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and a Summer
NAMM Recap

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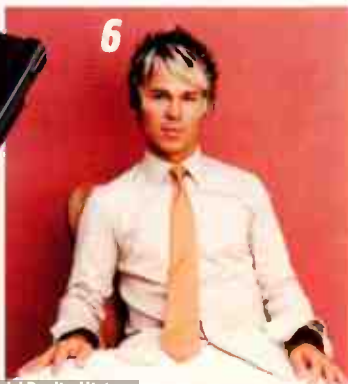
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VOX TALK

Is there an instrument more unpredictable and finicky than the human voice? From frail whispers and gravelly growls to full-lung blasts and knife-like squeals, the voice can throw curveballs and cause headaches like few other sources when it comes to recording and mixing. What variables are under our control in such an unpredictable environment, and how can we make the most of those parameters? What can we do as producers and engineers to positively influence the process from start to finish?

In our endless quest to record the ultimate vocal, we hunt and gather as many tips and tricks as we can to improve our game — and that's the subject of this month's cover story. Starting on page 20, you'll find a pack of articles related to vocal production, recording, editing, and mixing — from a point-by-point in-studio look at how some of the world's top producers and engineers got their award-winning hit vocal sounds to a series of lessons that deconstruct and explain the vocal chain.

And there's more. For those looking to get a completely different type of sound, one far removed from silky smoothness, we've compiled a list of extreme editing tips for mangling and twisting vocals. In our review section, Mitch Gallagher applies his expert ears to a crop of hot new vocal mics. We hope you enjoy this foray into the heart of the art, and can use this info to bring your own vocals up a notch.

In other news relating to this issue, the *EQ* crew recently returned from the annual summer NAMM conference and expo in Nashville, TN. At first glance, we were a bit surprised to see fewer exhibitors on the show floor, but lo and behold, when we tallied up the new product announcements at the end of the event, it was actually a strong season for product debuts. Take a virtual tour starting on page 12. And look for a continuation of announcements in next month's ToolBox column.

—Greg Rule

The BAND STAND

What vocal mic has logged the most hours in your studio?



Greg Rule,
Executive Editor

An AKG 414 has been "Swiss army mic" for years. It's transparent and flexible enough to give me clean, clear input across a wide range of singers. An AKG SolidTube gets called into service when a creamier source is desired. At the top of my wish list: a Neumann U87.



Mitch Gallagher,
Editor

I've been privileged to spend time with so many amazingly good microphones (four in this issue alone), but for vocals, my Soundelux U99 is my first-call mic. Voices tracked with it are round, full, and intelligible, with the presence to make them sit in the mix with no EQ.



Craig Anderton,
Editor at Large

I've tried a bunch o' mics, but have yet to find something that flatters my vocals like a Shure SM58. However, a Peavey T9000 gets the nod for voiceovers and narration. When I get some bucks, I'd love to pick up a Royer ribbon mic for recording guitar amps — it rocks.



John Krogh,
Technical Editor

I started recording on a modest budget, but I was able to pony up for an AT 4050 large-diaphragm mic. Since then I've tracked a bunch of standards such as an AKG 414 and even a U87, which I no longer own. What's next? I have to agree with Craig: a Royer.

Executive Editor: Greg Rule, gregrule@musicplayer.com

Editor: Mitch Gallagher, mgallagher@musicplayer.com

Managing Editor: Debbie Greenberg,
dgreenberg@musicplayer.com

Technical Editor: John Krogh, jkrogh@musicplayer.com

Editor at Large: Craig Anderton, canderton@musicplayer.com

Contributing Editors: Gerry Bassermann, Dan Brown, David Frangioni, Steve La Cerra, Jerry McPherson, Roger Nichols, Kevin Owens, Lisa Roy

Art Director: Doug Gordon, dgordon@musicplayer.com

Publisher: Valerie Pippin, vpippin@musicplayer.com

Associate Publisher/Northwest Advertising Sales:

Dan Hernandez, Tel: 650-513-4253, Fax: 650-513-4646,
dhernandez@musicplayer.com

Southeast Advertising Sales: Joe McDonough

Tel: 212-378-0492, Fax: 212-378-2158;

jmcdonough@musicplayer.com

Southwest Advertising Sales: Pete Sembler

Tel: 650-513-4544, Fax: 650-513-4646;

psembler@musicplayer.com

Northeast/Europe Advertising Sales: Gary Ciocci

Tel: 603-924-9141, Fax: 603-924-9209, gciocci@musicplayer.com

Sales Administration Manager: Lauren Gerber

Tel: 650-513-4528, Fax: 650-513-4646;

lgerber@musicplayer.com

Manager of Specialty Sales: Joanne Martin

Tel: 650-513-4376, Fax: 650-513-4646; jmartin@musicplayer.com

Sales/Marketing Administration Assistant: Laney Erokan

Tel: 650-513-4397, Fax: 650-513-4646; lerokan@musicplayer.com

THE MUSIC PLAYER GROUP

Vice President: Louise Rogers

Group Publisher: Valerie Pippin

Editorial Director: Michael Molenda

Financial Analyst: Cheri McElroy

Production Manager: Amy Santana

Marketing Director: Carrie Anderson

Circulation Manager: Heather Harmon

Newsstand Sales and Marketing Manager: Pam Santoro

Assistant Circulation Manager: Rosario Perez

Assistant Circulation Manager: Maribel Aleman

Imaging Technicians: Martin Ruiz, Joe Gung

Reprint Coordinator: Karen Jones

Administration Support: Sandra Pollard

WWW.EQMAG.COM

Web team: Matt Dula, Joe Gero, Coral Xu, I-Hsun Huang, David Pak, Greg Rule

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Please direct all editorial and advertising inquiries to:

eq@musicplayer.com

Please direct all subscription orders, inquiries, and


address changes to: Michele Fonville, 212-378-0449,

F: 212-378-2160, mfonville@uemedia.com

Websites: www.eqmag.com & www.keyboardmag.com

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Three-time Grammy®-winning mixer and producer **Frank Filipetti** (at right) has distinguished himself by being an early proponent of digital recording and surround sound. He has over a dozen 5.1/DVD projects (for clients like Billy Joel and James Taylor) on his resumé, which also includes work for KISS, Luciano Pavarotti, Barbra Streisand, Korn, Elton John, Carly Simon, and Rod Stewart.

Musician and producer **Michael Beinhorn**, who got his start as keyboardist for the legendary group Material, has gone on to Grammy-winning success with clients such as Korn, Marilyn Manson, Fuel, Soundgarden, Hole, Red Hot Chili Peppers, Aerosmith, and Ozzy Osbourne.

Whether working solo or as a team (as they've done for Fuel and Korn), these two industry powerhouses have created quite a musical chronicle with the help of 40 Series microphones from Audio-Technica. Take it from Frank: "The A-T 40 Series microphones have become indispensable, especially the **AT4047**. Recording drums, bass, guitars or a swinging horn section, it handles high SPL while retaining the subtle details. I don't leave home without it!" Adds Michael, "A-T mics have become mainstays for me. They offer exceptional clarity and detail, which are crucial to my recordings."

Take a tip from these music industry pros and try 40 Series mics on your next session. Who knows? You might just be making musical history – like they have.

Special thanks to Standard Electrical Recorders, Venice, CA



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World Radio History

News

Industry Milestones

Last month we reported the 35th anniversary of The Village studios in L.A. Other music industry institutions are celebrating this year as well. Such as:

- Euphonix, 15
- Korg, 40
- Lexicon, 30
- MicroTech/Gefell, 75
- Musician's Friend, 20
- Neumann, 75
- Sennheiser Electronic Corp (SEC), 40
- TEAC/TASCAM, 50
- Yamaha, 15/30

[15 years of digital mixers, 30 years of pro audio consoles]

News

EQ/Madonna/Pat Benatar Collaboration

In other music auction news, *EQ* was proud to contribute two items to a recent fund-raiser for the Belmont School District in Northern California. Thanks to our good friend and top tour programmer Mike McKnight, we were able to obtain autographed prints from Madonna and Pat Benatar, signed: "Thanks for supporting music education in schools." The photos, along with other items on auction, helped raise over \$20,000 for the California schools' decimated arts budgets. Thanks to Mike, Pat, Madonna, and the kind folks at Maverick Records for making this possible.



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:

■ www.kvr-vst.com

Speak VST? AU? DXi? Then don't miss K-v-R — a leading community and news site for open-standard audio plug-ins. Their mission is to "supply up-to-date news to the VSTi, DXi, and AU community in a friendly and upfront manner. By 'open standard' we're referring to the fact that the Software Development Kit (SDK) required to create them must be freely obtainable and available to all, allowing anyone to make a compatible host or plug-in. Currently only Steinberg's VST, Cakewalk/Microsoft's Direct X, and Apple/Emagic's AU fall into this category." Since its launch in 2000, K-v-R has evolved into a thriving community with user reviews, tutorials, a friendly forum, and monthly song contests in the Music Cafe. What K-v-R *isn't* is "a place for obtaining/discussing warez, cracks, porn, flames, elitiness, egos, one-upmanship, format wars, platform wars, etc. K-v-R isn't a free-for-all democracy where you can say what you like about who you like; respect one another and they will respect you."



■ www.audiounits.com

While quite not the MegaMart that K-v-R is, this site is still an excellent resource for AU users. AudioUnits.com is "an open guide to applications, utilities, instruments, effects, and devices compatible with Audio Units, the native Mac OS X standard format for DSP plug-ins. You'll also find important resources for developers, and interesting stories for AU users."



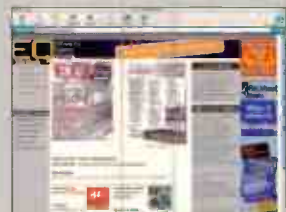
■ www.berkleemusic.com

Want to attend Berklee School of Music, but don't live in Boston or have time for on-campus school life? The new online extension program is the next best thing to being there. More than just world-class musical study, the school offers a variety of audio, production, and music industry how-to courses as well. *EQ* took a test ride of their Pro Tools course last year, and was impressed at how quick and easy it was into a groove with the system. While it lacks the funky charm of sitting in an actual classroom (you can't throw paper airplanes at your classmates), it is an impressive interactive experience, thanks to the regular chats and file exchanges with the instructor and fellow students. Best of all, the schedule allows for flexibility on your part, as long as you hit your deadlines and log in for the chats. At the end of each 3-12 week course, students are awarded a custom Berklee certificate.



■ www.eqmag.com

Hey, we're back! Each month we'll post select articles from the current issue of *EQ*, plus companion audio files, additional text and photos, and a variety of other goodies, links, and resources — including a portal into our *MusicPlayer* forums, which are alive and buzzing 24/7. Hope you'll visit often.



The New P-Series Power Amplifiers From Yamaha LONG ON POWER, SHORT ON DOLLARS



There's no question that the cost of power has dropped significantly in recent years. Unfortunately, quality and reliability have often suffered as a result. The trick is to not sacrifice features and performance simply for a lower price. That's where the new Yamaha P-Series amplifiers come in . . .

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tip

SPACE: THE FINAL FRONTIER

If your desktop is cluttered with a QWERTY keyboard, control surface, dual monitors, and the like, you may be able to gain back some space with an under-desk keyboard drawer. You can find these at most office supply stores; they mount under a desk or table, and have sufficient room for a typical QWERTY keyboard. But that's not the only use. The Belkin F8B080, for example, easily holds an M-Audio Oxygen-8 (you'll need to use a right-angle MIDI connector if you don't use USB, though). At \$20, the Belkin is also one of the least expensive under-desk drawers.

The desk shouldn't have any kind of lip protruding downward, or the keyboard might not be able to clear it. And be very careful when you attach the drawer to the desk's underside; make sure the front of the drawer is parallel to the edge of the table, not at an angle. This not only affects playability, but also may make it harder to slide the drawer in and out. Incidentally, these drawers can withstand reasonably heavy pounding, but the key word here is "reasonable."

With something like an Oxygen-8, it's probably best to mount the drawer just off to the side of where you sit. When fully extended, you may even be able to turn the keyboard at an angle so it's facing you a bit more head-on. And guitar players, take note: An underdesk drawer can also be a good place for stashing a few effects.

News

Page, Shirley, and Kosmos

After mixer/engineer/producer Kevin Shirley wrapped work on the Jimmy Page and Black Crowes *Live at the Greek* album, it didn't take long for lightning to strike twice. Shirley explains: "Jimmy went to a club in Spain where they put on one of his songs. He didn't know what it was straight off the bat. It sounded like Zeppelin — only *better*. And then he realized it was from the Page and Crowes album. I think that's when it struck home for him." That listening experience prompted Page to enlist Shirley as mix engineer for the new 3-CD live *How the West Was Won* and *Led Zeppelin DVD*. One of Shirley's secret weapons for guitar processing on the projects was Peavey's Kosmos — and later a Kosmos Pro.

For more on the Led Zep DVD, see this month's CD spotlight. And for more on Kosmos, visit www.peavey.com.



DVD of the Month

Led Zeppelin

Led Zeppelin DVD, Atlantic Records



In this corner, weighing 80 tons and dressed in nothing other than musician-ship, the heavyweight champions of '70s rock and roll: Led Zeppelin. And in this corner, weighing it

at multiple GHz: the most sophisticated audio restoration, editing, and video tools of the 21st century.

And the winner is . . . you. This marriage of classic rock (sans computers, SMPTE, or video-friendly girl dancers in lingerie) with superb technical restoration returns you to the days when the music was more important than the spectacle.

Led Zeppelin DVD isn't just a technical triumph, but a fitting coda to a career that exemplified musical integrity. People often forget that Zep debuted to nearly universal critical scorn — but they stayed true to their vision, and enjoyed the last laugh. Legendary excesses aside, Zep was a class act, and this DVD is a class package. But it's also a timely reminder about all that's really needed to create compelling, timeless music: musicians. (www.ledzeppelin.com)

tip

IMPROVE DAW PERFORMANCE

If you record to the same hard drive that houses your OS, it's possible you're jeopardizing DAW performance — track count could be lower, as could the number of plug-ins available to you.

Digidesign, for one, comes right out and says it in their owner's manuals: "Record to system drives only when absolutely necessary." Partitioning won't help, because the read mechanism still has to skip around from sector to sector on the hard drive.

Recording/playing back from a defragmented second drive means the read mechanism need concern itself with nothing other than data. Another reason for keeping data separate is for ease of backup, and, if you need to reformat your drive or reinstall your system, the data is sitting safely somewhere else.



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POSTCARDS FROM SUMMER NAMM 2003

New Gear in Nashville



This year's summer gear expo in picker's paradise had a few less exhibitors than before, but, not to fret, we found plenty of notable new gear to get amped about. Many manufacturers showcased smaller and more affordable products, while a handful chose to launch major production tools at this show. If one theme surfaced this year, it's that digital tape is officially on life support. Alesis has discontinued the LX-20, and while there are a couple of DAT machines still in production, digital tape is certainly reaching the end of the line.

So what new and exciting gear topped our highlight reel this year? Here it is, listed in alphabetical order by manufacturer. (And don't miss additional NAMM coverage in our sister mags *Keyboard*, *Guitar Player*, *Bass Player*, and *Pro Sound News*.)

AKG

Wireless or wired, you choose. These new interchangeable mics from AKG — the **D880 (\$147; \$159 with on/off switch)** and **C900 (\$250)** Emotion series — feature a removable XLR output that, when used in conjunction with the optional TM40 UHF plug-in, allows users to go wireless without altering the sound or feel of the microphone. Slick.

www.akg.com



Alesis

The **MultiMix 16FXD (\$499)** is a 16-channel, 4-buss analog mixer with built-in effects and S/PDIF output. Compact, flexible, and affordable, the 16FXD features eight mic/line ins and four stereo line ins. The mic pre's include switchable 75 Hz highpass filters, phantom power, and up to 50 dB of gain. Each channel includes a 60mm fader, 3-band EQ, and two aux sends — one switchable to pre- or post-fader. The master section features stereo LED bargraph meters, independent main mix and alt 3/4 60 mm faders, 2-track send and return, and a separate Control Room level control. The digital effects section offers 100 28-bit effects, eliminating the need to patch in external effects, and enabling quicker setup and greater portability. . . . The shiny new **PowerTrip8 (\$199)** is a 3-way power conditioner, light module, and voltage meter

in one rack space. . . . The **ProActive 2.0** powered monitors (**\$249 ea.**), feature a 6" woofer and a 3/4" tweeter, powered by a built-in 2-way, 65 watt power amp with an active crossover. . . . Building on the technology of the ProLinear 720DSP, Alesis introduced the larger **ProLinear 820DSP** digital studio monitors (**\$549**). The bi-amped 820DSP employs a digital crossover and digital parametric EQ — adjustable via a built-in LCD display and editing controls, or from a computer via included software. Store settings for different listening environments or monitor placements, as well as emulations of alternative monitor types. Also available are two non-DSP models, the **ProLinear 820 (\$499)** and **720 (\$349)** monitors. These offer the same drivers and amplifiers as their DSP relatives without the added cost of digital components.

www.alesis.com



Aphex

Aphex debuted the **Punch Factory (\$199)**, a pedal that functions both as an optical compressor and a D.I. box. Punch Factory's front panel includes Drive and Volume knobs, and an LED bar graph meter, calibrated in dB, that shows the gain-changing action of the compressor.

www.aphex.com

Audio Technica

AT rolled out a new line of pro monitor headphones at NAMM. Following in the tradition of the ATH-M30 and ATH-M40, the new **ATH-M20** headphones (**\$69**) utilize a closed-back design, feature a rich bass response with an extended high end, and are available at an affordable price point.

www.audiotechnica.com



Audix

Audix is calling its two newest microphones, the **M1245 (\$379)** and **M1290 (\$429)** Micros, "the smallest condenser mics in the world, with an integrated preamp and detachable cable." The M1245 is approximately 2" long and weighs .6 oz while the M1290 is 3-1/2" in length and weighs in at a whopping 1 oz. The M1245





has a uniform response over a frequency range of 80 Hz–20 kHz, while the M1290 has additional wide response of 40 Hz–20 kHz. www.audixusa.com



Auralex

The new **Aural-Xpander kit (\$39.95)** consists of high-density acoustic foam components cut in distinct shapes to give recording engineers a high degree of control over off-axis colorations, structure borne resonance, and external noise bleed. Use the triangular baffles on horn mics, for example, or for cutting out leakage between hi-hat and snare. . . . Auralex also debuted the **HoverDeck (\$399–\$899)**, a portable drum isolation riser for recording studios, working drummers, practice rooms, live sound production, and more. www.auralex.com

Behringer

Behringer's new **B-5** professional condenser mic (**\$99.99**) is designed for recording acoustic instruments, cymbals, drum overheads, and vocals. It features two interchangeable capsules for selecting pickup patterns (cardioid and omnidirectional), a low-mass gold sputtered diaphragm, and a low-noise, transformerless F.E.T. input. . . . Behringer also rolled out the **Powerplay Pro-XL HA4700 (\$129.99)** and **Powerplay Pro-8 HA800 (\$TBA)** headphone amps. The

NAMM Notes . . .

Roland announced they've made a minority investment in Cakewalk. Cakewalk products will be exclusively distributed by Roland and its subsidiary, Edirol, in selected countries outside North America. Roland has been the sole distributor of Cakewalk products in Japan since 1995. Since then, Roland and Cakewalk have worked together to co-develop and expand the growing market of desktop music. While the alliance will significantly alter Cakewalk's distribution outside of North America, the United States and Canada will maintain their own existing sales networks and will not be affected by the announcement.

For the "now shipping" file: Freehand Systems' sleek MusicPad Pro digital sheet music system is on the market. The company also announced that they've acquired Sunhawk Digital Music, who owns the world's largest collection of sheet music titles. "The acquisition places Freehand as the world leader in digital sheet music technology and largest distributor of digital song titles," they said in a press release (www.freehandsystems.com). KRK announced they're delivering their ST series active nearfields (www.krk.com). M-Audio is shipping their stylish lollipop-shaped Luna condenser mic, pictured (www.m-audio.com). Presonus is delivering their sleek new MaxRack mini modules (www.presonus.com). Steinberg held a star-studded event at SoundStage Studio to celebrate the shipping of Nuendo 2.0. TC Electronic's PowerCore Firewire made its US debut in Nashville (www.tcelectronic.com). Sennheiser made waves in the live sound arena with their new InnovaSON console (www.sennheiser.com).

Last but not least, in "less is more" news, Behringer announced that the price of their 32-channel digital mixer, the DDX3216, has been reduced to a jaw-dropping \$995. TASCAM dropped the price of their mondo SX-1 recording system to \$5,999.



HA4700 houses four independent amp sections for up to four stereo mixes. Its big brother, the HA800, features eight independent amp sections with two stereo main inputs, eight independent direct inputs, paralleled main outputs, and a shielded power transformer. . . . The **Ultramizer Pro DSP1424P (\$129.99)**

is a 2-band digital loudness maximizer and sound program enhancer. It features 24-bit processing with 46 kHz sampling, 24-bit A/D and D/A converters, variable split-band compression, a de-noiser, a 3-D stereo surround processor, and more. . . .

Ultrapatch PX1000 (\$39.99) is a 48-point, 19" rackmount, balanced patchbay for stage and studio use. It's housed a rugged steel chassis and sports fully balanced 1/4" TRS connectors. . . . Also new is the **Ultra-DI Pro DI800 (\$129.99)**, a multi-purpose 8-channel D.I. box for stage and studio use. www.behringer.com

Boss

With eight primary recording tracks, 64 virtual tracks, COSM effects, and USB, the **BR-864 (\$595)** is a feature-packed, portable 8-track recording solution for guitarists and

songwriters. The BR-864 records to a 128MB Compact Flash card (included) for over an hour of recording, and its onboard effects include separate Loop and Insert processors with amp modeling, a bass simulator, wah effects, a guitar synth, and scale-intelligent pitch shifting. www.bossum.com



Cakewalk

Cakewalk's new **Home Studio 2004 (\$129)** and **Home Studio 2004 XL (\$219)** adds a host of new features, including support for 24/96 recording, ReWire 2.0, ASIO, DXi 2.0, plus a graphical drum editor, hundreds of megs of loops, and CD burning and ripping capabilities. . . . In Cakewalk software upgrade news, the company announced Project5 1.0.1 (available as free



download to registered Project5 customers) and Cakewalk VST Adapter 4.3.1.
www.cakewalk.com



Crown

Four new models make up Crown's XS Series power amplifiers: the 2-channel **Xs500** (\$989), **Xs700** (\$1,299), and **Xs900** (\$1,459) and the 4-channel **Xs4300** (\$1,619). The Xs4300 can be run as four independent channels, or can be bridged.
www.crownaudio.com



dbx

Kill feedback dead in its tracks with the new 1U **AFS 224** module (\$299.95) from dbx. Features include 24 filters per channel with widths as narrow as 1/80 octave, selectable modes, live filter lift, and easy-to-grab front-panel controls.
www.dbxpro.com

Edirol

The compact, battery-powered, 10-channel (5 stereo) **M-10E** mixer (\$155) is powered by a standard 9-volt battery (or included AC adapter). It features 10 analog inputs, four stereo outputs, and overload indicators. . . . Designed for laptop musicians, the 16-bit/48 kHz capable **UA-1X** USB Interface (\$95) features RCA I/O, as well as a combo port that has both headphone out (with volume control), and a S/PDIF optical out. . . . Also new in the USB department is the **UA-3FX** (\$215), which includes onboard DSP effects, up to 24-bit/48 kHz audio quality, and low-latency direct monitoring support. The 3FX also features RCA and S/PDIF connectors, and separate guitar and mic inputs. . . . Edirol also released a pair of USB MIDI interfaces: the **UM-1X** (\$50) and **UM-1SX** (\$45). . . . Also introduced was the USB powered **PCR-A30** MIDI keyboard (\$395) with 24/96 audio interface. The A30 has the same guts as the

Edirol's PCR-30 but has additional audio features such as two 1/4" inputs, stereo RCA output, 1/4" outputs, ASIO and WDM support, optical S/PDIF out, and direct monitoring.
www.edirol.com



Fishman

Fishman stirred interest with their new **Aura** controller (\$429.95). Developed by a joint team of Fishman and Akai engineers exclusively for acoustic musicians, the system captures and reproduces the characteristics of various guitars, microphones, mic positions, and more.
www.fishman.com

Korg

Korg's booth was buzzing with news of their new **D16XD** (\$2,599) and **D32XD** (\$3,750) Xtended Definition series digital recorders. Both models feature uncompressed 24/96

The Odd and the Beautiful

They're strange, but as cool as a San Francisco summer. Two unusual new products caught our eyes and ears in Nashville:

■ **Moog PianoBar.** The audio wizards at Moog chose Summer NAMM as the coming out party for the PianoBar (\$1,199), a 3-piece system designed to turn any acoustic piano into a MIDI controller. The system is made up of the Scanner Bar (a slim device that sits over the keys immediately in front of the fallboard and uses a patented infrared sensor to register the keys' motion without touching or affecting their feel), the Pedal Sensor (which sits on the floor and registers pedal motion), and the Control Module, a small box that ties the Scanner Bar and Pedal Sensor to a MIDI I/O. The PianoBar ships with a library of more than 200 instruments and effects and lets you import your own sounds, too.
www.moogmusic.com



■ **Yamaha SubKick.** What's that little tom doing in front of the kick drum? For those of you who tuned into our Punch-In section last month, you saw the raw version of this idea in Chris Vrenna's studio (page 10, Aug.). Now Yamaha has an honest-to-goodness cone mic in the SubKick (\$499). This handsome sub-frequency capture device is designed for use with kick drums and floor toms as an alternative or supplement to a traditional mic. The SubKick features a 10" woofer (frequency response 20 Hz – 8 kHz), which is shock mounted inside a 7-ply maple shell and covered with 10" black mesh heads. The shell focuses sound waves in a strong, directional pattern through the speaker. Standard loudspeakers have been used as microphone diaphragms before, but never in combination with the characteristics of a drum shell and mesh heads, which is what makes Subkick a first of its kind. The demo blew hair back and dropped jaws.
www.yamaha.com



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TASCAM

We gave you a sneak preview of this robust controller in our June issue, and now the **FW-1884 (\$1,599)** is ready for primetime. Co-designed by TASCAM and Frontier Design Group, the FW-1884 is a FireWire-based DAW control surface and audio/MIDI interface. New at NAMM was the companion **FE-8** fader expander option (**STBA**), which adds an additional eight control channels and faders per unit. www.tascam.com

Trident Audio

Trident Audio's new **LS101** nearfield monitors (**\$799 per pair**) feature two 5" low-to-mid drivers, a 1" dome tweeter, a frequency range of 30 Hz to 22 kHz, and handling of 50 watts RMS at 4 ohms. Trident also introduced the **M101** large-diaphragm condenser mic (**\$495**) to the U.S. market. Designed to deliver warm, "vintage analog" tone, the M101 features three switchable patterns — figure 8, omnidirectional, and hyper cardioid — and comes with a shock-mounting holder and a flight case. www.tridentaudio.com



Ion Explained

Craig Anderton (right) treated NAMM showgoers to informative clinics on virtual analog synthesis. He's pictured here at the Alesis booth chatting with guitar guru Paul Reed Smith about the Ion synth.

