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Recording

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THE TECHNIQUES BEHIND
THEIR MEGA-HIT CD**

11

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cakewalk

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FW-1884

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Check out Chuck D's commentary shows on Air America radio: *Unfiltered and Bring The Noise.*



Johnny is the original Public Enemy DJ. Returning in 1998 for the He Got Game soundtrack, *Yo! Bum Rush Show and It Takes*

A Nation of Millions to Hold Us Back, he's the FW-1884 wizard behind Public Enemy's upcoming releases, *How Do You Sell Soul To A Soul-less People Who Sold Their Soul?* and *New Whirl Odor*. Get the details and release dates at www.publicenemy.com and www.slamjamz.com



CHUCK D.

DJ JOHNNY "JUICE" ROSADO

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CHUCK D.

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DJ JOHNNY "JUICE" ROSADO

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DJ "JUICE" ROSADO

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DJ JOHNNY "JUICE" ROSADO

"Johnny used my old Portastudio to record a new beat loop that sounded like a sample lifted from an old record. It worked so well that many fans were convinced we had sampled an old break beat. The recording techniques of the past are not all obsolete..."

CHUCK D.



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DJ AND PRODUCER



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Talk Box



SEDUCED

There's been a lot of talk about Volume Wars in music production — everyone wants their music to be louder than everyone else's. Naturally, my opinion has always fallen in line with those who despise this trend . . . I need dynamics in order for the music to sound real to me, to say nothing of how much I hate the destructive and abhorrent side effects super-limiting can create.

At the same time, it's interesting to watch what's happening these days. As has always been the case, those who "consume" music are rarely listening on stellar playback devices. I love my iPod — and it gets used constantly on the road, at the gym, even to play endless background music in the living room. But it's no secret that MP3's aren't anyone's idea of high fidelity.

But there's more to it than a move toward compressed formats. Two days ago, I endured seven hours of airplane confinement. My trusty iPod made the trip with me. I receive a ton of CDs each month from people hoping for coverage in this magazine. I usually dump quite a few on my 'Pod to do some listening. This time I also loaded up a bunch of older favorites, albums from the '70s, '80s, and '90s.

Even given the aurally hostile listening situation — MP3's on iPod with earbuds, sitting in a people-packed jet airliner — there was a noticeable difference as I switched among the 4,000 or so older and newer songs I had loaded. I'm not talking about the Digital Versus Analog issue — let's not go there. Rather, there was an amazing difference in the dynamics, the arrangements, the musicianship, and the *sound*.

Whatever the root of the sonic difference, here's my point (yes, I have one): The world has been seduced by changing sonic values. The "smiley curve" hi-fi EQ has become the norm — booming bass and ice-shard highs, scooped middle, no dynamics. Things don't sound like what they are anymore.

When I hear the drums on an older recording, they sound like drums. On many modern recordings, that's no longer the case. In fact, on many modern recordings you can't even hear the kick drum or the bass guitar through earbuds — all that "boom" simply vanishes. On older tunes, everything was audible. We're not talking about musical/stylistic choices here, we're talking about production values.

Who do you blame? Technology? Nope, everyone wants to blame the gear, but that ain't the source. Consumers? No again. MP3? Sorry. Here's the crux: We only have ourselves to blame. As engineers and producers, we're responsible for knowing how things are supposed to sound, and to make them sound that way. When instead we follow the hype and the trends, a flushing sound and swirling downward spiral commence.

It's time for us as engineers, producers, and musicians to realize that we determine how the recordings sound — especially as many of us live and work in the indie world, and aren't beholden to major labels and other self-proclaimed "taste-makers." Things aren't always 100% under our control, but we can certainly make suggestions, and more important, *educate* those we work with.

I don't want to come off as some ivory tower whiner or an old "I remember when. . ." guy, nor am I averse to modern music — there's a lot of it I like very much. But I think it's become too easy to sublimate our responsibility to the music, the art, and the consumers. I believe it's up to us to make the difference.

—Mitch Gallagher



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World Radio History

Punch-In

Tips & News You Can Use
BY CRAIG ANDERTON

The Skinny on Skins

Media players do it, operating systems do it . . . why not let music programs have customizable looks? Aardvark has updated their Mac OS X drivers with new "skins" for the accompanying control panel applet (controls VU metering, sample rate selection, solo, mute, etc.). Users can choose from skins for Cubase, Nuendo, Logic, and Digital Performer (shown), each of which matches the graphic style of the host program; eight skins in total are now available. To download the new v2.4 Mac OS X drivers, surf on over to www.aardvarkaudio.com.



We Record It, UmixIt

Is mixing ready for the mass market? UmixIt Technologies thinks so, and has enlisted Cakewalk to provide an audio engine that will allow music buyers to make their own mixes of songs. As a content provider, UmixIt delivers a mixed-mode CD consisting of traditional audio tracks that the customer can play in a CD or DVD player, but also includes Cakewalk's Media Mixer software. This hosts eight individual tracks of a particular artist's song, which consumers can then remix as desired. All the tracks have been encoded with Windows Media 9 Series encoding, which applies Microsoft's digital rights management to protect copyright. www.cakewalk.com



Phoning in Your Part

Let's hear it for ISDN: Two-time Tony Award-winning actor James Naughton was performing in the Albany, NY area, but needed to complete a 60-second spot for Citalis with a New York City agency. Fed Ex? Commuter flight? No. Using Cotton Hill Studios' ISDN link and a Digidesign Pro Tools system run by Associate Engineer Aaron Scher, Naughton was able to complete the spot without leaving the area . . . mission accomplished. www.cottonhill.com

(L to R) Ray Rettig, President of Cotton Hill Studios, Inc., James Naughton, and Associate Engineer Aaron Scher.





NOISE BE GONE

Having noise troubles when running your laptop with a FireWire or USB device? As reader Geoff Wood points out, it may not have anything to do with unbalanced I/O, ground loops, or RF on the interface, but the noise could be entering on the power lines from your laptop's switching power supply. If the problem goes away when running on batteries, then you've confirmed the source.

Unfortunately, additional capacitive smoothing or decoupling doesn't contribute much to solving the problem; in extreme cases, your only alternative may be to find a linear, non-switching power supply for the laptop. Before you do, though, at least try using an audio interface with balanced connectors, as that can help reduce noise in some situations.



Technology Update:

Rip, mix, burn . . . print!

HP's LightScribe Direct Disc Labeling enables customers to burn silkscreen-quality labels on their CDs and DVDs — with the same drive that was used to burn the data. It requires no printer or adhesive paper labels. Customers can burn to the data side of the disc, then flip the disc over and “burn” a silkscreen-quality label with text and graphics to the label side using the same laser.

To date, 12 companies (including Philips, Memorex, Hitachi, Toshiba, Mitsubishi, Roxio, Sonic Solutions, and others) have completed the licensing process and are in various stages of bringing LightScribe into their product lines, both to support the initial HP product launch and enable the creation of a market-standard labeling protocol.

LightScribe Direct Disc Labeling technology requires three elements: a LightScribe-enabled optical disc drive (which requires only minor, low-cost modifications to standard drives), LightScribe-supported software applications, and LightScribe-compatible media (as identified by the LightScribe logo). www.hp.com

Music China Grows

Music China (and the concurrent event “Prolight + Sound Shanghai”), the China International Trade Fair for Musical Instruments & Accessories, is scheduled for October 20 – 23. Now in its third year, the fair keeps growing: Over 400 exhibitors, including seven national pavilions, will cover 30,000 square meters of space — a tripling in size since its debut. Already, a bigger space at the Shanghai New International Expo Centre has been reserved for the 2005 show. For more information on the fair, visit www.musikmesse.com.



INDIE WORLD:

Rob Levit, *Anatomy of Ecstasy*

A mix of jazz, experimental electronics, tonality, and atonality, this CD will never be filed under “easy listening” — but it provides a glimpse into a new direction for jazz. As Levit says, “Compositions all started as improvised sketches either into Sound Forge to create loops that could be used later, into Ableton Live 3.0, or recorded on a Roland VS-1680. After I had lots of sketches, samples, and improvs, I began trying different combinations of putting them together. For guitar, I mainly used my Heritage 535 with a standard Roland synth pick-up and Yamaha G50 Guitar to MIDI Converter, driving a Roland JV-1010 keyboard module. They were then manipulated *ad infinitum* in Ableton 3.0.”

A fan of Steve Reich, Levit uses a lot of asymmetrical length drum loops (15/8, 11/8, and 7/8 layered on top of each other) to create the sound of a kit that's always unpredictable, even in a loop-based context. As he says, “I don't have the patience for beat construction. Working with already done samples and them tweaking them to my taste works best and is actually more spontaneous. Ableton allowed me to ‘improvise’ with the drum samples by moving markers, pitch, and effects around while recording. Many songs have multiple drum sets at different volumes; I call the interplay between them ‘rhythmic polyphony.’”

To hear MP3 clips of the album's cuts, surf to www.roblevit.com and click on Compact Discs.

tip

BACKUP FOR THOSE WHO DON'T BACK UP

You know you should back up, but you don't . . . and someday your hard drive will fail, and you'll kick yourself. So as a public service, here's the lazy way to do backups.

First, we'll assume you have separate drives for your operating system and data. If you don't, this tip isn't for you.

The key is to install a big, honkin' hard drive for your OS, like 160GB. When you install your OS, partition it so there's about 20GB for the OS; the rest will become your backup partition.

As data builds up on your data drive, periodically copy the drive's contents over to the backup partition on your main drive. That's it. If your data drive fails, you can just install a new data drive, copy the data over from your main drive, and you're back in business. If the OS drive fails, well, you still have the data drive.

When the backup partition fills up, power off your computer, temporarily disconnect your data drive, then install a new drive (make sure all the jumpers are set correctly for master/slave). Power up, format the drive, copy the backup partition over to it, then pack it away inside a nice little anti-static package and put it on your shelf. While you're at it, I strongly suggest making two backups on drives from different manufacturers. When you're done, re-install your original drive, erase the data in the backup partition, and you're ready to start accumulating more data.

Don't lose months or years of work . . . if you don't have a standard backup procedure, at least try this approach.



Is This What They Mean by "House Music"?

Need proof that home studios and music-making are becoming increasingly ubiquitous in today's world? Look no further than a recent home show held in Indianapolis, Indiana. This year, the annual Home-A-Rama show featured seven newly constructed homes, ranging in price from 1.2 to 1.85 million dollars, and in size from 8,000 to 10,000 square feet. While those figures may not raise the eyebrows of residents of pricey San Francisco or Manhattan, for the Midwest's more real-world cost of living standards, they're up at the top of the market.

Besides being the sort of palatial mansions in which pro audio magazine editors typically dwell, these homes featured tons of the expected amenities: decked out kitchens and master suites, over-the-top home theaters, wine cellars, and home automation. But on the lower level of one home was an unexpected extra — a complete home studio. Auralex, Sweetwater, Digidesign, and Monster Cable joined forces to equip the studio, which featured a closet that had been converted into an isolation booth, with an angled window and Auralex foam acoustic treatment. Auralex Elite ProPanels were used for acoustic treatment in the control room, while a Pro Tools rig fronted by a Control 24 was the DAW of choice. Numerous windows provided a serene view of the landscaped backyard and the adjacent golf course.

In a house equipped with every luxury (including an elevator to circumvent that long, arduous climb from the lower level to the main floor), the studio stood out as exactly the sort of creative retreat every musician would just love to call home.



INDIE WORLD:

Susan Robkin, Surfacing to Breathe

Yes, she writes some fine rock songs and sings her heart out, but the added attraction is the band on the CD — Elliott Randall (Steely Dan) on guitar, and Peter Gabriel's rhythm section of Jerry Marotta (drums) and Tony Levin (bass).

Randall took full advantage of today's technology: "As Pro Tools is virtually everywhere, I was able to record in friends' studios in NYC — Deep Diner Studio and RK Music Studios. I also picked up a Pro Tools rig for myself, and moved a lot of the overdub sessions to my NYC home studio.

"We migrated the project to London for vocal overdubs and final gloss, renting a beautiful apartment for Susan, where we set up a rather large Pro Tools rig. We used two big rooms as 'studio' and 'control room,' and utilized different characteristics of the various rooms, like when we recorded the opera singer and cello. Simon Hanhart engineered the basics tracks and Susan's vocals.

"After the vocals, we moved to my London studio where the remaining guitar overdubs and 'various assorted' were turned into musical zeros and ones. I mixed in NYC, with Godfrey Diamond on his HD system, running through 16 Neve module strips — the best of both worlds, sonically. Scott Hull did the mastering at Hit Factory NY.

"The coolest thing about Pro Tools is how portable your studio can be in the interim period between basics and mixing. I'm definitely a believer in the 'traveling Pro Tools road show.'" www.susanrobkin.com, www.elliott-randall.com/sounds.htm

A Big Knob.



If you've spent any time making music on a computer, you've probably noticed a few simple things you're missing. Like a big, convenient volume knob. And a monitor selector... and a talkback section... and a source selector... and some headphone control. In short, you're missing the basic stuff you'd find on a traditional recording console.

To solve this problem, we created the Big Knob. A simple tabletop level control box that lets you switch between three sets of studio monitors, four different stereo sources, and even send musicians their own custom headphone mix while communicating with them via a built-in Talkback microphone. With its high-end audiophile sound quality, robust Mackie construction and, um... big, smooth knob, every computer-based studio needs a Big Knob.

Go get the big picture at www.mackie.com.



Dan Steinberg is the product manager for Big Knob. He has repeatedly exercised his right to veto several previous captions.



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Secrets of the Pros: The Basics of Modern Recording & Mixing

2 DVDs, NTSC, English
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As an engineer, Ken Walden worked with Santana, Metallica, Sammy Hagar, and others. Walden also served as a Product Support Specialist for Digidesign for almost nine years. For *The Basics of Modern Recording & Mixing*, Walden has gathered the knowledge and techniques he's picked up from the best in the business over the years — these are indeed the same techniques used to make major records.

The two DVDs comprise 15 sections. Walden has an easy, conversational presentation style. He takes you into his studio, and begins at the beginning: studio layout and mic preamps. Most of the focus for the basics and background sections is on DAWs — specifically referencing Pro Tools for commands and techniques. There's little discussion of hardware or other DAWs. The concepts are universal, but beginners may have trouble transferring them from Pro Tools to their DAW of choice — and it may be difficult if you're not using a DAW.

Walden suggests that recording drums and other sources is best done in a "pro" studio. However, he does provide information for those who want to record at home. He also makes suggestions for the best mic for each drum, electric and acoustic guitar, and vocals, and shows typical placements. Bass and keyboards are handled direct, and there's a discussion of using amp modelers and plug-ins to record guitar. There's also an introduction to MIDI and sequencing, and to software synths.

The mixing section is more conceptual than specific — you're told to find an engineering book to learn about compression and effects, for example. But a lot of good tips, tricks, and advice are provided on processing and combining tracks.

The final section, "The Big Secret," focuses on acoustics. Noise floor, standing waves, early reflections, and solutions to these problems are all discussed. Guest speaker Manny LaCarrubba goes into great depth on the acoustics of small rooms, and how to set up a great-sounding studio on a budget.

Learning to record and mix is a massive topic. Making all the required information fit into three hours is a major challenge. But Walden does a good job of presenting a useful overview of the topics he covers. There's not a lot of depth, and it's skewed toward Pro Tools, but there's a ton of good information here, whether you're a beginning or experienced engineer. www.secretsofthepros.com



Surfboard

As we peruse the inner recesses, nooks, and crannies of the web, we're constantly flagging sites, news items, and useful tidbits that we feel will be of interest to you. Such as:

■ <http://defectiverecords.com/pc1600/pc1600.html>

The Unofficial PC1600 and PC1600X User Page is a treasure trove of downloads (there are free 1600X presets for just about everything: synths,



sequencers, and effects). You'll also find lots of tips, such as adding external controller inputs, mapping to Pro Tools, using the PC1600 as a CV-to-MIDI converter, creating a 16-step sequencer with note values controlled by the faders, and even a mod to double the PC1600's memory (not for the faint of heart). If you have anything to do with Peavey's legendary PC1600, bookmark this site.

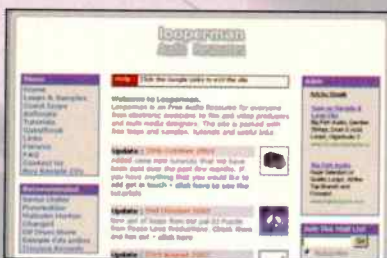
■ <http://www.vsplanet.com>

If you're a user of any of the Roland VS series of recording workstations, this independent site (it's not affiliated with Roland) is for you. As it says on the home page, "VS-Planet's goal is to provide a one-stop resource for VS-Musicians and home recordists to learn and get help with their recording problems." Resources include active forums, and profiles on artists using VS-series products.



■ <http://www.looperman.com>

You'll find plenty of free loops here (of the legal variety, so no worries; many are demos from commercial CD manufacturers), including drum, bass, flute, guitar, synth, effects, tabla, sitar, strings, pads, and others. Some have previews using Real Audio, but most are small enough that they make for a quick download. The quality is variable, but you'll find some nuggets; there are also links to plenty of other sources of free samples.



The Name Game

After seven years of operation, Transamerica Audio Group has changed its name to TransAudio Group and restructured into three divisions: TransAudio Broadcast, TransAudio Recording, and TransAudio Live. Check out the updated web site at www.transaudiogroup.com.



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MusicPlayer.com Forum Watch

Ah, the mysteries of CD-Rs . . . here's some great info on getting better results with duplication.

Original question posed by Lincoln Ross (Lrossmusic): I just found out that a CD-R is not technically the same as a regular commercial CD. I purchased Diskmakers' Reflex 1 CD duplicator, which claims to duplicate an 80-minute CD in less than five minutes. When the master disc is a pre-recorded commercial CD, the unit performs without errors at 40X. But when the master disc is a CD-R made on some stand-alone CD recorders like my Marantz 631 and I try to copy at burn speeds above 4X, dropout errors occur.

Discmakers' tech support said this is due to the difference in how a CD-R is made on the Marantz and how a manufactured commercial CD has been made, but I don't quite understand this difference.

■ Michael Oster (F7sound): Commercial CDs have pits in a thin layer of metal. The laser is reflected (or not), and that determines the data (being either on or off). CD-Rs fool a CD player into thinking it's a commercial CD by using a layer of dye that is burned and changes color. That causes the laser to reflect (or not).

■ Lrossmusic: Any suggestions as to what brand CD-R might work better in my Marantz? Their tech department said they could better tell what brands have had the most complaints (Maxell, Memorex, Verbatim). Also the manual recommends 74-minute blanks, which seem to be getting harder to find.

■ F7sound: When a CD-R really counts, I use Apogee Golds. They're expensive, and I usually only use them for mastering. I've also had good luck with Sony and Maxell, but they are 80-minute CD-Rs.

■ Mats Olsson: For duplication I use the SK brand (www.sk-cd.de) almost exclusively. I used to buy Taiyo Yuden, but they're expensive. For backup and masters I use Mitsui (sometimes Plextor or Verbatim).

■ Ani: Here are some links for info on a CD's mechanics: www.howstuffworks.com/cd.htm and www.pctechguide.com/09cdr-rw.htm.

■ Mats Olsson: For a graphic demonstration of CD versus CD-R technology, go to <http://static.howstuffworks.com/flash/cd-burner-edr.swf>.

■ Ken/Eleven Shadows: I've had okay luck with the Taiyo Yuden so far. But yeah, I'll burn stuff perfectly, it plays perfectly fine, but I'll get it kicked back to me from the lab saying that it's defective even though it plays in every CD player I have.

■ JimmieWannaB: For small groups like my daughter's, the biggest bite has been recording a pile of CDs, confirming that they work in a variety of players, then getting complaints from people who buy them at shows. They don't sell nearly enough CDs to justify non-CD-R duplication, and the selling price (\$5) is too low to justify high-end CDs. The problem players typically tend to be in cars.

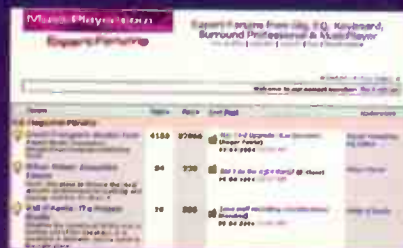
■ Mats Olsson: When you burn your masters, do it at low/medium speed (16X tops), select disc-at-once, do not run other programs, and choose jitter correction if your software has that option (Nero does). Use premium-grade discs, you may have to try a couple of different brands with your burner. If you don't use a good burner for your masters, get one (they don't cost much these days) — I suggest the Plextor Premium model.

Duplicate at lower speeds, it really doesn't take that much more time. The higher speeds aren't used on the entire disc anyway. 24X vs. 40X does not make much difference, but your discs will probably play better. If you can afford the extra time, try 12X or 16X. I use 8X speed for at least 90% of all duplication I do. (I have an autoloader.)

■ Lrossmusic: The Marantz CD-R 631 is indeed finicky about which CDs it likes. Oddly, sometimes it works better with lesser-grade CDs. Part of this may be because the unit was designed before 80-minute discs became the norm.

I am now duplicating at 4X on the Reflex 1. The tech guys at Disc Makers don't all agree that I need to stay at that speed, but one fellow who has a Reflex 4 (burns four discs at a time) at his home studio convinced me that to minimize my error rate it was the best not to go higher than 4X.

Even with the possibility of an occasional skip error and the 4X burn speed, I will likely keep the Reflex 1. It's very easy to operate and makes dubbing my demos much more convenient than from DAT to Marantz in real time. And it cost only \$316 shipped to my door. Thanks to all for helping me think through the variables involved here.



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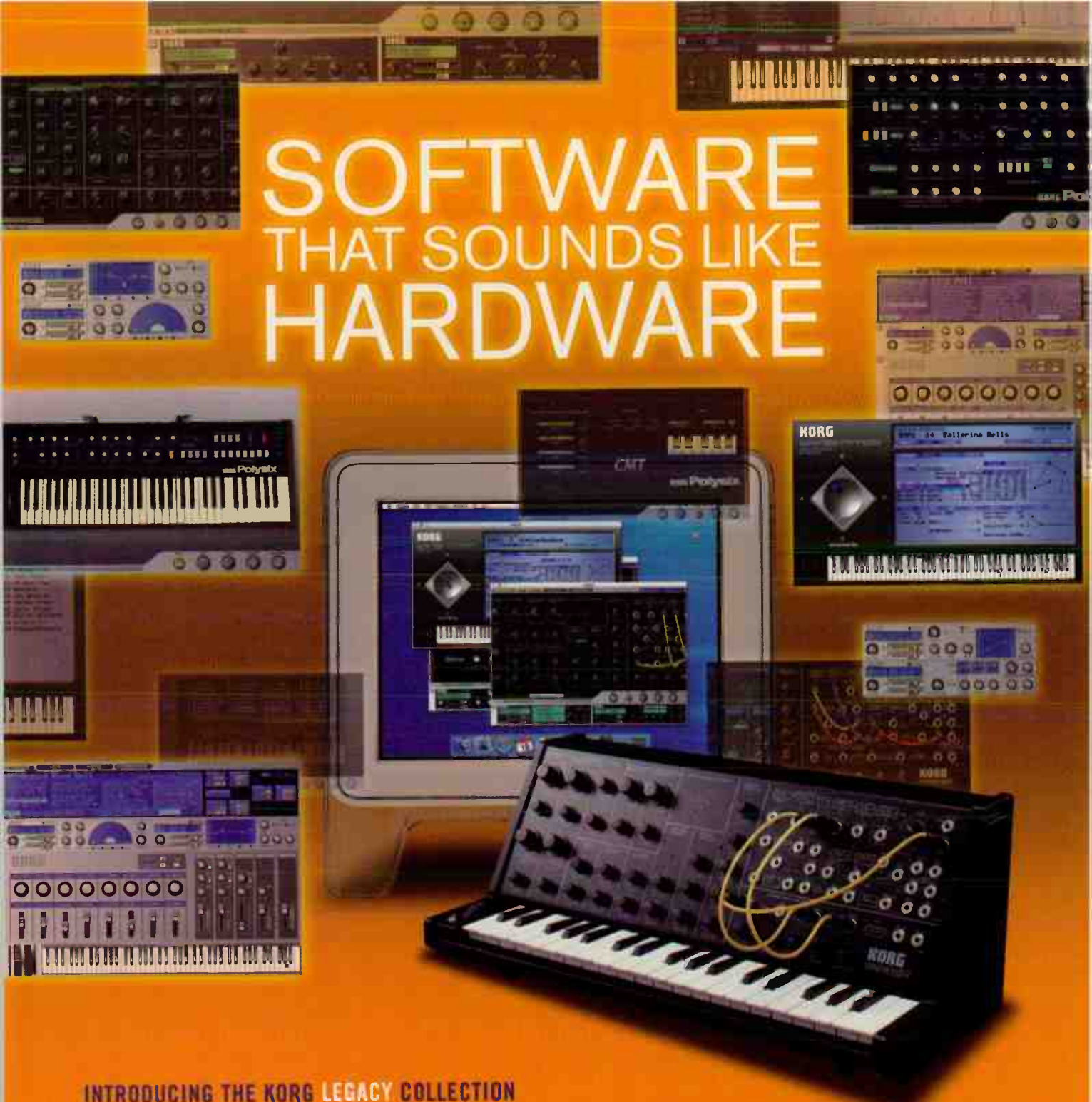
GarageBand.com announced that it will offer the Creative Commons Music Sharing License as an optional tag for all songs uploaded to its website. The license, provided by the nonprofit Creative Commons, permits fans not only to download music files, but also to copy and share them as long as they're not used commercially or altered. Such a license allows musicians to use the Net for promotion while retaining rights to their work. The display of the license on each participating GarageBand.com song page lets fans know what they can legally copy or share.

