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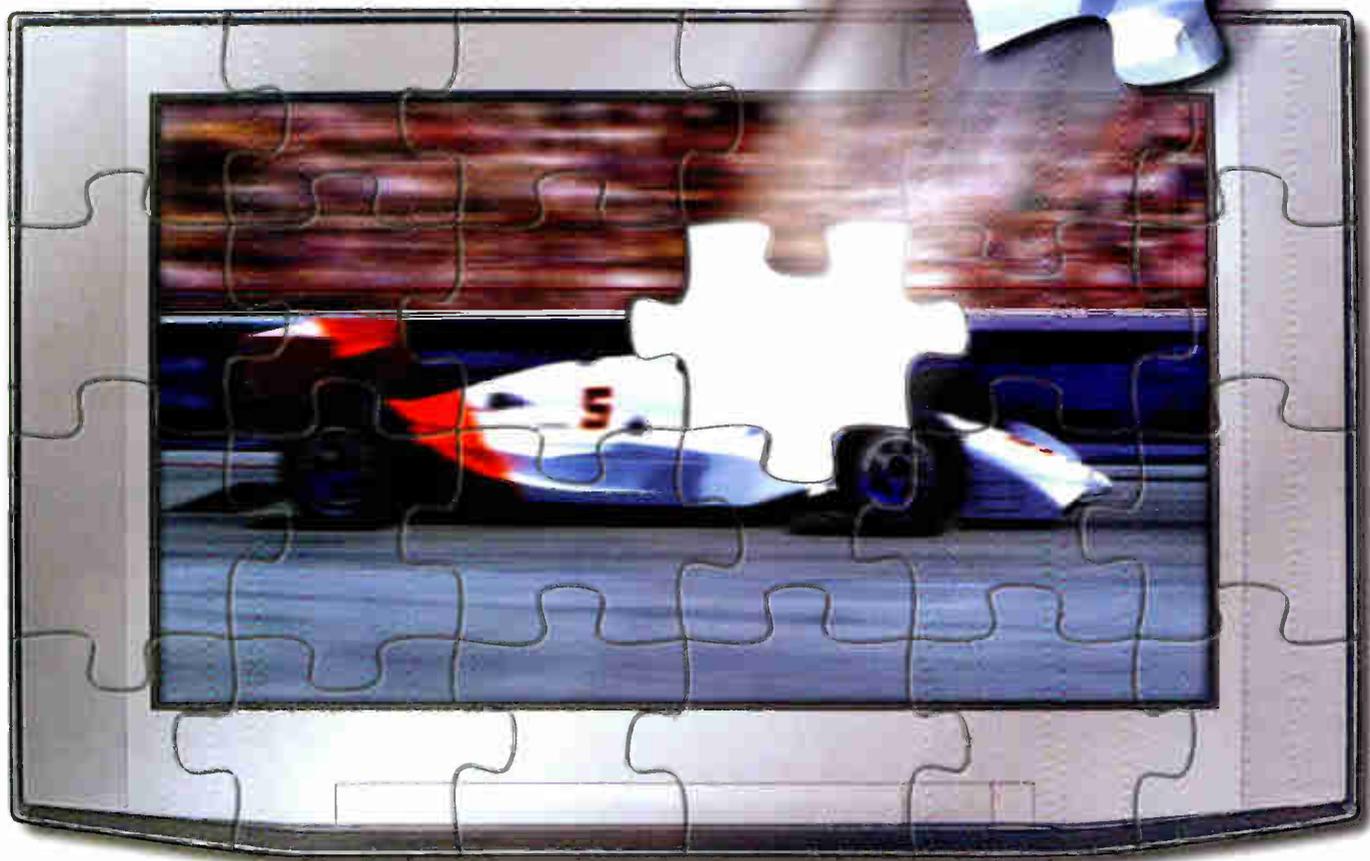
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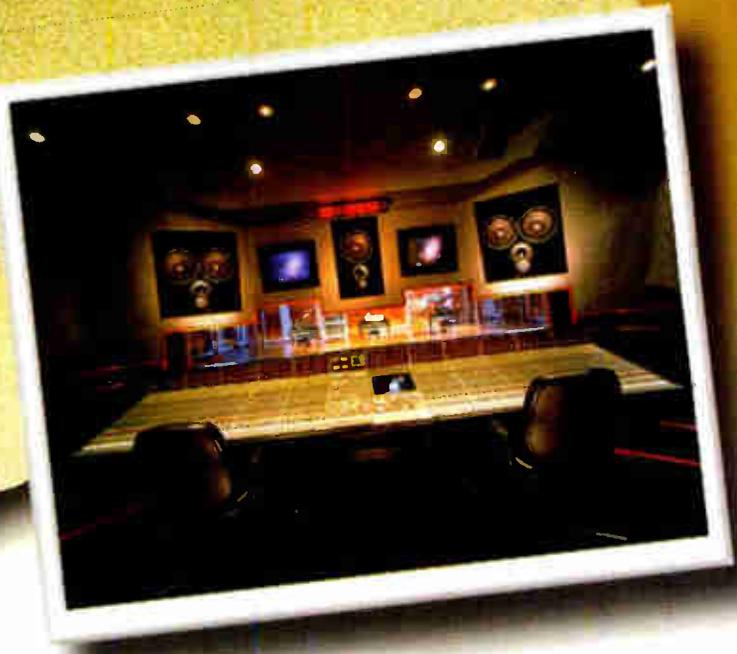
No.1

Billboard

Consoles used on No.1 singles, 2000-2001

Chart	Recording Console	Mixing Console
Hot 100	No.1: SSL	No.1: SSL
R&B	No.1: SSL	No.1: SSL
Country	No.1: SSL	No.1: SSL

Studio information is acquired either from CD liner notes or from the record label. In each case, the studio is contacted directly for console information. Billboard's No. 1 singles on the Hot 100, Hot R&B/Hip-Hop Singles & Tracks, and Hot Country Singles & Tracks charts from July 15, 2000, through July 7, 2001, were used to determine the top consoles. Pictured right: The SL 9000 at Hit Factory, NY.



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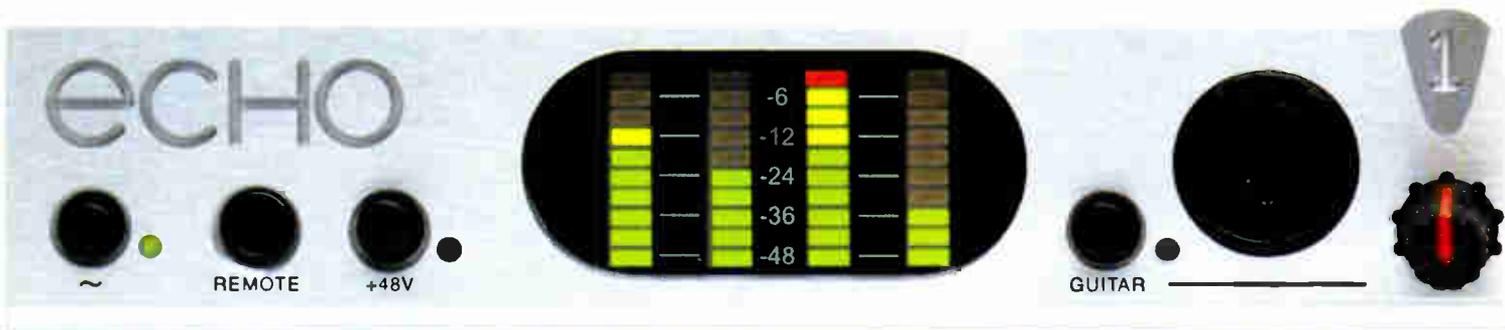
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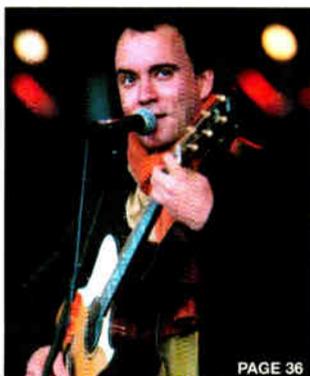
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On the Cover: Egan Media Productions in Colchester, Vt., is a new three-room audio/video production/post facility designed by Francis Manzella of FM Design. Studio A centers around a D&R Cinemix console and a combination of Dynaudio and Tannoy surround monitoring. For more, see page 18. **Photo:** George Roos. **Inset Photo:** Steve Jennings.



MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION
February 2002, VOLUME 26, NUMBER 3

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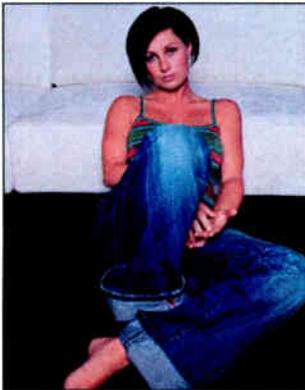
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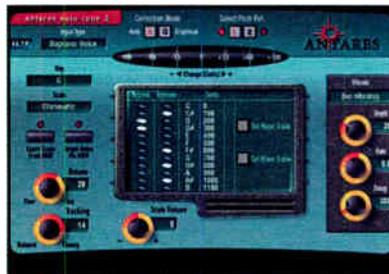
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The Dark Side of Gray

The Internet is a wonderful resource for audio pros, offering immediate access to product information via downloadable brochures, troubleshooting FAQs and even user manuals. Take your search a step further and you'll find software updates, drivers, schematics and newsgroups, where experienced users offer advice on what to buy and hints on getting the most from your gear. In terms of information exchange, these are the good old days.

At the same time, Internet shopping is a modern marvel. Besides the convenience of turning to CDnow.com or Amazon.com to find the latest books, DVDs and music releases, sites such as Ebay bring the world's biggest garage sale to your fingertips, whether you're looking for Elvis EPs or repro cards for an MCI JH-24 multitrack.

Besides the occasional bout of Internet fraud—typically credit card abuse—Internet retailing is well accepted by most consumers. However, one area of Net commerce that has become increasingly problematic is the importing of gray-market goods. Unlike black-market retailing, where products are smuggled, stolen or counterfeit, gray-market merchandise is defined as items manufactured abroad and imported without the consent of the trademark holder.

Gray-market gear is common in the electronics, computer and photographic industries, yet for consumers surfing for great prices, it can be difficult to tell a legitimate, authorized dealer from a gray marketeer—and sellers of such merchandise typically don't go out of their way to advertise this fact.

So who cares, especially when shoppers are looking for the best price? The dark side of a gray-market bargain may be that the product you bought was not built to U.S. standards (such as UL approval), or might have originally been manufactured for a different voltage or line frequency, and has been modified by some unknown person to operate on domestic current. Also, equipment made for use in Japan—where the AC standard is 100 volts—may operate for a while at the U.S. standard 117 VAC, but over-voltage will certainly lead to a shorter lifespan for many products. Granted, the AC problem is less common these days, particularly with the proliferation of devices equipped with switching power supplies, which will operate at any line voltage, or wall wart adapters that are easily substituted to match local power requirements.

Assuming fairness ever entered the mindset of a bargain-seeking consumer, the unfortunate aspect of gray-market retailing is that such sellers compete with legitimate importers, who often are the ones paying for the ancillary services we all need, such as printing brochures and catalogs, maintaining informational Websites, technical support (e-mail and/or phone), and sponsoring tradeshow displays, clinics and seminars.

More directly troublesome to users is the reality that gray-market goods rarely carry the U.S. manufacturer's warranty, so obtaining guaranteed service may entail the cumbersome process of shipping the product back to the country of origin for repair. If you're a pro and depend on a product, then you should know that the first-class perks of loaners and fast service turnaround are not going to materialize with your gray-market bargain.

Caveat emptor.

George Petersen

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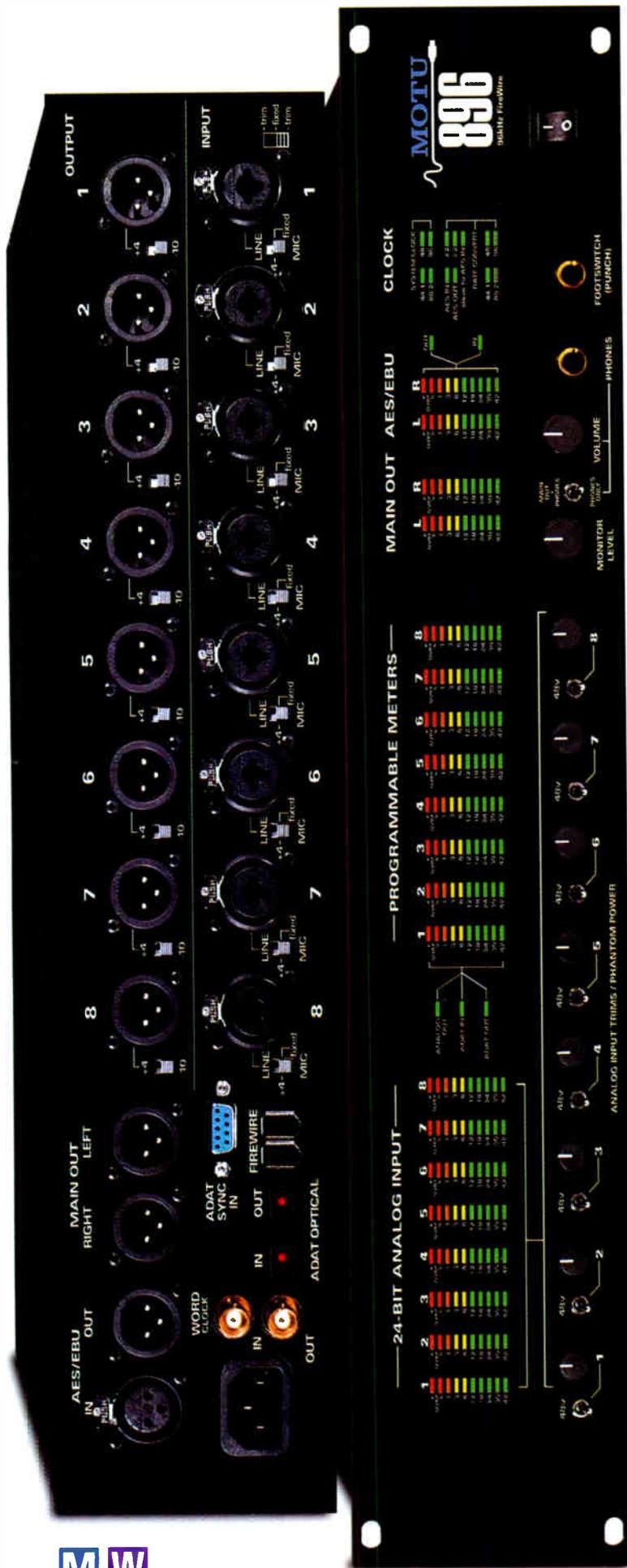
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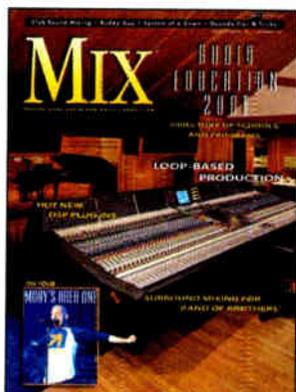


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Letters to Mix



WHAT'S A PROSUMER?

For the most part, I think your magazine is exceptionally informative and well-written: Thumbs' up to the "Tech's Files." This mail is concerning the column entitled "The Column That Wouldn't End" by Paul D. Lehrman ("Insider Audio," November 2001).

The cover of the magazine says "Professional Audio and Music Production." This doesn't include video production, but that was the subject of Lehrman's article. I've worked as an assistant video editor/tech support person for two years-plus, and still consider myself a greener.

What astounded and annoyed me is that someone who teaches video production would saddle their poor students with a PC-based video editing system, and then gripe about the lack of professional results. There's a reason why almost every single video editing system runs on the Mac platform: because it's made for working with large files, i.e., video data. (Apparently, Windows NT was supposed to address this issue, but I heard it doesn't work very well.)

I understand not everyone can afford Avid, the industry standard, but shouldn't your students be learning it anyway? Second, what's with "prosumer"? Sounds like a catchphrase someone used to get the poor editing department in question to pay more than they should have for substandard gear.

One out of 10 MiniDV tapes (the consumer version of the professional DVcam system) will have errors imprinting or reading timecode, straight off the shelf. This is not up to pro standards yet. In my opinion, the modestly informed consumer using MiniDV should have been easily steered toward Final Cut Pro, any version. It works, and on a platform meant for files as large as your drive can handle. Everyone uses it.

Last, I'm one of those guys with a mini-studio. My speakers kick ass, and so does my production, which is largely loop-based. I'll charge whatever I can get to do sound because it's a

dog-eat-dog world. Please inform yourself adequately and give people the right tools to do the job before complaining about unprofessional results. It's only professional.

Clayton MacDonald
Via e-mail

I've owned about a dozen Macs, and if I had my way I would never even look at anything else. But the early Mac G3s, as I pointed out in the first part of the column (October 2001 issue), had a fatal flaw that prevented them from being used for video editing. (And Final Cut Pro was not an option, because it didn't exist yet.) So, my colleague made the decision to go with the PC platform for the college lab.

On the other hand, plenty of professionals work with Premiere and similar programs on the PC, with perfectly good results. In fact, our video lab has been using PC editing systems for more than a year successfully. It was only when we tried to do a relatively long and complicated film that the system fell down.

A system is only as good as its weakest component, whether it's hardware, software or the operator. In this case, it was primarily the software, and secondarily the computer operating system, not the video format. To dismiss MiniDV is missing the point—it would be as if I told you that your mini-studio couldn't possibly produce anything worthwhile, because it's not Pro Tools.

—Paul D. Lehrman

BENNETT CREDIT

Many thanks for Paul Verna's wonderful coverage of the opening of Bennett Studios in Englewood, N.J. (Coast to Coast section, November 2001 issue). I was only sorry that the article missed mentioning the important role played by Professional Audio Design and Dave Malekpour. Dave and his crew worked closely from the beginning with us and studio designer Andy Munro to equip our facility with just the right mix of vintage gear and the newest technologies.

Dae Bennett, owner, operator
Bennett Studios

DIVA DEFENDER

In December "Feedback," Diane Renay, "hit singer" of "Navy Blue" (back in 1964), responded to the September 2001 "Insider Audio" article entitled "Living on Borrowed Culture." Renay stated that "What has happened to music today is a crime!" Such a blanket statement is far from the truth. Her comment on a remake of "Can't Take My Eyes off of You" by multi-Platinum, multi-Grammy-winner Lauryn Hill was

a perfect example of being too close to the source to be objective.

"Hip hop just doesn't cut the mustard," she states. Why is it that so many of us so-called musicians never recognize that a style of music is not invalid just because it does nothing for our ears?

The state of today's music in schools, in general, is truly a tragedy, but specifically, there are many high schools in the country that have some of the best music programs in the world. I'm sure Renay would not be surprised to know that many of these so-called vocal whiners and scale-riding singing cheaters have had vast classical training. If she wonders if these singers, such as Whitney Houston and Mariah Carey, can sustain a straightforward note, each of them has an extensive catalog that includes examples of their vocal prowess.

Jerome Maddox
Via e-mail

KEEP IT UP!

I am a longtime *Mix* reader. I have every issue going back to 1987. I thought your October issue was fabulous. The Roy Halee interview, "Mix Masters," product reviews...I just wanted to let you know to keep up the good work. Music is my love, not my profession. Your publication has always added to my enjoyment of it.

Larry Goldsmith
Via e-mail

REMEMBER TAPE

I'd venture to guess that a lot of us in the industry are facing a common problem: the slow deterioration of our 20-plus-year-old analog tape masters. I just faced some difficult choices in the process of transferring several old analog master tapes to digital so I could pull them into a Pro Tools | 24 session here at the Chicago Recording Company.

It's been a while since you did an article on transferring old tapes. Would you please publish an update surveying the current state of the art, and perhaps listing a few specialized resources?

After all, when that old oxide's peelin' off the tape at 15 ips, you only get one shot at making a good 24-bit transfer.

Kent Devereaux

"A faithful reader since the days when Mix was printed on newsprint and music was printed on tape."

Via e-mail

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World Radio History

TC ELECTRONIC ACQUIRES TGI/TANNOY



Anders Fauerskov

TGI has accepted a takeover offer worth close to £15 million. The UK-based firm is being bought by Danish audio software firm TC Group, which wants to combine its technology with TGI's range of products.

TGI signaled earlier this year that it would listen to bids after being frustrated by its low share price, according to a TGI spokesperson.

TC is paying 68 pounds per share, a premium of 34% on TGI's closing price of 51 pounds in mid-December, valuing the group at £14.8 million.

Michael Windsor, TGI chairman, said: "The board believes the offer represents a fair price for the business and enables shareholders to crystalize the value of their investment."

TC chief executive Anders Fauerskov said all jobs will be safeguarded and added: "All units will continue to operate as individual companies."

Visit www.tcelectronic.com for more.

SURROUND 2001 CONFERENCE AND SHOWCASE

(Beverly Hills)—The posh Beverly Hilton Hotel was the site for the third annual Surround Conference and Technology Showcase, December 7-8. Over 550 people attended the event sponsored by United Entertainment Media and companies such as DTS, Denon, TC Electronic, Steinberg and Genelec.

Surround 2001 was a two-day event where the current state of the nascent surround sound recording/mixing format was discussed and explained by acclaimed professionals. Noted luminaries such as John Eargle, Tomlinson Holman and Chris Jenkins of Universal moderated various forums, while many other mixers, designers and producers presented an ongoing package of 24, hour-long seminar/conferences. Day one's 12 conferences were divided into two tracks: Case Studies or "How Did They Do That" and Production Hardware or "What Gear Do I Use?" Day two's tracks continued with more production hardware usage and the most interesting: Delivery Formats or "How Does Surround Sound Reach Its Audience." These hour-long conferences offered general Q&A periods, along with examples of nearly ideal surround sound/picture playbacks of cur-

rent, major theatrical and music releases.

Additionally, the conference's scheduling permitted ample time to visit over a dozen different manufacturers' exhibits demonstrating the latest production hardware and software used in the production of multichannel surround sound for film, TV, DVD-V, DTS, DVD-Audio and SuperAudio CD release formats. Complete documentary DVD-V copies of the event will be available soon.

—Barry Rudolph



Steinberg and DTS introduced the Steinberg Producer Group at Surround 2001. Shown making introductions is David Del Grosso of DTS (at podium), while group members (L-R) Rory Kaplan, Chuck Ainlay and Frank Filipetti look on. The group also includes Greg Ladanyi, Elliot Scheiner, Phil Ramone, Ed Cherney, Alan Parsons, David Tickle and Rob Hill.

MIX L.A. OPEN ANNOUNCES DATE

The Seventh Annual Mix L.A. Open benefit golf tournament is scheduled for Monday, June 10, 2002, at the popular Malibu Country Club. Space is limited, so make your reservations early. For information about sponsorship opportunities, contact Karen Dunn at 925/939-6149, e-mail KarenTEC@aol.com or check the Website (www.tecawards.org).

SURROUNDED BY BRITNEY



Dolby broadcast applications engineer Jeff Riedmiller in Denon sound truck.

HBO and Dolby Laboratories hosted the Britney Spears: Live From Las Vegas concert event, held on November 18, which was broadcast in Dolby Digital 5.1—the first live concert to be offered in surround.

"The Britney Spears concert encompassed an



Steve Venezia (left), director of Dolby DVN Broadcast Support, and Don Worsham, independent production sound mixer.

entire venue—not just what was seen onstage—and Dolby Digital 5.1 brought the full experience into the living room," said Bill Chase, VP of East Coast production for HBO. "The sound quality delivered a realistic concert event that HBO subscribers enjoyed in the privacy of their own home."

Dolby provided HBO with the DP570 multichannel audio tool, DP5571 Dolby E Encoder, DP572 Dolby E Decoder and DP563 Dolby Surround Encoder. Dolby engineers were also on-hand during the broadcast providing technical assistance.

COMPILED BY SARAH BENZULY

ON THE MOVE



Who: Jim Mack

Position: general manager, Tascam
Main Responsibilities: U.S. sales and marketing effort, as well as worldwide product direction

Previous Lives:

- VP of sales and marketing, Alesis
- 1998 worldwide sales responsibilities, Alesis
- 1994-'98 product manager, Alesis

I became involved in this industry: My first real job in the audio industry was in the warehouse of a music store called Just Music (Chicago). I also had a little sound company that I ran with the PA system my band had slapped together. I was able to do fairly well in sales, so I continued on that path. I spent over a decade in consumer electronics and pro audio retail, and then 11 years as a manufacturers' rep before joining Alesis.

If I could do any other profession, it would be: I would love to design and build custom wood furniture. Woodworking is a hobby that I love for the challenges and strategy that go into the concept, design, layout and execution of a piece. The problem is, just like my bass playing, I wouldn't be able to keep up with the masters who make their living as artists in wood or music. If I had taken that path, I would probably have ended up in sales and marketing for some furniture company.

My best moment since working in pro audio was: I always get a kick out of working with a group of really smart people to develop a strategy and then seeing it work as planned. One example that comes to mind is the crossover from the original black ADAT to the ADAT XT that replaced it. Sales, marketing, engineering, manufacturing and finance all got together to plan the release, and it worked flawlessly.

The first concert I saw was: Grand Funk Railroad in Chicago around 1972. I sat in about the 15th row in front of the left speaker stack. It was unbelievably loud. I literally could not hear for a week after the show.

Currently in my CD changer are: Little Feat's *Waiting for Columbus*, Steely Dan's *Two Against Nature*, U2's *All You Can't Leave Behind*, Tower of Power's *T.O.P.*, Sting's *Brand New Day* and No Doubt's *Rock Steady*.

The last great movie that stirred me was: *Hannibal*. But I would say more shaken, not stirred.

I enjoy...when I'm not in the office: Spending time with my four-month-old daughter Christina Marie.

BILLY JOEL AND THE IVORIES



Joel takes a break with studio manager Nancy Falkow and owner/engineer Michael Comstock.

Billy Joel stepped into **Indre Studios** (Philadelphia) for a Live From the World Café taping for WXPB radio. Hosted by David Dye, Joel was promoting his classical record *Fantasies & Delusions* (Sony). Joel brought pianist Richard Joo along with him to perform. The session was recorded by **Michael Comstock** on the studio's new SSL 4048 console.

In other Billy Joel news, The Recording Academy has named the Grammy-winning musician the 2002 MusiCares Person of the Year for his professional and philanthropic accomplishments.

NOTES FROM THE NET



For months, media giants had been ambiguous as to when their online music subscription services would launch. But in a recent flurry, these services streamed across the Internet with much fanfare. First out of the gates with its paid subscription music service was Listen.com's **Rhapsody**. The service offers users unlimited access to commercial-free Internet radio programming and on-demand music from indie labels for a flat, monthly fee. Literally the next day, RealNetworks unplugged its **RealOne Music** service. For \$9.95 a month, users can listen to over 100,000 tracks—which is limited to 100 downloads and 100 streams a month—licensed from MusicNet (the joint venture between RealNetworks and record label owners AOL Time Warner, Bertelsmann and EMI Group). Like Rhapsody, RealOne Music's files can't be copied to portable MP3 players or burned onto CDs, though Roxio's CD-burning technology will be bundled as a plug-in with the new RealOne player. America Online released its own beta version of **MusicNet** one week after RealNetworks released its pay-for-play service. The beta version offers the same "features" as RealOne.

Pressplay went online one week later. It will eventually be offered through **MP3.com** and other affiliates. However, the launches do not mean that all is well on the legal front. Once again, many artists say that no one is asking the musicians whether they want their songs to be included. In early December, attorneys for dozens of angry artists began preparing cease-and-desist orders that would bar the use of their songs on MusicNet.

The name of this game, it seems, is how to find the balance between the consumers' desires and copyright holders. I guess we'll wait for the market research to come back.

And once again, **Napster** was back in federal court, but this time in Pasadena, Calif. The disabled service and the record industry squared off again to idle over the finer points of enforcing the court-ordered restrictions on Napster. A three-judge panel of the Ninth Circuit Court of Appeals heard arguments from the two sides on how to share the burden in policing Napster to prevent copyrighted material from being illegally exchanged. The court did not indicate when it might rule on the issue.

DOWN TO BUSINESS



Ozzy Osbourne and engineer/producer **Tim Palmer** were in mixing and recording vocals for Osbourne's new album, *Down To Earth*, at **Scream Studios** in Studio City, Calif.

MIX LOOKS BACK

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

NUMBER ONE ALBUMS



Wings *Wings Over America.*
Producer: Paul McCartney. **Engineers:** Jack Maxson, Phil McDonald,

Mark Vigers, Tom Walsh. **Studio:** Abbey Road.



A Star is Born soundtrack (featuring **Barbra Streisand** and **Kris Kristofferson**). **Producers:** Phil Ramone, Barbra

Streisand. **Engineers:** Phil Ramone, Tam Vicari, Dan Wallin. **Studio:** A&M Recording Studios.

NUMBER ONE SINGLES



Mary MacGregor "Torn Between Two Lovers."
Producers: Barry Beckett, Peter Yarrow. **Studio:** Muscle Shoals

Saund Studios (Sheffield, AL).



Manfred Mann's Earth Band "Blinded By the Light." **Producer:** Manfred Mann's Earth Band. **Engineer:** Laurence Latham. **Mas-**

tering: Arun Chakraverty. **Studio information not available.**



The Eagles "New Kid in Town." **Producer:** Bill Szymczyk. **Engineers:** Allan Blazek, Bruce Hensal, Ed Marshall, Bill Szymczyk. **Mixing:** Bill

Szymczyk. **Studio information not available.**

Industry News

With 25 years as a producer and recording engineer, **Keith Olsen** has been promoted from Mackie's (Woodinville, WA) director of recording product development to corporate director of global recording product and market development...**Shure** (Evanston, IL) announced new managing directors: **Mark Brunner** will manage the newly created musical instrument and touring sound business unit, and **Rob Cappucci** will oversee the newly created sound contracting and broadcast business unit...**Soundcraft's** (Hertfordshire, England) and **BSS Audio's** (Hertfordshire, England) new centralized communications department will be headed by **Dave Neal**, marketing and communications manager...**D. Dino Virella** accepted the national sales manager position at **Fostex America** (Norwalk, CA)...



Keith Olsen



Rob Cappucci



Mark Brunner

After a six-year stint at New York City's Sterling Sound, **Paul Angelli** joins **DVDLabs'** (Cambridge, MA) engineering staff as lead engineer...**Doug Osborne** joined **Martinsound** (Alhambra, CA) as director of sales and marketing...**Sara Griggs** is the new director of marketing and communications at **Alesis** (Santa Monica, CA)...**Ego Sys** (Santa Clara, CA) welcomed **Wendy Wild** to the technology director position. Planning the marketing and advertising needs for both **Ego Sys** and **Audiotrak** (Seoul, Korea) will be **JJ Jenkins**, marketing and communications director...**Mark Graham** is **Crown International's** (Elkhart, IN) new VP of marketing...New distribution deals: **Digidesign** (Daly City, CA) has been appointed exclusive distributor of the **Waves TDM** product line in Asia; **Midiman** has assumed exclusive distribution responsibilities for **Ableton's** (Berlin, Germany) software products in the U.S., Canada and the UK; **Transamerica Audio Group** (Las Vegas) has picked up high-end manufacturer **Sequerra Audio Labs** (Stamford, CT); **HHB Communications USA** (New York City) adds **Audio Geer Inc.** (Huntington Beach, CA) to its team, representing the company in Southern California, southern Nevada and Arizona; **Nexo USA** (San Rafael, CA) sound reinforcement products will now be handled in New York City and the Mountain states by **Metro North Marketing** and **Warman Marketing** (Broomfield, CO), respectively; and **Bryston/PMC** (Ontario, Canada) appointed **Secom** (Atlanta) to cover Southeastern sales in North and South Carolinas, Tennessee, Mississippi and Georgia.

EXPANDING YOUR MIND

Pocket Rocket Road Tour—Fits & Starts Productions LLC and Apple continue their 5.1 surround sound road tour (featuring recording engineer/author/surround expert **Mike Sokol**) in the Southeast and West Coast. For more RoadTour info, call Fits & Starts at 732/741-1275 or visit www.ModernRecording.com.

TOP OF THE CLASS

At the recent AES Convention, **Felix Bautista**, a student at The Institute of Audio Research (IAR), was awarded the highest honor for his recording of "Country Music," a smooth jazz instrumental piece, by Gary Fisher Group. The song was selected from more than 40 student and school submissions worldwide by a panel of judges, including recording engineer/producers **Ed Cheney** and **Jim Ancerson**.

Bautista recorded and mixed the winning entry in his Recording Studio Workshop class using IAR's digital 24-track Studio B. It was mixed to analog tape at 30 ips with Dolby SR noise reduction, and then burned to CD for presentation.



Felix Bautista (center) is presented with the Certificate of Competition from AES and an Award of Recognition from IAR. IAR dean **Noel Smith** (left) and mastering instructor **Dan Grigsby** are shown presenting the awards in IAR's Studio A.

Send your "Current" news to **Sarah Benzuly** at sbenzuly@primediabusiness.com.

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If you don't have a DAW system, TASCAM's MX-View waveform editing software runs in native Mac and Windows versions and connects via a fast 100Mb Ethernet interface. With MX-View, you get sophisticated, sample-level waveform editing, drag-and-drop editing on the fly, click and pop repair with the pencil tool, onscreen metering for up to six MX-2424s, editing across multiple machines, easy management of virtual tracks and much more.

For all the details on the MX-2424 go to
www.mx2424.com

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TASCAM
a whole world of recording

Egan Media Productions

by Barbara Schultz

Egan Media Productions, a new three-room audio/video complex in Colchester, Vt., is "about 30 miles from the geographical center of nowhere," says owner Joe Egan. "In a dense market, diversity can kill a company—you find you're a jack of all trades and a master of none—but in an area like this, we can't just do music."

Egan has had an audio business in the upper reaches of Vermont for a decade, doing music recording and radio production out of a 600-square-foot extension of his home; it seemed luxurious after his previous studio, which was in the back room of a men's big-and-tall store. But, eventually, Egan's business outgrew his home space.

"My friend Scott Esmond and I were riding the train down to AES in '97, and we hatched this scheme," Egan recalls. "He'd been an editor at Vermont Public Television since 1987. We thought, if we could have a studio where we could do really good work, a really client-oriented facility, if we build it, they will come..."

Egan purchased a large space in a turn-of-the-century army barracks building in the middle of what he calls a mini "media mecca." "Some space upstairs is leased to a guy named Shaun Varney, who is the sound designer for a *Star Trek* series," Egan says. "Across the street from us is Vermont Public Radio, and also in the fort are Vermont Public Television, another recording studio and four FM radio stations."

Egan hired architect John Rooney of Scott and Partners Assoc., and renowned studio designer Francis Manzella to design the studio.

"What was intriguing about the site was there was an out-building that was attached," Manzella says. "It was tall, with a pitched ceiling, and there was already a deep penetration from the out-building to the main building. I think everybody looked at it and envisioned a live room connected to a control room in the main building. We ended up placing about half the control room in the main building and about half of it in the larger auxiliary building, then surrounded the front part of the control room with a good-sized live room and recording booth."

Also in the main building are Esmond's video production suite and a smaller audio room, for voice-over work, Pro Tools recording/editing, etc. "The B room and the video production suite were built to be the engine that drives the A room," Egan explains.



L to R: Aron Flinn, Scott Esmond and Joe Egan. Above: wrap-around window provides sight lines into Studio A.

Egan, the designers and general contractor Tom Freiheit developed design solutions that made sense. "For us, the challenges were to design a high-end facility with very good isolation and superior acoustic performance on a limited budget," Manzella says. "We came up with a series of smart compromises to float these rooms. Instead of doing expensive, jack-up concrete floors, we did a poured-in-place-on-a-form concrete floor with affordable isolators from Kinetics.

"In the other studios, the ceiling height was limited so we did not do floating-construction, but we did heavy double-wall construction and good ceiling construction, while maintaining reasonable ceiling height," he continues.

Studio A is centered around a D&R Cinemix console. "I really wanted a surround console," Egan explains, "and I've played around with enough digital consoles to know I want a knob for every EQ, a single fader for every channel. The Cinemix is a digitally controlled analog console; all the routing takes place in the center section, so instead of having 24 bus buttons on the top of each channel, you select a channel and then do any routing from the center.

"It's got dynamics on the first 24 channels,

and it's got moving faders, both upper and lower. It's got a stems module for doing film premixing. It's a comprehensive console, and it also happens to be great for doing music."

Monitoring in the main control room is via two Tannoy System 12s (stereo) and five Dynaudio BM15As (surround), augmented by two Dynaudio BX30 subs. "When I'm doing stereo work, I treat the subs as the lowest portion of a three-way speaker," Egan explains. "They're crossed over with the left/right BM15As, and then for doing surround, I can switch it so that the subs are not in stereo anymore; they're acting as a true sub, and all five satellites are getting full bandwidth."

Egan Media Productions' projects have included local TV spots for STX Lacrosse sticks and Nike Hockey skates, voice-over for General Dynamics' armament division, as well as music recording of local rock bands, big bands, singer/songwriters and more.

"What we're trying to do is take Scott's experience doing long-form documentary film production and mine with music and radio production, and integrate those. If a producer can walk into the studio with a handful of Beta tapes and edit the video, record the music, do ADR, do sound design and mix it in surround, all of a sudden we're a one-stop shop." ■

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Chris Dietze, Clear Sound

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Dave Cline, Seventeen Grand

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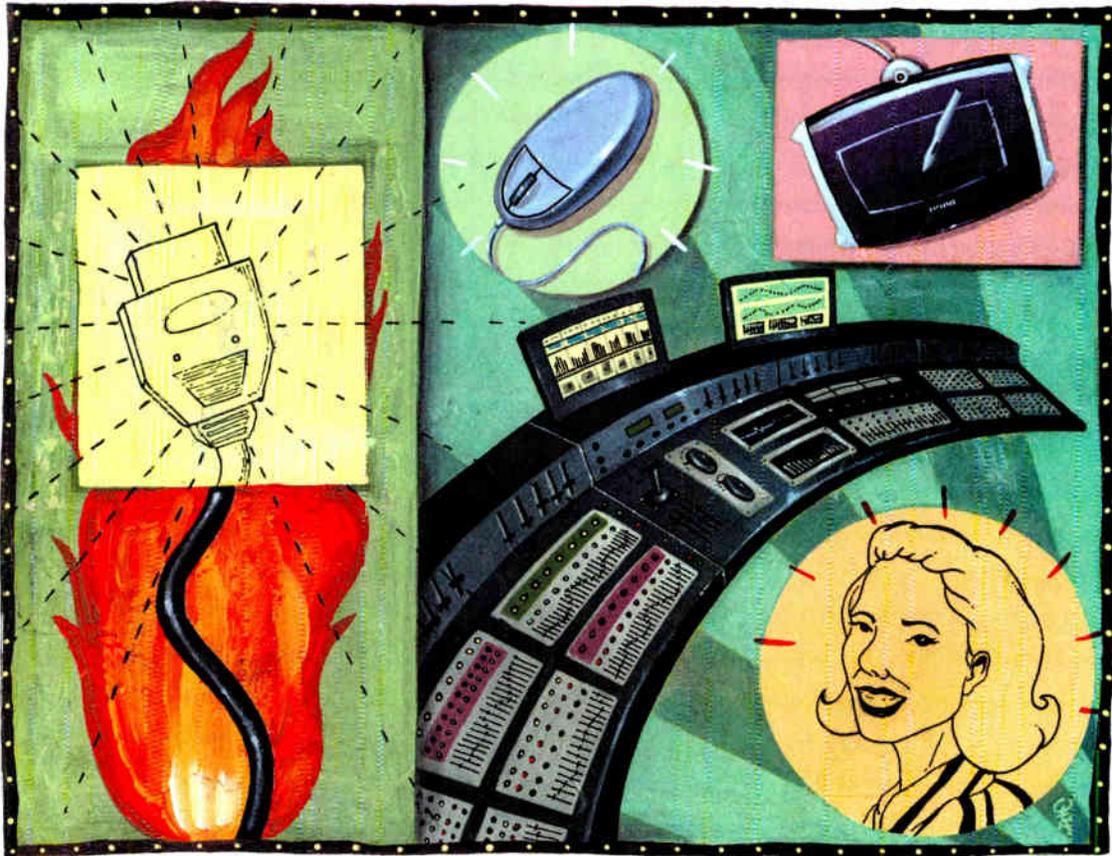


ILLUSTRATION: NATHAN OTA

We certainly have more than our fair share of control freaks in our industry. The formula is perfect: We have big-budget studios, lots of gear and touchy technologies that are maintained by one group of people, but actually *used* by another group. And on the road? Well, even though the Artist knows that the guitar tech is the one setting up his axe, and that the roadies are actually setting up his amps and mics, and even though the Artist knows that there is only so much actual direct control that he can exercise, he will still go totally ballistic when something goes wrong. I know I did for most of my decades onstage.

Only recently have I mellowed enough to realize that, as much as I fear it, having a pickup fall out of my guitar as I hit the first chord of the night probably won't actually kill me. Probably. (Now, the *guitar tech's* prognosis may not be quite so positive.) You gotta have some immediate control over life and death if you are standing out there in front of a paying audience.

So, what I can't figure out is why we, professionals working in recording studios, continue to tolerate and use stone-aged control surfaces. I just don't get it.

I am a Mac guy. I have an iPod; some iMacs; some eBooks; and a giant, clear, Plexiglas DP 800 "silver bullet" central system with two transparent 17-inch studio displays. (For the eight of you out there who care, I didn't get the super-cool giant cinema display because the off-axis color shift is totally unacceptable.) I use nice, track balls, Wacom tablets and radio-linked virtual airbrushes. I use every controller I can get, and to use an old Blues Magoos line, "We ain't got nothin' yet."

CONTROL YOUR DESTINY

So...why are we still leaning over 3-foot-deep consoles and rolling our chairs back and forth along a 9-foot-wide work surface just to mix a tune? Why does my back hurt at the end of each mix? Screw this.

It is time, nay, well past time, for us to shake off the stupor of familiarity and re-examine how we actually work. And the only way to do this is to step outside and look at how we really *should* work.

Now, I understand that it is very, very bright, noisy and dirty out there, but we can't be Lost Boys forever, lurking and working in our caves in exactly the same

Analogue Artistry Digital Domain



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THE FAST LANE

way that our forefathers did, slowly twisting 3-inch Bakelite knobs, smiling as we feel the wipers scraping over huge wire-wound pots somewhere beneath ¼-inch-thick steel panels, the smell of ozone assuring us that there will be enough high end to satisfy even the Euro-dance market.

Well, I do kinda miss the sparks, but I am willing to give that up to move ahead.

We need to get *way* outside to be able to re-evaluate our primary interface tools objectively, our precious control surfaces. So, let's start at the beginning—the exact point that nobody wants to approach because they know that if they do, they will have to back up to the very beginning and start over.

Get a friend to come over with a Polaroid or digital camera that has a manual shutter control. Sit in a nice comfortable chair with two of those cool little LED

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pocket flashlights (preferably white). Mount the camera on a tripod, aiming it at yourself in the chair, set up so that the field of view includes you and, say, four feet in front of you. Darken the room, sit in the chair. Have your friend open the camera's shutter, and with one light in each hand, wave your arms around wildly, saying repetitively in a deep voice, "Danger, Will Robinson, Danger." Don't bend your arms; do it like Robbie would.

Now, here is where your friend comes in. You probably read the paragraph before and figured, where does this St. Croix guy buy his cameras? I don't need anybody to set *my* shutter. *My* new camera can do all this on a timer...

Well, yes, I'm sure it can. So can mine. But the friend is there so that he will eventually say, "Um, you done yet? This is pretty stupid." You see, *that* is when you close the shutter and stop. Trust me. I have tried many different methods to optimally time this procedure, and the "Laughing Friend" system consistently yields the most useful and valid results.

The next step is to look at the picture. If your friend was a *true* friend, you will have this very 1965-looking stoner shot of you in the chair, partially encased in a hemispherical bubble of glowing neon spaghetti. This glowing web is exactly where you can reach in 3-D space, and so graphically represents what should be the shape and placement of your control zone!

You just cut it away above your shoulder line, and making all that remains—below your shoulders and all the way out to your left and right and down to your thighs—your new control surface.

Now you can see how it really should be, and how it eventually will be, either physically or with some form of hand-sensing VR. And, at the same time, it is immediately obvious why manufacturers wake up in cold sweats from nightmares about such industrial designs. Humans still make most gear the old-fashioned way, flat. We make boxes. And, while the consumer world is advancing—producing more curvy, organic gear that is better suited for humans to actually hold and use—the pro world lags sorely behind.

There is so much more money to be made out there in the real (consumer) world that converting from flat metal to injection-molded curved surfaces, along with the flexible circuit boards and trick component designs needed to support such evolution, is not only viable, but well under way. But in our little pro recording industry, this is simply not the case.

And so I predict, with a lowered head and sad eyes, that each year we will see less and less true pro gear, made by us for us. Instead, we will be buying more and more of the best "prosumer" gear, with its dramatically better interface and tools and shockingly better price/performance ratios, even with its insanely wide spread of actual audio quality. Brave New World and all that.

AND NOW, THE FIRE PART

A new topic, yet the same topic. Why do all the kids out there have fully functioning FireWire at 80 terabytes per nanosecond, and we don't?

When I first got into FireWire, it was magic. I had a Sony DV Camcorder with a FireWire port, and I searched for weeks and finally found a FireWire wire. And that was it. Camera, wire, nothing to hook the other end to—so, I guess it was just magic.

Then, slowly at first, but now as a solid part of today's river of new-tech,

—CONTINUED ON PAGE 176

The ALESIS logo is positioned in the top left corner of the advertisement, set against a red rectangular background. The logo itself is white and consists of the word "ALESIS" in a bold, sans-serif typeface.The product name "ADAT HD24" is displayed in a stylized, bold font. The word "adat" is in a smaller, lowercase font, while "HD24" is significantly larger and more prominent. The text is white and stands out against the dark background of the device's control panel.