Yamaha

Yamaha showed off three new Motif models at the show. The 61-key **Motif ES 6 (\$2,350)**, 76-key **Motif ES 7 (\$2,850)** and 88-key **Motif ES 8 (\$3,350)** each feature a new tone generator chip that includes 128 notes of polyphony, new filter algorithms and impressive DSP power (16 three-band EQ, eight insert effects, two system effects and two master effects in Song and Pattern mode), plus 175 MB of wave ROM. All models come with Yamaha's MegaVoice technology, Phrase Factory, and an advanced Integrated Sampling sequencer that allows you to add audio tracks to sequences. Improvements include larger knobs, sliders, transport controls, and a new ribbon controller. Other features include support for 512 MB of DIMM Sample RAM, USB storage hosting, and second-generation mLAN connectivity. . . . Yamaha's legendary SPX processor line expands with the new **SPX2000** multieffects processor (**\$1,249**). The unit inherits the user interface and common programs from its predecessors, while updating the sound quality to 24/96. It also features the advanced Rev-X reverb algorithm. Analog, digital, and MIDI I/O is provided, including AES/EBU, word clock in, and USB connectivity. . . . Yamaha also debuted the **UW10 (\$159)**, a Windows 98/ME/XP-compatible USB audio interface for entry-level home and mobile computer recording applications. www.yamaha.com



Yorkville

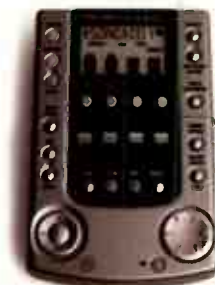
The new **YSS1** active subwoofer (**\$459**) gives Yorkville a complete surround solution. Features include 150 W integrated power, a 12" speaker, frequency response from

35–150 Hz, variable frequency crossover, phase reverse, and more. www.yorkville.com



Zoom

The **PFX-9003** palmtop effects processor (**STBA**) is a full-featured effects unit with an integrated drum machine. There are 61 effects types onboard, 10 of which can be used simultaneously. The unit incorporates Zoom's Variable Architecture Modeling System, which provides a variety of guitar and bass amp models. The 9003 also has a built-in mic with a dedicated preamp. . . . Another notable new pocket product from Zoom is the **PS-04** palmtop studio (**STBA**), which provides four audio tracks, a stereo drum track, a bass track, modeling, multi-effects, and a built-in microphone. Each of the four tracks provides 10 virtual takes, so you can record several performances, and use the best one. The PS-04 uses SmartMedia as a recording medium, and will operate for over five hours using four AA batteries. www.samsontech.com



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World Radio History

Recording the Ultimate Vocal

The human voice was arguably the first instrument, and to this day it remains the focus of many styles of music. But the technique and technology for capturing vocals has changed dramatically over the years, and what happens after they're captured — like correcting pitch deviations — has aroused a storm of controversy. In this special section, we'll talk about tools, techniques, and of course, emotions.

Reality check: We're not here just to capture a performance, but also to capture an emotion. The tools used to record vocals, like mics, have proliferated to the point where it's easy to experience option overload. If a singer loses that moment of inspiration because you wanted to try out mic #5 to see if it sounded better than mics 1-4, you'll realize that *any* mic would have been a better choice.

Recording vocals is easy. Recording great vocals is more difficult. But recording vocals that *move the listener* is the real goal. There's a great line in the movie *Spice World* where someone working with the Spice Girls says, "That was absolutely perfect . . . without being actually any good."

Are we recording perfect vocals, or vocals that are really good? Are we using pitch correction to fix a few choice glitches, or as a default on a track? Are composite vocals sucking the life out of a performance, or helping to augment the life that's already there?

Let's sort out the techniques and technologies that will help you record better vocals, and figure out how to tame technology so it *serves* us instead of taking over. It's all about the right performer, the right gear, the right techniques, the right attitude, and yes, the right magic. Ready to push the record button? Let's go. —Craig Anderton



4 Hit Producers 4 Hit Vocals



How they got that sound by Lisa Roy

You've heard these songs on radio and TV, but how did the producers and engineers get that ultra-pro vocal sound? We dispatched Lisa Roy, who met up with the producers and engineers to get the lowdown.

NORAH JONES

"Don't Know Why"

Producer: Arif Mardin

Co-Producer: Jay Newland

Engineer: Jay Newland

Arif Mardin walked away with several Grammys this year for his work with Norah Jones — one of which included Producer of the Year (non-classical). The legendary producer had this to say about his tone objectives for Norah's vocal on her multi-platinum recording: "We picked vintage microphones which would preserve the natural beauty of Norah's vocal sound. We did not go for microphones that add coloration."

Jay Newland co-produced along with Mardin, engineered, and mixed "Don't Know Why." He earned a Best Engineered Album (non-classical) Grammy for *Come Away With Me*, from which "Don't Know Why" was a single. "The objective for the vocal was to take what is clearly a beautiful voice and have it sound as natural as possible. At the same time it needed to seem very close to the listener, with all the subtleties intact."

Signal Path: Tracking

"The first time I heard Norah Jones sing at a rehearsal before our initial sessions, I knew she had a truly great voice," says Jay. "I only mention this because it's the crucial first link in the chain. The recording chain for 'Don't Know Why,' as well as

most of the rest of the record, was a Neumann M 49 microphone into a Manley tube mic pre. We tried other mics, a [Neumann] U 47 and a [AKG] C12vr, but the M 49 had the right amount of 'air' while maintaining a real fullness and warmth. The tube pre was also warm but a little less colored than, say, a vintage Neve pre, which I love in many cases. This went into one side of a Manley Vari-mu compressor with a fast attack and release setting. The threshold was high so it was barely hitting the compressor. The Vari-mu can also be very transparent, which is why I liked it for this application. This went to BASF (Emtec) 900 analog tape at 15 ips on a Studer A820 with Dolby SR. Although I like Pro Tools HD, we did not use Pro Tools on this session. No Auto-Tuning. The console is custom built by Al Fierstein, owner of Sorcerer Sound, and is called Acoustilog."

Signal Path: Mixdown

"In the mix stage, the voice went through a new Universal Audio LA-2A. Again the threshold was set so that compression was minimal."

JUSTIN TIMBERLAKE

"Cry Me a River"

Producer: Timbaland

Engineer: Jimmy Douglass

"Justin came to me with his microphone in his case, and didn't actually take it out because he decided to see what I could do first," says Jimmy of the first session. "He was very happy, so he didn't get into that. I guess he has his mic with him just in case he runs into trouble. He works with a lot of different



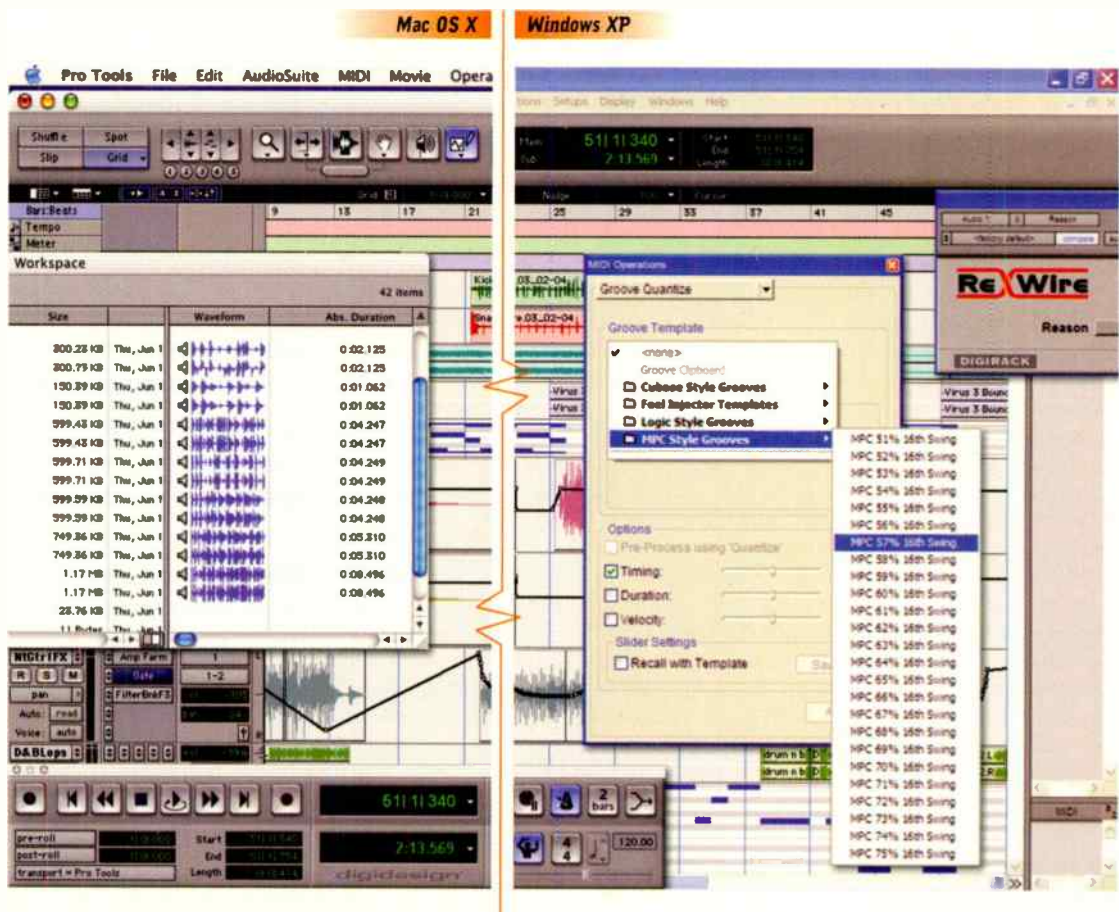
Norah, Arif, and their 2003 Grammy sweep.



Justin Timberlake and engineer Jimmy Douglass.

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* DV25 video playback via FireWire not supported with QuickTime on Windows XP; support for MIDI I/O and MIDI Time Stamping with external MIDI devices on Windows XP expected Q2 2004; support for Unity on Mac OS X expected Q3 2003

** Requires DigiTranslator 2.0 option



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engineers and everybody has their secrets about their great mics. The thing about the [Neumann] U 87 — I used it because it's really kind of a neutral mic. All the other microphones have characteristics to them that don't work on everybody's voice. The U 87 seems to work on everybody."

"I look for Jimmy to tweak my vocals and make them crisp," adds Timbaland. "That's what I look for — that tone. With Justin, his vocal tone just came. Justin does his own thing."

Signal Path: Tracking

Jimmy explains: "The U 87 went to the Neve VR channel strip in mic position — I used the preamp on the board, and then inserted the [Universal Audio] 1176 across that particular path and then I sent it out to all my individual buses. I tracked Justin's vocals to Pro Tools. That's it. I've found that this is the chain of least resistance; it doesn't effect the vocal as much, and you can always do more creative things later in the mix. It's the most natural signal path I can find. I use the 1176 because it's a very fast limiter and it works well as a limiting tool as well as compressor.

"The reason I don't do anything coming in on the EQ side," he continues, "is because you can always EQ it later, but you can't take away EQ you've messed with on the way in. That gets recorded and you can never take it away."

Missy Elliott received the exact same signal treatment for her Timbaland-produced hit "Get Ur Freak On"; as did Aaliyah on "Try Again," Jay-Z "Big Pimpin'"; Snoop Dogg "Last Meal," Lil' Kim "The Jump Off," and Bubba Sparxxx "Deliverance," among others.

Signal Path: Mixdown

"I basically added a Teletronics LA2A across the chain," says Jimmy, "and I used the EQ on the VR. I just added a little bit of top and took away a little bit of the low bottom. I put a little bit of high-end just for shimmer.

"The vocal to me is God. The vocal sells the record. I've always felt that way. That comes from working with a long line of great singers: Aretha Franklin, Roberta Flack, Donny Hathaway, and Lou Gramm [Foreigner]. I came from the school of having the vocalist be the most important part of the record. If you listen to the early records Lou did, the vocals are really out there, it's very clear, it's very transparent. I look for transparency in vocals. And I also try to keep them very dry."

KORN

"I Did My Time"

Producer: Jonathan Davis of Korn

Engineer: Frank Filipetti

"It's about clarity," says Korn frontman/producer Jonathan Davis, "especially with my stuff cause there's so much low-end and sh-t going on. A lot of mixes can come out not really that clear, and that's one of the reasons I love Frank, because he records great vocals. So any vocals that I do or produce, it has to be about clarity. I have a couple mics that I really like to use; the Sanken is one of my main ones. It's all about not f--kin' with it — just a little bit of compression, that's it."

Signal Path: Tracking

"I was out on the road at the time writing the lyrics," says Jonathan. "I sang a verse in New Orleans and shipped it off to Frank on Pro Tools, so actually we used two different mics when



Korn's Jonathan Davis and engineering great Frank Filipetti.

I recorded that. The first was a [Neumann] U 47 with my chain, my preamp [Tube-Tech MP 1A], and the stuff I did at the house [ElemenTree Studios] with Frank was a different process. We used the Sanken [CMU-44]. But with Frank, he totally knows. I listen to it and I really don't have to say anything, 'cause Frank knows me."

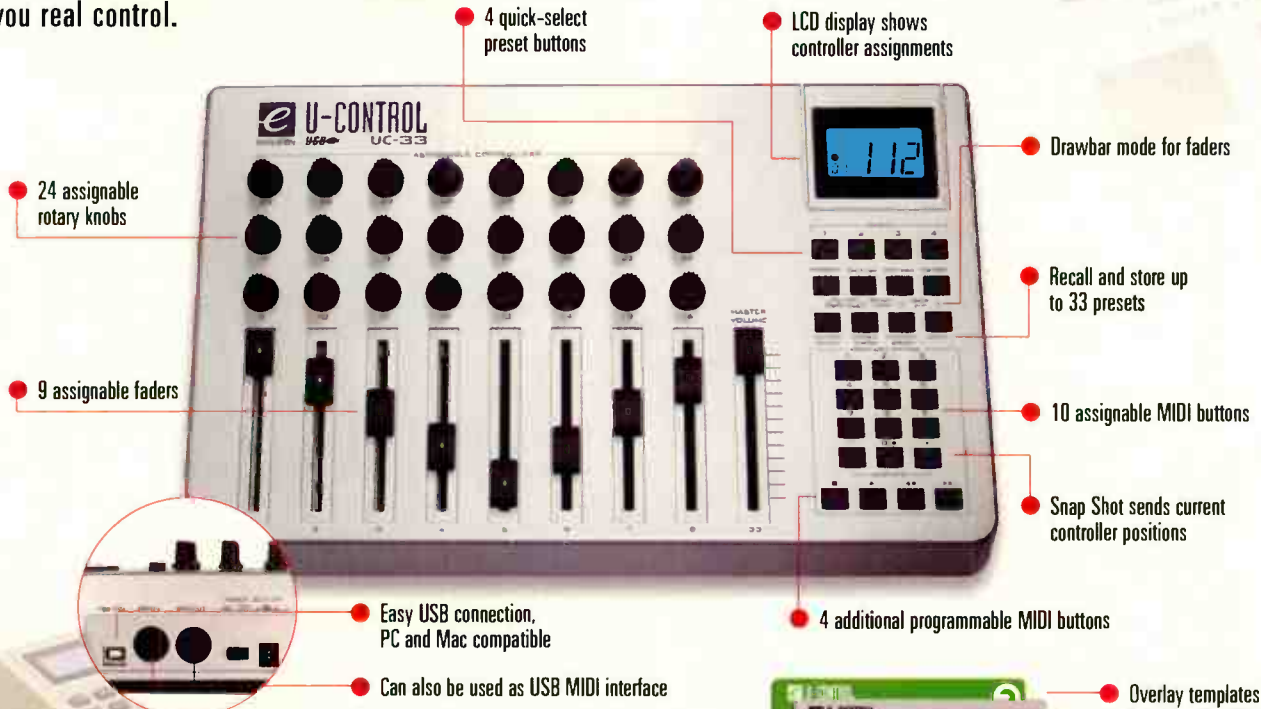
"The vocal signal path I used for Jonathan is a Sanken CMU-44, into a Tube-Tech MP-1A mic pre," adds Filipetti. "From there it went to a Neve 1073, then into the [Universal Audio] 1176, and from there to a GML EQ. Then I brought it into the tape monitor on the SSL 6000, then to the Euphonix R-1. We also used the dbx 160SL on the return on playback to vary the levels slightly, but we didn't record with it. That was part of the chain as well. It's about 85% of what we came up with on the last record with some slight modifications. It's a different console to begin with and a different microphone. The mic we used the last time was an M 49. We chose the Sanken because it just has the best overall combination of lows and highs.

"Jonathan has a very powerful voice," he continues, "especially when he starts to get into it. Some mics pick up the low level detail very well and some mics can hold themselves with screaming really well, but this seemed to have a good combination of both. We were able to get a nice quality between Jonathan singing softly and Jonathan screaming out full-bore. After comparing a lot of other mics, we ended up with the Sanken. In fact the top two mics were the Sanken and the [Audio-Technica] AT4060."

As for the other key components in the chain, Filipetti explains: "The Tube-Tech provides the presence. It has more presence than any other mic pre that I've used and it has an incredible midrange. The 1073 was there just to add a little bit of that Neve crunch — we ran it pretty hot. And I also used a tiny bit of the low frequency and the high frequency EQ. Then I went to the 1176; after trying out a bunch of compressors on Jonathan's voice, the 1176 worked out best. It just seemed to hit him properly. We used that real high-end stuff on the GML, which added that over-end air, which it does incredibly well, and then brought it into the console. On some tracks at the end of the chain we added a dbx 160SL. On a couple tracks that just added a punch that worked out really nicely." ►

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Vocal Philosophy

"My objective with Jonathan is what it is with everybody," says Filipetti. "Basically, the song lives and dies with the vocal. I tend to gravitate toward and work with singers who have real personality. I'm not looking for dancers who are singers. My approach is to make sure that all of that personality comes out; I don't want anything to get lost. I'm looking for all the little quirks and the harmonic things in their voice that make them special, and I look to bring that out. Sometimes it's a matter of just putting the proper mic in front of them. Sometimes it's a matter of adding more things in the chain, but basically, like I do with everyone, I always listen in the room to the singer and then try to capture as much of that as I can through the vocal chain."

50 CENT

"In Da Club"

Producer: Dr. Dre

Engineer: Vito (Mauricio Iragorri)

"With 50, he's an artist with such an amazing voice," says Vito. "You just put him behind a microphone and it just sounds good! My job is make sure it doesn't distort and it's not overloading. While he's vibing and doing his thing, I'm scrambling to make sure nothing is going wrong with the signal path."

"Recording vocals with Dre is a meticulous process," Vito reveals. "There are some exceptions, like 50 is an exception. There are some people that just do it, and there's not much punching involved. And there are other people who need a lot of punching, and that means maybe a couple words at a time until all the rhythm and the pockets are correct. Dre has an amazing sense of rhythm. He hears all these crazy rhythms in the vocal and, because he's a rapper as well, he knows how it should be performed. As a producer he's great, but as a rapper he knows what pocket they should be hitting and he can really coach someone well. Working with Dre on vocals is cool because you



Vito and Dr. Dre pictured in Record One Recording with the rack used on 50 Cent's vocals.

get to see how he directs someone and they actually sound the best they've ever sounded."

Signal Path: Tracking

"I like my vocals to sound 'crystal,'" says Dre. "I use the Sony C800-G for vocals because it has a clean sound and about 85% of the people that get behind it sound great. My main objective is that the vocal sound is present and clean and ultimately does not distort. I get the sound I want out of the EQ on the SSL. We've used it forever and have made many hits on it, including 50's 'In Da Club.'"

"We come from the Sony C800-G and out of that into the Neve 1073 mic pre," explains Vito. "We don't use the EQ, because most of the time it sounds good flat. If there's a need for it we'll engage it, but for 50 Cent on 'In Da Club' we didn't use any EQ. Then we took it out of the Neve mic pre into the Avalon 737-SP compressor. It's a mic pre with EQ, and it actually has a compressor, but we're not using any of the mic pre on the Avalon — we're just going straight into the line input. From the output of the Neve it goes into the line input of the Avalon, which allows you to use the compressor alone. We set the compression ratio around 7:1 and the threshold usually hovers at around 0. I set it at a medium attack and fast release. I'd say we're using around 3 or 4 dB of compression, sometimes up to 7 dB. On 'In Da Club' it was about 4 or 5. Then it comes back into the SSL 4000 G with E modules (at Encore Studio) and we bring it back on the insert."

"There's a patch on the patch bay that says 'insert return,'" he continues, "and that's where we bring the vocal back into the insert return, because it's the shortest patch before you actually hear the vocal. It has the least amount of circuitry of anything in the channel, so you're bypassing the EQ, the dynamics. You could use it all, but if you really want the shortest, cleanest signal, that's the way to go. Then we bus it out to Pro Tools HD and we use the small fader to send it to PT. That's about it."

Discovery

"The way we came to this chain is — a while ago, when I first started out, I was assisting for Dr. Dre," says Vito. "I noticed how their engineer was doing it and it sounded good. The records sounded amazing, so when Dre hired me to engineer, I told him, 'Ya gotta buy some of these,' and he bought some 1073s. I had heard for a long time that they were really good mic pre's to run vocals through. At Encore, where I was assisting, they had one there, and anytime we were doing a session we would always run vocals through it. So when I saw Dre doing it, it was just cool seeing a rap guy using a 1073! That's how we came up with it. As for the compressor, it's just a good tube-sounding compressor. Sometimes we use the dbx 160 — the original — as an alternate compressor; it sounds good and we've used that on a lot of records."

Signal Path: Mixdown

The Yamaha SPX-1000 played a prominent role in mixdown. "We used a REV-5 room setting," says Vito. "There are a couple patches in there that sound really good. They're old reverbs and they're not the best nor most expensive, but they sound good, they're reliable, and that's all that matters! For R&B the Lexicon reverbs sound great. They work good for R&B, but for rap the SPX works good. We've used Lexicon's before too and they work okay. It depends on the song and the artist and what you're looking for in the song. Like on Eve's stuff we used the SPX-1000, too." EQ

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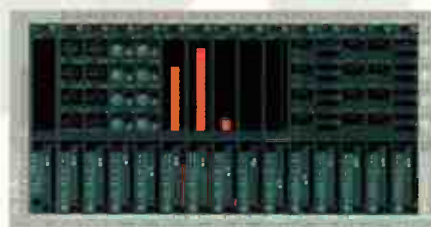
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Vocals at the Source

Choose the best tools for recording vocals **by Mitch Gallagher**

Capturing the best vocal tracks requires the right tools, along with the knowledge and technique to apply them well. However, while the tools for recording vocals are well established, the variety and assortment available can be overwhelming. You can choose among hundreds of microphones, an amazing array of microphone preamps and channel strips, plus a vast sea of compressors, limiters, gates, EQs, and vocal processors of every stripe. How can you possibly narrow down the choices to what you need? And when you've narrowed down your choices and purchased a few of the likely candidates, how do you know which of *those* to use on any given voice?

Your favorite recording guru will likely give you one of a few variations on the stock answers: "I use X, Y, and Z — they always give me the best sound." "It doesn't matter what you use, it's the voice and where you put the mic." "It's different for each voice, that's why I have 35 \$5,000 vintage microphones and 20 \$3,000 mic preamps to choose from." All valid responses, certainly, but none of them really lays it out when you're trying to decide how to record vocals yourself, using a limited selection of gear. Let's take a look at the components in a vocal recording chain, and how to use them.

THE VOCAL SIGNAL PATH

MICROPHONE — The microphone is the recording chain's first stage, and sets the "tone" of things to come. Choosing the best mic for a particular voice can be a challenge. Once you've learned your mics' "sound," you'll more easily match them with the characteristics of each voice — *e.g.*, put a darker-sounding mic with a bright, strident voice.

But even if you know your mics extremely well, selecting the right one may involve some trial and error. Consider the mic's dynamic response as well as its sound — in most cases you'll want equal dynamics from the singer and mic, but if your vocalist is overly dynamic, a mic with a smoother dynamic response can be a help.

Most engineers default to using large-diaphragm condensers for vocals, but don't let that stop you from trying whatever you can. If a small-diaphragm mic sounds best, go for it! Likewise, cardioid is the most commonly used polar pattern due to its good rejection of unwanted room noise and reflections, but that shouldn't stop you from trying mics with other patterns.

Cardioid mics typically feature strong proximity effect, which an experienced vocalist can put to good use. Careful though, inexperienced singers tend to "eat" the mic to get the fattest sound, resulting in unwanted distortion and severely reduced dynamics. One tool to help counter this is a . . .



POP FILTER — This helps protect the mic from moisture from the vocalist's mouth, and controls distortion from plosives — the bassy pops that result from sounds such as "p" and "b." But pop filters can serve another purpose: If you're working with an inexperienced singer, set one up at the distance you want them from the mic, and tell them to stick right on it as they sing. This will not only help control proximity effect, but also erratic dynamics and vocal level — the singer has something to focus on.

Note that pop filters and windscreens are different. A pop filter is generally fabric stretched over a frame that's positioned in front of the mic. (Higher-tech designs use screen grids and molded plastic louvers to redirect plosives away from the mic diaphragm.) A windscreen is hunk of fitted foam that slips over the mic and is designed for live use outdoors to curb wind noise, etc. Most windscreens audibly affect the mic's frequency response, so they're not used in studio situations.

I like the ISA 428 very much indeed. It looks good, sounds fantastic, is completely bombproof and is a joy to use. In terms of technical performance, the card at least equals – and in most cases outperforms – other comparable converters.