Creative Commons copyright licenses come in three expressions, a plain-language summary, a thorough copyright license complete with all necessary legalese, and a summary of the legal terms in markup language (machine-readable metadata). GarageBand.com now embeds the machine-readable layer into the code of its site, so that search engines and fans can find and identify legally shared music. <http://creativecommons.org>, www.garageband.com

Urge to Merge: Numark and Akai Pro

Numark Industries has acquired the official distribution rights of Akai Professional Musical Instruments (APMI) for the Americas, including the legendary line of MPC Studio products. Numark also owns and distributes Alesis Studio Electronics, the process of integrating Akai Pro's marketing, technical support, and sales administration into Numark's current model is already underway. www.numark.com, www.akaipro.com

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Tool Box

BY KEVIN OWENS

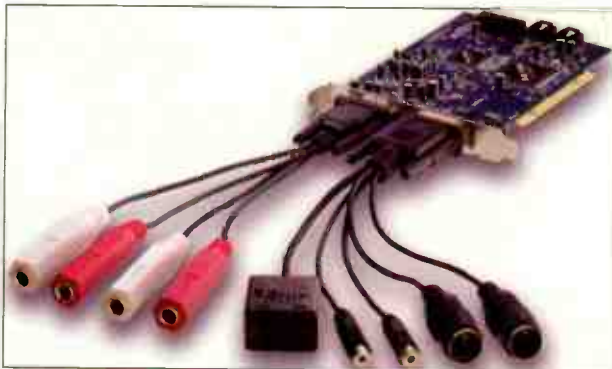


Digidesign 64-bit Expansion Chassis

Pro Tools HD expansion system

Designed and built by the PCI specialists at Magma, Digidesign's **64-bit Expansion Chassis (\$2,495)** extends the mixing and processing capabilities of Pro Tools HD and Accel systems by supporting up to seven Digidesign PCI cards, making high track-counts a reality. Expanding a system is as simple as installing HD Accel cards into the Chassis' slots, rebooting the computer, and launching Pro Tools; no additional software is necessary. The Chassis ships with a 400-watt power supply and features a low-noise fan to help keep things cool.

Digidesign, www.digidesign.com.



E-Mu 0404 Digital Audio System

PCI audio interface

E-Mu's **0404 Digital Audio System (\$99.99 street)** has everything you need to record, mix, and play back audio on a PC: 1/4" analog I/O, optical and coaxial S/PDIF I/O, MIDI I/O, over 20 effects, 24-bit/96kHz A/D and D/A converters, and E-Mu's E-DSP processor, which boasts zero-latency hardware-based mixing and monitoring via the included PatchMix virtual DSP mixer. The 0404 ships with ASIO 2.0 and WDM drivers and a software bundle that includes Steinberg's Cubasis and WaveLab Lite, SFX Machine LT, and a trial version of Minnetonka's discWelder Bronze.

E-Mu Systems, www.emu.com.

Tube-Tech MMC 1A

Mic pre/compressor

The **MMC 1A Microphone Multiband Compressor (\$3,995)** features a Lundahl transformer-equipped mic preamp with variable input impedance, 69dB of gain, a high-impedance instrument input, and a line-level input. The MMC 1A also includes a 3-band optical compressor with adjustable crossovers.

Tube-Tech, dist. by TC Electronic, www.tube-tech.com.



Lynx Core Audio Drivers

OS X drivers for Lynx interfaces

Lynx released **Core Audio Drivers (Free to current owners)** for its AES 16, LS 22 and LynxTWO PCI audio interfaces. The new drivers are tightly integrated into the OS X kernel, allowing users to manage the clock from the application or from the Lynx software mixer. Other new features include the ability to store and recall mixer scenes and settings, realtime metering and monitoring control, extremely low-latency monitoring, and full mixing and routing capabilities using the Lynx mixer.

Lynx, www.lynxstudio.com.

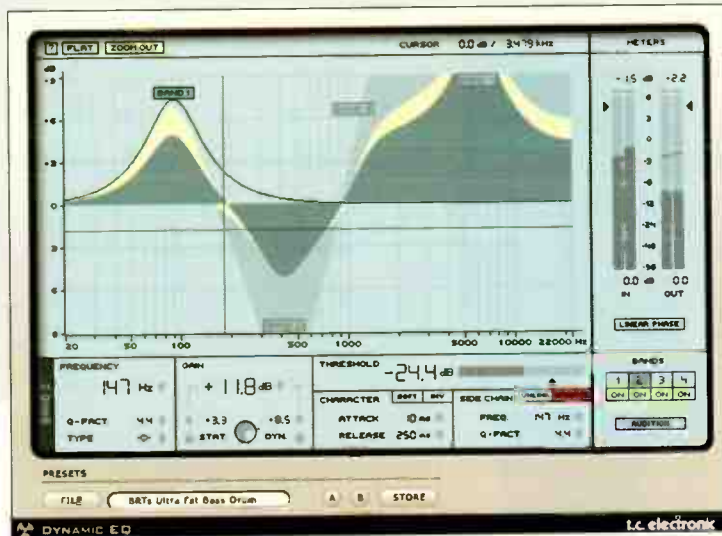


TC Electronic Dynamic EQ

PowerCore plug-in

The new **Dynamic EQ (\$495)** mixing and mastering plug-in for the PowerCore platform offers up to four definable bands, which can work in static or dynamic mode, or in a combination of both. Each of the bands can be configured as a parametric EQ or as a high/low-shelving filter. Feature highlights include independent sidechain and processing frequencies, 48-bit precision processing, and an Inverse mode.

TC Electronic, www.tcelectronic.com.



AKG Hearo 999 Audiosphere II

Wireless surround sound headphones

The recently FCC-approved **Hearo 999 Audiosphere II (\$1,199)** wireless surround headphones are fat with features: Dolby Pro Logic and Dolby Digital surround processing, digital and analog inputs, 150-foot interference-free reception, 24-bit digital signal processing, an EQ with 12 presets, AKG's patented EARS circuitry, and more. The headphone/transmitter set comes with washable leatherette and soft velour ear cup pads, and ships in a heavily padded metal case.

AKG, www.akg.com.



Quik Lok Z-600 Project workstation

The **Z-600 workstation (\$799.95)**, the first release in Quik Lok's "Feng Shui" series, was designed to add usability and graceful looks to any studio environment. The workstation comes standard with two large shelves with cherry wood laminate tops and a 14-gauge steel frame, and can be expanded by adding the matching Z-712 pull-out computer shelf and/or the Z-612 12-space companion rack.

Quik Lok, dist. by Music Industries, www.musicindustries.com.



Peavey Studio Pro CM1 Handheld condenser mic

The **Studio Pro CM1 (\$199.99)** is a handheld, cardioid-pattern condenser mic intended for use as a main or support mic in live and studio settings. It has a medium-format condenser element designed to handle SPL levels of up to 136dB while maintaining a clean, natural sound. The CM1 has a frequency response of 50Hz-16kHz, is equipped with a dual-layer pop filter and a built-in shockmount, and ships with a compact carrying case.

Peavey, www.peavey.com.

Voxengo Elephant 2.0 Mastering plug-in

Elephant 2.0 (\$69) is a mastering limiter plug-in (PC VST) that claims to do its job without any audible "pumping" effects. Features include seven limiter modes, seven speeds for different styles of music, gain reduction meters, noise-shaped bit-depth conversion, up to 4x oversampling, A/B comparisons, and automatic attack and release. Requires Windows 98 or later and a host application with VST support.

Voxengo, www.voxengo.com.

Elephant: Mastering Limiter v2.1

Presets: A | B Copy Reset

IN	OUT	Ch L	Ch R
5.0 dB	-0.3 dB	0 RMS	0 RMS
SHAPE	RSHAPE	2.5 -9.7	2.5 -9.8
		5 -2.7	5 -2.7
		7.5 0	7.5 0
		10 PRed 4.6	10 PRed 4.6

0.0133 0.50

LIM Mode: AIGC-3 ST. LINKING: On

LIM SPEED: Fast OVERSAMPLE: 4x

DITHERING: 16 Bits NOISE-SHAPE: On

DC FILTER: 10 Hz DC FL Type: Bessel

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CS-1 Channel Strip
with suite of 4 plug-ins

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Mike Clute - Pro Sound News, October 2002

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1176SE Limiting Amplifier

1176LN Limiting Amplifier

Cambridge 5-band
Parametric EQ
with 17 Filters

LA-2A Leveling Amplifier

Pultec EOP-1A
Program Equalizer

Fairchild 670 Vintage
Mastering Compressor

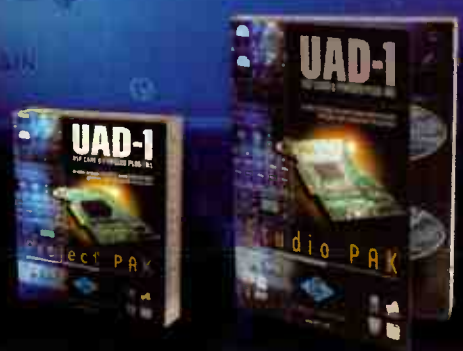
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EX-1 EQ & Compressor	•	•
Nigel	•	•
RealVerb Pro	•	•
Pultec EOP-1A	•	•
1176SE Limiting Amplifier	•	•
1176LN Limiting Amplifier	•	•
Cambridge Parametric EQ	•	•
Fairchild 670 Vintage	•	•
LA-2A Compressor	•	•
Pultec Pro	•	•



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World Radio History

Apex SP2 Studio Pack Microphone bundle

The **SP2 (\$699)** is a prepackaged set of four microphones designed to complete any studio. It contains one Apex 460 large-diaphragm multi-pattern tube condenser mic (with power supply/pattern selector), two matched Apex 185 dual-pattern pencil condenser mics, and one Apex 415 solid-state tri-pattern large diaphragm condenser mic. All four mics are shipped with shockmounts and windscreens in a foam-lined carrying case.

Apex, www.apxelectronics.com.



Kjaerhus GCO-1 Compressor and expander

The **GCO-1 Golden Compressor (\$118)** is a VST plug-in for Windows that uses an open architecture with many means of adjustment, enabling users to dial in sounds ranging from smooth and transparent to warm and tubish to pumping. In addition to five envelope types — Classic, Smooth 1, Smooth 2, Opto-coupled, and Pumping — the GCO-1 features adjustable knee and compression linearity, frequency-dependent compression, filters to eliminate low-frequency disturbances, 64-bit internal processing, A/B comparison, and more.

Kjaerhus, www.kjaerhusaudio.com.

Avid Xpress Studio Content creation suite

Avid unveiled two all-in-one production packages aimed at digital video professionals: **Xpress Studio Essentials (\$3,995, pictured)** and **Xpress Studio Complete (\$6,995)**. Studio Essentials includes the Digidesign Mbox and features Pro Tools LE with DV Toolkit. Studio Complete replaces the Mbox with the Digi 002 and also includes Avid's Mojo Digital Nonlinear Accelerator (DNA), which offers a ton of video and 3-D effects features. Both packages include Avid's Xpress Pro, Pro Tools LE, 3D, FX, and DVD by Sonic software applications.

Avid, www.avid.com.





Studio photo courtesy of Solid State Logic Inc.



Plus

RECORDING PACK

MXL 2003 + MXL 603



Features

- 1.06" (27mm) gold-sputtered, 3 micron density diaphragm
- Balanced transformerless output
- 3 position switch: Bass Cut, -10dB pad
- Durable brass enclosure
- Complete with mic clip and zipper pouch

Applications

- Vocalist mic - Lead and Background
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- Close miking Guitar Amplifiers
- Overhead miking



Features

- 20mm gold-sputtered, 6 micron gold diaphragm
- Satin silver finish with etched engravings
- Mic clip included
- Supplied with Carrying Pouch

Applications

- Stringed instruments, bass, guitar
- Piano miking
- Drum overhead
- Percussion
- Room miking

The  Recording Pac was designed with the working musician in mind. It was developed for recording music and vocals into digital or analog recording devices. The combination of these two highly respected studio condenser microphones is perfect for working in recording studio and home music recording applications. The unmatched sonic excellence and superior component quality, make the Recording Pac Plus the best value on the market. Audition your Recording Pack Plus today and experience the music you can only achieve with MXL Studio Condenser Microphones.



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World Radio History



Soundart Chameleon mkII DSP studio tool

The successor to Soundart's open platform DSP is the **Chameleon mkII (\$1,495)**, a rackmount or desktop box that — thanks to its intuitive controls and realtime playability — can double as an electronic instrument. The mkII features four balanced analog inputs, a hi-Z input with level pot, XLR input with phantom power, six balanced analog outputs, S/PDIF I/O, MIDI I/O/Thru, a Compact Flash slot, and a good-sized graphic display. The unit will ship with a dozen soundskins, including Soundart's Commodore 64 SID Emulator, Electric Piano, PD Synthesizer, and Drum Machine and Pattern Sequencer presets. Additional soundskins and computer-based (Mac and PC) skin-tweaking are possible via the mkII's USB port and included editor software.

Soundart, www.soundart-hot.com.



Drums On Demand Volume 3: Upbeat & Aggressive Drum library/construction kit

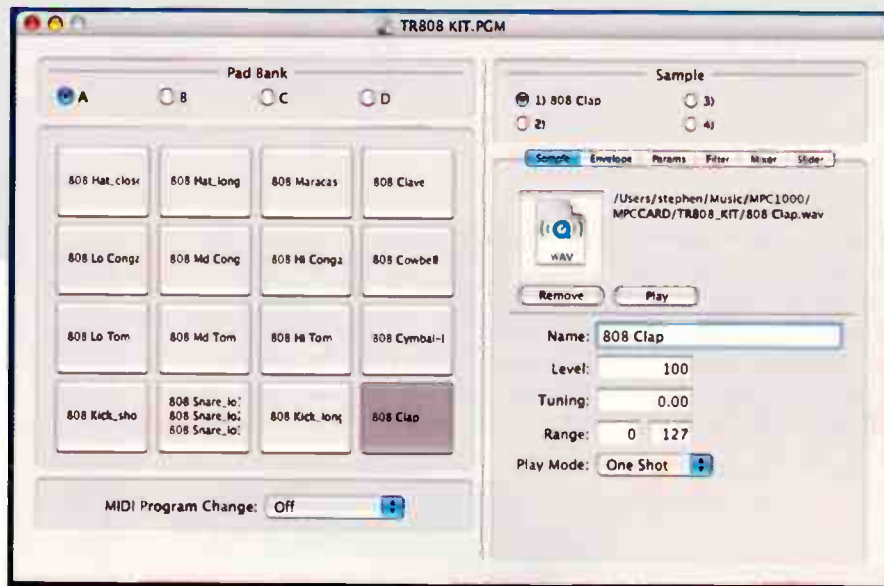
Upbeat & Aggressive (\$79.95) is a 2-CD set — available in 16- or 24-bit Acidized WAV and Apple loops formats — that features 1,700 royalty-free loops and matching single hits organized into 25 Song Sets. Each Song Set contains an average of 45 verse, chorus, fill, bridge, break, intro, ending, and other loops. Upbeat is DOD's first product to use Loop Layers, isolated kick, snare, rim, hat, and ride loops that allow users to create their own matching multi-channel grooves. Intended for use with "alternative rock, aggressive pop, and rowdy country," the loops range in speed from 73–188 bpm with most above 120.

Drums On Demand, www.drumsondemand.com.

Stephen Norum's MPC Pad 187 MPC 1000 editor software

Created by University of Saskatchewan electrical engineering/computer science student Stephen Norum, **MPC Pad 187 (Free)** is a full program editor for the Akai MPC 1000. The application can edit all values found in the Slider, Mixer, and Program modes of the MPC 1000 (pads 1, 8, and 7), including their sub-windows. Other features include the ability to assign note layout chromatically, auditioning of samples directly from the program, and concurrent editing of multiple programs. Requires Mac OS X 10.3.

Stephen Norum, lee.usask.ca/members/snorum.



Buying Gear in the 21st Century

Navigating today's music technology landscape

by Adam Cohen



Sweetwater Sales Engineers take the time to fully explain the gear they sell to their customers — in person or on the phone

These days, buying music technology equipment is more complicated than ever before. There's an incredible array of inexpensive, extremely sophisticated hardware and software products available offering unprecedented power to musicians, engineers and producers. However, we're faced with so many choices that it's often hard to figure out what to buy, let alone how to make it all work once it's set up in the spare bedroom/garage/basement/multi-million dollar studio.

In decades past, you'd likely turn to your local mom-and-pop dealer who knew you well enough to understand your needs and help figure out what piece(s) of gear would get the job done. However, these days, national chain music retailers and faceless internet companies have all but driven the local dealers out of business. The likelihood of finding a salesperson at one of these "gear supermarkets" who actually understands the gear they sell and will be working there long enough to take the time to comprehend your needs is slim at best. Ever tried to get any useful information from an actual human at most online retailers? It's like asking an ATM for investment advice — good luck!

WHAT'S A MUSICIAN TO DO?

Thankfully, there are alternatives. Sweetwater Sound, for example, has managed to blend the benefits of national retail (seemingly endless stock and great prices), local mom-and-pop shops (recommendations from a

knowledgeable staff that's been there for years and a genuine commitment to post-sale support), and online dealers (the ability to research and buy any of thousands of products 24-7 and a generous free shipping policy). The result is a full-service retailer with a devoted following.

How do they do it? It starts with the philosophy of Chuck Surack, who founded the company a quarter century ago and is still actively involved in its day-to-day operations. "I started our retail division because, as a gear junkie myself, I wanted to support my own 'habit' and support my friends. I couldn't find a dealer who knew the gear well enough to help me make good decisions about what would work best for my needs or was able to help me if I had a problem after the sale." Surack continues, "I had a working studio, so my job was running the studio. I wanted to be able to trust that there was someone whose job it was to stay on top of the technology and who would take the time to understand my needs and help me make the right decisions about what to buy. Since that sort of music retailer didn't exist, I decided to do it myself."

FAST FORWARD 25 YEARS...

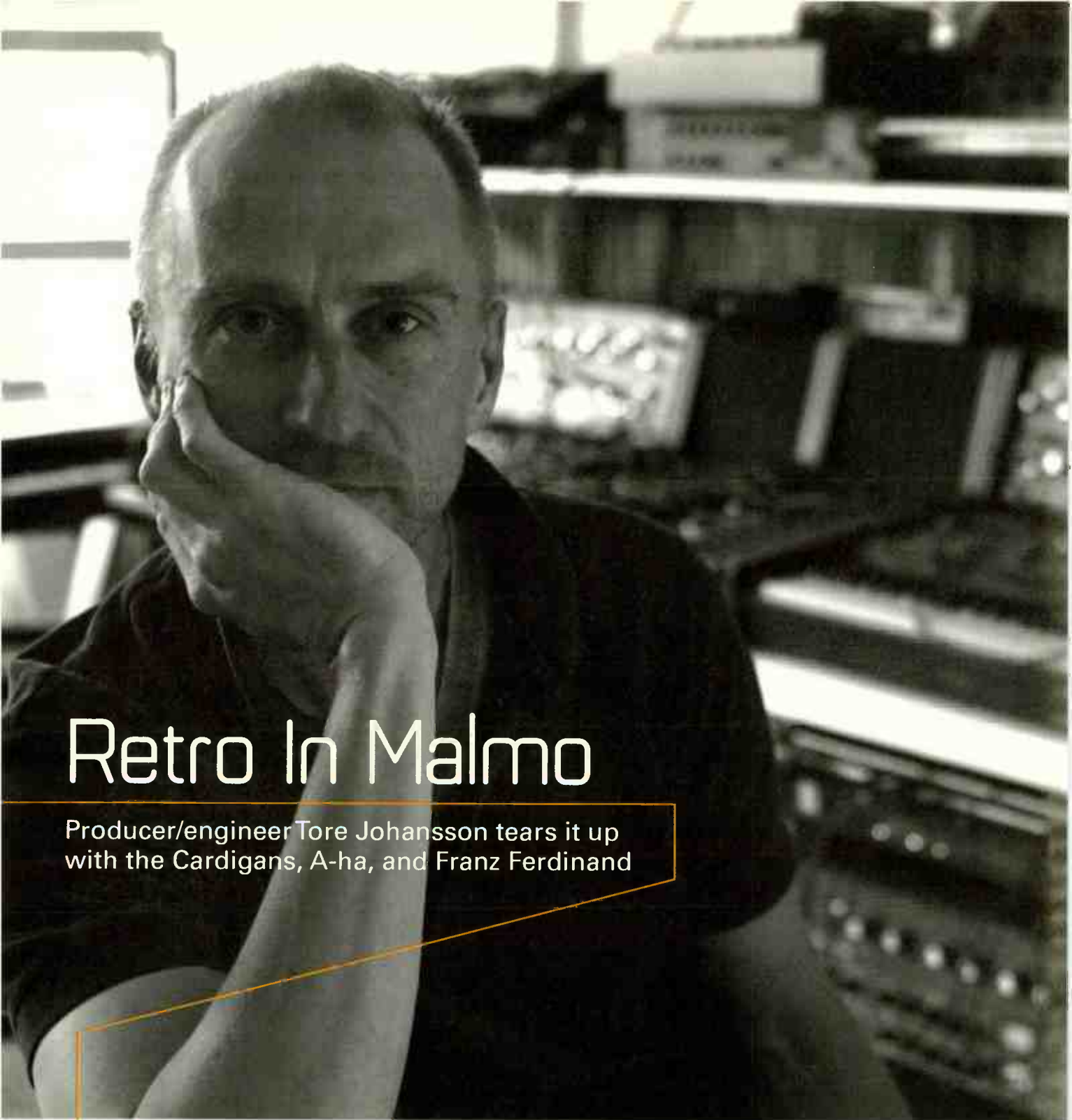
Today, Sweetwater's success is based on the same philosophy. Every Sales Engineer at the company is a musician with a solid background in recording and/or live sound, a prerequisite for their employment. They also go through an extensive training program in the first several months of their tenure and spend several hours each week learning about the latest music technology directly from the manufacturers who build it. Sweetwater customers are encouraged to build a one-on-one relationship with a single Sales Engineer, who in turn gets to know that customer's needs. The result is a truly consultative, low-pressure sales experience that is totally unique among national retailers. As long time Sweetwater customer Dan South recently said in an online forum, "The 'Sweetwater Difference' is that they CARE about their clients. I've been dealing with the same guy at Sweetwater for over ten years, and I've had nothing but FIRST RATE service for all of that time."

"Even though Sweetwater's prices are among the best around, it is their service, professionalism, can-do spirit and willingness to go the extra mile that will keep me coming back for many years to come."

Christopher Dykes

Sweetwater backs their consultative sales approach with a top-notch tech support and service staff who install complex computer based DAW systems, offer operational support over the phone and in person, and can repair virtually everything they sell. Plus, with a warehouse full of gear, they enjoy the sort of quantity discounts that allow them to offer prices as good as or better than the competition.

So if you're looking for a really great music retailer, give Sweetwater a call at (800) 222-4700 or check out their website at www.sweetwater.com. You'll be glad you did.



Retro In Malmo

Producer/engineer Tore Johansson tears it up with the Cardigans, A-ha, and Franz Ferdinand

by Dan Daley

Sweden sometimes seems like the Cleveland of rock 'n roll. Despite a hefty contribution to the art form, from ABBA in the '70s to tracks for the Back Street Boys in the '90s, as well as Malmo, Sweden's alt-music equivalent of Seattle, the Scandinavian country tends to get tagged more for Volvos than for volume.

Tore Johansson is one of the people who make sure that this Scandinavian country gets its due. Producing and engineering records for the Cardigans, A-ha, Tom Jones, and most recently

guitar-band sensation Franz Ferdinand, Johansson seems to have the same magic touch that a few Swedes have shown over the years. But Sweden is by definition an alternate spot on the world, and Johansson's discography includes some tastier bits of critics' choices, including Suede, Melanie C, Atlas, Sinéad Quinn, and Celena Cherry, formerly of the Honeyz. He's currently producing the first effort for the new UK act Spitfire.

EQ caught up with Johansson after a recent stint in Real World Studios in the UK enroute back to his home in Malmo.



THE EARLY DAYS

A question about his early years in the business prompts Johansson to think back to his days as a musician, a skill he never gave up and still brings to sessions he engineers and produces. "The moment that changed me was actually me buying an electric guitar just because I wanted to dismantle it to see how it worked," he recalls. "My hero back then was Jimi Hendrix, and I went into the local shop and asked for the same guitar Jimi had, and the bastard sold me some crap Strat look-alike with two pickups."

"I decided that I had the guitar so I might as well try to learn a couple of Jimi songs. But I didn't even understand how he played 'Wild Thing,' so I started to write my own songs instead. And that's the way it's been since — going my own way and refusing to learn how something's properly done. At that time I had a Bang & Olafson 2-track tape machine with ping-pong tracking, and I did my first recordings on that, overdriving the input with my guitar, trying to sound like Jimi."

The transition from musician to producer was similarly autodidactic, and Johansson used the various bands he played with as his first recording subjects. "When I was playing in bands in the early '80s and recording in low- and mid-budget studios, I soon realized that I got better results — in my opinion, anyway — by recording the bands myself in the rehearsal studios," he recalls. "I have a brother-in-law who built a mixer for me and if there weren't enough microphones I used small speakers as mics. We had a TEAC 4-track 1/4" deck and did weird ping-pong recordings with that. There was a huge staircase that we used as reverb. I really learned by using the materials at hand."