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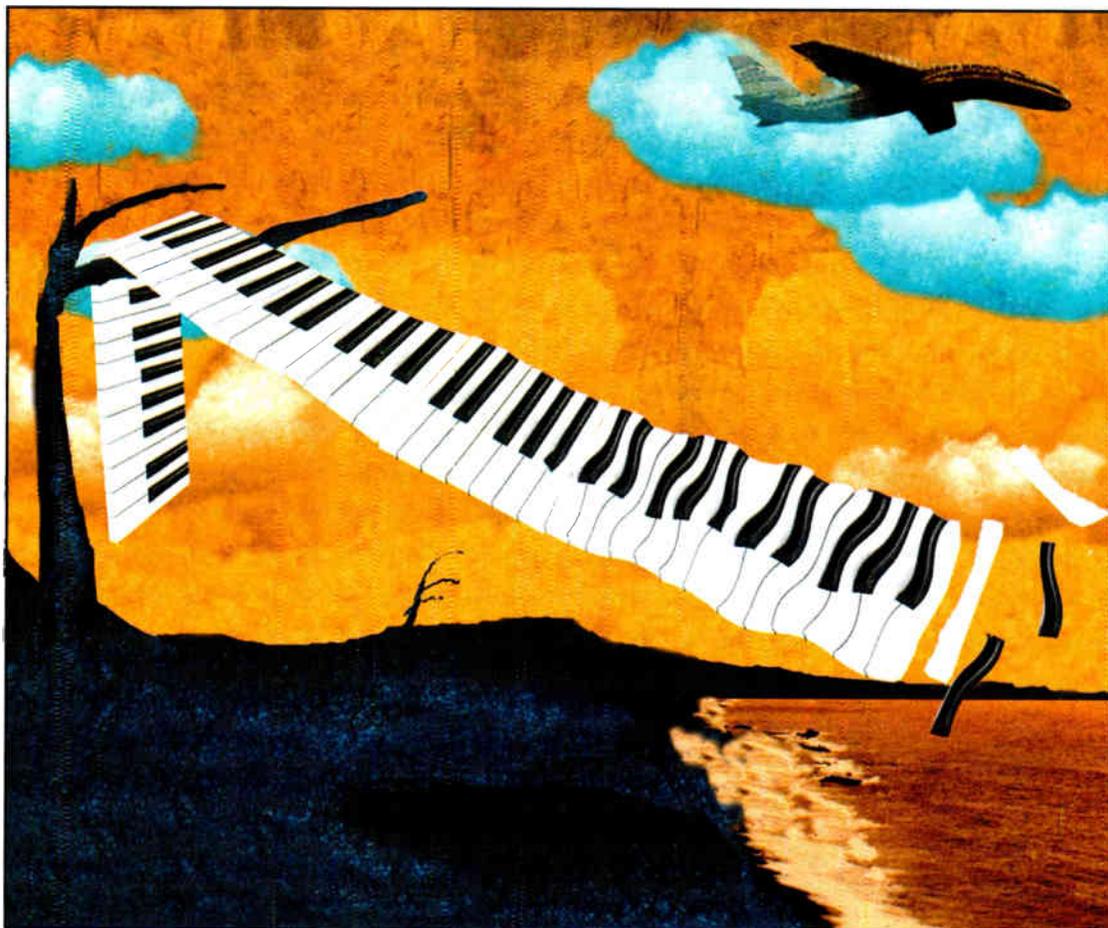


ILLUSTRATION: MICHAEL MORGENSTERN

Following up on last month's column (which you can read at mixonline.com), I've been looking heavily into software synthesis. This semester, I built a new studio for students that's largely based on soft synths, so I've been trying a bunch of them out. I also heard a really interesting lecture on the subject by my friend Michael Bierylo, who teaches at the Berklee College of Music, where students are getting into software-based synths.

It would seem that a lot of composers, and educators, are interested in getting rid of their synth hardware. Why? Pretty much the same reasons so many mixers and post-production engineers are moving toward host-based DSP: It's cheaper, it's portable, and it's easy to upgrade and update. Even more significant in the synthesis world, however, is that software-based synths let you see everything you're doing, which isn't the case with most hardware instruments.

No one would tolerate a tape deck that only lets you look at the level of one track at a time, or a console that forced you to dive down through a bunch of menus to tweak the EQ on a channel. (Although this wasn't always true—anybody remember the Yamaha DMP7?) Hardware synths, with few exceptions, force you to view their world through a tiny LCD window, a few parameters at a time. To get the overall picture of a sound requires a computer and dedicated editing software, not to mention someone to write the code. Because a modern computer can do all of the DSP to actually create the sound anyway, why not forget the hardware synth entirely?

There are other advantages to going soft. Unlike some hardware synths that promise "open architecture," software-synths let users choose nearly any type of studio configuration they want. Programs like Reaktor and Reason let you build just about any

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type of synthesizer or studio configuration you want. Adding more modules doesn't take up any additional space on your rack or patchbay, so you can keep dozens of the things on hand, whether you use them every day or once a year. If you want to try a new software product, you don't have to convince some store's assistant manager to let you borrow a keyboard for a week; just download the demo version from the developer's Website and fool around with it for as long as you like. (It would be nice if more of those trial versions allowed patches to be saved—some of those early experiments you do before you buy the thing would be instructive to go back to and use later on.)

Unlike some hardware synths that promise "open architecture," software-synths let users choose nearly any type of studio configuration they want.

And, of course, there's cost, both for the initial investment and upgrading. Software synths and samplers go for anywhere between \$20 and \$700, while hardware synths start at the latter figure and go north from there. When a new version of a software module comes out, you can usually download it and pay just a small fee. There's no need to buy a new EPROM, open up the keyboard, pull out the old EPROM, and then wrestle with a grounding strap while you pop in the new one, ever watchful that you don't bend any of the pins.

So are there drawbacks? Yes, there are, and most of these revolve around the fact that you're putting all of your synth eggs, as it were, in one basket. And that basket is not infinitely large, or infinitely flexible, or even remotely bullet-proof.

Computers, of course, crash. When you're running an audio or MIDI sequencer and the computer crashes, you lose everything you've done since you last saved the session file. If you're careful, that should be just a few min-

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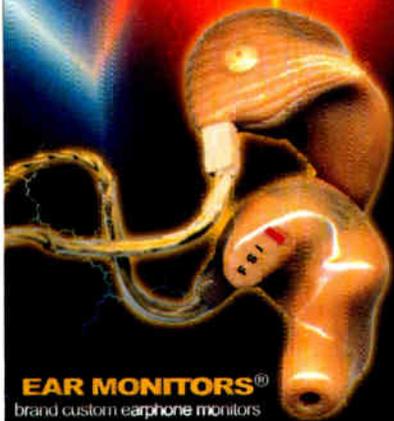
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utes' worth of work. (I make it a rule for my students to save their work every 15 minutes—a rule that would save me a lot of time if I followed it myself!) The rest of your studio—the synths, the processors, the console, the hard drives with the raw audio—doesn't go down with the computer (you hope). But if you're running, say, five different synthesis programs simultaneously, then you have to have the discipline of a Trappist monk to remember to save all those files (which, of course, you have been constantly tweaking) every few minutes, and to be able to deal with the disruption to your creative flow as your brain switches from left-dominant to right-dominant.

You could automate the process so you don't have to interrupt yourself, but

Where are the knobs on software synths? There are plenty of onscreen controls, but they're just virtual—you're still stuck with a mouse as your primary input device.

then you lose control over what gets saved—and in my experience, knowing when to “lock down” a patch and when not to is really an integral part of the creative process. I'd hate for a macro program to take that away from me.

Every time Apple or Microsoft comes out with a new operating system, they promise that “This one doesn't crash!” because it uses protected memory or some other mechanism. And perhaps if all you're doing is database management, Web serving or desktop publishing, it can be pretty stable. But the kind of developers who are drawn to writing software synths are always looking for ways to push the edge of the envelope for every operating system they encounter, and they don't always strictly follow the rules. You can be sure that some day, something those folks do is going to cause OS X or Windows XP (or OS XXXI or Windows XZ.2100) to crash.

In addition, software synths have to work and play well with other applica-

tions on the same computer, which might include video, graphics, communications or other time-sensitive tasks. Even if your computer is running twice as fast as the one you had last year, the video program you're using (because video software developers like to take advantage of faster processors, too) is probably using up twice as many CPU cycles, so you actually haven't gained as much as you might like.

And besides competing with each other for CPU time, these programs all have their own peculiar way of interacting with the operating system, and those ways may not all be friendly with each other.

Another issue that comes up when you have multiple synthesis programs on one platform is how they talk to each other and to other audio programs. In the hardware world, there are standard analog and digital audio cables for wiring things together, and usually the hardest issue you have to deal with is which device is the clock master. In the computer-based studio, there are a host of different ways to pass audio among synths, sequencers, mixing programs, sound cards and audio interfaces, like (to name just a few) Steinberg's VST and ASIO, Digidesign's DirectConnect and Propellerheads' ReWire. Which of these you use depends on what kind of hardware you're running, and whether you have a “host” program that demands you use a certain protocol. Synth-module developers tend to include drivers for as many of these different systems as they can, so as not to discourage any potential purchasers, but some, like Seer Systems and Nemesys, have their own protocols.

While dealing with audio routing can get pretty clumsy, the MIDI side is even more fussy. On the Mac, the most common way to pass MIDI from a controller or sequencer to a soft synth is to use OMS's InterApplication Communication (IAC) protocol. But OMS, itself, is no longer supported, because Opcode, the company that created it, effectively no longer exists. OMS doesn't work at all with Apple's OS X, and the promised “MIDI services” that OS X is supposed to have are still not available. Mark of the Unicorn's FreeMIDI has never particularly caught the attention of other developers, but it does work with most applications—when it is running in “OMS Emulation” mode!

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to the sound card. At the same time, it has to refresh the screen, poll the computer keyboard and run whatever other programs are in use. Just the overhead needed by the operating system can be a significant drain on the process. And, obviously, the more things you have going, like video, hard disk audio or even time-code, the worse the problem is going to be.

The theoretically fastest response of a hardware MIDI synth is 1 millisecond. That's how long it takes a 3-byte MIDI command to be received. If you consid-

er that the speed of sound is about 1 foot per millisecond, then that much of a response delay means that the instrument will sound like it's one foot away from you. Longer delays are common (a synth's onboard CPU isn't infinitely fast either), but like woodwind players, keyboard players learn, in most cases almost instinctively, to adjust. In the hardware-synth world, response times of up to 10 or even 15 ms are not unheard of.

A delay of more than about 20 ms, however, will feel clumsy to just about anybody. As the designer of one pio-

neering late-'80s software-synthesis system put it, "Real time is not negotiable!" (His product, sad to say, never made it out the door.) And if there are other tracks that need to play in sync with the synth tracks, like from hardware synths or internal or external hard disk audio, then one or more of the tracks have to be offset to compensate for the delay. Some programs can figure out how to do this automatically, but even they are not going to work in all situations.

It gets much worse if the response time of the synth changes. If the latency is not consistent, then no matter how good your fingers are at compensating, it's just not going to come out right.

In software synths, latency can be made constant with good programming, but it takes a lot of horsepower—both CPU speed and RAM—to get it down to really low levels. Most programs allow you to set up a buffer in RAM to help keep the load on the CPU down. But there's a trade-off: The larger the buffer, the higher the latency.

A buffer is just that: a place where the samples can be loaded before they are spit out. A large buffer means that the CPU doesn't have to be constantly generating audio data, but can "batch" the samples and attend to other chores according to its own schedule. But filling up a buffer takes time, and that's where the latency can get larger.

If you lower the buffer size, then it fills up faster, but now the CPU has to pay more attention to how tightly it's generating the audio data. The result is that other tasks—most notably streaming audio from the hard disk—have less CPU time available to them and can get literally choked off. Those who have tried to integrate software synths into hard disk audio environments are all too familiar with the dreaded "Your CPU isn't fast enough" message when playing four tracks, even though the same machine can play 12 or 16 tracks perfectly when it is just doing audio. (Michael Bierylo has done some interesting experiments in this area, which you can see at http://people.berklee.edu/~mbierylo/MarkWorld_2001/markworld5.html.)

As Michael says, "There's a lot of smoke and mirrors" when it comes to software-synth performance. There are, as of yet, no standards, no benchmarks, no way to really measure one program or system against another. Worse yet, because different modules are "optimized"

—CONTINUED ON PAGE 203

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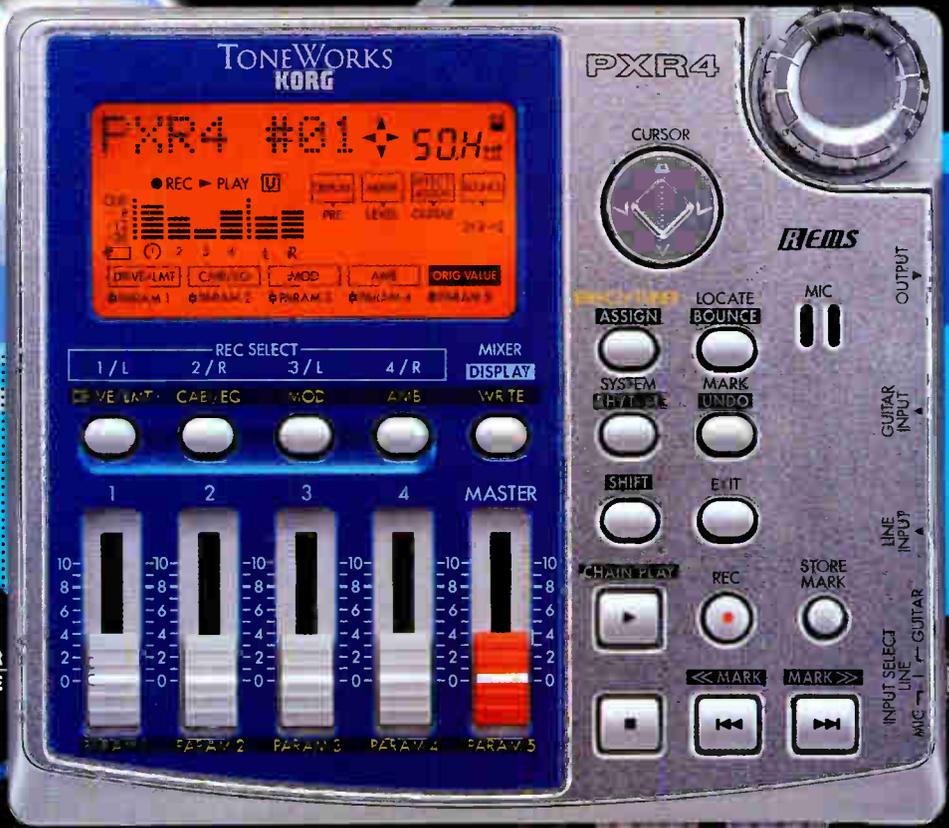
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DAVE MATTHEWS BAND'S "VIDEOS"

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When consumer electronics, entertainment and computing interests came together behind DVD more than five years ago, plans included formats for home video, computer data and music. But, while DVD-Video and DVD-ROM were available to the public starting in 1997, it took years for DVD-Audio to make it off the ground, and even now support for the format from major labels is tepid at best. That doesn't mean, however, that music hasn't had a role in the growing popularity of DVD. While DVD-Audio struggles to take flight, mu-

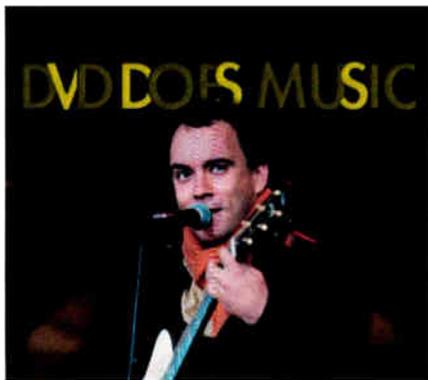
sic DVD-Video has been airborne since DVD itself was launched.

As DVD-Video moves from the early adopters to the mainstream, more consumers are discovering the format's strengths: high audio fidelity, high picture quality and random access. Because these attributes are at least as important for music video as they are for feature films, it may turn out that the real problem for music video was not the underlying concept but rather VHS, in which case DVD-Video offers a very appealing solution.

by Philip De Lancie



Crush Digital Video surround suite



DAVE MATTHEWS AT THE TOP

In early fall, the DVD Entertainment Group's list of top-selling music video titles was studded with venerable names such as The Eagles, Michael Jackson, The Who, Santana and Fleetwood Mac. The top position, however, was held by an August release from the Dave Matthews Band, *The Videos 1994-2001* (RCA Records). The group also held position number seven with their earlier release, *Listener Supported*.

Production of *The Videos* was overseen by RCA creative director Doug Biro, and prepared for DVD release by a team at Crush Digital Video, a DVD authoring and production studio in New York City. Crush's services include interactive design and consultation, audio and video stream-

ing, menu design and production, DVD mastering and quality control. With a client list that includes BMG Entertainment, A&E, NBA, Showtime, Elektra, Arista, Jive Records, RCA Records, Criterion and Major League Baseball, the company has developed DVDs not only for music video content, but also for feature films and corporate communications.

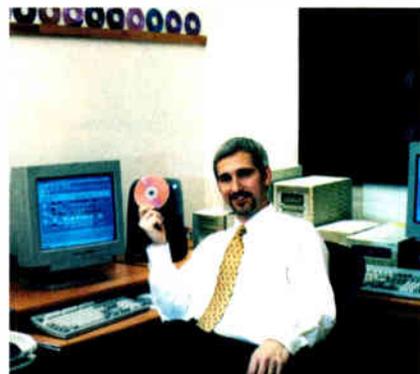
Led by Crush's president, Jeff Stabenau, the Crush group on the Dave Matthews Band project included executive producer Meri Hassouni, audio engineer Greg LaPorta and encoding specialist Mario Rodrigues. Animation and design were handled by Dan Fenster and Jay Chumley, who also handled authoring.

Many of the highest-profile music video DVDs (including *Listener Supported*) are based on concert footage. *The Videos*, however, is basically an augmented collection of the band's music video offerings over the years, starting with "What Would You Say" and running through "The Space Between."

"There are the 12 original music videos, with PCM audio, Dolby Digital 5.1 audio and subtitles of the lyrics," explains LaPorta. "There are also 12 re-edited videos, music in Dolby Digital 2.0, plus commentary tracks by the five di-

rectors [David Hogan, Wayne Isham, Ken Fox, Dean Karr and Dave Myers]. And there are also 'behind-the-scenes' videos for 'Don't Drink the Water,' 'I Did It' and 'Stay.'"

Unlike the concert material in *Listener Supported*, (also authored by Crush) where a multicamera shoot provided source material for DVD-Video's multi-angle video playback feature, all the clips on *The Videos* are made up of a single video stream. As for material outside the disc's "DVD-Video zone," often included for playback in a computer-hosted DVD-ROM drive, *The Videos* has a simple link



Jeff Stabenau, president of Crush Digital Video

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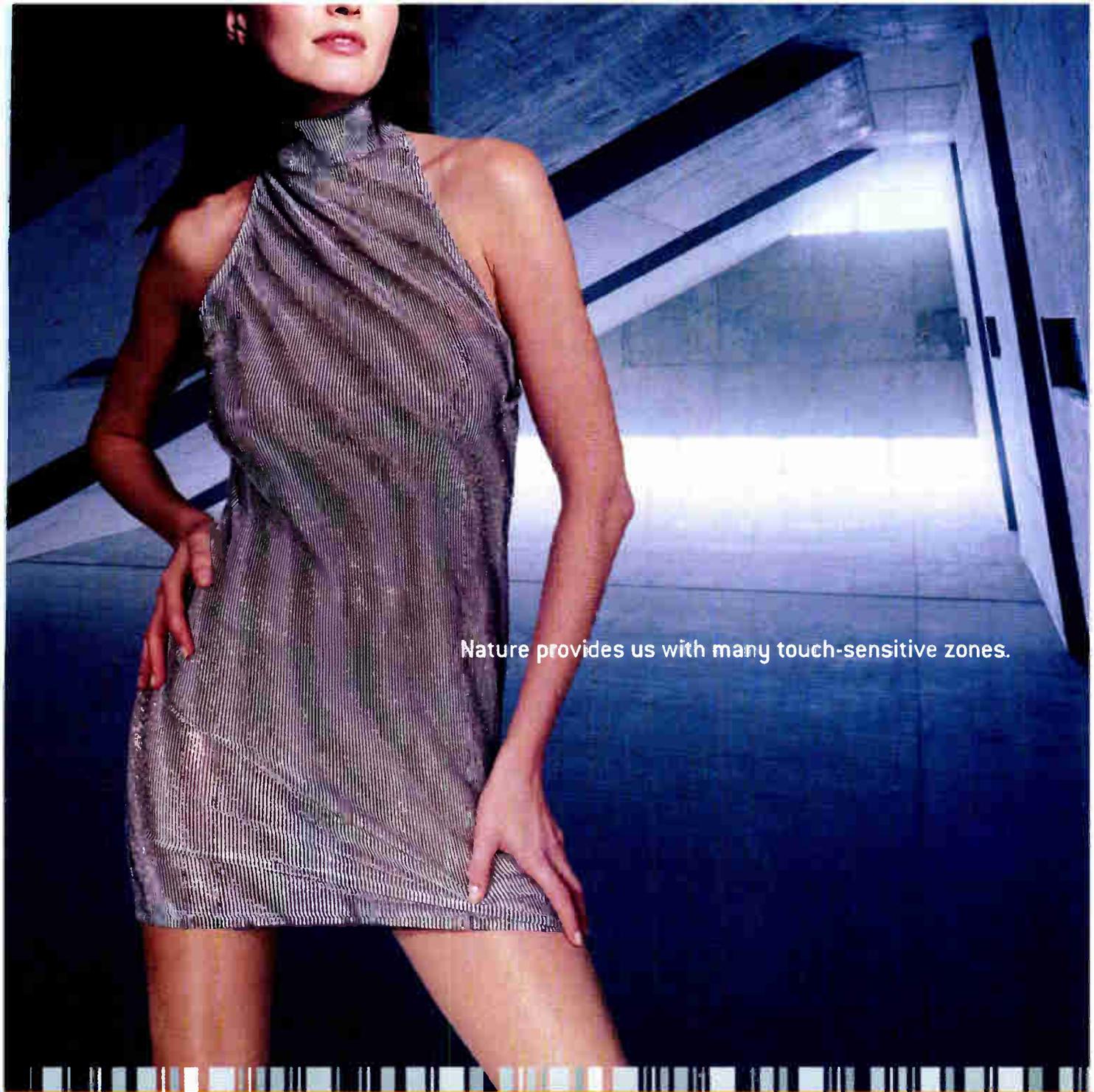
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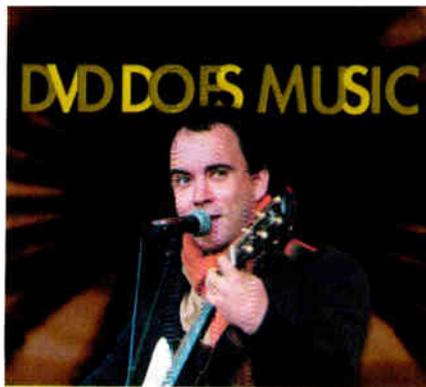
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A woman is shown from the waist up, wearing a sleeveless, high-necked dress covered in vertical lines of shimmering sequins. She is standing in a modern, blue-toned interior space with geometric architectural elements. Her hands are on her hips. The lighting is dramatic, highlighting the texture of the dress and the contours of her body.

Nature provides us with many touch-sensitive zones.



to the band's official Website.

The presence of multiple shorter clips on *The Videos* points up one way in which making a DVD for music video can be different from making one for a feature film. "Music titles tend to have many more assets involved with them," says Chumley. "Feature films tend to have one movie, several other video clips and the navigation menus. This disc contains over 25 clips of video, 55 different audio tracks and dozens of menus, including about eight minutes of motion menus. So the scale of the project is much larger."

ASSET PREPARATION

Once the elements that will make up a DVD's content are defined, the production team gathers and prepares the as-

sets, putting them in a form that can be used within the DVD-Video format. In the case of the audio for *The Videos* main music soundtracks, this meant capturing the stereo tracks from the sources provided by the client, either Digital Betacam tapes or Betacam SP tapes with separate DA-88 soundtracks.

"The music videos were originally mixed for stereo," LaPorta says, "but we wanted to take advantage of DVD's surround capability. To accomplish this, we created 'up-mixed' versions of the stereo sources for all 12 of the music videos."

LaPorta says the stereo mixes were captured from the client's masters onto a Sonic Solutions workstation. "There, the tracks were used to create a surround field through a combination of delay and EQ that allowed us to emphasize separate elements. In this process, we push the vocals and lead guitar toward the center and front speakers, while using the surrounds to emphasize the rhythm."

The newly created surround mixes were recorded at 16-bit/48kHz onto DA-88 tapes, then later encoded to 5.1-channel Dolby Digital at a data rate of 448 kilobits per second (the maximum Dolby Digital data rate supported by DVD). Because DVD-Video allows up to eight

audio streams (bandwidth permitting) to accompany a given video clip, RCA was able to include both the Dolby Digital and the original stereo mixes. Viewers can switch seamlessly between the streams with the remote control. "For the stereo streams on the music videos," LaPorta says, "we used Linear PCM to provide the highest-possible audio quality."

Once the audio for all the videos was captured, the soundtracks had to be mastered to create balanced sound levels between all the tracks and their streams. "LPCM has a much greater dynamic range than Dolby Digital," LaPorta says, "and has a perceived sound dif-



Producer Seri Westerbeck

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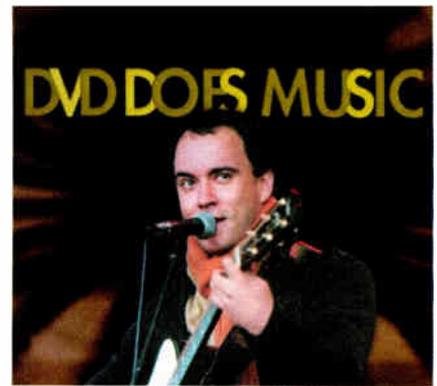
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ference of 6 or 7 dB that must be accounted for. This work was also accomplished on the Sonic Solutions workstation. The sound levels were matched for what would be the eventual result after the Dolby Digital streams were encoded."

In addition to mastering the audio, the asset preparation stage also included the creation of still images and motion-video elements for the disc's menus, the design and placement of onscreen buttons, the preparation of text files with timing references for the lyric's subtitles, and the encoding of all video elements, including the 27 video clips and the menu transitions.

Crush used a Sony DVA-1100 for all encoding of the project's video assets. Encoders from both Sonic Solutions and Dolby were used for the audio.

AUTHORING

Once the project assets were ready, Chumley was able to start authoring, which involves importing assets into the project, defining the navigational flow of the title, defining the commands associated with menu buttons, checking the behavior of the title as the work progresses, and formatting the final version for output in a form that can be used by a replication plant to mass-produce copies. The authoring was done on a Scenarist NT system (now Sonic Scenarist), with the final disc type being a DVD-9 (single-sided, dual-layer).

"Technically, the disc was one of the most extensive I have authored," Chumley says. "To get this many different types of material on the same disc, with 15 motion menus, was a fun challenge."

With 27 main video clips, part of the challenge was to make it easy to get from place to place without a lot of clutter on the menus. "There are a lot of options on the disc," Chumley says, "and we tried to present them without getting too overwhelming, and without making the viewer go through endless channels of menus. We created the design so as not to overwhelm the ease of navigation. Hopefully, the navigation is rather straightforward."

To keep things simple, Chumley says,

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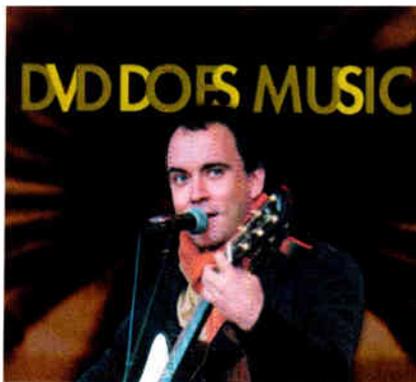
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there are basically two main sections of menus. "The Videos section shows a preview clip of each video, as well as related information, including the director, run-time, release date and the album that the song is from. In the Extras section—which you can access through every screen—we tried to let you get to any area quickly and yet simply."

During authoring, Chumley checked his work by previewing it using software simulation of what the playback would be like from an actual DVD player. "The video is watched on television," he explains, "while the audio is passed through the TV speakers and several different types of receivers." Previewing allows the author to revise the work until the visuals, audio and navigation all play back correctly according to the title design approved by the client.

"After we felt the disc was complete," Chumley continues, "we burned a DVD-R, which we checked in-house on a variety of popular players. The DVD-R was also looked over by BMG and RCA at their locations." Once approved, the project was transferred to DLT tape and sent

to the replication plant.

VIDEO-CENTRICITY

The content on *The Videos* could perhaps have been released on a DVD-Audio disc, because the DVD-Audio specification allows the playback of DVD-Video material (though some limitations apply). Apparently, however, RCA did not feel that it had much to gain in sales from making a hybrid disc of this type, and the DVD-Audio authoring would have added complexity and expense to the project. In any case, because DVD-Audio's potential for enhanced fidelity doesn't apply when playing back video, such a move might have been beside the point for a collection like *The Videos*, which is explicitly video-centric.

"What I really like about this disc," Chumley says, "is that I think it shows much more respect for music videos as a medium. You have the best audio quality and surround mixes to support the music, but you also get all of the videos in much higher quality than you would ever see in broadcast. And the commentaries are a first for music videos, treating them on the same scale as feature films."

It may not be a classic on the order of *Casablanca*, but if *The Videos*—and titles like it—spark greater interest among consumers, perhaps DVD-Video will be the medium that finally pushes the music video genre toward the sales levels that eluded it in the pre-DVD era. ■

Philip De Lancie is Mix's new-technologies editor.

NUMBER CRUNCHING

GAUGING THE SUCCESS OF DVD MUSIC VIDEOS

One place to get a feel for the extent of music video activity on DVD is the Website of the DVD Entertainment Group (www.dvdinformation.com), a trade association of nearly 40 companies that is intended to advance the use of DVD in entertainment applications. The DVD Entertainment Group's members describe themselves as "key software and hardware companies representing leading consumer electronics giants, [and] major movie studios' home video and music video units." Among them are such familiar music-business names as BMG, EMI, Sony, Universal and Warner.

A search of the site's database of titles turns up just 92 DVD-Audio albums out of a total of 12,069 DVDs in current release by the Group's members. Music DVD-Videos, on the other hand, number 1,307, about 11% of all the group's current DVD-Video titles. (Most of the rest of the titles are, not surprisingly, feature-film releases.)

With that many titles, it's clear that the music DVD-Video genre has some appeal to artists and labels. That doesn't mean, however, that music video, in general, has been a big hit with consumers. Figures from the Recording Industry Association of America indicate that the category has never shipped much more than 27 million units (in 1998), and slipped to 18 million units in 2000. That's a drop in the bucket compared to the more than 942 million CD albums shipped the same year.

—Philip De Lancie



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New Work Surfaces for DAW-Based Mixing

by Randy Alberts

Not to knock the legendary mouse or QWERTY keyboard, but as the popularity of digital audio workstations continues to surge, so does the need to improve desktop ergonomics. Buying a better chair and assuring perfect neck, arm and wrist angle measurements can help fight destructive carpal tunnel syndrome and repetitive stress injury (RSI), but nothing can harness the increased horsepower of a new software release like a dedicated DAW control surface. Consider just the time and muscle movement it takes to locate, grab and rotate one EQ knob back and forth with a mouse. Do the same calculation based on simply grabbing and twisting a dedicated EQ knob on a DAW controller, and multiply that effort by a hundred or a thousand times in a single day. You've already saved 30 minutes or more per session—and that's just for EQ.

Mix queried 14 control surface manufacturers about the developments in hardware controllers for software workstations. Hybrid, multifunction control surfaces targeted mainly for DAW software control, and sporting extras like A/D converters, onboard DSP and stand-alone mix capabilities (Tascam US-428, Event Electronics EZbus, Peavey StudioMix) are described in this article; full-function digital mixers (Mackie Designs D8B, Tascam DM-24, etc.) and stand-alone hardware digital workstations such as the Roland VS-1680 and Akai DPS16 that can also control software environments are not. Check out some control surface solutions for your favorite DAW, and your fingers, wrists, back, neck, eyesight, clients and bottom line will all be happy you did.



Steinberg Houston



CM Labs Dashboard



Event Electronics EZbus



JLCooper Electronics MCS-3800



Digidesign ProControl

CM LABS

Designed with Digidesign Pro Tools TDM and Digi 001/Pro Tools LE systems in mind, CM Labs' MotorMix Digital Mixer Workstation (\$995) now also supports MOTU Digital Performer. This tidy, compact, 10x12-inch fader work surface has eight long-throw, 100mm motorized faders, dedicated Mute and Solo switches, a Burn button to control audio recording and automation, and rotary pots for instant access to pans, aux sends, plug-in parameters, input/output assignments and channel automation modes. Compatible with software from Emagic, SEK'D, Minnetonka, Steinberg and BitHeadz, MotorMix features a 40x20-character backlit LCD with contrast control to dis-



Contour Design ShuttlePro

play channel labels, rotary pot position, effects parameter settings and soft key control. MotorMix's group and bank switches and cursor keys allow users to control eight channels at a time. The unit can also be used live, and it responds to Show Control lighting systems. MIDI in/out ports and a built-in power supply are included. The company's new Dashboard Digital Editor Worksurface (\$995) comes with built-in Pro Tools support and features full-sized transport keys, a jog/shuttle/scrub wheel, a 15-key autolocator keypad, and eight rotary pan, send, plug-in, automation and monitor level pots. Zoom and track selection navigation keys, eight mute, solo and track-arming switches, and a single-rackspace MF-20 monitor interface for replacing a monitor section are also included on this digital Dashboard.

CONTOUR DESIGN

ShuttlePro Multimedia Controller (\$99.95) from Contour Design is an inexpensive, tactile way to jog and shuttle a wide range of audio and video software environ-

ments. Thirteen buttons and the unit's smooth jog/shuttle wheel can be independently programmed to control specific software features in Digital Performer (built-in), Final Cut Pro, AudioDesk, QuickTime, Media Composer, Cubase VST/32, Logic Audio, After Effects, Pro Tools and many more platforms for MacOS and Windows users. The 7.75x4.25-inch ShuttlePro sports a rubberized shuttle ring for a better grip, and the ergonomic placement of all function buttons and the jog/shuttle wheel provides one-handed operation and control over a wide range of software parameters and shortcuts.

DIGIDESIGN

ProControl (\$11,995), one of Digidesign's four Pro Tools-dedicated control surfaces, offers eight channel faders and a master control unit expandable up to 48 channels. Providing 1,024 steps (10 bits) of resolution each, eight touch-sensitive 100mm DigiFaders on the ProControl incorporate a sealed encoder, servo-controlled motor, and a Flex Circuit that emulates the feel, performance and reliability of moving faders found on high-end mixing consoles. All TDM plug-ins can be edited from the ProControl surface, as can write, touch, latch and read modes for fader level, pan, send and mute controls.

Each FaderPack (\$6,495) for ProControl contains eight DigiFaders and channel strip sections, and can expand the basic ProControl unit to a 48-channel Pro Tools controller. To interface ProControl with Pro Tools, the optional ProControl Cable Kit (\$345) provides two D-Sub-to-XLR female and one D-Sub-to-XLR male cables/connectors.



Emagic Logic Control

EditPack (\$7,495) is a mixing control surface that adds surround mixing and editing capabilities to ProControl for Pro Tools Versions 5.1 and higher. A built-in custom keyboard and track ball mouse come with each EditPack, as do two patented DigiPanner joysticks and eight 40-segment meters for multichannel output monitoring. Twenty dual-function edit switches provide easy access to a number of Pro Tools operations, such as track duplication, region management, macros, automation and MIDI operations.

Control124 (\$7,995) is Digidesign's newest Pro Tools TDM control surface. The result of a collaboration with Focusrite, Control124 is a 24-fader surface that includes 16 high-quality preamps based on Focusrite's Platinum line of processors. Illuminated switching for dozens of Pro Tools functions, such as mute, solo, record arm, channel select and automation modes, are included, as well as dedicated EQ and dynamics switches on every channel. Offering hands-on access to nearly every recording, routing, mixing and editing function in Pro Tools, the Control124 includes 26 scribble strips; dual-channel



E-mu PARIS C-16 Pro

Complete Control

metering on each channel strip; a high-resolution LED for displaying transport location; two DI (direct inject) inputs on the first two channels; and a comprehensive analog monitoring section capable of 5.1 surround monitoring. An integrated sub-mixer section includes eight stereo inputs,



Digidesign Control|24

and the Control|24 connects to Pro Tools via a 10BaseT Ethernet connection for MacOS or Windows Pro Tools TDM users. An optional Cable Kit Package for Control|24 (\$695) is available.

EMAGIC

Emagic's new Logic Control (\$1,299) is an expandable hardware controller for Logic Platinum 5 music production software. Developed with Mackie Designs as a plug-and-play controller requiring just two MIDI cables per unit, Logic Control measures 17.5x17.5 and is expected to ship by press time. Depending on available MIDI ports, a virtually limitless number of Logic Control and Logic Control XT expander units (\$1,129 each) can function as one Control Surface Group. Groups can be configured independently in order for one to control volume and pan settings, while another edits plug-in settings or track assignments, for example. Though not available initially, user-definable buttons and fader assignments on Logic Control will replace default controller assignments in future versions of Logic Audio. Penny & Giles 10-bit, 100mm motorized faders are standard on the Logic Control, and surround mixing parameters such as angle, diversity, LFE and surround mode can be controlled via the unit's V-Pots.

E-MU SYSTEMS

The PARIS C-16 Pro (\$1,495) from E-mu is a dedicated control surface for PARIS Pro software. Seventeen 100mm faders, a monitor level knob, and dim/mute switches are onboard, as is a weighted jog/shuttle wheel for scrub/jog, shuttle and editing purposes. A multifunction numeric keypad provides access and control for markers, screen views and data entry, and a full complement of dedicated transport, loop and punch function buttons are standard. Sixteen input channel fader sections, a main L/R mix fader section and a master control section are built-in, as are five digital rotary encoders, one rotary potentiometer, 82 push-button switches and 127 LED indicators. Two footswitches may be independently assigned within PARIS Pro to useful functions such as play/stop, punch-in/out, etc.; and an 8-pin RJ-45 connector is used to connect the C-16 Pro directly to its EDS-1000 PCI card via a 10BaseT-type networking cable. The C-16 Pro also features a rotary EQ level knob that controls frequency and bandwidth over four EQ bands. The 20x10.5-inch enclosure is all-steel and weighs 10 pounds.

EVENT ELECTRONICS

Event is now shipping its EZbus (\$849), a three-in-one unit that works as a software control surface, computer audio recording interface and stand-alone digital mixer. (A front panel local on/off button switches the EZbus from onboard audio mixing to DAW control surface operation.) Twenty-four-bit/96kHz audio I/O and MIDI con-



JLCooper Electronics MCS-ClipShot

nections are via USB for Mac and PC users of Cubase, Cakewalk, Logic Audio and other DAW environments. EZbus includes eight locate points, a jog/shuttle wheel, recorder-style transport keys for sequencer or MMC control, and dedicated fingertip access to volume, pan, aux send, mute and solo functions. Thirty-two snapshot memories capture all parameters. The EZbus offers 18 inputs (16 TRS balanced line inputs and two mic preamps with phantom power); analog outputs are via a main stereo pair and alt outputs; and there are eight channels of ADAT Lightpipe I/O and a pair of independently assignable stereo S/PDIF digital outs. Additional features include two parametric bands and a pair of sweep high/low-shelving EQs, programmable onboard dynamics, 24-bit/96kHz converters, low jitter wordclock and asynchronous sample rate support.

JLCOOPER ELECTRONICS

JLCooper Electronics offers a dizzying list of audio and video control surface solutions, and has now added the MCS-3800

CONTROL SURFACE MANUFACTURERS

Manufacturer	Website	Telephone
CM Labs	www.cmlabs.net	360/794-1196; 650/731-6300
Contour Design	www.contourdesign.com	800/462-6678; 603/893-4558
Digidesign	www.digidesign.com	650/731-6300
Emagic	www.emagic.de	530/477-1051
E-mu/Ensoniq	www.emu.com	831/438-1921
Event Electronics	www.event1.com	805/566-7771
JLCooper	www.jlcooper.com	310/322-9990
Mackie Designs	www.mackie.com	800/258-6883; 425/487-4333
Martinsound	www.martinsound.com	800/582-3555; 626/281-3555
Midiman	www.midiman.com	800/969-6434; 626/445-2842
Peavey	www.peavey.com	601/483-5376
Radikal Technologies	www.radikaltechnologies.com	201/836-5116
Steinberg	www.steinberg.net	818/678-5100
Tascam	www.tascam.com	323/726-0303



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World Radio History

 **MACKIE.**

Complete Control

(\$2,999.95; \$3,499.95 with simulated granite wrist rest), MCS-3000x expander (\$1,999.95), MCS-Orbiter (\$1,999.95), and MCS-ClipShot (\$4,999.95). The company's MCS-3000 Series of Media Command Stations offers a variety of flexible, customizable configurations. The MCS-3800, with two expansion slots for USB, Ethernet,



Mackie Designs HUI (Human User Interface)

GPI, RS-232 and other control interface cards, includes eight 100mm motorized, touch-sensitive faders, 100 locate points, 60 user-programmable function keys, and built-in SMPTE/EBU and MIDI timecode readers. Five rotary encoder controls, a 2x40 backlit LCD, numeric keypad and an optically encoded concentric jog wheel/shuttle ring are also included, and the 3800 is expandable up to 64 channels using the company's MCS-3000x expander units. The MCS-3000x is an 8-channel MIDI controller that provides eight 100mm motorized faders and 32 assignable function keys for Avid, 3DV, MOTU, Soundscape and other DAWs. The MCS-3000x also works as a standard MIDI fader controller for programs like Cakewalk, Cubase and Logic. Also new, the MCS-ClipShot (\$4,999.95) is a switch palette featuring 40 multicolored LED buttons capable of displaying text and graphics; 20 lighted buttons; and a 2x40 backlit LCD screen.

The MCS-Orbiter is a touch-sensitive, motorized joystick controller now supported by Steinberg Nuendo 1.5.3, and the MCS-ClipShot, the newest addition to the

company's MCS-3000 Series. The latter is a tactile switch palette with 40 multicolored 24x32 LCD buttons that also function as a QWERTY keyboard; 20 lighted buttons; and a 2x40 backlit LCD that provides instant video clip or audio playback triggering for broadcast, post-production and other applications.

MACKIE DESIGNS

Mackie Designs released the \$3,499 HUI (Human User Interface) as the first control surface for Pro Tools, circa V. 4.1 software. This classic, touch-updatable controller measures 21x23 inches, and features eight assignable 100mm motorized faders, full transport controls, DAE and TDM plug-in control, keyboard shortcuts, window buttons and two built-in balanced XLR Mackie mic preamps. V-Pot rotary controls and a vacuum fluorescent alphanumeric display for showing all plug-in parameters are included, as are a switch matrix for assigning channel status and/or global session attributes, a numeric keypad, a jog wheel, a keyboard shortcut section and dedicated transport/locate/selector functions. An analog control room section can control up to three sets of speaker/headphone controls, and a talkback mic is included.

GRAPHI-Q: 5 PRODUCTS. 1 UNIT. 2 BUTTONS?

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—Mark Frink, MIX
Field Test, January 2001

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Complete Control

MARTINSOUND

The Martinsound PanMAX Automated Surround Panner (\$1,995 processor; add \$1,695 for console-mounted remote) adds surround functionality to existing hardware consoles and DAWs, allowing users to make



Martinsound PanMAX

repeatable dynamic sound motion and parameter changes. Surround panning is handled by three motorized faders and a joystick on the remote unit. The PanMAX also sports 10 stereo input sources, automated control over divergence and stereo width, and SMPTE-lock capability for frame-accurate replay of previously recorded joystick and fader motions. The base unit PanMAX comes with eight outputs and is expandable from 10 up to 16 input channels.

MIDIMAN

Midiman's new, futuristic-looking Surface One (\$799.95) is a completely user-configurable virtual control surface that was expected to ship last month. Connecting via USB or MIDI, the Surface One, which can function without a computer, has user-definable touch panels, virtual buttons, thumb pads, and 16 rotary encoder knobs that promise to control any MIDI-compatible software program or hardware. Users can manipulate "objects" such as virtual channels, buttons and knobs; and any object on a Surface One is programmable and can transmit any message communicable via MIDI, including volume changes, note on/off, alter-



Midiman Surface One

ations to any parameters and program changes. Utilizing a Smart Fabric fiber-optic-based, touch-sensitive material developed by the Canadian Space Agency as its primary interface, the Surface One converts touch information into MIDI to control MIDI-compatible devices. Surface One's special fabric can read up/down, left/right and pressure information concurrently; can be used as a virtual mixer to control sequencing software, soft synthesizers and sample players; and can even be used as a virtual Light Board controller. Various motions, such as touch, double taps and finger pressure, can trigger different MIDI commands, and any pressure applied to the top or bottom portion of a fader can create independent channel fade in/out.

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Complete Control

PEAVEY

The Peavey StudioMix (\$899.99) is a DAW control surface and computer audio/MIDI interface that comes bundled with Cakewalk Professional 8 for Windows. Assigning any of the unit's eight motorized faders, five macro buttons, eight track arm/mute/solo buttons and rotary knobs to various mixing parameters is easily handled within Cakewalk. A jog/shuttle wheel is included for shuttling audio, and the unit features a main/aux master control module, rotary mic gain and line gain pots, and mix out and control room monitor controls. The unit's back panel bristles with stereo tape in/out; stereo/mono monitor out; soundcard stereo in/out; stereo line and mic in; and MIDI In, Out and Thru connectors. The package comes bundled with many ready-to-use virtual control panels for various MIDI-compatible audio devices. All cables and adapters

are included.