– Hugh RobJohns, *Sound on Sound*, May 2003

respect the past

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Vocals at the Source

SHOCKMOUNT — For a sensitive large-diaphragm mic, a shock-mount can be a useful accessory. This isolates the mic physically from its environment so that noise transmitted through the mic stand (thumps, foot tapping, rumble) won't be picked up by the mic. Most use some variation on elastic bands woven into a web that supports the mic without physically coupling it to the mic stand.

PREAMP — After the microphone, the mic preamp is probably the biggest contributor to the vocal sound, gear-wise. As with mics, there are literally hundreds of preamps available, from those built into low-end recorders to big-bucks boutique models.

Flavors run the gamut from solid-state to tube to units that can blend the two types of circuits together.

As a result you can access myriad preamp zones, with one that's hopefully appropriate for each situation. But you also have to sift through the available choices before settling on the best one. As with mics, this ultimately comes down to personal preference and knowledge of the sound of the preamps at your disposal. Is the preamp extremely present? Then it will help a mellow voice punch through a mix, but may make a harsh voice even harsher. It's also important to match the mic to the mic preamp — certain mics sound great through some preamps, not as well through others. You

can look at spec sheets all day, but the only way to really know how a mic will respond with a preamp is to try them out together.

Also consider the preamp's dynamic response. Some will be smoother, while others will faithfully track even the slightest level change and inflection in the vocal. Which type you want depends on the result you're after.

EQ — Engineers tend to fall into two camps: Those who will use EQ during tracking, and those who refuse to let an EQ touch their signal chains. Which type you are depends on a number of things, including your confidence in your ability to select EQ settings that will hold up all the way through the final mixdown, and your feelings on whether EQ should correct for frequency response characteristics, or if a different mic/preamp should be used for the track. For many, the second factor really comes down to how much gear is available. If you have one mic and one preamp, and they're both bright sounding, you have two options: reposition the mic to capture a different tonality, or use EQ to create the sound you want.

As with most questions related to gear selection and technique, there's no correct answer to whether you should EQ as you track or not. Most engineers ultimately admit that the ends justify the means — as long as the final tracks sound great, who cares how you got there? Personally, I try to use mic and preamp selection, as well as mic technique, to get as close to the sound I want as possible (hopefully all the way there). But if it's necessary to add a dB here and there during tracking to make things sound right, then so be it.

COMPRESSOR — In the ideal world, there would be no need for dynamics control. Our recording devices would have unlimited headroom, and vocalists and performers would have complete mastery over their dynamics and levels. But this is the real world, and dynamics control for vocals can be necessary. While 24-bit (and

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higher) recorders have reduced the need for heavy compression — at least during tracking — it can still be useful to clamp down a bit if the performer has too wide a dynamic range.

If you're recording once-in-a-lifetime tracks digitally, you might also want to consider either inserting a limiter in the signal path to help prevent digital overs and resulting nasty distortion, or to use an analog-to-digital converter with built-in limiting (although these built-in limiters may be very audible when they kick in on a loud passage). Still, that can beat a big burst of digital grunge in an otherwise pristine track. While it's best to set your levels conservatively if you're not going to get a second shot at a take, if you're going to use a limiter to prevent overs, use the best, most transparent one you can find.

NOISE GATE — With the advent of computer-based editing, noise gates have been relegated to the "rarely used" category for many recording situations — especially during tracking. Many engineers and producers fear that the gate might cut off desired audio, and the complete silence between words that can result from gating often sounds unnatural (for more on gating and alternatives to it, see Craig Anderton's article "Cleaning and Polishing Vocals"). With a digital editor it's easy to go back after the fact and cut out any loud noises or problems, while leaving in the various clicks, smacks, breaths, and other noises created by a vocalist while singing. This is especially important when you're going for up-close, intimate vocals.

PURITY ABOVE ALL


With the wide dynamic range and quality tools currently available, many engineers are going for the purest recording path they can: mic to mic preamp to recorder. This captures the vocal in its most pristine form, with minimal processing. Then during the editing and/or mixdown phase of production, you can tweak EQ, add compression, etc.

There are advantages to this approach. For example, you can more effectively shape the vocal tone and dynamics in the context of the other completed tracks. You also have the vocal recorded in a raw but pure form; this lets you easily make the moves that are required by the production, while being able to "undo" things if it starts to sound bad. If you track the vocal with compression and EQ, and later find the settings you used aren't appropriate in the context of the overall production, you may find that "undoing" the earlier processing — if indeed it's possible at all — is quite destructive to the vocal sound.

What processing you use will also depend on the style of music. For example, in many pop styles, the vocal will end up compressed. If that's the case,

you may have good luck lightly compressing the vocal during tracking, then going back and compressing a second time during mixdown.

My approach is to track with as minimal a gear setup as possible, and go back later and process. But if your situation, gear, and production require that you process as you track, no problem. Lots of classic tracks were recorded that way — and it certainly makes mixdown faster and more efficient. There is no right or wrong way to do things. Put in some hours experimenting, and you'll arrive at the right combination of gear, technique, and magic. Great vocal tracks await! **EQ**



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Cleaning and Polishing Vocals

Bring out the very best in your vocal tracks **by Craig Anderton**

Great vocal tracks don't happen by accident. Well, occasionally they do . . . but it's more likely that some engineer put significant effort into cleaning up a vocal to make it all it can be.

How much work are you willing to put into editing a vocal to perfection? The answer should be "Whatever it takes." What we're about to describe may seem a bit tedious, but the results are worth it.

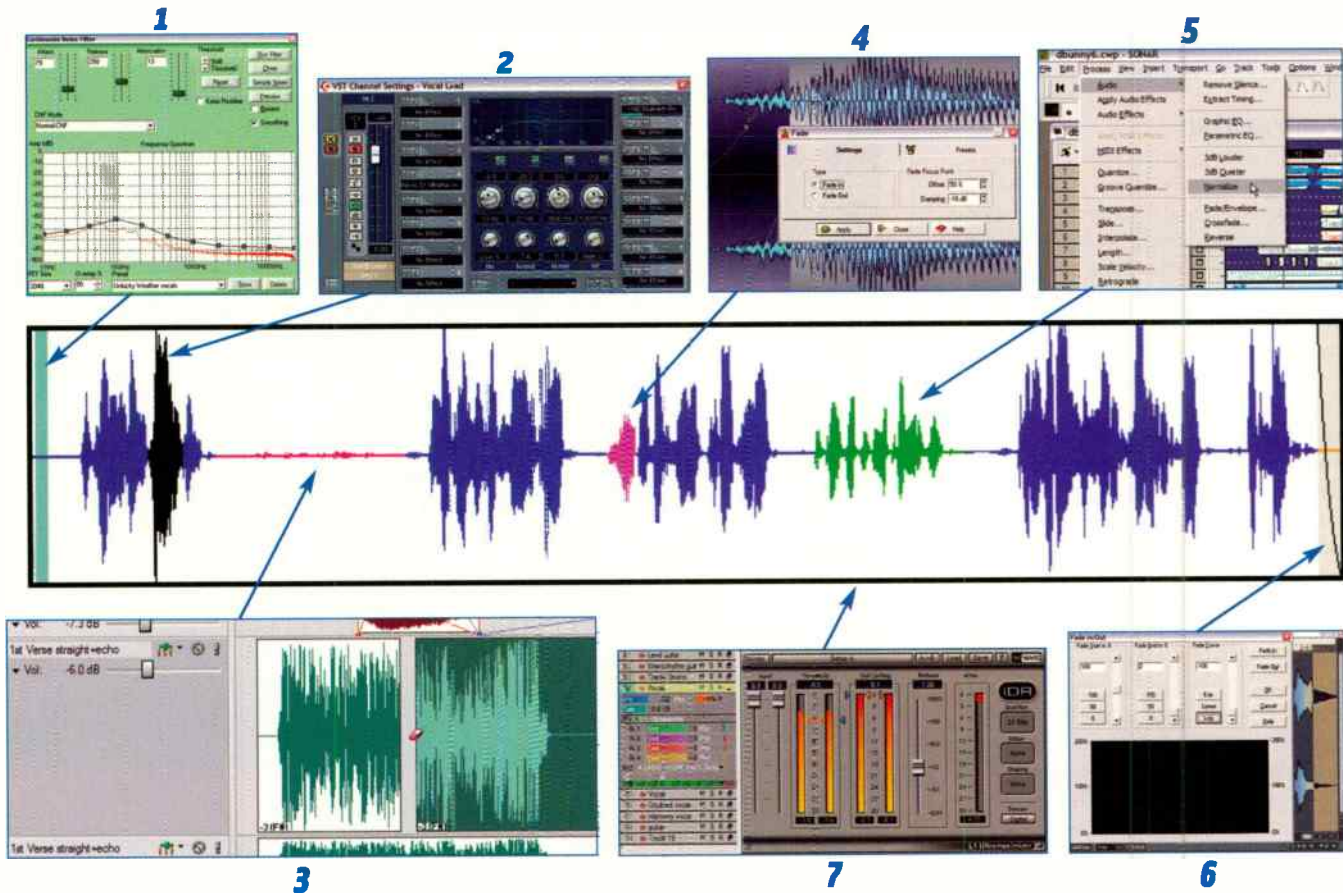
You may be able to do some, or all, of these operations with your DAW software's audio editing functions; but in some cases, you'll want to import the track into dedicated digital audio editing software, clean it up, then bounce it back into your DAW.

A TYPICAL VOCAL

The illustration shows a typical vocal track (from George Toledo III's "Fate of a Heart"), with the various sections identified that we're going to clean and polish. Each of the screenshots shows an element of the cleaning/polishing process, and is keyed by number to the sections below.

1 NOISE REDUCTION

The first step toward a clean vocal is to remove any mic or preamp hiss that's getting in the way. Think it doesn't matter, because it's -76 dB down? It *does* matter. Even a tiny bit of hiss or noise adds haziness to the overall sound. You might not



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Cleaning and Polishing Vocals

notice it, but you'll notice the improvement when it's *not* there.

Most noise reduction software (the screen shot shows Diamond Cut 5) requires that you take a small sample of the hiss by itself. It analyzes this, then subtracts this signal from the file. For best results, observe the following:

- Take the best possible sample. Make sure it's pure mic/preamp noise, and doesn't include mic handling sounds and the like. The sample can be very short.
- Don't add a huge degree of noise reduction. If you start removing sound from the vocal itself, you have a problem. Go for about 10 dB — more if you can get away with it, less if you can't.
- If you apply noise reduction to the entire track, listen to the *entire* track to make sure there aren't any unintended consequences.

2 SEEK AND DESTROY PLOSIVES

Maybe you used a pop filter, maybe you didn't. Maybe the singer was a little over-enthusiastic that night. In any event, there's a P-pop (called a "plosive") that's sitting in the track like a cockroach in a punch bowl.

Mostly, this is low-frequency energy. Select the popping sound (which can happen with "B" and other sounds as well as "P" sounds), and apply a sharp low-cut filter. Set the cutoff at around 100 Hz and see if that helps. If not, you may need to:

- Move the cutoff higher to remove more bass.
- Increase the slope to attenuate the bass further
- Place two filters in series to double the amount of attenuation
- Combine low shelf and parametric EQ to reduce low-frequency energy, as shown in the screenshot using Cubase SX's VST filter section.

Be careful when you select the region with the plosive; you don't want to affect anything other than that part of the sound. *Hint:* Zoom way in, and you'll see a low-frequency waveform superimposed on the vocal. It should be obvious because the wave will have a much longer wavelength. Select just this section.

3 DEALING WITH GARBAGE

By this we don't mean hiss, but mic handling noise, the sound of a sheet of paper being turned as the singer looks at the next page of lyrics, fabric rubbing against something while the singer waits to sing the next line, that sort of thing. There are four main ways to deal with this:

- **Noise gating.** Personally, I think this is the lazy way out — the transition from total silence to vocal is too jarring. But if the noise is fairly low level, and you set reasonable gate attack/decay times, be my guest.
- **Downward expansion.** This is a better option than gating, because the results can sound more natural if you choose a gentle roll-off slope below a certain threshold.
- **Silence.** This is an option in the Edit menu for most hard

disk recorders. You select a region to be silenced, and the program writes all zeroes in that space. However, some programs can accomplish the same thing using a different process — like Acid Pro's eraser tool, shown in the screen shot. Note that editing with silence can exhibit the same kind of excessive abruptness as using a noise gate.

■ **Fade out to silence, fade in from silence.** This is my preferred choice if I have the time: Silence the most objectionable section, but fade out into the silence over a few hundred milliseconds, and fade in back to the vocal over a similar period of time. This takes out the garbage, without causing an abrupt transition.

4 WAITING TO INHALE

Inhales are not a bad thing; they help humanize a vocal. There's a story of when Barbra Streisand was doing a session, and took a break. While she was gone, the engineer dutifully removed the breath inhale sounds to clean up the track. When Streisand came back, she didn't like the results, so the engineer put them back in again.

But sometimes, you're stuck with an inhale sound that is loud enough to be distracting, especially if you compressed the vocals. I have two favorite ways to deal with this:

- Select the region that contains the inhale, and reduce the level by an appropriate amount (e.g., -6 to -15 dB).
- Select the region, but add a fade-in over the inhale's duration. This can give a dramatic effect, because the inhale is still prominent, but it takes place over an apparently shorter period of time. The screen shot shows this being done with Wavelab.

I don't really recommend one option over the other; try each and see which sounds best (isn't undo great?).

5 SELECTIVE NORMALIZATION

Compressors usually sound better if they can work with a

These days
I'm using less
compression on
vocals because of
the (phrase)
normalization trick.
A small amount of
loudness maximizing
will give the vocal a
nice "lift" while
sounding more
dynamic than heavy
compression.

consistent signal. Some engineers just squash the track and hope for the best, but you can optimize your compressor's operation by examining the vocal track for phrases that are lower in level than other phrases (e.g., the singer was a little further away from the mic). Make their levels consistent with the other parts of the vocal. Of course, don't do this if the volume drop is for a good reason (e.g., it's an intimate vocal section where the other instruments quiet down).

I generally use a DAW's normalize function (the screenshot shows Sonar's) to normalize individual phrases up to a nominal 0 level. I don't do this for every phrase, just for the ones that need it. As a result, when the compressor reduces any peaks, it does so in a consistent way that avoids having some sections of the vocals sound more "squashed" than others.

6 DON'T FORGET TO FADE

A bit of a fade at the beginning and end of the vocal helps transition smoothly between no vocal and vocal sections. I generally prefer a logarithmic fade-out that drops off quickly, then fades slowly into nothingness (as shown in the screenshot of a log fade-out created in Sequoia's fade editor). For fade-ins, there are two main options:

- If you want to retain some of the breath noise leading up to a vocal, use an exponential fade-in (e.g., it rises rapidly to a high level, then "coasts" a bit more slowly to maximum level).
- If you need to have the voice "come out of nowhere," use a

logarithmic fade-in, which rises slowly at first, then rises very rapidly to the maximum level.

7 PROCESS THE CLEANED AND POLISHED VOCAL

Now that you have a clean, consistent, pop-free, artifact-free vocal with a consistent level, do processing such as EQ, compression, limiting, and the like on the complete track. As to EQ, I often add a very slight lift in the upper midrange (3 – 5 kHz) if the mic didn't already add one. I also add a slight low shelf boost if the singer needs a bit of "warmth," or a bit of a low shelf cut if the vocal is too bass-heavy, as sometimes happens due to the proximity effect.

Although I almost always tweak EQ and dynamics in context with other tracks, for vocals I make an exception and usually solo the vocal track while processing. This is because I feel the vocal is the key element, and therefore everything needs to accommodate it, not the other way around.

Also, these days I'm using less compression on vocals because of the normalization trick mentioned earlier. Some simple limiting, or a small amount of loudness maximizing like the Waves maximizer shown in the screen shot, will give the vocal a nice "lift" while sounding more dynamic than heavy compression.

Of course, all these comments are subjective . . . it's up to you to adapt the technology to fit a particular voice, because each voice is as individual as a fingerprint. But they can *all* benefit from some cleaning and polishing. EQ

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Lucky 13 Vocal Processing Tips



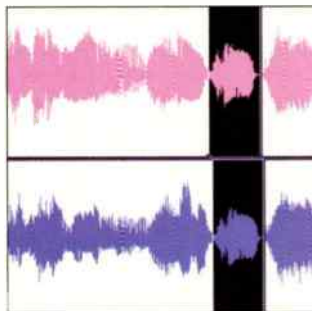
Find your own voice with vocals by Craig Anderton

Yeah, you already know about equalizing voice, and how to choose the right mic to flatter a singer. But you're an *EQ* reader . . . you want more, better, bigger, and further. This baker's dozen of tips will help take your vocals up one more notch.

1 THE COMPOSITE VOCAL FIX

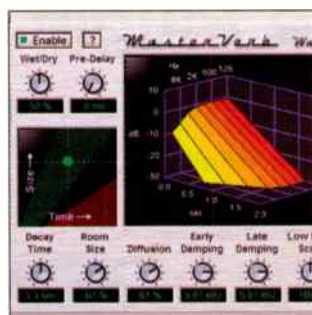
You want a doubled vocal part, and have loop-recorded a vocal on multiple tracks so you can pick and choose among the best bits to create two killer tracks.

Unfortunately, for one short phrase, only one track has the perfect take — maybe the others have flaws, or the singer "hit the jackpot" and couldn't duplicate it properly. Don't worry: Copy the perfect part into the other track, shift its pitch a tiny bit, then delay it by 20-35 ms.



2 OPTIMIZE REVERB DIFFUSION

Great vocals demand great reverb, so try low diffusion ("density") parameter values. Here's why: Diffusion controls the echo "thickness." High diffusion places echoes closer together, while low diffusion spreads them out. With percussive sounds, low diffusion creates lots of tightly spaced attacks, like marbles hitting steel. But with voice, which is more sustained, low diffusion gives plenty of reverb effect without overwhelming the vocal from excessive reflections.



3 OPTIMIZE REVERB DECAY

Many reverbs offer a frequency crossover point, with separate decay times for high and low frequencies. To prevent too much competition with midrange instruments, use less decay on the lower frequencies and increase decay on the highs. This adds "air" to the vocals, as well as emphasizes



some of the sibilants and "mouth noises" that humanize a vocal. Vary the crossover setting to determine what works best for a particular voice.

4 THE BEAUTY OF AUTOMATED PANNING

With doubled vocals, you probably know that panning both to center, or panning one more left and one more right, gives a very different overall effect. For example, if background vocals are part of the picture, I almost always put the two tracks in the center. If I want the voice to cede some of its prominence to the instruments, I'll spread the two tracks out a little bit to "unfocus" the vocal. Use automated panning to set the vocals as appropriate for particular parts of the song.



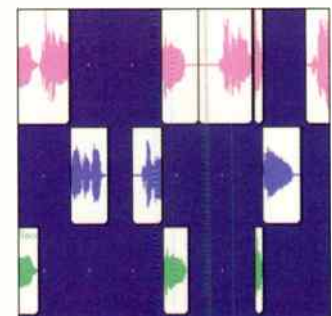
5 CREEPY VOCALS

Remember those creepy, whispery-type vocals that Pink Floyd used to do? Try this one on vocals that are more "spoken" than sung, e.g., rap. Plug in your vocoder (software or hardware), use voice as the modulator, and pink noise as the carrier. You may need to reduce the pink noise high frequencies somewhat. Mix it well behind the vocal — just enough to add a creepy, whispery element. Also try delaying it by some rhythmic value, and adjusting its level as appropriate.



6 SELECTIVE ECHOES

I very much like synchronized echo effects added to voice, but only for specific words and passages. You can do this with automated aux send controls; put a synchronized delay in an aux bus and turn up the fader when you want delay. This is best if you want to apply the same effect to multiple tracks. Or, cut the



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World Radio History

Lucky 13 Vocal Processing Tips

parts you want to echo, paste them in another track in the same position, and add synchronized delay to that track. This is preferred if you have a limited number of aux buses.

7 STEP UP TO THE PLATE

If your digital reverb has multiple algorithms, try using a plate-based preset for voice. In the old school days of recording, plate reverbs were often favored for vocals over chamber reverbs, which were used on instruments. "Real" plates have a tighter, somewhat brighter, less diffused sound that works well with vocals. Of course, there's no guarantee your reverb's plate algorithm actually sounds like a real plate, but give it a shot.



Weird-ass vocal formant shifting can turn choirboys into crusty blues singers.

8 SHIFTY PITCHES, PART 1

If your studio uses digital tape (e.g., ADAT), there's probably a variable speed control. Use this to thicken doubled vocals; when you record the doubled vocal, speed up or slow down the tape slightly so that this vocal has a slightly different timbre when you play it back at the normal pitch. One caution: If you speed up the tape for a lower-pitched sound, be extra careful about timing. Slowing the tape down magnifies any timing discrepancies.



9 SHIFTY PITCHES, PART DEUX

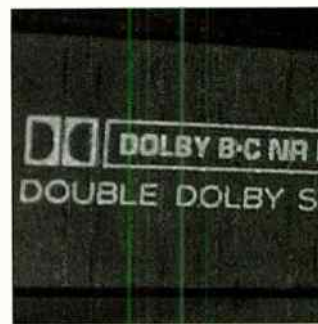
This trick is as old as the Harmonizer (trademark Eventide), when engineers discovered that shifting pitch downward 10 to 15 cents and mixing the harmonized signal behind the straight vocal added a useful thickening effect. You can do this with any digital pitch-shifting processor, hardware or software. If you're planning to triple the vocal, shift up the second pitch shifter by an amount equal to the downward shift. When tripling, you may want to increase the overall amount of shift.



10 GET DOLBY B OFF UNEMPLOYMENT

At one time, Dolby B units were used in studios to reduce noise

with analog tape. But they also were used on a lot of background vocals to give an airy, bright sound by encoding with Dolby while recording, but *not decoding* on playback. What Dolby did was compress above a certain frequency and add pre-emphasis, which is ideal for souping up a vocal's intelligibility. It's not all that easy to find old Dolby B units, but when you do, they're dirt-cheap.



11 SAY HELLO TO VOCAL PROCESSORS

Vocal processors, by companies such as TC-Helicon and DigiTech, provide a whole bunch of vocal effect functions, from harmonies to weird-ass vocal formant shifting that can turn choirboys into crusty blues singers, and vice-versa. The harmony functions are also useful, and few people are aware of what these things do with toms. If you record a lot of vocals, or do voice-over work, these powerhouse processors offer a really deep bag of tricks.



12 MAXIMIZE OR COMPRESS?

It's common knowledge that most pop vocals are compressed to some degree. Lately, though, I've been doing very light compression while recording (just enough to smooth out some of the more abrupt level variations), then using loudness maximizer-type processing (e.g., Waves L1) on mixdown. To my ears, this gives a more "raw" sound (as opposed to "smooth") than using compression alone. This seems particularly effective on rock vocals.



13 MODULATION ECHOES

Okay, we like echoes on voice. A somewhat rare feature in digital-land is the ability to modulate delay time slightly. This "feature" was an inherent part of tape echo, as the tape speed was never perfect. If your delay doesn't offer modulation, you can simulate the same effect by splitting off the delayed sound through a chorus or flanger set for a short delay, with a very slight amount of modulation (try a random modulat on source if possible). EQ



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"EDR" for Vocals

How to produce vocals for the best emotional response by Craig Anderton



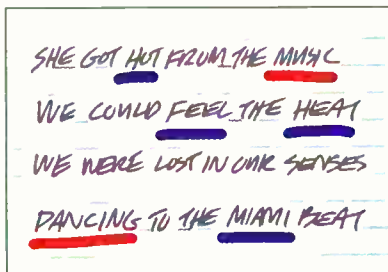
Vocals are the emotional focus of most popular music, yet many self-produced songs don't pay enough attention to the voice's crucial importance. Part of this is due to the difficulty in being objective enough to produce your own vocals; luckily, I've been fortunate to work with some great producers over the years, and have picked up some points to remember when producing myself. So, let's look at a way to step back and put more EDR (Emotional Dynamic Range) into your vocals.

WHAT IS EDR?

Dynamics isn't just about level variations, but also *emotional* variations. No matter how well you know the words to a song, begin by printing out or writing a copy of the lyrics. This will become a road map that guides your delivery through the piece.

Grab two different colored pens, and analyze the lyrics. Underline words or phrases that should be emphasized in one color (e.g., blue), and words that are crucial to the point of the song in the other color (e.g., red). For example, here are notes on the second verse for a song I recorded a couple years ago.

Reviewing a song and showing where to add emphasis can help guide a vocal performance.



In the first line, "hot" is an attention-getting word and rhymes with "got," so it receives emphasis. As the song concerns a relationship that revs up because of dancing and music, "music" is crucial to the point of the song and gets added emphasis.

In line 2, "feel" and "heat" get emphasis, especially because "heat" refers back to "hot," and is foreshadowing to "Miami" in the fourth line.

Line 3 doesn't get a huge emphasis, as it provides the "breather" before hitting the payoff line, which includes the title of the song ("The Miami Beat"). "Dancing" has major emphasis, "Miami beat" gets less because it re-appears several times in the tune . . . no point in wearing out its welcome.

By going through a song line by line, you'll have a better idea of where/how to make the song tell a story, create a flow from beginning to end, and emphasize the most important elements. Also, going over the lyrics with a fine-tooth comb is good quality control to make sure every word counts.

TYPES OF EMPHASIS

Emphasis is not just about singing louder. Other ways to emphasize a word or phrase are:

- **Bend pitch.** Words with bent pitch will stand out compared to notes sung "straight." For example, in line 4 above, "dancing" slides around the pitch to add more emphasis.
- **Staccato versus sustained.** Following a staccato series of notes with sustained sounds tends to raise the emotional level. Think of Sam and Dave's song "Soul Man": The verses are pretty percussive, but when they go into "I'm a soul man," they really draw out "soul man." The contrast with the more percussive singing in the verses is dramatic.
- **Throat versus lungs.** Pushing air from the throat sounds very different compared to drawing air from the lungs. The breathier throat sound is good for setting up a fuller, louder, lung-driven sound. Abba's "Dancing Queen" highlights some of these techniques: The section of the song starting with "Friday night and the lights are low" is breathier and more staccato (although the ends of lines tend to be more sustained). As the song moves toward the "Dancing Queen" and "You can dance" climax, the notes are more sustained and less breathy.
- **Timbre changes.** Changing your voice's timbre draws attention to it (David Bowie uses this technique a lot). Doubling can also make a vocal stronger, but I suggest placing the doubled vocal back in the mix compared to the main vocal — enough to support, not compete.
- **Vibrato.** Vibrato is often overused to add emphasis. You don't need to add much; think of Miles Davis, who almost never used vibrato, electing instead to use well-placed pitch-bending. (Okay, so he wasn't a singer . . . but he used his trumpet in a very vocal manner.) Generally, vibrato "fades out" just before the note ends, like pulling back the mod wheel on a synthesizer. This adds a sense of closure that completes a phrase.
- **"Better" is not always better.** Paradoxically, really good vocalists can find it difficult to hit a wide emotional dynamic range because they have the chops to sing at full steam all the time. This is particularly true with singers who come from a stage background, where they're used to singing for the back row. Lesser vocalists often make up for a lack of technical skill by craftier performances, and fully exploiting the tools they have. If you have a great voice, fine — but don't end up like the guitarist who can play a zillion notes a second, but ultimately has nothing to say. Pull back and let your performance "breathe."