TRUE GRIT

Johansson is an analog groupie, and says that the format's gritiness is critical to his records. "Analog definitely sounds better, and for me that means distortion," he explains. "Someone said that you can make any sound better with some sort of distortion and I agree with that. The combination of that, the editing, and the total recall ability of digital is perfect for me. If I don't have the time or budget to go to tape I feel it's important to use mic pres and compressors to achieve that warmth that tape provides, and use plug-ins like Amp Farm to overdrive the sound digitally. I prefer '70s discrete stuff over just tube gear. Sometimes it's nice to use tube mics but I prefer the edge I feel I can get especially from vintage Neve mic pres. A common procedure for me is to record the basic tracks on a 16-track 2" machine and then transfer to Pro Tools and do overdubs there. The 16-track is superior to 24-track when it comes to tape compression on drums. It has a wider range of distortion levels, while a 24-track hits the roof and then flattens out more suddenly."

Johansson founded Tambourine Studios in the early 1990s. Like his engineering, it went from hobby to passion quickly. "We didn't really know much about equipment but were lucky to happen to buy those Neve consoles and compressors from the mid-1970s that everybody now uses for tracking," he says. "We wanted to use the studio for our own music and actually had a cover band playing '70s disco instead of renting the studio out, but after the success with the Cardigans it was hard to say no to all the work that was suddenly coming in. I thought I could take a break from my own music for a while and then get back. Well, that's ten years ago and I'm still waiting for a break." [Tambourine is still in business, though Johansson sold his share of the studio.]

CARDIGANS

Johansson discovered the Cardigans in 1994 and brought them back to Tambourine, where he recorded their seminal early recordings *Life* and *First Band on the Moon*. "We managed to

Retro In Malmo



Tore Johansson works with a broad range of equipment, using modern tools such as Digidesign Pro Tools to record vintage, retro, and off-the-wall unique gear. He prefers to use large tracking rooms. "I'm always looking for big recording rooms. Not so much to get a big sound but more to get away from the 'boomy' sound of small rooms."

develop a new sound for the albums thanks to the fact that the band came to the studio with their songs written but in a very unrehearsed and raw state. We were able to start out very fresh. When we did *First Band on the Moon* we really tried hard to make it big and fat sounding, but it turned out to be almost easy listening — that dry retro sound that I've become known for by some people. Sometimes you want to make it heavier and fatter but it's just not in the music."

Cardigans vocalist Nina Persson has a remarkable voice, and the band's vocals in general are shimmering. Johansson credits Persson with much of the group's vocal sound. "She is a great singer and created most of her sound herself. She has that 'x-factor' in her voice that just records really well. The first four albums were recorded singing close to a Sennheiser 421 with the high pass filter on full S — lots of bass cut — into a '70s BBC Neve EQ also with a 270Hz bass cut, then into a BBC '70s Neve compressor set to a 5:1 ratio. I like to cut bass before compressing. It makes the compressor work harder on the high notes and also gives you automatic de-essing. I replace some of that bass when mixing, adding in a little around 200 Hz."

The Cardigans led to some interesting new projects, but none more so than an encounter with the legendary Tom Jones. "Tom wanted to do a duet with Nina and I came up with the idea of doing 'Burning Down the House,'" says Johansson. "It's one of my favorite tracks of all time. The Cardigans could only spend half-a-day in the studio at that time, which actually gave me a chance to fool around with horn sections and other overdubs that the Cardigans normally don't use. Tom is the loudest singer I've ever recorded. He was very professional and did the song in two takes."

OLD-SCHOOL TRACKS

Johansson is old-school when it comes to tracking. "It's so much better if you can do it in the old-fashioned way, having everybody playing at the same time," he says. "But practical things like the need for isolation and the cost of having session

musicians hanging around while decisions get made means that you end up overdubbing a lot anyway. Sometimes when I do a remix I sit with my own setup and play and program everything myself. Sometimes that's fine, but it's better if you have someone else to bounce ideas off of."

Franz Ferdinand came out of the gate with a lot of critical hype and strong sales. Johansson applied classic recording techniques to this guitar-based combo. "I'm always looking for big recording rooms," he says. "Not so much to get a big sound but more to get away from the 'boomy' sound of small rooms. I think my perfect room is big but dead. I'd rather create space with compression and distortion. Live sounds are good but I'd rather hear the actual drums than the room sound, if you know what I mean. I often want to compress or distort to get the instrument sound to flatten out and be less dynamic. I like heavily compressed drums but when the room is lively you get the room sound as a side effect that I don't always want. It's hard to find rooms that just amplify the instrument sound without adding a room identity. Actually, I'm not that interested in spaces because I think each instrument is a space in itself. Even in a dead room a piano has spatial qualities and ambience of its own."

ON THE MOVE

Johansson is increasingly using his portable studio set up, an interesting mix of old and new that he brings to the project, as long as it's relatively local. "It's a Pro Tools Mix+ system with an Apple G4 and an Apogee Rosetta," he explains. "I have two Neve mic pres and one Neve compressor. With my Sennheiser 421 and a Neumann M147 microphone, I can do all the overdubs I need to. I only move it around to studios in Scandinavia, so I don't fly with it. I did that in the beginning but found that it's too messy."

Johansson has definite opinions about commercial studios. "I like studios that don't look like studios," he says. "Natural light, fresh air, and a good vibe are much more important than the

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Retro In Malmo



While Tore Johansson works with a wide variety of vintage and retro gear, he's not a fan of huge mixing consoles. "I believe in simple setups with good mic pres and Pro Tools as a monitor mixer." His mix philosophy is equally straight-ahead: "What's good for the song is good for the mix. Too often we go for impressive soundscapes instead of musicality."

equipment to me. And I find it terrible when you arrive at a studio and there are no instruments there. Studios are for music and I think it's part of the studio's job to inspire creativity by having interesting instruments laying around. I also find it's awkward when the house engineer is not really musical.

"Overall, I think it's important to remember that we're actually trying to capture music, not simply sounds. I understand that studios must be versatile to be able to get as many bookings as they can, but in the end it will make a much bigger impact on the recording if you came up with the idea of doing a cool vibraphone intro on the song than if they had a U 67 for the acoustic guitar.

"I'm not really a fan of large, complex consoles; I believe in simple setups with good mic pres and Pro Tools as a monitor mixer. I also don't believe in letting musicians make their own mix in their headphones. The best you can have in your cans is a good mix of the whole band. Give everybody in the band the same well balanced mix in the cans and it will groove. If someone has a problem playing with that, he has a general problem with playing, and it won't help to have the hi-hat louder."

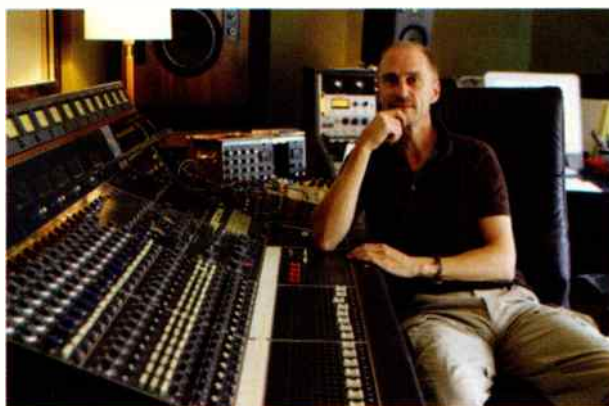
WHAT'S GOOD

"What's good for the song is good for the mix. Too often we go for impressive soundscapes instead of musicality. And it's really sad about the pressure to make super-loud mixes these days. It's stressful and can cause you to compromise the mix. Listen to the fantastic mix of 'All Along the Watchtower' by Jimi Hendrix where the acoustic guitar is ridiculously loud, with tons of reverb, and the drums are tiny! It's magic. It would be terrible if the drums and bass were up front on that song."

That simplicity of approach doesn't necessarily extend to Johansson's use of dynamics. "I use compression a lot," he says. "Not necessarily as an effect but actually to make sounds more natural. A recorded drum kit will never sound as impressive and loud as if you are standing in front of the real thing. The

room and your ears and your brain create their own compression and distortion. When mixing in Pro Tools, I tend to replace compressors with de-essors quite often. It gives a smooth compression effect with less pumping."

Scandinavia isn't as remote from the mainstream music industry as it once seemed to be. But while digital has made the world smaller and made the process of music making and its business more consistent globally, it's also making its issues more pervasive. Johansson comments: "I think it's great what's happening with the music industry. Sure, I make less money and recording budgets are smaller, but I think that Internet distribution and downloading will be good for the indie music business as well as live music. All technology will be good for music in the long run." **EQ**



Tore Johansson always puts the music above the technology. "Overall, I think it's important to remember that we're actually trying to capture music, not simply sounds."



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Maximum Studio, Minimum Stress

It's time for an extreme room makeover

by Ethan Winer and Wes Lachot

My previous *EQ* articles about project studios and acoustics focused on the basics of room treatment, with an emphasis on practical applications and related theory. This article brings together those concepts — and adds several new ones — to present a complete design for the ultimate personal studio. Granted, not all *EQ* readers may have the luxury of building a dedicated studio room, but those of you who do are in for a real treat.

For this article I teamed up with acoustics expert Wes Lachot, who has graciously designed the room and provided the blueprints. I'll start by explaining our design goals, then present the plans with detailed instructions. Although the design is ideal for a typical basement, it could be built in a garage or anywhere there's sufficient space to accommodate a room with these dimensions.

THIS TIME IT'S PERSONAL

We consider this design to a "personal" studio for several reasons, but mainly because it's a single room that will be used for both recording and mixing. There are many reasons to favor one room over two: Given a fixed amount of space, it's much better to have one room that's large enough to achieve a great low end response, rather than two rooms that are each too small to sound good. Further, it's very difficult to obtain significant isolation between rooms in a typical house unless you invest a handsome sum into building double walls, a rigid, hung ceiling, and floated floors.

As modern DAW software offers an unlimited number of tracks, there's less need to make mixing decisions while recording. Just record each microphone to a separate track, and sort out the balances later while mixing. Also, many home and project studio owners are interested mainly in recording themselves one track at a time. So, for both of these

reasons, it makes a lot of sense to build one excellent room that's large enough to record other musicians too, when needed — including a drum set or even an entire band.

Our other goal was reasonable costs for construction and acoustic treatment. By building three simple walls, you can create good proportions and non-parallel sidewalls. Then, for a few thousand dollars more, you can buy bass traps, diffusors, and the ceiling cloud materials. If you build these treatments yourself, you can do it for even less.

Note that the placement of absorbers, diffusors, and the listening position is very specific, with the goal of using as little absorption as possible. This keeps the room live enough to capture great recorded sound and make playing more fun for the musicians, while avoiding excess reflections and echoes that compromise accurate mixing. You can add more absorption if you prefer, but you don't *have* to just to get acceptable results. Also, splaying the sidewalls makes the room sound much larger than it is because the angled walls avoid flutter echoes while yielding a more pleasing ambience.

SOUNDS LIKE A PLAN, MAN

Figure 1 shows the basic floor plan with dimensions, while Figure 2 shows elevation views of the front, rear, and right side-walls. You can use an existing wall for one of the studio room walls, or build all four walls. The walls are standard construction using one layer of 5/8" sheet rock on 2x4 studs, with fluffy fiberglass between the studs. In a basement or garage bounded by cement or cinder block, building a fourth wall several inches in from the existing outer wall will help the low frequency response, because sheet rock gives some additional bass trapping as it flexes.

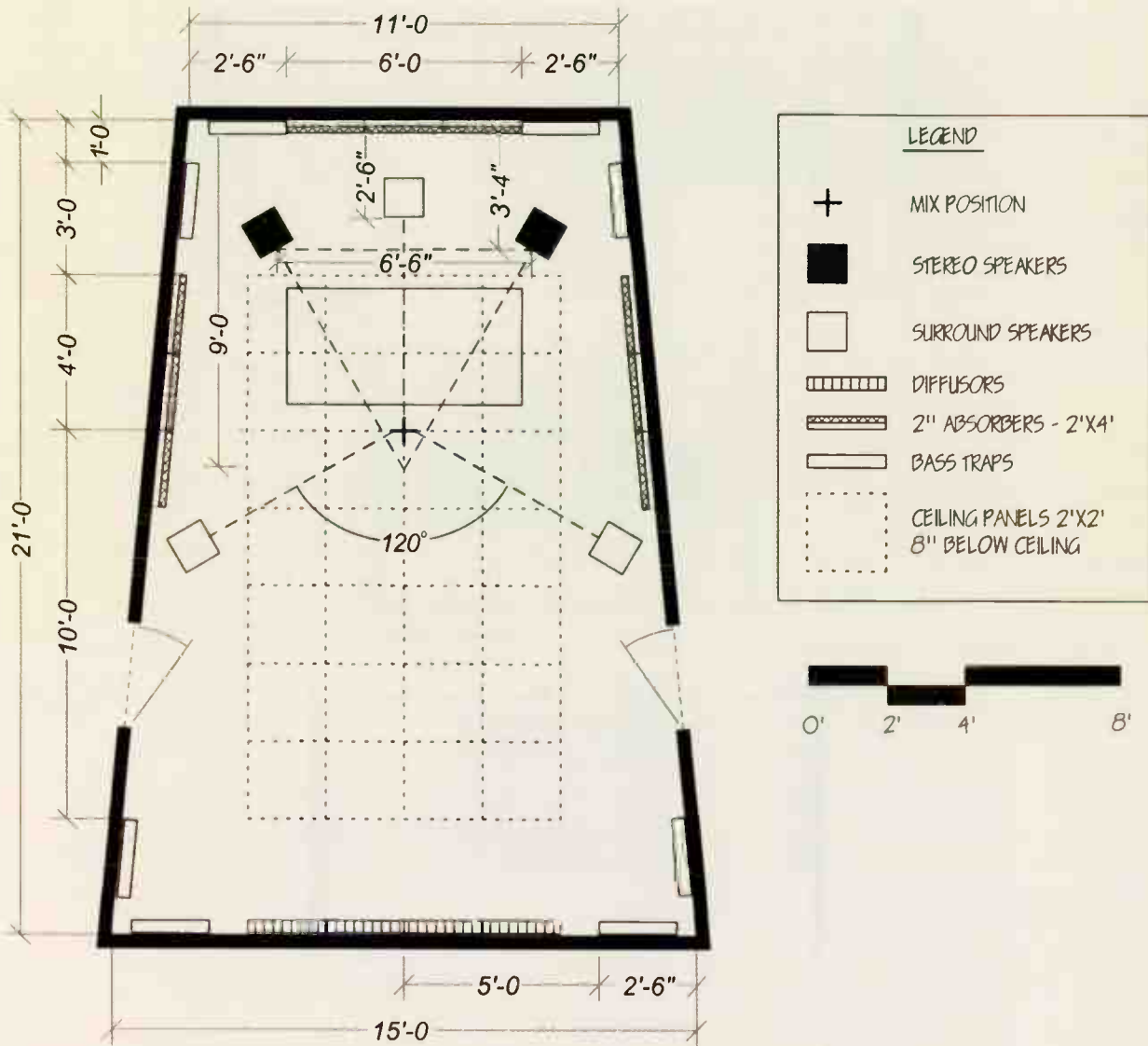
If you build the fourth wall, be sure to fill the entire gap between it and the outer cement wall with fluffy fiberglass. If isola-

tion to the rest of the house is required, you can use two layers of sheet rock for the walls instead of one, though the added wall mass increases the need for bass trapping inside the room. If you do use two layers for the walls and ceiling, consider suspending them on resilient channels, which will give even more isolation.

The floor should be a hard surface, but you can add area rugs as needed; for example, to place under a drum set to keep it from sliding around. A reflective floor is also ideal when recording acoustic instruments, and it doesn't have to be expensive hardwood. Linoleum, or even painted or stained cement, sounds just as good, and cost much less than wood.

This design assumes a ceiling height of exactly 8' to the rigid boundary above. If you install a sheet rock ceiling to increase sound isolation to the floor above, then consider the ceiling height as the bottom of the sheet rock. If isolation is not a concern, leave the bottoms of the joists exposed, and simply pack the space between the joists with fluffy fiberglass a foot thick. In this case the ceiling height is the distance to the bottom of the floor above the joists. Regardless of the ceiling type, if it's not exactly 8', scale all of the other dimensions accordingly, including the listener and speaker positions and the sidewall absorbers. Again, the height that dictates the room modes is measured from the floor to the rigid boundary above. If that height is exactly eight feet, you won't need to scale the other dimensions.

Covering the ceiling entirely with fiberglass is simpler than building the ceiling cloud shown in the plans because it avoids having to hang a grid and buy or make ceiling tiles. The extra fiberglass in the corners around the perimeter also gives additional bass trapping, which is always welcome. You can cover the fiber-



NOTES

- ALL SPEAKERS ARE EQUIDISTANT FROM MIX POSITION.
- MOUNT 2" ABSORBER PANELS 2" AWAY FROM WALL SURFACE.

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Fig. 1: Basic studio floor plan with dimensions.

glass with fabric stapled to the bottoms of the joists, and attach thin wood trim to cover the staples and fabric seams. However, the room might then have too much absorption. We recommend that you attach a reflective border to the joist bottoms that extends around the perimeter of the room — everywhere the plans do

not show the cloud. For a border, you can use 1/8" plywood or Masonite, or even thin plastic or heavy card-stock, painted for appearance. The goal is to reflect mid and high frequencies around the ceiling edges, yet allow bass frequencies to pass through to the fiberglass above.

If you need more isolation and use a

sheet rock ceiling, you'll build an 8' x 14' cloud, centered along the main axis as shown. Hang a standard T-grid 8" below the ceiling, then fill it with rigid 1-2" thick fiberglass tiles. You can optionally use commercial ceiling tiles made of rigid fiberglass the same thickness, or thinner tiles with fluffy fiberglass batts, 3-6"

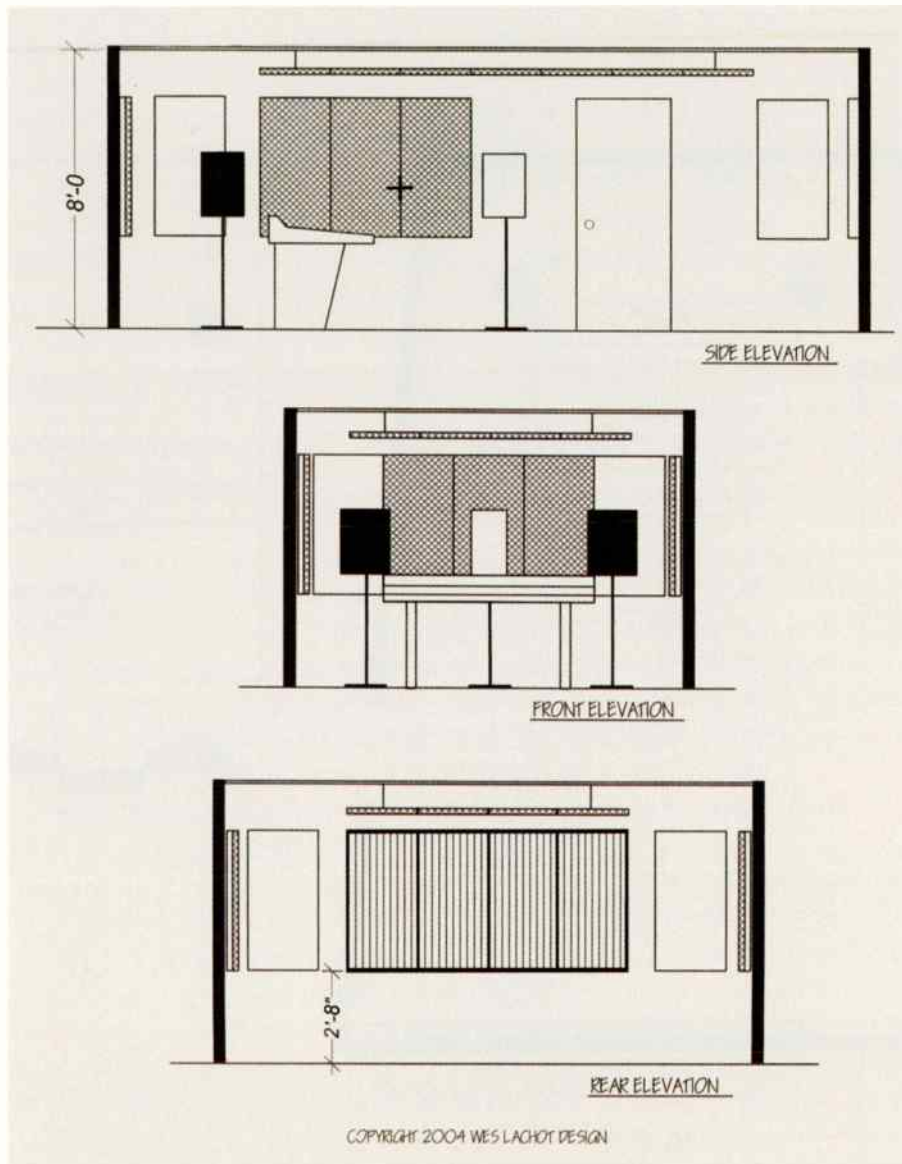


Fig. 2: Elevation views of the front, rear, and right sidewalls.

thick, laid on top where they won't show. (If you have air ducts above or near the cloud, be sure to cover the fiberglass with fabric or a plastic painter's drop cloth to minimize airborne fiberglass particles.) More fiberglass is always better than less because it extends the cloud's absorption to lower frequencies.

For convenient access, two doors are better than one, and having an extra exit is always a good idea in case of an emergency. The doors must be solid-core and should be mounted to swing into the room. This makes them flush with the wall when

closed and creates a plane that is symmetrical with the opposing wall. The door locations may be shifted slightly along the sidewalls if needed, but do not put them where they will interfere with the surround speaker locations.

ACOUSTIC TREATMENT

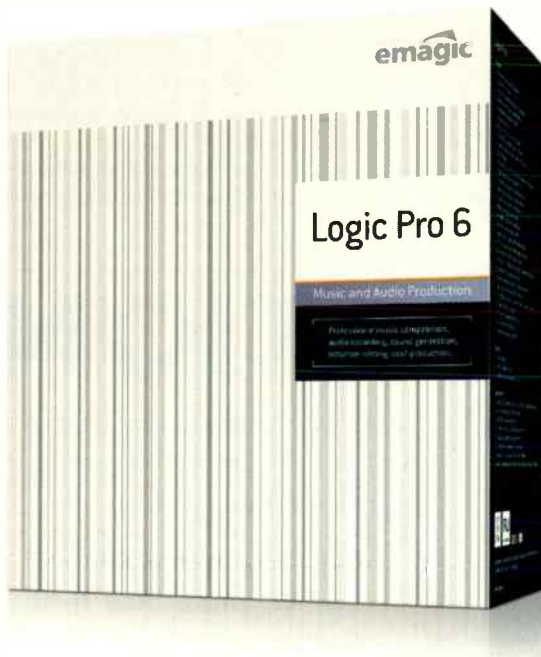
This design uses three different types of acoustic treatment — mid/high frequency absorbers, bass traps, and diffusors. All of these are in the form of 2' x 4' panels, and are mounted vertically to cover the walls between a height of 2'-8" to 6'-8". Let's cover each of these treatment types in turn.

As mentioned earlier, all of the mid/high frequency absorbers must be

placed exactly as shown. You can add more panels if you decide later that you want a less live-sounding room. But those will be in addition to the panels in the plans. The panels shown are intended to avoid all first reflections at the mix position, which is why their placement is critical. The concept of a Reflection-Free Zone was explained in my article "Improve your Monitoring" in the May 2004 issue, so I won't explain that again here. Briefly, avoiding first reflections improves imaging and is mainly a mid/high frequency issue. For this purpose, 703 or 705 rigid fiberglass or equivalent, 2" thick and spaced 2" off the wall, is adequate.

All of the bass traps go in the room corners, and the wall-mounting shown in

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DESIGN NOTES

There's a slight live-end/dead-end vibe with this design, though it doesn't strictly follow that approach. The front of the room has exactly enough absorption to create a Reflection-Free Zone (RFZ), while the rear is entirely hard surfaces, bass traps, and diffusers. I intentionally didn't line the walls with extra absorption, preferring to leave that to individual taste. However, every absorber panel shown has a specific RFZ purpose, either for the main stereo speakers or for the center channel and surrounds.

The main speakers should be mounted behind the console as shown, not on the meter bridge, because comb filtering will result from reflections off the console. The front speakers are placed 30° around from the centerline of the room, and the surrounds are placed 120° from the center. This puts the front center speaker in an equilateral triangle with the rear surrounds. That is, both the main and surround speakers are the same 30° off-axis. I favor this configuration for surround mixing because it's fully symmetrical, and it makes sense sonically to get the surrounds far enough back that the room

is covered without the need for 7.1.

The equilateral triangle formed by the three surround speakers is 1.5 (3:2) times the size of the main listening triangle. This proportion falls on the Fibonacci series, whose higher expressions approach the Golden Mean proportion of 1.618. The proportions of the studio itself are derived from the same mathematical series. (The ratios of 13:8 and 21:13 are both very close to 1.618:1.) Another Fibonacci series ratio — 8:5 or 1.6:1 — has received a lot of press. I think of them as slight variations of the same minor 6th musical interval. Two successive minor 6ths comprise an inverted augmented chord, which has good modal spacing for a room with such a high ratio of length to height. This is appropriate for a studio having a low ceiling as this design does. The listening position is also derived from the Fibonacci series, being 8' from the front wall and 13' from the back wall. In this spot the modal response is reasonable, and the negative effects from rear wall reflections are minimized. —*Wes Lachot*

Figure 1 is merely a placeholder. For example, wood-panel membrane bass traps must be mounted flat on the walls to work properly, but bass traps such as Auralex LENRDs and RPG's Modex traps are shaped to fit optimally into a corner. Other

bass traps (including *RealTraps* — Ed.) can mount either straddling the room corners at an angle, or parallel to the walls as shown. Therefore, if you buy commercial bass traps, follow the manufacturer's recommendation (or those of the trap plan's author if you're building your own). Note

that having bass traps in the four wall-wall corners as shown is the *minimum* we recommend. With bass trapping, the more you have, the flatter and tighter the low end will be.