Peavey's PC 1600x (\$399.99) is a programmable MIDI fader control system with up to 50 customizable presets. A 20x2 display, up to 100 scenes, dual-CV gate inputs, 16 faders, 16 buttons, MIDI In/Out, MIDI merge, MIDI filter and SYSEX dump/receive round out this popular MIDI controller's lineup.

RADIKAL TECHNOLOGIES

Radikal Technologies' SAC-2K Software Assigned Controller (\$1,849) is a futuristically ergonomic control surface that automatically recognizes a wide range of DAW programs when the units are connected over the USB bus. Users of Cubase, Pro Tools, Samplitude, Digital Performer, Soundscape and other DAWs can assign any of the SAC-2K's nine touch-sensitive motorized faders, 12 rotary encoders with 31-step LED parameter displays, nine track-select buttons and 12 navigation buttons to their recording environment. The controller also supports PPG Wave, Pro 52, Mercury-1, B4, EXS24, Reason and several other soft synth programs. Multiple locator and plug-in parameter displays are onboard, as are a jog wheel and scrub



Radikal Technologies SAC-2K

button, four location markers, one system button and a four-way USB hub for connecting additional USB devices.

Radikal's SAC-8X Expansion-Unit (\$1,299) is an 8-fader (motorized) MIDI/USB hardware controller that expands the functionality of the SAC-2K base unit. The number of additional SAC-8Xs available depends on your DAW's remote-control support; Pro Tools users, for example, can chain up to three units for 32 tracks of control.

STEINBERG

Houston (\$1,499), a new MIDI/USB control surface from Steinberg, is designed and engineered for the company's VST and Nuendo platforms. Almost every parameter in the audio engine and every VST

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"The C-3 is THE HIP new guitar mic. It gives your Marshalls that phat-gut-punch we all crave. I'll never cut another record without one."

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Pete Leoni - Producer/Engineer, Tech writer and reviewer



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World Radio History

Complete Control

Instrument can be displayed, controlled, edited and automated from Houston, including the VST MIDI Track Mixer. Nine touch-sensitive motorized faders, eight rotary encoders with LED position indicators, full transport controls, a jog/scrub wheel, numeric keypad and a large LCD

Nuendo 1.5.1 or higher, and a free USB port or multiport MIDI interface. (A Mac USB driver is under development as of this writing.) Besides Cubase and Nuendo, other programs currently supported by Houston include Pro Tools (Mac/PC), Logic Audio (Mac/Windows), Deck LE (Mac), Digital Performer (Mac), MX-Tracks (Windows) and Native B4 (Mac/Windows).

TASCAM

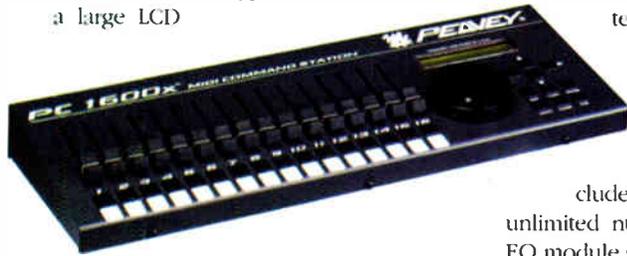
The Tascam US-428 (\$625) is a tandem USB computer audio and MIDI interface/DAW control surface codeveloped with Frontier Design Group. Dedicated aux/send, transport controls, mute/solo buttons and locate keys are included, and the unit supports an unlimited number of 8-fader banks. An EQ module supports control of up to four bands of fully parametric EQ. Thirty-two channels of MIDI I/O are supported, and a host of audio connections make the US-428 a good audio interface: 24-bit D/A and A/D converters, two balanced XLR inputs, a pair of 1/4-inch TRS, two unbalanced



Tascam US-428

1/4-inch inputs switchable to hi-Z for guitar and bass input, and S/PDIF I/O. The US-428 can receive four channels of audio in and simultaneously output two channels via a hot-pluggable USB port. Both Windows and Mac versions of Steinberg's bundled Cubasis VST are now included, or users can instead opt for a BIAS Deck LE bundle. Current drivers and plug-ins necessary to support the US-428 can be downloaded from Tascam's Website for these other programs: Pro Tools (Mac/Windows), Cubase VST V. 5.0x (Mac/Windows), Nuendo 1.5 (Mac/Windows), Logic Audio 4.7 (Mac/Windows), Digital Performer 2.7 (Mac), Minnetonka MXTracks (Windows) and Native Instruments B4 (Mac/Windows). ■

Randy Alberts is an audio and music journalist in Montara, Calif., and a frequent contributor to Mix.



Peavey PC 1600x

dot Houston's facade. Houston requires that users of Windows 98SE/2000/ME and MacOS 8.6 through 9.1 have Cubase 5.0 or

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Last year, four of the world's top-selling singles were tracked and mixed on Mackie analog 8•Bus consoles. So were at least two Platinum albums.

Bottom line: It takes a sonically impeccable console to make a hit. But that *doesn't* mean you need a million-dollar, block-long British console to get the job done.

If you have enough talent and creativity, you can build a chart-buster with a sonically-impeccable mixer that costs as little as \$3,599¹.

The industry standard 8-bus.

The analog 8•Bus comes in 24 and 32-channel flavors. Each channel strip has six aux sends, true parametric 4-band EQ and a Mix B in-line "channel strip within a channel strip" that's used for monitoring during tracking and as another input during mix-down (effectively doubling each console's input count).

The master section has six master aux sends, six master stereo aux returns with a wealth of assignment possibilities, separate Solo, Mix B Monitor, Studio/Control Room and Solo sub-sections as well as two

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Punctiliously-accurate faders.

One reason that top engineers take this console seriously is its logarithmic taper, 100mm faders. They behave like those on megabux consoles: You get accurate, linear sound control along the entire fader travel length – instead of an abrupt, unplanned fade-out about ³/₅ of the way down.

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500Hz to 18kHz. And you can vary the bandwidth from a deliciously subtle 3-octaves to as narrow as ¹/₁₂-octave.

Expandable to 80+ channels.

All of the engineers who created the hits listed at left have added one or more 24•E Expander Consoles. It plugs into the 24•8 or 32•8 via a cable to provide 24 more channels (sans master section). The 24•E's outputs are submixed internally to reduce line and thermal noise and maintain maximum sonic quality at the main console.

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Enrique Iglesias*
"Bailamos"

Tina Turner*
"When the Heartache's Over"

¹ Suggested U.S. retail for Mackie 24•8. Meter bridge is extra.

² Okay, we'll admit it: some really good microphones and outboard effects won't hurt either.

*Listing in this ad represents usage of our consoles as reported to Mackie by an independent producer or engineer and is in no way intended as a real or implied endorsement by the artist.



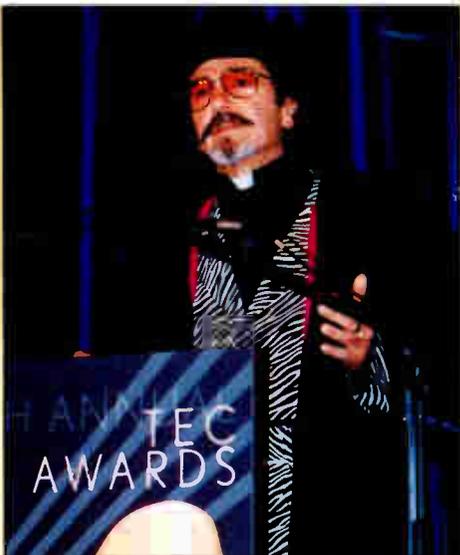
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17TH ANNUAL

TEC Awards

It was a festive evening for the 600 audio professionals who attended the rescheduled 17th Annual Technical Excellence & Creativity Awards, held December 1, 2001, at the New York Marriott Marquis. Hosted by the ever-popular Father Guido Sarducci, the evening's highlights included the induction of famed engineer Roy Halee into the TEC Hall of Fame by Phil Ramone, and presentation of the Les Paul Award to Steely Dan by Larry Carlton and Les Paul. Proceeds of the ceremony will go to assist the outreach efforts of the House Ear Institute and to scholarship funds for students of the audio arts and sciences.

PHOTO: GEORGE KANATOUS



Father Guido mixes holiday humor with technology for a festive mix.

PHOTO: ALAN BRILLMAN



Roy Halee Jr. (L), Laurie Halee and Walter Halee accept the Hall of Fame Award from Phil Ramone on behalf of their father, the legendary engineer Roy Halee.

PHOTO: GEORGE KANATOUS



Clair Brothers' Ron Borthwick accepts the award for Outstanding Creative Achievement/Tour Production, Steely Dan, along with Jim Meyer (second from right) and Rick Lehman (R); JBL's Mark Gander (L) accepts for FOH engineer David Morgan.

PHOTO: GEORGE KANATOUS



Walter Becker accepts the Les Paul Award.

PHOTO: ALAN PERLMAN



Furman Sound's Joe Desmond and Lesa Kinny accept the TEC Award for the HDS-16/HRM-16 Headphone Cue System in the category of Outstanding Technical Achievement/Ancillary Equipment.



PHOTO: ALAN PERLMAN

Jonathan Porath accepts the TEC Award on behalf of Sound One for *Jazz: A Film By Ken Burns* in the Outstanding Creative Achievement/Television Sound Production category.

PHOTO: GEORGE KANATOUS



Chris Martirano accepts the TEC Award for Musical Instrument Technology for the Kurzweil PC2X.



PHOTO: ALAN PERLMAN

Solid State Logic's Colin Pringle (L) and Phil Wagner accept the Large Format Console Award for the SSL SL 9000 J Scoring System.

PHOTO: ALAN PERLMAN



Larry Carlton (L) and Les Paul (center) present the Les Paul Award to Steely Dan's Walter Becker and Donald Fagen. Henry Juskiewicz, Chairman and CEO of Gibson Musical Instruments, presented guitars to both inductees. Gibson is the official sponsor of the Les Paul Award.

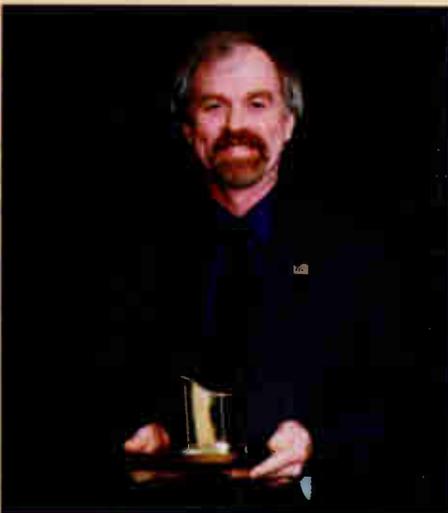


PHOTO: ALAN PERLMAN

JBL Professional's David Scheirman accepts the TEC Award in Sound Reinforcement Technology for the VerTec VT4889.

17TH ANNUAL

TEC Awards

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Presenters George Massenburg and EveAnna Manley show that technology can be a funny business.

PHOTO: GEORGE KANAIOUS

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Craig Chaquico

He Built His City on Smooth Grooves

Craig Chaquico is probably still best known for his two decades as lead guitarist of Jefferson Starship. Since the early '90s, however, he has successfully carved out a new career for himself: making CDs that meld new age with light jazz. The five albums he has recorded for the Higher Octave label have placed Chaquico at the forefront of the smooth jazz market.

Chaquico, who recently moved to Oregon with his family, has had project studios since his earliest years with the Starship. His current album is being tracked on a MOTU hard disk recording system. We spoke with Chaquico about his art and the techniques he's evolved for recording and mixing his work.

"My project studio started out as a 4-track back in the Starship days, around 1977," he says. "I started bringing the band little ideas on tape. The recording equipment was kind of like a tumor that began to grow off of my stereo! I'd record sound-on-sound on the 4-track, and then moved onto an 8-track, and eventually a Fostex B16 tape machine. Both *Acoustic Highway*, which went to Number One in the adult alternative category in 1993, and *Acoustic Planet*, the follow-up, which also reached Number One and was nominated for a Grammy, were recorded on the Fostex."

Because the Fostex was limited to 15 tracks (with an edge track devoted to SMPTE) and Chaquico, with his writing/producing partner Ozzie Ahlers, sequenced drums and bass, the guitarist was using lots of virtual tracks. "Performer was always a great sequencer," he notes. "I've used it on all my albums. Then, when Digital Performer was released, I went for it immediately.

"I have a simple setup—anyone could go down to their local music store and duplicate it. I use DP 2.7 to track. I also have a Carvin SL40 console that I love; it has some great op amps. However, I don't record through the board—I take my guitars straight into the computer, but I use the board for monitoring.

"Stereo delays, in particular, are critical to my sound," he adds. "I'll get some reverb, chorus and delays going through the console, but I don't print any of these effects. We save all that for the mix."

Tracking his guitar parts direct is crucial to Chaquico's work process. "I wanted to be able to record at home and not have to worry about the sound of a washing machine, or a truck rumbling down the street. Of course, we try to soundproof, but you're never going to get the kind of isolation that a great live room has in a project studio. When I had Washburn—and, later, Carvin—build my signature line of guitars, I spent a lot of time making sure that they



PHOTO: ED ACONA

sounded great going straight into a board or hard disk recorder. Monitoring through the console eliminates any latency problems, which is also a plus."

Chaquico definitely knows his way around a studio well enough to engineer, but for a number of years he's also enlisted the aid of a mixer, William Aura, himself a new age pioneer and a successful smooth jazz artist. "He's got great ears for EQ," Chaquico comments. "When I track my guitars, I'll use Digital Performer as a recorder and as an automated console. The software's internal mixing functions are outstanding. I'll also throw on some effects, knowing that nothing I'm doing is being printed."

Aura does his mixing at his own AuraVision Studios in Ojai, Calif. (near Santa Barbara). "William's got a 24-channel Trident board that we like to mix on," says Chaquico. "We execute some submixes in DP and then go to the Trident. We like a combination of analog effects that hang on the board, and digital effects within DP. I particularly like MOTU's compressor/limiter. Dave Roberts of MOTU's tech support team has turned us on to some very helpful shortcuts and gotten us out of some jams."

Chaquico's last CD, *Panorama*, was a greatest hits album that included several new cuts, and, yes, it also went to the top of the smooth jazz charts nationally. Bill Heller, a New York-based arranger, was brought on board to add loops, as well as percussion, horn and string parts. "Bill's a DP user as well," the guitarist says. "We sent him CDs of the rough mixes, and then he'd listen and add his parts. At this point, he'd send us MP3 files for us to check out. When we all approved, he'd send us CDs back with DP sequences and audio files." ■

DAVID KAHNE, M-POWERED.

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

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

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

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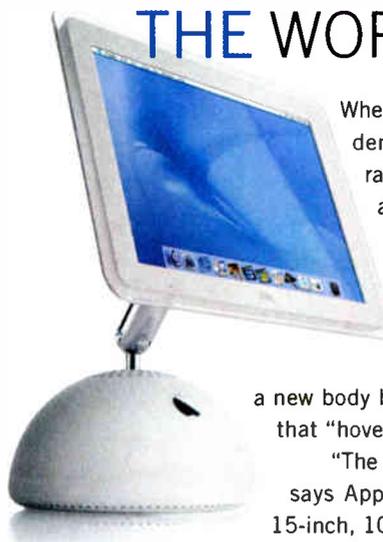
NEW WEB AUDIO GEAR

Napster Takes the Beta Route

Unable to keep a good thing down, Napster is back up and running—this time in beta form. The embattled peer-to-peer file-sharing music outfit has been back in court to discuss the finer points of the court-ordered restrictions. However, in an attempt to show the music industry that it will not go quietly into the night, 20,000 volunteers are beginning to access some 110,000 tracks available on the new Napster service. The catch: The available music is from indie labels because Napster has yet to strike deals with the Big 5. To make sure that things go swimmingly, Napster has chosen its security system and billing software package from Counterpoint Systems and Portal Software, respectively. Unlike other services that launched in late December, the beta version allows the downloaded music to be burned to CD or transferred to a portable player. And all this can be yours, too, for \$5 or \$10 a month for 50 downloads.



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THE WORLD IS FLAT

Whether you love it or hate it, you can't deny that Apple's new iMac incorporates a revolutionary design. Unveiled at last month's Macworld Expo in San Francisco (where it quickly earned nicknames ranging from "The Lamp" to "iTit"), the new computer is packed with powerful digital media features, with a new body based around a flat-panel monitor that "hovers" over a dome base.

"The CRT display is now officially dead," says Apple CEO Steve Jobs of the iMac's 15-inch, 1024x768 LCD flat screen, designed to be twice as bright and three times as sharp as CRT displays, with zero flicker. The adjustable screen swivels on a sleek chrome neck above a super-compact (10.5-inch!), hemispherical base that houses the fastest Mac yet, with an 800MHz PowerPC G4 processor, Apple's SuperDrive for playing and burning CDs and DVDs, up to 1 gigabyte of RAM and up to a 60GB hard drive. Touted as a "digital media hub," it's also bundled with Apple's iMovie 2 video-editing software, iTunes 2 digital music-management software and iDVD 2, for burning custom DVDs. Two FireWire and five USB ports are built in. See the iMac in action at www.apple.com/imac.

Power to the Prince Fans

Prince and the New Power Generation are using the Web to make music more accessible to fans through the NPG Music Club (www.npgmusicclub.com). Since launching in February 2001, the monthly subscription-based online service has been offering members exclusive tracks and other fan club-style perks: free NPG songs, music videos, and the Make Your Own Mix "multimedia experience," which lets fans build their own mixes of NPG tracks. Prince recently offered club members the first listen of his latest album *The Rainbow Children*.



THE LATEST LIQUID

Hot news from Liquid Audio: Liquid Player Six software supports Microsoft's Windows XP and has a new interface with download manager. Users can stream, download, purchase and play back music, and rip and burn CDs from a single application. Support for MP3, Liquid, Windows Media, .WAV and audio CDs, along with a new built-in music Web page, gives users immediate access to a wide variety of music downloads. Free downloads are available at www.liquidaudio.com; an extended Liquid Player Plus Six (\$19.95) lets users burn CDs up to four times faster.

overheard

The Internet says to the industry that you folks are yesterday's news, you're following outdated models, your business strategies don't work anymore and your profit motive is showing rather vulgarly."

—Representative John Conyers Jr. (D) of Michigan, at the Future of Music Policy Summit 2002, held January 7-8, in Washington, D.C.

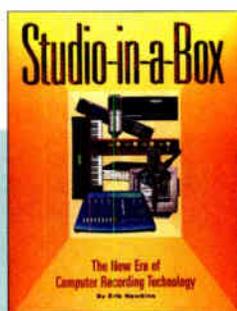
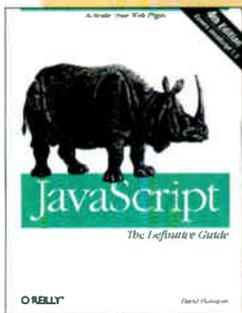
Read Code, Write Code, Use Code

Learning JavaScript is fast becoming a prerequisite to developing powerful Websites. And while there's plenty of cut-and-paste code and other resources available both on and offline, to really tap into the power of this scripting language, you just have to...well, learn it. Whatever your level of programming experience, a great resource is **JavaScript: The Definitive Guide** by David Flanagan (O'Reilly, 2001).

A reference to programmers since it was first published in 1996, this fourth edition has been expanded to cover JavaScript 1.5 and other updates, and focuses heavily on platform independence. The book lists for \$44.95; visit www.oreilly.com.

If you're ready for the virtual studio, check out **Studio-in-a-Box** from EM Books/ArtistPro (2001, \$34.95). Veteran producer and audio journalist Erik Hawkins tells you how to get your

desktop studio up and running, from choosing a computer and peripherals to optimizing and troubleshooting your system. The book provides a comprehensive—and frank—rundown of popular products on the market, from sequencers and plug-ins to audio and MIDI interfaces and controllers; including features, compatibility issues, and pros and cons.



WEB RADIO, NO COMPUTER

It's old news that Web radio lets you tune in to everything from London shows to soccer news from South America to your old college radio station. But now you can do it in style, with Philips' FW-i1000 Internet Radio Mini Shelf System. Using the free iM Tuning Service from iM Networks, the FW-i1000 lets listeners plug in directly to a broadband connection and tune into iM's "Best of Planet" Internet radio, broadband-optimized programming or any MP3 Internet audio stream. Radio stations can be sorted by genre, region or language; although the FW-i1000 doesn't require a computer, it can play custom MP3 playlists on locally networked PCs.

And it's all housed in a slick, brushed-metal component system that would look great in a living room. Street price is less than \$500; visit www.philips.com or www.imnetworks.com.

Soup Up Your Mac

Got iMac envy? Want your blue G3 or G4 to fit in with your funky studio motif? Or does your dull, gray living room need an accent? Check out Appleskinz, wildly colorful panels that attach to the outside of the side panels for a custom look. Dozens of "skins" are available, from flames and skulls to faux wood finishes, to "personal skins" that display your own photos. For even more customization, paint your own design on a clear skin—or have Appleskinz apply your logo. Check out www.appleskinz.com.



In Search of... The DAW

So you're looking to buy an audio workstation and you're ready to shop around. Where do you start? You might want to check out www.dawguide.com, the new online home of *The DAW Buyers Guide*. An independent online guide to digital audio workstations, disk-based multitracks and disk-based recorders, the guide lists product summaries for nearly 300 random-access recording and editing products designed for prosumer/professional audio applications. Users can search by criteria such as primary application, system type, host platform, sample rate and cost range. For first-timers, a glossary of audio terms helps demystify features. The guide is compiled by Sypha, UK-based audio consultants and researchers. Other Sypha guides include *The NLE Buyers Guide*, *The Internet for Broadcasters*, *Tapeless Technology in Radio Applications—The User's Point of View* and *The Non-linear Video Buyers Guide*.

The Internet Media



BY GARY S. HALL

THREE YEARS AGO, multimedia on the Web was on a roll. The widespread acceptance of MP3s, combined with faster Internet connections, created an explosion of music and sound. A multiplicity of entertainments could be streamed or downloaded, and fidelity was improving.

For those of us who produce audio for the Web, the technology is now reasonably mature, but the same is not true for those who want to integrate sound with picture. Access to "fat pipes" certainly increases the options for decent video, though with serious limitations in time and space. And the masses are still linked to the Web via dial-up connections, where video is stuck at a true postage-stamp size. About the most you can say is that there *is* a picture, and it does at times move, but most would dismiss such limited video as a curiosity.

Despite today's limitations, it's important that audio professionals know what choices are available for creating and delivering multimedia content on the Web. There are some cool new technologies out there, and ingenious ways of using what we already have.

QUALITY GOALS

Before getting down to the nitty-gritty of the options, let me state what I believe to be the minimum acceptable quality benchmark: no loss in audio quality, and video at a level close to what we've come to expect and enjoy in audio. Continued growth in audio features, especially as they relate to picture, is another desirable goal.

For audio, the minimum standard is equivalent to the quality offered by good perceptual-coding, lossy data compression. (Of course, linear PCM is welcome wherever we can get it.) What I'd really like to see on the video side is something comparable to DVD or a good VHS tape, with a full-size picture, at full frame rate, and generally free of contouring and gross compression artifacts. At the low end, there are good applications where quarter-screen video can be used.

As video quality grows, the allocation of bandwidth to support surround sound becomes a much smaller percentage of the total, so we can expect that multichannel audio will eventually become part of the online video experience.

THE GREAT BANDWIDTH DIVIDE

More than any other application, digital video brings out the differences between broadband and dial-up connections. On a cable modem, DSL or T1 connection, video streaming and downloading are still not completely fluid, but the download time and quality are more or less acceptable. On a 56Kbps or lower bit rate dial-up, the experience is un compelling, to say the least. Today, the reported combined share of cable modems and DSL in home applications is hovering around 6%, which means that 94% of

DELIVERING INTEGRATED AUDIO/VIDEO ON THE WEB

potential Internet video consumers are sucking on a mighty thin straw.

Of course, even those who do have faster home connections are not exactly swimming in bandwidth. Corporate and university users with T1 or better connections have the best access, and some attractive applications target these sectors specifically. For the home user, though, it's still a marginal proposition overall, and one that's

clearly split among haves and have-nots. Local and Wide Area Networks using Ethernet or other technology offer the best bandwidth, and these systems are found not only in corporate and academic settings, but also to an increasing degree in large condominium or other high-end residential developments. In these "Video-over-IP" configurations, a more-or-less vertical audience can be given access to very compelling applications for entertainment, training and information.

DIVX/MPEG-4 SP

In the past two years, a video-oriented subculture (not unlike the one that embraced early MP3) has sprung up around a compression standard commonly referred to as DivX. DivXNetworks, the parent company, claims more than 25 million free player downloads to date, and as was the case with MP3, the greatest activity is on college campuses and other places where young, active minds have time and access to generous bandwidth. Even so, at least one commercial site, DivX.com, is offering downloads of full-length feature films (at an average file size of 690 MB) for a fee.

DivX is based on the MPEG-4 video compression standard (the term DivX was adopted to provide a catchier handle for the community of users and to establish licensing separate from that of MPEG) and is actually identical to the lowest level of the MPEG-4 spec, referred to as Simple Profile, or MPEG-4 SP. The so-called Simple Profile defines the core of audio and video data compression for MPEG-4, taking advantage of technical developments beyond those in MPEG-1 or MPEG-2 to yield good quality at lower bit rates—dramatically lower in the case of video, somewhere between 0.5 and 1 Mbps. The picture quality can be compared to that of DVD, and download times are more or less reasonable, provided you have a fat pipe.

Taking it back a step, DivX/MPEG-4 SP compression is based on an earlier standard called H.263, which was developed for video conferencing. Faced with extreme bandwidth limitations, and user demand for full motion, the engineers who developed H.263 came up with technical innovations that proved to leverage compression substantially over prior techniques.

This ended up becoming the basis for video compression as defined by the MPEG-4 specification, with MPEG-2 AAC for audio. AAC (Advanced Audio Coding) improves on MP3, though not to the same degree that H.263 improves on MPEG-2 on the video side. Formal blind listening tests have shown that AAC at 128 kbps delivers fidelity equivalent to that of MP3 at 192 kbps. (The full report on the ISO-sponsored testing effort can be found at www.tnt.uni-hannover.de/project/mpeg/audio/public/w2006.pdf.)

As occurred in the case of MP3 audio, the notions of

—CONTINUED ON PAGE 72

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MPEG-4 SP compression were picked up in the open-source developer community, resulting in the implementation of encoder-decoders that are free to everyone. For DivX, the tools of choice today are the DivX codec 4.11 for encoding, with a player application called The Playa.

Quite a lot of attention in MPEG-4 has gone into defining scalable stream delivery, capable of simultaneously addressing users with a wide range of viewing devices and bandwidth situations, including mobile users whose connection rates tend to swing wildly as they travel.

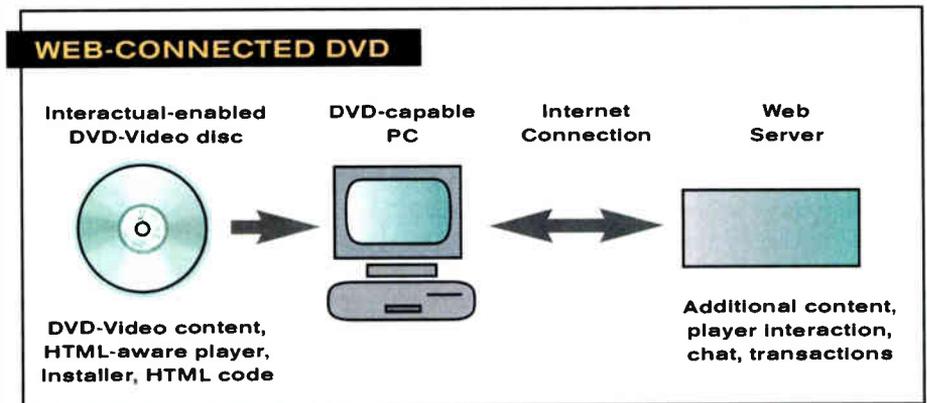
When the full provisions of the MPEG-4 specification are implemented, it promises to be the key technology of multimedia for the Internet.

HOW GOOD IS DIVX?

In visiting DivX sites on the Web, you'll frequently find the claim that DivX-encoded picture is of the same qual-

ity as DVD. This is a statement that I can't fully endorse, having now looked at a fair number of clips. To say that DivX, as commonly practiced, is "DVD quality" is a bit like saying that MP3 sounds as good as CD.

There are issues with equivalency of playback platforms as well. All of the DivX decoders I've seen are software-based, which means that they are dependent on CPU performance and usually require a VGA display.



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Because MPEG-4 video decoding is more efficient than MPEG-2, a given CPU configuration may well look better playing DivX than it does playing DVD.

Though DivX/MPEG-4 beats the pants off anything

else available for high-quality video at manageable bit rates, it still is fat enough to present issues in streaming and downloading. The broadband/56k divide is much in effect here. If you're in the 94% of the populace that

still dials in, then DivX is of marginal utility for you; a two-minute trailer can take an hour or more to download.

However, if you've got a lusty, fat pipe to work with, then there's a lot of enjoyment to be had from DivX downloads. I'm still not sold on downloading 700MB feature films, because I think the DVD is probably a better deal. But there are truly nifty independent short films available that are well worth looking at.

DVD DELIVERY MODES AND BANDWIDTH

56 Kbps dial-up modem	56 Kbps
Digital (ISDN) phone line	128 Kbps
T1 dedicated connection	1,500 Kbps
Asymmetric Digital Subscriber Line (ADSL)	1,500 Kbps (receive)
Cable modem	10,000 Kbps (max. receive, under ideal conditions)
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"I've been using the System 6000 as a four engine device connected to my console at BackStage studio in Nashville. Configuring the unit for each application could not be easier allowing me to use it for stereo as well as 5.1 mixes.

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— Bob's Studio

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PUTTING DIVX TO WORK

If you're interested in using DivX for video downloads or other applications, it couldn't be easier to get started. (Assuming, of course, that you've got the video!) Just download the encoder and player applications from www.divx.com and go to work. The current version runs on Windows and on Linux, with Mac support promised in the near future.

The encoder application accepts input in .AVI format. For best results, be sure that your input files are to full video specification. If you're working with less than full-resolution source video, then you may not be getting the most out of the medium.

For my money, DivX/MPEG-4 is at its best for short-form material. Luckily for us music types, that description fits music videos perfectly. At 15 to 30 MB for a two- to three-minute video, you may even get some dial-up traffic. But be warned: DivX is not going to play well on less than a PIII at 250 MHz, and I'd consider even that marginal.

WHAT ABOUT QUICKTIME?

Apple's QuickTime technology, of course, is the daddy of all computer video formats, with a full 10 years in the market. When absolutely nothing else existed, CD-ROMs

were full of games and movies in QuickTime format, and QuickTime downloads were the first to show up on the Web. So where is Apple's now-venerable technology in the current arms race of Internet video?

QuickTime has undeniably lost a lot of market share (MediaMetrix reports just 4% market penetration) and momentum to the likes of RealMedia, Windows Media Player, and MPEG/DivX formats. That said, however, our old friend is far from dead. The MPEG-4 standard has adopted QuickTime's file format, because it offers the flexibility needed for the ambitious scalability that is dear to the hearts of those driving the standards process. The media codecs, though, are coming from elsewhere, as described previously.

Apple also seems to have woken up to the need to bolster one of its flagship technologies, by upgrading video and audio quality, and by launching a campaign to re-establish QuickTime's presence in recognized outlets. One major coup recently was the adoption of QuickTime as the format for all of the *Star Wars: Episode II* trailers on the Web.

STREAMING STANDARDS: WINDOWS MEDIA PLAYER AND REALNETWORKS

When someone mentions video on the Internet, the first

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thing that comes to mind are streaming video, *a la* RealNetworks and Windows Media Player. The presence and mindshare of streaming sites are undeniable, but when it comes to integration of audio and video, I feel that it may be the least satisfactory of the alternatives available, for two reasons: (a) the video sucks because of bandwidth limitations, and (b) the audio sucks because video takes up the lion's share of available bit rate.

That said, the value of streaming video for promotion is undeniable. One of the best ways to get a potential customer to download a big video file, or order a Web-connected DVD, is to show a teaser in streaming format. For music sites, artist interviews make a sensible application of the medium, because the limitations of sound and picture are going to be less of a problem.

The Goliaths of streaming media, of course, are RealNetworks and Microsoft, and these two compete furiously. Pressured to start showing revenue, RealNetworks now charges a nominal sum for its latest player (RealOne), while Microsoft still offers free downloads of Windows Media Player, currently at version 7.01.

The infrastructure for delivery of content in both streaming formats is extensive, both from the companies and from third parties. Details on the ins and outs of

encoding and delivery can be found on the Web at www.realnetworks.com and www.microsoft.com/windows/windowsmedia/default.asp.

CONCLUSION

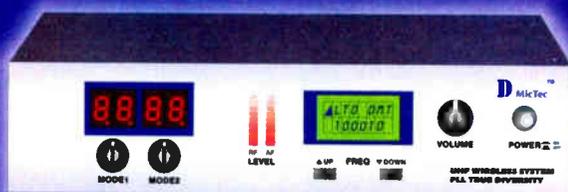
High-quality audio and video on the Internet are facing some challenges as connection bandwidth is at a plateau, but new technologies, along with clever application of both existing and emerging standards, are pointing the way to truly satisfactory combinations of high-impact sound and picture. In this article, I've tried to show you that if you want to deliver kick-ass sound and picture over the Internet, or to create compelling interactive experiences with theatrical-level media, realistic options do exist. Look at the available encoders, play with some sound locked to video. It takes work and creativity, but the possibilities are out there. ■

Former technical editor for *Mix's* sister publication *Electronic Musician* Gary S. Hall is pioneering 5.1 electronica, video and live performance, with collaborators in the international Chill Out scene centered in Bahia state, Brazil. Look forward to his forthcoming Web-connected title, *Ouvir Mais e Pedir Menos (Listen More and Ask Less)*.

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BMW

Films



Driving Through Cyberspace



IN THE PAST COUPLE OF YEARS, we've gone from surging dotcoms to disappearing dotbombs, and there has never been more uncertainty and confusion about the commercial potential of the Internet. Do banner ads work? What is the true value of a hit on a Website vs. more traditional avenues of marketing and promotion? These questions are being asked in latte-fueled meetings every day, as executives seek the mystical and elusive "bang for the buck" on the Internet. Can we even still believe in the Internet, after it's given so many of us red ink, pink slips and heartburn?

BMW thinks so. They know that you want a robin's-egg blue Z-3 to tool around in on weekends, and a steel gray 750iL to shuttle the kids to school. Or maybe I'm just projecting. Anyway, BMW knows that they make cool cars that just about everyone covets, and so they decided on a unique way to market their automobiles, to make them stand out (even more) from the pack. They spent untold millions of dollars to hire five top film directors to make short movies, each involving BMW cars in its story, for the Web (www.bmwfilms.com). The result was some excellent filmmaking and what would have to be deemed a highly successful campaign: Through last summer, the films had drawn more than 3 million viewers—admittedly, not much compared to the audience of a 30-second spot on the Super Bowl, but the hipness quotient of the gesture and the quality of the "commercials" are so high, it's hard to put a price on this innovative approach to "branding."

The series, as a whole, is known as "The Hire," and what each film has in common, aside from gleaming BMWs careening through city streets, purring out on the open road and screeching through claustrophobic parking garages, is actor Clive Owen, who has a certain Bond-ian touch with these fine driving machines. Otherwise, the stories and film styles are quite different: John Frankenheimer (whose *Ronin* has some of the best chase scenes ever filmed) tells a story about a man who may be smuggling jewels; *Crouching Tiger's* Ang Lee offers a tale involv-

ing a young monk; Guy Ritchie (*Snatch*) provides a hilarious slice of life centered around a bitchy, self-absorbed star, played to perfection by the director's wife, Madonna; Wong Kar-Wai serves up a dreamy story about romantic distrust; and Alejandro Gonzalez Inarritu spins a story of intrigue involving a photojournalist in a corrupt Latin American country. Each film runs around six to seven

minutes, and can be viewed to maximum effect by download-

ing (free) the BMW Interactive Film Player from the BMW Films Website; it is also available in streaming formats, which give the full audio, but only a distillation of stills from the films. (It's definitely worth the download time to watch the BMW Player versions.)

The directors and their crews treated each movie like a mini-feature, though, naturally, they had neither the time nor the financial resources to be overly perfectionist. From a sonic perspective, it was challenging work for the sound designers, the production sound crew and the mixers to capture and convey the sounds of the cars (our friendly sponsor) and all the action that each story demanded. For Frankenheimer's *Ambush*, for example, the sound design and effects were by one of the best in the business, Ren Klyce (*Seven*, *Fight Club*), and it was mixed at a top post house, POP Sound in Los Angeles, by a leading commercial engineer/mixer, Loren Silber. (Additionally, Silber mixed the Wong Kar-Wai and Guy Ritchie films, and supervised the transfer of all five films to DVD last fall.)

Klyce handled his end as he would have a feature, recording the sounds he needed on DAT. "I already had some of what I

BY BLAIR JACKSON

needed from having worked on a film called *The Game*, which had a 740 and a 540 BMW," he says. "But, in general, we spent a lot of time getting the engine sounds from every possible angle. And we'd do dual-miking—one on the engine and one on the exhaust; then we'd filter the two together so you can cut interior or exterior and you wouldn't lose where you were—you'd still have the thread of the momentum."

"Ren brought in all his sounds on several DA-88s,"





adds Silber, who works in an AMS Neve AudioFile/Logic 2 console environment. "He comped a lot of tracks to reduce the number, and then he brought me the comps [32 tracks' worth], and we worked from there."

For the Frankenheimer film, the director wanted "a lot of quick cuts, a lot of action, a lot of screeches and explosions and engines and guns, so the mix challenge was how to hear all the effects through each other," Silber says. "The way Ren likes to work is, for each little scene there's something that dominates the scene, and then it usually switches to something else in the next scene. So if it's a close-up of a gun, that's going to dominate. If the next shot is a close-up of the wheels, the engine is going to dominate, but you can't lose the gun, so it's a tricky balancing act between everything. And to do it all so you can hear it all clearly, and it all sounds powerful and strong, is hard. That's a very different mix than the Wong Kar-Wai film, which was all music and hardly any dialog. That one, he was in love with the song and it was all about the music."

Asked about the peculiarities of mixing a film specifically for the Internet, where most people will be hearing it through small speakers, or even in mono, Silber says, "We weren't sure quite what to do with the Web, because I mix commercials, where you have a legal peak limit. If you're working on movies, you can go all the way to digital 0 in spots; you can't do that with a commercial. It's got to be all compressed. We knew people would be watching on a computer. We also knew they'd probably make a DVD of it. I'm not aware of any peak limits for the Internet. So, basically, we used a wider dynamic range than we would for broadcast, and we made sure it sounded good on a very small speaker. You miss a lot of bass. On stereo speakers, obviously the peaks will be a lot stronger.

"It was Ren's idea that we should mix it like a film, but do some mastering on it to make sure it sounds okay on a small speaker," he continues. "So when we mixed it on the big speakers—Genelec 1031s with a subwoofer—we were listening [to it] pretty loud: When a gun went off, you jumped in your chair. But once we got the mix the way we wanted it, we put it on a small speaker and we ended up

compressing it a little bit and bringing up some of the lower stuff so you could hear it better. We used the compression on the Logic and we also used some outboard Dominators to get a little more peak limiting. We played with that on and off because the Dominators really clip off the peaks, which is good in some cases, but in the case of gunshots and explosions, it took too much of the edge off."

For Silber, having to mix with inferior speakers in mind wasn't too much of a stretch from his work in commercials. As he notes, "At agencies, things sometimes get approved through the oldest 3/4-inch machines and the worst TV imaginable," he laughs. But in this case, Klyce adds, "We mixed to a little 1-inch mono speaker and a 13-inch Sony monitor to make sure we were getting it right for the way many people would be experiencing it. It was tough, especially with the really transient sounds, like gunshots and glass shards, all those things, which have such incredible punch at high volume—you pump them up and they sound great. But here, in the design stage, we had to say, 'Okay, let's not get too excited and turn the volume way up because you can fool yourself.' But working this way makes you focus on the content a little more to get the impact you want, and that's a good thing."

What was the nature of the changes that listening on the little speaker demanded? "Usually, dialog had to come up, the effects came down and music was somewhere between," Silber says. "We didn't want to change the mix that much, so we ended up usually bringing up the whole dialog track 3 or 6 dB, or something in that range, and we put a compressor over the whole mix sometimes to limit some of the peaks. So you can turn up your computer without distorting your speakers."

Obviously, the 5.1 mixes for the DVD (which were included free with subscriber copies of *Vanity Fair* a few months ago) had a different set of sound requirements, and none of the limitations of the Web-friendly mixes. "Of course, you hear more," Silber says, "but I think the Web version came out well, too. It's still kind of a new area and people are feeling their way. I think everyone's sort of waiting for digital TV and what that's going to do for sound. That will really change everything."

It remains to be seen whether there will be another round of BMW Films, or if other companies will be inspired by this most creative use of the Internet, but there's no question that the bar has been raised in terms of audio production for the Web, and that more and more sound designers and engineers will find themselves wondering out loud, "How will this sound in cyberspace?" ■

Blair Jackson is *Mix*'s senior editor.



Medeski, Martin & Wood

DISTRIBUTING MUSIC ON AND OFFLINE

BY DAVID JOHN FARINELLA

MEDESKI, MARTIN & WOOD have stood out from the crowd since their debut release, *Notes From the Underground*, in 1992. The New York City-based jazz/funk jam band built a fervent fan base around their eclectic collection of album releases and a torrid touring cycle. Mainstream acceptance came with the 1998 Blue Note Records release *Combustication*. The band took its grassroots distribution online when they released the live album *Electric Tonic* exclusively through their Website, www.mmw.net; their 2000 Blue Note release *The Dropper* was released online as a digital download through Liquid Audio simultaneously with its physical release.

Billy Martin, the band's drummer, took a breather from a meeting where the trio was choosing the bonus cut for the Japanese release of *Uninvisible*, their newest album, due out in April, to talk about online music distribution.

When did the band first get involved in the Internet?

A fan of ours started creating a Website for us, I think that was seven years ago. We weren't thinking about the Internet very much back then. As our whole operation as a business got together, our manager [Liz Penta] got us into thinking about designing a Website that was official [www.mmw.net].

You guys have also released a couple of albums via the Internet.

That was exciting. I'm into that kind of special offer for the fans and exclusivity in the way of not relying on some crazy marketing, distribution situation. We really wanted to try it, and I think this *Electric Tonic* thing was really an exciting project, and it's working out.

Was it a little odd to finally get on the Internet and realize how many people were out there checking out the band?

It's unusual to look through a porthole and see your fans in a different dimension. There's nothing odd about it, it's great. We're able to tap into a forum, another dimension, and communicate.

As a musician, were you concerned about fidelity online?

Yeah, I don't think it's fair to sell someone something that's below the standard of what we released. If I don't hear the difference with my own ears—and I think I have good ears—then I'm cool with it. There are people who argue about how it's processed and compressed and all that. I've taken stuff off of EMusic or Napster and figured out how I could burn a CD. That was the way I could tell.

Did you try out any other sort of players and encoders?

A friend of mine is associated with [Liquid Audio], and that's how it all started. I ended up liking the sound quality, but I'm not into all these different players or different companies that are trying to make it this or that. I

really think there should be just one system. You can make it look like a different player, but it should be similar technology. I think people who're trying to create their own separate player are just trying to make bucks.

So, are you pro-Napster?

Personally, I feel like it's a good thing if you could get a sample of something. But if you end up downloading the whole record, I don't think it's fair. Ultimately, for me, what I like about it is listening to music I've never heard of before and get a vibe on a composer or a band. I think if you really want something, you should buy it. What I'm not into is being able to download something that is of perfect quality if it discourages you from contributing to the artist's well-being. I don't think that's fair; there should be some kind of royalty. I'm okay with people sharing music now and then on a casual level, it's cool. So, I'm not sure when it comes down to it. Get back to me in a year, and I think it's going to be interesting. ■

David John Farinella is a freelance writer in the San Francisco Bay Area.



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tralized server, and changes are automatically updated and distributed to remote studio participants. Users can also transfer playlists, control settings, automation and plug-in information; other features include file compression, video posting and receiving, and an instant messaging chat window. A Mixdown function allows finished audio to be delivered for client review and approval. DigiStudio accounts start at \$10; for more information, visit www.digipronet.com/digistudio.

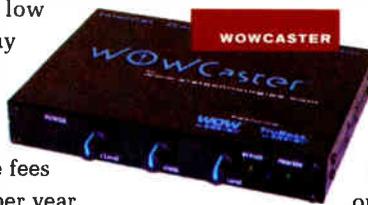
Sonic Solutions eDVD

Sonic Solutions (www.sonic.com) has enhanced its eDVD authoring system, which now includes InterActual Technologies' new Player 2.0 and engine technologies. Sonic eDVD lets authors create Web-connected DVD content without having to code in HTML or Java; by attaching a URL to a DVD menu button or within motion video, eDVD authors can enable Web-connected viewers to easily jump to a site.

Sonic's DVD authoring applications automatically convert URLs and other Web events into XML code, which is compiled by the integrated InterActual DVD engine into the runtime software required for PC platforms. This runtime player links to the computer's DVD-Video player and presents the end-user with a new interface that combines DVD-Video, Web browsing and support for Macromedia Flash playback. The eDVD player application will be included as an output option in Sonic's professional DVD authoring applications.

