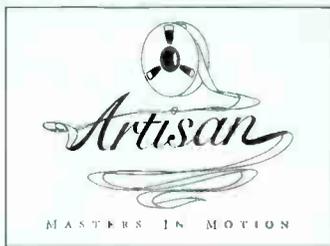


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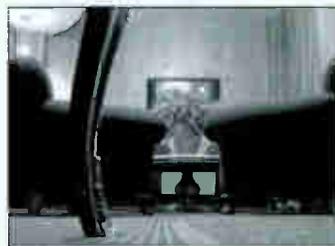
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I needed a 10-foot monitor extension cable to move the CPU to the next room—away from open microphones. I was told there was a 16-foot maximum with no interconnects. Needing 17 feet, I contacted Molex (they make the DVI plug on the end of the Apple monitor cable) and eventually got a 16-foot extension. That made the final run about 23 feet, well beyond the theoretical 16-foot limit. The monitor works fine and runs in Millions-of-Colors mode without slowing the system down.

TICKS IN THE MACHINE

Pro Tools LE 5.0.1 does not use the Mac AltiVec engine in some G4s for processing. Perhaps when it does, it could do real-time crossfades at simple cuts without imparting ticks due to zero crossover untidiness. (A separate DSP processor handles those chores in TDM-based systems.) This is seldom a problem in the Digi 001 when removing breath noise between words of a narration. Ticks can occur, however, when editing music or within words of a voice track where levels are moderate or higher.

UP-FRONT FILE MANAGEMENT

Think of the Pro Tools system as any other dedicated tool in your studio. Adding Internet stuff, extensions, control panels, games and other files to the system folder is asking for trouble. Consider splitting your main drive into two partitions; one for office software and one for the Digi 001 and Pro Tools LE. Install a separate OS on each partition. For Macs, this means



using the Startup Disk Control Panel to choose the Pro Tools partition when you want to do audio and the other when you want to balance your checkbook or run Photoshop.

WHERE'S THAT AUDIO?

Check Disk Allocation under the software's Setup menu to see where your audio tracks will reside and avoid storing audio on the same drive as your System folder. Round Robin may work for you, but if you have to clean the media drives for a new session and forget to save a chunk of audio...well, let's not go there. Also, choose something other than default names, or you'll end up with hundreds of files named "Audio 1," "Audio 2," etc.

POWER: USE IT WISELY

As Pro Tools LE uses your computer's processing power and AS/RTAS plug-ins instead of DSP farms and TDM plug-ins, you can only do as much as your processor is fast. To determine your system's capacity, try adding inserts, EQ, sends, buses and compressors until the system kicks out an "Out of Power" message. As a way to conserve power, you might consider using channel sends and one mono or

stereo reverb rather than using separate reverb plug-ins for each source.

MYSTERY MESSAGE

If Pro Tools LE will not start, and you get this message: "The hardware is not installed or is in use by another application," go to the Mac Sound Control Panel and select "Built-in" for the output. Then restart the computer, start Pro Tools LE and go back to the Mac Sound Control Panel and select Digidesign for the output. Disabling "Active in Background" in the PT LE Operations menu also helps with these sorts of software collisions.

GOING DIRECT

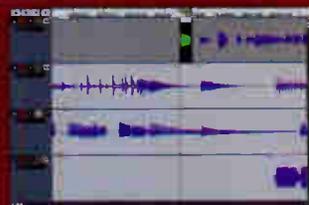
Digidesign reports that DirectConnect RTAS is now working. It allows you to import host-based applications directly into Pro Tools LE. Products such as Tokyo (a software-based synth and drum machine from Koblo) are designed to use a host processor. Their sounds usually exit the analog Mac port. DirectConnect allows up to 16 channels from the synth to be brought directly into Pro Tools LE mixer buses. Cool. ■

Ty Ford can be reached at www.jagunet.com/~tford. Be patient, he's probably rebuilding his desktop.