Finally, the entire center portion of the rear wall is lined with diffusers. Diffusion

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World Radio History

Maximum Studio

makes the room sound larger than it really is, and also improves intelligibility by scattering the rear wall reflections to avoid obvious slap echoes back into the mix position. There are many brands of diffusers, and like absorbers, you can build your own, so I'll just offer some general advice. Good diffusers, like RPG's QRD designs, are expensive to buy and difficult to build because their construction is very complex. If obtaining good diffusers is beyond your reach right now, you can instead use mid/high frequency absorber panels where the diffusers are shown. That will avoid slap echoes from the rear wall, and you can replace them with good quality diffusers later.

YOU SPEAKIN' TO ME?

The last issue is loudspeaker placement; this design accommodates true 5.1 surround mixing. Even if you're not currently doing surround mixing, you

may in the future, and it costs no more to plan for that. (When I set up my home theater last year, I was astonished to discover that almost every network television show is broadcast in some form of surround. Trust me — this is the future of audio production.)

The loudspeaker placement must be exactly as shown, but a subwoofer will go wherever you can fit it, or where the model you own sounds best. There are too many variables, such as whether the sub fires out the side or downward, to examine all the possibilities here. Use your ears or follow the manufacturer's recommendation for best placement.

The front surface of each main speaker is 3'-4" from the front wall, and 3'-3" out from the centerline. The speakers should be focused at ear level, approximately 48" above the floor. Note that the 9'-0" dimension shown in Figure 1 is to the point of the triangle 16" behind your head when seated at the listening position, with the sound grazing your ears as it travels along

the lines shown. All five loudspeakers are the same distance from the listening position, angled exactly as shown in Figure 1.

YOU'VE GOT QUESTIONS, WE'VE GOT ANSWERS

As hard as we've tried, it's nearly impossible to explain every detail of a complete studio design in a single magazine article, or anticipate every construction question the reader might have. Therefore, the authors invite you to visit Ethan's Acoustics forum at www.eqmag.com, where you are welcome to ask follow-up questions about the design or construction of this studio. **EQ**

Ethan Winer heads up RealTraps (www.realtraps.com) where he designs acoustic treatment. Ethan also hosts the EQ Acoustics forum (www.eqmag.com). Wes Lachot is a professional studio designer; you can see his projects at www.weslachot.com.

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FLOAT, FLOAT, FLOAT YOUR FLOOR

Sometimes being isolated is a good thing

by Jeff D. Szymanski, PE

For pro or home studio construction, floating a floor or platform is an important element of good isolation. But it's easy to do it incorrectly, through improper selection of materials, bad design, or careless construction. This article will help you make informed decisions about floating a floor or platform for your studio.

With new studios where isolation is a priority, "room within a room" construction is common. This typically employs dead airspaces between walls and ceilings. With a home studio, you'd leave several inches of dead airspace between the existing walls and the new walls, then build a new ceiling as a "cap" on the new walls, with the same depth of airspace between it and the existing ceiling. The key to the design and construction is a total avoidance of any physical connections between the new walls/ceiling and the existing surfaces. This is called "decoupling."

Decoupling a floor is a bigger challenge, as there's no option for dead airspace. Floating the floor is needed to maintain the same level of isolation achieved by the decoupled walls and ceiling, and typically employs springs and damping material. This is like building a shock absorption system (like that of a good car) for the bottom of your studio.

Here are a few examples of scenarios that demand floated floors or platforms:

- Drum kit in a live room that is over or adjacent to a noise-sensitive area, such as a bedroom or a neighbor's apartment.
- Large subs in the control room, also over or adjacent to a noise-sensitive area.
- Drum kit in a garage or a basement. Surprisingly, concrete can easily transmit vibrations into the structure. Avoid this if you'd rather not have the police show up in the middle of a session. . . .
- Furnace room adjacent to a studio. While the ideal solution would be to separate these two spaces as much as possible, it's often not possible. Either work with an HVAC expert to isolate the furnace/air conditioner/etc., or simply float the floor in the studio — wherever you will have open mics — to prevent any bad HVAC vibrations from ruining a recording.

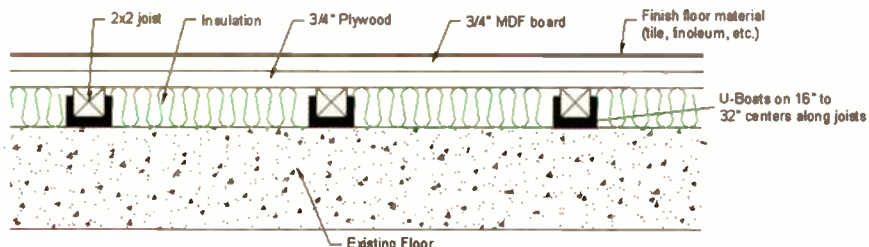


Fig. 1: A low-cost, floated floor design. Note that the 2x2s could easily be replaced with larger 2x pieces of lumber for increased acoustical isolation.

WAYS TO FLOAT

There are several ways to float the floor. Your decision will not only depend on the desired degree of isolation, but also on how much headroom you can afford to lose, and how much construction you are willing to undertake.

A "poor man's" floated floor is quite simple. First, roll out some 3/4"-1" carpet pad, top with some 3/4" plywood, and finish to taste (hardwood, laminate, vinyl, etc., are preferable). Total headroom taken up will be a little more than 1.5". The isolation won't be great, but will be better than nothing.

If you can afford to lose at least 2.5", see the construction in Figures 1 and 2. Figure 1 shows an elevation cutaway view of a studio floor that uses Auralex's U-Boat isolators for decoupling. It's critical to space these properly for the right amount of decoupling in the right frequency range. Too many isolators will couple the

system, and make it too rigid. Too few will over-compress the isolators, also causing coupling.

Optimal spacing will depend on the mass being applied to the floor. For the floor shown in Figure 1 (assuming this isn't a room with several grand pianos, refrigerators, and some elephants), a good distance is about 16" between the center of each U-Boat. (For more information on your specific floor, see www.auralex.com.)

The same guidelines for U-Boats apply to DIY rubber pucks. U-Boats typically cost about \$2 each. By contrast, 1/2"-thick rubber sheets (look for Neoprene or "EPDM" rubber, with a hardness rating of 60 durometer) can cost about 50% less wholesale. (Durometer is a measure of rubber hardness — values typically range from 30 to 80.) Do *not* settle for "SBR" or natural rubber just because it is less expensive; this type of material will not



Fig. 2: The construction process. Note how the isolators separate the floor support boards from the "real" floor.

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last nearly as long as Neoprene or EPDM (which lasts the longest). Also, don't go for softer rubber because it's easier to cut, as you'll need more pucks to do the job.

Cut 2"x2" pucks out of this material (this is no easy task, so use a sharp knife and be very careful not to cut yourself). Also, unlike U-Boats that are designed to fit around the short edge of "2x" lumber, you need to place DIY pucks carefully so that they don't slip out. A little glue can help.

WHEN TO BUILD

A common question is "Should a framed-type floated floor be built first or last?" In other words, should the walls (and ceiling) be set on the floor, or should the floor be built inside the new walls? For acoustical reasons, the former is often preferable so the new walls do not touch the existing floor. However, for practical reasons, building the floor last is probably better. In either case, make sure that the floated floor does not touch the existing or new walls.

Leave a space and fill it with acoustical caulk. Also, if the walls are going to rest on the existing floor, "float" it by using, for example, a thin layer of limp-mass barrier material.

CONCRETE IDEAS

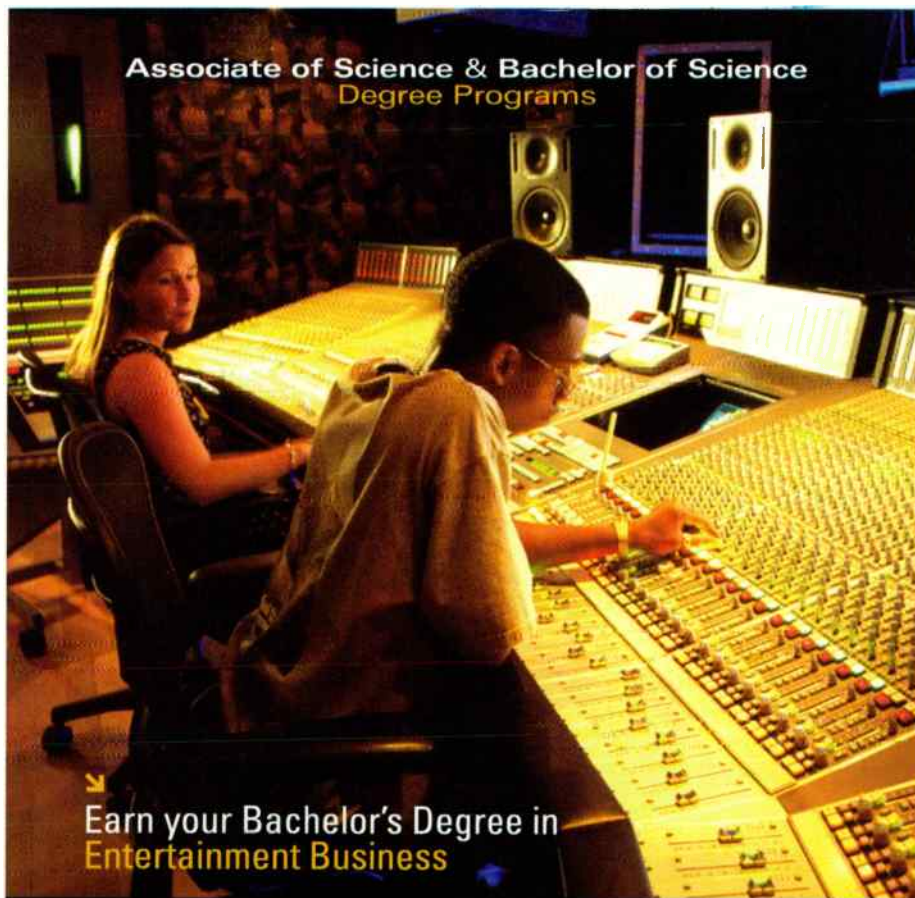
Floating a concrete floor is outside the budget of most home studio owners (you *cannot* float a concrete floor with the rubber materials mentioned above). However, this is the most acoustically effective option. Two companies in particular specialize in products for floating concrete slabs. RIM model Floating Concrete Floor, from Kinetics Noise Control (www.kineticsnoise.com), can simply be rolled out. If you're experienced with concrete, this would be a good choice as you just pour the concrete on top of the pad. Mason Industries (www.mason-ind.com) carries a wide variety of mechanical spring isolators, including whole systems that can be assembled to house a floated concrete slab. Note that this sort of floor will usually require input from mechanical and structural engineers.

If building a floated floor is way out of your budget/time constraints, then consider floating a section of flooring in the room. You can do this with the rubber materials already mentioned above. You can also look into dense foam or fiber materials suitable for laying out under some plywood [Auralex makes a product called "PlatFoam" that's designed for this application - Ed.], or use dense (at least 6-10 lb/ft²) glass fiber pads. The basic idea is to build an 8'x8' (or so) platform that can go under a drum kit — the single largest impact vibration source in any studio, with the possible exception of large subwoofer(s) in the control room.

Finally, be sure that any floated floor you are installing meets local building codes. You can usually build a floated floor even in locations with strict earthquake construction codes, but will probably have to include some other safety devices to comply with local codes.

Is floating worth it? Even some of the basic options outlined above make a significant difference, so go ahead and give it a try. Better sound can be yours! **EQ**

Jeff D. Szymanski is a guitarist, singer, and songwriter with his own home studio, as well as the Chief Acoustical Engineer for Auralex Acoustics, Inc. Jeff can be reached by e-mail at appsupport@auralex.com.



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Whether we're musicians, engineers, or both, we can all appreciate the beauty of a well-designed professional recording studio, acoustically tuned to perfection and stuffed with the finest gear. For those who can't afford to work in the "big rooms," a home project studio might seem like a

isolation while recording. I'd learn to compensate for that in other ways.

I also decided against building any separate isolation booths. If needed, I could isolate amps from drums with gobos, and move them out of the way when not in use. I also figured that a little mic bleed

the analog era, when one couldn't rely on non-linear editing to fix performance mistakes or change arrangements after the fact. Being in a band, I knew we'd already have worked out most of the basic arrangements in pre-production. Therefore I wanted a recording environment where,

once the mics and signal paths were set up, I could just push a button and start recording. I didn't want to be wrestling too much with recording gear while trying to focus on playing guitar. I also didn't want to deal with latency during tracking or overdubbing, and I wanted punch-ins to be easy. In other words, I wanted the vibe of an analog tape deck in a digital environment.

Therefore, I opted not to use a computer-based DAW and instead went with the Yamaha AW4416, a stand-alone, 16-track digital recorder and mixer. Besides having buttons and faders that are intuitive to me as an analog fan, it has only a small LCD screen rather than a full-sized monitor — which I consider an advantage, as I find monitors distracting while playing. Even when using computer-based DAWs in professional studios, I try to put the monitor in an out of the way place where I don't have to look at it while tracking. I'd rather trust my ears than eyes when it comes to sound, and I'd rather look at my bandmates than a computer screen. Furthermore, with an all-in-one solution I don't have to worry about latency, syncing up digital devices,

DESIGNING A PROJECT STUDIO FOR BANDS

CREATE A SPACE THAT FITS YOUR SPECS

by Lee Flier

step down. But potentially, a home studio can have some actual advantages over the big boys, if it's designed for your particular creative context.

As a rock guitar player, songwriter, and engineer who thrives on collaborating with others in a band situation, designing for maximum interaction and "band vibe" was uppermost in my mind when I began to think through building my home studio. There wasn't much budget, but I felt it would be possible to compensate for this by focusing on creating a space that fostered great chemistry, thus making it easy to get the best possible performances from the musicians.

THE FLOOR PLAN

My house features a full basement, and after finishing off half of it, I had a 19' x 24' room — larger than many home studios. So the first order of business was to decide how to build the room out. With such a large space, the obvious thing to do would have been to break it up into a control room and tracking room, but I was reluctant to do this. Even though the advantages of the separate control room are obvious, in most cases I would be both the engineer and a performer, and I didn't want to physically isolate myself from my bandmates. Nor did I want the acoustical disadvantages of small rooms — as a lover of live "organic" drum sounds, it was a priority to have a space large enough for a drum kit to really "breathe" and move air. So, I decided to break with studio tradition and forego the separate control room. Being able to stare my fellow musicians in the eyeballs was more important than hearing the tracks in

between tracks never hurt anybody — digital recording can sometimes make an isolated track sound a little *too* clean, especially for rock 'n' roll. Bleed from multiple mics, if they're placed correctly, can really help glue a mix together, as well as capture the magic of musicians playing together in the room.

As it turned out, the ideal environment for maximum band interaction turned out to be the simplest and cheapest possible floor plan: one big open room.

THE GEAR

Next, I had to decide on my recording setup — again, keeping in mind that interaction and simple workflow were the top priorities. As an engineer, I came up in



This wide-open layout shows the proximity of drums, piano, and, in the lower right, the recording/mixing area.

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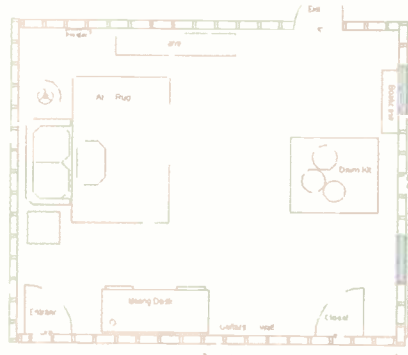
Michael Wagener
(Allan Cooper, Ozzy Osbourne, Celine Dion)

and other technical headaches that can impede the flow of a session if you're wearing multiple hats.

The other most important piece of gear I purchased wasn't recording gear at all — it was my Gretsch Broadkaster drum kit. Though often overlooked, a really good drum kit is one of the best investments you can make for your studio if you intend to record bands with live drums. Not only will you be guaranteed a great recording kit (which not all drummers own), but also if you suddenly get inspired to record something on a whim, it's a lot easier to convince a drummer to come over for an impromptu session if it's not necessary to lug a kit! Lastly, if you start off with a great drum kit and a nice room, you're well on your way to getting good drum sounds, even with few and/or relatively inexpensive mics and preamps.

MONITORING

The last major issue to tackle was monitoring. With no separate control



This home studio layout is designed to maximize interaction between band members, and slide easily between rehearsal and recording.

room, there are two challenges: First, you need to be able to hear what you're doing when tracking. Second, the ideal room acoustics for a tracking room may not be ideal for mixing. I left the walls of my studio somewhat reflective so it would have a nice "snap" on drums and guitars, but it's a little too live for really accurate

mixing. Luckily, the room is large enough that the reflections aren't overwhelming so long as nearfield monitors are used at relatively low volumes. My KRK V8's are large enough to rock, and small enough that they aren't overwhelmed by the room characteristics.

For monitoring while tracking, I went with "Ultrap hones" isolating headphones, which attenuate the ambient sound by 29dB. These aren't all that tonally accurate, as closed cans by nature attenuate the high end, but they sound good and they're a godsend in a live tracking situation. Although we prefer to track basics without headphones, it's a great help to have the phones on while getting basic sounds so you can hear if you're in the ballpark. I'll put the phones on to save my hearing while we're getting sounds, record a short section of music, and play it back through the monitors for a more accurate picture.

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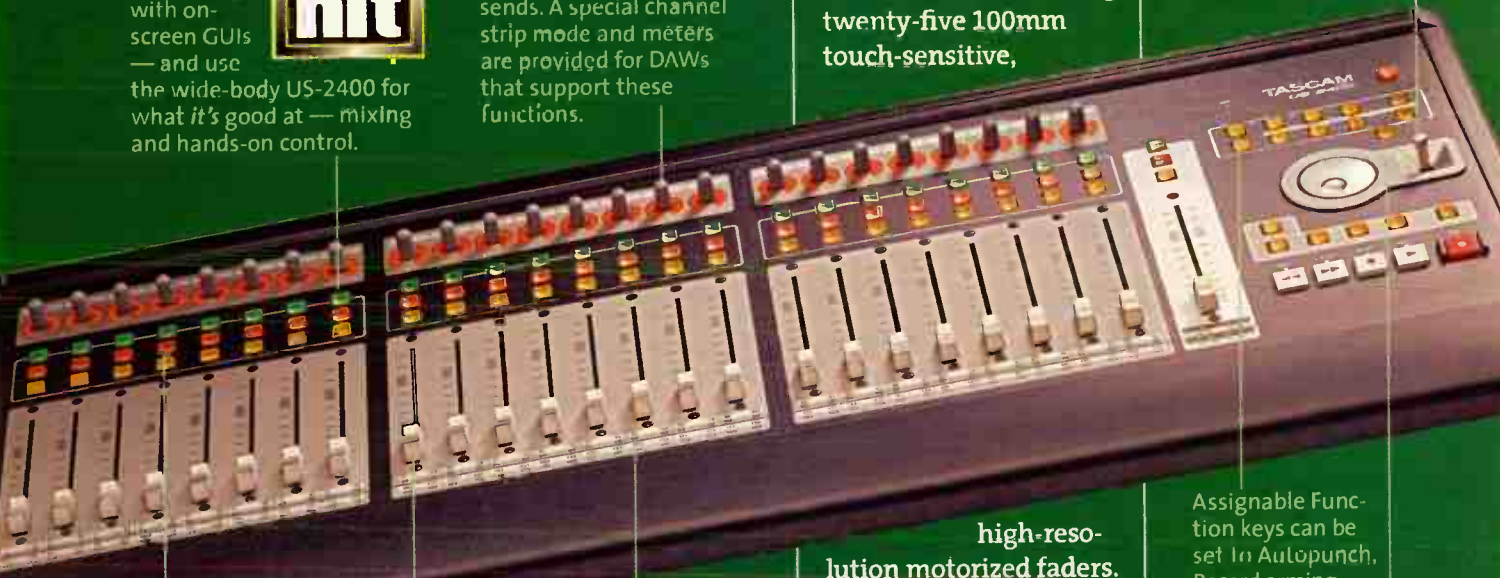
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The recording/mixing zone, based around Yamaha's AW4416, is the studio's control center.

having to use a talkback, and everyone being just a few feet from each other with no barriers between us, more than makes up for this disadvantage. The isolating headphones are also great when overdubbing guitar tracks with a loud amp in the room, and

drummers love them too, as they can hear the headphone mix clearly over the "live" drums without excessive volume in the cans.

THINKING CREATIVELY

With a honky-tonk upright piano rescued

from a thrift store, my vintage guitar and amp collection, and other funky embellishments, my band has the perfect space for working together. As the studio also doubles as our rehearsal space, it's easy to switch from working up songs to recording them in little time, and with little interruption in the creative flow.

Commercial studios need to accommodate a wide variety of situations, and must be designed accordingly. With a home studio, you can think outside the traditional design models for studios and tailor a space that works for you. Even your room's quirks and limitations can become creative advantages, if you're willing to imagine it! **EQ**

Lee Flier is a guitarist, recording engineer, and software designer who also moderates the "For the Band" forum at www.musicplayer.com. Her band, "What The...?", is a fixture in the Atlanta, Georgia area; check out their web site at www.what-the.com.

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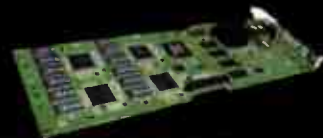
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Get The Word Out

As I mentioned before, a great source are the local musician websites. You want to be where the bands are. Get yourself in as a judge of your local college's battle of the bands — most colleges in towns and cities throughout America have these competitions. Go to talent nights at wine bars and clubs. Hang out with the bands and artists — consider getting yourself worked into the scene by offering to do front-of-house sound for a band or club. Gordon Raphael, who produces The Strokes, and who is a client and friend of mine, was doing front of house for a long time before he started working in studios.

When should a studio, engineer, or producer make the move to a PR firm?

When they are making enough money to justify it, or when they have the funds to do it. You want to make sure that you're using a PR firm or agent that's connected with local bands and artists. Find out who's promoting those talent nights. Check out what local bands are getting press, and find out what PR agent they use.

For a small studio
or for engineers
and producers
just starting out,
it's all about the
local scene.

If you're a studio that has bigger goals and the space and time to invest in going after those ambitions, hire someone who can get you into magazines such as *EQ*. In order to get noticed on that level, you need to have a story to tell, an angle — something that makes you unique and interesting to

an editor and their broad range of readers. There's got to be a story there, though; I can't sell something vacuous (and believe me I've tried!).

What should studios, engineers, and producers look for in a PR agent or firm?

For a small studio or for engineers and producers just starting out, it's all about the local scene, as I've already mentioned. For those more established, look for a PR firm that has a handle on the bigger picture. Maybe they already represent some of your heroes, or people you'd like to work alongside. This year, I've worked with Gordon Raphael as he launched the second Strokes record, Tore Johansson as he broke it big in the United States with Franz Ferdinand, and Mick Glossop, who came over to the United States to talk about the work he had done with Van Morrison and Lloyd Cole.

For Gordon, it was all about getting him in front of record labels, here, in Europe, and in Japan. For Tore, it was an opportunity

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Get The Word Out

to talk about his work, which includes the Cardigans, Tom Jones, and many others — Franz Ferdinand's success gave him that opportunity to present his story. For Mick, my job was more to introduce him to the American media. So each job was different — look for a PR representative who can handle the full spectrum of promotion for you.

What services do PR firms offer/not offer?

A lot of PR companies simply send out press releases to the media. They don't follow through, and there's often no real reason for a magazine to print the piece they've sent out — they haven't thought through what they're promoting properly.

A few PR firms get it. They understand that for a studio or an engineer or a prospective producer to be successful it's like dropping a stone into a pond. You try to get well known in your town, then your state, then nationally, then internationally — you have to work the waves as they move outward. Your PR representative should have the knowledge and the patience to do that for you at each stage of your career. Sadly, most don't.

What kind of publicity materials do studios, engineers, and producers need for themselves?

There's no way to get by without the Internet — a web site is absolutely essential. Put tracks you've recorded up there (after you've got permission to do so, that is!) Client testimonials are great. Tell the world about yourself: Impress them with your gear, your experience, and your expertise. Offer discounts for the graveyard shift (10 pm – 6 am!) and forget about sleeping for a year or so. . . .

Make sure you have attractive flyers to hand out at those talent nights and musicians' union meetings. Well-designed post cards to mail out to prospective clients are always a winner. Buttons are always good. But in any case you must have a professional looking (and sounding) demo CD or DVD — that's essential!

And don't forget to work the grassroots angle: Get all your friends to wear a t-shirt with your name on it!

What are the worst things engineers, producers, and studios typically do when trying to market themselves?

They greatly exaggerate their expertise, their experience, and their knowledge. There's a delicate balance between spewing BS and bigging yourself up — tell the world what you've done in no uncertain terms, but don't exaggerate or fabricate.

A big mistake that studios make is that they don't maintain their gear properly. Rule #1: make sure everything works — all the time. Bad word of mouth does more damage than tons of PR can undo; and a studio that doesn't work properly is a great way to generate bad word of mouth.