SRS WOWCaster

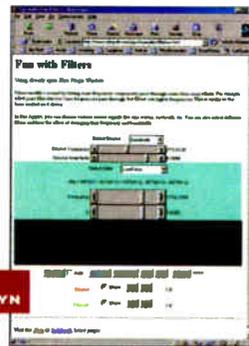
WOWCaster from SRS Labs (www.srstechologies.com) is a preprocessor for Internet radio that uses proprietary signal processing to enhance audio quality, enabling broadcasters to stream higher fidelity at lower bit rates. The hardware processes stereo files prior to compression, expanding stereo width and adding psychoacoustic bass to compensate for both the loss of fidelity through compression and the low quality of many multimedia speaker systems. WOWCaster license fees start at \$695 per year.



SoftSynth.com JSyn

JSyn from SoftSynth.com (www.softsynth.com) is an audio synthesis API for Java and is designed to allow users to develop interactive computer music pieces in Java. Based on unit generators that can be connected to form complex sounds, JSyn offers real-time, 16-bit/44.1kHz audio synthesis. The library of unit generators includes oscillators, filters, envelopes, noise

generators and effects, and additional features include audio input support, time-stamping for event control, support for multi-channel devices, sample and envelope data queuing, and Wire, a graphical patch editor. JSyn supports Windows, Macintosh and Linux, and can be used from a



Java application or an applet with Netscape Communicator, Internet Explorer or iCab browser plug-ins. The JSyn plug-in is free; developers can use the free JSyn SDK for non-commercial purposes, and commercial developers can license JSyn for redistribution with their products, or for use on commercial Websites.

Acceloop Multimedia Booster

Acceloop (www.acceloop.com) has introduced Acceloop Multimedia Booster software for enhancing and accelerating the delivery of multimedia formats by up to 200% over dial-up lines, and up to 700% over broadband networks. An optional peer-to-peer technology optimizes available unused bandwidth on other users' systems in real time, downloading portions of the content from each other. Multimedia Booster also includes an auto-recovery mechanism that allows users to recover from multimedia delivery failures, even after disconnection periods. Once installed on a Web server, Multimedia Booster runs automatically. Prices start at \$2,700 for a single CPU Web server.

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PHOTOS DAVID GOGGIN



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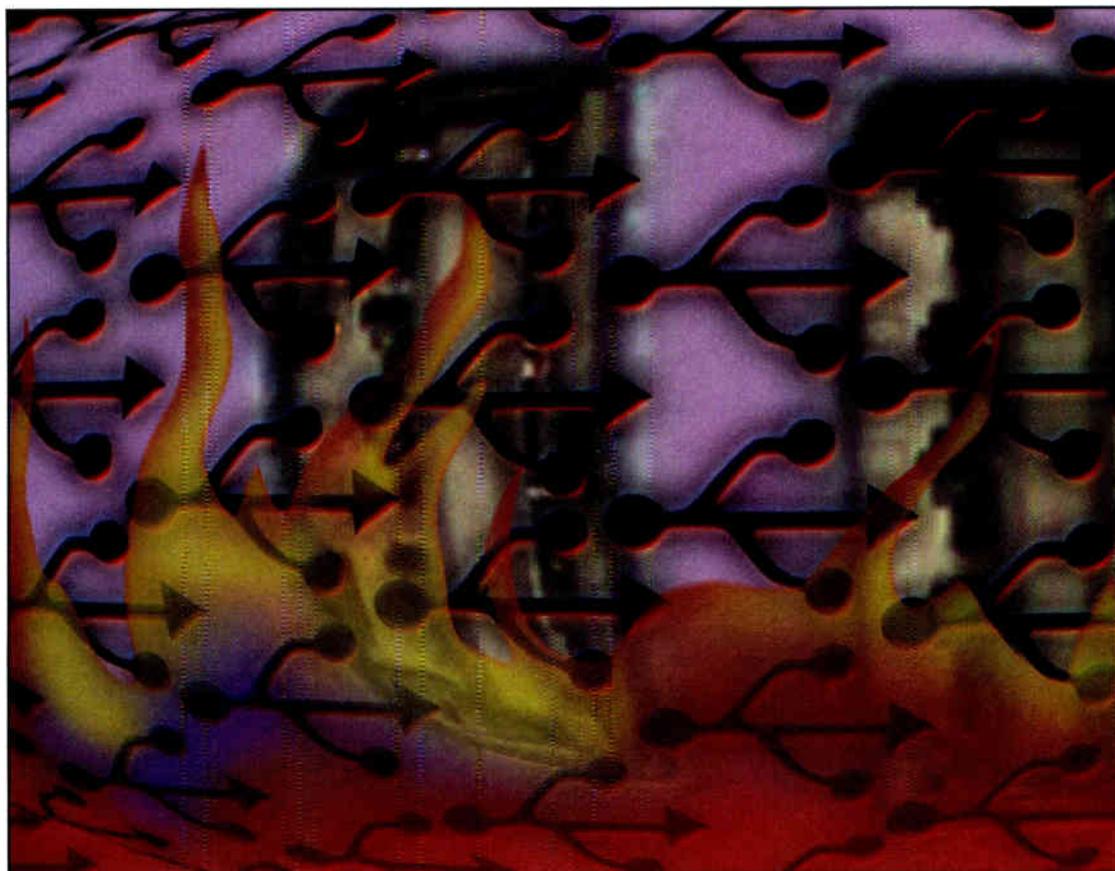


ILLUSTRATION: MAE JAROBIS

This month, "Bitstream" celebrates its 2nd anniversary...Thank you, thank you very much...and, to placate you loyal readers, I'm revisiting a subject covered back in October and November of 2000: If any of you have purchased a computer of any kind lately, it has surely come equipped with one or both of the now commonplace local buses, USB and 1394. These standards are evolving as I predicted, and will subtly but profoundly impact audio professionals in the next 12 to 18 months.

If that computer came in a bovine box, you've probably come to realize that consumer-oriented computers of the beige variety typically have all the legacy spigots but only an Unused Serial Bus connection to herald that they were designed sometime after the fall of Rome. More pro-oriented models configured for A/V production have a beefier I/O solution, the first generation of 1394, also known as FireWire, also known as i.Link™, also known as

mLan™, also known as "that bitsy connector on my DV cam..."

WHY FIREWIRE?

IEEE 1394 is a peer-to-peer protocol that runs over a variety of PHY or physical layer choices, including shielded or unshielded twisted pair for short runs and glass or plastic fiber for long hauls. It boasts great data security features and, helping to keep costs down, is widely used in the consumer space. In short: smarter, faster, more versatile and, yes, more attractive than USB.

The most visible manifestation of FireWire to date is the very successful incorporation of the technology in consumer electronics (CE), where it's seeing competition from the Digital Video Interface or DVI standard. Cahners In-Stat Group claims that, in 2000, over 35 million PC-based and CE products were equipped with 1394, and the high-tech market research firm projects that the number will exceed 200

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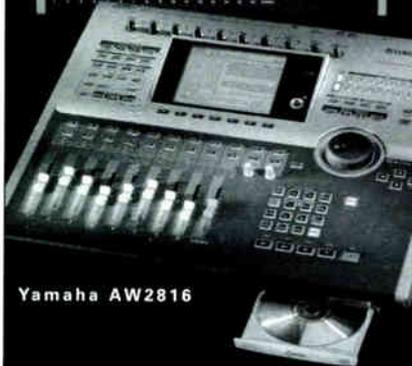
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million by 2005. By the way, 1394-equipped consumer product shipments were expected to overtake PC devices last year. This augers well for continued price erosion for 1394 hard- and firmware, making it increasingly attractive for inclusion by vendors.

The 1394b, or "beta" spec, boosts FireWire's data rate from 400 to 1,600 Mb/second, with future improvements to 3,200 Mb/ps. Though that handily eclipses the more pedestrian USB 2.0, it's unfortunate that beta hardware is as rare as a bivalve Pokémon. By the way, the revised, second-generation spec has a "b" appended to its name and is referred to as "beta"—as in second in the line, not beta as in still-in-development.

As the supply chain slowly fills in 2002 with next-gen FireWire, wired and wireless networking products like Unibrain's cross-platform FireNet will begin to show off that 800Mb/ps speed advantage. For A/V distribution, the beta spec defines data transmission at 400 Mb/ps over POF (Plastic Optical Fiber), or at 100 Mb/ps over Cat5 UTP up to 100 meters. Omneon Systems has long been an advocate of networking for professionals over 1394, because it can isochronously carry audio and video while simultaneously moving asynchronous data. Home-networking products based on 1394 will join the fray and start appearing at local discount stores. These commodity wares will fit comfortably into any wallet-bearing life form's arsenal of tech solutions. FireWire-attached storage is the most used version of 1394 in our audio world at present. The aforementioned Unibrain joins Archos, CD Cyclone, EZQuest, FireWire Direct, Glyph Technologies, LaCie, Micronet, Maxtor, QPS, PowerFile, Rorke, SmartDisk, Western Digital and others in offering disk and disk-based storage solutions. Western Digital, tapping into FireWire's innate intelligence, demo'd a novel stand-alone 1394 A/V drive that can simultaneously play and record in either asynchronous or isochronous mode. Focus Enhancements' FireStor is a smart, relatively inexpensive little solution to a bunch of video predicaments one often faces. Unibrain's FireNAS (I'm sensing a trend in these naming choices...), though not as capacious as Micronet's SANcube X-stream, does provide 1394 and 100/1000BaseT Ethernet connectivity. As for tape, DAT, ADR and, better still, VXA drives are all available in 1394-attached, external configurations.

Steering back 'round to consumer land for a moment, many of us who deal

with advanced distribution formats long for a clean, easy, digital way to ship audio out of SACD and DVD-A player mechanisms so we can use our own favorite brand of D/A conversion. A lack of standards in the CE arena has darkened this vision so far, though 1394 supports strong 5C encryption, and 1394 spigots, though not operational, began to appear in DVD-A transports this past year. A need for continued differentiation in the marketplace should hasten the appearance of 1394-equipped DVD-A boxes.

PRO AUDIO? STILL WAITING

Alas, FireWire for pro audio is still in its infancy and false starts abound. Crest Audio, in conjunction with the now-defunct Digital Harmony, hatched the pioneering FB-88, a "state-of-the-art 8x8 1394 audio interface and the first to bridge the popular ADAT optical interface to the 1394 bus." Great, but the FB-88 never made it to the market. The M-Audio division of Midiman also worked with Digital Harmony to create 1394 products, but nothing there escaped the lab either. The wire wonks at Monster Cable worked on a 1394 digital audio gateway but, when asked, disavowed any knowledge of its existence.

Still, some progress has been made... This time last year, Swissonic announced an mLAN interface option for the AD-8. mLAN is a proposed amendment to the 1394 spec that adds isochronous MIDI data to the protocol. Of course, Yamaha has its own batch of mLAN gear (including an interface for the 02R—check it out). Even better, the amphetamine-fueled elves at MOTU have gotten farther, producing the single-rackspace, cross-platform 828. This low-cost alternative to multichannel sound cards and built-in hardware competes with the plethora of USB offerings and has all the features an ADAT-abusing project studio would need. At press time, MOTU was getting ready to release another crowd pleaser, the 896. This 96kHz FireWire audio interface has eight channels of 24-bit analog I/O, eight channels of Lightpipe I/O, eight built-in mic pre's, AES/EBU digital I/O, wordclock and ADAT sync.

Metric Halo's bus-powered Mobile I/O is another solution to both the stationary and portable studio dilemma, adding some significant features to what's available from Midiman. Built like a tank, it promises sophisticated software control over power management, analog level control of input, output and

—CONTINUED ON PAGE 166

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World Radio History

Preview



TLA 8X2 TUBE MIXER

British tube specialist TL Audio (distributed by HHB, www.hhbusa.com) offers the M3 TubeTracker, a small-format, 8x2 tube mixer that's well-suited as a front end tube gain stage for digital recorders and DAWs. The M3 has eight discrete tube mic preamps, direct outputs, 4-band EQ with sweepable mids, PFL, two aux sends, stereo returns, and a flexible master section with a tube stage mix bus. An optional stereo digital output supports up to 24-bit/96kHz signals. Additional features include phantom power, illuminated VU meters, master controls for aux sends and returns, rackmount external power supply, Sovtek ECC83/12AX7A tubes and a link port for connecting multiple M3s.

DENON DUAL-DRIVE CD PLAYER/RECORDER

Denon Electronics (www.denon.com) offers the DN-C550R dual-drive CD player/CD-R/CD-RW recorder, which can provide for CD and HDCD dubbing at either real-time or 2x speed. Drive 1 can be used as a dedicated playback deck for both pro and



consumer CDs, CD-Rs and CD-RWs, and also supports playback of HDCD-encoded discs. Drive 2 can function as either a CD-R/CD-RW recorder, or as a second playback drive. Both drives feature digital and analog outputs with 24-bit D/A converters, both drives are PC/data disc compatible, and the analog and digital inputs to Drive 2 are SCMS-defeatable. Analog recordings inputs (balanced XLR) feature 24-bit A/D converters.

Digital inputs are coaxial S/PDIF or optical, and the DN-C550R will convert 32kHz and 48kHz rates to 44.1 kHz. A text input feature allows disc and track names to be entered for display on the unit's front panel. The unit offers several different recording and playback modes, including an auto-start function. The 2U rackmount unit is priced at \$850.

M-AUDIO NEAR-FIELDS

M-Audio (www.midiman.com) offers the Studiophile SP-5B, a bi-amped, powered compact monitor. Its 5.25-inch polypropylene cone woofer has a damped rubber surround, and the ported cabinet outputs frequencies as low as 30 Hz. A swivel-mounted, 3/4-inch, silk-dome tweeter allows adjustment for various loudspeaker-mounting positions. Both drivers are mag-shielded. Two amplifiers deliver 40 watts to the bass/mid driver and 30 watts to the tweeter. Price: \$399/pair.

LEGACY AUDIO DIGITAL SPEAKERS

Legacy Audio (www.legacy-audio.com) has developed the Helix digital speaker system, an 8-driver, four-way studio monitor with a frequency response of 16-25k Hz (± 0.5 dB) and a max output of 155dB SPL (@ 2.5 kHz). Featuring a time-compensating digital crossover, Helix incorporates a single 1-inch, dual-diaphragm tweeter, six custom 6-inch midrange drivers, two 15-inch mid-woofers, a tri-coil 15-inch subwoofer and a 15-inch rear-firing "wave terminator" designed to cancel unwanted energy. Dimensions are 70.5x18.75x20 inches (HxWxD); weight is 280 pounds.

Z-TAP BATTERY SUPPLY

The Z-Tap rechargeable battery power system from Remote Audio (www.remoteaudio.com) can deliver 12 volts DC at up to 100 Amps/hour for DC-powered field recording equipment. The Nickel-Zinc Z-Tap outperforms a lead-acid battery by 3-



to-1, with significantly longer battery life under continuous high-current conditions. With an estimated life of 10 years or 500 recharge cycles, the Z-Tap is immune to the "memory" effect and can be "topped-off" or partially charged. The unit includes detachable AC cord for the built-in charger and six 4-pin XLR power outlets protected by auto-resetting breakers. Price: \$895; a carry case is optional.

EQUI=TECH RACK SYSTEM

Equi=Tech Corporation (www.equi-tech.com) has upgraded all of its pro rackmount, balanced AC power line products. Equi=Tech's 2002 models feature new transformers with a reduced line impedance to improve current delivery for brighter, cleaner audio. Other new features include a more accurate 3-digit LED voltmeter on the front panel, a fail-safe non-GFCI twist-lock, and blue LED indicator lights.



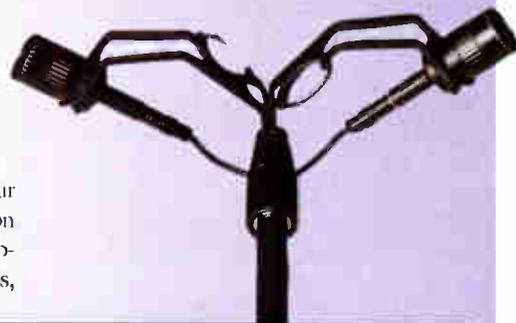
BEHRINGER HEADPHONE AMP

Behringer's (www.behringer.com) Powerplay Pro HA4600 is a one-rackspace unit with four independent stereo headphone amplifiers. Input/aux sections provide up to four stereo mixes. Each output section includes a 2-band EQ, stereo aux input, mono/stereo and left/right mute switches, balance and volume controls. A front panel direct in allows inserting an additional stereo signal source, and several headphone amps can be cascaded. LED output meters for each channel, and illuminated switches ease operation. I/O connections are servo-balanced, gold-plated XLR and 1/4-inch TRS. Price: \$125.

DPA XY/ORTF MIC MOUNT

DPA (www.dpamicrophones.com) offers the CXO4000 Compact XY and ORTF mic mount, designed specifically for mounting DPA Compact Cardioid microphones in either a coincident XY stereo configuration or a near-coincident ORTF configuration. The lightweight CXO4000 mounts on a single microphone stand and optional shock-mounts are available: the EXY4000 Extension for Compact Stereo Holders and the UA0897 Shock-Mount. The black anodized aluminum holder can hold four mics simultaneously for A/B comparison between XY and ORTF setups. ORTF applications include close miking pianos,

overheads for drum kits, horn or string sections, choirs, ambient surround recordings, and as a main or additional spotpair for acoustic ensembles. Distributed in the U.S. by TGI North America Inc., the XY/ORTF mount is priced at \$95.



HOT OFF THE SHELF



DH Labs celebrated its 10th anniversary by adding to its Silver Sonic line of audio/video cables. New products include Q-10 4-conductor speaker cable, Deluxe Toslink optical cable, Subsonic subwoofer cable and a wide range of matching connectors. Contact DH Labs at 561/745-6406 or click on www.silversonic.com...Pro Audio Design (PAD) offers the TDD Surround Panning Module for SSL 4000, 6000 and 8000 Series consoles. Developed jointly with the Desk

Doctor, the upgrade replaces the existing panpot and, by means of a modification to the console center section, allows surround panning from any module. Cost: approximately \$550/channel. Call 781/982-2600 or surf to www.proaudiodesign.com...Flashpoint Studios' royalty-free music CD Anomaly was created by composer David Helpling, and features 16 cuts in both full-length and one-minute "broadcast-length" versions. Genres include ethno pop, jazz, neo orchestral, inspired Celtic and ambient pulse, and the disc can be previewed or purchased for \$169 at www.flashpointstudios.com...HHB has launched a new range of double-coated metal-particle DTRS tapes. Available in three lengths, the HHB DA30DC, DA60DC and DA113DC are officially approved by Tascam for both conventional 16-bit and high-resolution DTRS recording applications. HHB is also now the U.S. distributor for the entire TL Audio Valve Clas-

sics range of high-end, tube-driven audio processors. Call 310/319-1111 or visit www.hhbusa.com...*Finale: An Easy Guide to Music Notation* from Berklee Press is the definitive independent guide to the popular music notation program. Written by music educator Thomas E. Rudolph and producer/engineer Vincent A. Leonard Jr., the book includes a Macintosh/Windows-compatible CD-ROM containing tutorials, professional templates and dynamics, and general MIDI libraries. The \$49.95 book may be ordered from their Website at www.berklee.com...The latest catalog from MilesTek features over 50 pages of test and interconnection products for audio, video and computer network applications. Over a dozen product categories include tools, cable management products, equipment racks and video mounts. Call 800/524-7444 or order online at www.milestek.com. ■

Digidesign Pro Tools|HD

96/192kHz Digital Audio Workstation

It's here. After years of speculation, Digidesign has unveiled Pro Tools|HD (High-Definition), its next-generation flagship. The announcement was hardly shocking, given the number of competing systems on the 24-bit/96kHz market. But the real surprise was Pro Tools|HD leapfrogging most of the industry, offering a 192kHz system with greater resolution and increased flexibility, but priced essentially the same as the existing PT|24 MIX 888|24 platform.

Although recent Pro Tools enhancements (V. 5.0, V. 5.1) were software-oriented (adding MIDI sequencing and surround mixing), the focus is now on hardware. The downside? It's gonna cost you. If you're buying a PT rig for the first time (or adding another), the news is good—you'll get a lot more DAW for your money with PT|HD's better routing and I/Os, higher track counts, more DSP and vastly improved audio.

Besides making the hyperspace leap to 192k, PT|HD incorporates improved TDM II chips (providing double the time slots of previous systems, with dynamic, bidirectional use of the slots) and slicker interfacing between the I/Os and cards, so a simple upgrade from an existing PT system is impossible. Certainly, Digidesign wants to keep its customer base happy, so to soften the impact, the company offers trade-up discounts on a new PT|HD system in exchange for users' old hardware. Also, Legacy ports on the new converters allow connecting previous-generation hardware—i.e., 888|24 I/O, 882|20 I/O, 1622 I/O or 24-bit ADAT Bridge I/O—providing more physical signal pathways when working at 48 kHz or lower sessions, using gear you already own. Of course, taking full advantage of PT|HD's high-res audio demands 96 or 192kHz converters.

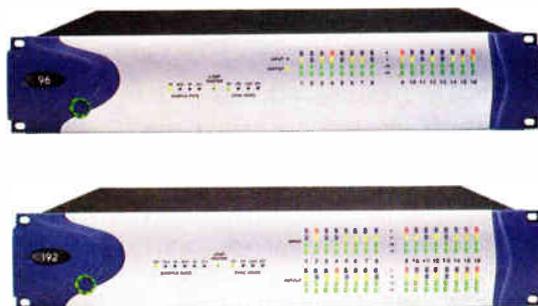
Pro Tools|HD requires V. 5.3 software (included with the system), which, other than accommodating the new high-performance hardware, functions almost the same as the V. 5.1x software you're used to. Also, PT|HD V. 5.3 offers full session compatibility with 48kHz

systems running on V. 5.1. And, it's not Mac OS X compatible—yet. Digidesign wisely took this change in the Pro Tools platform one step at a time, so stick to System 9 for the time being and expect an OS X assault sometime down the road.

The big news is the hardware. Based around an HD Core PCI card, the basic PT|HD system comes in three flavors—all are expandable later with more DSP cards and numerous converter/interfacing options. The \$7,995 Pro Tools|HD 1 has one HD Core card (with support for up to 32 I/O channels of audio I/O and 96 simultaneous audio tracks) and one or more new HD interfaces. Pro Tools|HD 2 (\$9,995) combines an HD Process card (\$3,995 each when sold separately) with the HD Core card—double the mixing and processing power of the HD 1 system (up to 64 channels of I/O and 128 simultaneous tracks). The top-of-the-line Pro Tools|HD 3 system (\$11,995) packs an HD Core and two HD Process cards for up to 96 channels of I/O and 128 simultaneous tracks. Note that the maximum track numbers quoted here apply to 44.1/48kHz work; the number halves at 96 kHz.

Each system includes a promo HD-pack suite of free plug-ins, and speaking of plug-ins, all of Digidesign's plug-ins have been updated for PT|HD, along with all releases from Waves, Wave Mechanics, McDSP and Bomb Factory. Selected releases from Aphex, Focusrite, Access, Line 6 and Drawmer will be HD-ready by presstime, with more slated for future release.

Pick a basic system and the fun heats up. Priced the same as its predecessor 888|24, the \$3,995 192 I/O offers 24-bit/192kHz resolution via eight onboard A/D and D/A converters, up to 50 analog and digital ins and outs, real-time SRC on any digital inputs and support for up to 16 simultaneous I/O channels. The 192 I/O adds nice touches such as LED meters for 16 I/Os, +4 and -10dB inputs (on two D-25 subs); stereo AES and



S/PDIF I/O, a soft-clip limiter (for overload protection or tape saturation effects), Lightpipe I/O (no ADAT Bridge required!), multichannel AES I/O, TDIF I/O and the Legacy connector for earlier Pro Tools interfaces. An extra bay houses an optional card for any additional (analog or digital) I/O.

The 96kHz 96 I/O interface outperforms the earlier 888|24 at half the price (\$1,995). Supporting 16 I/Os, it includes eight analog I/Os on 1/4-inch TRS jacks, ADAT Lightpipe I/O, stereo AES and S/PDIF, and a Legacy port. Also new is the \$2,095 SYNC I/O audio/video sync box that features timecode window burn, low-jitter clocking, pull-up/down for film/video, machine control pass-thru to allow 9-pin master or slave operation, and support of MTC, video, blackburst, bi-phase, LTC and VITC—at any standard timecode rate.

Overall, Pro Tools|HD rocks. It sounds great. Digi went the extra mile in pumping performance specs, with the 192 I/O boasting 118dB dynamic range and -109dB THD on the ADCs, low-jitter clocking and fully dual-differential internal signal path (with discrete buffer amps)—tough to match on a feature-laden, multichannel converter in this price range. The system price is right, and there's more to come, with PRE, a high-res, remote-controllable, 8-channel mic preamp (\$2,495), and MIDI I/O, a \$595 USB-powered interface with 10 I/O ports.

Digidesign, 2001 Junipero Serra Blvd., Suite 200, Daly City, CA 94014; 650/731-6300; www.digidesign.com. ■



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Sony DMX-R100 Version 2.0

Digital Console Software Upgrade

In just two years, the DMX-R100 has become Sony's most successful console ever. With more than 1,200 units in use worldwide, the mixer has far outstripped the company's sales projections, while garnering legions of satisfied users and a coveted TEC Award along the way. Whereas most analog consoles remain essentially unchanged throughout their working lives, the DMX-R100 is software-based. The latest Version 2.0 software update adds a few bug fixes, but, more important, includes a plethora of operational tweaks and a host of powerful new features.

DMX-R100 BASICS

Adapted from Sony's flagship OXF-R3 Oxford console, the DMX-R100 is a 24-bit, 48-channel (or 24 channels at 96 kHz) digital mixer with a base price of \$20,000. The DMX-R100 features snapshot recall or SMPTE-driven dynamic automation of all console parameters, including moving faders with 1,024-step resolution. The DMX-R100 also offers 44.1/48/88.2/96kHz support, programmable 4-band parametric EQs, HP/LP filters and comprehensive dynamics (compressor/ducking, expander/gate).

The DMX-R100 is built for speed with an intuitive touchscreen providing access to all menus. Each of the 24 channel strips (which are arranged in two switchable banks) has touch-sensitive faders with a Write button, Solo switch and a Cut feature (automated post-fader muting). The pan control displays status via a ring of 15 positional LEDs. An Access button activates the parameter setting and assignment panels in the central master section, allowing for immediate access to any channel parameter, such as EQ/filters, bus assigns, phase reverse, delay, gain trim, dynamics and any of the eight (pre/post-fader switchable) aux sends on each channel. The monitoring section is comprehensive, with talkback mic, tone

oscillator, and selection of six sources in the control room and sends for studio monitoring.

Sony makes the reasonable assumption that DMX-R100 users already have outboard processing gear available, so no onboard effects are provided (other than the built-in dynamics and EQ packages). The mixer includes eight effects return channels, bringing the total number of console inputs to 56 when in Remix mode. Speaking of inputs, the DMX-R100 has 24 analog inputs as standard, the first 12 of which are line/mic switchable (with phantom power) and analog insert points before the 24-bit A/D converter sections. Four expansion slots on the rear panel accept optional 8-channel I/O cards, for handling additional analog (line in/out) or

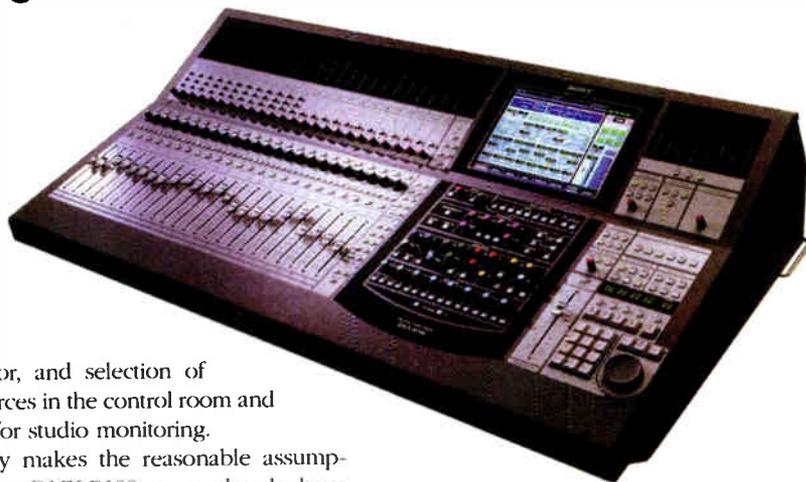
dynamics or EQ curves; it also provides touchscreen control for 5.1 surround panning functions.

A rear panel, 15-pin, D-sub port connects an external monitor to duplicate the console display, and a PS/2-type DIN port provides for an optional mouse and keyboard for quick data entry. Regarding surround, the DMX-R100 includes full surround monitoring control, with six discrete monitor outputs on ¼-inch TRS jacks for listening to the L/C/R/LS/RS and sub channels.

Like the Oxford, the DMX-R100 offers programmable matrixing via a set of simple menus that handle all program, aux, monitor and input/output routings for fast setups—all under touchscreen control.

With its compact 45x27-inch footprint and numerous sync features, the DMX-R100 is equally suitable in post or traditional studio environments. A "select machine" panel determines which of six connected transports is controlled by the tape recorder-style transport keys; a large jog/shuttle wheel doubles on transport control

and data entry functions. Automation data can be stored/backed up onto the internal 3.5-inch floppy drive, and automation moves can be defined as SMPTE frames or MTC beats/bars; snapshots can be triggered as SMPTE events. Of course,



The Input/Pan/Assign screen offers fast access to essential functions.

digital signals ain't AES/EBU, ADAT or TDIF formats.

The centerpiece of the console is the high-resolution, color SVGA 600x800-pixel touchscreen, which displays parameter and operational settings, as well as dy-



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wordclock I/O (with 75Ω termination switch) and video sync (NTSC or PAL) are standard, along with 9-pin control.

ENTER V. 2!

The Version 2.0 software upgrade is a two-step process. The user first installs a new QNX operating system that supports both V. 1 and V. 2 software. Once this is completed, the V. 2 software can be loaded. There are a few caveats here. Any mix data stored in the DMX-R100's flash memory should be backed up before upgrading, as it will be lost during the installation. Also, due to DSP reallocation in

V. 2 software, the new software is not backward-compatible with mixes stored in earlier versions. Once you've updated to Version 2, accessing data from mixes archived in a V. 1.1x title requires reinstalling the original V. 1 software. And, of course, you then have to reinstall Version 2 software in order to return to work on current projects.

The focus on the new software is on functionality, rather than new sounds, EQs or DSP, so the console's "sound" is unchanged. Essentially, the V. 2 software speeds the workflow with some logical operational updates, enhances the sys-

tem's already extensive automation capabilities, and also enables 5.1 mixing at double sampling rates (88.2 or 96 kHz). Other enhancements include improved Trim and Audition modes; EQ and dynamics library functions; an access-follow-solo feature; a Dither mode for the program output; and DOS-compatible (finally!) floppy storage. The latter is especially useful, because it now allows mix data stored on the DMX-R100's internal floppy drive to be easily backed up or archived using any PC. Another small but appreciated tweak is V. 2's ability to add channel names (up to seven characters) in the Channel GUI. Touch the name and an onscreen keyboard pops up for quick naming.

Previously unavailable in V. 1, the new software adds full surround 5.1 panning at high sampling rates. The double-sampling work in Surround mode is made possible by reallocating the stereo bus and the four 96kHz multitrack buses (normally eight buses at 48 kHz) to create a full five buses (plus sub) with on-screen surround panning, as well as full 5.1 control room program monitoring and switching to an external 5.1 playback source. One slick touch is the addition of a jog wheel control of the subwoofer level in conjunction with the 5.1 panning screen. This puts everything you need right at your fingertips—it's fast and easy.

A Channel Link function now allows linked control of numerous parameters (trim, EQ, delay, dynamics, mute, channel or multitrack fader, solo, etc.). Adjacent channels can become stereo pairs or 5.1 groups can be set up using channels 1-6, 7-12, 8-18 or 19-24. I liked being able to create an EQ and assign it to output groups such as the LCR or surrounds, which was great for setting up mastering-style multichannel tweaks.

Available in several modes, V. 2's new "Mask" function gives the ability to link or copy only a user-defined selection of parameters. Another plus is the ease of use of the Copy function: Just hold the access key of the source channel until it blinks; now, when the access buttons of any other tracks are pressed, any settings are immediately copied—either globally or selectively via Mask. Also a Fader Copy feature enables copying of fader settings, either as individual channels or in entire banks. Using this function to copy a program mix to the cue mix was a definite timesaver in the studio. Working from the program mix copy, I could quickly create an intricate cue mix by building from the program mix as a starting point. Yeah!

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Zero Reset automatically puts all levels, faders, knobs, EQs and dynamics to default settings, for a clean, fresh start on a new mix. Sony has also added a Snapshot Library with the ability to store up to 99 EQ and dynamics curves per title, for fast assignment to any console channel. The idea is cool, but the next step would allow these snapshots to be copied and easily imported into any other title, perhaps with the addition of a simple offline editor application for storing/organizing favorite settings.

One neat trick that I liked with the DMX-R100 in 48kHz mode was the ability to set up simultaneous 5.1 and stereo mixes—ideal for dry studio tracking while cutting a live 2-track mix. The facility would also come in handy in a broadcast or other live mix environment. In such cases, channels can be set to output as pre-EQ, pre-fader or post-fader, depending on your needs. And, although not specifically new to Version 2.0, the console's I/O Status window—which displays the sync status of all I/O cards—is one of those “everyone needs this” utility tools. Providing an immediate checkout for those times when problems arise (usually something simple, such as a clock or incorrectly set sampling rate), the I/O Status window gives answers in a hurry.

AUTOMATION TWEAKS

A number of new enhancements were added with the V. 2 software, but one thing I noticed was that the automation seemed to be significantly more stable than in earlier versions. But V. 2 adds lots of new automation functionality as well. Automation options can be pulled down from any page. An Audition feature offers a “Rehearse” mode that disables the automation on playback and puts the system into Safe mode, allowing fader trim updates to be auditioned before overwriting a previous mix—great for post work where you want to separate longer segments into scenes. A Touch Hold mode latches the automation on touch, with quick, one-button punch out, which is ideal for on-the-fly automation changes, particularly on longer passages. Also new is the ability to offset the time code used in automation, as opposed to that coming from an external source.

Previously very basic, the Automation Trim mode is now greatly expanded. New fader movements are stored as soon as a fader is touched. Various automation drop out modes offer a wide selection to choose from, including Butt, Ramp, To End, To Next and Top To End. The latter is especially suitable in cases where

you're working with slow transports such as audio MDMs or tape-based VTRs and you only want to make changes at the tail of a reel.

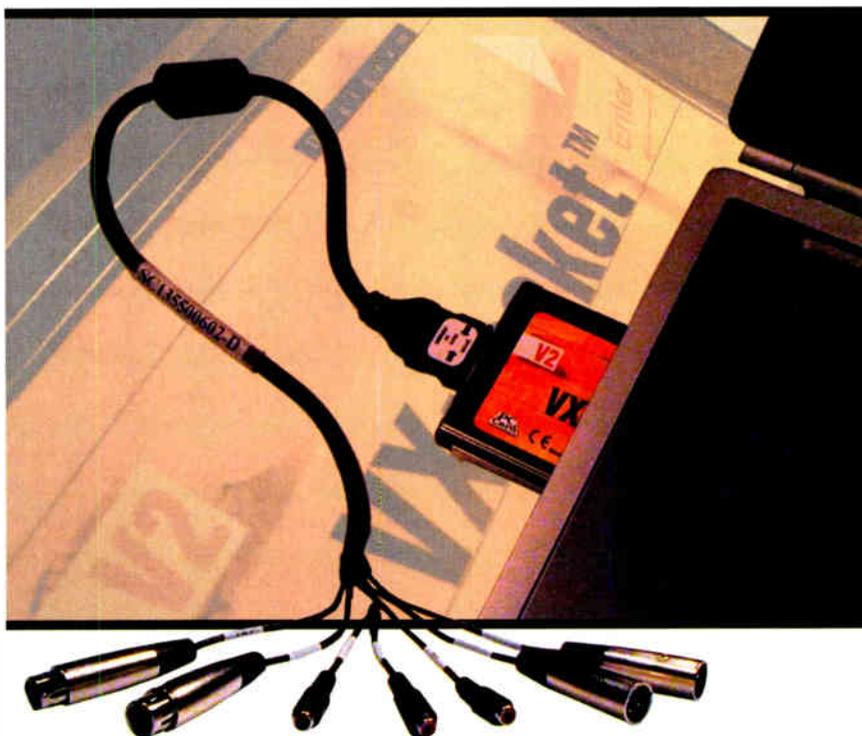
FUTURE STUFF

There's no doubt that the Version 2.0 software offers a huge leap forward in functionality for DMX-R100 users. There are still a few tweaks to be made—for example, due to a minor bug, the compressor page is inaccessible except by first pressing the Expander Access button followed by the Compressor Access button. Hopefully, this will be taken care of in the next

release, Version 2.1, which is due next month. Version 2.1 also includes support of the optional MADI interface board (required for cascading two DMX-R100s for 96-track (at 44.1/48 kHz) or 48-track (at 88.1/96 kHz) production. On a single mixer, the MADI board also expands the console's total digital I/O capability to 72. Version 2.0 software is included with new DMX-R100s, or owners of existing consoles in the U.S. can get the upgrade free by calling 800/538-7550.

Sony Professional Audio, One Sony Dr., Park Ridge, NJ 07656; 201/358-4201; www.sony.com/proaudio. ■

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Steinberg VST System Link

Multisystem Interconnection Protocol

Steinberg, which invented VST (Virtual Studio Technology) in 1996, debuts VST System Link, a new protocol for interconnecting multiple computers by way of standard digital audio cables and formats such as ADAT, TDIF, AES/EBU and S/PDIF. For now, VST System Link is only possible between computers using ASIO 2.0 (Audio Stream Input/Output) hardware protocol and a Steinberg host application such as upcoming versions of Nuendo or Cubase.

More than just another computer network connection (i.e., Ethernet), VST System Link can distribute computational needs among any number of computers. Distributed computing is used for large-scale problem solving, such as human genome mapping or predicting global weather patterns. A problem is "parsed" into separate and manageable chunks for many computers to work on in parallel.

VST programs are host-based and dependent on the computer's "horsepower," so factors like bus/clock speed, memory and hard drive specs dictate the number of tracks possible, how much and how many plug-ins you can use at the same time, and overall system performance and latency. A VST System Link network allows users to spread out a music/recording system across as many other computers as necessary—even using different computer platforms and disparate software applications, as all computers connect via standard ASIO 2.0 protocol.

Computers are linked in a daisy-chain configuration, with each passing accumulated information to the next. VST System Link uses a single bit (the least significant bit, or LSB) of the 24-bit audio stream as a carrier for transport and sample-accuracy synchronization information. Optionally, other bits of the audio stream can be used for up to hundreds of channels of MIDI information. Steinberg allays any fears of audio degradation by simply *not* running master audio down the same digital audio I/O channel as System Link data and instructions. Each computer in the chain

(at this time) has to run its own VST host program to accommodate whatever VST plug-ins or instruments you require. Editing and tweaking are done locally on that specific computer.

You could record and playback audio tracks on one computer and then use MIDI to play virtual synthesizers on a second computer, use any number of effect processing on a third computer, and then mix it all on a fourth computer. Computers can be added to or subtracted from the system without crash or reboot—and the first computer in the chain does not have to be reconfigured to recognize a system change. This "hot-swappability" means that you can use any of

More than just another
computer network
connection for large-scale
problem solving,
VST System Link can
distribute computational
needs among any number
of computers.

the linked computers offline for other tasks such as balancing your checkbook or playing Tomb Raider. However, in a daisy-chained system, if one of the linked computers crashes, then only the subsequent linked computers afterward are affected.

Used as a music production network, VST System Link allows the number of computer/users to expand and contract depending on workload and work methods. Autonomy between computers is always maintained even while linked up. Every user can access as many audio tracks as desired and as many VST instruments as necessary. Each additional computer in a VST System Link network

adds hard drives and increased processing power. Audio or MIDI data recorded outside of the studio on a laptop is easily integrated into the session, simply by docking onto the local system. Routing is controlled by a master software "patchbay" running on the first computer in the chain. A typical configuration might include a keyboardist with many virtual synths operating on one computer that does not affect the mixing engineer's computer running with many VST effects and plug-ins. Nonetheless, all of the different computer's audio sources remain in perfect sync with VST System Link's sync protocol using just a single digital audio cable to connect them.

For post-production, several engineers and producers can work on different scenes on the same project at the same time. Separate workstations for dialog editing, effects/Foley and music scoring can stream audio output to a fourth computer for the final mix. Another machine can be used to run digital video in perfect sync, with a lockup time of only a few milliseconds.

The ultimate music mixing system can be realized by connecting many computers together with VST System Link. One computer is the mixer with many EQ and dynamic processors, one an effects rack running reverbs and flangers, and another is running virtual instruments such as Native Instruments' Absynth. There is no latency in mixing the virtual instruments, nor is there any timing fluctuation (both of which can be major headaches if locking computers together with MIDI); and the full 24-bit resolution of the virtual synths and the FX outputs is passed directly to the mixing computer.

VST System Link is included in new versions of both Nuendo and Cubase in the first quarter of 2002.

Steinberg North America, 9200 Eton Ave., Chatsworth, CA 91311; 818/678-5100; www.us.steinberg.net. ■

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

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Roland VS-2480

Integrated Audio Production Workstation

With the VS-2480, Roland makes a concerted bid to define the current, state-of-the-art, integrated recording/mixing systems. It's an impressive showing, with a combination of features and functions that place the VS-2480 as close as anyone has gotten to the true "studio-in-a-box."

OUT OF THE BOX

The VS-2480 (\$4,495 MSRP, with internal 30GB hard drive and one VS8F-2 dual-effects processor card) combines 8/16-bus input and output mixers with an internal 24-track recorder/editor, extensive internal effects processing, 24-button phrase sampler, CD burner and mastering operations, with SMPTE and MIDI integration.

You can choose 24- or 16-bit operation; sample rates range from 32 to 96 kHz, with some reduction in the number of record/play channels at higher rates. The VS-2480 offers ample expansion opportunity. A mouse is included, and using it is recommended. An external VGA connector provides expanded views of the unit's major functions beyond what's on the onboard LCD. A standard PS-2 keyboard connector makes it much easier to adjust onscreen parameters, name songs and tracks, and more. The optional MB-24 meter bridge (\$895) provides 24 channels of full-size, illuminated level monitoring, as well as locator information.

Additional input and output devices can be added to the 2480 via two R-BUS connectors on the rear panel, with word-clock input on a single BNC connector. R-BUS is Roland's proprietary, multichannel digital I/O and control bus, carrying up to eight channels of 24/96 audio on standard DB-25 connectors, along with track arming, record and other control information.

The 2480's dual R-BUS connectors can be used to connect the unit directly to other Roland products, including the VM-7000 digital mixer series, the XV-5080 128-voice synth/sampler module and the VSR-880 studio recorder module.

Optional external interfaces provide linkage to ADAT and Tascam DA Series

The VS-2480's control surface includes analog audio inputs, 16 channel strips with motorized faders, a large LCD with soft function keys, data entry/locator control, transport controls and a keypad with lighted entry buttons.



recorders, or other devices that use ADAT or TDIF audio buses (DIF-AT, \$395), 8-channel blocks of 24-bit analog input (with mic pre's and phantom power) and output (ADA-7000, \$1,245 MSRP), and AES-EBU or S/PDIF I/O (AE-7000, \$645).

The VS-2480 also includes a single-channel pair of coaxial S/PDIF input and output and a separate optical channel pair. Any combination of R-BUS and onboard S/PDIF I/O can be used, but total digital inputs cannot exceed 16 channels at a time, in addition to the 2480's 16 analog input channels.

The VS-2480 comes with a single VS8F-2 dual-effects processor card, offering two stereo (or four mono) effects, installed. Up to three additional VS8F-2 cards, at \$395 MSRP each, can be installed for a maximum of eight stereo or 16 mono effects channels onboard.

The VS-2480 is delivered with a standard 30GB IDE hard drive. Disk space can be expanded using 3.5-inch IDE drives with 10ms or better access time. The unit supports project archiving to CD-RW or to SCSI Zip drive. The CD-RW recorder is an option, connected externally via SCSI. Roland offers, warrants and supports the VS-CDRII (\$695) from QPS.

GETTING UNDER WAY

Getting the 2480 up and running is easy. If you have the CD-RW recorder, then it must be connected to the rear panel SCSI connector and powered on before starting up the main unit. If you've purchased VS8F-2 effects cards, then these will need to be installed before you begin.

All outputs are on 1/4-inch TRS jacks, reference to +4 dBu in Balanced mode. If you are using the unit in stereo and relying on its internal effects and mastering functions, then only the two monitor outputs need to be connected. For mastering to external equipment, there are a pair of analog master outputs. Four analog aux outputs can be used as four single-channel sends or as two stereo pairs. All together, eight analog outputs are provided, with two headphone jacks with individual volume controls for record monitoring.

The 2480 provides 16 balanced or unbalanced analog inputs on 1/4-inch TRS connectors, with 24-bit converters capable of running at up to 96 kHz. Eight of these are paralleled by upgraded, high-grade mic preamps on XLR connectors with phantom power capability. All inputs have a 20dB switchable pad and sensitivity controls with a 58dB range. The sixteenth in-

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put includes a hi-Z switch for guitar input.

All of the audio input and output assignments can be changed, using easy-to-read screens in the onboard LCD or the external VGA display. The 2480 provides ample flexibility in routing throughout, with easy storage and recall of patch settings, and a library of configurations for common applications.

A SMPTE timecode input jack provides for slaving the 2480 to video devices. The 2480 provides a good MIDI implementation, including tempo mapping and In/Out/Thru connectors.

I recommend taking the time to view the one-hour startup VHS video that comes with the system. The 2480 bundles a lot of power under a compact set of controls, and not everything is obvious.