As vocals are the primary human-to-human connection in most pieces of music, reflect on every word, because every word is important. If some words simply don't work, rewrite the song rather than relying on vocal technique or artifice to carry you through. EQ

Web link: Listen to an MP3 of "The Miami Beat" at www.eqmag.com.

THINK YOUR PASSIVE MONITORS STILL PERFORM TO SPEC?

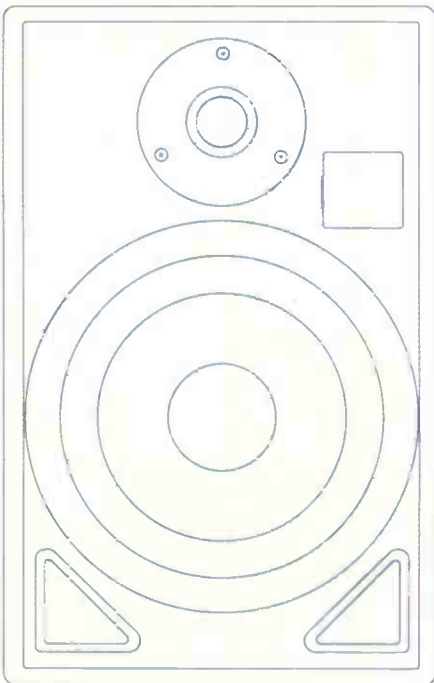


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Extreme Vocals

When Sandpaper is Better than Silk by Greg Rule

Smooth, lush vocals are a beautiful thing — but there are plenty of times when the song or circumstance calls for something completely different. Something that will lift your song to new heights. Perhaps a crude AM radio effect is the perfect touch for a verse vocal, or some ripsaw distortion in the breakdown. Or maybe you're stuck with bad source material, and you just have to find a way to make it work. Remixer's know this problem well — when a time-compressed or -expanded vocal just isn't cutting it at the new speed. Getting the singer to come in and track vocals to your new tempo isn't usually an option, so you either have to rethink the concept or take another approach: *accentuate* the bad quality by squashing, scratching, and warping the vocal even more.

That's what this mini-feature is all about — getting in the mindset of taking your vocals off the beaten path.

READY, SET, EDIT

It's easy to fall prey to the "set and forget" approach to vocal processing, where one delay and/or reverb patch coasts through the song from start to finish. Instead of using a static effect throughout, how about giving each section its own color? Try a lo-fi effect for the verse, for example, a swept filter and delay for the chorus, some vocoding on the bridge harmonies, and so on.

On one remix project, I took this idea a few steps further by applying a different effect to each sentence of the chorus. The catalyst was the lyric: "The heart of gravity." When I heard those words, I imagined a descending pitch-shift effect that implied heaviness or downward motion. To create this "gravity" effect I used GRM Tools' wild and funky Pitch Accum plug-in (www.grmtools.org). Get your mouse on those Periodic- and Random-Modulation parameter sliders, and let the bombs drop.

As expressive as my descending pitch effect was, I retained a small amount of the original dry vocal so the melodic reference wasn't obliterated. If you don't have GRM Tools, don't fret. Many pitch-shifting processors or plug-ins can be used to send your vocals plummeting.



Once I had the gravity effect sorted out, I started experimenting with the other vocal phrases in the chorus. In the end, a layer of grit was applied to the first line with Bomb Factory's SansAmp plug-in. A wah-wah effect was applied to the next phrase with



Bomb Factory's Moogerfooger filter plug-in. A touch of reverb and a tempo-synced delay were applied across the board for subtle blurring. The point of this isn't so much about which effect to use, but rather to get in the habit of using effects not just in broad strokes, but in small, specific places.

There's no limit to how far you can go with this concept. Take a tip from master editor BT, for example. His new single "Somnambulist" from *Emotional Technology* is a shining showcase of insane vocal slice and dice — sometimes hundreds of edits within single words.

GRANULAR EDITING

Speaking of BT, you probably heard his work on the N'Sync hit single "Pop." "I did 40 vocal treatments to that song," he told tech editor John Krogh. "I wrote 17 or 18 pages of SmallTalk code in [Symbolic Sound's] Kyma to treat the vocals. There's realtime granular synthesis, spectral morphing . . . I made the granular patch so you could lock it to tempo, but you can go into abstract note values. On one fader you have grain size, and on another fader you have the note values like 128th-notes, 256th-notes, and randomization of the cloud on another." ▶



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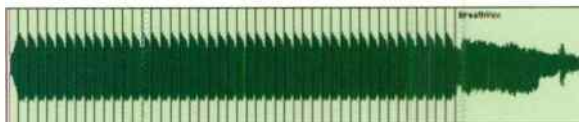
Extreme Vocals

Kyma isn't the only key to the granular editing kingdom. Cycling '74's affordable Pluggo 3 includes a suite of granular synthesis tools. Use plug-ins such as these to pulverize your vocals into particles of audio, and then manipulating the grains to create bizarre, complex effects. Reason 2's Malström synth is another popular and affordable granular tool.

TIME-SLICED BUZZSAW

On the topic of slice and dice, here's an effect that FatBoy Slim made famous on his hit "Rockafeller Skank," among others. It's sinfully easy to do. Let's look at the basics of how it's done, then we'll take it in a couple of different directions.

Set your DAW's grid to a minimum of 64th-notes, and copy a slice from the word you want to effect. Whether it's the first syllable or the last, the choice is yours. Now paste that syllable into a new empty track and copy it back to back across, say, one measure. Play it and you'll hear the Fat Boy effect. If you paste this machine-gun phrase inside the original word it was copied from, you've effectively lengthen the word, but in a robotic way.



Now start playing with the slices. Change their pitches, apply different EQ and filter settings to the pieces, try reversing some of the slices. Using a plug-in like Serato's Pitch N⁴Time (reviewed in this issue), you can use its graphical editing window to draw quick pitch curves, spikes, and sweeps across the entire region. Its Varispeed option is

“I did 40 vocal treatments to that song,” says BT. “There’s realtime granular synthesis and spectral morphing.”

also a fun way to make the vocal sound like it's speeding up or spooling down on an analog reel-to-reel deck. Digidesign's Vari-Fi is another plug-in that can create this effect.

SANDBOX VOX

A lo-fi, Victrola-like treatment can quickly turn a sweet vocal into a haunting, sinister sound. But, short of pressing your vocal track to vinyl and dragging the disc across a gravel pit, how to get that vintage, scratchy, compressed effect?

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TRIGIX

Start by zapping the low end from the track with an EQ or a high-pass filter, then peel a few layers off the top with the same. Then give the sound a good squash with a compressor. Think extreme. Now layer a vinyl noise sample with the processed track. An E-mu Planet Phatt module, for example, has an assortment of vinyl clicks and pops, as do many synths and sample CDs. Just make sure the vinyl sample isn't too short, or it'll be a dead giveaway.

Among the most authentic of all Victrola tools is an oldie-but-goodie plug-in: Opcode's Fusion Vinyl. If you can find one (and if your computer will run it) don't miss this one. This unassuming AudioSuite plug-in lets you add pops, clicks, and warp to your audio, compress it, and decrease the bandwidth dramatically. Your source vocal will be instantly transported back in time.



BROKEN VOCODER


Sometimes an accident can lead to beautiful results. Case and point, Chicane's hit song "Don't Give Up," featuring an unlikely collaboration with guest vocalist Bryan Adams. The dusty vocal treatment is stellar, and how it happened is an inspiring lesson in turning something bad into a supreme positive.

An early version of Prosoniq's Orange Vocoder was the tool used for the effect. "It's a f—king madman of a plug-in," Chicane reveals. "It has a complete mind of its own. Maybe it was because I was running everything VST off the processor, I'm not sure, but every once in a while it would go completely hay-wire, ballistic. It might decide to hold on a chord or go absolutely mad with distortion flying out of it.


"With Bryan's vocal being so distinctive," he continues, "we didn't want something where as soon as you heard it, it was like, 'Oh, that's Bryan Adams.' So there's an element of disguise in there. I played around with it in different ways. The sound in the choruses is different than the sound in the verses, but, truth be told, the number one reason for that is because the vocoder f—ked up. So what I had to do in the end was put it on DAT and wing it back into the computer. Then I mixed it with the normal [unprocessed] vocal. That worked out, because you get

the best of both worlds. I mean, you get a bit of the disguised sound, but you also need to understand what's being said, so mixing the two together accomplished that."

Moral of story, when things go awry, it might not be a bad idea to have background recording on, whether from a DAT as Chicane did, or a hard disk track. You never know when magic will strike.

Hopefully these tips will inspire you to get out the audio blowtorch from time to time and do some damage. We've only *scratched* the surface [heh-heh], so stay tuned for an ongoing stream of "lo-fi tips for a hi-tech world" in future issues. 

straight wire* with gain



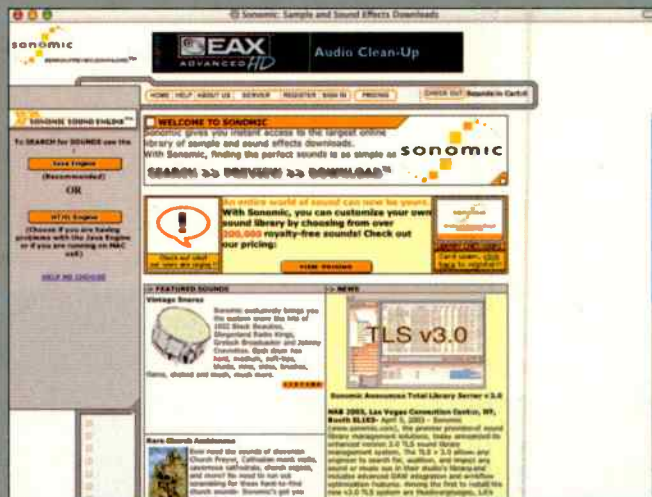
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PRODUCTION TOOLS ON TEST: Downloadable Soundware



Apple is turning the record industry on ear with its new pay-per-song download service. Is the soundware world ready for a similar revolution?

BY GREG RULE

It's midnight, and your client needs the mix by sunrise. Problem is, your track is begging for a floor-shaking explosion effect, and none of your synths or sample CDs has the sound you're looking for. What to do?

The solution is simple: Log onto a downloadable-sounds website, do a quick category search, preview the choices, pick a sound, pay for it, download it, and in a matter of seconds... kaboom! Thank you very much.

Time is money in the studio. When the clock is ticking, when the heat is on, and when you don't have time to waste, online services such as the two we're about to profile can be lifesavers.

We've selected Primesounds and Sonomic for this report because their business model was built first and foremost on the concept of downloadable sounds—straight from their websites to your hard disk. You can purchase just one or dozens of sounds at a time, and only pay for what you download.

It's worth noting that soundware giants such as East West, Big Fish, and Ilio are online, but their sites are primarily for marketing and delivering their CD libraries. At least, that's how it was until recently when—lo and behold—single-sound downloads started appearing on East

West's site (soundsonline.com). Other companies such as PowerFX, RiotAct, and Sonic Implants offer downloadable sounds as well. We'll be keeping our browsers tuned to see if others follow suit.

So are download sites such as Sonomic and Primesounds all they're cracked up to be? Is this a better way to get sounds than on traditional discs? We created a series of evaluation scenarios, dispatched a crew of editors, and put 'em to the test.

THE SEARCH

Without prior knowledge of what type of content would be stored on each site, we devised a list of 18 search items that covered a decent variety of musical food groups and instrument types. How did the sites fare? See chart on next page.

[Note: Our tests concluded in late July. It's possible that content has been expanded since.]

TEST NOTES

During the search for the above, we discovered much about each site, and stumbled upon loads of great loops, samples, and sound effects in the process. Here are some notes pro and con.

■ **Primesounds.com.** The site is stylish and easy to navigate. Within minutes of signing

up, I was auditioning and downloading. There are two layers of searching. The Quick Search window is a good place to start. By typing Drum Shuffle, for example, I was presented with a whole pack of grooves within seconds. However, when Timbale was typed into the same window, no match. I clicked over to the advanced search area,



and was impressed to see a multitude of options: Instrument Category, Genre, Type/Tempo, Note/Key/Chord, Source, Label, and File Type. I chose Latin Percussion and was presented with 20 pages of choices. Another search for Timbale, but to no avail. It turns out that Primesounds has plenty of conga loops, bongos, guiro, and such, but no solo timbale fills that we (or the search engine) could locate.

Mitch Gallagher had trouble automatically auditioning files when using his Mac.

SONOMIC PRIMESOUNDS

CATEGORY		
DRUMS/PERCUSSION		
Acoustic shuffle loop	Y	Y
Electronic loop	Y	Y
Gong hit	Y*	Y
Timbale fill	Y	N
SYNTH/KEYS/STRINGS		
303-style techno bass loop	Y	Y
Rock organ riff	Y	Y
Classical string phrase	Y	N
GUITARS/BASS		
Spanish/nylon-string phrase	Y	Y
Metal power-chord riff	Y	Y
Clean, funky wah phrase	Y	Y
Walking jazz bass	Y	Y
VOCALS		
Female pop "ooh/aah"	Y	N
Vocoded vocal	Y	Y
Gospel choir	Y	N
FX		
Explosion	Y	Y
Car drive-by	Y	Y
Whip crack	Y	Y
Creepy, ambient texture	Y	Y

**Sonomic has a Percussion category called Gong in their search menu, but there was no content to be found when clicking by category. Doing a keyword search for Gong, however, revealed 49 results. This has since been fixed.*

"There's no Help page that I could find. Eventually I came across a FAQ that explained how to designate iTunes as the default file player, but this didn't work, either. I was forced to manually drag the audition files into the iTunes window in order to hear them." Primesounds addressed this by saying: "We know that some Mac users have some problems with the preview function and we're working on explaining that better. We're using a 'streamed MP3' format for preview, so it's all about making the right settings in the browser. Our support team could have helped get the settings right within hours, but this info will be added to the Help section very soon."

The search for orchestral ensembles and phrases produced little. The selection seemed to slant toward pop and dance music production in many cases. Similarly, my search for gospel vocals came up short, although I was able to find Euro/techno vocals, whistles, hip-hop/rap, and a variety of international flavors, such

as Senegalese, Sudanese, Kurdish, Algerian, Russian, etc.

The way the site presents you with logical navigation choices based on what you're doing is excellent. Example: I was searching for drones and ambient sound effects, and, while scrolling through the options, came upon an impressive collection by Chill Thrill scattered among the list of choices. As I auditioned the sounds, I noticed a Chill Thrill button at the bottom of the page that, when clicked, displayed the entire Chill Thrill collection. Nice! From there I had the option of downloading multi-sample packets in one fell swoop. To give you a rough idea of download time: On a basic DSL connection, it took 20 minutes to download a 38.7 MB packet of material. "Downloads were speedy using a standard cable modem," adds Mitch Gallagher. "In mid-afternoon, it took nine minutes to download about 20 MB of data.

"I found Primesounds easy to navigate," Mitch continues. "The quick search made it simple to get an idea of what sounds

Continued on page 49 ▶

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THE PLAYERS

You've heard from us, now let's hear from the companies on test. Here's how they describe their service, selection, and subscription offers:

PRIMESOUNDS.COM

■ **The pitch:** "A huge, searchable library for professional producers, songwriters, remixers, and anyone else in need of unique, high-quality sounds and samples. You can choose between buying your samples by the megabyte or on a subscription basis. Besides downloading the sounds, all areas on the site are open to visitors. There are gigabytes of sounds to choose from. You download only the samples you like and need, when you need them and that's after you've auditioned them."

■ **The selection:** "60,000 loops, sounds, and multi-samples... new ones every day. Royalty-free content is supplied from BiggasGiggas, CrimeSounds, DBpm, DP Gravity, Falanx, Filibuster, HipHop HQ, Sounds & Cycles, Sounds Good, and Wizoo." Our site is updated several times a week, with new sounds being added all the time.

■ **The process:** "Opening a PrimeSounds account is easy. Once you're a registered member, you will be able to download within minutes. There are two options available, depending on your sampling wants and needs, Personal or

Professional. When you have an account, all of our samples and sound FX are royalty-free. So you are free to use a sound or sample as many times as you like, in any commercial or non-commercial project. All sounds on PrimeSounds.com are safe, knowing this, you can use them without worrying about sample clearance, or lawyers knocking down your door."

■ **The cost:** There are three main subscription categories — Samples, SFX, and Combo — with numerous sub-categories within each category (too lengthy a list to itemize here). Price ranges from \$17 for a 50 MB pass to \$1,250 for an exhaustive one-year "pro multi-user combo" pack. See site for details.

SONOMIC.COM

■ **The pitch:** "Sonomic gives you instant access to the sounds you need through a suite of tools designed to optimize production efficiency and creativity. Sonomic's industry-leading search technology allows you to locate, audition, and import samples and sound effects with speed and accuracy. Our online library is the largest and

most comprehensive database of professional samples, multi-samples, and sound effects. Sonomic also supplies you with a free personal SoundBay for life. Your SoundBay lets you store, organize and access all of your sounds from any Internet connected computer. All of the sounds you store in your SoundBay are secure and can be downloaded as many times as you like from wherever you're working.

"In addition to standalone access to the Online Library, Sonomic provides dedicated sound management systems. Sonomic's Total Library Server (TLS; www.sonomic.com/server) enables users to instantly find, audition, and import any sound in their in-house library or the Online Library directly to their audio/video software. We will soon be launching a standalone software app tentatively called SonomicSoft (Mac OS 9.x, OS X, Win 2000, Win XP). This software interface offers the same look feel as the TLS software, configured specifically for accessing the Online Library. SonomicSoft users will be able to search, preview, and view waveforms and import sounds directly to their AV software, as well as manage sounds in custom taglists, all without ever opening a Web browser."

■ **The selection:** "Over 230,000 pro samples and sound FX. The network includes Zero-G, Sound Ideas, Q Up

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Arts, Sampleheads, Universal Sound Bank, the BBC, Endlessflow, Electronisounds and Doug Beck Music, among others. All of our samples and FX are royalty-free, so you only pay once, no matter how many times you use the sounds in commercial projects."

■ **The process:** "Finding the perfect sound is as simple as Search > Preview > Download. Our search engine allows you to search by category or keyword. A few mouse clicks and you've created a custom list of the sounds you need. All of our sounds can be previewed before you buy them. Sound FX, samples, and multi-samples can be downloaded in all the standard file formats. Your sounds are automatically stored in your Soundbay, enabling you to store, organize, access and re-download them from anywhere."

■ **The cost:** "Choose between four options: Monthly subscription, Annual Unlimited Subscription, Pay Per Sound, or Library Card, which allows you to choose any 50 samples or 20 sound effects from the library. Prices range from \$1.99 per sample to \$1,499 for an annual unlimited subscription. See site for details (www.sonomic.com/pricing.jsp)."

were available. The Sample Search page, which allows you to specify more exactly what you're looking for was slower to use. I found that you have to start by searching on broad terms, and then do repeated searches on additional terms to narrow down on the exact thing you want. For example, when searching for a 303 synth bass loop, after first searching under the Synth Bass subcategory, I ended up having to back out to the broader Keyboard category then go to the Synthesizer sub-category to find 303 samples."

Our overall experience using Primesounds was positive. It's a good-looking, easy-to-navigate site. We'll look forward to seeing the content base grow, and for more Help data to be added.

■ **Sonomic.com.** First and foremost, this site is loaded with content, and offers several types of download/subscription options. Clearly it's the leader when it comes to choice. Where it lacks, though, is in its user interface; the Primesounds site is much more stylish and slick.

Accustomed to the dead-simple way Apple iTunes Music Store lets you double click to audition, I discovered that a Real Audio player was necessary with Sonomic. The site points to the Real Audio page, where you can download the free player, and get to the business of auditioning within

minutes. Auditioning files didn't always work smoothly, however. Real Audio froze from time to time, requiring a force quit in OS X and restart. "We also have Windows Media player as a preview option," says Sonomic, "which is much more stable on OS X. Our site right now is optimized for Windows and Mac OS 9.x. We'll be launching a fully compatible OSX version by AES."

Minor glitches aside, I eventually found my way onto some righteous content. The shuffle acoustic drum loops search, for example. . . . By clicking the Drums category and typing Shuffle into the search engine, 11 options appeared. Best of all, the loops were from [drum roll] Steve Gadd. Woo-hoo! I was equally enthused to find a batch of tortured

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vocal effects by legendary industrialists Skinny Puppy.

Like kids in a candy store, the *EQ* editors scoured the site for material. In doing so, another difference between Primesounds surfaced. With Sonomic, you can't grab packets of related material in one fell swoop. Everything is a single, separate item. If you want the entire Vinnie Zumo synth beats collection, for example, you have to select and download each sample individually. According to Sonomic, this will change soon. New software (now in beta) called SonomicSoft will enable you to download entire sets with a keyboard shortcut/click. Also, a Bundles section is set to debut that will give you the ability to download entire sets. Sonomic tells us this will include zipped/stuffed collections and sampler-specific formats.

Sonomic's Soundbay is an excellent feature, especially if you're concerned with storage space or worried about having backup material. Soundbay backs up your sounds on Sonomic's servers for download

whenever you'd like — remote access, 24/7, worldwide.

For sheer content, this is the site to aim for first. Ultimately, that's what matters most. We hope the UI will improve, though, making the experience of using Sonomic all the more elegant and inspiring.

THE FUTURE

Are downloadable sounds the wave of the future, or are they more hype than substance? Speaking from personal experience, I must admit to being a bit skeptical about download sites in the past — and was less than impressed by previous attempts to use them. But things have been changing quickly in this wired world. I was instantly hooked on Apple's new iTunes site when it debuted last May, and have since started to see how this model could work for the soundware world.

In the two months of access to these two sites, I can now say that I'm sold on the concept. Sure, I'll still want sounds on CD in some cases. Like purchasing pre-recorded

music on CDs, there's something special about owning a tangible product. And let's face it, there's no easier way to audition sounds than by shoving a disc in your CD tray, kicking back, and letting it play while you listen with notepad in hand.

That said, there's no denying the convenience and value of being able to audition sounds one by one online, and only paying for the sounds you want. And, hey, you've gotta love that 24/7 access.

In the case of these two sites, it's a win-win situation. Sonomic takes the award for sheer content; Primesounds wins for best UI and most inviting to use. But here's the real beauty . . . unlike having to choose which computer platform or DAW to buy, soundware is affordable enough to have your cake and eat it too. Bookmark both of these sites, become a "regular." And don't forget to keep your eyes peeled for new contenders along the way. *EQ*

Thanks to Sonomic and Primesounds for providing access to their sites during this review.

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World Radio History

by Greg Rule

Digidesign Digi 002 Rack

Popular tabletop tool turned rackmount

Type: FireWire audio & MIDI I/O

Price: \$1,295

Contact: Digidesign, 650-731-6300,
www.digidesign.com

Host connectivity: FireWire IEEE-1394

Audio resolution: 16-, 24-bit; 44.1, 48, 88.2, 96 kHz [Note: S/PDIF spec supports 96 kHz, but lightpipe spec maxes out at 48 kHz]

Dynamic range: 108 dB; > 98 dB (0.002%) THD+N

Analog I/O: 8 inputs (four 1/4" selectable +4 or -10 dB, four XLR/1/4" with mic preamps), 2 RCA inputs, two 1/4" main outs, two 1/4" monitor outs, 2 RCA outs

Digital I/O: 8-channel ADAT optical, 2 S/PDIF

MIDI I/O: 1 in, 2 outs

Included software: Pro Tools LE 6.0.2 and DigiRack plug-in suite. (6.1 should be available by the time you read this.)

System requirements: Digidesign-approved Windows XP- or Mac OS X-based system. Currently... **Mac:** 10.2.5 or higher (not compatible with OS 9). G4 and up, G4 laptops and up, and iMac and iBook (800 MHz and up). **PC:** Support for Windows XP with version 6.1. See Digidesign website for current release news and system requirements.

The Pro Tools family grows again with the arrival of the Digi 002 Rack — a 2U version of Digidesign's Digi 002 tabletop control surface/interface. The current Pro Tools lineup includes the USB-based Mbox, still the most affordable ticket into the Pro Tools club, the flagship HD series, and the Digi 002 and 002 Rack, which hold the middle of the line. We aimed our "sneak preview" spotlight at the Digi 002 Rack in July. Now, two months and many sessions later, we're ready to reveal the findings of our in-studio tests.

But first, let's hit a few of the highlights.

OVERVIEW

The Digi 002 Rack is Digidesign's first Pro Tools FireWire rackmount device, and represents a significant step up from its predecessor, the Digi 001. The Digi 001 has enjoyed a hugely successful run, but the Digi 002 Rack

(hereafter called the 002R) is a new-generation product with a lot more to offer — and for not much more money. For starters, it doubles the number of mic preamps from two to four, it expands the sample rate from 48 to 96 kHz, and it connects to the host computer via FireWire, unlike the Digi 001, which connects via PCI card. "The goal was to release a product that provided similar functionality to the Digi 001 but that utilized newer technology and expanded upon the 001 feature set," says a Digi spokesperson. "Another goal was to provide all the same recording abilities as the Digi 002 at a lower price and without the control surface."

For a rundown of the I/O lineup, see stats list (left). Let's talk about a few related "non-chart" topics, starting with the mic preamps and converters. For \$1,295, how much quality can you expect? Digi describes the preamps as

"high quality, solid-state with a low noise spec of -126 dB EIN, and up to -65 dB of gain. They're higher quality than the pre's in the Digi 001," they report, "and were purposely designed and built [by Digidesign] for the Digi 002 series." Our findings? See "In Session" section below.