Finally get some sun once in a while! There's nothing worse than meeting the studio owner, engineer, or producer for the first time and he looks as though he's spent the past three years in jail. . . . EQ

Kevin Fetterplace can be reached at kevin@mojoworking.com. Check out Mojo Working International at www.mojoworking.com.



KEYBOARD

January 2005 marks the beginning of the 30th anniversary year for *Keyboard* magazine. To recognize this landmark, the editors of *Keyboard* will take their readers on a journey from the earliest days of synths and MIDI to the future of music technology, all in a special music-packed special issue!

30th Anniversary

THIRTY...

To mark this legendary issue, *Keyboard's* editors — past and present — have contributed their favorite "30 Best . . ." articles, full of insider information, rock 'n' roll history, gut-splitting anecdotes, and skull-numbing details, taken from *Keyboard's* archives and from their own volatile memories!

The Next Thirty

In an exclusive report spanning three continents, *Keyboard* brings you a look at the future of keyboards, pianos, synthesizers, computers, software, and music technology. What do the next 30 years hold for you as a musician? Find out in this special issue of *Keyboard*!

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MAKING WAVES

Co-holder of the Tennessee State Men's Three Slalom record, producer/engineer Chuck Ainlay's spirit of adventure has lead to Grammy winning and/or multi-platinum releases for Mark Knopfler, Steve Earle, Lyle Lovett, Trisha Yearwood and many others.



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MAKING WAVES

The Art of Recording:

1 Analyze that Spectrum

Take a look at what you've been hearing

by Craig Anderton

A spectrum analyzer is a tool that can help analyze a mix, and reveal frequency or dynamics anomalies. It does this by dividing the audible frequency spectrum into hundreds or even thousands of bands (also called "windows") using a process called Fast Fourier Transform (FFT), then displaying the level of each band in a graph or 3D display. This feedback is invaluable in training you to correlate what you hear with your ears to hard data about frequency response and amplitude. Most digital audio editing programs, and even some multitrack hosts, now include software spectrum analysis tools.

However, the object is *not* to aim for a flat response; generally, the highs trail off gently, while what happens in the bass depends on the genre of music. (Interestingly, the HarBal mastering EQ program includes representative reference curves for different types of music.) For example, you'll see more bass on a dance mix with a prominent kick drum. A very uneven average bass response may indicate acoustics-related problems — either from room resonances when miking acoustic sources, or from mixing if you're using EQ to compensate for room anomalies of which you're not aware.

Spectrum analyzers are also invaluable for analyzing the spectral response of well-mixed, well-mastered recordings. Compare their curves to yours and see where the differences lie. Differences aren't necessarily "bad"; it depends on the music and style. But if, for example, your mixes sound muddy and other CDs don't, investigate what's happening in the bass and lower midrange.

CUSTOMIZING SPECTRUM ANALYSIS RESPONSE

Here are some common ways to customize the analysis process.

- **FFT size** determines the number of samples per band. Higher numbers give better frequency resolution, but require more time to compute the display. When you're looking for frequency anomalies, use a high value, such as 16K or 32K. This catches very narrow peaks that might not be seen with smaller FFT sizes.
- **FFT overlap** sets the amount by which the analysis bands overlap. Higher values (50% and above) provide a more accurate analysis, but increase display computation time.

- **Smoothing window** determines the analysis algorithm. Different algorithms trade off sharpness of peaks and leakage between neighboring bands (*i.e.*, data in one band influences the ones next to it). Triangular is a compromise between peak sharpness and leakage, Rectangular provides accurate drawing of peaks but high leakage, and Blackman-Harris has little leakage, but the peaks look more rounded.
- **3D versus 2D** shows the information in different ways. 2D shows amplitude versus frequency, while 3D displays a series of

"slices" within the selected region to relate time to frequency and amplitude.

- **Range, reference, etc.** are parameters that let you adjust the scale, zoom in on specific areas of the graph, change the 0dB reference, etc.
- **Linear versus log response** is best set to Log for audio work, as the curve more closely approximates how your hearing works.

Different programs do spectrum analysis differently. Some take (or even save) "snapshots," some take an average reading over time, and some show what's happening in real time. A few programs let you compare the input and output spectrum in relation to a signal processing function.

But the bottom line is that they all present useful information about your mix. With practice, maybe someday you'll be able to say "This mix needs a slight boost at 12kHz, a major cut at 340Hz, and a minor notch at 50Hz." Until then, use spectrum analysis to learn more about your mixes. **EQ**



When you call up the paragraphic EQ in iZotope's Ozone3 mastering plug-in, you'll see a superimposed realtime spectrum, the response curve you've created (the red line), and also a "guide" line (shown in yellow for clarity) that indicates the typical high-frequency energy rolloff that occurs in most music.

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Peter Freedman
President
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Sydney Australia

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The Art of Recording:

2. Built-in Tone Control

Turning a mic off-axis on a guitar cabinet may give you just the sound you're looking for

by Mitch Gallagher

Let's say you're going to close-mic a guitar amp/speaker. Many of us grab a dynamic mic, put it up in front of the speaker — some might mic the center of the speaker, some prefer near its edge. Personally, I often split the difference, depending on the cabinet/speaker I'm using; I'll mic somewhere on the cone of the speaker.

To dial in the sound, you'll move the mic back and forth, positioning it nearer and farther from the speaker. If the cabinet has no grille, you might start with the mic as close to the speaker as you can get, which will give you a nice proximity boost in the low end. Again, speaking personally, I find myself — at least lately — pulling back a bit to let the sound develop. Finally you settle on the right distance; let's say you're an inch off the grille cloth. All finished, right? Just push record. . . .

WAIT THERE'S MORE

There's (at least) one more variable you can experiment with: the orientation of the mic on- or off-axis. Many engineers will immediately go for on-axis (with the mic aimed 90 degrees, or straight into the speaker) to get the "best" overall frequency response. However, there's an infinite range of off-axis positions, with the mic turned at a slight angle to the speaker, that can be used. (Actually, given that the speaker is cone-shaped, unless you've accounted for the slope in the speaker surface, you may be slightly off-axis by just pointing the mic straight into the cabinet.)

Turning the mic slightly — or a great deal — off-axis does two things. First, the

frequency response of the mic will vary depending on the on-/off-axis positioning — check out the polar pattern chart for any directional mic to see what I mean. You'll see that the high-frequency response, in particular, changes as you turn the mic off-axis.

Second, you're changing what the front "full-range response" part of the mic is "seeing." If you rotate off-axis toward the center of the speaker, the front of the mic will see more of that as the main source (and again, take into account the slope of the cone of the speaker, and where it is hitting the mic to determine just how far off-axis you really are).

EXPERIMENT

Give it a try; for these kinds of sonic tests, I usually re-amplify the guitar signal into the amp. That is, I record a dry guitar signal using a direct box into my DAW. Then I use an interface box — a variety are available — to send that direct DAW track into an amp/speaker. This provides me with the exact same guitar performance each time. If you don't have a DAW-to-guitar amp interface box, try to play (or have your guitar player play) as close to the same thing as possible with each pass. You want to hear the sonic difference that changes in mic position make, not variations in the guitar performance.

Record a take with the mic aimed straight on. Angle the mic a little bit off-axis — don't change anything else. Record another take. Angle the mic a bit more, record another take. Continue through a good range of mic rotation. When you're finished, you'll have a session where you can A/B among the various mic angles. Make sure you take good notes, so when you listen back you know what you're listening to.

Now put your ears to work. Which position sounds best to you? Keep in mind that what sounds best in isolation may not be what works best in the context

of a song. And maybe the tone you like best is with the mic straight on — if that's the case, wonderful!

GOING TO SCHOOL

Even if you end up preferring the sound of the mic straight on-axis, you'll still learn a lot doing this kind of exercise. Unfortunately, what you're probably *not* going to arrive at is the One True Mic Position That You Will Use For The Rest Of Your Life On Every Guitar Speaker Forever And Ever, Amen. Rather, you're going to learn what that particular mic sounds like as you angle it on that particular speaker, with that particular amp tone, and that particular performance — on that particular day.

Still, what you'll learn is valuable. In the future when you're miking a guitar speaker with that mic, you can mentally dredge up the results of your test and think, "Hmmm, I need a bit less top end from the tone, I remember that if I turn the mic just a few degrees off-axis, the top-end cools down a hair." (Or whatever it is that happens as you turn the mic you experimented with).

Doing this kind of thing takes time, but it's an investment that pays off big in the long run. Not only will you end up educating yourself about the gear you're using, but you'll learn new mic techniques and positions, and even more important, you'll learn to hear the difference that even a small shift in mic position can make. And those are all valuable lessons.

THAT'S STILL NOT ALL

One final tip: The idea of turning a mic off-axis isn't limited to guitar speakers. Any time you're positioning a mic on a source, how you orient it on- or off-axis will make a difference in the tone. Learn what your mics sound like as you turn them, and you'll find the expanded "color palette" to be useful in many situations. **EQ**

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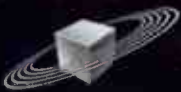
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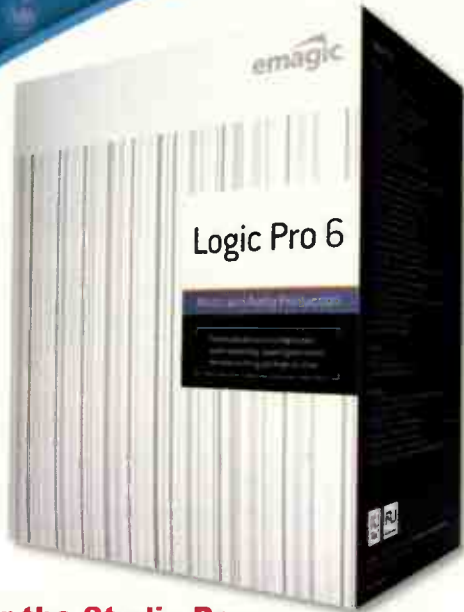
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The Oxygen 8 from M-Audio is the perfect controller for your portable Logic studio! Its 25 keys can send any type of MIDI message, and 8 programmable rotary knobs provide mouse-free control of your DAW's commonly used parameters.

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Serious recording practitioners know that reliable storage and backup capabilities are musts! Glyph has long been the source of reliable storage solutions, and they offer FireWire combinations to meet any studio's needs. Using Glyph's exclusive Integrity technology with bridging electronics right in the cartridge, the GT 308 holds up to 6 FireWire Hot-swap drives, plus any two DVD/CD, tape, or SCSI Hot-swap drives, all in a 3-space rack! The GT1031U rack holds any combination of 3 FireWire Hot-swap drives. Count on Glyph for rock-solid reliability!



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by Mitch Gallagher

It's an EQ Award triple play! All three of these products deserve EQ Awards. The Mackie Big Knob offers tremendous performance and flexibility at a miniscule price point. The Grace m906 is a top-of-the-line do-everything stunner. The Nautilus Nemo DMC-8 provides audiophile/mastering-quality analog lushness. Three products, three price points, three approaches, three winners.

Taking Control

Three new monitor control boxes address different needs

MODEL: Mackie Big Knob
PRICE: \$385
CONTACT: www.mackie.com

MODEL: Grace Design m906
PRICE: \$5,995
CONTACT: www.gracedesign.com

MODEL: Nautilus Master Technology Nemo DMC-8
PRICE: \$3,600
CONTACT: www.nautilusmaster.com

As computer-based DAW users shift more and more of their focus "inside the box," many are moving away from large mixers as the centerpiece of their studio. For some, this has created a dilemma: how to perform all the control functions normally handled by the master section of the mixer. These functions include setting monitor levels and switching between sets of speakers, providing headphone feeds, talkback, and more. In some cases, studio owners are using small-format mixers for these functions, which have the added benefit of providing some extra signal mixing capabilities when required. But for others, a small mixer isn't the answer.

A number of manufacturers have stepped in to fill the void with studio control boxes; the last Winter NAMM show saw the introduction of several such boxes. Let's take a look at three very different monitor system controllers. Each offers a unique take on solving the problems associated with going "mixer-less" — and each comes in at a very different price point.

MACKIE BIG KNOB

The Mackie Big Knob is set up to duplicate the master section of a well-appointed mixing

Analog inputs	DAW, 2-track A, 2-track B, DAW Phones Mix (all 1/4" TRS, switchable +4/-10); Phono (RCA); talkback footswitch (1/4")
Monitor outputs	Monitor A, Monitor B, Monitor C, Studio Out (all 1/4" TRS, switchable +4/-10)
Headphone outputs	Front panel 1/4" TRS (2)
Other analog outputs	2-track A, 2-track B, DAW, Phones amp (all 1/4" TRS)
Digital inputs	—
Controls	source select (4), speaker select (3), mono, mute, dim, source level (4), monitor level (3), headphone level (2), studio out level, volume, talkback level, phones/studio out source, studio out on/off, talkback to 2-tracks, talkback to phones/studio, +4/-10 switches (for all source and mixdown I/O)
Meters	6-stage LED ladder (2)
Talkback	Built-in microphone, footswitchable
Level matching	Back-panel knobs, for sources and monitors
Format	Stereo
Form factor	Desktop unit
Frequency response	5Hz to 100kHz, +0/-3dB
THD+IMD	>0.015% @ +4dBu
Crosstalk	90dB @ 1kHz
Noise floor	-90dB, 20kHz bandwidth, +4dB

console — and then some! You can switch among four stereo sources, routing them to up to four sets of monitors (three in the control room, one in the studio). All source and monitor connections have level calibration knobs. Almost all connections are on 1/4" TRS connectors; this meant adapters for me as most of my gear uses XLRs.

The unit is designed to sit on your desktop, which is convenient for control. However, if you connect all the possible

ins and outs, you're going to have a ton of cables dangling off the back of your desk — better stock up on cable ties.

Big Knob offers full talkback control, with a built-in mic with level control, and the ability to route talkback to either 2-track for slating or to headphones or the studio set of monitors to communicate with musicians. The headphone outs have a ton of power — even the deafest metal-head should be able to hear phones jacked into the Big Knob. A special DAW Phones Mix Input lets you route a separate cue signal through Big Knob to the phones while a control room mix is coming out of the unit's monitor outs. Input sources can be routed to three stereo outputs for mixdown; there's also a stereo out for feeding an external headphone amp, should you need one.

The push-button switches for choosing sources and monitors have associated LEDs that



indicate when a switch is depressed. You can have more than one switch depressed at once; this lets you monitor, say, a source while you play along, and it's great if you're using a monitor out to feed a subwoofer and you want to be able to turn it on and off without affecting the full range speakers. But for clean A/B'ing it means you have to hit two switches simultaneously. A little practice and it works fine.

And the sound? Big Knob delivers big time. The sound is clean, open, full, dynamic, and rich. Having spent many hours on Mackie boards, I expected good clear, neutral sonics. But Big Knob definitely raises the bar toward high-end analog tonality; I'm quite impressed.

If you need a complete control center for your DAW-based studio, Big Knob has you covered. Big Knob, big performance, small price . . . too cool.

STRENGTHS:

- Stellar sound quality
- Dual headphone outs with separate volume controls
- Convenient desktop unit
- LED meters
- Built-in talkback mic
- Performs far beyond its price point

LIMITATIONS:

- All cables must be routed to desktop
- Takes practice to cleanly switch between sources and speakers for A-B'ing

GRACE DESIGN M906

Jack of all trades, master of none. Does that phrase apply to the Grace Design m906? Nope — more like the opposite. There's little this system can't do, and do with top-of-the-line performance. If you've got a variety of digital and analog sources, work in surround and stereo, and want the best audio quality, this is the box for you. It can accept up to

Analog inputs	2 Channel 1, 2 Channel 2, Cue, talkback mic (all XLR); 5.1 Input 1 (DB25); 5.1 Input 2 (RCA); talkback footswitch (1/4")
Monitor outputs	5.1 Control Room Out 1, 5.1 Control Room Out 2 (DB25); Control Room Out 1, Control Room Out 2, Cue Out (XLR)
Headphone outputs	one on remote, one on rack unit (1/4" TRS)
Other analog outputs	5.1 DAC Out (DB25)
Digital inputs	8-channel AES3 (DB25), 2-channel optical (TOSlink), S/PDIF (RCA), AES3 (XLR), 8-channel ADAT (TOSlink); word/super clock in and thru (BNC). Supports up to 24-bit/192kHz
Controls	Analog input select (5), digital input select (6), channel solo/mute (7), mono, dim, mute, speaker select, talkback, clock select, Mon>Cue, calibration
Meters	
Talkback	Requires external microphone
Level matching	Comprehensive calibration of all I/O, including cue, talkback, dim, and individual 5.1 speakers
Format	Stereo and 5.1 surround
Form factor	2U rackmount unit + desktop remote
Frequency response	3Hz to 250kHz, ±3dB (analog)
THD+N	<0.009% (analog)
Crosstalk	<100dB @ 1kHz (analog)
Output signal-to-noise	-98dBu (low gain mode, analog)

five analog and six digital sources, including two analog and two digital sources in 5.1 surround. You can control up to three sets of monitors (two using the speaker selector switch, the third using the Cue>Monitor switch), two of which can be 5.1. There's an XLR connector for a footswitchable talkback mic.

The built-in 24-bit/192kHz converters sound stellar, and the analog audio quality is top-notch. Every input and output can be individually calibrated, including the cue I/O and the talkback mic.

Digital clocking is foolproof; the m906 can deal with cleanly switching among sources without any digital

noise or reclocking delays. While it's often best to have an external master clock for all your digital gear, with the m906 you don't have to have one. I used the box to control four digital sources and never had a clocking problem.

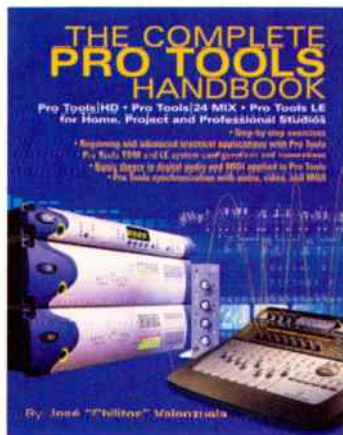
All input and output is handled by a 2U rackmount box, which also has a headphone connector. Control functions are handled by the sleek remote, which has an LCD for calibrating and selecting clock functions, and two LED readouts to display output levels for the headphones and monitor outputs. The LED readouts aren't meters, they display the reference level of the volume controls. However, I calibrated my monitors using an SPL meter so that, say, 80dB on the LEDs matched 80dB reference level on the speakers.

The remote also has a second headphone output. The headphone amp sounds great, but it doesn't have a ton of output. It should be okay for normal control room use, but may not keep up with loud tracking applications. ►



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EQ0307

Taking Control

I set the unit up with as many analog and digital sources as I could muster, as well as a set of stereo monitors and 5.1 speakers. It performed perfectly no matter what I threw at it, and sounded amazing. A big benefit for users of digital devices is that with the m906, you're monitoring everything through the same D/A converters; perfect for referencing mixes.

If you need top-of-the-line control over a ton of digital and analog sources and multiple sets of speakers and you're working in surround, this is the only box I know of that can handle it all, let alone sound this good doing it. The m906 is one outstanding studio tool.

STRENGTHS:

- Stunning sound quality
- Built-in digital-to-analog converters
- Remote offers all control functions
- Foolproof digital clocking
- Tons of connectivity
- Ability to solo/mute individual speakers
- Dual headphone outs

LIMITATIONS:

- No metering

NAUTILUS MASTER TECHNOLOGY NEMO DMC-8

Okay, I've got to start off by saying that the Nautilus Nemo DMC-8 comes with the most amazing power cable I've ever seen. It features three separate conductors, the total diameter of which must be an inch....I'm sure there's a good audiophile reason for it, but regardless it looks completely cool.

That having been said, there's more to the DMC-8 than a cool power cable! Co-designed by mastering engineer John Vestman and Inward Connections, the focus here is on discrete Class A analog sound quality. You won't find fancy bells or whistles here; the DMC-8 is straight-ahead and easy to figure out.

You get four source ins and two speaker outs. In addition, Source 1 (normally your DAW or console) can be routed through the DMC-8 to two stereo recorders for mixdown. A "Source Select" output lets you route the selected input source out at full line level to another device. A good use for this might be a headphone amp/talkback controller, since there isn't one in the DMC-8. (Upcoming products from Nautilus will fill the headphone/talkback void as well as offer 8-channel analog summing, and other functions; check out the company's website for further info.) ➤



Analog inputs	Buss in (XLR with 6dB pad & 1/4"), 2-track 1 (XLR), 2-track 2 (XLR), 2 track 3 (RCA, with 6dB pad)
Monitor outputs	Speaker A, Speaker B (both XLR)
Headphone outputs	—
Other analog outputs	Buss Thru [2], Source Select (all XLR)
Digital inputs	—
Controls	Source select (4), speaker select, mono, mute, dim, meter range, source level (3), Speaker B level, dim level, volume
Meters	Analog VU (2)
Talkback	—
Level matching	Front-panel knobs, sources and speakers
Format	Stereo
Form factor	2U rackmount unit
Frequency response	10Hz to 60kHz, ±0.5dB
THD	0.006% @ +4dBm
Crosstalk	100dB @ 1kHz
Output signal-to-noise	-95dBu

The right tools for the job

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personal recording

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digital DJ and performance



The M-Audio family of award-winning FireWire audio/MIDI interfaces lets you choose the creative tool designed for the way you make music. All offer easy, high-bandwidth connectivity, MIDI, powerful headphone monitoring, and bus-powered operation* so that you can create anywhere, anytime. Flexible software-controlled mixing includes aux sends on all channels and assignable aux outputs, providing for dedicated headphone mixes and sends to external effects. Simply choose the model that matches the way you work.

* 4-pin FireWire port or adapter required

FireWire Audiophile

4-in/6-out—ideal for use with DJ/remix software: features A/B source headphone switching



FireWire 410

4-in/10-out—great for software-based mixing, routing discrete outputs to mixers, and directly driving surround sound



FireWire 1814

18-in/14-out with ADAT Lightpipe—optimal for group tracking and connecting with other digital multitrack gear



M-AUDIO

Taking Control

The DMC-8 is easy to use; all the controls are right in front of you on the rackmount unit's front panel, including the knobs for level-matching speakers and sources for perfect A-B'ing. A volume/source select remote will be available soon.

It would be nice if the level-matching knobs lined up with the source and speaker

When I plugged in the Nemo DMC-8, I felt like my monitor system had undergone an upgrade; it sounds that good.

switches they coincide with; several times I changed the 2 Track 3 level when I meant to adjust the Speaker B level. Analog VU meters provide level information, and the unit comes with a CD containing tones for easy calibration.

The unit has no audible self-noise, although I did encounter occasional clicks and pops when switching among sources or between speakers. (Nautilus tells us this has been fixed on current units.) Put quite simply: The Nautilus Master Technology Nemo DMC-8 is a joy to listen to, with pure, luscious analog tonality, and wide, deep, rich sound quality. I could easily discern the differences between various digital-to-analog converters, as well as hear deep "inside" dense mixes. When I plugged in the Nemo DMC-8, I felt like my monitor system had undergone an upgrade; it sounds that good.

If you're looking for an audiophile-grade/mastering studio-level monitor controller and don't need headphone feeds, talkback, digital I/O, or other bells and whistles, Nemo DMC-8 will definitely float your boat. **EQ**

STRENGTHS:

- Luscious analog sound
- Cool analog VU meters
- Includes calibration CD
- Easy to grab knobs
- Excellent for easily A-B'ing sources

LIMITATIONS:

- Requires optional unit for headphones/talkback

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Margaret Cho, margaretcho.com



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by Mitch Gallagher

Symphonic Orchestra provides an amazingly powerful resource for anyone looking for orchestral sounds — and it does it in 24-bit surround!

East West/Quantum Leap Platinum Symphonic Orchestra

A virtual orchestra at your fingertips

Type: Sample-based software orchestral instruments/libraries
Price: Platinum Strings, \$995; Platinum Brass, \$995, Platinum Woodwinds, \$995; Platinum Percussion, \$495. Platinum Edition, \$2,995; Gold Edition, \$995; Silver Edition, \$295

Contact: East West, www.soundsonline.com

Resolution: 24-bit/44.1kHz (Platinum), 16-bit/44.1kHz (Gold and Silver). 88.2 and 176.4kHz versions will be available in the future

Platforms: Mac OS X, OS 9; Windows XP/2000/ME/98

Formats: VST 2.0, AU, DXi, HTDM, standalone

Audio drivers: CoreAudio, SoundManager, ASIO2, MME, Direct Sound

Multitimbral parts per module: 8

Built-in effects: reverb, chorus, delay, filter/EQ

Polyphony: depends on computer

Hard drive space: 28GB (strings), 17.4GB (brass), 16.5GB (woodwinds), 6GB (percussion)

Copy protection: serial number plus challenge/response. Two authorizations per module allowed.

Version reviewed: player 1.03, library 2.50

Test systems: Mac — Dual 2GHz G5 with 2GB RAM, dual SATA hard drives. Standalone, Digital Performer, Nuendo, Pro Tools, Logic

Windows: XP — 3.2GHz Pentium 4, 1GB RAM, dual SATA hard drives. Standalone, Cubase SX, V-Stack

There's nothing quite like the feeling of hearing your music played by a real orchestra . . . but few of us have a symphony orchestra at our beck and call. So East West has joined forces with Quantum Leap to help us out:

Their *Symphonic Orchestra* is a set of four modules, Strings, Brass, Woodwinds, and Percussion, available separately or in one of three bundles: Platinum, Gold, and Silver (see sidebar for the differences between bundles).