THE CONTROL SURFACE

Apart from the analog sensitivity, pad and monitor volume controls, there are five principal groups of controls built into the 2480. These are the channel fader group, with 16 motorized channel faders plus single master fader, with buttons for direct selection of four different control pages (two for input faders and two for track faders). Each channel strip includes a channel and

track select. Like most controls on the 2480, these serve additional purposes, controlling the phrase sample and auto-mix functions. Each channel strip also has a contin-

The LCD is the heart of control for the system. Its numerous, but well-organized, screens provide views of everything happening in the system. Using the mouse, you



Rear panel I/Os include two R-BUS connectors, Roland's proprietary multichannel digital I/O bus, carrying up to eight channels of 24/96 audio on DB-25 connectors.

uous rotation "virtual knob." These can serve as pan controls, settings for the eight aux sends, or they can be used as a group to control the dynamics and EQ functions on a single channel.

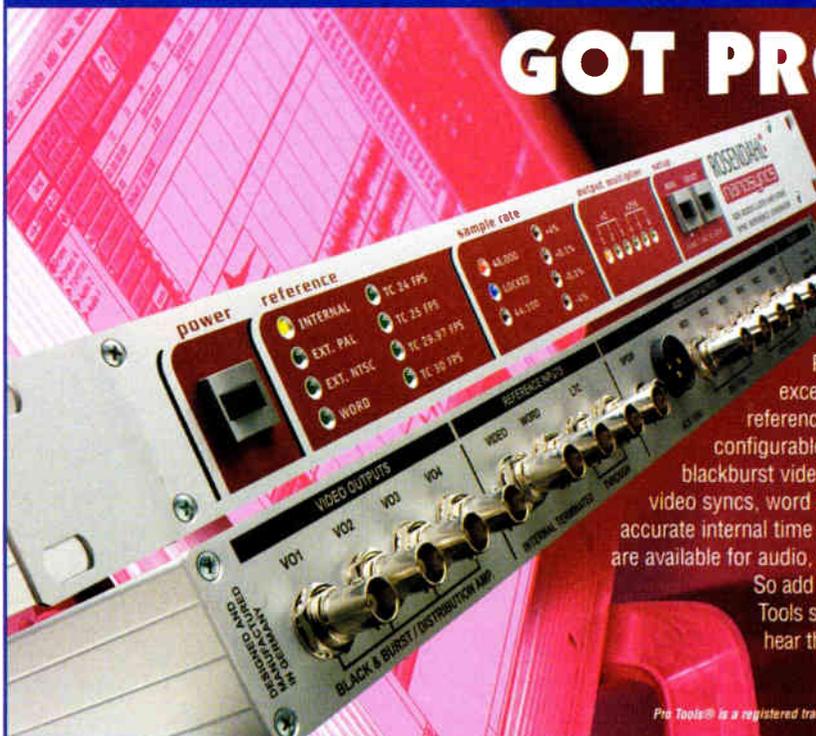
Four conveniently grouped buttons allow you to switch the fader assignments between the input mixer faders (24 input channels and eight aux masters) and track mixer faders (24 plus eight effects returns). You quickly get used to using these four buttons, which also have shift functions. The faders being motorized, levels shift as one moves from page to page.

can adjust anything directly on the screen.

A sizable mass (I count 48) of identical buttons occupies the rest of the right-hand area of the control panel. These actually break down into logical groups. Designing a multilevel control system for something as complex and capable as the VS-2480 is a major challenge. I think the company has done well, but I think slightly wider spacing between groups of related buttons would have helped to clarify the logical groups that are shown.

Everything that appears in the LCD window (which is virtually everything) can al-

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so be controlled using the mouse. I did find it a little troublesome to find a place to work the mouse. (I was using a small table top.) Future VS products could benefit from the kind of touchpad cursor control that my laptop uses. I highly recommend the use of the external VGA display.

Finally, a standard P/S2 keyboard can be connected, and a footswitch jack on the rear can be assigned to alternate play/stop control, record, set marker, and next or previous functions for editing.

MIXER AND SYSTEM ARCHITECTURE

It helps to have a clear view of the options

for interconnection inside the unit. The VGA display page serves as the system "patch-bay." The same information is available on the LCD, but it's distributed over multiple screens. In this view, you can see the functional units and how they interconnect.

All of the interconnections can be changed from the LCD view, using the cursor control keys and data-entry wheel. Analog and digital inputs can be connected to any input on the 24-channel input mixer. Signal inputs can be routed in parallel to any number of mixer inputs, but each mixer input can receive only a single signal input. Channel pairs can be

linked for stereo inputs.

Each channel input on the input mixer provides 4-band parametric EQ and a flexible dynamics processor, as well as aux sends, stereo or surround panning, grouping, etc.

The outputs of each of the 24 input mixer channels can be routed to any one of the 24 hard disk recording channels. Mixer channels can be routed to a single record channel, where the signals are summed. Channel faders can be grouped, with up to 16 groups available.

Eight auxiliary sends can be linked in stereo pairs. Sends can be routed to the internal effects and/or to any analog or digital output. When Surround mode is activated, the number of aux sends is reduced by two or four, which can be a bit of a loss depending on what you are doing.

There are up to eight insert slots available per channel, direct to the effects processor. The direct outs can be routed to the effects, either pre or post fader, and can be used as an additional loop or insert effects, depending on whether the channel is "floated" from the mix bus or not. The direct outs can also be routed to any analog or digital output.

Outputs of the 24 record tracks are automatically routed to the 24 channel inputs of the track mixer. The track mixer channels duplicate the facilities of the input channel strips, with eight effects return masters where the input mixer has aux send masters. Effects return strips provide fade, pan, solo, mute and group, but not EQ or dynamics. The returns can be routed to direct outs if desired.

The outputs of the track mixer channels can be routed back to hard disk recorder inputs, with summing of as many channels as desired.

The VS-2480 offers full snapshot and dynamic mix automation. In Version 1.222, a single auto-mix data track exists for each project, but in Version 2.0 this is expanded to 10 separate mix versions available for a single project.

RECORDING AND EDITING

The 2480 provides for recording at a number of bit resolutions and sample rates, with options for linear PCM recording, near-lossless data packing and conventional lossy compression. One selects the sample rate (32, 44.2, 48, 64, 88.2 or 96 kHz) and Record mode (combination of bit depth and packing option) when starting a new project. Once selected, these cannot be changed.

A total of eight different recording modes are available. The M24 and M16

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modes offer full linear PCM recording, but Roland recommends using the 24-bit "MTP" mode for most applications. In MTP mode, data is recorded using a proprietary audio data-packing scheme called "R-DAC." R-DAC reduces the bit rate required for recording by a factor of approximately three, allowing for simultaneous recording of up to 16 tracks (with 24 playback) at a 48kHz sample rate.

At the 3-to-1 reduction ratios that Roland claims for R-DAC, a well-designed audio-packing scheme can be effectively lossless. For most signals, in fact, data will be returned with bit-for-bit accuracy. The

use of 3-to-1 data packing in a high-end audio workstation is very appropriate.

Roland also offers MT1 and MT2 data-packing modes for 16-bit recording, though it isn't clear just how these compare to the 24-bit MTP mode. Two modes of steeper data compression, perceptually coded and subject to fidelity limits, are recommended for live recording applications when one is concerned about running out of space. Finally, CDR mode offers a direct capture to CD disc image, for efficiency in assembling CD compilations.

As sample rates, bit depth and data density go up, there are trade-offs in the

number of channels that can be recorded at once. Up to 48 kHz, one can record 16 tracks at once in every mode except 24-bit linear PCM. Above 48 kHz, the number of simultaneous channels begins to fall off, even when R-DAC is used.

Actual recording on the 2480 is extremely simple (as long as you remember the distinction between the input and track mixer pages): arm the track or tracks to be recording, press Record, followed by Play. The 2480 provides good facilities for dropping in markers during recording and supports manual and auto-punch, including loop recording. For each record track, there are 16 virtual tracks ("V-Tracks") for recording and editing.

The VS-2480 features two major editing constructs. "Phrase" editing defines stand-alone chunks of audio that can be inserted anywhere or triggered on-the-fly. This method is well-adapted for loop-based production. "Region" editing provides the stock sorts of cut-copy-paste editing that we've become accustomed to in computer-based DAWs.

Editing functions are based around the multitrack bar display and can be performed using the mouse, a set of dedicated track edit buttons or menu commands. The VS-2480 offers a waveform display view, limited to a single track at a time. In the software version I had for most of the display period (1.222), the waveform display appears only in the LCD screen.

The VS-2480 does not offer any cross-fade control, and the waveform display is comparatively rudimentary. The Phrase editing functions are a delight for creative audio assembly, but the system lacks the features associated with fine-grain music editing.

EFFECTS AND SIGNAL PROCESSING

The stock VS-2480 provides a high-quality stereo reverb/effects processor, with spaces to install three more. Each processor has two input channels, and depending on the effect algorithm, may be used to process two signals independently for eight stereo or 16 mono effects channels maximum.

Each effects processor offers 36 different effects algorithms and 250 preset patches, including three kinds of reverb, four delay algorithms, two choruses and four phasers, a 2-channel compressor/limiter and three kinds of EQ.

There are multi-effects algorithms for guitar and vocals, each of which places seven or eight individual effects in a chain for a "virtual pedal board." Three algorithms marry Roland's RSS 3-D sound process with

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delay and chorus functions. Two vocoders are available, and a low-fi (grunge processor), vocal canceler and a hum canceler fall into the "gimme" category.

Other processing functions include microphone modeling, speaker modeling (with recommendation of using Roland's DS-90 powered monitor with digital input) and a mastering toolkit.

The quality of processing is very good. I had no occasion to feel constrained by the fidelity of results, even with processes used in-line. Roland has been a mainstay and innovator in chorusing, tape delay and vocoders, and the versions in the

VS8F-2 processor maintain those high standards, but I have to admit that reverb is one area where I like variety. And while Roland offers a wonderful array of processing functions, a disadvantage that a hardware-based integrated DAW such as the VS-2480 has in today's market is that it inherently cannot partake of the excitement going on in processing plug-ins.

PHRASE SAMPLING/SEQUENCING

The VS-2480's track status buttons can also serve as trigger buttons to play tracks, or portions of tracks as samples. Phrase Sampling mode operates straightforwardly, with

each track status button starting immediate playback of the corresponding track. Virtual tracks make it easy to set up phrase samples without disturbing an entire track.

Phrase play has three modes: gate, in which play continues only while the button is held; trigger, which toggles play on and off with each press; and one-shot, which plays the whole track through from the head, restarting if the pad is tapped again. An onboard sequencer supports step and real-time recording, as well as quantizing.

Output of phrase sampling is routed through the track mixer, where it can be effected with the full range of dynamics, EQ and time/frequency effects. If one desires, the 2480 can operate as a live performance tool with significant capabilities.

MASTERING, IMPORT/EXPORT AND PROJECT ARCHIVING

The 2480 supports mastering directly to CD-RW or tape. The system can exchange audio files with other devices by import and export of .WAV files. Entire projects, including editing and mixing information, can be archived on CD-RW or Zip cartridges.

One can mix down directly to an external device, but at least for 2-channel mastering Roland recommends capturing the mix to hard disk, then using the device's editing and processing resources to create an optimized master. The channel dynamics and EQ processing certainly can benefit mastering, but Roland also includes a dedicated "Mastering Toolkit," which provides a processing chain with simple 4-band EQ and bass cut/enhancer, 3-band compressor/expander and a limiter. I wouldn't want to compete with Bernie Grundman with this setup, but it's certainly going to help make masters that can approach the professional ideal.

In the "Mastering Room" environment, you define track markers, disc name, etc. The 2480 allows for compilation of multiple cuts as regions or as combined projects.

There is no capability for sample-rate conversion; I'm a great believer in future-proofing a project by recording to the highest standard available. It would be really useful if Roland were to add an out-of-real-time, sample-rate conversion feature in future updates. Output of high-res/high-sample rate audio to DVD-Video and/or DVD-Audio would also be useful, although the software issues go beyond simple mastering, as some form of simple authoring would have to be incorporated. Likewise, encoding to AC-3, DTS and/or MLP would greatly enhance the power of the device for producing masters for mar-

—CONTINUED ON PAGE 167

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TC|Works Spark XL 2.0

Real-Time Audio Editor for Native and TDM Systems

The newest version of Spark by TC|Works, Spark XL, packs more than enough improvements and features to warrant the "extra-large" label in its name.

I first tested Spark Version 1.01 a little over a year ago (*Mix* February 2000), and though I was impressed by its concept and overall design, the application was still in its infancy. Since then, the software team at TC|Works has fixed the bugs I ran across and added several important new features. The program's basic operating principles have not changed, and because these were covered in the previous field test, I'll focus on the latest improvements, features and differences between the software's native and TDM bundles.

This time out, I tested Spark XL on a Mac G4 400 MHz with Digidesign's 24 MIXplus system running Pro Tools Version 5.1.1. At the time of this field test, Spark was at Version 2.02—version numbers are the same for both the native and TDM versions because both depend on the same core program.

The differences between the two programs are not only that Spark XL is TDM-compatible, but it is also bundled with a bunch of extra plug-ins. Along with the standard complement of Spark plug-ins (see table), Spark XL adds the entire TC|Native Bundle and two high-end restoration plug-ins, DeClick and De-Noise. Spark XL retails for \$749; the native-only bundle goes for \$599.

EXTRA-LARGE UPDATES

One of the biggest enhancements to the user interface is the addition of a dedicated crossfade editing window, the Cut Editor (see Fig. 1). With files listed in the Playlist window, the Cut Editor becomes available for fine-tuning crossfades. It is ingeniously organized to allow working on both the head and tail segues of a track. Waveforms are displayed complete with crossfade envelopes (all the standard types) and you can nudge crossfade positions by milliseconds or samples with gross and fine controls; track start and stop times are fully adjustable, as are

crossfade lengths. Auditioning crossfades is a breeze with Over, From and To options. The audition pre-/post-roll times are tweakable right in the Cut Editor (no need to visit the Preferences menu).

The Next, Previous and Jump To controls let you scroll anywhere in your playlist directly from the Cut Editor. This means that all your pause times and crossfade work can be done directly in the Cut Editor with no need to return to the Playlist window. Very cool. That said, the fact that the Cut Editor window is a set size is a hair annoying. On more than one occasion, I found myself wishing it was resizable; the ability to expand the Cut Editor to full screen size would be especially nice.

Spark's core audio engine is new and improved and dubbed the Virtual File engine. TC|Works reports greatly increased processing times for cut-and-paste-type duties. Compared with previous versions, I did notice faster processing times—not an extreme difference, but enough to feel like I spent less time twiddling my thumbs while the computer crunched numbers. And after processing a few files, if you suddenly realize you made a mistake some moves back, then the Virtual File engine allows for up to 99 levels of undo/redo. There are no Preference settings available for this function (how many levels of undo you want), but the Undo/Redo main menu items sport a brief description of your last move, along with a clear-the-undo/redo-memory buffer command.

The Master FXMachine (Spark's built-in effect matrix, not its plug-in counterpart) can now wield up to 99x99 effects slots. (Grid size is set in the Preferences, and the program's default is 5x4.) This new feature alone equals more processing power than most of us will ever need (to say nothing of the fact that a fully loaded 99x99 effect matrix—that's 9,801 native plug-ins run-

ning simultaneously—would obviously choke today's computers). The power and flexibility of the Spark FXMachine are sheer genius. And its twin VST effect plug-in (Spark FXMachine) now comes in the MAS format too. (An RTAS version would also be really nice, but TC|Works says there are no plans to support this format.) However, the plug-in effect matrix remains fixed at a 5x4 grid, and the Spark FXMachine Instrument plug-in is still just for VST. (Incidentally, for those of you who just want the FXMachine plug-in, it's currently available online at the TC|Works Website for \$29.95.)

New plug-ins released with Version 2.0 include TouchWah, Metergraph and Sonograph (see Fig. 2). TouchWah is a software emulation of a vintage wah pedal that doesn't sound half bad. You can move the pedal with your mouse (or via a keyboard's Mod wheel) to adjust the envelope follow amount, or you can set it to autopilot. Because Spark is not a digital audio sequencer, there is no way to automate the pedal action directly in this program, but it can be automated in an appropriate host application (Cubase VST/32 for example). Metergraph is a 30-band, $\frac{1}{3}$ -octave, spectral analyzer, and Sonograph displays audio over time as well as by frequency and level. Whereas before you had to find third-party analyzer plug-ins to augment Spark, these essential mastering tools are now part of the

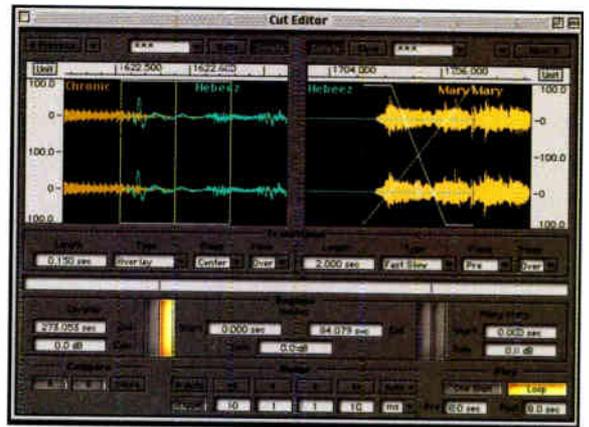


Figure 1: The newest version of Spark features a dedicated crossfade editing window for working on both ends of the waveform.

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standard bundle—very handy additions. Metergraph and Sonograph only work in Spark; they are not stand-alone VST plug-ins, though they will instantiate in the FX-Machine plug-in.

Those of you who have been using Spark know that Spark Modular (the very cool set of synth building block proprietary plug-ins) isn't new. While it was an add-on to the core application previously, it now comes standard. Marker management has been improved, making them a breeze to work with. They can be named, freely scooted about, locked down and are very easy to see against the waveform. However, it would be nice if clicking somewhere on the marker moved the playbar to that location. CD audio can now be imported directly into Spark via the QuickTime audio format, a much appreciated convenience.

XL-ONLY CLUB

Spark XL is bundled with two restoration plug-ins, DeClick and DeNoise (see Fig. 3). These plug-ins are native (not TDM) and work only in the FX-Machine (within Spark or in the FXMachine plug-in). Use DeClick for extracting pops and scratches and DeNoise for removing unwanted broadband noise. Both plug-ins are a piece of cake to use because they feature simple but effective controls. I tried cleaning up some old, scratchy drum recordings off vinyl. This was a real acid test, because the records were in pretty bad condition. After fiddling with the

plug-in parameters for a spell, I managed to cook up some pretty pleasing results—I was impressed.

However, I was not impressed by Spark XL's TDM implementation. I was unable to route audio through the dedicated TDM plug-in portion of the program. The TDM

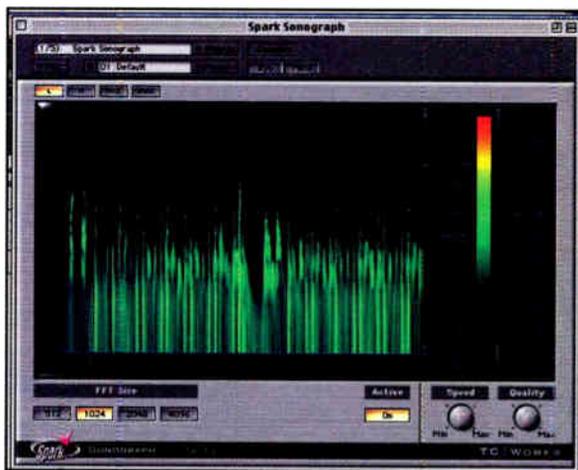


Figure 2: New plug-ins packaged with Spark Version 2.0 include TouchWah, Metergraph and Sonograph (shown).

Master will take up to five TDM plug-ins run sequentially and falls post the native FXMachine. DirectConnect is supposed to be the key linking the FXMachine to the TDM Master. I was able to get Spark to output audio through DirectConnect and into the Pro Tools' mixer itself (which is cool for playing VST plug-in instruments through Pro Tools), but no such connection seemed possible within the program itself. Indeed, when TDM mode was launched, I couldn't even get Spark XL to

play at all—though DAE did seem to launch successfully and the TDM Master did output sound from Signal Generator.

To make matters worse, Spark's communication with Digidesign's Direct I/O was also less than satisfactory. Sound would output; however, there was a noticeable delay before hearing playback, perhaps as much as half a second, which made trimming the beginning of a track extremely frustrating. As a result, I was forced to monitor Spark XL's audio through my Mac's 16-bit mini-jacks—pretty sad.

Maybe DirectConnect and Direct I/O Versions 5.1.1 threw Spark XL for a loop. Thinking this might be the case, I swapped DirectConnect 5.1.1 with the previous version, 5.1. (I didn't try this with Direct I/O.) Still no luck. After several days of trying to figure out what was going on, I gave up. Very frustrating. Also, when TC|Works gets the TDM aspect of Spark XL functioning, I suggest spicing up the TDM package a bit

more. How about bundling a few of those excellent TC|Works TDM plug-ins with Spark XL? And is it possible to create a TDM master that looks more like the FXMachine, with parallel effects and a TDM plug-in counterpart?

GET THIS SPARK GOING

In my previous field test, I was unhappy with the program's propensity to overwrite original files without proper prompting. Happily, this problem has been remedied. There are now plenty of prompts and opportunities to cancel an overwrite. Loop playback works flawlessly, and there doesn't seem to be any conflicting loop playback command structures as in the past. And mono files processed with a stereo effect now save as a stereo file.

Additionally, Spark drops what are called Overview Files (.OVW) all over your hard drive. These files enable Spark to show a file's waveform instantaneously without having to calculate the waveform's overview each time it's loaded. Okay, I understand the object, but is it necessary to drop these files right next to every audio file that Spark has accessed? All the extra files in my neatly organized sound library folders are a real eyesore. (And I hate to think about what might be happening to my computer's file hierarchy with so many extra files being generated.) How about keeping .OVW files hidden or

SPARK XL PLUG-IN GOLDMINE

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Spark FXMachine Instrument†

TC|Native Bundle (VST compatible)

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TC|Native CL Master
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TC|MaxIt Master
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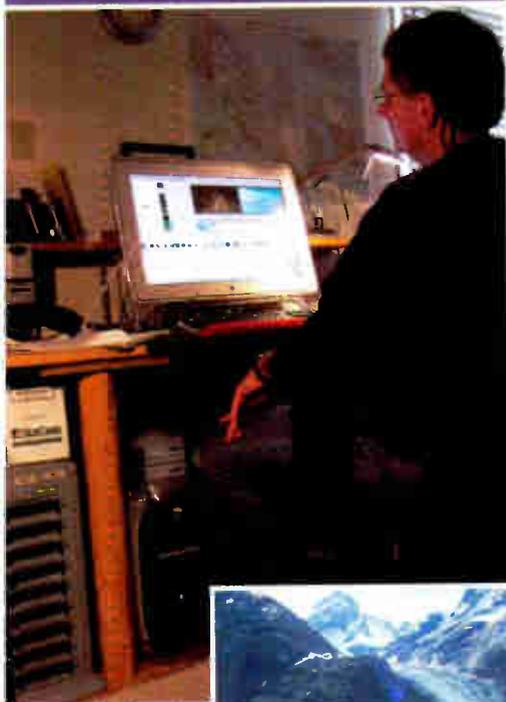
Spark Proprietary (FXMachine only)

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TC|DeClick

†Also available as MAS plug-ins.

*Spark Modular synthesizer building block plug-ins.

Glacier Bay Alaska



John Brooks, a veteran documentary filmmaker, wanted a solution that would allow him to match or exceed the benchmark resolution of underwater filming.

Diving into High-Definition

It's not just a job, it's a truly unconventional adventure when John Brooks, an award-winning producer/director/cinematographer, is in charge of the project. He is currently in the final stages of finishing a one half hour "high-definition" video documentary about the underwater work of Alaska's Glacier Bay.

"The Park Service had this project in the queue for a couple of years. The delay was actually a blessing in disguise because it allowed me to take advantage of today's high-definition quality", said Brooks. "This piece will enhance the visitor's experience by giving them a spectacular close-up view of the bay's underworld", added Brooks.

Brooks wanted a solution that would allow him to match or exceed the benchmark resolution of underwater filming. After a great deal of research and underwater equipment testing, Brooks found HD to be very flexible in its ability to deliver superior resolution in the bay's harsh underwater conditions. One of Brooks' biggest concerns was the camera. "The camera had to be able to withstand extreme underwater conditions over long periods of time without incident", said Brooks. This concern was lessened when he discovered a Panasonic HD camera with a special Pace Technologies housing specifically built for underwater filming.

On the post-production side, Brooks needed a reliable and flexible solution. He used a Power Mac G5 with an Atto Ultra160 SCSI card, Apple Cinema Display, Final Cut Pro, the **RAID-ready StorCase InfoStation enclosure solution** filled with Maxtor Atlas drives, CineWave HD and Panasonic's compact deck.

Brooks shot and viewed tapes with his onboard monitor immediately in HD after each 32 minute dive. The tapes were later transferred to D5 masters for archiving and converted to DVCPRO format for editing using CineWave's video capturing feature. This allowed Brooks to fit 13 hours of quality compressed video on the StorCase InfoStation storage solution. Edited drafts were created in DVCPRO by utilizing Final Cut Pro. After the editing process was complete, the drives were flushed clean and a final edited version was recaptured in full HD resolution. After some fine-tuning, the makings are output back onto D5. A D5 Master with soundtrack and animations will be created at a post-production facility and a final HD copy will be transferred onto storage where all future products will be derived.



Armed with all his brilliant talent and cutting-edge capture and post-production equipment, Brooks is already thinking about and planning his next out-of-the-ordinary journey somewhere along the continental shelf in the South Atlantic.

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Figure 3: Two audio restoration plug-ins come bundled with Spark XL, DeNoise (shown) and DeClick.

caching them all in a single folder within Spark's application folder?

Despite the TDM-compatibility flop and annoying .OVW files, I had a lot of fun with this program. Exporting the playlist with all its associated pauses and crossfades to Jam 2.5 (Adaptec) worked great. The great-sounding Fraunhoffer MP3 codec in combination with the program's batch processor is an excellent way to convert audio to this format. Transferring files between Spark and my Akai S2000 sampler was a blast and really came in handy for sound design. Spark will even translate Akai CD-ROM sounds into .AIFF files, so I had plenty of material to draw from for my late-night beat-mangling sessions.

Obviously, I can't recommend the TDM version of Spark at this time. Once it is stable and they sweeten the bundle a bit, for those running TDM systems, it will certainly be worth having a look at. In the meantime, the native application of Spark is wonderful, and I do recommend checking it out, especially if you are a hardcore sound designer and in need of a really good play-suits creation program. It is sad that DeClick and DeNoise are exclusive to Spark XL, because they are great restoration plug-ins, and having them available as add-ons for Spark native would be nice. But for an extra \$150, if audio restoration is your thing, even if you aren't TDM-based, then Spark XL might be your meal ticket.

TC|Works Soft & Hardware GmbH, Flughafenstrasse 52B, Hamburg, Germany D22335; +49 (40) 531-0803; fax +49 (40) 531-0831; www.tcworks.de. ■

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World Radio History

Antares Auto-Tune 3

Pitch-Correcting Plug-In

Available in both software and hardware versions, Auto-Tune corrects the intonation of vocals and instruments, resulting in sweeter-sounding tracks and relieving studio engineers of the gnawing tedium of endless punch-ins to capture takes that sound in-tune. Auto-Tune did not change much since it was introduced a few years ago, until the recent introduction of Auto-Tune 3. The new version—available as a software plug-in only—brings a host of fresh and powerful features to the party, including a mode for tuning bass instruments, the ability to recognize absolute time (for some host applications only), phase-coherent pitch correction of stereo tracks, high sample rate (up to 96 kHz) compatibility, and super-cool MIDI functions that allow you to easily and quickly tackle weird scales and songs that modulate.

SYSTEM REQUIREMENTS

I reviewed the MAS plug-in version of Auto-Tune 3 (\$399; see sidebar for prices of other versions) using Digital Performer 2.72. Like other Mac plug-in versions—TDM, RTAS and VST—the MAS plug-in requires a PowerPC processor and Mac OS 8.6 or later. Additionally, Pro Tools users must use a PCI TDM (not NuBus) system and Pro Tools III or later. A DirectX version is available for PC users; Version 6.1 or later DirectX Media Runtime is recommended. Antares was considering producing a PC RTAS version at press time. Of course, you'll also need a host program (e.g., MOTU's Digital Performer) that supports the appropriate plug-in architecture for the Auto-Tune version you'll be using.

NEW LOOK, SMARTER BRAINS

The graphics may have changed with Auto-Tune 3, but users of the old Auto-Tune program will feel right at home. Many of the changes are cosmetic, but Antares made using the Graphical mode more intuitive. All of the old functions—including Retune, Tracking, Scale Detune and Vibrato—are retained. And you've got all the major, minor and chromatic, as well as 26 historical, ethnic and microtonal



Auto-Tune 3 features a redesigned interface.

scales for pitch correction at your disposal to handle any musical style on Earth.

Auto-Tune 3's core pitch-detection algorithm has been improved in both Automatic and Graphical modes, and a new "input-type" drop-down menu further improves pitch detection and correction by allowing you to specify the pitch range your vocal or instrument source lies within. Your five choices for input type are soprano; alto/tenor or low male voice; instrument; and bass instrument. Choose instrument when your axe goes down no lower than 55 Hz (A0). The bass instrument setting will recognize and correct pitches that are over an octave lower, down to 25 Hz. Auto-Tune 3 can distinguish pitches as high as C6.

Auto-Tune 3 can now treat stereo tracks, and Antares asserts that Auto-Tune 3 will maintain phase-coherent pitch correction while doing so. You choose which side of the stereo pair—left or right—will be used for Auto-Tune's pitch reference. For the best results, make sure you choose the cleanest track with the least amount of ambient noise.

Auto-Tune 3 also allows you to select either of two alternate Auto Mode functions that work in conjunction with MIDI input from your keyboard: Learn Scale from MIDI allows you to define a custom scale before you begin playback, and Target Notes via MIDI empowers you to change target pitches on-the-fly. Both functions require a host application that can route MIDI to an audio track's plug-in to serve as a sidechain signal of sorts.

Auto-Tune's manual leaves you guessing as to how this is done, so here's the scoop: In DP (Digital Performer), first make sure the "Inter-application MIDI" option in the FreeMIDI Preferences dialog box is checked. Auto-Tune 3 then shows up as an output choice in DP's Tracks window. Assign Auto-Tune 3 to be the output for any track receiving input from your MIDI keyboard. You can then either put the track into record-ready status so that live MIDI data can control Auto-Tune 3 or, alternatively, use prerecorded MIDI data in the track to control the plug-in.

The Learn Scale From MIDI function is best programmed when your tracks are not playing. It lets you define a scale by simply playing the notes on your MIDI keyboard. You can play the song's melody without regard to tempo, and Auto-Tune can then use those notes as a scale for correcting the pitch of your lead vocal, for instance, once playback begins.

Unlike the Learn Scale From MIDI function, Target Notes via MIDI works best in real time during audio playback. Simply hold down multiple keys together to define what your target pitches will be for the current song section being processed. This is an awesome feature for use on songs that modulate from one key to another. As the song modulates into a new key, simply release the notes on your keyboard that don't belong to the new key and add the other notes that do (along with any accidentals for the melody in the current song section). Auto-Tune 3 will follow your key changes in real time, making the

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appropriate changes in target pitches. MIDI keyboardists especially will love how fast they can work with Auto-Tune 3 through multiple key changes.

Auto-Tune 3 also recognizes absolute time within Mac MAS- and VST-host applications. This allows you to make multiple Graphical mode tweaks throughout your song and have the plug-in remember where each one lies with respect to time-code on subsequent playback. This new capability represents a major breakthrough in expediency, although it is not without fault, as I'll discuss in a moment. And, unfortunately, RTAS and TDM users will still need to use host-application markers with Auto-Tune's Graphical mode to lock the plug-in's relative time reference to phrases to be processed. As of press time, Antares also knew of no DirectX applications that could feed Auto-Tune 3 an absolute time reference, although the DirectX architecture doesn't necessarily preclude this capability.

Auto-Tune 3's new sample rate display shows the current audio file's sampling frequency. The plug-in supports 88.2 and 96kHz rates, as well as all the lower rates your host application can dish out. Antares also purports that the TDM version employs enhanced MIX chip-usage efficiency, allowing more instantiations per MIX chip.

TIME FOR A TUNE-UP!

I got wonderful results running electric bass guitar tracks through Auto-Tune 3 with the plug-in's Bass Instrument setting chosen. The processing sounded virtually transparent and improved the pitch noticeably. On a peppy country music production, intentionally ghosted bass notes did not cause glitches in the processing and went through unchanged.

Choosing the correct input-type setting will improve your results. For example, the alto/tenor voice setting made pitch correction of male vocal glisses a tad more natural than the soprano voice setting. My A/B tests also confirmed that Auto-Tune 3 generally corrects pitch a bit faster and smoother than the plug-in Version 1.51.

Although the MAS version's Graphical mode recognizes absolute start times in DP, it will not follow memory cycling. When audio loops back to the start of a memory cycle, Auto-Tune 3 continues to scroll onward from the memory cycle's end point. But more importantly, Auto-Tune 3's recognition of absolute start times now allows you to make multiple Graphical mode tweaks throughout your song,

rewind to any part of the song, and then process the tracks from that point until the end in real time (without needing to bounce them), while simultaneously transferring them back to your MDMs, if you wish. In fact, you don't even need to press the Correct Pitch button in DP, because any existing tweaks in the Pitch Graph will automatically engage the Correct Pitch function on playback. Sweet!

Auto-Tune 3's implementation of absolute time sense does carry a price, however. The plug-in's buffer start point—for tracking the pitch—always corresponds with 00:00:00:00 absolute time. If you use ADAT 9-pin sync or SMPTE to timestamp your audio files and you want to correct the pitch of a vocal phrase that occurs at 00:30:00:00, for example, then you'll need to set Auto-Tune 3's buffer to over 30 minutes or it will run out before it tracks your vocal phrase's pitch! Of course, this places an unrealistic demand on your computer's RAM. There is currently no workaround for this limitation. Hopefully, the next release of Auto-Tune will allow the program to switch to relative time sense or, better yet, offer a user-definable buffer offset to solve this problem.

Until then, I'll be using my older version of Auto-Tune to perform Graphical mode tweaks on my epic-length and end-of-tape ADAT tracks. For Auto mode processing (or for Graphical mode tweaks of reasonably long files that begin close to 00:00:00:00 absolute time), there is no question that Auto-Tune 3 offers more power and flexibility, speedier use and smoother-sounding processing than the preceding releases. What's more, the price is right!

Antares Audio Technologies, 464 Monterrey Ave., 2nd Floor, Los Gatos, CA 95030; 408/399-0008; fax 408/399-0036; www.antarestech.com. ■

Michael Cooper is a Mix contributing editor and owner of Michael Cooper Recording in beautiful Sisters, Ore.

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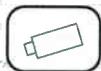
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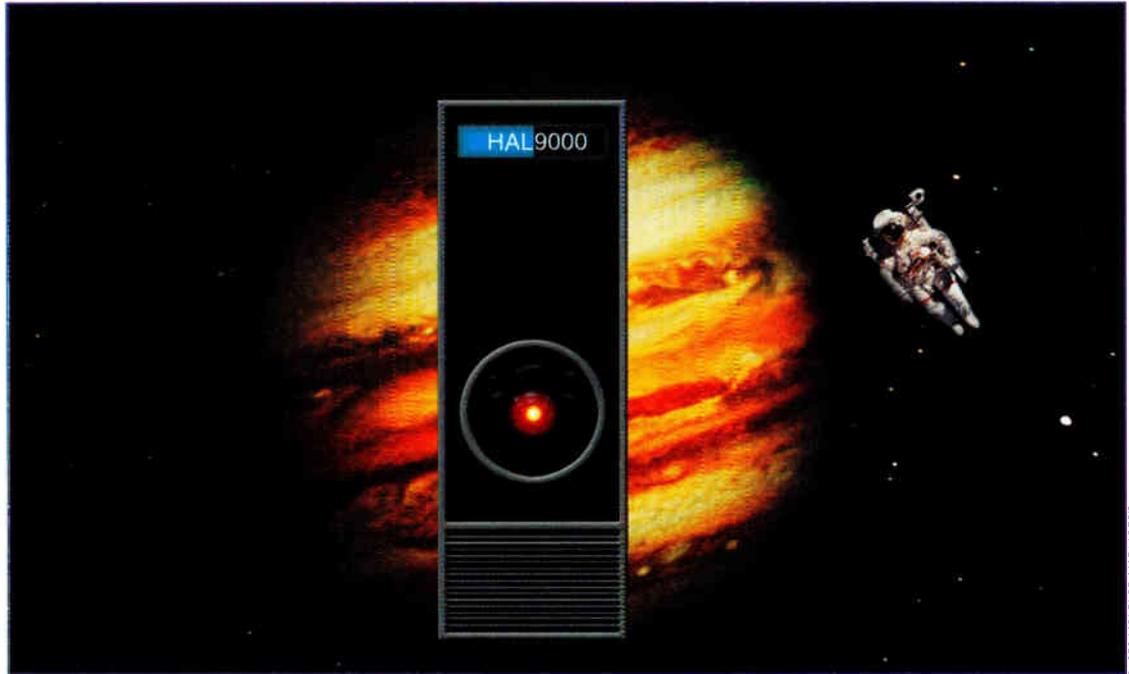


PHOTO MONTAGE: MAELAROBIS

One of the central themes of Stanley Kubrick's *2001: A Space Odyssey* is the classic struggle of man against machine—or in this case, astronauts vs. HAL 9000, the evil computer that takes control of the spacecraft and threatens the lives of the entire crew. Insiders have long known that the name of the film's mechanical antagonist was derived by taking the letters IBM and alphabetically shifting each letter down one step to form HAL.

Today, we're well into 2002, and while we're not constantly threatened by evil computers, PCs have permeated nearly every aspect of modern life, from the Internet, e-mail and Web commerce, to everyday business and financial transactions, and, of course, the production of graphics, video and audio. In any case, both PC and Mac versions of the HAL 9000 computer will eventually need maintenance. Unfortunately, our HALs (like all technological gizmos) have a "Critical Need Detector," which can somehow time a failure or maddening crash to occur when it's least appropriate.

Fixes do not come easy. Massaging software and hardware often takes us into unfamiliar territory. We typically do this only when necessary, so it's rarely intuitive and always takes too long. With that in mind, I'd like to present some tips to encourage your HAL to be more cooperative. Most of these suggestions are PC-specific, yet many of these also apply to Macintosh computers as well as dedicated hard disk recorders.

DRIVING MISS THANG

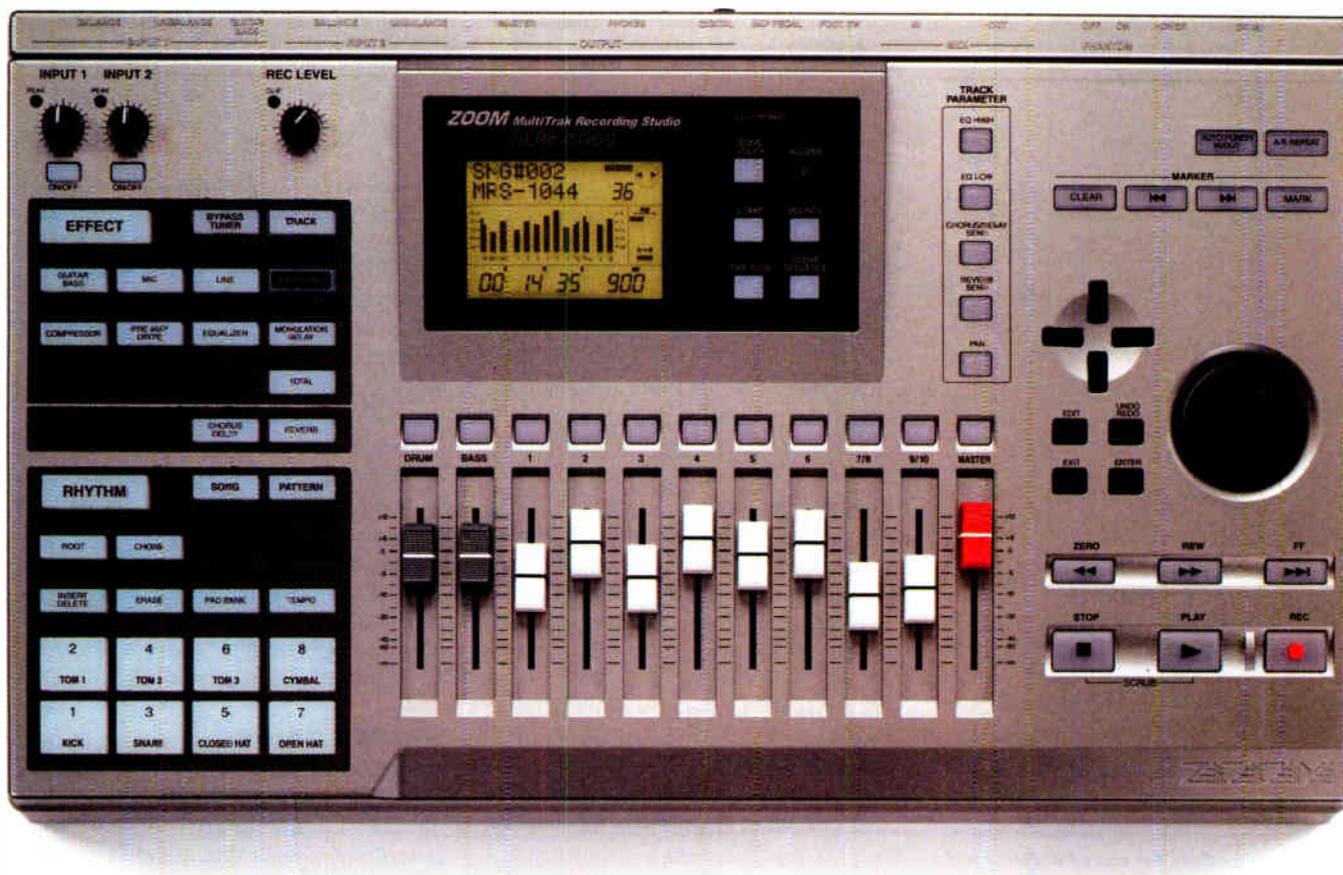
Today, with removable hard drives becoming nearly as common as a roll of 2-inch once was, the concept of keeping audio files separate from operating systems (OS) and program files is essential. This is standard operating procedure for dedicated DAWs such as Pro Tools, SADiE, Soundscape and Sonic Solutions. For native-based systems—Cool Edit Pro, Cakewalk, Nuendo, Logic, etc.—users need to direct their files to the designated drive.

Take advantage of what the Web has to offer. For example, click on the Support button at www.syntrillium.com for tips on optimizing your computer for audio. Whenever a drive is suspect or sluggish, reformatting is the simple cure—easy for an audio-file drive, more necessary for an OS and Program drive and quite a bit more involved.

Before getting tweak-happy, let's look at the obvious. Memory is at its most affordable these days—256 MB of PC133 RAM can be had for about 30 bucks! I am not sure how manufacturers make money on hard drives—headphones cost about as much—when a 40GB 5,400 rpm EIDE disk ballparks around \$125. New computer or old, HAL's attitude will surely improve with these two cost- and speed-effective solutions. Don't skimp on these items. Faster rotational speeds are recommended for multimedia applications, 7,200 rpm and now 15,000 rpm drives are quite common.

High-performance SCSI drives are not to be dis-

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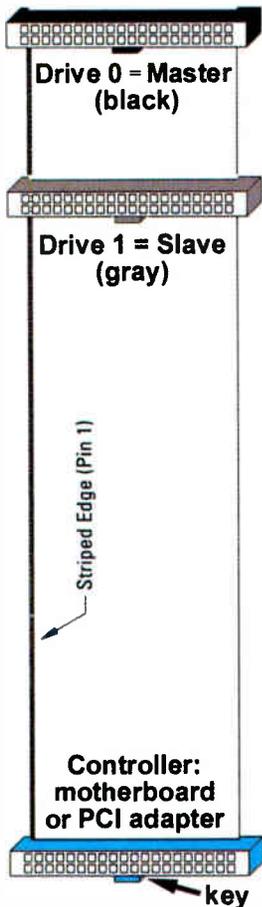


Figure 1: An 80-conductor EIDE/ATA hard drive data cable uses 40-pin connectors, and while pin-compatible with 40-conductor cables, it is not performance-compatible. Also notice that Master and Slave locations are position-specific. (For the corresponding basic jumper options, see Figure 2.)

counted, both in terms of performance and price, but the industry has embraced that affordable common denominator—the Enhanced-IDE/ATA drive, now found in both Mac- and IBM-compatible systems. To take advantage of these faster drives, you *must* use an 80-conductor cable even though the connectors at each end are only 40-pin. (See Fig. 1.)

KINKY BOOTS

With the exception of defragmenting and scanning for unclosed files, I am not real keen on any software that purports to do system maintenance. Reformatting and re-installing can be tedious and time-consuming, but the process works. By replacing the boot drive rather than attempting “repair,” the original drive can serve as backup until the system is fully functional. This assumes you own and possess all software and licenses. With a clean install of the operating system, use drive-cloning software—such as www.ghost.com—to copy the boot drive to several drives if possible, just in case other problems arise while installing programs. (Cloning a funky drive will only pass along the problems.)

Before re-installing the Windows OS, determine whether you have an Upgrade version (about \$99) or a Full version (about \$199). The difference is a matter of convenience. The Full version will run directly from the CD, the Upgrade version requires a boot floppy and proof of a previous version. If confused about the number of Microsoft operating systems, then it may be worth a Web visit to your multimedia software vendor to determine the “best” version. Always look for new “driv-

ers,” as they are easily downloaded and can significantly improve performance.