BY TY FORD

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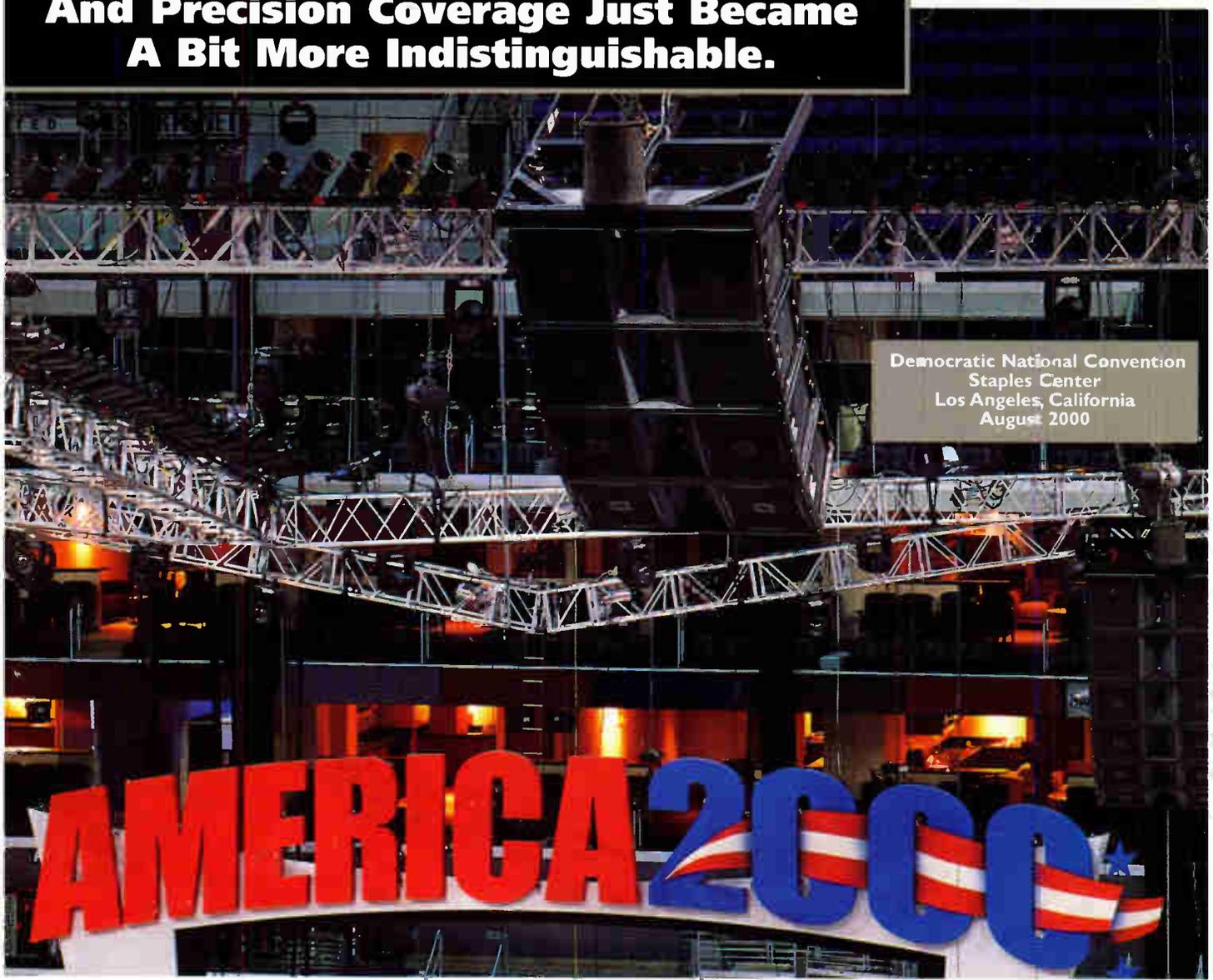
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