More than just a sample library, the modules are software sample players (based on Native Instruments' Kompakt engine) that can run on a variety of platforms and formats. Each module has built-in effects (reverb, chorus, delay,



THE MULTI SECTION IS WHERE YOU ASSIGN THE INSTRUMENTS TO MIDI PARTS. EACH INSTRUMENT CAN HAVE UP TO THREE STEREO LAYERS: "C" LAYER IS STEREO CLOSE-MIKED, "F" LAYER IS STEREO MIKED USING A DECCA TREE AT THE FRONT OF STAGE, AND "S" LAYER IS STEREO MIKED BACK IN THE HALL. IN STEREO YOU CAN BLEND THESE THREE SOURCES TO CONTROL HALL AMBIENCE. IN SURROUND, YOU CAN ASSIGN THE STEREO SOURCES TO DIFFERENT SPEAKERS, E.G., "F" TO FRONT L/R, "C" TO SURROUND L/R.



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MSRP \$599



HR626 This popular bi-amplified studio reference monitor features a custom D'Appolito driver design for enhanced bass without boominess. A favorite in post-production facilities.

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HR824 As the most acclaimed active nearfield monitor of the last decade, the legendary HR824 brings esoteric, high-end studio monitoring to a price within reach of the working professional. Features an 8" woofer and 1" tweeter with metal dome waveguide for wide sweet spot.

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Introducing...

East West/Quantum Leap Platinum Symphonic Orchestra



I WAS ABLE TO RUN ALL FOUR MODULES SIMULTANEOUSLY ON MY DUAL-2GHZ G5, BUT HAD TOO LITTLE RAM TO RUN MORE THAN ONE OR TWO AT ONCE ON MY PC.

and filter/EQ), as well as synth-like envelope and modulation capabilities. Each is 8-part multitimbral. Sounds can be loaded and saved as individual Instruments, or as an 8-part Multi. If you need more parts, just open another module instance.

The *Symphonic Orchestra* modules were recorded using 6-channel samples. These are arranged as a close-miked stereo pair, a stereo pair taken from a front of stage Decca tree, and an ambient stereo pair recorded further back in the hall. When you load the Multi version of an instrument, all three stereo pairs load; you can solo or mute each, as well as control its level.

If you're working in stereo, you can balance the three pairs to control the amount of hall ambience and presence. Or, kick it up a notch and arrange the pairs in surround: send the close-miked version to the center, the front-of-stage pair to L/R, and the ambience pair to the surrounds.

THE CATALOG

Symphonic Orchestra includes a wide assortment of instruments and sounds; you should be able to cover most "day-to-day" orchestral needs. There are things I missed, such as string harmonics and marimba. Those working on 20th-century (I guess that should be 21st-century now) music may want euphonium and saxophones, and some of the more esoteric

extended techniques and articulations. And those doing chamber music will miss other instruments: I tried sequencing Bach's *Double Violin Concerto*, for example, but the lack of a harpsichord put a damper on the continuo part. Fortunately, East West is committed to updating and expanding the library in the future.

As a bonus for those who must edit samples to be happy, the individual Instruments and Multis can be opened by Kontakt. I found this feature useful for creating a quick, 16-part multi-timbral orchestra for use when composing.

IN USE

It takes far longer to load the 65GB of data for *Symphonic Orchestra* than it does to learn to use it. I was up and running in no time.

There's really only one significant issue with *Symphonic Orchestra*, and that has little to do with East West or the library: this much orchestral majesty simply requires a ton of computer power. My 3.2GHz PC didn't have enough RAM to run more than one standalone module at the same time. For example, I tried sequencing *Hebrides* by Mendelssohn in Sibelius on the Mac (which uses flute, oboe, clarinet, bassoon, horn, trumpet, timpani, 1st and 2nd violin, viola, cello, and bass), then using the Strings, Brass, Percussion, and Woodwinds standalones

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EACH INSTRUMENT IN THE MULTI CAN HAVE ITS OWN TUNING AND FILTER/EQ, AS WELL AS PAN AND VOLUME SETTINGS.

on the PC to play back. I could sort of get Woodwinds and Brass to play at the same time, but anything more was impossible. I switched over to using the VST plug-in versions loaded into V-Stack, and I was able to get all the parts to play — again, the limitation was RAM in my computer.

Attempting the same thing in reverse, playing *Hebrides* from Cubase SX on the PC, and running all four modules on my dual-2GHz Mac was no problem — everything worked like a charm. In this case, I took advantage of having multi-port interfaces on both computers; each module received on

its own MIDI port. Using Digital Performer, I was almost able to play *Hebrides* on the same computer using AU plug-ins — it handled all but the big flourishes where everything plays at once.

After working with *Symphonic Orchestra* for a while, I landed on what seems the best way to work: Create your sequence, and do all tweaking using a scaled-down orchestra running "front of stage" instruments in stereo. Then when you're ready for the full effect, play each part back individually with the 6-channel instruments, recording

Silver and Gold

If you can't lay out the cash for the top-of-the-heap *Platinum Symphonic Orchestra*, East West offers *Silver* and *Gold Editions* that should go a long way toward satisfying your orchestral jones.

If you go for the *Gold Edition*, you're basically going to get 16-bit stereo versions of the four *Platinum Symphonic* modules, which reduces the space requirements to around 15GB. Limiting the Instruments and Multis to stereo also reduces the load on the host computer, so *Gold* (or *Silver*) may be a better choice if you're working on a laptop or a less-than-firebreathing desktop computer.

The *Silver Edition* is also stereo-only with 16-bit resolution. It includes all four modules, although there aren't as many articulations as in the *Gold* and *Platinum* versions. But East West makes up for this by including pipe organ, grand piano, and male and female choirs not found in the *Gold* or *Platinum Editions*.

The *Gold* and *Silver Editions* are "upward-compatible" with the *Platinum Edition*, meaning anything you create with them will play back perfectly on *Platinum*. This makes the *Silver Edition*, in particular, useful for those on the road with laptops. You can upgrade among the three versions for the difference in price.

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East West/Quantum
 Leap Platinum
 Symphonic Orchestra

No End In Sight

East West sees *Symphonic Orchestra* as an ongoing project. The current *Platinum Edition Symphonic Orchestra* library is 24-bit/44.1kHz. However, all files were recorded at 88.2 and 176.4kHz for future updates — when computers are powerful enough to handle all that data!

But beyond the sample rate increases, the library itself is still growing. At the time of this writing, East West was about to embark on additional recordings with Professor Keith O. Johnson; not to replace existing instruments or articulations, but to augment them.

At the same time, *Voices Of The Apocalypse 2* will be recorded. It will also be released as a Kompakt player instrument, and will feature male, female, and boys choirs using the same multiple-microphone technique and hall as *Symphonic Orchestra*. The new library will feature East West's "word building" utility, which allows users to type in text for the choir to sing as lyrics.

them to tracks in your DAW. I recorded one of my string orchestra pieces this way; I was truly thrilled with the results. And hearing my final piece in surround was awesome — I felt like I was hearing the music in a real hall.

Since computer requirements are high, East West recommends that you use separate computers for each section; or better yet, two computers for each section. (Fortunately, two copy-protection authorizations are allowed.) If you're doing serious work, there's no question that's the only way to go. This will, of course, become less of an issue as computers become more powerful — at least until *Symphonic Orchestra* makes the jump to 88.2 or 176.4kHz!

THE SOUND

So what's it sound like? In the right hands, with careful MIDI programming and performance, it sounds like, well, an

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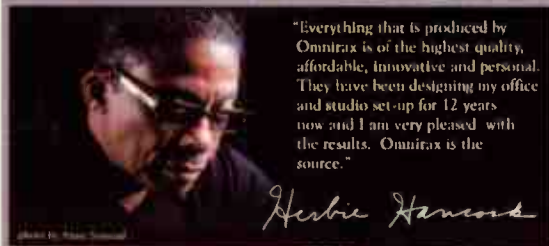
The S6DXBL pictured features:

- One 8-space rack bay sloping up on the right side of the DXB, with a large writing surface between it and the wrist pad.
- The left side has a small writing surface next to the wristpad, followed by 4 rackspaces, with 8 more rackspaces angling up. These rack spaces have a usable depth varying from a little over 6" in the front section to 14" in the back.
- One-piece padded wrist rest across the front.
- Mounted on heavy duty powder-coated black steel legs.



Synergy S6DXB XL
 for Mackie DXB

pictured with optional
 solid mahogany "cheeks"



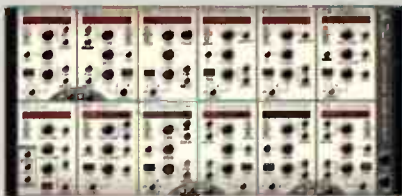
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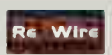
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Randy Ezratty, Effanel Music

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orchestra — and an extremely well recorded orchestra at that! The sample recording was done by Professor Keith O. Johnson, a highly respected engineer in the orchestral field, and he has captured simply outstanding performances of every instrument. Among my favorites are the lush strings, bass clarinet, contra-bassoon, and much of the Percussion module, particularly the Wagner bass drum, the anvils, and the timpanis. Occasional noises, such as a couple of key clicks in the Bassoon Gliss program, only add to the realism and naturalness of the instruments. The sounds are extremely playable; clearly a lot of time and thought was put into the articulations and programming.

For a taste of what *Symphonic Orchestra* can do, check out the outstanding demos at www.soundsonline.com — what you’ll hear comes so close to a real orchestra that for anyone other than the most picky purist the difference is negligible. But those demos are in stereo . . . to truly experience *Symphonic Orchestra*, you need to hear it in surround. When you do, you’ll be hooked.

THE DOWNBEAT

Color me completely impressed. East West, Quantum Leap, and Professor Johnson have accomplished an amazing feat: *Symphonic Orchestra* is a totally awesome resource for those needing orchestra sounds. You’ll love it in stereo, but please, please try it in surround — the realism is outstanding.

There’s no question that *Symphonic Orchestra* gets an EQ Award. It’s fast and easy to use, and sounds spectacular — and there’s a version to fit every budget and application. **EQ**

Strengths:

- Excellent 24-bit samples
- Surround-ready
- Useful articulations
- Built-in effects
- Plug-in and stand-alone versions
- Easy to use
- Very playable and sequence-able
- Outstanding dynamics
- Individual Instruments and Multis can be opened and edited using Native Instruments Kontakt

Limitations:

- Massive storage requirements
- Can bring even the stoutest CPU to its knees



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by Craig Anderton

Wavelab not only brings digital audio editing into the 21st-century world of surround and DVD-A, but retains the best of previous versions.

Steinberg Wavelab5

Audio editing software takes a big leap forward

Type: Digital audio editing, CD/DVD burning, labeling, and backup software

Price: \$699.99

Contact: Steinberg, www.steinberg.net

Platform: Windows XP, 2000

Minimum system requirements: Pentium 3/800MHz, 256MB RAM, 10GB of free disk space for DVD menu creation, ASIO interface with at least 8 channels, Microsoft DX9

Copy protection: Serial number on installation, CD insertion for updates

Version reviewed: 5.00

Supported audio drivers: ASIO/WDM/MME for stereo, ASIO for multichannel

Supported file types: WAV, AIFF, MP3, Ogg Vorbis, SD2, PCM, AU/SND, WMA, ASF, VOX, PAF, MP2, MP3, AVI (video), more

Internal resolution: 32-/64-bit

Supported sample rates: Up to 192kHz

Supported samplers: SDS, SMDI, and several samplers from Akai, Ensoniq, E-mu, and Kurzweil, as well as the Roland S760.

Plug-in support: DirectX, VST, Wavelab native

Tested with: Dual Athlon, XP Pro, Creamware PowerPulsar interface

Wavelab5 represents a quantum change in digital audio editors — perhaps the most significant since Digi started the ball rolling with Sound Designer. Sure, there have been some variations on the theme: Sound Forge brought editing to the masses, Cool Edit added multitrack recording to become Cool Edit Pro (now Adobe Audition), Magix's Sequoia skillfully combined multitrack recording, digital audio editing, and high-end mastering into one program, and Wavelab itself previously added a Montage feature to allow multitrack editing.

But Wavelab5 is the first editing program to whole-heartedly embrace DVD-Audio and surround, both of which certainly feel integrated into the core of the program rather than tacked-on. Furthermore,

if you're a Wavelab veteran, you'll find a gentle learning curve. Working with the DVD functions resembles working with the CD functions in previous versions, and editing multiple channels for surround is like editing two channels for

stereo — except there are more channels.

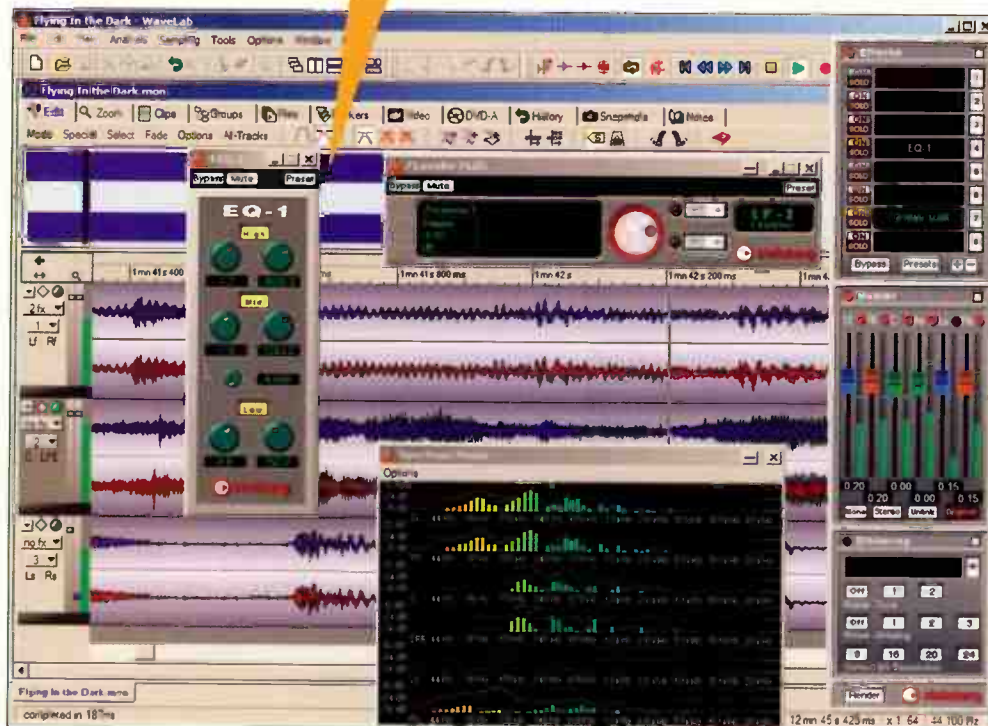
INSTALLATION

The CD proves ownership, but you also need to enter a serial number. In any event, copy protection is not onerous — if



WAVELAB5 PROVIDES A DEEP SET OF TOOLS FOR DVD-AUDIO AUTHORIZING, INCLUDING MENU CREATION, TITLING, AND THE ABILITY TO FOLD IN VIDEO AND TEXT INFORMATION.

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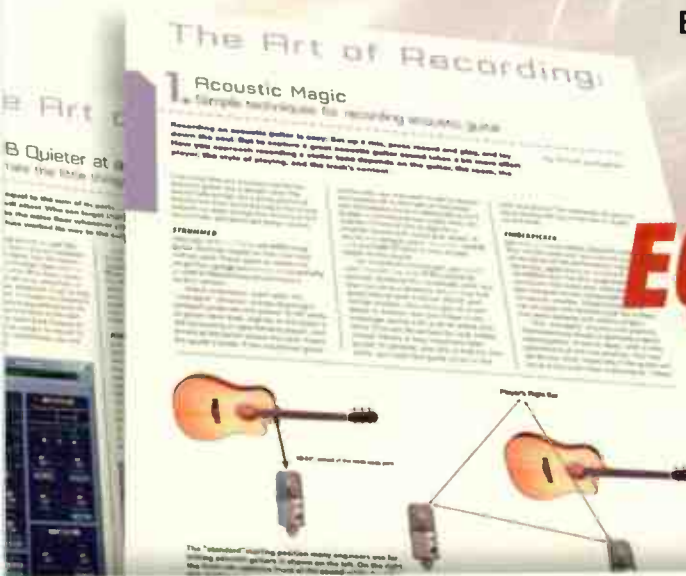
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The Art of Recording:

1. Why Rong is Gud Sometimes mistakes are good for you

Whether giving seminars or receiving emails, I'm constantly asked about the "right" way to record, as if there was some committee on standards and practices dedicated to the recording industry ("for acoustic guitar, you must use a small diaphragm condenser mic"). Well, I certainly don't want to demean the art of doing things right. Yet some of the greatest moments in recording history have come about because of ignorance, unbridled curiosity, luck, trying to impress girls, or just plain making a mistake that became a happy accident.

When Led Zeppelin decided to back the trend at that time of close-miking drums, the result was the Olympian drum sound in "When the Levees Break." Prince decided that sometimes a bass ampily wasn't necessary in a rock tune, and the success of "When Doves Cry" proved he was right. Reverse tape, hanging, distortion—all at one point were considered "wrong."

A lot of today's gear took out the chance to make mistakes. Feedback can't go above 99, while "normalized" patching reduces the odds of getting out of control. And virtual plugins typically lack access points, like insert and loop jacks, that provide a "back door" for creative wanderings. It's time to reclaim some of our heritage as sonic explorers, and scribble up some of the recording process. Here are a few suggestions to get you started.

UNINTENDED FUNCTIONS

The Lexicon Pantheon reverb (included in Sonar, Lexicon Omega, and other products) can provide some really cool resonator effects as well as reverb. Try these settings:

- Reverb type: custom
- Pre-delay: Room Size, RT60, Damping: minimum settings
- Mix: 100% (wet only)
- Level: as desired
- Density Regen: +90%
- Density Delay: between 0 and 20ms
- Echo Level (Left and Right): off
- Spread: Diffusinn: 0
- Bass boost: 10X

Vary the Regen and Delay controls, and feel free to experiment with the oth-



It says it's a reverb, but here Pantheon is set up as a resonator.



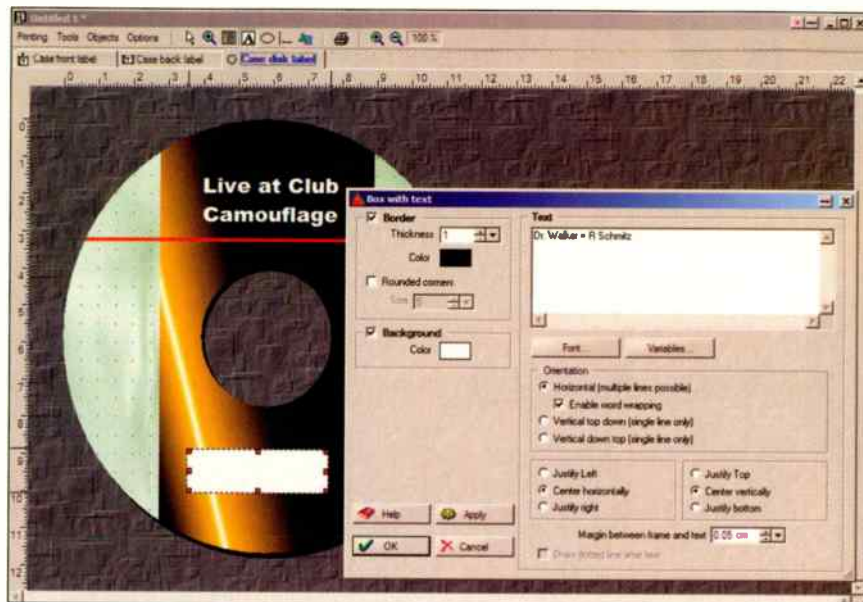
Steinberg Wavelab5

you're in the middle of a mastering session and your hard drive crashes, you have the security of knowing you can easily re-install. You're also allowed to install on both laptop and desktop (thank you!).

SURROUND

Surround hasn't hit critical mass, yet anyone who's worked with it knows this is audio's future. Part of the problem has been missing pieces of the surround puzzle, like the paucity of surround-oriented digital audio editors. Well, Wavelab has beefed up its Montage (multitrack) feature to handle true surround operation from input to output — record, process, and master in surround, up to eight channels. Even the metering and analysis tools handle surround.

Before continuing, I must confess I'm reviewing a surround-oriented program without the benefits of a full surround system. I have a surround-compatible mixer and sound card, and can listen to the results of messing with all the channels,

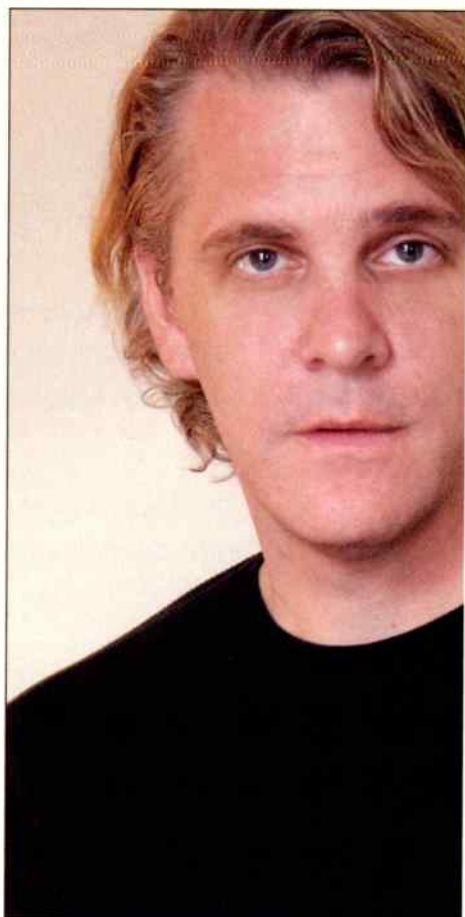


WHEN YOU'VE FINISHED CREATING YOUR AUDIO OR DATA CD, YOU CAN CREATE LABELS FOR THE DISC, CASE FRONT, AND CASE BACK.

but I don't have a THX-certified system with a big sub and other niceties.

But now that Wavelab5 is here, decent surround capability for my studio

has jumped from "when I get around to it" to "I need this now." And it wouldn't surprise me if you have the same reaction. Wavelab5 makes the process of working



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For the first time, there's a program that lets me do professional-quality audio restoration in a logical, straightforward way. The all-in-one interface is fantastic and the quality of the finished product is as good as anything I've ever heard. Whether I'm cleaning up old audio cassettes or making a vinyl-to-CD transfer, SoundSoap Pro gives me the results I've got to have.

**James Barber,
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Steinberg Wavelab5

with multiple channels not only bearable, but simple. Meanwhile, at least there's user-definable surround to stereo downmixing, so I can hear surround creations over my 20th-century stereo system.

Of course, with surround comes the need to support additional file types, and Wavelab5 can now export to Windows Media Pro 5.1 and 7.1. Surround plug-ins are also an issue, but Wavelab5 ships with several plug-ins that process all channels in a surround setup: EQ-1, Leveler Multi, Noise Gate, Peakmaster, Puncher, and Silence (adds silent portions at the start and/or end of the file — great if you have

The mechanics of creating a DVD-A are fairly simple. You use the Montage feature to assemble up to nine *groups* of up to 99 files. This is all explained clearly in the manual, which is a good thing for DVD-A newbies (like me). The groups could be, for example, different combinations of songs: One group could play one set of tunes, while another plays the remixes, and

another plays only the downtempo material. Of course, you can also have just one group. All DVD-A file options are available, from two channels of 24-bit/192kHz audio up to multiple channels of audio, at lower bit and sample rates if needed to fit on the disc. You can also burn DVD video data on the same disc as DVD-A. So, one document can have audio, pictures, and

The inclusion
of DVD-A
burning and
extraction is a
breakthrough.

an echo or reverb tail that "hangs over"). You can also process individual montage tracks with conventional stereo effects.

DVD-A

The inclusion of DVD-A burning and extraction is a breakthrough, and I'd go so far as to say that Wavelab5 could make a difference in the DVD-A versus SACD contest. Wavelab5 will empower a bunch of musicians to experiment with high-def audio because the program integrates the DVD-A process so effortlessly.

Not only can you burn DVD-A, but there's serious DVD-A menu creation, including onscreen menu design, slide shows, DVD text, transitions, etc. You can even print DVD labels from the program. Of course, CD-R/RW burning hasn't been left behind either. And like CDs, Wavelab5 can extract audio data from DVD-A.

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Steinberg Wavelab5

video — if nothing else, I've seen the future of electronic press kits.

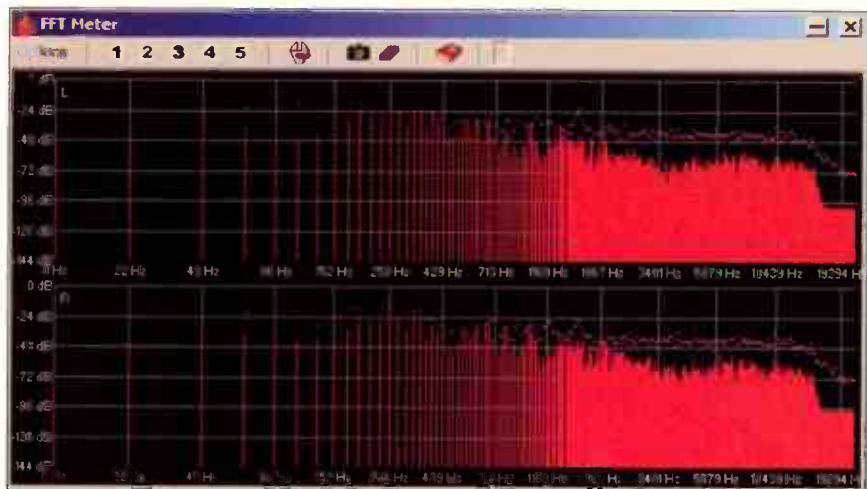
So does it work? Amazingly enough, by doing the secret "power user" trick of reading the manual, within a couple hours of installing the program I was the proud owner of a burned and verified (no errors!) DVD-Audio disc. Note that DVD and CD burning extends to backup and archiving as well, but this isn't limited to Wavelab projects; Wavelab5 also serves as an excellent general-purpose archiving application.