On the consumer side, I found each step in Microsoft’s growth rather annoying, not for the improvements from Win95 to Win98 and WinME, but for the obstacles—everyone and their dotcom momma wanted a piece of me, clogging my desktop in the process. While multimedia support on the pro side was lacking, things always seemed calmer. Windows NT technology was Microsoft’s way of starting from scratch, abandoning DOS for something better. NT evolved into Win2000 and now WinXP, their newest OS, available in both consumer and professional versions. Always take advantage of the Window Update link for software enhancements.

Apple has never been married to the concept of supporting “legacy” systems, and the company will embrace a better way of doing things even if it may inconvenience some users. But comparing Apple to Microsoft is like comparing fine wine with multigrade engine oil. Apple applications are easier to optimize for a specific piece of hardware compared to the task of satisfying the plethora of PC clone options. To improve reliability and performance, some PC-based products are shipped as a turnkey system.

WHAT’S 4 DINNER?

During the boot process, some programs make “memory reservations” so they can run in the background and/or start faster, potentially robbing the system of speed. On a PC, these are the little icons at the bottom right corner of the screen, an area known as the “Taskbar.” Press

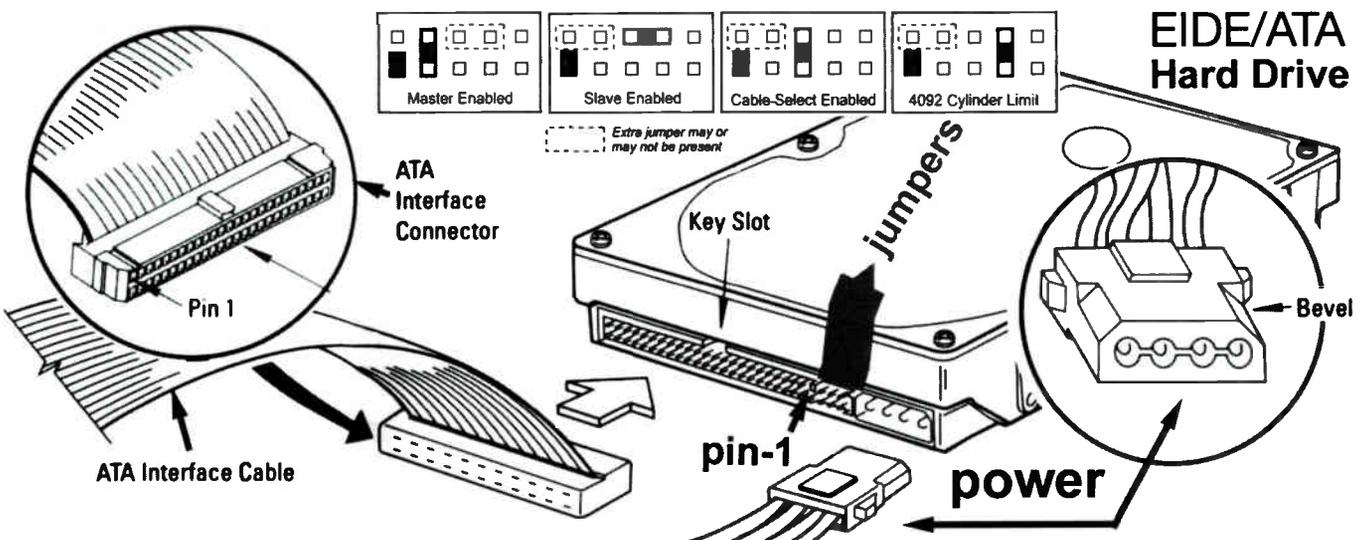


Figure 2: Computer devices have “keyed” connectors that prevent potentially damaging misconnection. This is definitely true for power distribution but sometimes inconsistently implemented for drive connections.

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"CTRL-ALT-DEL," then click on Task Manager to check for background programs or to close programs that have locked up. To prevent programs from hogging resources, click on the Start button at lower left, then select Taskbar to delete them from the Start menu. This does not remove the program from the system or desktop. (For Windows XP: first select the Control panel, then select Taskbar & Start menu.)

CHERISH IS THE WORD...

When storage space commanded higher prices, data compression was a tempting

option. I never use it, on drives or on tape. Why risk the possibility of a small defect trashing even more data? I still use Data DATs in addition to CD-Rs. If you are backing up to CD only, then do it twice, preferably to different brands of media. Whichever backup system you choose, *always verify the data*. It takes forever, but isn't your data worth it?

PASSWORD?

One aspect of Windows inconsistently implemented is the method of adding and removing programs. (Apple programmers have to follow stricter guide-

lines.) An icon for this process is in the Control panel, accessed from either "My Computer" (your computer's name here) or the Start button. *All* programs should be removed this way, but may not show up if directly installed from the CD. Troubled installs can create multiple listings (or the lack of same), an indication that the install tracking file is corrupt (learned from personal experience when it became impossible to uninstall a number of programs from Window's list).

A troubleshooting method I recommend is taking advantage of Windows' multi-user log-in feature. If a system boots all the way up to the log-in window, then it is fairly safe to assume that the operating system and boot drive are healthy. An error message from this point forward could be specific to one user's preferences. Log in under another name and the problem may not exist—neither will the familiar desktop you had created, but it's a start.

The person installing the NT operating system is called the "administrator." I log in under this name *only to do system maintenance*. Install all other programs as a "user." If all goes well, then the User file can be cloned to protect against possible future corruption. If all is *not* well, recalling the cloned user file might bypass the need to start completely from scratch. Otherwise, create a new user to see if post log-in problems disappear.

**HARDWARE:
GETTING DOWN AND DIRTY**

If you're gonna stick your hands in any high-tech device, observe all of the common precautions.

Remove Power: Most computers have a "soft" power-up feature via keyboard or even front panel power switch. Soft implies that the power supply is partially on, providing a trickle of juice to the necessary circuitry even when "off." Pulling the plug is the solution. Pay no attention if HAL complains.

No Static At All: It's winter in some parts of the world, humidity goes down and static electricity goes up. Seeing or feeling sparks when touching any object is a sign that moisture should be pumped into the room—40% is the target. Gauges are cheap. Humidifiers are good for human and HAL alike.

Electrostatic Discharge: Good practice is to first discharge your body on anything other than an important piece of gear. If static is real bad, get a wrist strap. Always touch HAL's case first before pulling any of his critical cabling or private parts.

USE HAFLER. GET IT RIGHT. THEY DID...

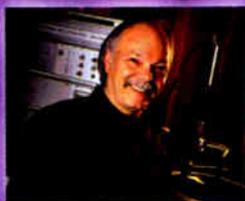
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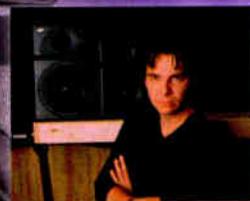
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Orientation: Pay close attention to connector and cable orientation as well as drive configuration jumpers (see Fig. 1 and Fig. 2). Flat-ribbon data cables have a stripe on the edge that indicates "Pin-1." Sometimes the stripe is obvious, other times it is almost camouflage; correct orientation is nearest the power connector. The ribbon connector should have a "key" in the center, the omission of which allows the connector to be flipped. This is truer for hard drives than floppy drives. Obviously, if the system is working and the connector does not seem to be correctly oriented, then it is

flipped at the motherboard end. If there is no key, check both motherboard and drive for an obvious Pin-1 indication. Note the location of the "Option Jumpers." On a Maxtor drive, for example, the "4092 cylinder limit" option allows the Alesis Masterlink to take advantage of the extra capacity.

HEAT IS THE ENEMY

This bears repeating: "Heat is the enemy." Cooling fans extend the life of every component, including the processor, memory, video card, drive controller, power supply and hard drives, to

name a few. Fans generate noise and suck in dust. Noise issues are another topic altogether, yet accumulated gunk should be removed and filters should be added. (For monitors and power supplies, dust is attracted to high voltages. Eventually, a small "spark" will carbonize the dust, a potential cause of premature failure.) Again, beware of static electricity when poking around with a vacuum cleaner. Sometimes, wiping down the plastic hose and nozzle with a damp washcloth temporarily tames the static. Do not proceed if it doesn't.

I open the power supply once a year to remove the dirt, installing filters and reversing the fan direction, if necessary, to minimize the amount of dirt drawn into the unit. Once everything is visible again, re-connect, power-up and do a quick visual inspection of all fans. Fans should turn and should be relatively quiet. Noises not attributable to fan blades and air currents might be from bad bearings in either the fans or hard drives. Momentarily stopping the fan blades will not damage them and can help to isolate noises and potential failures. (Fans should immediately spin to full rotational speed.) Most computer supply stores—including Radio Shack—are well-stocked with some of the cutest, tiniest fans you've ever seen. Other computer parts suppliers—such as www.TigerDirect.com and www.aberdeininc.com—have even better selections.

For a wide range of prices (starting from \$30), computer supply companies have a plethora of power supply options. It's best to buy the identical supply from the manufacturer, but most PCs have a handful of standard "footprints" as dictated by computer case size. The most important issues are power capacity (i.e., watts), the motherboard connector (ATX) and the number of peripheral (drive) connectors. While Apple users do not have nearly as many options, all of the basic stuff is covered at www.apple.com, including videos and Adobe Acrobat (PDF) files for upgrading memory, as well as known hardware bugs.

BIO-SETUP

A drive installation should be effortless, but not all computers "see" them the same way. This is a function of the Setup options specific to the computer motherboard's BIOS. Most systems allow access to Setup—during the initial boot process—by pressing DEL or some other key. User access is sometimes hidden within special keystrokes to minimize accidental tweaking. Consult the manu-

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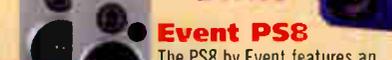
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al if no options are immediately obvious.

BIOS settings—including time, day, date—are preserved in memory by battery, so this should also be checked with a voltmeter when the system is powered down and unplugged. If your machine forgets where the boot drive is, then it's time to change the battery. Replacing a weak battery, when possible, resets all parameters to their default settings. All of the primary BIOS setting are at the top of the screen. For each hard drive entry, select "Auto Detect" and remember to save on exit, typically by pressing F10.

Most of this article assumes you have a Pentium II or newer, or an Apple computer outfitted with an EIDE (PC-compatible) drive. Some drive manufacturers are better than others at providing documentation and "assistance." The best place is on the drive itself, but on paper, on a floppy or online, the more the better. ■

For more links and tips, visit Eddie Ciletti at www.tangible-technology.com and see if he ever got around to posting pix of his second child.

THE 80-CONDUCTOR SOLUTION

The Ultra ATA/66 hard drive spec suggests substituting a 40-conductor cable with an 80-conductor cable to guard against electronic noise interference—or signal crosstalk—for improved data integrity. The cable is plug-compatible with Ultra ATA/33 drives and headers. The pin side of the 80-conductor cable's connector is identical to the connector for a 40-conductor cable. Within the connector, the 40 additional ground lines are connected to the existing ground pins in the 40-pin connector. This ensures complete plug compatibility with existing drives and systems.

Mandatory for running Ultra ATA/66, using an 80-conductor cable doubles the Ultra ATA/66 burst data transfer rate (over the Ultra ATA/33 rate) without requiring any significant changes to the Ultra ATA spec. Newer systems can detect the presence of the 80-conductor cable. By having a break in one of the lines that's normally an unbroken connection in the 40-pin cable, the system BIOS can take advantage of the faster drive.

—Eddie Ciletti

ACOUSTIC SYSTEMS



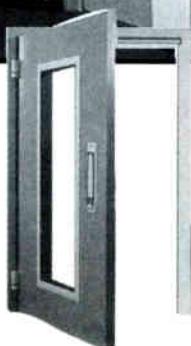
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“The Shipping News”

24-Bit Dialog, All the Way Through

By Tom Kenny

It's a truism these days in all worlds audio: Those who produce are working in the highest resolution possible, while those who consume often seem to be satisfied with MP3 quality. Until recently, 16-bit release limitations defined the divide between what the creators and consumers of content heard. But the gap has been closing in music and home theater with the advent of DVD. And now it's closing in feature films.

On *The Shipping News*, Miramax's holiday release based on the Pulitzer Prize-

“There are two problems,” Waldspurger explains. “First, we're recording 24-bit and the Avid can only accept 16. Other films have done it using CMX lists, but we like to work in OMF because we can see exactly what Andy [Mondschein, the film editor] cut, down to the sample. The other problem we had was that Glen recorded 4-channel audio. This leads to a big problem during prep, because the dialog editor needs to be able to access other channels of that Nagra to make sure that he has the best recording. This is a problem in Pro Tools because the OMF does not give you access to all those other tracks. It will just give you whatever the picture editor cut.”

IT'S ALL IN A NAME

The Shipping News was recorded by Gauthier to a Nagra D, 4-track at 24-bit, using a combination of boom and radio mics. Those tracks were loaded digitally into a Tascam MMR-8 for telecine, then exported as Pro Tools sessions. (The OMF library

was 130 gigabytes.) The sessions were sent to the picture department, where Jenny Davidoff Cook and Paul Wagtouticz hand-renamed all shots and takes consistently. Every take was then dithered down to 16 bits for import into the Avid, creating, according to Waldspurger, “parallel trunks in the tree,”—the original 24-bit files and the Avid import.

“Unfortunately, the by-product of importing it into the Avid is that it destroys the file name that we had worked so hard to get by removing characters and adding others,” Waldspurger says. “But I do picture assisting as well, and we knew of this hidden command in the Avid—you type it into the console—called RenameMediaFiles, which got us back our original names. Let's say the original shot was called '042-01_1*4'; that would be shot 42, take 1, channel 1 of 4. After using the Rename command, the file names matched very closely to what we started with. The Avid would add an S.A1 [S for *Shipping News*]

prefix and a suffix of .omf to the original file names. We then used a simple utility called Drop Rename to make our 24-bit master files match these new Avid names. If we had named the project anything longer than S, it would eat into the budget of 31 characters. At this point, the picture department and sound department files had the same exact names.

“Now the Avid does this hidden console command in a batch, so that doesn't take much time, but it gave us the ability to get our OMF,” he explains. “We used Digi Translator, the typical OMF translation tool, and it has an option to spit out a 24-bit OMF that thought it should be giving us 24-bit audio. Sample for sample, these files were the same in length as the picture department. The only thing different was the bit depth. But the length and samples were the same, and it all matched up.

“The basic idea, that we cut with a parallel set of files, the credit goes to Larry



Roy Waldspurger, Lee Dichter and Michael Kirchberger at the 80-input Neve DFC in Sound One, New York City.

winning novel, the audio post team wanted to take full advantage of 24-bit location recordings, carrying the original files through to the final mix and the archival master. Despite the current buzz around all things 24-bit, it was not a simple task. But the decision to go through the experiment of a 24-bit dialog chain certainly added depth and space to the final release, and, as a whole, it's a stellar track, full of air, dynamic range, subtlety, inventive design and some of the best dialog you will hear in a theater.

“We got involved before they started shooting,” recalls supervising sound editor and sound designer Michael Kirchberger. “We wanted to figure out some kind of way to take the 24-bit sound that Glen Gauthier recorded on a Nagra D and be able to access those original 24-bit files with an Avid OMF.” With help from assistant sound editor Roy Waldspurger, Kirchberger and the sound crew came up with a workaround.

THE CREW

Sound Editorial by: Sound, San Francisco
Post-Production Sound Services by: Sound One Corp., New York City
Foley Recorded at: Fantasy Studios, Berkeley, Calif.

Supervising Sound Editor/Sound Design: Michael Kirchberger
Re-Recording Engineers: Lee Dichter, Reilly Steele
Recordists: Harry Higgins, Martin Czernbor
Sound FX Editors: Steve Bissinger, Peter Staubli, Kyrsten Comoglio
Additional Sound Design: Peer Landa
Additional Sound Editor: Dan Korintus
Assistant Sound Editors: Roy Waldspurger, Everett Moore, Mick Gormaley
Apprentice Sound Editor: Michael Vangen
Sound Interns: Guru Mastak Khalsa, Lindsay Manning, Joel Dougherty
Sound FX Recording: Lang Elliot, Dan Gleich, Andy Aaron
Foley Artists: Margie O'Malley, Marnie Moore
Foley Mixer: Frank Rinella
Foley Recordist: Ben Conrad
Foley Editors: Jeremy Molod, George Berndt

Dialog Editor: David A. Cohen
ADR Editors: Jane McCulley, Laura Civiello
Assistant ADR Editor: Roland Vajs
ADR Engineers: David Boulton, Paul Zydel

Production Sound Mixer: Glen Gauthier

Schalit, a sound editor friend of mine. He came up with the big idea.”

Finally, in order to have access to alternate tracks, Waldspurger wrote code in a language called Perl, which gave the dialog editor, David A. Cohen, access to all four tracks in a given take, no matter which track the picture editor, Andy Mondschein, cut in. The OMF track that Mondschein cut would expand into four channels, A1-4, in sync. “The filter I wrote took a Pro Tools 5.0-style session and produced a template,” Waldspurger explains. “If Andy cut five tracks of production audio, which he did in some cases, then it was 20 tracks that the dialog editor had sitting there.”

That, in turn, was a great boon for lead re-recording mixer Lee Dichter at the predub.

THE FINAL MIX

“Certain tracks were pulled, and the dialog editor had decided which ones to go with,” Dichter says. “In mixing them, I might say that I need another angle, or another microphone, what else do you have? We played directly out of Pro Tools into the dialog premix, so at any time I could ask David to find another mic to maybe make a better transition from a close-up to a long shot, or something like that. I could make the choice, or I could take two of them and do cross-dissolves at the console. Sometimes, I would ask him for all four channels and mix and match—start with one fader and go to another to make the transitions really smooth.”

Miramax booked the effects and dialog premix for the same time last fall at Sound One in New York. Dichter got a one-day head start on the dialog predub, then fed each day’s work upstairs for Reilly Steele to premix effects against. Steele then sat in for the final with Dichter at the 80-input Neve DFC.

Because they didn’t have access to Mondschein and director Lasse Hallström during the predubs, the re-recording team did what Kirchberger called “defensive mixing,” going 13 8-track units wide for effects, Foley and backgrounds. Though it was not an effects-intensive picture, there was a lot of



Julianne Moore and Kevin Spacey in the Miramax release, *The Shipping News*

PHOTO: DOANE GREGORY/MIRAMAX FILMS

overlap material in the way the film was cut, and Kirchberger wanted to be able to take it apart easily. Also, the console was set up identically for each reel—pre-planned, but nonetheless a luxury, Dichter said—and during some of Quoyle’s (Kevin Spacey) underwater nightmares, and in the few big moments, they needed the tracks.

EFFECTS AND FOLEY

The effects scenes in *The Shipping News* are not the main attraction, but there are moments when the design works particularly well emotionally—the musical nature of the wind through the house cables; or the bubbly, underwater silence of a grown man’s nightmares; or just the icy, airy, wider-than-the-screen backgrounds.

Kirchberger made use of his extensive library and licensed much of the rest from a variety of sources. Lang Elliot, a sound effects recordist out of Ithaca, N.Y., whom Kirchberger first met on *Ishtar*, contributed indigenous birds and surf from the coast of Newfoundland. Some underwater material came from noted nature recordist Bernie Krause. Dan Gleich and Andy Aaron contributed additional effects. For the big house-moving-on-ice sequence, one of the elements was airplane skis on ice, which the late Alan Splet recorded for *Never Cry Wolf*.

Peer Landa, a composer in residence at CCRMA on the Stanford University campus, received an Additional Sound Design credit for his contribution, which melded wonderfully with Christopher

Young’s music in many key scenes.

“He did most of the cables for us in the house scenes,” Kirchberger recalls of Landa, who is a friend of Waldspurger’s. “He started with real recordings of huge, huge cables that he tuned with a crowbar. He took those elements, processed them, then morphed them with a young girl screaming. He’s Norwegian but he grew up in Sweden. My big joke was that he knew more about what Lasse wanted in the soundtrack than the picture editor or any of us, because he spoke the language.”

Foley was performed by Margie O’Malley and Marnie Moore at the Saul Zaentz Film Center in Berkeley, Calif. Foley was mixed to Pro Tools by Frank Rinella, then edited by Jeremy Molod and George Berndt, all at 24-bit.

IN THEATERS

The Shipping News was mastered at 24-bit 48kHz and archived to an Akai DD8 drive. It was one of the first films in wide release to make use of Dolby’s new Digital Mastering Unit (DMU), which has digital inputs and dithers down to 20-bit, rather than the DS10’s 16-bit. “We complained to Brad [Hohle] from Dolby that we had to dither down to 20 bits to get into the DMU instead of going in the full 24,” Kirchberger laughs. “Some day, we can play this and get our extra four bits out. But hey, I would have been happy at 16-bit with Lee at the console. Nobody in the world makes dialog sing the way he does.” ■

Tom Kenny is the editor of Mix.

OYSTERHEAD

GREAT SOUND FROM SMALL PACKAGES

When Phish, the most popular jam band in the country, announced in 2000 that they were going on an indefinite hiatus, many fans didn't believe them, or assumed that the band would be back on the road by the summer of 2001. But the various members have studiously avoided each other, and have given no indication of when they might start playing together again. However, they have not been idle; all four have taken on various side projects. By far the busiest has been guitarist Trey Anastasio, who played large venues like the Berkeley Greek Theatre and Colorado's Red Rocks during a summer solo tour. Anastasio then took off on a fall mini-tour with former Police drummer Stewart Copeland and Primus bassist Les Claypool.

The Anastasio/Copeland/Claypool trio first got together as Oysterhead for a one-off show at the New Orleans Jazz Festival in May 2000. It was generally assumed that the trio would not play together again, especially because Anastasio and Claypool were dissatisfied with the results. However, Copeland took a tape of the show, edited it down to 45 minutes of solid material and sent it to the other two. Intrigued, they made plans to get together again. The result was a new record, *The Grand Pecking Order*, and a tour that brought them to the Fillmore in Denver for two nights over Halloween.

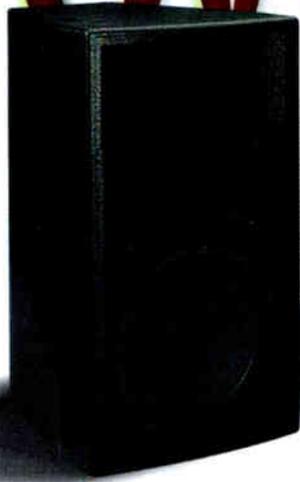
by Candace Horgan

Trey Anastasio



PHOTO: VANCE NITRO/GROOVE COGRAPHY

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Full Range Long Term 127.3

1100 Watts available to the components

- > Compact, self-powered, 3-way full range system
- > Horn-loaded MF/HF (65 x 45 coverage pattern)
- > 15-in vented LF; 8-in horn loaded MF; 1.4-in exit/75mm voice coil HF compression driver on constant directivity horn

EAW



When Oysterhead decided to do a full-on tour, one of their first problems was choosing a sound engineer. They eventually settled on Tim “Quake” Mark, an engineer with 24 years’ experience who works with ProMedia/UltraSound out of San Francisco. Says Quake of the selection process, “Les and Trey both had engineers that they had worked with for long periods of time, at least 15 years. When this project came up, each wanted to use their own guy, and someone—perhaps Stewart—suggested that they look at a third person. I used to be the FOH engineer for Jane’s Addiction. On one tour, they allowed everyone on the tour to pick an opening band, and I picked Primus. I became friends with Les at that time. That was about 11 years ago. Four months ago, I started talking with these guys again, and my name floated to the top of their list.”

HANDMADE MIC PRE’S

For three musicians, Oysterhead makes quite a large sound. At FOH, everything starts with the desk. “I use a Gamble EX56,” says Quake. “I get a lot of grief from younger engineers for using it, actually. I’ve tried all the automated desks, but I really love this one. The signal path

is clean, it has the best mic preamps I’ve used and it has great EQ. If you A/B’d the Gamble pre’s to the Grace pre’s that we are using for recording, you’d be amazed how many people would choose the Gamble’s.

The Gamble’s are all handmade and all a little different. I’ve been using this desk for over seven years now, and I know what I am going to get every time.”

Quake doesn’t find the need to use many effects, and likes Oysterhead’s approach to sound. “It’s been pretty easy, because they are virtuosos and a three-piece—it fits very well with my ideas about mixing,” says Quake. “I approach it as sound reinforcement. After that part of it is done, they play as a band onstage, and it comes over out front that way. It’s also been very interesting watching their use of dynamics. They go from doing a quiet acoustic tune like ‘Birthday Boys’ to doing ‘Pseudo Suicide,’ the loudest tune of the show. You can also tell how educated the audience is because they get the swings in the dynamics; their audience is very attentive compared to a lot of

ones that I have worked on. With the amount of compression I use, the challenge is to use compression to gain control of the mix without destroying the band’s ability to be dynamic.”

For effects, Quake carries two Yamaha SPX900 reverbs for vocal effects, a Lexicon PCM 70 reverb, a TC 2290 delay and a TC M5000 dual-engine reverb. The main vocals (Anastasio and Claypool) get Summit DCL-200 compressors, and Quake assigns Aphex 661 compressors to the remaining vocal channels. Six Aphex Expressors are patched to “everything from kick and snare to bass guitar” and a Drawmer 441 Quad compressor is on the guitar channels. Seven channels of Aphex noise gates are used on the drum kit, and Copeland controls an Echotron delay unit on the timbale/snare inputs, which he uses for one song, “Wield the Spade.”



L-R: sound engineer Tim “Quake” Mark, monitor engineer Tom Lyon and systems engineer Jeff Child

HOW MANY DRUM MICS?

Choosing microphones proved to be an interesting task for Quake. "One of the weird things of coming into this group is you have three different visions of how things should be miked, and then you have a fourth entity, me, who then says, 'This is how we are doing it today,'" he laughs. "Stewart has a Beta 52 on the kick drum. On the snare drums, I have two SM57s, one on top and one on bottom, and then I have nine SM98s for toms and percussion toms; he has two different setups. I am using Beta 56s for a timbale and a second snare on the percussion rig, and a Beta 52 on the gong drum. For hi-hat, cymbal and percussion tables, I use Shure KSM 27s; they are a brand-new mic, and as far as I know I am the first to use them. Finally, I use a KSM 32 on the overheads on the drums. That's 24 inputs total."

Compared to Copeland's setup, Quake has it fairly easy with Claypool and uses just three Countryman DIs for Claypool's bass pedals and two bass guitar channels. "One minute, Les plays a regular bass, then a banjo bass, then an upright," explains Quake. "He has an Ampeg bass setup, but everything for the P.A. comes from the DI."

Anastasio's guitar setup is more complicated. "Here's the thing for Trey," explains Quake. "He plays an acoustic guitar on 'Birthday Boys.' I mike the guitar itself with an Audix CX111; he also is plugging the acoustic into a California Blonde amplifier, and I take a direct signal out of the back of that amp. For the electrics, he has total of six channels. I use an Audix D4 in the back of the cabinet, out of phase; in the front of the cabinet, I have an Audix CX-111 in the front of the speaker and a second CX-111 about eight inches back, just to give a little bit more depth to the sound. He also plays through a Leslie—we mike the high end with Sennheiser 409s, and the bottom end with an Electro-Voice RE38."

HOW MANY VOCAL MICS?

The vocal setup is also less than straightforward. "Les has three different vocal channels and three different vocal mics," says Quake. "His main mic is an SM57 with a windscreen on it, which he has been singing into for as long as I've known him. The second channel is a Shure Green Bullet, set up next to his main vocal, that is used as an effect mic to make it sound weird, like a megaphone. For one song, Les has an Army helicopter helmet with a

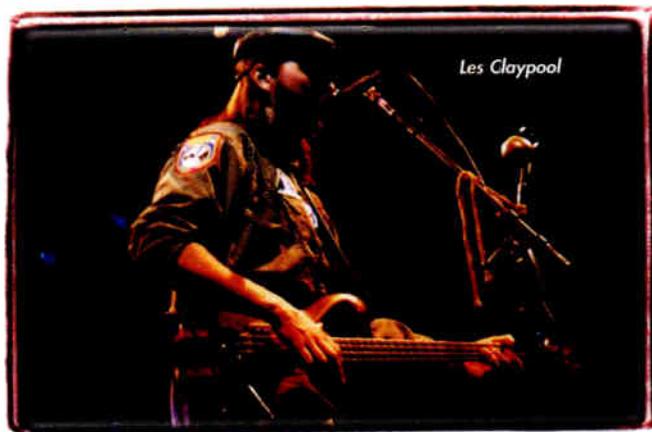


PHOTO: CANDACE HORGAN

Radio Shack Motorcycle Communications mic, one that hikers use to talk to each other. He uses it to sound different. It works real well in the context of the song." Anastasio sings into either of two Audix VX-10s, and Stewart also has two Audix VX-10 vocal mics, one on his main drum kit and one on his percussion rig.

Despite the fact that Oysterhead is only playing mid-sized venues, they are carrying their own all-Meyer P.A., provided by ProMedia/UltraSound. "I have up to 12 MSL-4s, 16 MSL-3s, 12 650s, four MSL-2s and two UPAs," says Quake. "Here at the Fillmore, I am running three MSL-4s a side, on top of six MSL-3s, and four of the 650 subs per side. We have different bumpers to fly the P.A. off of depending on how much P.A. I can fit in the room."

The system is powered by Crest amplifiers, except for the MSL-4s, which are self-powered. All system control is done on a laptop with BSS's Soundweb software, which Quake uses to set EQ, delay and the output levels for each speaker zone. "The whole Soundweb idea makes everything so much more quiet and efficient," notes Quake. "I can use less P.A. to fill the room, as opposed to bringing in everything you've got and turning it to '10.'" Quake uses an XTA SIDD inserted across the FOH console output to add a little compression to the overall mix and uses Smart Live Version 4.5, controlled via Soundweb, for analysis.

Oysterhead has been recording every show on five Tascam DA-78s. Quake uses 40 Grace preamps for recording purposes and monitors via a Mackie 32-channel console. "Everything is done at FOH, if we have the room," explains Quake. "However, the recording setup was created so that Tom Lyon [monitor engineer] can do it onstage if needed. Jeff Child is the third tech guy we have; he's the systems engineer. He slaps my hand when I get too

loud. He also puts together the recording rig with the drum tech, Pete Carini."

Lyon, who is also affiliated with ProMedia/UltraSound, has been doing sound work since 1992. "I got into it when I was in college, where I was studying to be an engineer, but not an audio engineer," he explains. "I had done the Snow Core Icicle Ball tour with Les' other band, the Colonel Les Claypool's Fearless Flying Frog Brigade, this past January."

Though in-ear monitors have gained increasing popularity in recent years, Oysterhead's monitoring setup is a bit more old-school. "In-ears wouldn't be appropriate because they are just getting their communication going," notes Lyon. "The stage volume isn't too loud right now so it doesn't affect it too much." Onstage wedges include two Meyer USM-1s for Anastasio at his main position and one at his acoustic position. Claypool's two wedges are supplemented with a Meyer MSW subwoofer cabinet, while drummer Copeland listens to two MSL-2s and a single 650 subwoofer at his primary kit and a single MSL-2 at the percussion setup. Lyon mixes on a 48-input Gamble EX48 monitor board.

The monitor mix concentrates mostly on vocals. "The mix is really simple," says Lyon. "Trey gets his vocal, and under that is a mixture of everyone else's vocals and a tiny bit of drums, but no guitar. He also has, luckily for me, his own Gallien Kruger bass amp, which he uses to get some of Les' signal, and he sets his own levels on it. Stewart gets a lot of kick and snare, a lot of bass and guitar, and all the vocals; he gets as much of the front-of-house mix as I can give him. Les gets his voice, a little bit of bass and guitar, and kick drum." ■

Candace Horgan is a freelance writer based in the Denver area.

Touring In 2002

SECURITY CONCERNS AT AIRPORTS



ILLUSTRATION: MIKE CRUZ

by Mark Frink

Everyone remembers where they were on September 11. I happened to be in Denver for a k.d. lang show and, once the show was cancelled, I had to ride back to L.A. in the equipment truck. It seems unlikely that the events of that horrific day will be repeated, but anyone who spends more than a few dozen days a year flying should reassess their future travel plans in light of the new airport security measures. This month's column consists of reminders and useful tips that may help your 2002 touring season run smoothly.

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442

The 442 offers essentially the same features as the 480 with a 4x4 input/output configuration and a tamper-resistant front panel.



240

The 240 offers a 2 input, 4 output configuration with switch closure inputs, which makes the 240 perfect for portable and fixed-install applications.



241

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The 480R is the master remote controller for the 480 Series DriveRack™ products. All aspects of any 480, 481, 442 or 482 can be controlled by the 480R.

ROLL YOUR OWN

For the price of a handful of first-class tickets, a small group can travel in style on a small chartered jet. Bidjetcharter.com is a helpful site for pricing itineraries. The trick to keeping costs down is to travel two legs in one day, flying into one city and on to the next after the show that same day. A Lear 35 is like a limousine with wings, and a Gulfstream can hold a dozen or more passengers, but luggage space is still at a premium.

First, the obvious stuff. Reeling from a precipitous decline in air travel, several airlines have cut back their schedules, and will continue to do so as necessary. It's now more important than ever to confirm that the flight you've booked is actually flying. If your flight is canceled, remember that airlines have a little-publicized policy of accepting passengers from other airlines. This is one instance in which an old-fashioned paper ticket is useful. If your flight is canceled, or delayed to the point where a connection will be missed (and this can include a ground connection), your counter agent can put you on another airline's flight. However, this is difficult or impossible without a paper ticket.

Most airlines now recommend that passengers arrive two hours before departure, and, on early morning and late afternoon flights, when airports are busiest, it now can take all of that time to reach the gate. Simply getting to the front of the ticket counter line may take more than an hour, and security screening can add another half hour. Of course, at other times of the day it may only take 15 minutes to get from curb to gate, leaving you with an hour and 45 minutes to fill. Sadly, the Nashville Admiral's Club is just one of several executive lounges that have been closed, as have many in-city ticket centers.

SAFETY FIRST

To get past security checkpoints, you now need a boarding pass, a ticket or a printed e-ticket confirmation, and photo ID. If you travel with a computer or cell phone, you may be asked to demo them. The wrong choice of words at a security checkpoint can have horrendous consequences, so any crew members new to touring should be thoroughly briefed—joking with airline or security employees is high-risk behavior. Any real or perceived lapse in security can result in an

entire airport being shut down.

Remember, knives can only be transported in checked baggage and gate security will confiscate any sharp object, including nail scissors. Knives of any size or kind are prohibited in the aircraft cabin—many airlines no longer provide steak knives in first class. Other prohibited items include corkscrews, knitting needles, baseball bats, golf clubs, pool cues, ski poles and hockey sticks. Packing small, loose items into clear plastic containers will help speed you through security—heavy-duty Ziplock freezer bags are a better choice than microphone pouches.

THE OTHER "PACK"

Airlines generally allow you to check two bags, each weighing up to 70 pounds. Extra pieces and oversized or overweight bags are deemed "excess baggage" and charged accordingly; extra pieces start at about \$75 per, and items that are both oversized and overweight can be charged twice, at the discretion of the agent. However, a group traveling together can use the sum of their individual allowances as their total baggage allowance (i.e., four travelers can check eight bags). And you can often get away with slightly overweight bags, especially at those airports

BAGGAGE



PICKS FOR THE AIRPORT

Chicago Case's MFCART22149 meets the strictest airline carry-on size restrictions and has a built-in telescoping handle and roller-blade wheels. When you need to get the most out of your carry-on allowance, this case fits all requirements. Made of high-density polyethylene, the case has both key-lock clasps and a combination lock. The MFC22149 without wheels and handle has a little more room inside—enough to hold all mics and DIs for a typical show.

Samsonite's 29-inch "Cartwheels"

Oyster is the Tupperware of road warriors. You've seen thousands on luggage carousels, and they can be bought cheap on the streets of New York City. These rugged polyethylene cases are not only good for clothes—I have used one for an entire show's worth of mic cable looms—and they're just about the right size for a three-space rack-sleeve. They can also hold a snare, kick pedal, cymbals and sticks.

They're never questioned at check-in, and if it looks like a suitcase, you'll often get away with one that weighs more than the 70-pound limit.



Pelican's 1470 and 1490 Computer Cases. The new restrictions limit you to only one carry-on plus one personal item, which can be a computer case or a briefcase. The Deluxe version of this new case comes in two sizes, for either 12- or 14-inch-wide computers, with key locks, a file and cell phone organizer in the lid, a shock-absorbing computer tray with accessory storage underneath and a detachable shoulder strap. The case is waterproof, and if it needs to be gate-checked on a particular flight, it's rugged enough to protect a laptop.

TechnoMad's ProRacks are roto-molded cases made from the same materials as TechnoMad's rugged military-spec'd. speakers. The linear dimensions of the 4RU and 6RU sizes qualify them as checked baggage, and, because they weigh under 25 pounds empty, they can be loaded with 45 pounds of gear without exceeding weight limits. Gasket seals protect against moisture and dust.

—Mark Frink

THE SHIPPING NEWS

Do you have a piece of baggage that cannot be checked but absolutely must reach its destination? Overnight round-trip for a 70-pound item via FedEx or UPS is typically less than the cost of a discounted coach ticket. Items weighing more than 150 pounds can be shipped by FedEx Freight, and I once overnighted an EAW KF 850 cabinet. A new FedEx division, Custom Critical, provides time-specific, exclusive-use trucking up to 800 miles overnight.

that allow curbside check-in; tip a skycap generously, and your group's baggage may avoid the scales.

Checked bags must have a "linear dimension" (length + width + height) of 62 inches or under. Items over 62 linear inches can be charged \$75, no single dimension may be over 62 inches and items over 115 linear inches can be refused. Items weighing more than 100 pounds can also be refused. Exceptions to these rules can be made for camera, film, light-

ing and sound equipment that are checked by TV or film company representatives; these items are charged at a rate of \$35 per piece. Make sure you have proper credentials—business cards and a company name stenciled on the cases.

Traveling abroad, all bets are off. Foreign countries have vastly different luggage restrictions, and I can tell you from experience that a bag weighing more than 50 pounds won't get on a flight in Australia. Also, carrying a walkie-talkie onboard a plane in Germany will get you stopped.

Another point to remember is that luggage liability in the U.S. is limited to \$2,500 per passenger, and most airlines assume no liability whatsoever for computers, electronic and photographic equipment, jewelry, cash and securities, artwork and "fragile items." Any trip that includes a change of planes represents an excellent opportunity for checked bags to wind up at the wrong destination; I still have a Hawaiian agricultural inspection sticker on my mic case to prove it.

CARRY ON

On commercial jet flights, you can now

carry on only one bag, plus one personal item. The one personal item can be a purse, briefcase, computer bag or camera case and an additional coat, jacket, newspaper, book, snack or drink usually don't count. Of course, passengers without luggage to check can bypass the counter and go directly to the gate. And going "carry-on only" saves time at the other end—while other passengers are waiting at the baggage carousel, you can be first in line at the taxi rank or car rental counter.

If you opt for the carry-on option, some downsizing may be in order. With an all-black wardrobe, doing laundry a little more often can help you get all your stuff into a single carry-on bag. This year's backstage laundry award goes to Walnut Creek's Alltel Pavilion (Raleigh, N.C.), whose recent renovations include two new pairs of Maytag Neptune machines. Most airlines have similar size limits for the carry-on bag (typically 22x14x9 inches or 24x16x10 inches). [See the accompanying sidebar "Baggage Picks for the Airport" for some suggestions.] ■

Mark Frink is Mix's sound reinforcement editor.

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PHOTOS AND TEXT BY STEVE GRANITZ

Fuel is a hard-working band. To support their first album, 1998's *Sunburn*, Fuel played over 425 shows on a two-year world tour, and the band had already spent 15 weeks in 2001 on a summer tour with Aerosmith when they started their own headlining tour of theaters and small arenas in October. The relentless touring has paid off; by December, the band's second album, *Something Like Human*, had been on the charts for over a year, spawning at least two charting singles, and had also been certified double-Platinum. *Mix* caught the band's two San Francisco Bay Area gigs at the San Jose Event Center and San Francisco's Warfield Theatre.



Fuel is:
 Carl Bell: lead guitar
 Brett Scallions: lead vocals/guitar
 Jeff Abercrombie: bass
 Kevin Miller: drums



"The Midas XL4 is the best-sounding console with the features I was looking for," says FOH engineer and production manager Randy Lane (pictured above on the right, with Clair audio crew chief Brent Carpenter), who praises the board's EQ and preamps and overall roadworthiness. Lane uses a BSS DPR-9011I dynamic equalizer on the lead vocal channel. "It just takes the point out of the vocal every now and then when it gets a little bit harsh in the midrange, without getting in the way of the vocal clarity," he explains.

Fuel is touring with a Clair Bros. I-4 line array P.A. system for the first time. "Clair really has got something going with this because the cabinet is very punchy, but, at the same time, it's got a lot of top without being harsh," comments Lane. "That's what this band really looks for—clarity without it being brutally loud in the high mids. The Clair guys have gone out of their way to make sure we have what we need."



Singer Brett Scallions plays Fender Telecasters, while lead guitarist and chief songwriter Carl Bell plays Gibson Les Pauls and one Paul Reed Smith. The band's guitar tech is Jeff Tweedy.



Monitor engineer Brian Kutzman (pictured below on the left with audio tech Dave Hood) worked with Fuel drummer Kevin Miller for 10 years in a number of different bands, and has been mixing monitors for the band since the start of its latest 15-month tour. Kutzman is using a Midas Heritage 3000 to create separate mixes for in-ear monitors, vocal wedges, side-fills and a drum fill system. All four musicians are using in-ear monitors (Ultimate Ears molds and Shure PSM600 receivers), and drummer Kevin also has a full-range drum fill, with two ML 18s, two top boxes there. Lead singer Brett Scallions also has a pair of Clair Bros. 12AM 2 wedges.

"I like this newer version," says Kutzman of the Heritage. "The EQ section on it is incredible. It's crystal clear—you turn any knob, you actually hear what it's doing."

Drum/bass tech Nathan Wazelek takes care of bassist Jeff Abercrombie and drummer Kevin Miller. Drum mics are all Audio-Technica models: ATM25s on kick drums, ATM23s on snare (top and bottom), ATM35s on toms, and AT4050/CM5s on overheads and hi-hat.



SHOCKPROOF MIC CLIP

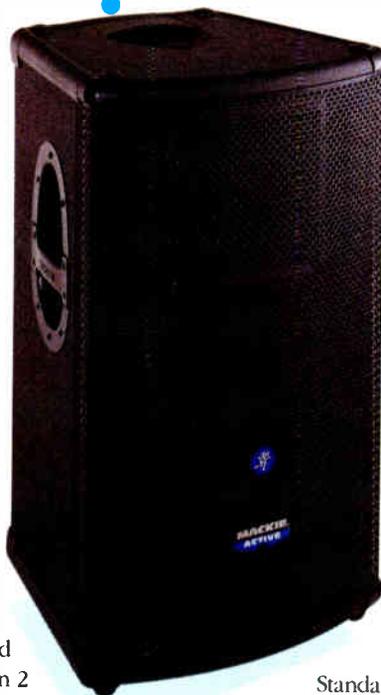
On-Stage Stands (www.oktava.com) offers shock-proof microphone clips for handheld microphones measuring either 25- or 30mm in diameter (MY-325 and MY-330 models, respectively). Each clip secures the mic with 35 pounds of pressure, while a contact rubber ring at the clip's base is specifically designed to absorb vibrations, keeping the sound clean. The clips are guaranteed for life and are priced at \$12.99.

**QSC DIGITAL PROCESSOR**

The DSP-30 Digital Processor from QSC Audio Products (www.qscaudio.com) is a 2-channel, rackmount, multifunction signal processor. The customizable DSP-30 (eight user-configurable presets) provides crossover, compression/limiting, parametric EQ and subsonic filters, time delay, attenuation, mixing, and tone- or noise-generation functions. The DSP-30 features 24-bit converters and operates at a 48kHz sampling frequency. Program selection is via an intuitive front panel; a RS-232 port provides a computer interface for the supplied PC-based Signal Manager software. Inputs are balanced Neutrik® Combo connections; outputs are XLR.

MACKIE POWERED SPEAKERS

Mackie Designs (www.mackie.com) offers the SA1232, a three-way, tri-amplified, horn-loaded system powered by its own 1,300-watt amplifier. The SA1232 features two 12-inch woofers with 3-inch voice coils, a high-output, horn-loaded 6-inch midrange, and a 1-inch exit CD on a wide-dispersion, 90°x40°, mid-/high-frequency Optimized Wavefront horn design. Mackie's SA1521 is a two-way, bi-amplified, horn-loaded, active speaker system featuring a 15-inch woofer, and a 1-inch exit CI mounted on a 75°x65°, mid-/high-frequency wide-dispersion horn. The SA1521 has 500 watts of onboard amplification and is capable of peak SPLs in the 130dB range. Both the SA1521 and SA1232 feature trapezoidal cabinets constructed of heavy-duty, 13-ply Baltic birch with molded impact-resistant, composite-resin front panels. The SA1232 is priced at \$1,699; the SA1521 is \$1,199.

**MACPHERSON M2X VERSION 2**

MacPherson (www.macpherson-inc.com) is shipping the M2X Version 2, a compact and versatile loudspeaker designed to be bi-amplified. Version 2 features a new high-power, 15-inch LF driver that requires no filter network, minimizing phase changes and preserving output sensitivity. A custom-designed damping insert has been added to the 2-inch-exit HF compression driver, and a completely redesigned HF filter network shapes and controls response. Featuring a trapezoidal enclosure constructed from hardwood plywood and finished with a rugged epoxy coating, M2X Version 2 may be used singularly, in stereo pairs or in horizontal arrays. An integral cast-aluminum pole cup allows the speaker to be stand-mounted.