The dedicated front-panel gain knobs for inputs 1-4 are a welcome feature, with companion line/mic selector and rolloff switches, plus phantom power. There's no level metering on the unit, though: no multi-segment I/O meters or even a signal-present LED. Unfortunate. You'll need to rely 100-percent on software for that. There are MIDI in/out activity LEDs however.

Other I/O items of note are the RCA "alt source" inputs and outputs for patching in CD players/recorders and the like, and a footswitch input for punch control. Need a storage or throughput path? An extra back-panel FireWire port



allows you to connect another FireWire-capable device such as an external hard drive to your computer while simultaneously running Pro Tools. Headphones plug directly into the 002R's front panel; a dedicated headphone volume control is provided. You also get a dedicated volume control for the monitor outputs.

Here's a major bonus of the 002R package: It comes bundled with the latest version of Pro Tools LE software (6.0.2 was supplied with our review unit) and a suite of Digidesign's DigiRack RTAS plug-ins at no extra cost. Pro Tools LE accommodates up to 32 simultaneous audio tracks and 256 MIDI tracks. The 002R has a low-latency monitoring mode like the 001 and 002, and PT LE's "64 sample buffer" setting provides the lowest recording latency yet in a Pro Tools native system. OS X is supported on the Mac side; Windows support is now happening with the 6.1 software release. For more on Pro Tools 6 software, see our review in the June 2003 issue.

IN SESSION

EQ was fortunate to get one of the first Digi 002Rs off the assembly line, and put it into steady studio use for two months before posting this report. A G4 Quicksilver tower with dual 1.2 MHz processors running OS X was used for the first month of testing — mainly for pop-type productions that involved stacks of keyboards, lots of software manipulation, and live percussion overdubs. In every case, all 32 of PT LE's tracks were packed to capacity. The system performed perfectly throughout, except for an occasional erroneous message when launching the program: "Pro Tools hardware is either not installed or used by another program." A click of the 002R's on/off switch put things back in order, so this is a minor point.

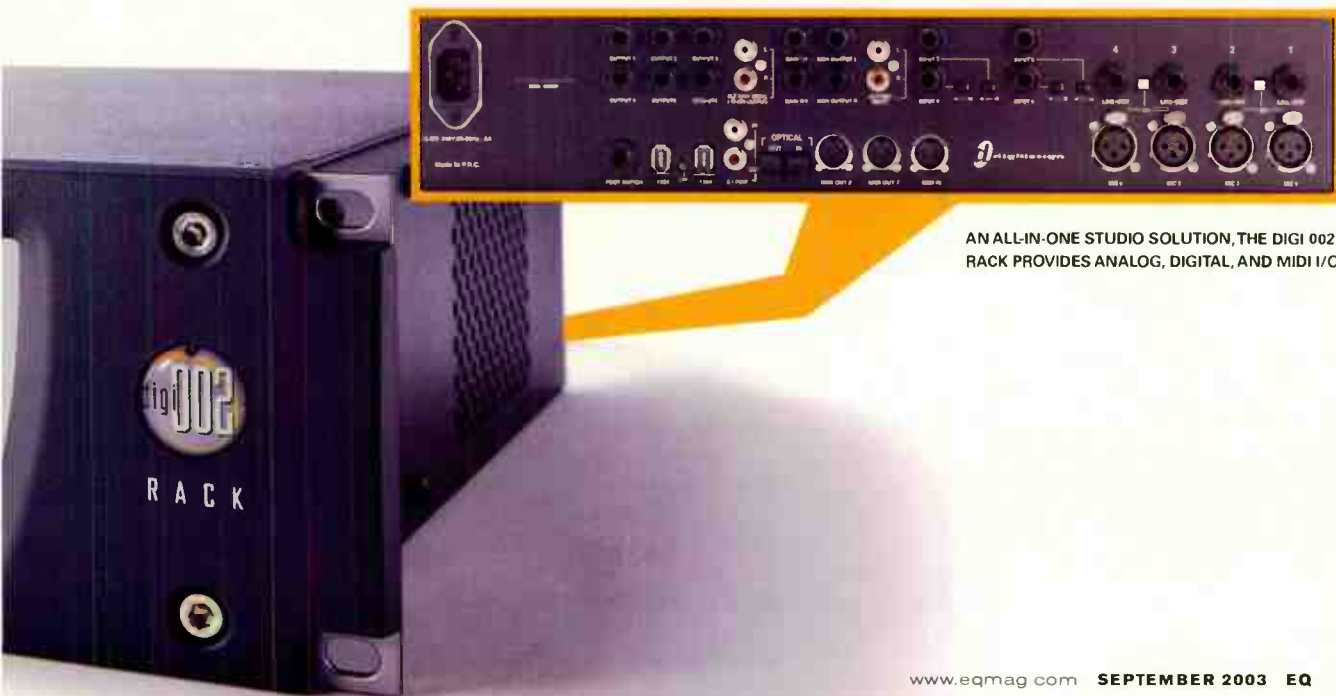
To test legacy file compatibility, I imported several old PT files, and performed some additional tracking, editing, and mixing to see how the new system dealt with old material. All was smooth there. ▶

Two Digi 002 Add-Ons

■ **Need post? Thanks to the DV Toolkit software bundle (\$995) you can add desktop post-production functionality to a Pro Tools LE 6.1 system. DV Toolkit allows users to import a project file (OMF or AAF) from applications such as Avid's Xpress DV on either Windows XP- or Mac OS X-based Pro Tools LE systems, record new audio such as voice-over and Foley, clean up unwanted existing audio such as background noise, replace audio such as compromised on-camera dialog, and add music tracks. The DV Toolkit option includes special timecode functions, the DigiTranslator 2.0 option for full AAF/OMF import/export support, Digidesign's AudioSuite DINR noise reduction plug-in, and Synchro Arts' VocAlign Project for dialog replacement. It supports both Windows XP and Mac OS X.**



■ **The DigiPack custom-designed carrying bag (\$125) provides a main compartment with 2U capacity, and an additional padded front pocket with adjustable divider for a laptop and accessories. There's durable foam padding throughout, an internal Velcro lid to secure the laptop compartment, and an overlapping lid to protect the entire bag. Extra side storage pockets are provided on the sides for mics, cables, etc.**



AN ALL-IN-ONE STUDIO SOLUTION, THE DIGI 002 RACK PROVIDES ANALOG, DIGITAL, AND MIDI I/O.

Digidesign Digi 002 Rack

A more critical audio test came when tech editor John Krogh and I conducted a live classical cello session. At 24/96, the 002R captured the three-century-old instrument with precision and clarity. We had the cellist play a variety of pieces that spanned a wide frequency and dynamic range. The mic preamps performed beautifully, as did the D/A converters; for playback, we output directly from the 002R to Genelec 1031As. Also impressive in our tests was

its convenience for laptop users — it all makes perfect sense.

Who is this rig best for? At the top of the list are those wanting to get into Pro Tools 6, who want higher resolution than Digi 001, more I/O, FireWire connectivity, and who don't want (or can't afford) to pay for a Pro Tools HD rig. In this case, 002R can't be beat.

Judged strictly in its price class as a hardware interface, however, the 002R faces some stiff competition from the likes of MOTU and their new 828mkII. The 002R wins in mic preamps (four over the 828mkII's two). But the 828mkII wins in SMPTE and word clock sync (002R has neither), front-panel metering, in rack size (1U versus 2), and its ability to function as a standalone device. And there's more. M-Audio's new FW410, to name another of several FireWire I/O entries, is in a much lower price class, but has something that neither of the above has: super-handly dual headphone outs and companion volume knobs. Of course, if you want to use Pro Tools as your DAW, then all of the above is moot — you *must* use a Digi hardware product, period.

All factors considered, Digidesign has a solid product on their hands in the Digi 002 Rack. In all tests it performed beautifully. Coupled with one of the most popular audio apps ever (Pro Tools, which is included for free), it's surely going to sell in significant numbers. **EQ**

[Thanks to Liz Lee of the San Francisco Conservatory of Music for bringing her 300-year-old French cello, Bach repertoire, and sharp skills to our test sessions.]

A major bonus of the 002R package is that it comes bundled with Pro Tools LE software and a suite of Digidesign plug-ins.

how smoothly and solidly the system handled huge 24/96 files on a G4 laptop running a native host.

In related "in use" news, Roger Nichols' *EQ* review of the Digi 002 tabletop unit in March concluded: "Perfect recordings, perfect mixes. Everyone was happy, especially me." Worth restating, since the Digi 002 shares many of the same components as the 002R.

The only notable disappointment in all of my studio hours with 002R was the lack of a Core Audio driver, which meant that every time I wanted to use another app such as Reason 2.5, iTunes, or Quicktime, I had to toggle to another audio device. Digi tells us that the Core Audio driver for Pro Tools LE is in beta, and should be available for free download by the time you read this. Also, it's worth pointing out that Digi added ReWire support to Pro Tools version 6.1, which allows audio from any ReWire-compatible app, such as Live or Reason, to be piped directly into the Pro Tools mix bus for further processing.

CONCLUSIONS

My first reaction when the Digi 002 Rack was announced: "Brilliant." After all, the Digi 001 was starting to show its age, and how logical it was to take the best of Digidesign's second-generation 002 tabletop unit and compress it into a rack. With FireWire established as a standard for audio and MIDI I/O — and considering

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Strengths:

- Well stocked with analog, digital, and MIDI I/O
- Four mic preamps with front-panel controls
- 24/96 compatible
- Pro Tools 6 LE software and DigiRack plug-in suite included
- Direct-to-FireWire connection (no card required)
- Robust industrial design

Limitations:

- No front-panel metering
- No word clock or SMPTE I/O
- No DSP or standalone mode as in the 002
- No Core Audio drivers (yet)
- Wish it had two headphone outs
- Miss having a couple of front-panel inputs, as on the Digi 001

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by Mitch Gallagher

Microtech Gefell

UMT70S and UM92.1S

German engineering results in two high-class microphones

UM92.1S

Type: Large diaphragm tube condenser microphone

Price: \$3,250

Contact: Microtech Gefell,
www.gefell-mics.com

Polar Patterns: Omni, cardioid, figure-8

Frequency Response: 40 Hz to 18 kHz

Maximum SPL: 120 dB

UMT70S

Type: Transformer-less large-diaphragm FET condenser microphone

Price: \$1,600

Contact: Microtech Gefell,
www.gefell-mics.com

Polar Patterns: Omni, cardioid, figure-8

Frequency Response: 40 Hz to 18 kHz

Maximum SPL: 139 dB (149 dB with pad on)

German manufacturer Microtech Gefell has been in the business of making microphones for 75 years. The company continues to craft microphones the old-fashioned way, by hand, using many of the methods developed by Georg Neumann dating to when he founded the company in 1928.

Microtech Gefell makes microphones in three main categories: large diaphragm condensers, small diaphragm condensers, and measurement mics, as well as small-diaphragm models featuring pure nickel diaphragms. The

microphones we're looking at here are large-diaphragm models that trace their lineage straight back to the earliest vintage microphones created by Georg Neumann. In fact, both mics utilize the venerable M7 capsule, designed by Neumann in 1932 (see sidebar "Time Capsule" for more information

I was quite enamored of the stereo pair of Microtech-Gefell M930 mics I reviewed in the June 2003 issue — so much so that I ended up buying them for my studio. Let's see if these two mics hold up my high opinion of the brand.

UM92.1S

The UM92.1S is a big, solid-feeling mic. It features an external power supply, which connects to the mic using a hefty 7-pin cable. For secure connection, the cable screws onto both the mic and the power supply. Nice. The mic also screws into the EA92 shock mount, allowing you to hang it upside down with no fear of it falling to a horrendous death on the floor below.

Aside from the polar pattern selector switch located on the power supply, the UM92.1S has no switches, filters, or pads. The pattern selector switch gives you a choice of using omnidirectional, cardioid, or figure-8 patterns. The frequency response curve of the mic varies a bit depending on the polar pattern; for example, in omni pattern, the mic is rule-flat from 50 Hz to around 3,000 Hz. Above this point, there are small peaks at 5,000, 10,000 and 15,000 Hz, with a fall-off to 20,000 Hz. In cardioid and figure-8 modes, the low-end gently rolls off starting at 500 Hz, although proximity effect can provide plenty of low end when necessary. Both cardioid and figure-8 modes have broad peaks in the high-end "presence" (around 7k) frequency range.

So what does this mean sound-wise? In general, the

The UM92.1S has a fat, round tone, with a lot of midrange complexity and solid, full low end.

on the history of Microtech Gefell and the M7 capsule).

As mentioned above, both the mics reviewed here are large-diaphragm condensers. But that's pretty much where the similarities end. The UM92.1S is a multi-pattern tube design that uses transformer coupling on its output. It traces its ancestry back to the original Neumann-Gefell UM57. The UMT70S is a multi-pattern FET solid-state design and has a transformer-less output.



ON THE UMT70S, YOU TURN THE RING BENEATH THE HEAD GRILLE TO SELECT OMNI, CARDIOID, OR FIGURE-8 POLAR PATTERNS. (ON THE UM92.1S, PATTERN SELECTION IS HANDLED VIA A SWITCH ON THE EXTERNAL POWER SUPPLY.)

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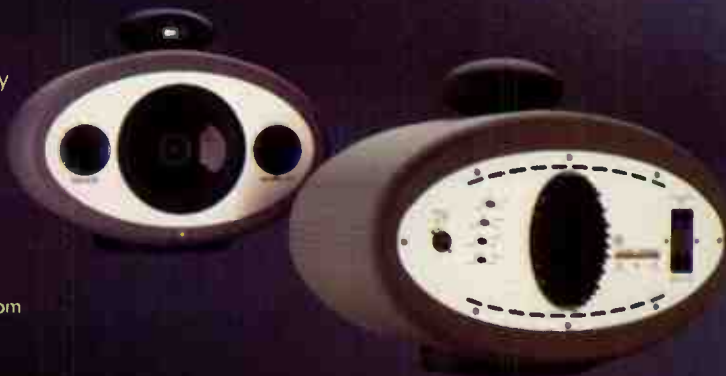
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Microtech Gefell

UMT70S and UM92.1S

UM92.1S has a fat, round tone, with a lot of midrange complexity and solid, full low end. There's plenty of presence, but without any associated harshness. The top end is smooth, but well detailed.

On vocals, tracks recorded with the UM92.1S sit well in the mix. They're full, without being mushy or boomy. There's plenty of definition, making the vocal intelligible, but sibilance is not a problem. This is a mic that could be used to fatten up a thin voice, or to add punch to a weaker one.

On classical guitar, placement was critical, since the fat low end and midrange can result in an overly obese sound. The mic's presence peak helps with detail, although it can over-accentuate string squeaks if placement is poor.

I was quite pleased with the UM92.1S on steel-string guitar, particularly for heavy strumming parts, where a lot of punch and drive was desired. It also worked well for capturing the elusive low end that can result from deep detuning of

Time Capsule

Few would deny that the heart of any microphone is its capsule — the entire process of converting sound waves into electrical current begins right there. The Gefell M7 capsule, as used in the UM92.1S and UMT70S microphones on review here, has a particularly long and storied history.

The M7 was designed in 1932 by Georg Neumann. Neumann founded his microphone company in 1928 in Berlin. The advent of the Second World War caused relocation of the company to the



quiet village of Gefell. After the war, some members of the company returned to Berlin; this branch of the company became the Neumann company in 1948. Neumann Berlin and Neumann Gefell worked together closely until 1961, when the Berlin Wall placed the Gefell company in East Germany. In 1964 communication with the West was banned by the East German government.

The Gefell company continued developing microphones and tube technology, re-entering the Western market when the Berlin Wall fell in 1989. In 1993, ownership of the company was returned to the Neumann family; it's now run by the directors of Microtech Gefell under the official name "Georg Neumann KG." (There is no relation between this company, and the Neumann brand name, which was purchased by Sennheiser in 1990.)

The Gefell M7 capsule uses a dual-membrane capsule with a triangulated pedestal mount. This triangulated



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mount helps to reduce reflections coming off the microphone body and capsule housing, which in turn reduces phase cancellation and comb filtering anomalies. The substrate or base material in the M7 capsule is made from PVC (Poly-Vinyl-Chloride) — in fact, it's the only capsule currently manufactured that uses PVC. Other similar capsules use PE (Poly-Ethylene), more commonly known by the name "Mylar." The substrate is a thin sheet that's coated with a gold surface, becoming a "metal film," and charged to create a capacitive (condenser) effect.

PVC starts as a liquid that's spread across a glass surface to become a thin film. PE, on the other hand, starts as a solid that's rolled into a thin sheet form. Because of this, PVC is more difficult to make and has a tougher time meeting quality control standards. The PVC used to make the M7 capsule is manufactured in the Gefell factory, using the same

process originally designed by Georg Neumann. Modern manufacturing technology has been applied to the process, resulting in higher levels of purity, better consistency, and longer life expectancy.

While one could argue the benefits of PVC versus PE (and vice-versa), what it really comes down to is that PVC has different characteristics than PE. According to Gefell, PVC is "fluid" and therefore attains its final form naturally. The membrane is more evenly tensioned, reducing physical distortion. The company says this results in a more uniform transfer of energy, making the diaphragm more "forgiving."

The M7's PVC diaphragm has a 10-micron thickness — a seemingly huge thickness considering the prevalence of modern designs featuring diaphragms as thin as two microns. However, the company credits this thickness (and the resulting stiffness) as contributing to the M7's distinctive sonic character. They also

point toward side benefits such as reduced sensitivity to vocal pops and humidity deposits.

The M7 capsule has a long history; it has been used in some of what we consider to be the "classic" vintage microphones, including the Neumann-Gefell UM57. In addition, early Neumann U47, U48, and M49 microphones used M7 capsules. Later, this was changed with the U47 using the K47, the U48 first using the K47 then the K49, and the M49 using the K49.

For the past 75 years, many Microtech Gefell microphones have used (and continue to use) the M7 capsule, including current models such as the UM92.1S, UMT70S, UM900, and UMT800. These and other Microtech Gefell microphones are still completely hand-made in Gefell, Germany. For further reading on the fascinating journey of this company from its founding to the years in the Eastern Bloc to the modern revival in the West, visit www.gefell-mics.com. —Mitch Gallagher

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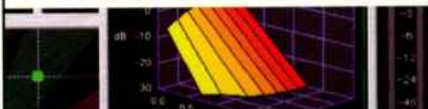
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Microtech Gefell

UMT70S and UM92.1S

the guitar's bass strings — some mics have trouble capturing the "real" low end, substituting amorphous boom and bass wash instead. Good top end detail complemented this low end, with rich midrange colors filling out the middle.

I was also quite happy with the UM92.1S on crunchy electric guitar. All the thump of a 4x12 Marshall cabinet was right there, without too much tizz or hash in the distortion on top. Singing solo tones were captured accurately, as was the cluck and twang of a clean chicken-picked Telecaster track.

On handheld percussion, the UM92.1S delivered pure crystalline tones from metal instruments such as triangle and finger cymbal. There was also plenty of attack in transient-heavy parts such as clave.

All in all, the UM92.1S excels at any application where you'd normally use a large-diaphragm tube mic — I wouldn't hesitate to use it on just about anything in the studio.

UMT70S

The UMT70S is different from the UM92.1S in almost every way — beginning with its physical appearance. It's a large-diaphragm condenser, featuring transformer-less FET solid-state electronics. The mic is capable of three polar patterns, omnidirectional, cardioid, and figure-8. It operates off 48-volt phantom power. To select among the polar patterns, you turn the ring (or collar) beneath the head grille. Two switches are located on the long, thin body of the mic, one activating a 10 dB bass roll-off starting at 90 Hz, the other padding the electronics by 10 dB. Some mics use one switch for these two functions, forcing you to choose one or the other. With the UMT70S, the switches are independent, so you can activate both the roll-off and the pad at the same time if desired.

Looking at the frequency response graphs for the UMT70S reveals curves for the three polar patterns that are remarkably similar to those for the three patterns on the UM92.1S. There's the same flat-as-a-board low end and multiple high-frequency peaks in omni mode, and gentle bass roll-off and broad presence peak in cardioid and figure-8 modes.

Sonically, however, you would never mistake the UMT70S for the UM92.1S — which goes to show that specs and

graphs only take you so far in learning about a mic (or other piece of audio gear). There's substantial difference in the low end, with the UMT70S offering a tight, contained bottom. On the top, the UMT70S has more sparkle and shimmer, without sounding crispy or sterile. In the mids, the UMT70S has clarity where the UM92.1S has complexity.

The
UMT70S is
the kind of mic
that you can
just put up
and expect
to sound
good.

I found the UMT70S to work on virtually everything I put it in front of. It's also more forgiving of placement than some other mics. On a Marshall 4x12, I simply stuck the mic in front of the cabinet and pushed up the gain, doing a normal sound check before tweaking the final mic placement. To my surprise, the sound was excellent; full, round, and crunchy, with good definition. Thinking I might have gotten lucky, I moved the mic around and was rewarded with equally good tones.

On classical and steel-string guitar, this mic can handle getting in closer than some other large diaphragm models — certainly you can get too close and experience the dreaded soundhole "boom," but with reasonable care, I was able to get in close for a nice intimate sound with plenty of detail. On 12-string guitar, the UMT70S was sparkly, and captured all the drive of hard-strummed parts. I had similar good

luck recording hand percussion, something I normally reserve for small-diaphragm mics. The transient attacks were there, with good high-end detail, no harshness, and plenty of fullness.

After experiencing such good results on instrument applications, I turned to vocals, and was likewise impressed. The UMT70S is the kind of mic that you can just put up and expect to sound good. It's a full-sounding vocal mic, with plenty of dynamics, good detail without overly much sibilance, and a solid low-end capable of capturing hard-sung male vocals.

CONCLUSIONS

Both the UM92.1S and UMT70S impressed me with their performance. I was especially pleased with their versatility. These aren't mics that you're going to pull out for one isolated application. They're not cheap in this day and age of pretty-good sounding \$99 mics, but their handcrafted quality and sonic excellence justify the asking price.

If I could only have one, which would I choose? Tough question, as having both would be ideal. Still, if limited, I would have to consider what I was after. The UM92.1S has a more colored, tube tone (desperately trying to avoid the "warm" and "fat" clichés here). The UMT70S is less colored, tighter, and more open. I'd probably be inclined to go with the latter, as it offers a more neutral palette, then supplement that later with the more colored tube model. But do yourself a favor: Avoid making the choice and get both! **ED**

UM92.1S

Strengths:

- Fat tube sound
- Detailed top end
- Shock mount and cable attach securely

Limitations:

- Pricey

UMT70S

Strengths:

- Versatile
- Independent lowcut filter and pad switching
- Compact size allows easy positioning
- Tight bottom end

Limitations:

- No mic clip or shock mount included

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STUDIO TECHNOLOGIES INC.

by Mitch Gallagher

Soundelux ifet7

Two mics for the price of one

Type: Dual-mode large-diaphragm condenser microphone

Price: \$2,100

Contact: Soundelux,
www.soundelux.com or
www.transaudiogroup.com

Electronics: V mode, Class A; i mode, Class AB — both modes transformer-coupled

Polar Pattern: Cardioid

Frequency Response: 20 Hz to 16 kHz

Maximum SPL: 135 dB (i mode), 117 dB (V mode)

Soundelux's stated goal is to provide a family of microphones that captures the sound of the most sought-after vintage microphones — vintage microphones that are increasingly expensive, hard to find, and difficult to maintain. Models such as the U99, E47, and ELUX 251 covered some of the tube mainstay studio standards. Now vintage mic guru David Bock and company have turned their attention to a solid-state condenser model, the ifet7. The ifet has the look of a "normal" large-diaphragm microphone, but under the hood, there's a surprise lurking. . . .

JOINED AT BIRTH

The ifet7 features a large-diaphragm cardioid capsule, and is transformer-coupled on its output. It's a straightforward phantom-powered mic, with an integral swivel arm/stand mount, and no pattern or filter switching. (If you need a shock mount, the one designed for Soundelux's E47 will fit.) There's just one switch, labeled "V-i." Under this switch is where the ifet's uniqueness lies: The mic features two completely independent electronic circuits — this is literally two mics in one, sharing the same capsule. (Of course, only one set of electronics can be used at a time.) When you flick the recessed switch to the "V" side, the mic uses

Class A electronics with a response tailored to match an '87fet microphone. On the "i" side, you get Class AB

electronics matching those in a vintage fet47.

What's the difference? As Soundelux describes it, V ("vocal") mode has a low-frequency contour, with no roll-off, and high-frequency contour with roll-off starting at 15 kHz to reduce sibilance. It can't handle quite as much level (117 dB max) but it has a warmer character. In i ("instrument") mode, the ifet has low-frequency roll-off to reduce bass build-up in close-miking situations. It has no high-frequency roll-off so there's extended high-end and improved definition. Maximum SPL in i mode is 135 dB.

IN USE

I found the ifet7 to be useful for just about any miking application. Despite the "V" and "i" labels, I found myself using the modes interchangeably, matching the tone of the mic to the instrument or vocal being tracked.

V mode is a bit rounder and fatter on the bottom, with a rich midrange, and smoother top end. I liked it on male vocals, as well as on chunky electric guitars. It added a nice fullness to classical guitar, although extreme top-end detail was a bit muted in this application. On strummed steel-string and 12-string, the sound was powerful and punchy; for fingerpicking, the tone was mellower and worked well for accompaniment.

"i" mode has a nice tight bottom end. For electric guitar, this let close-miked tracks sit well in the mix, allowing plenty of space for bass guitar and kick drum. The midrange was clean and present. On classical guitar, the top end had great clarity, allowing the transient of nail on string and finger

pressing string to fret to come through. On steel-string and 12-string strumming, there was a shimmer that wasn't quite there on V mode. For fingerpicking, i mode captured the high-end "stuff" — fret noise, fingernails on metal . . . all the details that make a solo steel-string acoustic guitar passage sound intimate and real. The bottom end was full, but not boomy. For vocals, I liked i mode for bassier voices, and where voices were being layered — the tighter bottom end let the voices blend well together in the mix.

The ifet has good noise rejection and is quiet in both modes. It's forgiving of position, having a broad sweet spot. Proximity effect isn't overbearing.