VIDEO SUPPORT

Finally — Wavelab can import AVI video files if you're into editing audio for video. As expected, you can't edit the video, but at least being able to do audio-for-video steals a little of the thunder from its video-friendly competition.

OTHER NEWS

Wavelab5's equalizer has been upgraded, and joined by a multiband compressor. There's no "loudness maximization" type of



THE FFT-BASED SPECTRUM ANALYZER IS JUST ONE OF SEVERAL ANALYSIS TOOLS.

plug-in, and while Wavelab5 does include a DeNoiser and DeClicker plug-in, there's no frequency-based editing as with Audition 1.5, nor "noiseprint"-based noise reduction.

MORE FUNCTIONS, MORE FEATURES

Wavelab5 retains previous features that

are worth mentioning: Batch processing, file database, quality dithering, analysis options, MTC sync, and sampler support (for computers equipped with the requisite MIDI and/or SCSI ports). This provides not only loop point editing and crossfade looping; the killer feature here is the "Loop Tone Equalizer." This can loop just

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World Radio History

Steinberg Wavelab5

about *anything* thanks to a "slice" mode that cuts the loop into multiple slices, then "averages out" the sound so that the end and beginning transition seamlessly. With sustained tones you have to be careful to tweak crossfades, though, so there's not too much of a sonic transition between the sound's attack and where the loop begins.

I also found this useful for drum loops. For example, suppose you have a 4-bar loop. You "Loop Tone Equalize" it into four slices, so each bar now consists of a mix of the four bars. Isolate one of the bars, and you have a new, complex loop that includes elements of all four bars.

CONCLUSION

Although Wavelab5 has been a delight to work with, the DVD recording process is still iffy. Some drives like some media and not others, or prefer +RW to -RW (even though they're supposed to read both), or get picky about write speeds. But to put things in perspective, I was

able to create DVD-A discs and backups on DVD with less fuss than ever before. I'm willing to put up with a few teething pains, patches, and Service Packs in order to take advantage of what the DVD format offers.

Regarding Windows digital audio editors, for the past several years we've seen a comfortable status quo with Sound Forge, Audition, and Wavelab slugging it out for market share, while Samplitude/Sequoia fans stake out their own turf. Of these, I'm used to bouncing back and forth among programs: Audition for its great noise reduction options, Sequoia for when I need to evolve within one project from recording to mastering, and Sound Forge when creating acidized files. But Wavelab gets the call for most of my straight-ahead mastering projects because it's easy to use and has all the features I need (and then some).

The brains behind the program, Philippe Goutier, deserves props for

constantly refining his baby. But Wavelab5 goes beyond "refinement." I've wanted to get into surround and high-definition audio, but with the Red Book CD as the ultimate bottleneck, I never really felt the time had come. With Wavelab5, that time is now. It's not just the latest version of Wavelab; it's the start of a new generation of digital audio editors. **EQ**

Strengths:

- Burns DVD/CD-Audio and DVD/CD data discs
- Complete DVD-A authoring
- True surround editing
- Supports samplers
- Prints DVD/CD labels
- Montage (multitrack) feature
- Video support
- New multiband compressor and EQ
- Includes DeNoiser and DeClicker.

Limitations:

- Limited noise reduction tools.



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A woman with long dark hair, wearing headphones, is singing into a silver Samson CL7 condenser microphone. The microphone is mounted on a boom arm and has a black pop filter in front of it. The background is a plain, light-colored wall.

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by Phil O'Keefe

Phonic P6A

Nice sound, nice price

Type: Active 2-way monitors
Price: \$519.99 (pair)
Contact: Phonic, www.phonic.com

Drivers: 6.5" woofer, 1" tweeter
Power amps: 120/50 watts
Frequency response: 55Hz – 20kHz
Crossover frequency: 1.8kHz, 24dB /octave Linkwitz-Riley
Connections: 1/4" TRS and XLR balanced inputs
Controls: Input level, Low Match, Room Compensation, High Match, Power Mode, Power
Dimensions: 13.8" x 8.7" x 9.3"
Weight: 18 lbs each

One of the most subjective gear purchases is monitor speakers. Not only do preferences vary, but the room the speakers are in will affect what you hear. With that in mind, I tested the Phonic P6As in various different locations, including the nearfield position in my control room, at the rear of my control room, in my office, and in an untreated bedroom.

A nice feature was the built-in speaker response controls. Included are a ± 6 dB level pot, "High Match" switch with +2, 0, -2, and -4 dB setting for controlling tweeter levels, "Low Match" highpass filter control switch with 45/60/80/100Hz settings, and a "Room Compensation" pot with ± 6 dB range for compensating for placement near walls and

corners. The controls were effective, but it was difficult to match the settings between the speakers.

There are two power switches: main power and "Power Mode." Power Mode has three positions: Off (power off), On (power on), and Auto On, where the speakers automatically power-on when signal is received, and the amps go into standby after about five minutes with no input signal. The amps run pretty warm, so keep the heatsinks from coming into contact with heat-sensitive items.

IN USE

My first reaction when playing back reference CDs was, "they're a bit bright." Using the High Match switch helped tame things, but these speakers do tend toward a slightly hyped top end. For example, when listening to Seal's "No Easy Way," I heard more sibilance on the vocals than with other monitors.

On the plus side, reverb tails were easily audible, and stereo imaging and width of the sweet spot were very good. And if you're looking for volume, these speakers won't disappoint. For such a small speaker, they're impressively loud at nearfield distances, and when cranked never sounded compressed or strained.

With a 6.5" woofer, I wasn't expecting huge amounts of bass, but I was pleasantly surprised. Not only do they extend fairly low, the bass is big and powerful for such a small unit. The Room Compensation control helped me get things dialed in.

But the strong highs and lows can overshadow the

midrange, giving the speakers a bit of a hifi-type "smiley curve" EQ sound. I called Phonic for a frequency response plot, but the company was going through management changes and developing a new website; I was unable to reach them. Later I received a frequency plot (which verified what I heard), and learned Phonic now promises 24-hour response on any inquiries submitted through their site.

After spending time with the P6As, I did a mix for a project I'm working on with singer/songwriter Ralph Torres. I found getting a good bass guitar/kick drum relationship was easy, but I struggled with EQ for guitars and snare drum, and the top end of vocals tended to be more "out front" than when I played the mix back on other speakers. Still, with minor compensation on my part, I was able to get a mix that translated well to other systems, and that's the most important thing from a pair of monitors.

When you take price into consideration, these are impressive speakers. They definitely deserve an audition if you're in the market for a pair of affordable powered monitors. **EQ**

Strengths:

- Powerful response tailoring
- Plenty loud for most applications
- Strong bass response
- Good imaging and wide sweet spot

Limitations:

- Slightly hyped highs
- Midrange somewhat overshadowed by lows and highs
- Settings difficult to match between speakers



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Omega 8x4x2 USB I/O mixer

Differentiating itself from standard computer I/O boxes which are typically based on a patch-bay paradigm, the Omega 8x4x2 USB I/O mixer is based on a mixer paradigm and includes input, output and mixing functions that support a variety of tracking/monitoring applications while requiring no additional mixing hardware. The I/O mixer is packed with professional features such as ultra-transparent, high resolution A/D converters, extremely low-noise mic preamps with 48-volt phantom power and active balanced line level inputs. MIDI and S/PDIF ports allow connection to a variety of digital equipment.

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Yamaha's Subkick gets the EQ Award nod for its fat sound, ease of use, and cool look!

by Phil O'Keefe

Yamaha Subkick

Price: \$499

Contact: Yamaha, www.yamaha.com

Strengths:

- Increased sustain
- Huge bottom end
- Sturdy construction
- Easily adjustable
- Looks cool

Limitations:

- Usually must be paired with another mic for best results



Many engineers use two mics when recording kick drum: a dynamic in close for the "snap" and attack, and a condenser out front for the bottom end "bloom" and sustain.

Sometimes a makeshift setup of a speaker wired as a microphone is substituted for the condenser mic. Such a setup has the advantage of capturing great bottom end, but has always been a homemade affair — until now.

Yamaha and Yamaha drum artist Russ Miller have packaged a 6.5" woofer into a 10" x 5" drum shell, added mesh heads and an XLR output jack, and mounted the whole setup on a sturdy, easily positioned tripod stand.

So what does it sound like? A Spinal Tap song comes to

mind: "Big Bottom." It's not going to replace a standard kick drum mic for most people, nor does Yamaha claim that it will, but as a supplement, it offers increased low-end punch and sustain.

An RTA confirmed what my ears were telling me: The Subkick captured a lot of fundamental in the 60Hz range, had a significant dip at 300Hz, a smaller peak in the 600Hz range, and dropped off steeply after that. Frequency response is spec'ed to 2kHz, and there's some information captured as high as 3.5kHz, but not much.

One advantage the Subkick has over a condenser mic is that bleed from the rest of the kit is never a problem. While I was able to use the

Subkick by itself with a lot of high-frequency boost and some compression to obtain a punchy, old-school rock tone, I imagine most people will take Yamaha's advice and run it in conjunction with a dynamic mic. But if you're looking for beef, this thing will give it to you in abundance. An added bonus is how well it worked when I tried it on a bass amp: some people will find it useful for adding bowel-shaking bottom to bass as well as kick.

Compared to the \$1,000 condenser I was using, the Subkick is a bargain. In the time I've had the Subkick, it's become indispensable to me. I'm sorry Yamaha, but you're going to have to send me a bill — I'm not sending it back. **EQ**

by Craig Anderton

Arturia Storm 3

Price: \$149 (upgrade \$50)

Contact: Arturia, www.arturia.com

Strengths:

- Rewritten, efficient code
- New General MIDI synth
- More flexible interface
- Greatly improved sequencer
- Excellent ReWire implementation

Limitations:

- Synths (except GM Synth) don't respond to pitch bend
- Default drum patterns are only one measure
- Bug in audio capture

Storm was the original groove-oriented virtual studio. V3.0

(Win98SE/2000/XP, Mac X 10.3.1) enhances its mixer with basic EQ (high and low shelf, sweepable mid) and an effects routing section, offers a far more flexible sequencer, and adds a GM synth to the roster of instruments, samplers, and effects. Thanks to new code, efficiency is way improved (I inserted 20 instruments and six effects before my computer stuttered).

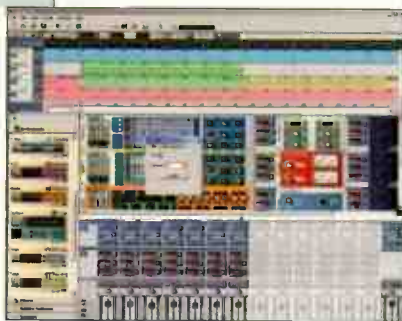
Although Storm 3 no longer works as a VST plug-in, ReWiring into Storm's mixer simply involves dragging a ReWire object from the Browser (which also shows instruments, effects, and samples). Storm is equally suited as a ReWire client; it's easy to control instruments via MIDI when using Storm as an instrument expansion rack, or tweak parameters with a hardware controller. Unfortunately, only the GM Synth (which, incidentally, has a decent sound set) responds to pitch bend messages.

New GUI features include the option to detach the mixer and sequencer, resize views, and use the instrument mini-editors or open up a fully editable piano roll that displays notes and controllers. Sweet.

I love that all drum machine parameters have "always on" automation — it's easy to

create animated patterns with varying pitch, envelope decays, etc. Although the drum patterns are only one measure long, you can copy patterns into the sequencer, create automation that spans several measures (this works for instrument parameters too), then easily capture and export these longer patterns — or entire songs. You will have to trim them in an audio editor, though, because Storm doesn't hit the measure boundaries exactly. This bug is scheduled for a fix.

There's more, but here's the bottom line: Storm 3 is truly fun standalone software, as well as a superb companion to programs that lack pattern-oriented looping or could use more virtual instruments. If you work with loops or groove-oriented material, at this price you simply can't go wrong. **EQ**



Scrollworks Peak Slammer

by Ethan Winer

Price: \$39.95

Contact: Scrollworks,
www.scrollworks.com

Strengths:

- Does one thing, and does it well
- Easy to use

Limitations:

- Normalizing below maximum would be useful

The usual way to make tracks loud is with compression, either standard or multi-band. But over-compression reduces the dynamic range to zero and adds nasty artifacts. Cymbals swell and fade unnaturally; vocals sound overly breathy; and after only a few minutes, most listeners are lunging for the Stop button. There's got to

be a better way to make tracks louder but without harming the music, and there is — Peak Slammer from Scrollworks.

This unassuming little plug-in (Windows, DirectX only) does one thing and does it very well: It increases the

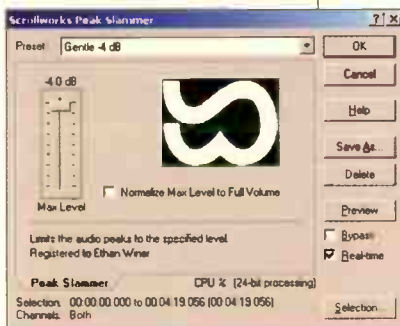
volume of a track with minimal artifacts. I regularly achieve a 4–6dB increase in level without any audible side effects. Depending on the type of music and how it's recorded, you may be able to achieve even more of a level increase. And with only one parameter to adjust, using Peak Slammer is a no-brainer.

Peak Slammer operates on individual cycles. You specify the loudest allowable level, and Peak Slammer reduces the volume for only those cycles that exceed the threshold. On the surface this may sound like traditional limiting, but it's not because the change is immediate and lasts for the length of that one cycle only.

I use Peak Slammer when finalizing mixed tracks in SoundForge, just before

normalizing or setting the final volume manually. You can do the following steps in most stereo editor programs that host DirectX effects: First, scan the file to identify the loudest point and note that level. Let's say the loudest point is at -6dB. Now insert Peak Slammer and set the slider 4dB lower (to -10dB). After processing, no parts of the track will exceed -10dB, so you can then normalize or raise the volume manually to obtain the final level.

While Peak Slammer does offer an option to normalize to maximum automatically, I never use that feature because some CD players distort when presented with full-scale levels. So I always normalize manually to -0.1 dB instead of to exactly 0.0. **EQ**



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e-Lab Obsession

by Craig Anderton

Price: \$299.95

Contact: e-Lab, www.e-lab.se; distributed by Big Fish Audio, www.bigfishaudio.com

Strengths:

- Extremely editable
- Excellent loops and samples
- Extensive automation
- Imports REX2 files
- Easy to use

Limitations:

- No RTAS or pre-XP/OS X support
- AU currently supports only Logic

Obsession is an 8-track REX2 file player plug-in that comes with a 3.7GB, DVD-ROM-based R&B/hip-hop drum loop library consisting of 24-bit REX2 files (with excellent REX marker editing). The instrument itself works as a VSTi with Windows XP, or VSTi/AU with OS X. The loops are honkin', groovacious beats with a humanized "feel" (quantization appears minimal); the drums are multitracked to take advantage of the eight stereo outs.

But the big deal is editability. You can tweak, and generally automate, level, pan, solo, mute,

tune, filtering, saturation, amp envelope, mod envelope, and LFO; there are also six separate mod matrices. You can even import a MIDI file and play with the groove by moving around the data for each slice, as well as import your own REX2 files into Obsession's engine. (One fave trick: Bringing in some of my house/techno kick loops, but using Obsession's snares and hats.)

Installation was uneventful, except that at least with XP, I had to search for the accompanying MIDI files because they weren't where the manual said they'd be. Otherwise, there's virtually no learning curve unless you don't know what a filter or mod matrix is — just sit back and tweak your grooves.

Obsession works with Sonar's VST-DX adapter, but with the usual tradeoff: Either use multiple outputs without automation, or two outputs with automation (but the plug-in is efficient, so you can install multiple instances for extra outs, then render to an audio track if needed).

Yes, Obsession costs more than a traditional sample CD, but you get a great editable instrument and multitracked drums. Most importantly, though, Obsession's files can become *your* grooves because of the editing and mix-and-match options. Twenty different people could use this plug-in and if they're creative, get 20 different sounds out of the same loop. It's the kind of plug-in with which one could become, well, obsessed. **EQ**



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Sounds



SONY
Bradley Fish Restrung

Contact: Sony, <http://media/software.sonypictures.com>
Format: 1 CD-ROM (Acidized WAV)
Price: \$59.95

This library has a twist: In addition to 894 loops and 32 one-shots, there are seven Acid-compatible files and nine mixes derived from them, which provide instant “needledrop” music. The genre is sort of world/new age/jazz; while the tunes are quite good, I suspect *EQ* readers will focus on the individual loops for their own projects.

Most loops provide the basis of the construction kits used to create the Acid files, while the “bonus” loops are primarily of stringed instruments (autoharp, acoustic/electric/synth guitar, bass, banjo, dulcimer, some processed loops, combo loops, etc.). The bonus loops and one-shots work best as accents, but that doesn’t diminish their usefulness.

The construction kit loops are more general purpose. The dulcimer loops are my favorites, followed by the *Gu Zheng*. Although you’ll find a few bass and drum loops, they seem designed to support the music files.

Overall, the loops sound ideal for a Loreena McKennitt-type CD, with that sort of acoustic, California/Oregon “sipping a merlot while watching the fog roll in on a summer day” vibe.

And if that description is a little too abstract, then just listen to the samples on the Sony web site — they’re an honest portrayal of what to expect from this understated, well-crafted CD. —CRAIG ANDERTON



KEYFAX
Future Beats

Contact: Keyfax NewMedia, www.keyfax.com
Format: CD-ROM with over 500 MIDI files (also downloadable)
Price: \$39.95

This CD contains “construction kits” of 4-bar MIDI files in various dance/electronic genres: 13 kits of Nuskool breaks, 12 of Drum ‘n’ Bass, 9 Chillout, 3 Electroclash, 6 Dub, 14 Hip-Hop, 8 House, 2 Techno, and 2 Trance, as well as 12 controller patterns (volume) for adding rhythmic effects. Each kit averages about ten parts. Files come in two versions of the Standard MIDI File format (with and without General MIDI program changes), Sonar MIDI Groove Clips, Motif/Motif ES patterns, and MOTU Clippings. While SMFs load the entire construction kit, Groove Clips can load individually — great for mix and match.

MIDI files are highly flexible, as they can drive any sound (feeding some patterns into the “wrong” instruments produced a few wonderful accidents). The editability is welcome; it was

easy to fix a Techno snare part I didn’t like. But you can also create variations without getting too deeply into editing, as the construction kits generally offer variations on the instrument parts.

No digital audio “stretching” protocol beats MIDI for loops you can edit, transpose, or have follow tempo changes. *Future Beats* delivers plenty of solid, well-programmed MIDI grooves to kickstart your compositions, at a lower price than most sample CDs. —CRAIG ANDERTON



CYCLING '74
Cycles '02 — Unnatural Rhythms

Contact: Cycling '74, www.cycling74.com
Format: 1 audio CD, 1 DVD-ROM
Price: \$99

Clang, crunch, boom, snap, ting, smash, crash, whoosh . . . if you want lush natural soundscapes, look elsewhere! The second installment in Cycling '74’s “Cycles” series is entitled *Unnatural Rhythms* for good reason. Produced by Ron Macleod, the library is said to be “an assemblage of cyclical undulations, found sound grooves, industrial gamelan, pounding machines, and syncopated vintage elements.” While there are a few synth sounds, and some processed vocal sounds, the focus is on short loops of mechanical-sounding noises.

There are metallic hits and pings, scraping drones,

reversed hits, compressed air-like sweeps and swoops, huge low-end rumbles, and more. For some sounds, you can almost pick out what the original noisemaker

Overall, the loops sound ideal for a Loreena McKennitt-type CD, with that sort of acoustic, California/Oregon “sipping a merlot while watching the fog roll in on a summer day” vibe.

was, though the timbres are generally processed in some way.


The loops are presented on an audio CD for auditioning; a DVD-ROM provides the files in 24-bit/44.1kHz and 24-bit/48kHz WAV and 24-bit REX formats. There’s no paper docs, but the DVD includes PDF and Excel indexes. The files are broken up into six folders/categories, such as “BackAlleyTribal” and “FoundSound,” and extended versions (up to 32 bars) of some loops are provided. The loop filename includes the tempo (there is no key to most of these).

There’s a wealth of cool material to be mined here for effects, soundtracks, sound design, ambience, and unique rhythmic backing. *Unnatural Rhythms* will definitely take your tracks to a different place.

—MITCH GALLAGHER



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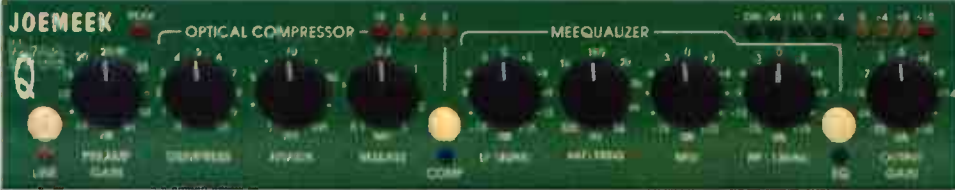
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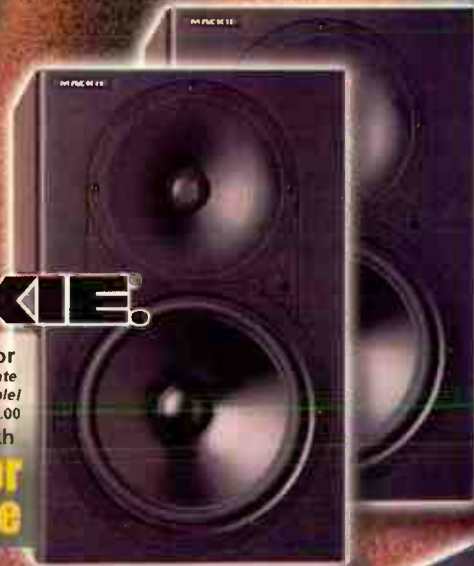
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COMING ATTRACTIONS

"Coming Attractions" are previews of new products that haven't arrived in the marketplace. These aren't product reviews, but are designed to bring you up-to-the-minute information on the next generation of cool recording tools.

Charismac Discribe Alive

Wanna buy a concert CD . . . right now?

by Craig Anderton

What is it? A system designed to duplicate large quantities of CDs or DVDs with minimum human interaction and maximum speed.

Who needs it? For starters, acts that want to sell CDs of concerts to their fan base.

Why is it a big deal? Although the concept of producing "on demand" CDs is not new, Charismac's approach was designed from the ground up for this application.

Shipping: 3rd quarter, 2004

Price: System-dependent

Contact: www.discribealive.com

One of the hot trends is producing concert CDs for concertgoers to buy immediately following a gig — a much more tangible reminder of the experience than, say, a T-shirt. But existing solutions for on-demand mass content distribution generally require some workarounds when using conventional duplication technology.

Furthermore, these systems tend to require "babysitting" to ensure the technology runs smoothly, are generally not designed for portability, and usually can't "scale" according to the content producer's needs.

Now Charismac Engineering (which makes products like the Anubis RAID disk management software utilities, Discribe CD mastering/burning software, and FibreShare storage area network-enabling software) has introduced Discribe Alive — a scalable, portable, mass-content duplication and distribution system optimized for live performance

applications. Intended for use in permanent installations or mobile systems, Discribe Alive has been engineered to avoid as much human intervention and overhead as possible. Although a major part of the initial push is to the live performance touring industry, the company also envisions applications in academia, worship, theater, and business, such as instant recording of seminars and plays.

The system consists of two main components. The Alive Master is an Apple Computer G4 PowerBook (running Mac OS X Panther) pre-configured with the Discribe Alive software, a duplication tallying key that tracks and reports on system status and CD-burning success, and a wireless networking card. The second component, the Alive Robot, is a customized ATA shock-mounted rack that contains two custom-built robotic CD duplicators, a rackmounted Apple Xserve server, and wireless networking connec-

tivity tools to simplify system setup and tear down. A Discribe Alive rack requires AC and an attendant to load the CD blanks into the duplicators, remove the finished audio CDs, then slide them into a cardboard sleeve.

Each Discribe Alive Target Robot can burn over 200 discs per hour (depending on the amount of content) in DAO or TAO modes. With the capability to remotely administer and control 50 or more Alive Target Robots, the system could produce a total output of over 15,000 discs at a single event. According to the company, engineering tweaks in the Discribe Alive software enhance the overall duplication speed; a Discribe Alive Target Robot Server can produce discs faster than many "high-speed" duplicators.

Compared to the current CD/DVD duplicator market, a single 12-drive duplicator carries a retail price that's about the same as the cost of a single Discribe Alive Target Robot Server. It's worth noting that commercially available duplicators generally don't contain a file server or wireless-network connectivity. Discribe Alive is also essentially autonomous; it self-audits and reports the exact number of discs that burned or failed within the timeframe of the job sent by the Discribe Alive Master.

Each Discribe Alive System is custom-configured and integrated; prices vary depending on system specifications.