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Shure Incorporated (www.shure.com) has introduced the ULX™ Standard and ULX Professional UHF Wireless systems. Featuring proprietary Automatic Frequency Selection circuitry, the systems operate between 554-865 MHz and offer up to 1,440 selectable frequencies across 36 MHz. Users can operate up to 40 compatible systems simultaneously (area-dependent) when both U.S. frequency bands are utilized. All ULX receivers include Predictive Diversity™ circuitry to minimize RF dropout and feature multifunction, liquid crystal displays for monitoring group/channel selection, battery level and TV channel. ULX Professional systems automatically scan all frequency groups to find the maximum number of compatible frequencies, and also feature frequency and volume lockouts, advanced front panel controls, indicators for RF signal strength, remote-mountable wave antennas and a rackmountable metal chassis. ULX Systems are available in over 30 system configurations with a variety of microphone options. ULX Standard systems range from \$960 to \$1,500. (With an SM58 handheld transmitter, it's \$1,050.) ULX Pro prices range from \$1,223 to \$2,953. (A single-channel ULX Pro system with a Beta 87C handheld transmitter is \$1,486.)

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2002 Grammy® Award Nominees For Production and Engineering

And you thought *last* year was U2's big year at the Grammys! After nabbing three awards in 2001, the Irish quartet is nominated for eight this year, leading a large, diverse field that includes talented newcomers such as Alicia Keys and Nelly Furtado, along with veterans of every

style, vying for trophies in a zillion categories. As has become traditional, we're proud to salute some of the engineers and producers up for Grammy Awards this year. We'll have more on the winners in our April issue.

—Blair Jackson

ALBUM OF THE YEAR

Acoustic Soul, India.Arie. Producers: India.Arie, Mark Batson, Carlos Broady, Blue Miller, Bob Power. Engineers: Mark Batson, Carlos Broady, Kevin Haywood, Avery Johnson, George Karas, Jim Lightman, Blue Miller, Mark Niemiec, Bob Power, Mike Shipley, John Smetz, Alvin Speights, Mike Tocci, Dave Way.

All That You Can't Leave Behind, U2. Producers: Brian Eno, Daniel Lanois. Engineers: Brian Eno, Steve Fitzmaurice, Julian Gallagher, Mike Hedges, Daniel Lanois, Steve Lillywhite, Tim Palmer, Richard Rainey, Richard Stannard.

Love and Theft, Bob Dylan. Producer: Bob Dylan. Engineer: Chris Shaw.

Stankonia, Outkast. Producers: Earthtone III, Organized Noize, Antonio "LA" Reid. Engineers: Jarvis Blackshear, Leslie Brathwaite, Josh Butler, Ralph Cacciurri, John Frye, Mark Goodchild, Carl Mo, Kevin Parker, Neal H. Pogue, Richard H. Segal, Kenneth Stallworth, Matt Still, Jason Stokes, Bernasky Wall, Derrick Williams.

O Brother, Where Art Thou?, Various Artists. Producer: T Bone Burnett. Engineer: Mike Piersante.



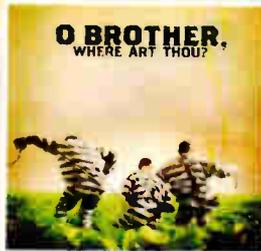
India.Arie

RECORD OF THE YEAR

"Video," India.Arie. Producers: India.Arie, Carlos Broady. Engineers: Kevin Haywood, Mike Shipley.

"Fallin'," Alicia Keys. Producer: Alicia Keys. Engineers: Kerry Brothers, Russ Elevado.

"Ms. Jackson," Outkast. Producer: Earthtone III. Engineer: John Frye, Neal H. Pogue.



"Drops of Jupiter," Train. Producer: Brendan O'Brien. Engineers: Nick DiDia, Brendan O'Brien, Ryan Williams.

"Walk On," U2. Producers: Brian Eno, Daniel Lanois. Engineers: Steve Lillywhite, Richard Rainey.



Steve Lillywhite

BEST ENGINEERED ALBUM, NON-CLASSICAL
Ballads—Remembering John Coltrane, Karrin Allyson. Engineer: Josiah Gluck.

Life on a String, Laurie Anderson. Engineer: Martin Brumbach.

The Look of Love, Diana Krall. Engineer: Al Schmitt.

New Favorite, Alison Krauss & Union Station. Engineer: Gary Paczosa.

*Time*Sex*Love**, Mary Chapin Carpenter. Engineer: George Massenburg.

BEST REMIXED RECORDING, NON-CLASSICAL

"Heard It All Before," Sunshine Anderson. Remixer: E-Smoove.

"I Feel Loved," Depeche Mode. Remixer: Danny Tenaglia.

"Thank You," Dido. Remixer: Deep Dish.

"Soul Shakedown," Bob Marley. Remixer: Steve "Silk" Hurley.

"Baby, Come Over," Samantha Mumba. Remixer: K-Klass.

PRODUCER OF THE YEAR, NON-CLASSICAL

T Bone Burnett (*O Brother, Where Art Thou?*, Various; *Down From the Mountain*, Various; *Fan Dance*, Sam Phillips)

Gerald Eaton, Brian West (*Whoa, Nelly!*, Nelly Furtado)

Nigel Godrich (*Amnesiac*, Radiohead; *The Invisible Band*, Travis)

Jimmy Jam and Terry Lewis (*No More Drama*, Mary J. Blige; *When a Woman Loves*, Patti LaBelle; *All For You*, Janet Jackson)

Dr. Dre ("Break Ya Neck," Busta Rhymes; "Family Affair," Mary J. Blige; "Fast Lane," Bilal; "Let Me Blow Ya Mind," Eve, featuring Gwen Stefani)

PRODUCER OF THE YEAR, CLASSICAL

Manfred Eicher (*Haydn: The Seven Words*; *Leos Janacek: A Recollection*; *Hollinger: Schneewittchen*)

David Frost (*Mendelssohn: Songs Without Words*; *Schoenfeld: Café Music*, etc.; *Schubert: Piano Duets—The Final Year*)

James Mallinson (*Berlioz: La Damnation De Faust*; *Berlioz: Les Troyens*; *Strauss: Die Liebe Der Danae*)

Joanna Nickrenz (*Haydn: The Complete String Quartets*)

Robina G. Young (*Elgar: Nursery Suite*; *Foss: Piano Concertos*; *Rachmaninov: Piano Concerto #3*)

BEST ENGINEERED ALBUM, CLASSICAL

Berlioz—Les Troyens, Sir Colin Davis. Engineer: Simon Rhodes.

Leonard Bernstein—West Side Story Suite, Joshua Bell. Engineer: Richard King.

Haydn—The Complete String Quartets, The Angeles String Quartet. Engineer: Marc Aubort.

Respighi—Belkis, Queen of Sheba, Eiji Oue. Engineer: Keith O. Johnson.

Vaughn Williams—A London Symphony, Richard Hickox. Engineer: Ralph Couzens.

Editor's Note: The above reflects selected credits. For full credit listing, visit www.grammy.com.

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LEONARD COHEN

NEW SONGS, NEW APPROACH

By Eric Rudolph

Mention Leonard Cohen to the average pop fan of a certain age and you'll likely evoke an exaggerated, croaking, mocking line or two from the songs "Suzanne" or "So Long Marianne," both from his 33-year-old first record, *Songs of Leonard Cohen*.

That the 67-year-old native Canadian, who first became something of a pop star as an iconoclastic, precocious young Montreal poet and novelist, should be so strongly identified with his earliest songs is testament to the stealth-like quality of his unusual but successful career. Although Cohen has sold more than 12 million records worldwide (in the CD era alone, according to his record company, Columbia), in America, starting in the late '70s, he became mired in a cult artist's career path for a decade. Large and extremely enthusiastic followings remained primarily in Europe and Scandinavia.



PHOTO: LASLO

That all changed, however, in 1988, when the self-produced *I'm Your Man* put Cohen solidly back on the American musical map. This album, with its sophisticated pop polish; wry, wicked humor; and soulful songs, eventually sold nearly two million copies worldwide.

Five years later, *The Future* rewarded patient fans with more impossible-to-ignore tracks, several of which found their way onto the soundtracks of the films *Pump up the Volume*, *Natural Born Killers* and others. In the title song of *The Future*, which



Cohen has said was inspired by the end of the Cold War and the chaos he felt would certainly ensue, he wrote and sang the now-more-than-ever chilling words, "I've seen the future, brother, it is murder."

It has been nine years since *The Future*, and the only Cohen releases since then have consisted of two live recordings. Cohen, who has had a lengthy association with Zen Buddhism, spent more than five of those intervening years at a Southern California Zen Buddhist monastery atop Mt. Baldy.

"I was nearly 60 when my last tour ended, and my teacher Roshi was nearly 90, so it seemed like an appropriate moment to spend more time with him," Cohen says from his Los Angeles home. "When I came down from Mt. Baldy about two

years ago, I met with Sharon Robinson." (Robinson had sung on Cohen's records and tours, and they had written two of his best recent songs together—"Everybody Knows" and "Waiting for the Miracle.")

Cohen and Robinson talked about ideas for songs, and eventually, when Cohen went to one of her son's piano recitals, he asked Robinson if she would collaborate with him on the next record. Eventually, her role expanded to that of producer, co-writer on all the songs, and musician playing all the instruments via samplers (aside from Bob Metzger's electric guitar part, on one track).

The result of that partnership is an unusual and spare recording. *Ten New Songs* features only Cohen's lead vocals Robinson's densely overdubbed backing vocals and the above-mentioned actual musical instrument on one track. Robinson used MIDI gear and sampling software to create the rest of the music.

The project began when Cohen gave Robinson poems and lyrics he'd written, mostly while at the Zen center, along with some rudimentary demo

—CONTINUED ON PAGE 152

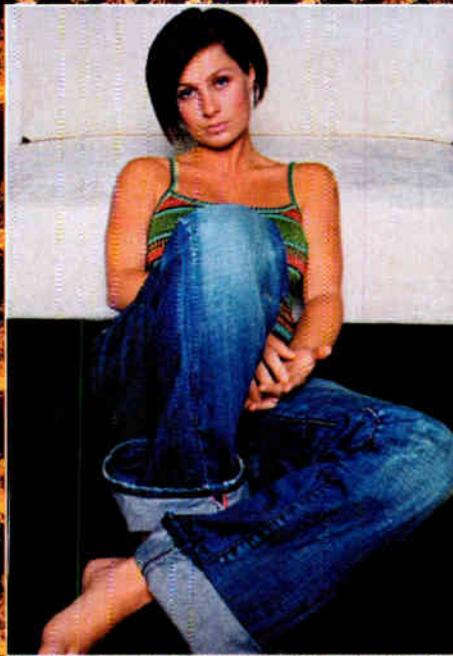
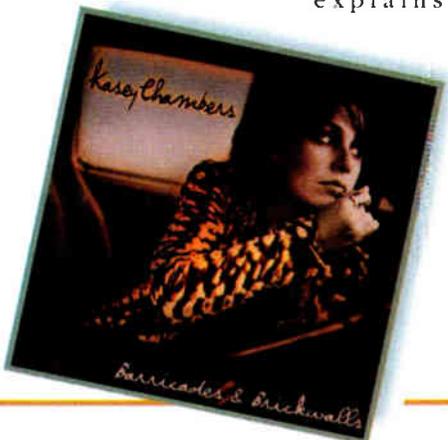
KASEY CHAMBERS

AUSTRALIA'S COUNTRY QUEEN
IS THE REAL DEAL

By Elianne Halbersberg

Artists often say that they have a lifetime to make their first album. For Kasey Chambers, that's especially true. Though she's just in her mid-'20s, she spent almost half her life recording and traveling around the wilds of Australia with her family in the Dead Ringer Band. By the time she released her solo debut, *The Captain*, in the U.S., Chambers was a seasoned singer/songwriter and a hit in her native land, where the CD had enjoyed success since 1999. America embraced her, too, as critics likened her to Emmylou Harris and Lucinda Williams and placed her on their "best of" lists. American audiences got a taste of her music when she toured with Williams, performed on *Austin City Limits* and had her album's title track featured on the HBO series *The Sopranos*. And she held on to her family roots, with her father playing guitar in her band, her mother overseeing merchandise, and brother, Nash, working FOH sound and producing her albums.

Before *The Captain* was available in the U.S., Chambers was already writing for her latest project, *Barricades & Brickwalls*, which doesn't stray stylistically from the alt-country vibe of her debut. But its story, she says, is different. "*The Captain* was made over 20 years of life as far as writing, no pressure to bring it out, and it came out sounding like a reflection of those 20 years," Chambers explains.



"This album was three years in the making and says more about who I am and where I'm going. I was lucky not to have too much pressure from my record company to bring out an album."

Barricades & Brickwalls was recorded primarily at Mangrove Studios in Australia, with additional tracking in Melbourne, Nashville—for guest appearances by Lucinda Williams and Matthew Ryan—and in Nash Chambers' home studio. Working piecemeal wasn't a problem, she says, because the songs were basically cut live. "My voice was recorded at the same time as the drums, bass and guitar. We're not the type of people to go over something 100 times until it's perfect—and it may sound like that. I may go flat a couple of times, but we didn't lose the emotion. The biggest problem was that we were on tour so much that we had to take whatever time we could get. I wasn't looking forward to doing it that way, but in the end we got a lot of moods that we didn't have on the first album."

In addition to giving her a taste of success at home and in the U.S., Chambers says that *The Captain* was a valuable lesson in the record-making process. "The biggest thing I learned [from it] was that you don't have to compromise anything," she says. "You can make the best album you possibly can and not bow to what is being played on the radio or what people tell you to do. And you can still sell a few records along the way. I went in this time to once again make an album that best describes me. One of the major things I learned was

that you don't have to spend a lot of money to make a great album. We didn't go overboard with anything. I got a major deal, and we could have used more money than we did, but it's not about how much money or having everything perfect. It's about having something that feels right, and I think we got that on this album."

She says there was never a question that her brother would assume the role of producer on both albums. A lifetime of working professionally with her family has made them integral to her sound and creativity, and, she remarks, "I would be very lost without them, especially Nash. Without them, these two projects would not have come out sounding this way. They know who I am and what I want to say. I couldn't have a producer



Producer/brother Nash Chambers

I don't know and feel totally relaxed with. Nash lived every one of these songs with me; he knows the type of artist I'm trying to be and the person I want to be, and that makes us the best combination."

Outside of his work with Kasey, Nash Chambers' productions are best known in Australia. Among the artists he has worked with are vocalist Troy Cassardale and Screaming Jets vocalist Dave Gelason. Additionally, he has begun a label deal with EMI, Kasey Chambers' label in Australia, which he hopes will lead to some production work in the U.S.

Chambers opened his studio eight years

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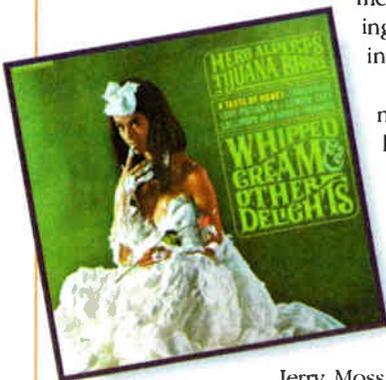
HERB ALPERT & THE TIJUANA BRASS "A TASTE OF HONEY"

By Dan Daley

Engineers are often involved in the pre-production of records, sometimes sitting in on rehearsals with the producer and the band. In the case of "A Taste of Honey," engineer Larry Levine was actually bold enough to suggest the song to the producer/artist Herb Alpert.

"We were in the mastering room at Gold Star Recording Studios [L.A.], and I was making him an acetate copy of another song he was going to record, a song called 'Whipped Cream,'" Levine recalls. "He told me that that was the name of his next record, and that it was going to be all about food. So, I suggested 'A Taste of Honey.' That's how it got onto Herb's list." (Other song titles on the album included "Tangerine," "Green Peppers," "Peanuts," "Lollipops and Roses" and "El Garbanzo.")

The album, *Whipped Cream & Other Delights*, reached Number One on the pop charts after its release in April 1965, and spawned several hit singles, the biggest of which was "A Taste of Honey," which also copped Grammy Awards that year for Record of the Year, Best Pop Arrangement and Best Engineered Recording—Non-classical. Not bad for an instrumental.



Alpert was already a successful music industry veteran by the time he hit it big with "A Taste of Honey." In the late '50s, working with manager/promoter Lou Adler, he had helped in the careers of both Sam Cooke and Jan & Dean. He parlayed his triumphs in that area into the founding of A&M Records in '62 with his partner, producer

Jerry Moss. A trumpeter since the '40s, Alpert was inspired to start the Tijuana Brass in L.A. after seeing a bullfight in Mexico and digging the local music there.

In his own garage studio, he experimented with overdubbing his trumpet parts, and that technique became the basis of some of his earliest Tijuana Brass compositions, including "The Lonely Bull," which became the centerpiece of the group's first album, which was also the first release on A&M Records. With its eclectic combo of Latin, jazz and easy listening sounds, the Tijuana Brass managed to appeal to a broad cross-section of adults and a good number of young people in the era just before The Beatles hit it big in America. And they would prove to have longevity that



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most instrumental hitmakers of the early '60s did not; they continued to thrive during the British Invasion.

The Scott/Marlow tune "A Taste of Honey" had been recorded by The Beatles on their debut album, *Please, Please Me*, in 1963. Levine joined Alpert and Moss, who were co-producing the Tijuana Brass records, in late 1964 to cut the track in Studio A at Gold Star, where Levine was a staff engineer. Alpert had done some of his previous records, including the hit "The Lonely Bull" (1962) at United/Western Studios in Hollywood. However, Levine says, Alpert wanted a bigger, brighter sound, and came to Gold Star and Levine because of what he had heard of Phil Spector's records, many of which Levine had engineered in Studio A. "I knew 'Lonely Bull,' and the whole Tijuana Brass sound was a real departure, so I was happy about the prospect of working with them," says Levine. "And I was also thrilled to be working with Herb and Jerry, who everyone said were two great guys to work with."

The basic track for "A Taste of Honey" was developed by Alpert in the studio with many of L.A.'s top studio session players, including Wrecking Crew drummer Hal Blaine. The drums were in the center of the relatively small (19x24-foot) Studio A, with the rest of the musicians clustered around them; the rest of the instrumentation included a Fender bass, an electric and an acoustic guitar, a piano and percussion played by Julius Wechter. Alpert liked to direct the basic tracks and overdub his trumpet parts later, along with the rest of the horn section. The drums were miked with a Neumann 67 above and an RCA 77 in the kick drum. The electric guitar amp had a Shure 57 pointed straight at the speaker about six inches away. Levine miked the acoustic guitar with an E-V RE-15, running all of them to a Scully 4-track deck through Studio A's custom-made 12-input console.

The arrangement was a tricky one: It began with a legato Mariachi-esque pair of trumpets drawing the chorus melody. (Alpert's frequent use of Mexican-influenced

horn parts on songs like "The Lonely Bull," "Spanish Flea" and "Tijuana Taxi" led his sound to be dubbed "Ameriachi.") The track then quickly made the transition to a walking four-on-the-floor beat, with the musicians landing on the one beat to-

gether after a tacit, a pattern that repeats three times in the song.

Or so it read on the chart. The reality was, L.A.'s finest had a great deal of difficulty landing on the beat together that day. "They tried four or five times after we

started tape rolling to all get in back on the beat," recalls Levine. "And these were the best session players in Hollywood. It was more funny than it was frustrating, even for Herb. Strangely, it was almost like a relief to know that sometimes even these guys couldn't get it. When we went back to the old tapes a few months ago in preparation for a new record, you could hear the musicians having this discussion on the outtakes as to why the heck they couldn't come in on the beat together. It was actually pretty funny. It was just one of those things. Had it been another day, it would have gone down fine."

The solution was found when Levine and Alpert decided that they would record the basic track in sections, and Levine would edit them together with the right amount of tape between edits to match the tempo. To provide him with a cue for the edits, Alpert asked Blaine to count it off, and Blaine responded by using his kick drum to pound out eight quarter notes before each up-tempo section. Later, when Levine was editing the track, Alpert began to show a fondness for the kick drum out in the track stark naked like that, and ultimately decided to keep it in instead of leaving the space blank, as he originally had conceived it. And that turned out to give "A Taste of Honey" one more killer hook. The kick drum was used just as Levine had recorded it, when it was supposed to be used solely as an edit cue. That it sounded as good as it did, Levine credits to Blaine's playing: "There are some musicians who, for one reason or another, just seem to own their instrument. They don't have to think about what they're playing—the instrument is just an extension of them. And that's how Hal was. It didn't matter what microphone I used or where I placed it. He always sounded good."

The basic track had been recorded in stereo to two of the four multitrack channels. Alpert's harmony trumpets—he played each part—and the trombone were recorded as individual overdubs. To create room for all the horn parts, Levine bounced them back to a second 4-track deck. Alpert's trumpet was recorded using a Sony C-38 microphone, which the band leader came to regard as a favorite. Signal processing, using mainly the two concrete live chambers of Studio A, was recorded to the tracks for both the basics and the overdubs. That left little to do in the mix, especially because the main mix was in mono, which is what radio wanted, and which was still the best-selling consumer format for LPs at

Cool Spins

The Mix Staff Members Pick Their Current Favorites



Various Artists: *Good Rockin' Tonight—The Legacy of Sun Records* (Sire)

Drawn from an episode (which I have not seen) of PBS' excellent *American Masters* documentary series, this CD celebrates the incredible contributions of Memphis' pioneering Sun Records to the history of rock 'n' roll. Because there are already plenty of vintage Sun anthologies to choose from, this one goes the "tribute" route, with a very impressive cast of all-stars. Some tackle the big Sun hits faithfully—Paul McCartney, with Elvis backups Scotty Moore and D.J. Fontana, doing "That's Alright"; Elton John banging through "Whole Lotta Shakin' Going On"; Johnny Hallyday (the "French Elvis") with a great "Blue Suede Shoes"; Bryan Ferry sounding like the primal Sun Elvis on "Don't Be Cruel"; and Jeff Beck backing Chrissie Hynde on "Mystery Train." Others offer new approaches to less-familiar material: Eric Clapton sings magnificently (and adds wicked slide) to "Just Walkin' in the Rain"; Bob Dylan and his band put down a sly version of "Red Cadillac and a Black Moustache"; Van Morrison and Sun original Carl Perkins romp through "Sittin' on Top of the World"; and Sheryl Crow offers an emotion-filled version of "Who Will the Next Fool Be." There are two radical revisions; one works and the other doesn't—Live's "I Walk the Line" is a surprisingly effective rocked-up reworking; but Kid

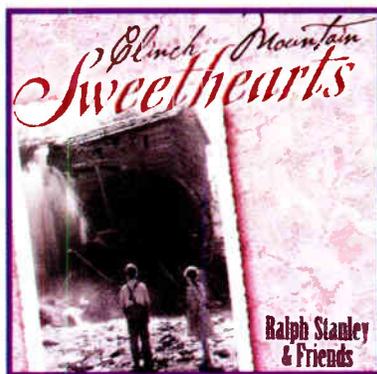
Rock's noisy, rapped "Drinkin' Wine Spo-Dee-O-Dee" is a disaster. The closer is the one artist I'd never heard before—Mandy Barnett (backed by The Jordanares) serves up an exquisite, Patsy Cline-ish version of "You Win Again." One *big* complaint with this set: The liner notes offer no clues about who cut the Sun originals on all these tunes.

Producers: Ahmet Ertegun (project producer), Jeff Beck, Jimmy Page, Robert Plant, Philippe Rault, Andy Paley, Rick Rubin, Tom Petty, Mike Campbell, Van Morrison, Bob Dylan, Eric Clapton, Simon Climie, Matt Serletic, George Drakoulias, Chris Isaak, Tim Palmer, Live, Kid Rock, Martin Gross, Johnny Evans. Engineers: Bobby Bradley, Mark Linnet, Steven Lee King, Tim Palmer, Mark Needham, Pete Cobbin, Frank Filippetti, Simon Climie, James Loughrey, Ron Warshow. Studios: Sear Sound (NYC), Angel Recording (London), Britannia Row (London), Bradley's Barn (Nashville), 54 Sound (Ferndale, MI), Arlyn Studios (Austin), O'Henry Studios (L.A.), Coast (San Francisco), Cornerstone (L.A.), Sunset Sound (L.A.), Oceanway (L.A.), Wool Hall (Bath, UK), Abbey Road (London), Olympic Studios (London), Your Place Or Mine (L.A.), The Townhouse (London). No overall mastering credit listed. —Blair Jackson

Ralph Stanley & Friends: *Clinch Mountain Sweethearts* (Rebel Records)

When they were putting together the marvelous 1999 double-CD *Clinch Mountain Country*, it became clear to Ralph Stanley and his producer, Bil VornDICK, that there

—CONTINUED ON PAGE 156



the time. (Stereo records cost about two 1960s-value dollars more.) However, one of Alpert's favorite parts of making a record was to take the multitrack with him to another studio—usually the Annex—and do the stereo mix himself.

It was yet another quirk of fate that led the song to become a smash hit: Originally, the track was not scheduled as a single at all, but rather as the B side of another song, the famous theme for the film *The Third Man*. When the record was finished, a B side is actually where Levine thought the track belonged. But it just happened to get flipped over one night by a DJ—not the first time that ever happened, to be sure—and it caught on almost immediately. It eventually made it all the way to Number 7 on the pop charts (while *The Third Man* theme stalled at Number 47 when it was subsequently re-released as an A side). A little less than a year later, at the eighth annual Grammy Awards ceremonies (in their pre-televized days), "A Taste of Honey" won trophies for Alpert, Moss and Levine. After the ceremonies, Alpert couldn't resist reminding Levine that the engineer had at one point suggested that Alpert put strings on the track. "So, he laughs and he asks

me, 'Do you *still* think it needs strings, and do you *still* think it's a B side?'" Levine laughs. "But I still think strings would have sounded good on it."

One final anecdote: It's been long debated as to what actually drove the sales of *Whipped Cream & Other Delights*: the music or the now-famous picture of the voluptuous and apparently nude woman covered in simulated whipped cream on the cover. Dolores Ericson has already gone down in history as the model on the cover. What gave her that glow, though? According to Levine, she was three months pregnant at the time. ■

LEONARD COHEN

FROM PAGE 148

tracks he'd made there using what he calls a "recording box" (assembled by Steve Lindsay, who produced some tracks on *The Future*). The unit consisted of a Mackie 12x2 board, a Neve 1272 mic pre-amp, a Tascam DA-88 (which was upgraded for *Ten New Songs* to a DA-78) and one of Cohen's stage mics, either a Beta

57 or an AKG 535. From the material Cohen proffered, Robinson selected pieces she thought would work as songs, conferred some more with Cohen, and then began writing the melodies to the pieces they selected.

Robinson then created simple instrumental tracks in the MIDI format and added her own scratch lead vocals, cutting to a hard drive at her Pro Tools-based home studio, Small Mercies Studio. The songs were transferred to a Tascam MDM for use at Cohen's home studio, Still Life Studios. "A rough mix was put onto two tracks of the 8-track Tascam tape; the other six tracks were left open for Leonard's vocals," explains the album's engineer and mixer, Leanne Ungar, another longtime Cohen associate.

Then, Cohen began adding his lead vocals at his home studio. Ungar, who had put together Cohen's studio, also served as engineer on Cohen's vocal recordings for the first few songs, but soon left the recording to the vocalist. "Leonard is very computer-savvy; he could learn Pro Tools," Ungar explains, noting that Cohen eschewed cutting his vocals to a hard drive via Pro Tools be-

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cause he was more comfortable with the operation of the Tascam. Another reason for using the Tascam was that a hard drive would have made too much noise in Cohen's one-room facility. Cohen's vocals were recorded on his new Tascam DA-78, in 24-bit mode.

However, noise from a hard drive wasn't the only ambient concern. Tracking final vocals in Cohen's home studio (which, despite its reasonably high-tech trappings, Ungar says "is not acoustically isolated") was an environmental challenge. "There were dogs barking, birds singing, garbage trucks. Also, occasionally Leonard would forget to turn off the Jacuzzi that is adjacent to the studio—the studio resides in a second story Cohen added above his garage, next to his Los Angeles home. When you're involved in doing vocals and your ears are full of track, it is easy to not notice these noises," Ungar says. She removed most of these sounds, but says she can still hear their remnants on the finished CD.

Ungar has worked with Cohen since 1973, when she was an assistant engineer on the exceptional *New Skin for the Old Ceremony*, so she is more than familiar with the unusual Cohen vocal style. To find the right instrument to capture his gravelly voice for *Ten New Songs*, she considered several microphones and ultimately decided on the Neumann U87. "The Future was all U67," she says, "but it is not easy finding a good 67. The U87 married well with Leonard's voice." Ungar matched the U87 with the Neve 1272 mic preamp from Cohen's portable recording box.

Asked about Cohen's startlingly gritty voice, Ungar laughs and says, "Leonard says it's cigarettes, but I hear a constant deepening. If you compare his first and second records, he's already down by about one-fifth of an octave by the second outing." She adds that her equalization of his vocals on the new record varied according to the mood of the song, pointing out that Cohen's voice is rendered with a lot of low end on some tracks and much less so on others.

Cohen approached the vocal sessions strategically, due to the limits of the studio and the inward-looking nature of the material. To facilitate relatively noise-free recording and complement the mellow nature of the piece, he tracked his vocals during the quietest times of day: very early morning, around four or five a.m., or sometimes even earlier. "I had to start singing before the birds, and the traffic on Olympic, and before my daughter's dogs started

barking [Cohen shares his home with his adult daughter]. It was very relaxed at those times, four or five a.m., to come in and find the right place to stand or sit, and have the right drink or smoke in your hand, lean back, go back, erase, go forward. It was a very luxurious way to do the vocals," Cohen recalls with evident pleasure.

"I was able to take the time to find exactly the right mood for the narrator, until the vocals married with the track and the song's content, so the voice represented the song rather than simply unfolded it," Cohen continues. Cutting vocals at home

was also much less expensive, he does not hesitate to add.

Cohen describes *Ten New Songs* as "deceptively spare, like a Sade record, with an agreeable groove from beginning to end. You can lean on it, relax into it. There are doors and windows you can enter if you have the time, and I don't think there'll be disappointment with the furniture and appointments. It may seem to be a spare outer surface, but with investigation much filigree and ornament can be discerned. It may not be apparent, but it is there."

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fect the experience of his nearly continuous five-year stay at the Zen center? "I guess there is a relationship to the life I was leading," Cohen says. "I wasn't anywhere else. It is hard to see, from the inside, the influence of the ordinary life one is leading," he adds. Both Ungar and Robinson agree that the record's spare sound and relaxed feel come from the artist's current state of mind.

When Cohen was satisfied with a vocal track, the Tascam tape was transferred to his Macintosh 450MHz G4 computer via the Pro Tools Mix Plus software, which was set

for 24-bit, 48k recording. The removable hard drive, a Cheetah 10,000 rpm Seagate, was then taken to Robinson's studio, where she completed the arrangements, adding sampled instruments and her luscious, often-complex background vocals.

In keeping with the long-held Cohen schema of contrasting his gritty voice against the lush backing of several female vocalists, some of the songs feature as many as 20 backing vocal tracks, all performed by Robinson; many songs have between six and 12 such tracks, she notes. This took "many hours in my studio, with

lots of early and late-hour sessions." She often found herself singing doubled three-part harmony. "I don't like to double the same voice on the same side," she explains, noting that this often meant doing three different parts for both the right and left sides of the stereo image.

"I stacked my vocals differently for each song, depending on the arrangement and the mood I was trying to create," Robinson elucidates. "Some songs were more intimate and called for only two or three tracks of background vocals; others were less so, or the arrangements were more complex, and so I used as many as 20 vocal tracks. But there's a very close-up feeling to this record, so I tried not to do too much doubling. I wanted to keep it real, and provide just enough to enhance and highlight Leonard's vocals." Her microphone was a Neumann TLM 103; "A copy of the great U87, minus some of the costlier features," Robinson notes.

"For recording, I used Pro Tools Mix Plus with one 888 interface, running all of the samplers and synths through a 1622," explains Robinson. "I did all the sequencing in Pro Tools 5.0, and printed all of the parts so they could be moved back and forth on hard drives between my studio and Leonard's. The third-party plug-ins we used included TC Mega reverb, a Wave Renaissance package, Focusrite compressor and EQ, and a Lexicon reverb."

However, by then the path of *Ten New Songs* had veered mightily from the original plan. When they started, Cohen, Robinson and Ungar planned to hire musicians and background singers and complete the project in a conventional manner in a regular recording studio. Initially, "My vocals were supposed to be just sketched out ideas, to be sung in sessions by others," Robinson says. But then a curious thing happened: Cohen fell in love with the sound of the sampled instruments and Robinson's layered vocal parts. "We decided that bringing in musicians and singers would actually be a compromise," Robinson explains. "When Leonard heard the first completed track, 'A Thousand Kisses Deep,' he was enthralled," adds Ungar.

In keeping with the home-brewed nature of the project, the rough mixes ended up being pretty close to the finals. Mixing took about three weeks at Cohen's studio, using Pro Tools Mix Plus and Yamaha MS 60 speakers. (This followed an attempt at mixing in analog at a regular studio, but the team found that the sound changed too much, and the idea was abandoned.) The mix was about "working carefully,



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laying in sounds with delicacy. That took time but there wasn't a lot of reworking," says Ungar. Most of Leonard's vocals are contiguous performances with some comping of words or phrases. Compression was hardly used at all: "With Pro Tools, you can ride each word so carefully you don't need to squash the signal."

Reverb plug-ins, used for most vocals, instruments and percussion, were initially D-Verb, but that was replaced with Lexiverb. "D-Verb had a dark, unspacious sound," says Ungar. "Lexiverb opened it up, although sometimes we did go back to D-Verb."

Convinced, from their attempt at mixing in analog, that they should stay in digital all the way through, the team went to Portland, Maine, to master at Bob Ludwig's Gateway Mastering Studios.

Cohen acknowledges that there are pitfalls to making records at home. "I could see where the sense of relaxation could induce a stupor. However, Sharon and Leanne and I share an obsessive interest in detail, and [working at home studios] gave us the time and space to concentrate on details and produce the kind of fully completed record that we wanted." ■

KASEY CHAMBERS

FROM PAGE 149

ago and continues to expand. "Like every studio, you keep buying gear," he says. "I started on ADAT and 32-channel Mackie desks. Now, obviously, I've bought more—a 32-channel Trident desk with an MCI JH-24 machine and a lot of outboard gear: API, Amek, Telefunken, Avalon. One of my favorite compressors is the AWA, an Australian brand, which was made as a broadcast limiter in the 1950s."

Barricades & Brickwalls was tracked at Mangrove Studio, which is owned by INXS bass player Gary Beers. Overdubs were done at Chambers' studio, and mixing took place at Mangrove using an SSL 4000 G Series. To record Ryan and Williams, Chambers brought the files to Nashville's True Tone studio, "hired in a U67 and LA-2A and a preamp," and used a Pro Tools system. Mastering was done by George Marino at Sterling Sound in New York. Chambers recorded Kasey's vocals with a Neumann U48 through the AWA compressor and an AMEK 9098 mic pre. "During recording, I brought in API 'lunchboxes' and 550s," he says. "For mixing, I hired in an AMEK 9098

and some Distressors. At Mangrove, they have lots of Neve 1073s, so I used a lot of stuff they had. Drums were recorded with Neumann U67s overhead, 414 room mics, FET 47 for kick drum, and the usual 57s and 421s for toms and snare. Electric guitar was an RE-20 through a V76, bass through a V72 through the Avalon compressor, and for acoustic guitar I used an Audio-Technica 4033 mic through another Amek 9098 preamp. My rack has API pre's, an Avalon 2044 compressor, my own Dynaudio BM6A monitors and a Telefunken B72 preamp. I take that wherever I go. Jeff McCormack [who also plays bass on Kasey's albums] is my main engineer; we engineer together for the band, and I engineer overdubs."

In addition to producing his sister and running her sound onstage, Chambers also managed her for two years during the release of *The Captain*. Therefore, he says, it was a natural step for him to oversee the making of her records. He believes that *Barricades & Brickwalls* is more diverse than its predecessor, something he credits to "traveling the world, and Kasey getting in a different headspace. We approached *The Captain* as a

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whole record, start to finish. On this one, we approached each song individually, but there is still a thread running through it as far as diversity—country, blues. A lot depends on the songs Kasey is writing at that period in her life. We wait until she writes a song, and we take it from there.

“The first record was a bit of trial and error, and there are some really cool things on it, because we were learning a lot as we were going along. With the new record, obviously, there was a lot more pressure, things to think about. Because the first record did so well, especially in

Australia, we made a conscious effort not to think about it and just make the best record we could. We were a lot more focused, a lot more experienced, and we’d done so much in between records, so we had a bit more direction about where we were going.”

One thing that separates Nash Chambers from the pack is his refusal to do any pre-production. “I’d rather hang around the studio and muck around with it there,” he says. “You often get the best takes that way.

“My job as a producer is to make the best possible recording of the artist, so my

exact role depends on the artist I work with. With some, you need to almost rewrite the songs; with others, you just sit back and order pizza. Kasey is a bit of both. She writes great songs, is a great vocalist and makes my job easier. I determine the music and surround her voice and songs with instrumentation. The idea of the studio is to capture that special something, but it can be a stagnant environment. Kasey sings and writes and performs and we try to track everything together, keep takes and not overdo or run through it too many times. You’ve got to get to a point where you’re happy with it, and I’d rather leave the mistakes than get it perfect. That’s a lot of the problem with today’s music, especially in Nashville: Everything is overdone to the point of having no flaws whatsoever, but those flaws are the character things I like in records.”

Chambers didn’t set out to be a producer. He sang and played guitar in Dead Ringer and fell into his current chair by default—which is where he gained his sense of what does and doesn’t work in the studio. “When we first started out with our band, early on we were extremely naive,” he says. “We hired top studios here [in Australia] to record our albums and found it extremely frustrating to go in and not get what we wanted. Back then, country music was not taken seriously here, so we’d get a rock ‘n’ roll engineer who didn’t care about what we were doing. We decided to start our own studio and, originally, I did not want to be involved with engineering. I got the gear, and there was nobody there to work it, so I learned through trial and error. Jeff [McCormack] taught me a lot, and I learned by making mistakes. There’s no substitute for the life experience of just getting in and doing it.” ■

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Cool Spins, FROM PAGE 151

were a good number more female artists with whom they would have liked to record. So, VornDick proposed a follow-up, pairing Stanley with just women singers, and this release has the same uncompromising beauty and authenticity as its predecessor. Stanley’s voice remains the most powerful instrument in bluegrass, and he doesn’t waste his time with pop-crossover; all of the duets here feature women with a sincere affinity for the genre (though not all are country singers). Dolly Parton never sounds sweeter than when she’s singing in this vein; Iris Dement deservedly performs on two tracks; and the legendary Melba Montgomery guests on Hank Williams’ “You Win Again.” Maria Muldaur,

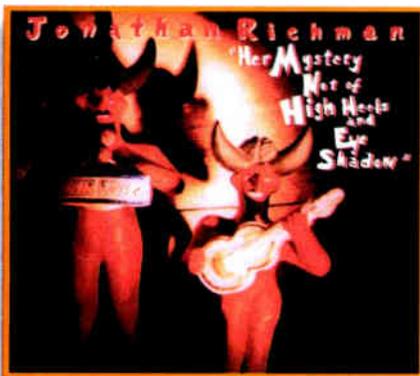
Joan Baez, Gillian Welch and Lucinda Williams also appear. As always, Stanley is supported by his talented road band, which includes his son Ralph Stanley II on rhythm guitar.

Producer/engineer: Bil VornDick. Recording/mixing studio: Masterlink Studios (Nashville). Additional recording at Quad Studios (Nashville) and Different Fur Studio (San Francisco). Mastering: Randy LeRoy/Final Stage (Nashville).

—Barbara Schultz

Jonathan Richman: Her Mystery Not of High Heels and Eye Shadow (Vapor Records)

Jonathan Richman is the anti-Lou Reed, a charming, child-like naif who "loves springtime in New York, I do" and sees the bright side of almost everything. I can't say he's progressed a helluva lot since his late '70s Beserkley Records



days, when he sang about the Martian Martians, the rockin' leprechauns and the ice cream man, but it's still kind of nice and reassuring to have him around. The songs are all driven by his warm acoustic guitar strumming and his simple, direct vocals. He's a romantic through and through, and he's so endearing it's hard not to root for him in his romantic entanglements. The last four tracks are all in Spanish (I must've missed that turn in his career) and they, too, communicate his gentle spirit and affection for early rock and Latin pop styles. Eccentric, to say the least, but cool.

Producers: Niko Bolas and Jonathan Richman. Engineer: Niko Bolas. Studio: Mobius (San Francisco). Mastering: Dave Collins/Marcussen Mastering (L.A.).

—Blair Jackson

Curve: Gift (Hip-O Records)

If you ever wondered where Butch Vig and Shirley Manson got the idea for Garbage, look no further than Curve. Toni Halliday and Dean Garcia have been doing the whole post-Siouxsie, sultry-goth-chick-fronting-an-industrial-band-thing for the better part of 15 years. And somehow they keep putting out consistently good records. *Gift* isn't a major departure from what the band has done in the past, but it still demands a listen. It's a pretty standard affair: Halliday's distorted croon is set against a

well-crafted assemblage of Pro Tools fodder and fuzz box guitars. And, sure, there's nothing too shocking anymore about a couple of studio rats auditioning plug-in settings in time with a drum program. But the band's obvious talented songwriting would work in any situation. Some of the standout tracks are "Want More Need Less," "My Tiled White Floor" and "Hell Above Water." And just to keep it all within the greater Depeche Mode-NIN-My Bloody Valentine family, producer Alan Moulder (Halliday's husband), Flood and Alan Wilder (ex-Depeche Mode) make some guest appearances, adding a few blips and buzzes to the mix.



Producers/engineers: Ben Grosse and Curve. Mixing: Ben Grosse. Studios: Todal Studios and The Mix Room (L.A.). Mastering: Kevin Metcallife at Soundmasters (London).

—Robert Hanson ■

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L.A. GRAPEVINE

by Maureen Droney

Over in Chatsworth, I stopped in at the new 60,000-square-foot office and manufacturing headquarters of Miller & Kreisel Inc., for a glimpse into what the rapidly growing, high-end speaker company was up to. M&K has long been a favorite of audiophiles, both consumer and professional, for its high-quality systems. Lately, the increase in surround sound projects and 5.1 home theater applications, coupled with enthusiastic endorsements by such notables as Skywalker Sound, 5.1



M&K co-founder/CEO Ken Kreisel (left) and president Stephen Powers.

Entertainment, Walter Afanasieff and Bob Ludwig, have led to increased visibility and burgeoning sales for the company.

During the expansion, Stephen Powers, an industry vet who has produced and/or engineered over 100 albums, and who previously helmed Drive Entertainment and Chameleon Music Group, has come onboard as president of M&K. Company co-founder Ken Kreisel, president since the company's 1973 startup, is moving over to CEO and planning to devote more time to his integral role as chief design engineer.

Kreisel has been directly responsible for the development of M&K's philosophy and products, and is generally considered to be the father of modern

satellite subwoofer systems. He's been involved with both consumer and pro audio since his early career when he sold hi-fi equipment during the day and, at night in the same store, engineered direct-to-disc recordings. It was back in 1973 when Kreisel's fate was truly sealed: That's when Walter Becker induced him to design a system, complete with a dual-driver subwoofer, for the Steely Dan *Pretzel Logic* mix sessions. Since then, Kreisel has gone on to introduce such innovations as adjustable spectral balance (now known as timbre matching), the first powered subwoofer, the first 3-tweeter array home speaker system, the first PushPull dual-driver powered subwoofer and the first phase-focused crossover.

"The comment that people always make is that M&K speakers are absolutely transparent," says Powers, "rather than having some kind of favorable, appealing coloration of the sound, which is different than what a lot of other speaker manufacturers have done."

All of this garnered Kreisel attention from Dolby Labs, which used M&K's 5000 system as a reference speaker for the development of AC3, and in 1999, from George Lucas, leading to the exclusive use of M&K monitors for production audio on *Star Wars: Episode 1-The Phantom Menace*. Since then, it's been pretty much non-stop for M&K, with production and design ramping up as more and more golden ears types have become fans. The new facility houses a staff of about 100 and features demo rooms for both the pro and consumer series. The manufacturing wing boasts two full production lines, with three expected to be operating soon. Testing rooms are also on-site; they're a key component, as every individual speaker is tested before it leaves the facility.

—CONTINUED ON PAGE 162

NASHVILLE SKYLINE

by Dan Daley

Each year around AES time, *Billboard* compiles a list of the top recording studios in the world. The methodology is based on where the year's Number One singles were recorded and how long they stayed in the top slot on the magazine's various charts. In an industry where "the best" is almost totally subjective—and something you assert at your own peril, anyway—it's as legit a method as you might conceive of, although it's produced a few squirrely results in the past, such as in 1997, when a small hole in the wall in Barcelona, Spain, was named the Number One studio on Earth, based solely on the fact that the novelty hit "Macarena" was recorded there.

This year's list continues a trend in most genres that appeared in the past few years, where there is no distinction made between private facilities and commercial ones.

In country, though, that phenomenon is thankfully absent. The top three studios in the genre—Ocean Way/Nashville, Emerald Sound Studios and Sound Kitchen—are all commercial facilities (or were for most of the year, in the case of Ocean Way, which was acquired by Belmont University's music production program last October). And all are in Nashville. That hegemony falters a bit in the list of top three country mixing studios. Sound Kitchen and Emerald come in at Number One and 3, respectively; the Number 2 slot goes to Image, in Los Angeles, where Chris Lord-Alge mixed Tim McGraw's records. The same applied to the mastering category in country, in which Nashville's Mastermix was rated Number One and Georgetown Masters Number 3, with L.A.'s Mastering Lab garnering the Number 2 spot.