TWO MICS IN ONE

I wish every mic was as versatile as Soundelux's ifet7. You can go from rich vocals to punchy electric guitars to intimate acoustic guitars to cracking percussion with a simple flick of the switch. And considering that you're getting two world-class mics in the deal, the price is pretty cool.

Every mic I've tried from Soundelux has been great, and ifet7 does nothing to change that track record. I can't wait to see what they come up with next! **ED**

Strengths:

- Versatile
- Two mics for the price of one
- Vocal mode has warm, rich midrange
- Instrument mode has tight bottom and detailed top end

Limitations:

- Shockmount is optional

THE IFET7'S "V-I" SWITCH COMPLETELY CHANGES ITS ELECTRONICS. "V" IS BASED ON AN '87, WHILE "I" COMES FROM THE FET '47.



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by Mitch Gallagher

AEA R84

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Type: Studio ribbon microphone
Price: \$999

Contact: TransAmerica Audio,
www.transaudiogroup.com

Capsule: LRG (Large Ribbon Geometry) using new old-stock 2-micron aluminum ribbon material

Polar Pattern: Figure-8

Frequency Response: 20 Hz to 20 kHz

Maximum SPL: 165 dB at 1 kHz or higher

THE R84 IS BASED AROUND THE SAME RIBBON MATERIAL USED IN THE VENERABLE RCA 44 MICROPHONES.



After 20 years repairing and restoring vintage RCA mics, AEA (Audio Engineering Associates) main man Wes Dooley knows his way around a ribbon microphone design. His latest con-

tribution to the ribbon transducer world is the R84 Studio Ribbon Mic. The R84 is surprisingly affordable for a ribbon model — list price is \$999 — and uses the exact same 2-micron aluminum ribbon material as was used in the vintage RCA mics. At two inches, the ribbon in the R84 is quite long, but only 0.185 inches wide. The ribbon is folded into accordion-style pleats, and suspended in the

feels very solid. The unit comes packaged in a cylindrical fabric-covered foam “bag.” The idea is that you leave the mic on a stand and slip the case over it when it’s not in use. This serves two purposes: protecting the mic from dust, and keeping it in a vertical orientation to prevent the long ribbon from sagging over time.

The R84 is a sizeable microphone at 11-1/2 inches tall and three inches wide. It comes affixed to a U-shaped swivel/stand mount; the mount is cushioned — no shockmount required. A 6-foot XLR cable is permanently attached to the mic body and clipped to the stand mount for strain relief.

The R84, like most ribbons, is sensitive to mic pre impedance. For this review I was fortunate to have pre-amps with impedance switching on hand from Universal Audio, Focusrite, and Summit. All worked well.

IN USE

If you’ve never heard a vintage-style ribbon mic before, you’re in for a treat with the R84. The sound is quite different from the “pre-EQ’d” sound most of us hear every day from our modern condenser mics. The top end is totally different: smooth, silky, and natural. In a word, “unhyped.” The low end is fat, and the mids are quite full and round. This is a mic that has no problem taming a strident vocalist or reducing sibilance problems. It can also be used to fatten up thin sounds without making them sound EQ’d.

I’ve used ribbons on electric guitar for over 15 years; I like the way they control

“This is a mic that likes a bit of distance. I found that when I was up close on it, the sound became overly mid- and low-heavy.”

capsule at low tension, which is said to reduce high frequency resonances . . . meaning smoother high-frequency response.

Like most ribbons, the R84 is susceptible to damage from phantom power and blasts of air. Ribbons are also sensitive to moisture and air-borne dust and debris. However, the R84 isn’t fragile; it can handle sound pressure levels up to 165 dB (at 1 kHz and above), and it

peaky upper-mids and grating highs. The R84 is no exception. I was especially enamored of it on my Telecaster through a Mesa-Boogie combo with an E-V speaker — a combination that can be shrill at times. The R84 rounded the tone out, filled in the mids, and captured the perfect balance of twang and detail on top. The R84 was great for "stereo-izing" tracks: I put a condenser on one speaker of my Marshall 4x12 cab, and the R84 on another, then panned the two mics wide — the sound was big and full without taking up as much sonic space as a true double-track.

On classical guitar, the R84 is clear and real sounding. On steel-string, the balance of lows to highs was good, with detailed fingers on strings. Ribbons are traditionally used on brass, and putting the R84 in front of trombone proved why: The sound was fat and powerful, with excellent dynamics, but no harshness.

The R84's large size means that it can be tough to get it in real close on certain sources. But this is a mic that likes a bit of distance. I found that when I was up close on it, the sound became overly mid- and low-heavy. We're talking more than normal bass boost from proximity effect; the tone was muffled sounding. Pulling the mic back solved this problem. For vocals, I found that a distance of eight inches or more worked well; on classical and steel string guitar, 18 inches or more. Like all ribbon mics, the R84 has a figure-8 polar pattern. This means that when you pull back from the source, you get more room ambience — not always a bad thing (assuming your room sounds good).

TIE A YELLOW RIBBON

The AEA R84 offers a classy alternative to the modern condenser mic sound — natural, full, real sound without the top-end hype. The price is right, and the sound is there. A worthy addition to any mic locker. *EQ*

Strengths:

- Natural sound
- High SPL handling
- Smooth, un-hyped top end
- Fat, full mids and bottom
- Affordable
- Looks too cool!

Limitations:

- Requires distance from source

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by Craig Anderton

Magix Sequoia

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Platform: Windows

Price: \$3,125

Contact: www.xvisionaudio.com

Minimum requirements:

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Copy protection: Parallel port dongle or USB dongle

Version reviewed: 7.12

Supported sampling rates: 11.025 to 192 kHz

Internal resolution: 32-bit floating-point

Driver support: ASIO, WDM, MME

Plug-in support: Included, DX, VST, VSTi

Audio support: WAV, AIFF, WMA, MIDI, AVI, SD2, MPEG, MGG-Import (Broadcast Format DIGAS), Broadcast Wave, MP3, Ogg Vorbis

Export formats: WAV, MP3, MPEG, WMA, Real Audio, Ogg Vorbis, AIFF, AIFF file with Quicktime, DDP 1.01 and 2.0, MIDI, AVI, Broadcast WAV

This is one of the toughest reviews I've ever written, because Sequoia is a huge, ambitious program that takes you from recording, to editing, to mastering, to CD burning. Sure, lots of programs do that — but not with Sequoia's depth. And at over \$3k list, you can understand why they'd better pack in as much as possible. Bottom line: There's a lot to cover here.

THE MAX VERSION OF THE OBJECT EDITOR ALLOWS EXTENSIVE EDITING FOR EACH OBJECT. IT'S NON-MODAL, SO YOU CAN PLAY THE TRACK YET KEEP THE WINDOW ON TOP. NOTE THE PITCH- AND TIME-STRETCH SECTION AT THE BOTTOM, WHICH OFFERS SEVERAL STRETCH ALGORITHMS, AND THE FACT THAT YOU CAN INSERT PLUG-INS, EQ, COMPRESSION, ETC., FOR INDIVIDUAL OBJECTS.

I first saw Sequoia at the Vienna Symphonic Library facility, where it's used for recording, editing, and mastering. As Sequoia is also intended for broadcast, editing goes way

beyond simple cut-and-paste to sophisticated ripple and insert edits, exhaustively comprehensive crossfade options, and "4 point source/destination" editing,



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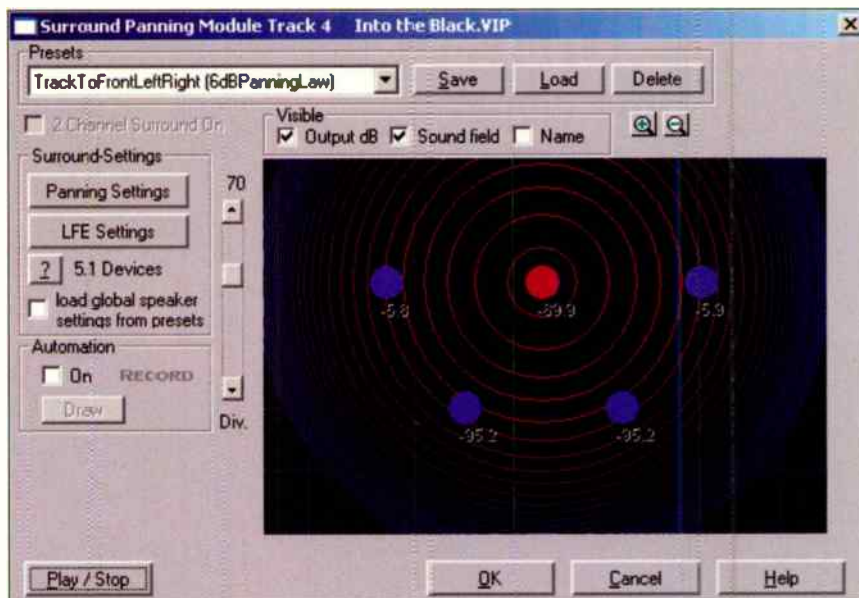


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PUTTING THE MIXER IN SURROUND MODE AND CLICKING ON A PAN CONTROL BRINGS UP THE SURROUND PANNER.

where you can cut a piece from one file, and with minimal mouse-clicking, insert it in a different destination file. This is great for editing narration, as you can just grab all the good bits and build the final result.

But Sequoia also does multitrack, based on the Samplitude engine. Like Samplitude, it allows three different project types — RAM, Hard Disk, and Virtual. RAM projects record data in RAM or load the data in from Hard Disk. While fast, the amount of RAM limits overall recording time; this is ideal for putting together loop-based projects. Hard Disk projects stream from the hard drive, which is likely what you would use for editing and mastering files. Virtual projects (VIPs), the main workspace for multitrack audio, “point” to RAM or HD files. This mode is most like traditional hard disk recorders, as files on disk remain intact, and the VIP objects modify their properties (level, fades, etc.) in real time.

There's also MIDI and VSTi support. While not the most sophisticated in the world, it's more than just functional. MIDI and audio objects within a VIP are treated fairly interchangeably, down to adding fade in/out times to MIDI objects.

For mastering, you'd probably open a 2-track WAV or HD file, watch the mixer shrink to fit a 2-track file, and take advantage of the massive complement of onboard signal processors — multiband

dynamics, room simulator, compression, EQ, etc., or any of your fave VST/DX plug-ins. Although a lot of programs can “master,” Sequoia does pro-level, no-holds-barred *mastering*. And for burning CDs, you can mix down multiple tracks to CD on the fly, do marker placement, perform disk-at-once burning, and the like.

Wherever you look, there's more than you expect. The impulse-based reverb sounds great. There's an FFT equalizer where as you draw the curve, you see the input and output responses compared. Of course there's latency compensation, but it's on the buses and auxes as well as the inserts. The 4-band multiband dynamics is smooth and if you're so inclined, can overcompress with the best of them. There's even a wonderful vocoder, and the dithering (with, of course, multiple options) is by POW-r.

Want to mix to surround? No problem. How about setting up Sequoia on a multi-user network with administrative control? Sure. This is one of those “think of it, and the software can probably do it” programs. Even the stretching algorithms sound amazingly good, and include formant fixes for voices.

As a result, although nothing in the program is particularly hard to figure out, there's so much happening that learning, let alone mastering, Sequoia will take you a *long* while. The manual is 500+

pages, and you really need to go through it all. You'll also want to learn the keyboard equivalents to do things such as toggle between zoom settings, as well as navigate around a waveform, if you want to get the most out of the program. And there are several undeniably weird

Although nothing in the program is particularly hard to figure out, there's so much happening that learning, let alone mastering, Sequoia will take you a long while.

quirks: Why is the default that you can't monitor other tracks while recording? It took me a while to figure out to check the box that allows simultaneous recording and monitoring.

GETTING STARTED

I tested Sequoia with the CreamWare PowerPulsar card, using both WDM and ASIO. However, I had to use the PowerPulsar's highest latency setting (25 ms @ 44.1 kHz), even though I routinely use far lower settings with Sonar and Cubase SX. Sequoia is optimized for use with RME soundcards; if you plan to base your world around Sequoia, given that it's entirely native-based, consider springing for the RME as well.

I found one strange glitch: Looping a project (not just looping within a clip) with time-stretched clips would cause occasional ASIO buffer loss. After trying everything I could, an X Vision Audio representative stayed on the phone until



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he found the fix: freezing time-stretched objects when looping. Interestingly, the distribution company was far more helpful than the Sequoia website, which twice gave me a password for support and forum access, but refused to let me in. Huh?

Speaking of freeze, this option premixes CPU-intensive objects, as well as buses and VSTi's, down to two tracks while "disconnecting" the original tracks from loading the CPU. This allows playing back more tracks, with more effects, on under-performing machines. Of course, you can always "unfreeze" for further editing.

THE INTERFACE

As with Cubase SX, the mixer is sizable; you can enable individual sections and for some sections, choose smaller or bigger views (e.g., two aux sends vs. six). Better yet, many dialog boxes allow minimum and maximum sizes. For example, the Object Editor minimum mode gives a summary of what's applied to an Object, and in maximum mode, shows possibly more than you would ever want to know about an Object. You can even scale the mixer to whatever size you want, and it remains in proportion.

ABANDON ALL HOPE . . .

. . . of me describing all aspects of this program. Instead, I'll pick out a few elements that tickled my fancy. To get a general idea of Sequoia you can download a demo version of Samplitude, which will at least confirm that the program works with your particular setup. However, you won't get to experience Sequoia's special goodies.

COMPARISONICS COLORING

Multi-colored waveforms seem like something out of the psychedelic '60s, until you use the Comparisonics Audio Search function. You copy a part of music, set the sensitivity for how close the searched item has to be compared to the original, and go.

This was most dramatic on a tune that had an occasional section where just drums and organ played. I wanted to find these sections to boost their levels by 3 dB. I copied one of the areas, did the search, and Sequoia found all instances of this particular passage in the song. Impressive.

WHAT ABOUT LOOPS?

Although Sequoia doesn't support Acidized or REX files, it's easy to loop audio with the Object Editor using any of six stretching algorithms, or with the "easy stretch" cursor — just drag the Object to the desired length, shorter or longer, so it fits into the pocket.

Also with the Object Editor, you can specify an "internal loop." Consider an 8-bar piece of audio. You could mark off bars 2 and 3 as a loop, which will repeat to fill the entire eight bars (e.g., it would play 2-3-2-3-2-3-2-3 then stop). This is incredibly useful, especially if you take a piece of audio, "stutter" something like the last 16th note, then trim length to suit. While Sequoia doesn't take a standard approach to looping, this is an effective way to create loop-based compositions.

LET'S MAKE A RED BOOK CD

You can set up a CD within a single file, and drop in track index markers, or drop track index markers into a multitrack project, in which case tracks that play simultaneously mix together — what you hear is what you get. Like Sonic Foundry's CD Architect, you can build tracks, add plug-ins, use automated level/pan or envelopes, and the like. You can also enter subindex and pause markers, do Disc-at-Once for CDs with crossfades between songs, enter ISRC codes and information about each track, etc.

The first time I tried to burn a CD, it worked perfectly. I suspect as long as your drive is one of the supported types, you're good to go. Probably the best aspect of all this is the multitrack option — it's fantastic for doing "DJ mixes."

CAPTAIN VIDEO

Through Media Link, you run an AVI file in parallel with Sequoia, and show the video track above the VIP window timeline. This makes it easy to position sounds with specific frames. You can also import and export audio to/from AVI files, and while you can't edit video, the ability to do audio-for-video is a useful addition for project studio work (an optional video capturing/editing program, Video Deluxe, is available).

MIDI

MIDI is a mixed bag. There's a piano roll editor and event list; controllers show up

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on the event list, but not on the piano roll — but they do show up on the track, and you can both draw curves and edit existing ones. There are 16 automatable parameters/controllers for VST instruments and effects (control surface support, too), although I couldn't automate DX8 effects.

CONCLUSION

This is deep, high-level software designed for power users who are willing to roll up their sleeves, invest a considerable amount of time in learning the program, and don't mind that Sequoia has its own way of doing things. While I readily admit I haven't mastered Sequoia in the six weeks I used it prior to finishing this review, it's already made a serious bid to take over a lot of my work done with other programs. In particular, waveform editing, CD burning, and RAM recording are ideal for this environment.

My wish list is short: ReWire implementation, Acidized file support, and documentation that syncs with updates (they could learn a lesson from Cakewalk about this). But as to features in general, there's an embarrassment of riches. There's also a decent upgrade path from Samplitude, and bundles with soundcards that make getting into this program more affordable.

And can you believe we've only scratched the surface . . . if you want to venture into a whole other realm of software, Sequoia is unique. It's like the Led Zeppelin of software: huge and powerful, yet capable of finesse when needed. **EQ**

Strengths:

- Extremely deep feature set
- Comprehensive Red Book audio CD burning
- Accepts DirectX and VST plug-ins, including VST instruments
- Handles multiple types of projects
- Extensive surround support; compatible with Dolby ProLogic or 5.1 (requires encoder)
- Source/destination editing
- Broad selection of included effects
- Freeze function handles objects, buses, and auxes
- Supports hi-res audio up to 192 kHz with automatic format and sample rate conversion to current project

Limitations:

- Doesn't support Acidized WAV, REX files, or ReWire
- No groove quantization
- Changing tempo doesn't change duration of time-stretched files
- No parameter automation for internal effects

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by Mitch Gallagher

Eventide Clockworks Legacy

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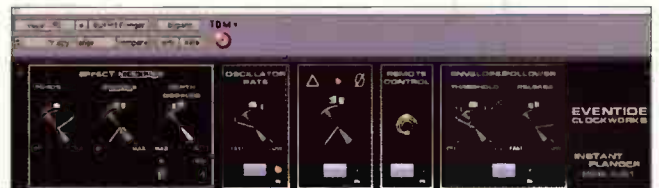
Eventide Clockworks helped change the audio world back in the 1970s.

Not only was the company among the first to offer an analog phaser and an analog flanger, their Harmonizers became standard issue for studios around the world. In fact, the company was among the first on the market with digital effects and with multi-effects boxes. As creators of the effect, the company trademarked the name "Harmonizer," and remains one of the major proponents of pitch shifting and digital effects technology.

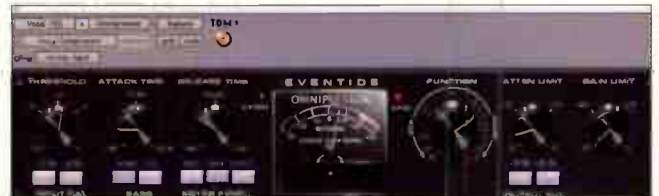
In the wake of the Great DAW Revolution, the company has gone back to its roots and created "Clockworks Legacy," virtual plug-in versions of five vintage processors. Let's take a look at what's included in the bundle. ►



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Ross Hogarth (Grammy winning Producer/Engineer - Ziggy Marley, Gov't Mule, Keb Mo, Coal Chamber, Jewel, Roger Waters, Black Crowes)



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Eventide Clockworks Legacy

INSTANT PHASER

When the original Eventide Instant Phaser was introduced in 1971, the only way to accomplish phasing was to use two tape machines playing the same material, with one of the machines delayed slightly — cost prohibitive for most musicians, to say the least! The plug-in version offers four ways to control the phasing effect: You can use an oscillator (variable from 0.1 to 10 Hz) or manual control (turning the knob sets the delay time, great for "fixed" phase settings). There's also a built-in envelope follower that allows you to use the dynamics of the input signal to control phasing — you're given control over threshold and release time. The envelope follower works particularly well on vocals, and on signals with an attack and some sustain, such as cymbals.

The original analog Instant Phaser allowed for external "remote control" over phasing; the plug-in version updates this using MIDI control for "remote." You can also automate all parameters using Pro Tools automation.

The Instant Phaser is capable of everything from subtle tone shifts to heavy liquid phasing. The Depth control varies the blend of direct (dry) signal and wet (effected) signal, so you can dial in as much effect as you want.

INSTANT FLANGER

Like the Instant Phaser, the original analog Instant Flanger (1976) was designed to simulate tape flanging — but the bar was definitely raised with the Instant Flanger. Additional features included a "Bounce" control that simulated the effects of motor or servo movement when speeds were changed — analog modeling! Instant Flanger also added a Feedback control for regenerating signal.

As with the Instant Phaser, flanging can be controlled by Manual, Oscillator, Envelope Follower, or Remote (MIDI). And as on the original, you can combine control functions, using, say, both the Manual and Oscillator settings to control flanging simultaneously.

OMNIPRESSOR

There are two types of compressors out there: Those that strive for transparent dynamics control and those that are designed to impart their own sonic qualities on the signal. The original analog Omnipressor (introduced in 1971) was

certainly one of the latter — while you could dial in subtle compression with it, it was happier when it was squashing the signal, making it fat and chewy. The plug-in version is the same way. It imparts a girth to compressed signals and seems to add presence at the same time.

But it's capable of more than just compression. Using the Function knob (essentially a ratio control), you can dial in noise gating and expansion, compression, limiting, and what Eventide calls "dynamic reversal," which makes soft sounds louder and loud sounds softer. Taken to its extreme, dynamics reversal can be used to alter the envelope of sounds, making something like a cymbal sound like it's being played in reverse.

The plug-in is authentic down to the input calibration controls, which allow you to pad the input signal by 10, 20, or 30 dB. Likewise, there are output calibration

I really like
(Omnipressor).
Not only can you do
"standard" com-
pression, limiting,
and gating, but you
can get creative
with it.

controls that let you add 10, 20, or 30 dB of gain to the output signal without changing any other settings. There's also a bass cut switch — a low-cut filter — that helps clean up compression when using bass-heavy inputs. Atten Limit and Gain Limit controls let you override the Function (ratio) control and set maximums for both parameters. The Omnipressor's "VU" meter responds in very analog fashion, and there are LEDs to indicate gain reduction and gain increase. A sidechain input is provided for controlling threshold from another track or input.

I really like this plug-in. Not only can you do "standard" compression, limiting, and gating, but you can get creative with it. And for creating "in your face" tracks, the Omnipressor has become first call

for me, whether on individual tracks or on full mixes. Other compressors are transparent — and the Omnipressor can be, too — but I like that the Omnipressor isn't afraid to put a sonic stamp on the signal when you drive it hard.

H910 HARMONIZER

For many of us, mention the name "Eventide" and the first word that comes to mind is "Harmonizer." And rightfully so. Not only was the Eventide H910 Harmonizer (debut in 1975) one of the first pitch shifters available, it was also one of the first digital audio processors on the market. It offered ± 1 octave of pitch shifting, a built-in delay, and an "anti-feedback" control for toning down room resonance in live applications. The original also had an optional HK940 keyboard that could be used to play in the pitch shift interval — with the plug-in you accomplish this using MIDI.

Like the hardware box, there are four switches that are used to set delay time in increments of 7.5 milliseconds up to a maximum of 112.5 milliseconds; the Feedback control regenerates the delayed signal.

H949 HARMONIZER

Released in 1977, the H949 Harmonizer was one of the first multi-effects boxes available, offering three octaves of pitch shift (two octaves up, one octave down), delay, flange, and a Reverse mode. The H949 could also capture and repeat 400 milliseconds of audio, making it one of the first "samplers" as well. A Feedback control lets you route part of the output signal back into the input, creating everything from multiple delay repeats to spiraling pitch shift effects. Low and High EQ knobs, which can both boost and cut, are provided — you do have to be careful with these if you're using feedback; the build-up of bass and treble can get extreme. Pitch shift can be controlled manually, using a ratio, or using MIDI input.

A Function control and four accompanying switches determine what the box is doing. With the Function button pressed in, you're doing pitch shift, with it out, delay and reverse effects. There are three pitch shift modes, normal, extended (allows the input signal to be stretched up to 400 ms maximum), and "µPC" — Micro Pitch Shift, which changes the range of ratio of pitch shift



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Eventide Clockworks Legacy

available to 1.0:1.07 to 1.0:0.93 for slight detuning effects. There are two pitch change algorithms provided. One is cleaner but more prone to glitching, the other more glitch-free but colored sounding.

Delay/Reverse also has several variations: normal delay, random (continuously randomizes delay time from 0–25 milliseconds for realistic double-tracking effects), flange, and reverse, which can capture and play back up to 400 milliseconds of audio backward.

CREATIVE TOOLS

As re-creations of their vintage hardware ancestors, I'd call the Clockworks Legacy plug-ins a success. But more important, as creative tools, these plug-ins are even more successful. The Instant Phaser and Flanger provide a wide assortment of time-modulation effects; between the two plug-ins you have access to just about any phase or flange tone that you could want. Being able to control the effects in a variety of ways makes them

even more useful for creative applications.

Omnipressor has become one of my favorite compressor plug-ins. I love that it has a sound, and that you can get aggressive with it. I'm a fan of it for in-your-face vocals and punchy mixes. Being able to use it to creatively alter the dynamics of a signal is icing on the cake.

The two Harmonizers offer loads of creative potential. I found myself pulling up the H949 more often than the more straight-ahead H910, but there are certainly cases where the H910 was just what was needed. Whether you're after subtle detuning, delay, flange, wide pitch shifts, spiraling alien voices, or other-worldly sounds far removed from the input signal, these plug-ins can provide it.

For Pro Tools Mix users, DSP power may be an issue — you can run one instance of the H910 and H949, two of the Instant Flanger, four of the Instant Phaser, or three Omnipressors per DSP. Pro Tools HD users benefit from the increased power of their platform. You

can, for example, run three H910s per DSP chip at 48 kHz, one at 96 kHz.

So is the bundle worth almost \$800 list price? If you're after vintage Eventide effects, this is the only way to get them, short of finding (and maintaining) vintage hardware units — which would likely cost a great deal more than \$800. But even those unwayed by the lure of vintage Eventide boxes should be interested; these plug-in offer loads of creative potential unique in the plug-in world. **EQ**

Strengths:

- Faithful recreations of the originals
- Unique capabilities in each plug-in
- "Updated" with automation and full MIDI control

Limitations:

- Mac TDM only
- Instant Flanger and Instant Phaser are mono in/stereo out only
- Only Instant Phaser and Omnipressor support 192 kHz operation



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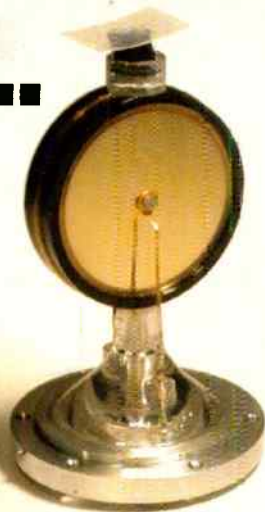
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2003 - UM92.1S capsule.