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Managing CPU Power

As

soon as computer manufacturers ship faster models, software developers find ways to soak up all that power and speed. When a computer starts to have problems keeping up, I hear, "But I just bought the newest computer." Granted, you can do a heck of a lot on the fastest

Mac or PC. But you still want to be aware of a few key things to make sure you don't run low on power.

YOUR ASSIGNMENT IS . . .

Do your homework before buying your DAW, and you'll get far before you have to kick into power conservation mode. Keep in mind that processor speed is only part of the power equation. Other factors include the speed of the system (front-side) bus, amount of RAM, and having a second hard drive dedicated to audio recording/playback.

Most recording applications have a "gas gauge" to tell you how hard your CPU is working, how much RAM you're using, as well as other details. If you keep that performance meter open, and check it often, you'll be able to take steps to conserve power before you have a problem.

BUFFER THE CPU SLAYER

Hardware buffers are important to understand and manage. DAW software and hardware use buffers to transport "packets" of audio in and out of the audio interface. A larger buffer is able to manage data throughput more efficiently and lighten the load on your CPU. If buffers are too small, the processor may not be able to keep up with all the tasks it's being asked to perform. The trade-off with higher buffers is increased latency, or the delay you hear when monitoring playback from your software while recording live.

Locate the buffer setting in your DAW software and get used to adjusting it. As a rule of thumb, keep buffers low when tracking to reduce monitoring latency, and raise buffers when mixing to optimize CPU usage for things like plug-ins. You may be able to leave buffers higher if your software or hardware offers a low-latency monitoring mode.

PLUG-IN MANAGEMENT

Newer computers can run an absurd number of realtime plug-ins simultaneously. But certain effects still demand a fair amount of power. So even if you've got a speedy new CPU, it may still be necessary to manage plug-ins.

Most applications allow you to "bounce" a track to disk, which creates a new audio file with any inserted plug-ins rendered to the file. Then you can disable (or remove) the original audio track, replacing it with the new bounced file.

The latest versions of several DAW applications allow you to "freeze" a track. Much like bouncing, freeze automates the process of rendering a track to an audio file, then disabling the original track, into a simple

step. Applications with this feature typically can "un-freeze" the track should you wish to make a change to the original track or its effects.

Most audio applications also offer aux sends and returns to allow several tracks to share one effect — just like when people mixed on analog consoles and had a rack of outboard reverbs. The process is pretty much the same. With hardware, each audio track has one or more "sends," which split the audio on that channel and route it to another output, such as an outboard reverb. The output from that outboard device is sent back into an aux return and blended with the mix. Software applications have the same capability in their mixing windows. Typically sends can be assigned to a bus. An aux track whose input is that same "bus" has a plug-in inserted. The result is that several tracks busing through an aux track can use one plug-in, instead of each track requiring its own.


VIRTUALLY HUNGRY

Virtual instruments are probably the most power-hungry apps in modern DAWs. Sampler instruments capable of loading very large libraries such as MachFive, SampleTank, and Kontakt can demand a large number of processor cycles. Specialty instruments can do the same. Some applications can "freeze" instrument tracks as described above. If you can't freeze a track with your application, it may be necessary to assign the output of your instrument track to a bus, assign the input of a new track to that bus, and record the instrument to the new track. By recording an instrument track as digital audio, you can disable the instrument and save some power.

Users often fail to realize that most virtual instruments can be multitimbral, with each channel having its own patch and receiving on its own MIDI channel. Opening two instances of an instrument when one can do the job really wastes resources.

Many virtual instruments offer power saving features. Polyphony settings allow you to raise or lower the number of notes an instrument can play at one time. Lowering polyphony to just what you need can reduce the amount of work your system needs to do. Some instruments offer a 32-bit mode, which saves CPU power at the cost of using more RAM. This can help with larger samples, if you have plenty of RAM.

The advanced tweaker can conserve power by customizing presets by removing layers or key ranges they're not using, disabling unused filters and effects, and shortening long envelope releases (if they're not being used) to prevent using up polyphony.

The best advice is to be aware of what your system can do, and to be ready to implement these steps before it's too late. Don't forget — watch those performance meters! 

Todd G. Tatnall is the Senior Tech in Sweetwater's Technical Support department.

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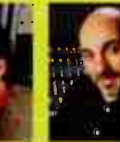
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Vocals: Crosby/Nash

Surround or stereo, home studio or commercial facility, producer/engineer Nathaniel Kunkel is the man you want behind the board if you're behind the mic. After all, this is the same guy who has received several Grammy nominations and wins for such eclectic credits as Lyle Lovett, Fuel, Robin Williams, and The Trio (Emmylou Harris, Dolly Parton, Linda Ronstadt). Recently Nathaniel and his Studio Without Walls received an Emmy nomination for Outstanding Sound Mixing for a Variety or Music Series or Special for the 5.1 mixes of Sting's *Inside — The Songs Of Sacred Love*.

"It was really strange and really wonderful that it was so easy. It felt like we'd just carried on where we'd left off 28 years ago," Graham Nash was quoted as saying about the first Crosby-Nash studio event since 1976. In between his non-stop schedule, Nathaniel shared how he recorded the famous duo in a sound stage in Burbank, a garage in Santa Monica, and a front porch in Hawaii . . . don't you wish you had his gig!

SIGNAL PATH

"I used the same mic for both Graham and David; when they sang together I used a figure-8 pattern and they sang on both sides at the same time," says Nathaniel Kunkel. "The mic was a heavily modified Klaus Heyne Neumann U 67 that was built for me by my good friend Stephen Jarvis. It is a stock diaphragm, but Stephen and I had the amplifier modified several times until we were happy with it. It's the same mic I use with Lyle [Lovett] as well. During the tracking/rehearsals, when Graham and

David were in the live room I used an [Audio-Technica] AT4055 because it has great rejection and an AT4050 capsule (one of my favorites) in case I got an accidental master."

MIC POSITION

"I like vocalists to get pretty close to the mic," shares Nathaniel, "within about an inch or so, and I use a fabric pop filter. I don't worry about the room I cut vocals in, but if I hear a problem I will fix it. Foam, packing blankets, something fluffy will usually do the trick. On this project we cut vocals everywhere, so I learned not to worry about our location early on. I really just used my ears. If the mic sounded wonky I would



Inspiring studio decor! The vocals for David Crosby and Graham Nash's album were tracked in a variety of locations including a porch in Hawaii.

move it. We even overdubbed Crosby on the porch of the studio in Hawaii."

PROCESSING

"The vocals were all recorded through a GML 2020 feeding a Genex A/D, which fed ProTools HD," says Nathaniel. "I monitored on a Sony DMX-R100 and JBL LSR Speakers. All my effect processing came out of a TC Electronic box. The real crucial part is the GML 2020 though; it's a single-channel, high-resolution recording channel with a GML mic pre, EQ, and limiter in it. It's the only way to make vocals sound like that. The [Digidesign] DigiRack de-esser is also usually employed on the return. Another thing that made a big difference was our cue system. I just got an Aviom 16-channel headphone system and the singers and the band loved it. It made a big difference for them and made my life so much easier."

TRACK NOTES

"Graham is one of my best friends, and David Crosby gave me my first kite," confides Nathaniel. "So I guess you could say that with my father [Russell Kunkel] in the mix, I was making a record with people I love very much. It was what you would call a 'family-friendly' session. Camaraderie was the predominant vibe of the project and it was present in the vocal sessions in spades. Graham and David were very receptive to input, and the singing was fast and fun. They really are very, very good singers. Most of the vocals were from the tracking take."

PROJECT NOTES

"This album is dedicated to my aunt Cass Elliott, who introduced David and Graham, and whom I barely knew," concludes Nathaniel. "She died when I was four. So I felt that there was some cosmic thing that brought me to this project, with these guys, at this time. I think everyone felt that way to be honest, and I think it shows in the album. It's a great piece of work, and I am very proud of it." **EQ**

DATE: January – April 2004

STUDIO: Studio Without Walls (www.StudioWithoutWalls.com)

LOCATION: Burbank, CA (Centerstaging), Santa Monica, CA (Studio Without Walls), Hawaii (Kazoo Studios)

ARTISTS: David Crosby and Graham Nash

PROJECT: Crosby-Nash album (Sanctuary Records)

PRODUCERS: Nathaniel Kunkel, Russell Kunkel, David Crosby, Graham Nash

ENGINEERS: Nathaniel Kunkel (recording), John Hurst (system)

ASSISTANT ENGINEERS: Kevin Plessner, Seth Waldman, Christine Serios

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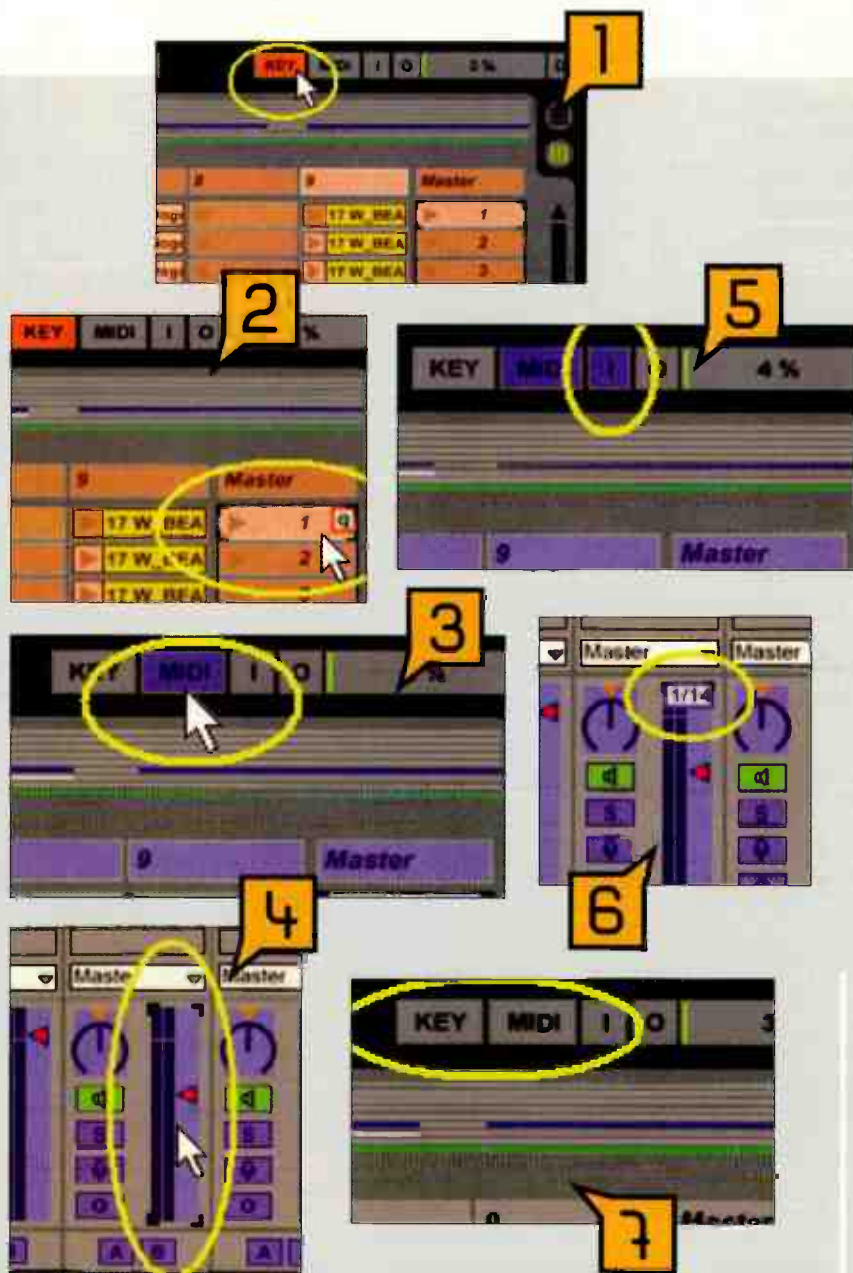
Ableton Live

Trigger scenes and tweak settings with external control

Objective: Create QWERTY keyboard shortcuts to trigger scenes and loops; also, assign controls such as pan, level, and effects parameters to MIDI hardware controllers.

Background: Live makes it very easy to use remote control devices, such as MIDI keyboards and fader boxes.

Step by Step: Repeat step 2 to assign additional keys, and steps 4 and 5 to assign additional MIDI controllers.



1 Click on the Key button toward the upper right. Parameters eligible for keyboard control are shaded in a tan/orange tint.

2 Click on the parameter you want to trigger, then type the letter you want to use for a trigger. This letter appears in a box in the parameter's upper right.

3 To assign MIDI controllers, click on the MIDI button toward the upper right. MIDI-controllable parameters are shaded in blue.

4 Click on a fader or other parameter to be controlled via MIDI. Brackets appear on the selected parameter's corners.

5 Move the controller you want to use (typically MIDI notes for triggers, and MIDI knobs or faders for variable parameter control). The MIDI In indicator should light to show MIDI reception.


6 A label appears that shows the channel and controller number (or note) being received. Here it's channel 1, controller 14.

7 When you've finished the assignments, exit Key or MIDI mode by clicking again on whichever button is lit.

tips

- To delete an assignment, while in Key or MIDI mode click on the parameter and hit the Delete key
- Only letter keys are valid for key assignments (no punctuation, numbers, etc.)
- If you assign an on/off controller (e.g., key or MIDI note) to a control such as pan or level, hitting the key will toggle between the minimum and maximum values
- Click on the MIDI or Key button at any time to check your assignments.

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Cakewalk Project5

Add auxiliary bus effects

Objective: Save CPU power by feeding tracks through aux effects instead of insert effects

Background: Project5 lets you insert effects on individual tracks. But to have several tracks go through the same effect (e.g., reverb), it's more efficient to create an Aux bus effect, then send some signal from each track into this bus.

Step by Step: Alternate between steps 6 and 7 to achieve the correct effect balance. The Aux Return affects the level of *all* signals going through the bus, whereas the Send affects only its associated track.



- 1 Click on the Mains button to display the Main and Aux Bus Syn.Ops controls.
- 2 The Mains' Syn.Ops appears. Click on an Aux bus (A1-A4) to select it. A4 is selected here.
- 3 To choose the desired Aux bus effect, click on the small triangle next to Audio FX, and navigate to the desired effect (in this case, the Lexicon Pantheon reverb).
- 4 In the Track view, click on the track whose signal you want to send to the Aux bus.
- 5 In the track's Mix section, enable the desired Aux send by clicking on the small dot to the lower left of the selected bus's Aux send level control (in this case, Aux 4).
- 6 Click on the Aux 4 send control, and drag to set the desired amount of send signal.
- 7 Turn up the Aux return control to adjust the Aux bus master mix.

tips

- In Step 2, double-click in the field to the right of the bus label (e.g., A4) to enter the effect's name.
- As you send more signals to the bus, distortion may occur. This usually can't be fixed by pulling back on the Aux Return; reduce each Aux Send.

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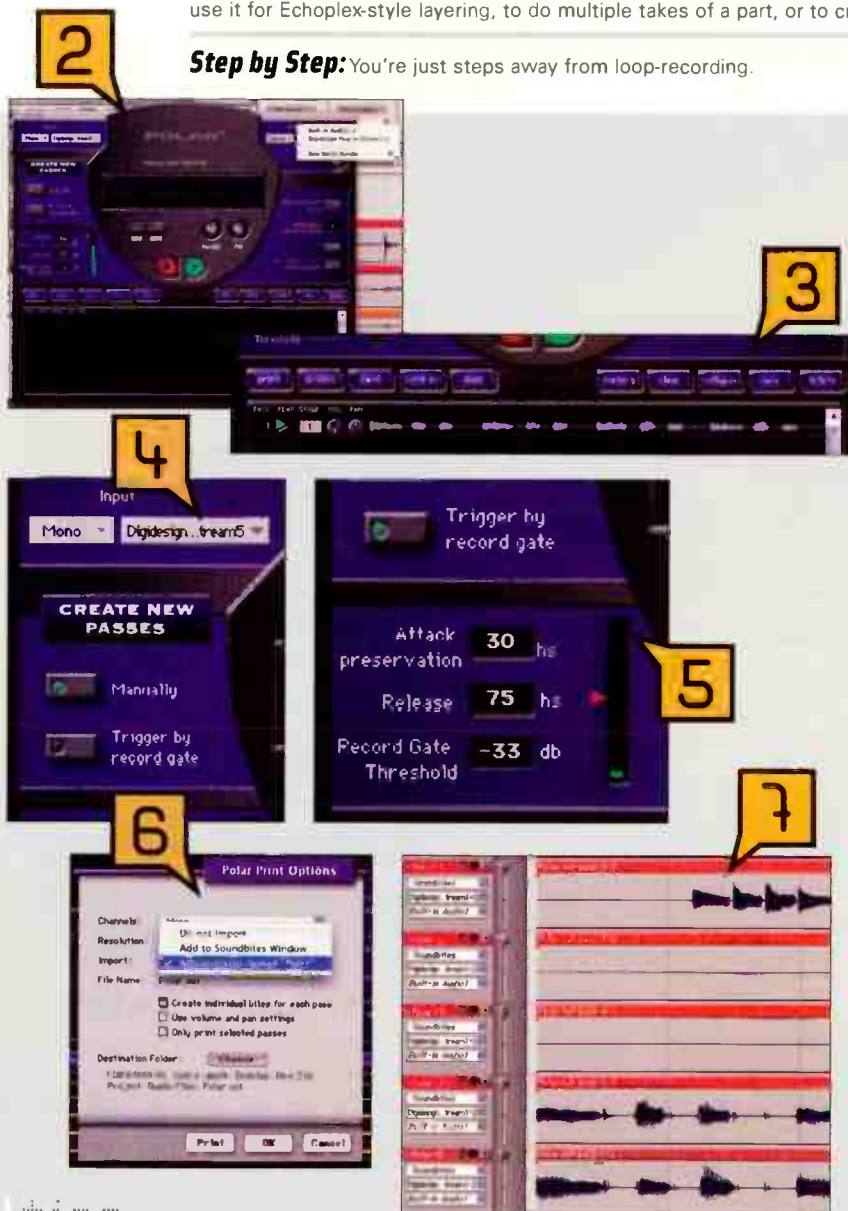
MOTU Digital Performer

Using POLAR to loop-record

Objective: Loop-record audio in MOTU Digital Performer

Background: POLAR is a unique Digital Performer "submodule" for loop-recording audio. You can use it for Echoplex-style layering, to do multiple takes of a part, or to create an entire arrangement.

Step by Step: You're just steps away from loop-recording.



1 Go *Studio > POLAR* (or type Shift-P) to open POLAR. Set up a region in the DP project you want to loop over.

2 In the upper part of POLAR, choose whether you want mono or stereo ins/outs, and set the I/O for each. Once you have the I/O set up, you'll see the level meter moving in the POLAR window.

3 Hit the red Record button in POLAR to begin recording. You'll hear any audio/MIDI tracks in DP playing in the background. The audio in POLAR is stored in RAM (not hard disk), and shows up in a "pass" in the bottom of the window.

4 With "Manually" selected under Create New Passes, POLAR will layer any subsequent audio — whether from another cycle through the loop, or if you stop POLAR and start recording again — into the same pass. In this way you can create layered Echoplex-style loops. Or hit the "New" button while POLAR is looping, and a new pass will be created.

5 With Create New Passes set to "Trigger by record gate," POLAR will create a new pass each time the audio falls below the level set by the input threshold.

6 Once you have the passes in POLAR, you can "print" them to hard disk files, to the SoundBites window, or to new tracks in your DP project. Choose where the passes will be printed by clicking the Options button, then selecting which destination you want from the Import menu.

7 Click Print to write the passes to the destination you've selected. Here I've printed my passes to new tracks in my project.

tips

- Each pass has its own mute, volume, and pan controls. There's also a master volume control for POLAR in the upper-right corner.
- If you have "Mute previous passes" selected, you won't hear the previous pass when you record a new one.
- A complete POLAR session can be saved to hard drive and recalled into any DP project.
- Multiple passes can be "Collapsed" (bounced) into a single pass.
- If you don't want to hear DP tracks while working in POLAR, turn off the "Link play button to main transport" button.
- You can punch in and out on a pass by clicking POLAR's record button.

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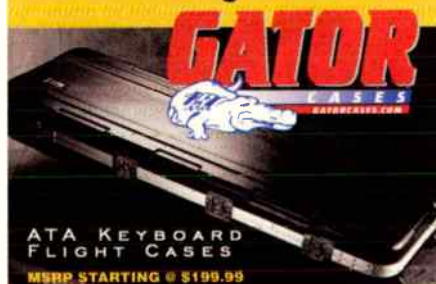
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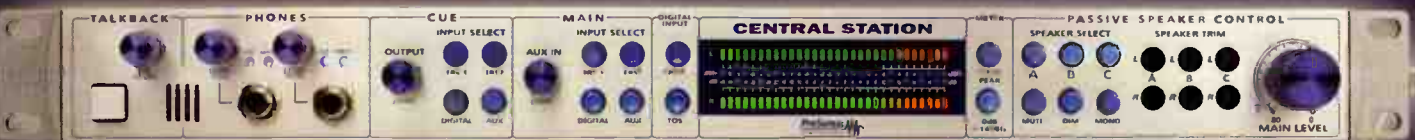
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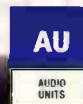
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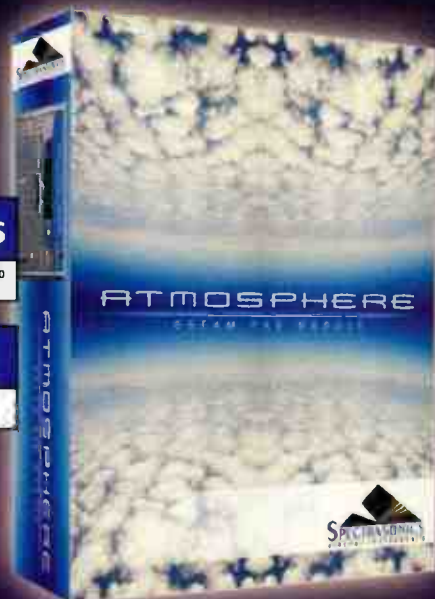


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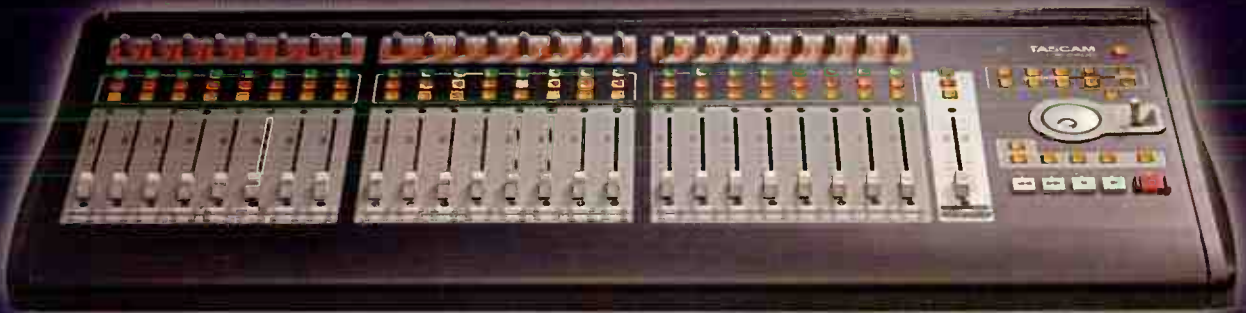
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Room with a VU

by Mitch Gallagher

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LOCATION: Mountain View, CA
CONTACT: www.studiohibiki.com
KEY CREW: Peter Thomas, studio manager/resident engineer
CONSOLE: Digidesign ProControl w/4 Fader Packs
RECORDERS: Studer A827, TASCAM DA-45HR, CD-RW402; Alesis ADAT XT
MONITORS: Genelec 1038, 1037 [4], 1030A, 7060a subwoofer; Mackie HR824, Yamaha NS10, custom-designed 15" subwoofers [4], BSS OmniDrive EQ, Oz Audio HM-6 headphone amp [4], Crown power amps
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SAMPLERS/KEYBOARDS/MIDI: Emagic Unitor8 mkII, Waldorf Rack Attack, MicroQ; AKAI MPC 4000, Roland XV5080, VP9000; Korg Triton ST88

COMPUTERS: Apple G4 dual 867Mhz [2], 15" Planar LCD [2], Digidesign Expansion Chassis [2], Glyph Trip-rack [2]

DAW: Digidesign Pro Tools HD, HD Process Cards [12], 192i/o [5], Sync I/O [2]

SOFTWARE: Digidesign Pro Tools TDM 6.4, Emagic Logic 6.3.3, Native Instruments Komplete, Propellerhead Software Reason

STUDIO NOTES: According to Peter Thomas, "Studio Hibiki is located in the heart of Silicon Valley, and serves the San Francisco Bay Area music community. We're the official home of the World Peace Music Awards — a global tribute to musicians who inspire peace through their music and personal convictions."

"The studio was designed by acoustical engineer Manny LaCarrubba and architect Bob Remiker. Studio A serves as the main tracking room with removable acoustic panels that allow many variations in the sound of the room. We can go from a tight sound to a huge hall sound by simply moving panels around. The control room has a collection of eight guitar heads all tied into a Radial Engineering JD-7 Injector allowing us to mix and match up to four cabs in the iso booths for truly unique guitar sounds. A guitar player's candy store!"

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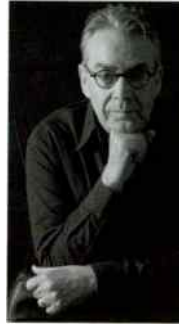


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