While some may bridle at the notion that any studio outside of Music City gets a nod for a top slot in country music, it's worth noting that Nashville and country have remained an intertwined pair longer

NEW YORK METRO

by Paul Verna

111TH AES: SMALL BUT MIGHTY

Let's face it: These times are as tough for the recording industry as they are for the rest of the global business community. Not that we needed to be reminded of this reality, but the rescheduled and significantly scaled-down Audio Engineering Society convention in early December corroborated it. Floor space was way down, attendance was way down and many of the industry's most prominent manufacturers were nowhere to be found.

On the other hand, those of us who were there are likely to remember the 111th AES as a turning point for our business—an event that separated the men

from the boys and brought out the true stalwarts. Nowhere was the resilience of our industry better reflected than in a corner of the AES exhibit floor. There, in a downsized booth, was Apogee Electronics, usually represented by a large stand and a staff to match, but this time led by its feisty owner/president, Betty Bennett, and a lean support team including Cathy Wagner. The fact that Apogee, unlike several other prominent West Coast-based manufacturers, decided to show up at all was not only a smart business move, but a gesture of support for the industry as a whole. "We really wanted to be here," said Bennett. "Obviously, we scaled-down our presence, but at least we're here!"

Next to Apogee was United Recording of New York, a consortium of three downtown

studios—Loho, Theater 99 and Threshold Music—whose owners pooled their resources to rent a booth on the floor. In my (too) many years covering the pro audio industry, I don't recall ever seeing a recording studio exhibit on the AES floor. The fact that three scrappy, independent facilities—which happen to be located in the beleaguered heart of this great city—chose to spend precious time and money on such an effort was another testament to the spirit of the industry.

"You have to give those people credit for their enthusiasm," said Michael Frondelli, a producer, engineer and technology innovator who recently left his post as VP of Capitol Studios. "That's the kind of spirit that drove this industry in the first place, and that's what's going to bring it back to its glory."

The owners of Loho, Theater 99 and Threshold were acting out of enthusiasm, indeed, and also out of a determination not to be held down by the tragedy that unfolded in their neighborhood last fall. Threshold Music co-owner James Walsh said, "In the aftermath of September 11, it seemed as though we all needed a place to come together and feel some unity, focus on the things that we feel represent ourselves collectively, and look toward the future knowing that things would always be a little different, and yet somehow we

—CONTINUED ON PAGE 166

than any other city and genre connection. Rock has been music's most peripatetic category, and has resided in more cities than an itinerant serial killer. Chances are you live in a city that was at one time or another considered *the* place to be in the music business, from L.A. and New York to Memphis, Chicago, Minneapolis, Boston, Raleigh, N.C., and Seattle.

Back to the *Billboard* list, it's also in-



PHOTO: COURTESY OF INC. OF THE COMMUNICATIONS

Sheryl Crow made herself at home inside the main tracking room at Emerald. L-R: Pro Tools operator Eric Tew, studio manager Scott Phillips, Crow and engineer Trina Shoemaker.

teresting that none of the studios in the country category were producer-owned facilities. Nashville's studio community has been hurting for the last two years, partially because its fortunes are so tightly linked to the economics of country music, which has taken a beating since its high-water mark in 1995, and partially because a number of heavyweight producers in Nashville have built their own studios. But in country, the bulk of the work remains rooted in the conventional, commercial studios. And so does the demo work—whether it's a song or an artist demo, the understanding remains that you need a place where you can put a bunch of musicians into a room and knock out as many songs as possible before you run out of money. The more modern methodology of one person writing, playing and performing all the parts sequentially in a home studio simply isn't as efficient in Nashville's cul-

—CONTINUED ON PAGE 164



A crowd gathers at the United Recording of New York (URNY) booth at the 111th Audio Engineering Society Convention, November 30-December 3 in New York.

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Will Smith was in at Scream Studios (Studio City) recording new songs for the motion picture *Men In Black 2* with producer/engineer Rob Chiarelli. Alanis Morissette was also in at Scream producing and mixing her new album, *Under Rug Swept*, with mixer Rob Jacobs. The album is scheduled for release this month on Maverick Records.

NORTHEAST

Bennett Studios (Englewood, NJ) recently hosted producer All-Star for vocals overdubs on a new Luther Vandross recording for J Records. Andy Blakelock and Angelo Aquiya engineered the session, which was assisted by house engineer Tim Stritmater. Also at Bennett, Earth Wind & Fire co-founder Philip Bailey spent some quality time in the North Room recording tracks for an upcoming Heads Up Records release. The Bob Belden-produced sessions were engineered by Robert Friedrich and Dave Kowalski, with Mark Fraunfelder and Stritmater in to assist...Violent Femmes frontman Gordon Gano was in Studio A at Kampo (NYC) with the temporarily

reformed band, The Bogmen. The musicians cut three tracks for a limited-edition CD available at benefit shows for the Secret Smiles organization at New York City's Irving Plaza last December. Producer/engineer Bonzai captured the session. Secret Smiles will distribute funds directly to September 11 terrorist attack victims' families...Out at NP Recording Studios (South Weymouth, MA), jazz trombonist Sarah Morrow began record-



Sharky Laguana (left) of Creeper Lagoon has been in working with engineer/studio owner Walt Szalva at Planet 3 Productions in San Francisco.

ing for her upcoming CD with producer/engineer Nick Joyce. Josh Cole returned to track acoustic guitars for his next CD. He is currently touring the country to support his latest release *Photosyntheses*, which was also produced and engineered by Joyce... Sound on Sound (NYC) recently hosted sessions with engineers Doug Wilson, Pat Viala, Brian Stanley and producer Big Dawg, who were in working on a variety of projects with artists Fat Joe, Xecutioners, Mr. Cheeks, Amazin and Mary J. Blige.

SOUTHEAST

TVT artist Sevendust locked out Patchwerk Studios (Roswell, GA) to work on overdubs and mixing for an upcoming MTV broadcast. Cash Money Millionaires were in working on



Last fall, No Doubt released their latest album Rock Steady. The first single, "Hey Baby," was recorded at Toast Studios in San Francisco. L-R: engineer The Count, producer/studio owner Philip Stein, Tom Dumont and Tony Kanal.

some new cuts. Also at Patchwerk, TLC and Diane Warren were laying down vocals for an upcoming release. All the sessions were engineered by Mike Wilson, with assistance from Nino Scarpelli and Steve Fisher.

NORTHWEST

Producer/engineer Tim Bomba spent the fall recording three *Live at the Fillmore in San Francisco* shows with the band Wilco for an upcoming documentary about the band.

SOUTHWEST

SugarHill Recording Studios (Houston) has had quite the star-studded fall: Destiny's Child was back again to do a remix of the Bee Gees hit "Emotion." Brian McKnight, while on tour in Houston, locked out the studio to do a remix of "What's Gonna Be" with Jermaine Dupri and Brian Cox.

MIDWEST

Producer Mark Rubel tracked South Carolina's very own Sheldon at Pogo Studios (Champaign, IL) with Travis Grimes assisting. Also tracking and mixing with Rubel was solo artist Anjali for her debut album.

STUDIO NEWS

Indre Recording Studios (Philadelphia) recently upgraded their facility with the installation of a Solid State Logic 4000 E/G console...Dungeon Recording Studios (North Miami, FL) employed Ross Alexander of Synergetic Services to re-



Saliva cut their contribution to the Not Another Teen Movie soundtrack at Sound Arts Recording Studio in Houston. L-R: engineer Gerry G, Jeff Wells, engineer Brian Baker, Josey Scott, Wayne Swinny and Chris D'abaldo.

PHOTO: COURTESY OF SOUND ARTS RECORDING STUDIO

PHOTO: COURTESY OF TOAST STUDIOS

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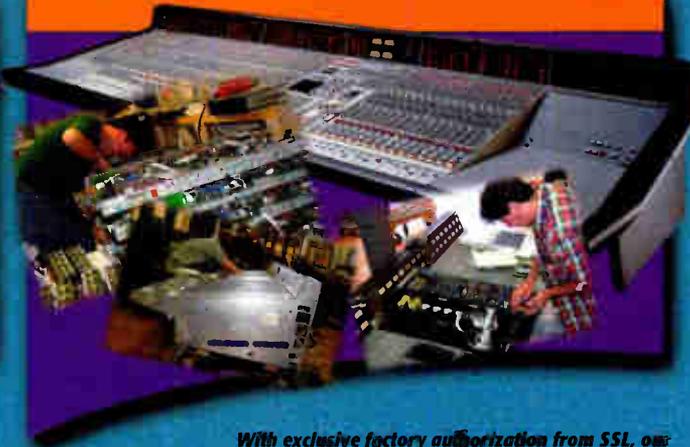
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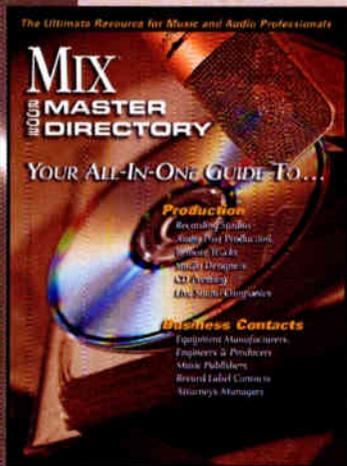
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PHOTO: COURTESY OF STUDIOS 301

The new Neve 88R at Studios 301. L-R: engineer Glen Phimister, artist Julie Anthony, artist Siman Gallaher and producer Michael Harvey.

design their Studio C. The new studio houses a new Sony DMX-R100 and a Pro Tools Mix Plus/G4 733 system installed by Audio One...Studios 301 in Sydney, Australia, recently upgraded their main tracking room with the installation of a Neve 88R. ■

Please submit your Sessions and Studio News for "Coast to Coast" and "Current" to Robert Hanson. Submissions can be sent via e-mail to RHanson@primediabusiness.com; fax: 510/653-5142 or snail mail: 6400 Hollis St., Suite 12, Emeryville, CA 94608. Photo submissions are always encouraged, and please include the name(s) of the artists, producers and engineers on the project, and the location of the studio.

L.A. GRAPEVINE FROM PAGE 158

"It's true, every speaker is tested," asserts Powers. "Most manufacturers figure that it's more cost effective to test just one speaker in 10 and to replace any failures. We don't think that's acceptable, so we test each one rigorously. People know that when you get an M&K speaker, it's going to perform perfectly. We also have the longest warranty in the business; our powered products are 10 years speaker components, five years on electronics, and our passive speakers are 10 years parts and labor.

"M&K makes sophisticated products," he continues. "We aren't in the mass retailers. We use an elite group of high-end audio dealers. Our largest is Magnolia Hi-Fi based out of Seattle, and now in San Francisco. Here in the Los Angeles area, we have many dealers, including Real Time Audio Video in Dana Point,

Audio Video City on the Westside and Wilshire Audio in Westlake."

The proliferation of home theater and media rooms is making custom installation a growth area. With an eye to the boom in multi-channel home systems, M&K now offers, in addition to mains, bookshelves and subwoofers, an in-wall, ceiling and frame-less architectural series that uses the same components as its MPS and S Professional Series.

"More and more homebuilders are recognizing a media room as a selling point," says Powers. "It's pre-wired with sophisticated cable for DSL and LAN, so you can run appliances off your computer. Fiber optics are now going in the walls of new homes. The wired

home is a very big trend."

You've got to figure that Ken Kreisel never sleeps, because while designing, running the company and overseeing the development of an ever-increasing line of speaker products, he's continued to engineer recording sessions. M&K distributes a line of CDs, including the recent release *The Max Weinberg 7*. To further that venture, in the works at the new facility are a soundstage and an editing suite. Also starting up are prototype and R&D design areas; current works-in-progress include—check it out mixers—a high-level automotive reference monitor system. Which leads us back to the beginning, long ago in that hi-fi store where Kreisel also installed high-end car systems, including for that way hot-rodded BMW of Walter Becker's. You know, this Kreisel guy has always been ahead of his time.

"My passion is in recording—cutting-edge recording," he says. "That's what has driven me. I can point to almost any speaker we have and tell you what artist or studio in the last 30 years has prompted us to make it. I consider it my R&D to work with key people and solve their problems. Now we are seeing the results of all of that."

Sound City Studios, that vintage Neve bastion in Van Nuys, has installed a larger 80-Series desk into Studio B. The two-room Sound City, which celebrated 30 years in business in 1999, has always been known as a good-vibes place to record and a great place to rock hard. On the day I visited, it was obvious that the tradition was continuing, with producer/engineer Joe Barresi and new Dreamworks' artists Leisure generating monster guitar tones in Studio A. Studio A, a favorite with such rock stalwarts as

Barresi, Ross Robinson, Matt Hyde and Rick Rubin, is famous for having stayed essentially unchanged for the past 30 years. During that time, major albums for Fleetwood Mac, Nirvana, Tom Petty, Red Hot Chili Peppers and Rage Against the Machine, among others, have been done there. The formula still seems to be working; in recent months, Studio A, with its Neve 8028 console, has stayed busy, playing host to the reformed Bad Religion, Virgin artists Amen, Ry Cooder with the Buena Vista Social Club, and Ben Harper producing Blackalicious.

Meanwhile, Studio B has been in transition. For the past three years, it complemented Studio A, housing a Neve 8038 owned by producer/engineer Sylvia Massey. When Massey departed L.A. for the rural life and her own private studio near Mt. Shasta, the 8038 went with her, leaving studio manager Shivaun O'Brien and owner Tom Skeeter with a dilemma: Should they stay within their vintage niche or try something different? After taking some time for research, they decided to go with a 40-input, 24-bus, 32-monitor Neve 8078.

"We find that with our clientele, 50 percent of the records are mixed on 80-Series Neves, the other 50 percent on SSL," says O'Brien. "Those that go with SSL to mix like the punch of the G Plus, so we actually looked at putting one of those into Studio B. But we've always been a Neve house, with vintage consoles and equipment. It really is our niche and what we do best. Also, Studio B is unique in that you can both record and mix in it. For example, Lenny Kravitz records in B, while Ben Harper, Betty Blowtorch and Rick Will mix there. And Queens of the Stone Age's *R* was tracked, overdubbed and mixed all in B.

"It's pretty much split 50/50, so we decided that we needed something flexible that could be used for both. The 8078 is a respectable console for mixing as well as for tracking. And the new console is a great improvement, because we can go 48 track with no problem, whereas previously, with the 16-bus, 32-in 8038 it was tough."

The 8078 features 31105 4-band EQ and dates from 1977, when it was first commissioned for The Town House Studios in London. Before arriving at Sound City, the desk, which is fitted with user-friendly, Macintosh-based GML automation purchased from George Lucas' Skywalker Ranch, made its home at Memphis' House of Blues Studios where it was used for projects by such artists as Isaac Hayes, Boz Scaggs, Saliva and Full Devil Jacket.

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in deference to B's existing clientele, nothing was acoustically changed, in either the control room or the studio.

"The console is a stock 8078, all hand-built with a discrete audio path," comments O'Brien. "We've learned that having an 80-Series console that's stock is a very good thing, since many of them have been altered with modifications that have turned out not to be improvements. I've been to the original Neve factory and seen how these consoles were made; there's real craftsmanship in them. That's what gives them that special warm sound that people value. In the end, it was talking to our clients that helped us make the decision to stick to vintage Neve. It's what they wanted, and we feel very comfortable with the decision." ■

Send your L.A. news to MsMdk@aol.com.

NASHVILLE SKYLINE FROM PAGE 159

ture as it is in that of other genres.

What's more promising is that the way Nashville makes music doesn't change

when non-country artists record there. They actually come for the acoustic spaces, for the expertise resident here for handling groups of musicians playing together and for the gear, which has evolved into probably the best amalgam of analog and digital anywhere in the world. Pro Tools may have sneaked in quietly in the mid-1990s, regarded more as a secret weapon in making pop-competitive records than heralded as an exciting new technology. But, today, it co-exists nicely with API consoles and LA-2As and acoustic guitars.

How long Nashville can keep its way of doing things remains an unanswered question. The crumbling of the genre's sales over the past five years has made life tough for the studios in Nashville, and more than a few have either shuttered or operate under less-than-ideal financial circumstances. But the fact that they continue to operate at all is cause for optimism. A studio culture such as this one would not have lasted this long anywhere else.

Sometimes low expectations are the best defense against a changing world. As the entire music industry evolves from a highly centralized Gang of Five into an ethereal collection of millions of songs



PHOTO: MAUREEN DRONEY

Sound City Studios manager Shivaun O'Brien (left) and Neve guru Pat Schneider.

The console's installation was supervised by L.A. Neve guru Pat Schneider. Prior to the commissioning, Studio B, which, by the way, houses a classic Steinway C grand piano, underwent cosmetic refurbishing, receiving new carpet, paint and wall treatments. Although Bob Hodas was called in to revoice the custom George Augspurger/JBL mains,

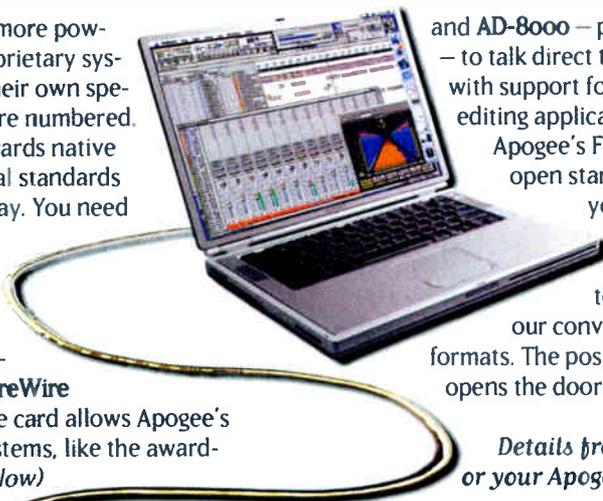
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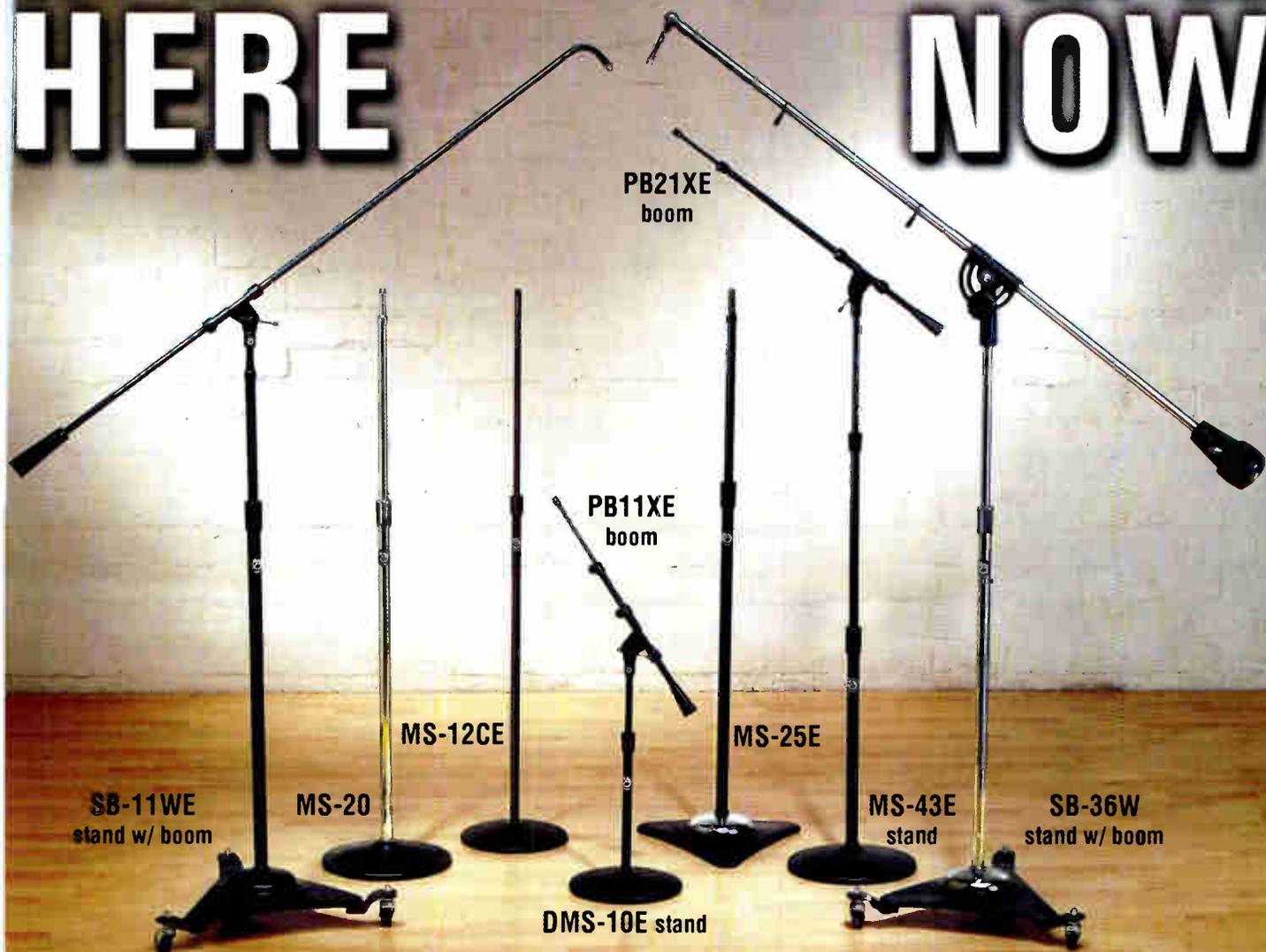


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World Radio History

on the Internet made by millions of people using Pro Tools at home, the idea of Nashville as music's friendly front porch becomes as economically viable as it is emotionally appealing. ■

Send your Nashville news to Dan writer@aol.com.

NEW YORK FROM PAGE 159

were all closer together. So myself, John Siket at Theater 99 and Victor Luke at Loho came up with this plan."

"There's potentially plenty of work to go around in New York," added Theater 99 co-owner Siket. "We should all help each other. If the studio scene in New York is doing well, then we're all going to be healthy. It's going to feed itself, and that's what we all want, ultimately."

Between the booth itself and the promotional materials that the three studios created to go along with their display, the total bill was approximately \$2,000 per facility—a sizable chunk of change for relatively new independents who are still struggling to gain visibility, especially among major clients. "Really, we are just a couple of guys that have built our facilities from the ground up—myself as a carpenter, quite literally," says Walsh. "We know how to overcome hardships and are dedicated to survival and growth."

Although it's too soon to gauge the business impact of the URNY project, Theater 99 co-owner David Seitz says he was encouraged by the response from AES attendees, particularly some of the high-profile producer/engineers who made the rounds. "I got to speak one on one with guys like George Massenburg, Tony Visconti and Chuck Ainlay," said Seitz. "They hadn't heard about our studio, and they seemed very impressed. In our case, the big pull is the room itself—a big vaudeville theater built in 1906. You just don't see too many rooms like that, in New York or anywhere."

Even though Theater 99, Loho and Threshold are plenty different from one another, they are all one-room facilities that specialize in big, live sessions. That made the URNY consortium that much more attractive to the three studio teams, according to Threshold partner A.J. Maltese. "We have all been friends for a long time, and we would always trade off work back and forth anyway," said Maltese. "So if one of us is booked and gets

a call to do a session, we refer it to one of the other guys. We figured it was a lot better to work together than against each other, especially after what happened here in New York."

Walsh added, "We love to record live music and truly believe in the music scene in New York and music in general. We look forward to surviving as the next generation of New York studios, and have found comfort and strength knowing that we are not alone. With a little work, we can all help each other."

MAKING WAVES, AGAIN

Another guy making the rounds at the AES was entrepreneur Eric Klein, a veteran of Waves and Toronto-based Saber Technologies, who has just founded his own digital audio software rep firm, Soul Tech Marketing. With the industry having now fully embraced plug-ins as legitimate audio processing tools, it seems as good a time as any to launch a software-oriented rep firm. Yet, until Klein launched Soul Tech in Brooklyn last March, the industry did not have such a firm whose specialty was plug-ins.

Klein brings serious qualifications to the job. Formerly national sales manager for software giant Waves, Klein knew the plug-in market intimately before he decided to venture on his own. Since launching, he has landed several high-profile, high-end clients, including Waves, Serato and Terason. "There hasn't been much independent technical support for those types of products," says Klein. "We're filling a niche in the Northeast for people who want a different type of rep firm—one that's oriented as much toward tech support as sales support. That means going beyond the call of duty of what's expected from a rep firm. For instance, we help our customers figure out how the products we represent interface with Pro Tools or with whatever other host application they're using."

Like anyone dealing in the software milieu, Klein has to contend with the specter of rampant piracy. However, he claims that the higher-end products that he represents are less prone to piracy than some of the less-established, less-supported ones. Still, he admits, piracy "affects everybody, and it's probably going to get worse before it gets better."

Fortunately, Soul Tech and the new wave of software-based rep firms that will inevitably follow in its wake are providing a solution to the problem. ■

Send your NY Metro news to pverna@vernacularmusic.com.

—FROM PAGE 88, LONG, SLOW BURN
monitoring with 50 dB of gain, plus padding on input. The clock is fully internalized, but WS and superclock I/O are available if you don't want internal or external lock to incoming AES. Low-jitter AD/DA conversion up to 96 kHz adds to the quality slant. An embedded DSP acts as a traffic cop while performing mixing, monitoring and metering duties. Plus, an optional second DSP will provide addressable signal processing (think built-in Channel Strip). The DSPs also offload computational tasks from bogging the host and enable the capability to operate in stand-alone mode, so direct 1394 storage support and UI is in store. Though currently shipping models are Mac-only, WDM drivers (Windows Drivers Model) are also in the works.

For those of the Redmond persuasion, OS support for 1394 is looking up. Microsoft has shifted its emphasis away from USB, so XP improves on the already decent support for 1394 found in W2k. Apple, for its part, continues to refine driver architecture in X. With Final Cut and DVD Studio Pro now OS X native, there's some real pull for adoption by creatives of the new OS version.

WHERE'S IT HEADED?

Not all of FireWire is sweetness and light. As with most standards, the IEEE 1394 specification for audio is unfortunately so broad that there are numerous ways to accomplish any particular function. To make matters worse, FireWire audio interfaces often have to contend with ASIO, in all its geeky glory. In addition, while stereo audio carriage over 1394 is a no-brainer, multichannel transport is a whole other matter and requires some serious brain baking to control jitter and interchannel delays.

So, while CE support for FireWire is a speeding juggernaut, the audio community is, not surprisingly, slow to follow. I prefer to think of it as conservative practicality; with such a small market, audio vendors can't afford any missteps. ■

OMas (bitstream@seneschal.net) waves good-bye to the business slump and looks forward to some snowshoeing before the thaw. This column was created while under the influence of Arvo Pärt's Trivium and Simon & Garfunkel's Bridge Over Troubled Water. For pertinent links and back issues on 1394 basics and FireWire interoperability, go to www.seneschal.net.

—FROM PAGE 110, ROLAND VS-2480

ket, but these items may not be feasible within the present architecture.

YOU'RE SURROUNDED

The 2480 supports surround output in 2/2 (quad), 3/1 (Dolby Surround) and 3/2 with LFE (5.1). The Surround mode is activated and selected from the LCD Utility screen.

The 2480 provides multichannel surround outputs by borrowing channels from the auxiliary sends. The sends that are diverted are lost to use as effect loops, which is sort of unfortunate. In 5.1 mode, only two auxiliary sends are left. One can counter somewhat by using inserts and the eight "direct" outputs, but it isn't the same.

By default, the system routes the surround outputs to a portion of the eight analog multi-outputs. Panning to the surround outputs is controlled by the mouse via a 2-D graphic display, or by setting individual pan, depth, center blend and LFE send controls. For my money, take the mouse! An optional channel strip controller (\$695) has knobs for all channel strip functions and a joystick for surround.

As noted before, the 2480 has a great complement of effects, but none of these are set up for surround. The loss of auxiliary sends in Surround mode also tends to limit what one can achieve in effects processing when surround is activated.

VERSION 2.0

Toward the end of the review period, I got a look at an alpha version of the 2.0 operating system, which is expected to be released by the time you see this review. In Version 1.222, no cursor is available on the VGA screen, or any highlights to indicate what parameters are being addressed by the value knob, forcing the use of the LCD to set parameters. In V. 2.0, full operation of the system from the VGA screen and mouse is possible. This will be a major step forward, and Roland is to be applauded for aggressive ongoing maintenance of the VS-2480's control system.

Version 2.0 also addresses a complaint that I had about the display of effects setting in the VGA output: In V. 1.222, they aren't displayed, but this is corrected as part of Version 2.0's commitment to full remote control. Also in Version 2.0, the mouse can be used for internal patching and routing, waveforms will be displayed on the external VGA, and a fade-in and fade-out function will be added to the phrase sampler.

FINAL WORDS

Among today's fully integrated hardware

workstations, the Roland VS-2480 leads the pack. Its combination of 24 channels, high-resolution options, editing, mixing, signal processing and mastering is unmatched by any other single-box system. The VS-2480 has a well-organized and efficient user interface and control surface. What deficiencies I experienced in the reviewed version are explicitly addressed in the forthcoming Version 2.0 operating system. Roland's aggressive program of system updates, as well as extensive support and training resources, are strong arguments in favor of the product.

A fully integrated proprietary hardware

system such as the VS-2480 does have some limitations as compared to open, software-based systems when it comes to software plug-ins. The advantages of system stability, ruggedness and the convenience of a dedicated control surface will outweigh that consideration in many, but not all, applications. If you're in the market for a self-contained unit that can do high-end multitrack recording and music production, then the VS-2480 is simply the one to get.

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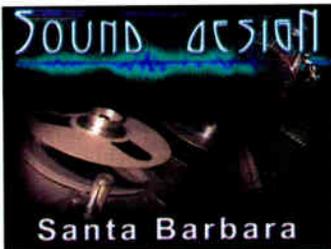
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—FROM PAGE 22, MAN CONTROLS FIRE

FireWire connectivity appeared in the consumer world. Every computer, external drive, camera and scanner I now own is FireWire. Even my little iPod MP3 player is full-speed Fire. Plug, play, rip, ship, burn, carry, transfer, backup, stripe... damn! *Everything* is FireWire, and *everything* works!

I was originally disappointed with FireWire performance in general, but then the Oxford 911 chip set came out, and Fire delivered on its promise overnight. Secret tip #202: If you own a FireWire drive and think it seems slower than you expected, find out if you are using the Oxford hardware driver set. If not, use it for target practice and buy one that does use a full-speed chip set.

And how's it going in our pro world? Well, things seem to be moving a bit more slowly here—again. Frankly, I don't get it. We need full-speed FireWire RAID's for A/V more than some kid needs it for storing AOL instant messaging addresses, don't we? I am at a loss to explain why it is so difficult to get full-speed, reliable, hot-swap technology to work in the studio, yet I hear complaints about just this all the time.

Personally, I use a DAW and Final Cut Pro, and I record straight to FireWire RAID's all day, with cameras hooked up at the far end of the chain, in-loading video through the chain, back to the host computer, and then back again to the drive at the end of the chain, where I used the free FireWire connector to plug in my camera. Obscene but true, and all with drives and software from the consumer world. Truly a case where "Pro" means less, not more. Oh, well.

CD DATA ON YOUR CD

But to end on an entirely unassociated up note, here is St.Croix's Useless Tech Tip for the month. Now that all of you have two of those little LED flashlights that you bought for the ergonomics experiment earlier in this column, here is something cool that you can try out. For some reason, if you shine them on any commercially pressed CD, you can see exactly how much data is on the CD. The data has a distinctly different appearance from the unused space. There ya go. Understanding technology by using technology. ■

If you get those little lights in blue and red, you can alternately flash them at the car in front of you, and because they are so bright, the car will move out of your way. Then, a real cop will come and arrest you.

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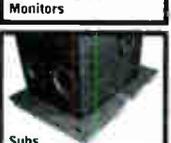
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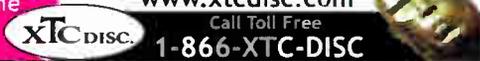
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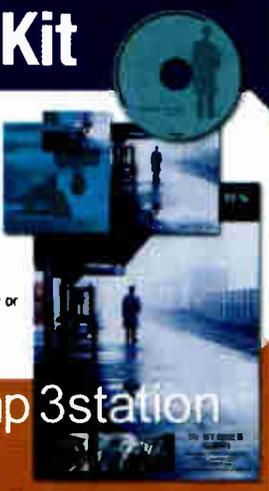
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—FROM PAGE 32, IS IT TIME TO GO SOFT?

for different operating environments, there can be a big change in the way a given module behaves on different platforms: In a TDM host, for example, with its dedicated processing hardware, a software synth may be much speedier than the same software operating as a plug-in to a native VST program.

Finally, there's the question of obsolescence: What happens when the platform your favorite software synth runs on no longer exists? One of my favorite all-time electronic-music teaching programs is Turbosynth, from Digidesign. Although it looks crude by today's standards, Turbosynth actually has a lot of very cool features (like evolving wavetables) that few other developers have put into their much-snazzier packages. About two years ago, I got what may have been the last five copies out of their warehouse to use in my classroom. It runs on OS 9, but I very much doubt it will work on OS X, so in a year or two I'm going to have to find something else to demonstrate the basic properties of sound.

At least with hardware synths, if you really need a particular model, then you

can usually find one somewhere. Dozens of concert music composers wrote pieces throughout the '80s and into the '90s with a DX7 as part of the ensemble, and although the thing has been out of production for over 15 years, finding one for a performance is not hard.

Here's an example from my very own Closet of Obsolete Technology. There are two products in there that were manufactured the same year: a Casio CZ-101 and a floppy disk containing a wavetable-editing program I wrote for the alphaSyntauri computer music system. The Casio cost about \$600. If I take it out of the closet (and assuming I can find the power supply), it can still do everything it always did, despite a couple of broken keys. And if I want to use those sounds in my studio, I can just hook up MIDI and audio cables, and I'm in business.

The alphaSyntauri cost about \$3,000, including the Apple II+ I had to buy to run it. I long ago sold the Apple II, and now the only place you're likely to find one of those is in an under-funded public school classroom. Even if I could get the computer, and the special audio cards that were needed (whose manufacturer is long

gone), and a monitor, and a 5.5-inch disk drive, and the dedicated 61-note keyboard, I still couldn't use the synthesizer with any other piece of hardware, because the company died before they could finish implementing MIDI into the system.

So we're still a ways away from being able to ditch all of our synth hardware. But that doesn't mean it won't happen. Many of these issues would be straightened out "if," as Michael Bierylo puts it, "manufacturers agreed on a standard architecture. Then one could buy a computer, software and third-party DSP from whomever they like, and configure and scale their system according to their needs and budget." To which he adds, "In your dreams, pal!"

To which I add, "Stranger things have happened!" It's a worthy goal. Let's see if there's enough cooperation and communication within the software-synthesis community to make it happen. ■

Paul D. Lehrman is a composer, teacher, consultant and Mix's Web editor. In his spare time, he likes to rummage through his closet looking for old stuff that still works.

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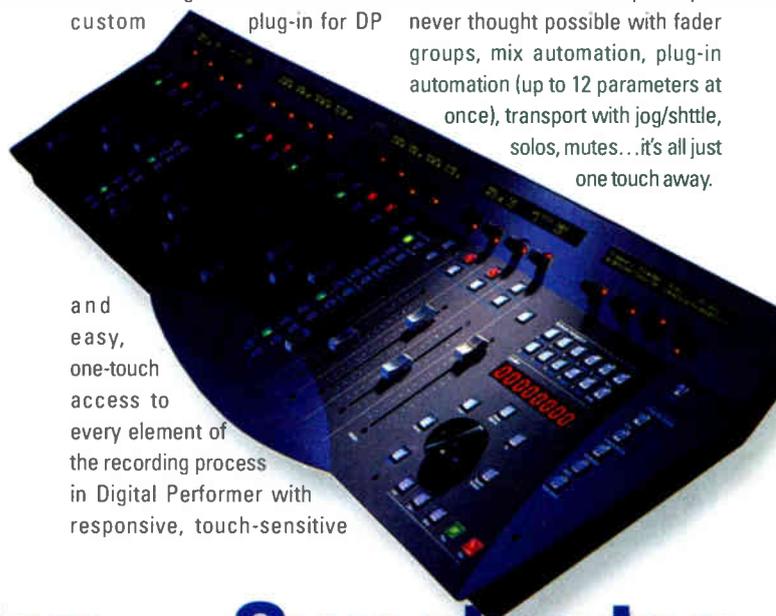


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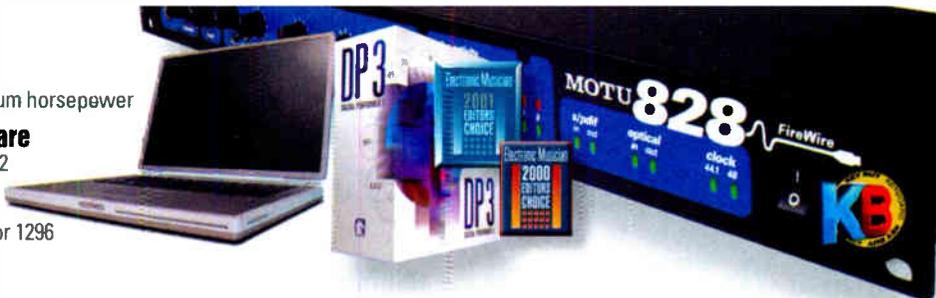


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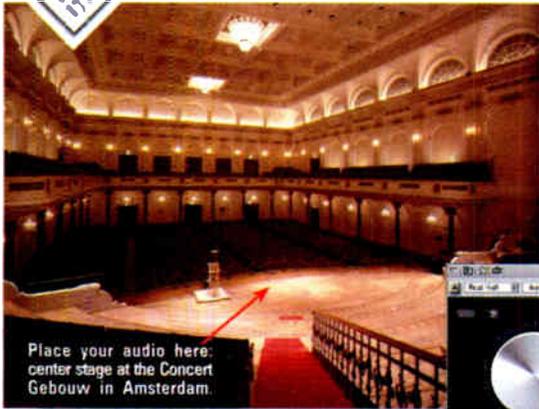
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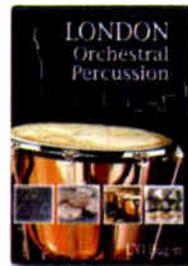
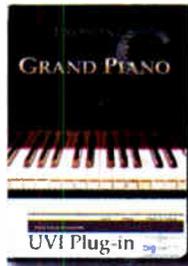


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virtual sound module right inside DP. No more wasted time loading CD-ROMs, waiting, listening, loading again, waiting some more... With UVI plug-ins, the patches are loaded in seconds and are available directly inside Digital Performer. There's nothing quite like this! London Orchestral Percussion, Prosonus Orchestral Collection, Prosonus Grand Piano, Six PlugSound Volumes: 1-Keyboards, 2-Frets, 3-Drums, 4-Hip Hop Toolkit, 5-Synth Collection, 6-Global and more titles on the way.



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Vol. 6 — Interactive Training for Digital Performer 3



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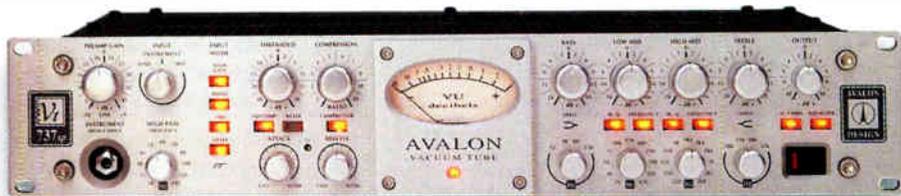
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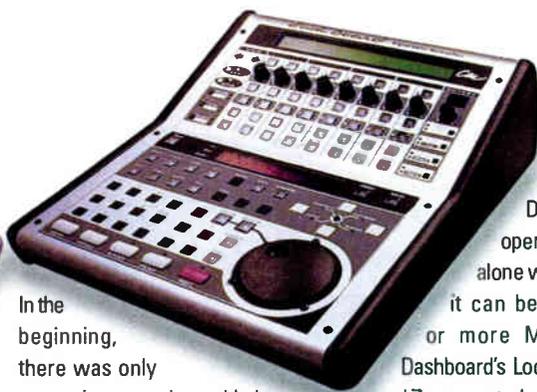
With its new, custom software written specially for Digital Performer, MotorMix becomes a seamless, tactile extension of your MOTU software recording environment. Put your hands on eight 100mm motorized faders and rotary encoders to tweak your mixes in record time. Gain instant easy access to all MIDI and audio tracks with control banks. You'll never even think about mixing with a mouse again. Imagine having tactile control over most of Digital Performer's features with MotorMix's



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Smart Code Pro™ Surround Encoder Plug-ins For DP3

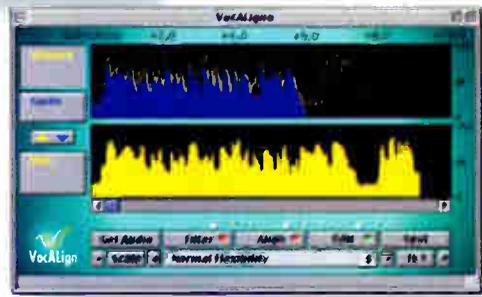
SmartCode Pro is the first and only surround encoder plug-in for Digital Performer. It allows you to deliver fully encoded surround mixes to your clients. Burn CDs or DVDs that you can preview using any consumer DVD player that supports Dolby Digital™ or DTS™ — a crucial final step in producing professional quality surround mixes. By encoding with Smart Code Pro directly within DP3, you avoid having to invest in expensive dedicated hardware encoders (that cost thousands), which saves you both time and money.

SmartCode Pro is available in two versions to accommodate the two most widely used surround formats: Dolby Digital and DTS. Both versions allow you to preview your 5.1 surround mixes in real time 5.1, then encode and decode the mix to create a 6-channel surround master. Smart Code Pro is a must-have for serious surround production with DP3.



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Tascam GigaStudio

Sound Management Tips

Finding the right sound to play in GigaStudio can be a daunting task, even with an 80GB hard drive dedicated to GigaStudio-recognized sound files. Now imagine using multiple GigaStudio systems with multiple dedicated hard drives on each of them, and the job of finding the right sound becomes overwhelming. Fortunately, GigaStudio comes with a few tools that not only organize your sounds, but also allow you to create and save instruments on-the-fly.

WHAT GOES WHERE

If you use a single GigaStudio system, then, obviously, all of your GigaStudio-related sound files will be stored on at least one dedicated hard drive. Use the Windows Explorer to organize those files in a logical manner. For example, I place the commercial Giga-format libraries I own in the folder that GigaStudio automatically creates when the program is first installed. Furthermore, I organize each library into its own folder.

I place Giga-format libraries converted from other sources into a different folder, arranging them in subfolders according to their instrumental classification. Likewise, I systematize .WAV files by creating separate folders for them, with subfolders for each sound category. Naturally, you can extrapolate on this system so that one drive, for example, contains all of your commercial libraries, while another drive holds all of your converted libraries, and so on. If you use multiple GigaStudio systems, then you can store commercial libraries on one system, store .WAV files that can be used to make .GIG files on another system, and so on.

However, multiple GigaStudio systems users may want to use other criteria to organize their sounds. For example, playing certain instruments in GigaStudio, such as pianos, percussion and other keyboard instruments, can easily tax the program's polyphony limits. If you use those types of instruments regularly, then you may want to store these libraries in one system that is prioritized for playing these sounds. Similarly, some Giga-format libraries, such as

Jim Corrigan's Nashville High-Strung Guitars, use multiple instrument levels to reproduce sounds. To play these sounds, you have to link GigaStudio's MIDI ports. In order to get the maximum use out of linked ports, you may want to store all multi-level instrument libraries on the same system.

THE QUICK AND THE DEADLINE

Logically organizing your sound files makes it easier to find files on your own, but GigaStudio also offers QuickSound, a powerful database feature to organize and find sounds. When you open GigaStudio, QuickSound scans all the drives and folders for the different files GigaStudio can potentially play. Every time you reopen GigaStudio, it will refresh the database to update each sound file you've added, deleted or moved. Of course, you don't have to reopen GigaStudio to refresh the QuickSound database. Select the QuickSound tab in the Settings menu and you can rebuild the database.

GigaStudio's Search feature helps you find your sounds more easily in the QuickSound database. Type in a search word and GigaStudio will display all the files that contain that word in its name. Better still, you can right-click on a file name in the Directory pane and a File Properties box opens. You can add keywords into the File Properties box and GigaStudio will use those to find files when you perform a search. In fact, if you select groups of files, you can apply merged file properties to all selected files. However, make sure the read-only attribute for those files is disabled, otherwise QuickSound will ignore the keywords. To disable the read-only attribute, go into Windows Explorer, select the appropriate files and right-click on their names. Select Properties from the pop-up menu and simply uncheck the read-only box when the Properties dialog box opens.



The Main window, with effects

QuickSound is also useful when using the Distributed Wave feature in GigaStudio. Essentially, the Distributed Wave tab allows you to load .WAV files into the Loaded Waves pool, mapping each file to MIDI notes as you go. You can elect to save the mapped, loaded .WAV files as a .GIG file by right-clicking in the Loaded Waves pane, or you can copy selected files from the Loaded Waves pool into the Wave Palette pane above. You can then save the sound list in the Wave Palette as a distributed Wave collection file. However, don't move the associated sound files after you save a distributed Wave collection, because it loses the file path and you will have to rebuild the collection again.

SOUND APPLICATIONS

Using the QuickSound, Search and Distributed Wave features together is a great way to call up and group sound effects or cue material together without using GigaStudio's Instrument Editor or moving .WAV files around in Windows Explorer. It's also great for creating .GIG files on-the-fly, particularly percussion instruments. You can then just use newly created instruments as is, or further edit the .GIG files to create more sophisticated instruments later. ■

Zack Price is a longtime GigaStudio user who's been fortunate enough to learn from the real GigaGurus: Jim Van Buskirk, David Govett, Jim Corrigan and John Thomas.

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