1957 - UM57 capsule.



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(Left to Right) Tube mics: Original UM57 (1957), UM57 V.E.B. (1972), and today's Gefell UM92.1S

That's not to say we have rested on our laurels... Since the beginning Gefell has set the pace for microphone innovation and continues to elevate the bar: The Gefell UM900 Phantom, the world's only 48V phantom powered tube mic; the Gefell M930 Compact, a large-diaphragm studio condenser with optical isolation and the lowest self-noise in the business; and now the Gefell MV230 digital for better than 140dB performance. But wait, there's more...

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by John Krogh

Massenburg Design Works Hi-Resolution Parametric EQ

The only software EQ you'll ever need?

Type: Plug-in parametric equalizer
Price: \$795
Contact: Massenburg Design Works,
 dist. by Digidesign, 323-845-1155,
www.massenburg.com

System requirements: Mac-based
 Pro Tools HD system running OS 9.x
 or OS X

Formats: HD TDM; mono, multi-mono
 (for stereo operation)

Copy protection: iLok Smart Key

EACH EQ BAND CAN OPERATE IN ONE OF SEVERAL MODES AS SHOWN HERE. NOTE THE FIFTH BAND; IT'S THE MOST FLEXIBLE, OFFERING FOUR VARIATIONS OF HIGH- AND LOWPASS FILTERING IN ADDITION TO PEAK/DIP AND SO ON.

- Bypass
- Peak/Dip
- Low Shelf
- High Shelf
- Lowpass 6
- Highpass 6
- Lowpass 12
- Highpass 12

- Bypass
- Peak/Dip
- Low Shelf
- High Shelf
- Lowpass 6
- Highpass 6
- Lowpass 12
- Highpass 12
- Lowpass 18
- Highpass 18
- Lowpass 24
- Highpass 24

Most of us who spend our days recording and mixing audio in computer-based DAWs probably don't think too much about the utilitarian effects in our plug-in arsenals. Let's face it, step-sequenced filters or primo reverbs are way more sexy and worthy of gear lust than a simple EQ, right? But lately I've started to feel differently — I've become more concerned with the quality of my "basic" effects, and, in particular, the EQs at my disposal. Why? Because a while back it dawned on me: Though often overlooked, EQ is the tool I use most when it comes to mixing and "home mastering." With a good EQ I can dig into a stereo overhead track to carve out a great sound, or perform delicate surgery on a lead vocal. These are exactly the situations where a high-resolution equalizer such as Massenburg Design Works' 5-band EQ can make all the difference compared to the parametric EQ included free with whatever host program you use.

There aren't many dedicated software EQs on the market, and the MDW EQ is at the high-end in both price and performance. Available only for use with TDM HD-equipped Macs, MDW EQ is a straightforward-looking 5-band parametric

equalizer with a couple of twists. For starters, it oversamples audio in sessions at 44.1 and 48 kHz to 88.2 and 96 kHz respectively. Running audio through the EQ at a higher sampling rate yields higher resolution results. There's more to it than this, but it's all behind the scenes; you don't have to worry about switching resolution, etc.

On the surface you're presented with a series of knobs for dialing in frequency, Q (bandwidth), and cut/boost. You can adjust the values simply by clicking and dragging vertically, which is a lot easier than having to twist or rotate the knobs with the mouse. There's been some bashing of the EQ's look in several web forums, and I have to admit, the interface isn't as glamorous or eye-catching as some I've seen, but this thing sounds so good, it doesn't really matter. To play devil's advocate, the light pastels are easy on the eyes, even after hours in front of the computer, and the large controls are easy to read from a distance — say, from behind a Pro Control.

IN USE

I tested MDW EQ on our Pro Tools HD2 system equipped with a 192 interface. Installation was painless and quick, and in moments I had a new session

open for the review. Over the course of several days I performed a series of tests and applied the MDW EQ to mixes and individual tracks I was familiar with (from commercial CDs and my own projects). In one situation, I pushed the EQ beyond what I'd normally do, setting a high Q and a boost of over 25 dB. Most software EQs would exhibit a scratchy, almost grainy quality under such conditions, but Massenburg's proved to be a smooth operator. I also compared it to my usual first-call EQs — Waves Q and Ren EQ — and to the Digi Rack EQ that comes bundled with Pro Tools. I made an extreme cut and boost at 1 and 2 k, with a tight Q. I applied this to solo vocals, submixed drums, and full mixes. As I expected, the Digi Rack sounded "phasey." The Waves EQ sounded better, but not nearly as open and natural as the MDW EQ.

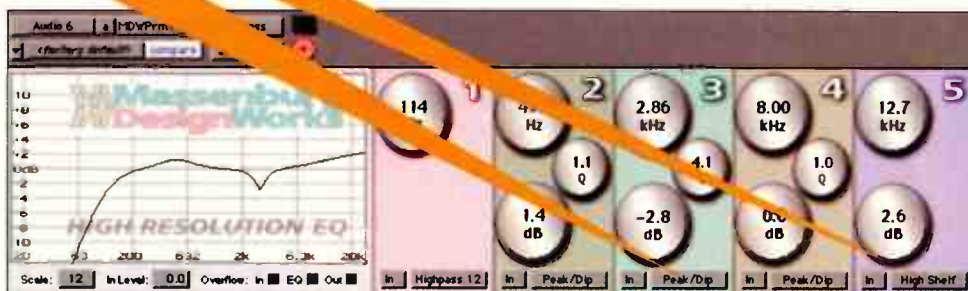
Color me impressed. The Massenburg Design Works EQ is an incredibly transparent EQ. It does use up a considerable amount of DSP — two mono instances or one stereo instance per DSP chip — so I probably wouldn't try to use it across every channel in a session. But using a bit more DSP is a small price to pay for what this plug-in delivers. EQ

Strengths:

- Wide frequency range (from 10 Hz to 41 kHz)
- Operates at rates of up to 96 kHz
- Transparent, clear sound
- Unwanted artifacts are virtually imperceptible

Limitations:

- Only HD Mac compatible





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World Radio History

M-Audio Ozone

by Greg Rule

Price: \$399.95

Contact: M-Audio,
www.m-audio.com

Strengths:

- Portable
- Offers audio (24/96) and MIDI I/O
- Low latency operation
- Phantom power (48v)
- Fits in a standard 19" rack

Limitations:

- No aftertouch
- No output level control
- No battery-power option



M-Audio's Oxygen 8 controller sold like hotcakes, and for good reason. It's portable, affordable, and, well, *cool*. Now M-Audio has one-upped itself with the new 4-pound Ozone. It looks just like an Oxygen 8, but adds audio I/O to the works. So with one USB connection, you get a 2-octave velocity-sensitive keyboard, an array of programmable knobs, a pitch- and mod-wheel, and MIDI and audio I/O, all for under \$500. With products like these,

it's no wonder M-Audio is the fastest-growing company in MI for the past two years running.

Ozone makes the laptop studio concept

more seductive than ever. Literally, one laptop (Mac or PC) plus an Ozone and you're off to the races. The Ozone's back panel is equipped with a XLR input, a pair of 1/4" ins and outs, an aux input, a headphone out, and a MIDI in and out. For those on the go, Ozone fits like a glove into M-Audio's handy StudioPack custom backpack (\$89) alongside a laptop.

"The Ozone is light," says *Keyboard* editor Ernie Rideout, "but once I loaded it up with cables, I found it stable to play. The keyboard action is no less sturdy than any other synth-action instrument." Ernie tested Ozone on both Mac and PC, and with a variety of apps — from Acid and Sonar to Digital

Performer, Cubase, and Reason. His only complaint: "I was disappointed to find Ozone isn't GSIF-compliant and won't work with Gigastudio, but to be fair, few USB interfaces are."

While M-Audio is fast becoming a giant, they aren't alone in the game. New offerings from the likes of Edirol, Evolution, Korg, and Novation have made the field all the more crowded and interesting. But the facts are clear: Ozone is a solid performer, it's affordable, and well equipped for its price. "Ozone performed well," summarized Ernie. "Its latency was well within acceptable limits, and it sounded good at both 16/44.1 and 24/96." We'll take one. **ED**

Serato Pitch 'n Time 2.2



by Greg Rule

Price: \$799 (\$99 upgrade from previous versions)

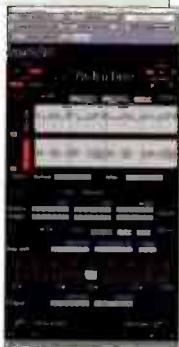
Contact: Serato, www.serato.com

Strengths:

- Incredibly smooth, artifact-free processing
- Numeric and graphical editing
- Auto length matching and note lengthening
- Varispeed effects

Limitations:

- Expensive
- For AudioSuite only



When I reviewed an earlier version of Pitch 'n Time for *Keyboard* magazine in 2001, I was genuinely blown away. In side-by-side tests with the best pitch shifters and time-compression tools of the day, it smoked everything in its path. Today, two years later, it's even better. The feature set has been expanded and the user interface improved.

True to its name, Pitch 'n Time is a time-stretching and pitch-shifting tool. It supports AudioSuite and works with 5.0-and-up versions of Pro Tools (including OS X and XP operating systems), even Pro Tools Free. Unfortunately AudioSuite is the extent of the formats, which is a shame.

Pitch 'n Time can time-compress and -expand from 1/8–8x speed independent of pitch, and can pitch-shift up to 36 semitones independent of

tempo. You can manipulate audio by entering data numerically (in bpm, samples, hours/minutes/seconds, SMPTE timecode, or percentages) or by note values (in note names or semitones). Source and destination entry windows are provided for dead-easy edits. You can also edit graphically by drawing automation along a timeline, similar to the rubberband-style automation editing in Pro Tools.

One of Pitch 'n Time's time-saving tools is automatic length-matching from one audio source to another. Simply select the destination clip, click Capture, and apply the captured parameters to the source clip. Another handy feature is its ability to automatically extend selected audio graphically by drawing the desired capture region and target duration parameters in

the waveform display, and — *voilà* — the audio is extended. If you've ever done this chore manually, you'll be doing cartwheels when you watch this feature in action. Realistic reel-to-reel varispeed effects are another Pitch 'n Time's specialty.

Pitch 'n Time is an expensive piece of software, but it's worth every dime if for no other reason than to have a tool so smooth. Depending on the source material, you might find yourself able to edit well beyond the recommended limits with startlingly good results. You can even run entire mixes through Pitch 'n Time. Try that with garden-variety pitch-shift and time-compression plug-ins and watch 'em choke. Next to a great compressor and channel strip, you'll be hard pressed to find a plug-in more valuable than this one. **ED**

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For more info on C Class processors lay off the chips and check out samsontech.com.

by Craig Anderton

Alto AltoComp

 link
Price: \$179**Contact:** Alto, U.S. distributor ART,
www.artproaudio.com**Strengths:**

- Value for money
- Useful, good-sounding presets
- Clever, unusual architecture
- AGC stage at input for varying input signals

Limitations:

- Line in is XLR only (no 1/4")
- Limited compression ratio choice (1, 2, 4, 8, and 16:1)
- Manual needs rewrite

AltoComp is a 1U, two-band dynamics processor. Despite its low cost, and the maturity of dynamics processing in general, it manages to spring a few surprises.

I/O is stereo XLR balanced line-level, with MIDI in/out/thru. Sixty-four factory presets cover common processing applications; 64 user slots are also available. The interface consists of a 2 x 20 character backlit LCD, accompanied by seven programming buttons and controls for input and output level. These stick out quite a bit from the panel, but the knobs are recessed to minimize

the chances of snapping them off — smart move.

The dual-band processing is unconventional: Each channel splits at an adjustable crossover point, with the lows going through a limiter and level control, while the highs have adjustable level only. The recombined signal then feeds a conventional compressor. This design favors boosting apparent volume as unobtrusively as possible rather than being an "effects" compressor. In fact, most presets are oriented toward program material, although I also achieved fine results on individual tracks. Furthermore, a switchable AGC (automatic gain control) "front end" is ideal for live use to even out incoming level variations. As a bonus, just about everything can be MIDI-controlled.

What's not to like? The manual tries to be useful, but glosses over some crucial aspects (e.g., compressor attack and decay are calibrated in "dB per second" instead of ms). Thankfully, ART says it's being rewritten. Meanwhile, it's good the presets are useful, because unless you're a dynamics processing veteran, you won't be able to figure out how to take full advantage of the AltoComp's clever features.

AltoComp isn't a "master of all trades" box, but excels as a quick, easy, inexpensive way to add a solid "lift" to recorded tracks, program material, or in live performance. Hear it for yourself: check out the example at www.eqmag.com, which shows how low-level signals can be emphasized without side effects or artifacts. **EQ**



Mackie HR626

by Mitch Gallagher

Price: \$899 each**Contact:** Mackie Designs,
www.mackie.com**Strengths:**

- Excellent low-end extension
- Auto power mode
- Clean midrange
- Filters and response tailoring

Limitations:

- None to speak of

The number of monitors available out there is nothing short of overwhelming. The good news is that the vast majority of them sound really good. Case in point: The Mackie HR626 Active Studio Monitors. The HR626s build on Mackie's existing HR824 and HR624 models, taking what was good about those speakers and augmenting it.

The HR626 is a dual-woofer design, using two 6.7" low-frequency drivers and a 1" dome tweeter. The cabinets can be positioned either vertically or horizontally without compromising imaging — the center-mounted tweeter stays in the same relative position.

The woofers are driven with 100 watts of power,

while the high-frequency driver has a 40-watt amp. Low- and high-frequency filters are provided, as is an "Acoustic Space" control that compensates for monitor placement against a wall or in a corner. There are RCA and balanced 1/4" and XLR inputs. An input sensitivity control lets you match levels with the rest of your rig.

Like its siblings, HR626 has two power modes. In the first, the speakers are simply turned on using a back-panel power switch; there's also a front-panel standby/mute switch. In Auto mode, the monitors turn on when they receive a signal of -74 dBu or greater; after eight minutes of silence they turn back off. No more reaching behind speakers to turn them on and off.

Sonically, the HR626s rock, but with lots of detail and

clarity. The speakers get plenty loud, and were easily able to fill my largish control room. Low-end extension is surprising: The very lowest octaves come through clean and solid. The HR626 has a nicely present and clear midrange. There's no low-mid sludge or fogginess, and the upper-mids sit nicely for vocal and lead instrument balancing. With the LF filter, you can mate the HR626s to a subwoofer if you're using bass management. For surround work, I preferred not to, instead using the HR626 full-range with a sub.

The HR626s are nicely balanced, detailed, clear, and easy on the ears. If you're looking for a monitor that works close-field, yet is capable of deep-down bass response, definitely give them a listen. **EQ**



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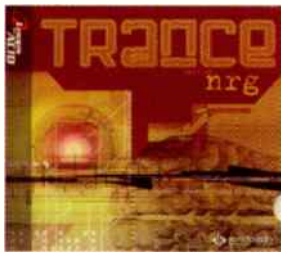
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Sounds



SONIC FOUNDRY Trance NRG

Contact: Sonic Foundry, www.sonicfoundry.com

Format: Acidized WAV, CD-ROM

Price: \$59.95

You're doing a commercial, and the client wants "y'know, something like those car commercials with all that keyboard stuff kids like." You realize he's talking about trance, the "Euro sound" that is making inroads into movies (especially those with chase scenes and explosions), industrial videos ("Welcome to Enron, visionaries of the New Economy!"), and yes, commercials. But you don't go to clubs, don't have a "feel" for this kind of music, and don't have the requisite analog synths or vintage drum machines anyway.

So you reach for *Trance NRG*, with over 450 MB of loops including bass, beats, pads, percussion, effects, scratches, and more. If you want to assemble your own beats, no problem — there are loops for individual drum elements, along with one-shots for cymbals, kicks, percussion, snares, and toms to add accents or create your own loops.

There's not a ton of variety (e.g., 59 basses, 44 beats, 29 scratches, 26 pads, etc.) but there's enough to put together a quick, credible

trance track. The whole collection is ultra mix-and-match — with the right editing, just about anything works. I was disappointed in the pads, though, as they lacked the rich string- or voice-oriented samples that work so well with some tracks.

Still, for quick trance with minimal effort, bingo. And there's extra material so you can get creative too. *Trance NRG* isn't an earth-shaking CD, but it's a straight line from conception to mixdown.

—CRAIG ANDERTON



GUITARWAYS Steel String Guitars

Contact: GuitarWays, www.guitarways.com

Format: Acidized WAV CD-ROM

Price: \$49.95 (introductory price \$39.95)

Steel String Guitar consists of one CD containing over 1,100 Acid-format loops. These are broken down into two types: 947 regular loops, which are stereo 1- and 2-measure loops of chord patterns, progressions, and licks performed on a 30-year-old Gibson guitar, and 166 "Duets," which consists of some of the regular loops playing in the left channel, with lead lines or complementary parts played over them in the right channel. If you just want the lead lines, you can pan to the right, or vice-versa. Many of the Duets are presented as a series; for example,

there are 13 "C#7 + Groove 8" Duets, each with a different lead snippet. If you string all 13 together, you're presented with a credible lead guitar part, although there are level, tone, and dynamics differences from piece to piece when you do this. There's occasional weirdness, such as what sounds like a reversed second note in the "C#7 Groove + Lead 8" Duet.

On the whole, this is a clean, well-recorded set. It's presented dry, so you can add your own reverb, compression, or other effects. The looping and Acidizing is done well, although how well a loop stands up to transposing and time-stretching varies.

If you're looking to add acoustic guitar vibe to your tracks, and need a good selection of patterns, progressions, and licks, give this one a try. The performances are good, the sound is good, and the price is great! —

MITCH GALLAGHER



M-AUDIO ProSessions Vol. 15: Elektron Machinedrum

Contact: M-Audio, www.m-audio.com

Format: REX2, WAV, AIFF, Acid

Price: \$49.95

While in Germany for Musikmesse earlier this year, I got hooked on a remix that was in heavy rotation on Euro MTV at the time. The band: Vanguard. The remixed track: "Flash Gordon" by Queen. In the video, two very aggressive DJ/programmer-types attack a pair of drum machines, twisting knobs and punching buttons with the vengeance of Hendrix tearing into a Strat. Turns out that the machines in question are Elektron Machinedrums — and what wild, wacky, wonderful devices they are.

In *Volume 15* of M-Audio's new ProSessions line of soundware, the Machinedrum is the star of the show. M-Audio promotes the package as the work of "Europe's hottest programmers pushing the continent's hottest drum machine to the extreme." In the liner notes, Charlie Storm is credited with creating the samples, with additional edits by Carlos Vasquez of Digital Assassins and Johnny DeLeon. All sounds on the disc originate from the Machinedrum SPS-1, and span a wide range of modern electronic music styles.

Get ready for some strange, infectious loops. Thumps and thwacks, springs and springs, four-on-the-floor stomps and fluttery arpeggiations, wheezy sci-fi grooves and outright ballistic beats — this collection rules. Some patterns are strictly beat-oriented, some have melodic material mixed in. Fitting, since the Machinedrum is really a synthesizer in drum machine's clothing. In all cases, the sounds are very electronic and

experimental. But don't get the wrong impression — many of these beats still groove hard.

Also on the disc are one-shot samples: booming electro kits, snappy snares, noise-burst hats, zingy cymbals, and a variety of miscellaneous SFX hits. In all there are 157 MB of loops and 115 MB of one-shot samples, duplicated in AIFF and Acid/WAV format. The loops are presented in REX2 format as well.

If you're looking for a library of creatively programmed and processed electronic loops, this collection is for you. And if you'd like to know more about the Machedrum, log onto www.machedrum.com.

—GREG RULE



ZERO-G
Ambient Textures

Contact: Zero-G, U.S. dist. by East West, www.soundsonline.com
Format: Reason Refill CD-ROM
Price: \$62.95

You've already got a fat library of drum loops, and your guitar-playing buddy beats any guitar sample CD out there, so what do you really need when it comes to fresh soundware?

How about a cutting edge set of synth and sampler patches capable of lending a polished, "Hollywood" element to your tracks? Look no further than *Ambient Textures*. It's only for Reason, and it's loaded with hundreds of synth pads, atmospheres, leads, and effects.

Ambient breaks down like this: 300 Subtractor patches, 201 for Malström, 259 for NN-19 (Reason's "basic" sampler), and 240 for NN-XT. If this sounds like a lot, that's because it is.

The man behind the sounds is producer Jonathan Heslop, who has taken care to craft a deep collection of samples that could be used in a variety of contexts — trance, pop, new wave, film

scores, etc. For each instrument, patches have been organized into categories such as ambient pads, harsh leads, effects, gated synths, and so on. Generally speaking, pads tend to lean toward digital-analog hybrid territory (think Absynth meets D-50). I had no trouble finding dozens of one-note soundtrack starters.

The Subtractor and Malström sounds don't have quite the expansiveness of the samples, but this is probably because these synths don't have the advantage of using finely processed multisamples as raw material. Nonetheless, the synth patches are impressive and I found that their more "analog-like" quality complemented the hyper-wide hi-fi multisample material. ➤



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"I think the MSS-10 sounds amazing. It's very hi-fi and open and sweet, but it's not sterile and boring. It's got fidelity, but it's got a lot of character and a lot of soul. It brings things forward in the track. Most of the music I tend to do is rock or alternative, so hi-fi can be a bad word that means characterless, but this is hi-fi with soul."

Joe Chiccarelli

Producer/mixer/engineer, Joe Chiccarelli loves the Natural Sound of the Martech MSS-10 mic preamp; *"I'm totally blown away by the realism and detail."* His recent use includes sessions with Elton John (vocals), Kronos Quartet (strings), Tim Easton (vocals, acoustic and electric guitars), and Tracy Bonham (drums).

Free Report: Discover why only Natural Sound truly captures the soul of the performance. For the full story on the MSS-10, call or visit us on the web and request report EQ23.



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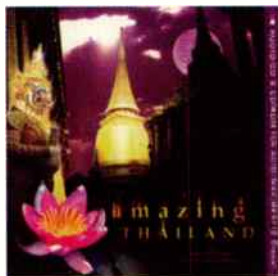
Sounds

Bottom line: This is an outstanding set of synth and sampler patches with a modern, analog-digital hybrid slant. —JOHN KROGH

DISCOVERY SOUND Amazing Thailand

Contact: Discovery Sound,
www.discoverysound.com
Format: 1 CD audio, 1 CD Acidized
WAV/REX2/movies
Price: \$91

This set is as refreshing as a Singha beer on a hot summer day. Based on traditional Thai music, the audio CD contains multi-samples for several instruments, as well as phrases from percussion, voices, various melodic instruments,



ensembles, some groovacious percussion ensembles, and a few sound effects. The CD-ROM draws from the audio CD, converting most of the phrases into both Acidized WAV and REX2 formats. Shipping is free, but you get only the CDs and printed materials, sans case.

What sets this package apart from the norm is 117 MB of movies (QT and WMV versions) that show the

This set
is as
refreshing
as a
Singha beer
on a hot
summer day.

players and instruments in action, plus a 5-minute movie called "Amazing Thailand" (see it on their site). They get you in the mood for sure, and are a great supplement to the otherwise slim printed documentation.

The quality of Acidization and REX2 marker placement varies; you'll need to tweak markers on many files for optimum stretching (of course, not all files can stretch seamlessly anyway). Some files work better when Acidized and some when REXed, so try each variation if your host supports both.

This set has a great "vibe," and as I like to sprinkle world elements into my music, I'm going to give it some serious exercise in the months ahead. If you want well-recorded, exotic spices to add to your music (or want to create some authentic Thai music for scoring, commercials, etc.), this is the real deal — curry, coconut, and peanut sauce.

—CRAIG ANDERTON EQ

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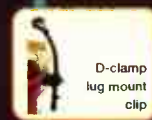
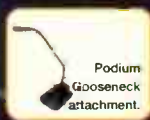
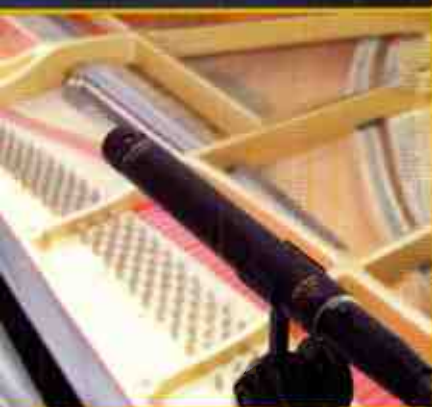
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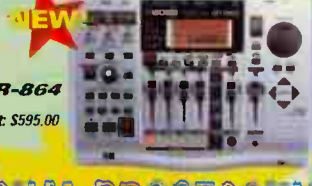
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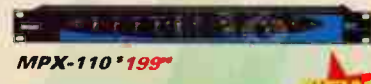
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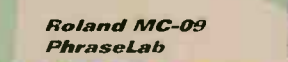
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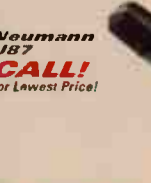
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COMING ATTRACTIONS

"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.

Weed Media Activator

by Craig Anderton

Napster meets Amway? Sort of . . . but here's the rest of the story

What is it? A unique model for online music file-sharing.

Who Needs It? Those who want to get their music online, and those who want to discover new music.

Why is it a Big Deal? Because not only does the artist get paid, but the money that used to be poured into independent promoters, payola, and A&R goes to the *listeners*.

Shipping: Fall 2003

Price: Free trial for content, then price set by artist

Contact: www.weedshare.com

So you want to get your music out into the world. File-sharing is one method, but you can't make any money from it . . . or can you? A Seattle start-up, Weed (as in "spreads like a") has devised a radical model for online music. Whereas other pay-to-download models focus on distribution for existing record companies, Weed aims to obsolete the concept of a "record company" altogether by de-centralizing A&R, promotion, and distribution so it's essentially listener-controlled. As a result, the listeners, not just the artists, are compensated for what they do.

Say what? The process works like this: A Windows Media file that includes Weed's Digital Rights Management (DRM) protocol gets posted on one or more websites. Anyone can download it for free, and listen to it three times. On the fourth time, a dialog box says "You seem to like this song, want to buy it?" If so, you use a PayPal-based micropayment system to pay whatever the artist charges,

and the Weed Media Activator "stamps" the file with your "receipt." 50% goes to the artist, and 15% goes to Weed. The file is unlocked, so you can also burn it to a CD, or download to a WMA-compatible portable player.

Pretty ordinary so far, but here's the twist: the other 35% provides three possible

Weed aims to obsolete the concept of a "record company" altogether by de-centralizing A&R, promotion, and distribution.

commissions of 20%, 10%, and 5%. Suppose you email the file you bought to your friend Bob, who likes it and buys it too. You get 20% commission. Then Bob sends it to Klaus, who also buys it. Bob gets 20%, and you now get 10%. If Klaus sends it to Julie and she buys it, Klaus gets 20%, Bob gets 10%, and you get 5%. Past that point you're out of the loop, but the commission process continues as long as the file is in circulation (and the artist continues to get 50% of every transaction). Essentially, when you forward a file you've bought, you're the A&R person, promoter, and distributor — why shouldn't you be compensated?

Although Weed uses DRM, John Beezer, who worked with Microsoft prior to joining Weed, says,

"Weed has built its system on the assumption that DRM will never be perfect, and that punitive DRM will always be vulnerable. Weed's approach involves reward for cooperation, which works not by making encryption more robust, but by removing the incentive to crack it."

So how do you get your music on the system? Weed principal (and mastering engineer) Steve Turnidge explains, "One of our highest aims is to ensure the legality of the music on the Weed system, and that the 50% credit goes to the right party. So, all content goes through our affiliated Independent Content Producers (ICP). They require signed paperwork that guarantees clearance and ownership of the work, set attributes for the file, and encode it. Finally, the ICP 'bounces' the un-monetizable Windows Media file to Weed, and gets it back as a monetizable Weed file."

It takes a bit for the Weed concept to sink in; it's not a conventional model that works with record companies. Instead, it's optimized for independent artists and the kind of people who frequented Napster not to download hits for free, but for the thrill of discovering new music. Only this time, they — and the artist — get compensated. It's a fascinating concept, and one that just might be the "killer app" for online music distribution.



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COMING ATTRACTIONS

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Broadjam Metajam

Music management and promotion tool

by Greg Rule

What is it? A comprehensive music management and promotion software kit.

Who Needs It? Independent producers, solo artists, and bands wanting to step up their business and presentation.

Why is it a Big Deal? Anything that simplifies the promotions and management sides of music is worthy of "big deal" status.

Shipping: Soon, if not by the time you read this.

Price: \$199

Contact: Broadjam, 608-271-3633, www.broadjam.com

Continuing our theme of service-oriented products in this month's Coming Attractions section, we're pleased to tip you off to Broadjam's forthcoming software kit called Metajam. It's a one-stop application for musicians and producers who want to get their music noticed — and make a professional impression in the process. For \$199, you can use the Metajam's friendly tools to build websites, promo kits, and more, and then launch the results online via Broadjam's popular broadjam.com service.

"This desktop software application enables bands and artists to manage and promote themselves," explains Broadjam, "even distribute their own music. Information is easily wrapped around songs using Broadjam's proprietary metadata format, so these songs can be more efficiently

searched and cataloged, by not only listeners, but also anyone in the industry looking to place music." Furthermore, Metajam enables musicians to provide potential licensors with the proper information, whether for film, television, advertising, or recording purposes. Metajam ships with 1,500 industry addresses — labels, publishers, radio, and the like.

The main components of the Metajam package are:

■ Website Manager.

Construct and manage your own site quickly and easily. Upload audio files, post images, create email with companion streaming audio, and more.

■ **Promo and Press Kit Builder.** Create promo sheets for venues, radio stations, record labels, publishers, and fans. If you've struggled with creating press kits in the past, Metajam will streamline this process for you.

■ **Song and Album Manager.** Leads you through a step-by-step process of creating "metadata" song details, which can then be added to your audio files. This gives your music a competitive edge as the

music industry turns to online searches for new music.

■ **Contact List Manager.** An easy-to-navigate database for storing your industry contacts, fan databases, and email lists.

■ **Gig & Event Scheduler.** Keeps tabs on your performances past, present, and future. Use this tool to track your events and organize your schedule.

■ **Photo and Image Organizer.** Stores and organizes your publicity photos, CD covers, logos, and other visual images. From here, images can be quickly dropped into your website or promo materials.

In order to use Metajam, you'll need a PC equipped with a 266 MHz Pentium class processor, 64 MB RAM, 60 MB of free hard drive space, a CD-ROM drive, 800 x 600 monitor (or better), Windows-compatible soundcard, and Windows 98SE, 2000, NT, or XP OS. A Macintosh version is slated for release soon after the PC launch.

For a limited time, those who join will get free 1-year access to broadjam.com (a \$99 value).

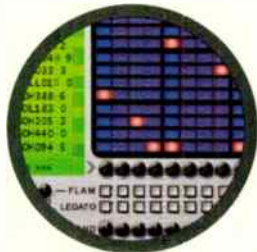


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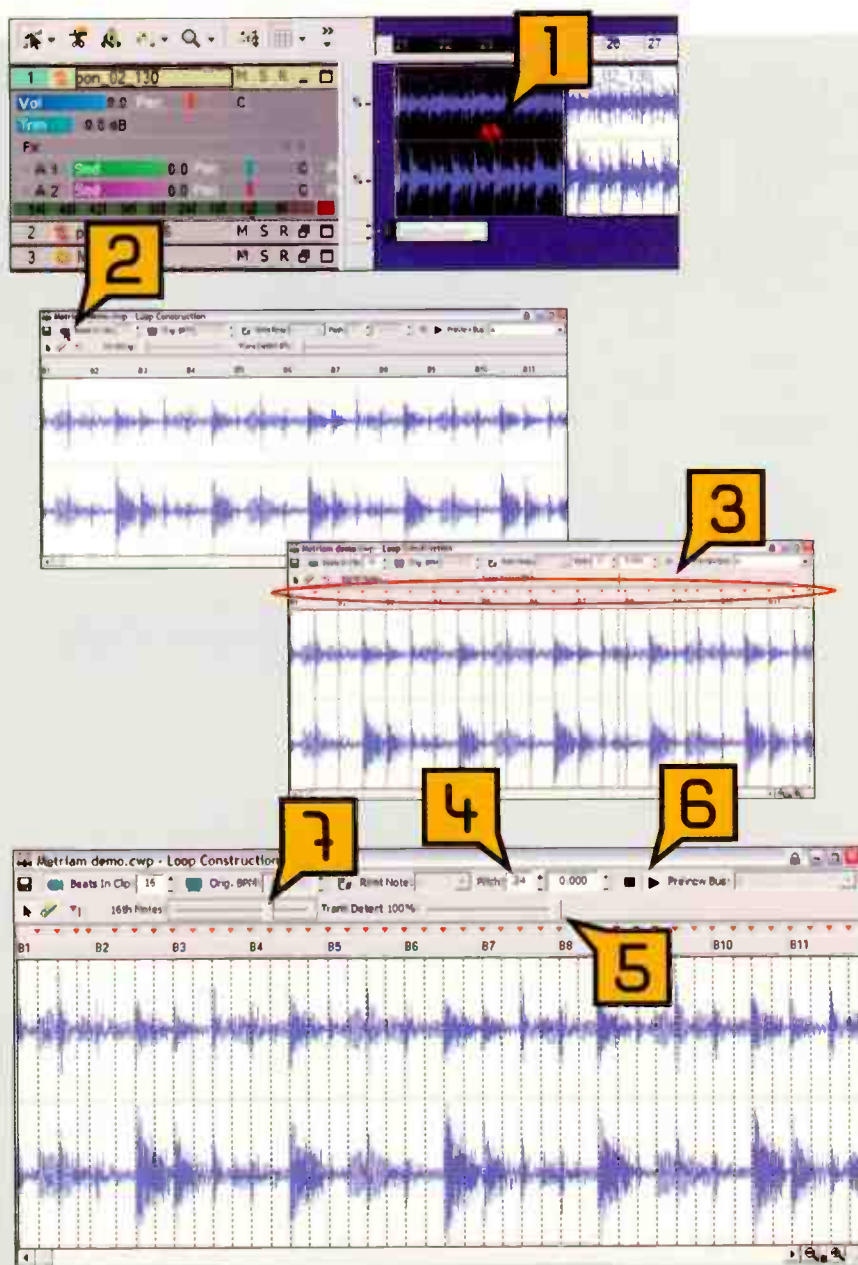


Twist Your Audio Beyond All Recognition

Objective: Don't just loop rhythmic tracks, but process them in totally freakazoid ways — from sci-fi to electro.

Background: Sonar can turn audio clips into "Groove" (acidized) clips, suitable for realtime tempo- or pitch-stretching. However, deliberately mis-setting some of the looping parameters can create effects unobtainable by any other type of processing.

Step by Step: You can rotate among steps 2, 3, and 5 in your quest for the ultimate tricked-out sound.



- 1 Double-click on a Clip to bring up the Loop Construction window.
- 2 Click on Beats In Clip. The default number of beats should be correct, but adjust if necessary.
- 3 As soon as you click on Beats In Clip, slice markers appear over the waveform in the window. These indicate individual rhythmic segments.
- 4 Set the pitch parameter to 24.
- 5 Slide the Trans Detect slider all the way to the right (100%).
- 6 Click on Play or Preview to start the loop.
- 7 Experiment with the Slicing slider. Start with 64th-notes for the most robotic/metallic effect, then try 32nd, 16th, 8th, etc. Each Slice setting produces a different type of freakazoid effect.

tips

- Although +24 is a somewhat "magic" pitch parameter, +12 also produces useful effects. -12 and -24 give weirdly pitched, slowed-down effects that also sound fabulous layered with the original loop.
- Often, you can simplify the loop beats by setting the Trans Detect slider to a low value, like 10%.
- The freakazoid loops work very well when layered with the original loop, which should be set to normal loop settings. They can make great breakbeats when you drop out the original loop.
- Listen to a loop, then its twisted version, then both layered together at www.eqmag.com.



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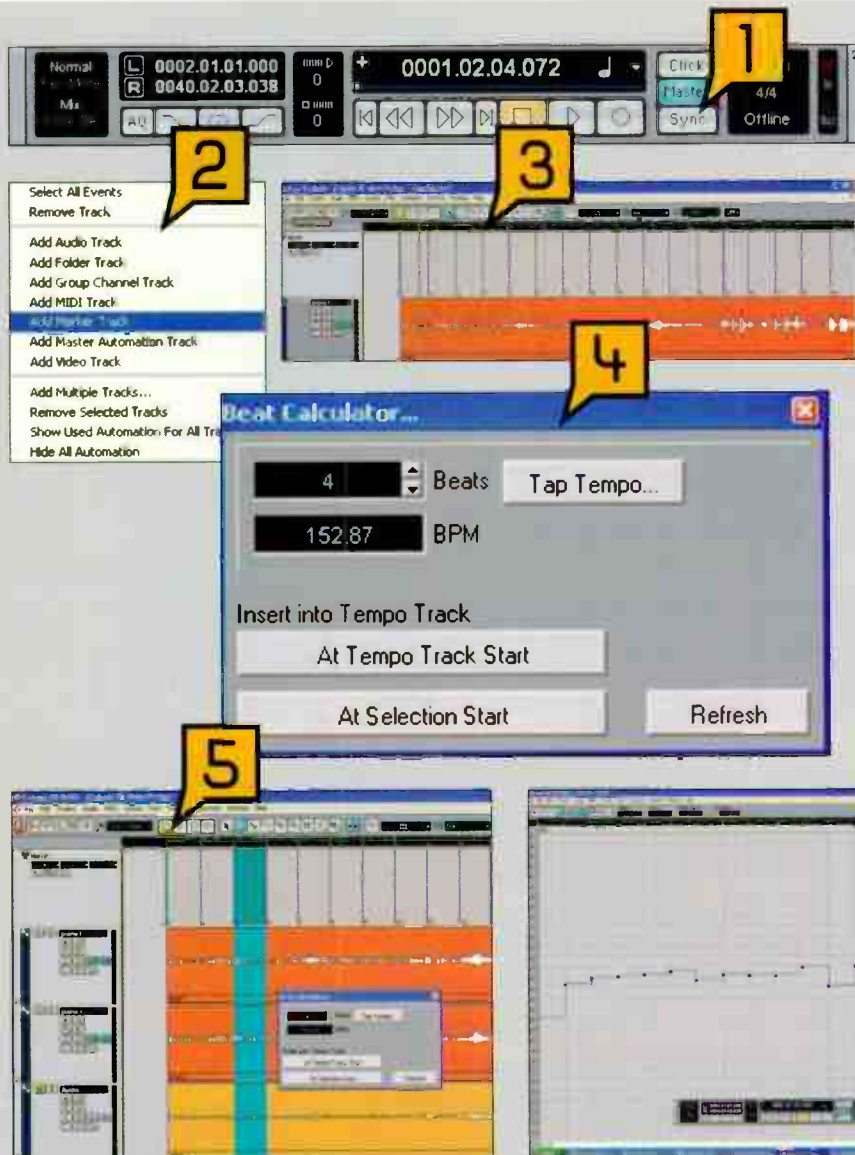
Steinberg Cubase SX & Nuendo

Taming the Wild Loop

Objective: Beat-calculate your audio, and lock it to grid.

Background: Identifying the tempo of a recording so the audio has a correlation to the beat and bar can greatly ease editing tasks. MIDI events can easily be quantized and audio events can be placed on a time grid. This is also an easy way to have tempo-based VST plug-ins such as delay maintain perfect timing with the audio.

Step by Step: Six steps to air-tight tracks.



- 1 Activate the Sync button on the transport so it's illuminated.
- 2 Add a marker track by going to the Track List column. PC users: Right click to add a marker track. Mac users: Ctrl-click.
- 3 Insert markers as the audio plays on every downbeat of a measure by tapping the Insert key on PC or the Home key on Mac.
- 4 Open the Beat Calculator from the project menu.
- 5 With the Range Selection tool, double click between two adjacent markers. With the Beat Calculator, select the number of beats and select insert at selection start. Click the Refresh key and proceed to the next set of markers. Continue the process.
- 6 The newly created tempo track is now visible in the tempo track.

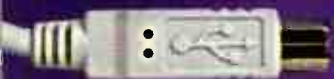
tips

■ Markers can easily be moved if the placement isn't accurate by simply repositioning the marker with the mouse. Cubase and Nuendo's Drop Zoom function makes it easy to adjust the marker in relation to an audio or MIDI event.

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The Resolution Revolution

There are literally dozens of surround DVDs being introduced every month. The reviews talk about the higher resolution of DVD-A and DSD audio releases. Yes, it is great to have 24-bit/96 kHz audio to play back on your high-end audio system, but it seems curious that the resolution of the final product is much higher than the original recordings.

Remember when CDs first appeared? There was a rating system in place that told you the evolution of the recording. The three stages of the recording were: (1) the multi-track tape format, (2) the mixdown format, and (3) the mastering method. "A" was for analog and "D" was for digital. If a CD was rated D-D-D, it meant that

Are We Getting What We Pay For?

the multitrack tape was digital, the mixdown tape was digital, and mastering was digital. For marketing reasons, the record companies wanted as many Ds as possible. Even though the third D was supposed to tell you whether the CD was mastered in the analog or digital domain, the record company always used a D because "the final step was digital because the end result is a CD." The rating system was finally dropped because it was completely up to the artist and the record company, and there was no way to tell when a stage was analog or digital.

Now that we have DVD-A, we are again looking at the marketing departments and not the technical departments to tell us what is on the DVD-A. When you read the back of the DVD-A and it says that the album is presented in 24/96, you would assume that it was recorded in this higher resolution. This is not always the case.

As an example, let's say you have a multitrack digital tape that was originally recorded at 16/48. You mix the album through an analog console and print the mixes to a piece of analog tape. The analog tape then goes to the mastering house and the mastering is done at 24/96. Where did the extra resolution come from?

Okay, for a second let's ignore the analog tape. When you EQ or compress or otherwise process a 16-bit signal, there are products generated that can only be captured by a greater bit depth. If you lower the level by 0.1 dB, the results can only be accurately captured at the higher 24-bit resolution. If you print the mix to analog tape, there are artifacts such as harmonic distortion, wow, and flutter that can be better captured by a 24-bit conversion.

I have a problem in two areas. The first area is mastering a 48 kHz source at the higher 96 k or 192 k sample rates. There is no new information generated that has anything to do with the original material that would require the higher 96 k or 192 k sample rate.

The second problem is the act of printing the mix to analog tape for the purpose of retrieving the mix from that tape at a later date for re-release at a higher sample

rate. This problem has actually two sub-problems. First, the mix, after being printed to analog tape, contains the additional artifacts as stated above, that are not part of the mix. These artifacts are distortion. Any additional information that is not part of the original information is called distortion. This includes clipping, compression, wow, flutter, tape non-linearity, phase shift, cross talk, and harmonic distortion caused by the tape medium. Second, the audio content of analog tape changes over time. The mix will not be the same in one year, one month, or even one week. If the mix is re-sampled at a later time, even at the same sample rate, there will be a difference in sound because of the deterioration of the magnetic recording.

Reviews in audiophile magazines praise the fact that there may be a later transfer from the analog mixes of the album at a future higher sample rate. This, of course, is for even more enjoyment when consumers are afforded the next generation of audio playback units. The quality won't be better, it will in fact be worse, mostly

When you read the back of the DVD-A and it says the album is presented in 24/96, you would assume it was recorded in this higher resolution. This is not always the case.

because of time passed and the generation loss caused by the analog tape. The higher resolution product will definitely sound different, but maybe this is all the public wants. Maybe they just want to own every permutation of the sonic possibilities.

When CDs were first released, there were some complaints that they did not sound as good as vinyl albums. After some investigation it turned out that the vinyl records were mastered from the original analog or digital master tape — the first-generation, original master mix tape. The CD was made from a second-generation analog tape copy. Yes, an analog tape copy was sent to the CD plant. Artists and producers yelled and screamed and the mistake was corrected.

The same thing is happening to the audio on DVD-A and DSD releases. What you think you see is not really what you get. The 16/44.1 CD is made from the original master tape. The DVD-A is being made from an analog copy, even if it is a 24/96 high-resolution disc; it is still made from a copy. At over \$20 each, we are surely not getting what we paid for. EQ



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Jonny Lang: Guitar

After much success as the team responsible for Counting Crows, Vanessa Carlton, and the all-star remake of "Lady Marmalade" — hit producer Ron Fair and Pro Tools engineer wunderkind Tal Herzberg teamed up with guitar slinger Jonny Lang for a first-time collaboration. *EQ* caught up with Herzberg, who shared the secrets of success on capturing the phenom guitarist's soulful riffs via Pro Tools.

■ **Engineer Notes.** "After tracking and comping all of the instruments and vocals for the song, it was time to record Jonny's final electric guitar track. We approached this record a bit differently than any other production we've worked on before, trying to capture some warm organic blues tones and feel, with enough modern, radio-friendly sound qualities."

■ **The Setup.** "We set up for the session by splitting the guitar signal [a vintage ES335 Gibson] to four different vintage Fender amps — a Super Reverb, a Deluxe, a Princeton, and a Bassman — using a Systematic Sound GBX-95 splitter, with no effect pedals inserted in the chain." To get the overdrive sounds, Herzberg says he achieved this by simply pushing the amps harder.

"Herzberg set the amps up in the middle of the tracking room on a rug and isolated them using gobos. Each was miked with a Shure SM57. "The four mics were patched to Neve 1073 pre/EQ modules, followed by Empirical Labs EL-8 Distressor compressors."

DATE: 6/23/2003
STUDIO: Record Plant Studio 4
LOCATION: Hollywood, CA
ARTIST: Jonny Lang
TRACK: "Red Light"
PRODUCER: Ron Fair
ENGINEER: Tal Herzberg
Assistant Engineer:
 Anthony Kilhoffer
RECORDER: Digidesign Pro
 Tools HD
SAMPLING FREQUENCY:
 88.2 kHz



■ **Tone Recipe.** "After auditioning the four direct amp sounds in the live room and control room, we chose the Bassman as the main direct sound. The Neve preamp was set to 35 dB gain, EQ in, +2 dB on the high shelf, +2 dB on the 3.2 kHz mid frequency, and +2 dB on the 220 Hz low frequency. The Distressor was set to 5 on the input control, 8 on the output, 3 on the attack, 8 on the release, 3:1 compression ratio, detector set to Band-Pass, and audio set to Distortion 3. This chain was then patched into input 1 of the Digidesign 192 audio interface, and was brought into the session on an aux input track, which was bussed into an audio track as final destination."

■ **Miking.** "Above the four amps we placed a Neumann U67 mic in the figure 8 pattern to capture more of the room tone. We used an SSL preamp, and processed the sound with Waves' Ren EQ, which I set on a low-pass filter at 180 Hz and +3 dB at 2.8 kHz. I also used McDSP's Analog Channel plug-in on the default preset. We let all four amps play in the room, so that the room tone was loud and rich, creating a short slap effect when bounced from the walls. This signal was also brought into Pro Tools on an aux track, and, after finding the right blend between it and the direct amp signal, it was bussed to the same final audio track the direct signal was routed to, creating a final printed blend."

■ **Final Coloring.** "We colored the sound a little bit by inserting a Digidesign medium delay plug-in on the final audio track (2 x 1/4-note repeats, 90:10 wet/dry mix), creating the final sound without committing to the delay as an integrated component.

"The rest was easy," concludes Herzberg, "Jonny played licks all over the song, and we all sat down at the end to create a final composite performance, with occasional lines doubled." *EQ*



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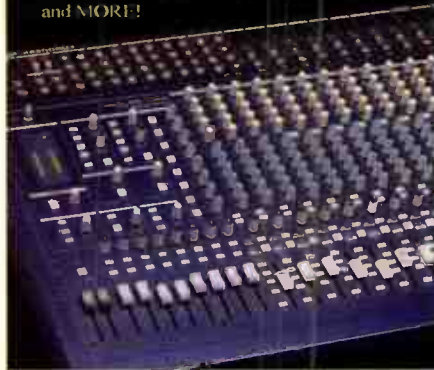
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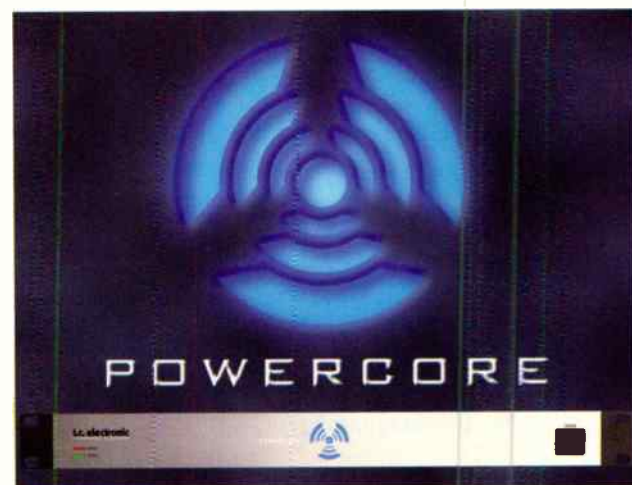
One Perfect Channel: the Grace Design Model 101 is a single serving of the critically acclaimed Grace Design 801 microphone preamplifier, and it's the perfect compliment to your MOTU 828mkII — or any other MOTU audio interface. The Model 101 is Grace Design pedigree throughout with fully balanced and transformerless design and no electrolytic capacitors in the signal path. The included instrument DI input is designed to accommodate a wide variety of high-impedance input sources, making it an ideal choice as a DI box that flawlessly preserves any input signal. The 101 delivers incredible bandwidth, headroom and resolution that produces remarkably natural, musical and detailed sound. The ultimate mic preamp for under \$1000.



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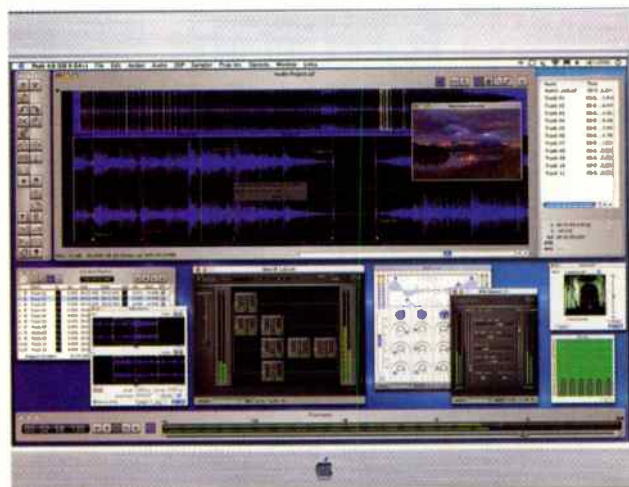
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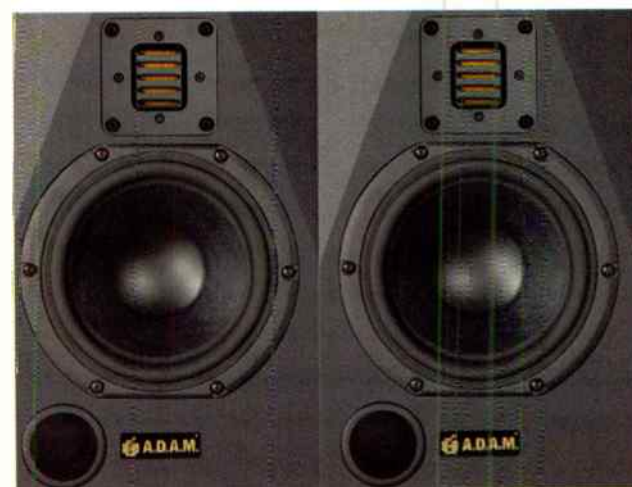
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ADAM Audio P11A Studio Monitors

Two-way shielded active monitors for your MOTU system

With groundbreaking innovation in electro/acoustic transducers, no-compromise design, superior materials and the same A.R.T. (Accelerated Ribbon Technology) folded ribbon tweeter found in all ADAM monitors, ADAM's P11A two-way shielded active monitors deliver your mix with astonishing clarity. Connect a pair to the main outs of your MOTU 828mkII FireWire audio interface — or any MOTU I/O — to hear your mixes with unique imaging and outstanding transient response at a very attractive price point. Europe's "Keyboards" magazine held a studio monitor shootout between no less than 25 professional monitor systems, and the ADAM P11A's came out at the top of the heap. One listen, and you'll be hooked, too!



Upgrade your

MOTU Studio

To Mac OS X

DP4, MachFive and the new 828mkII lead an impressive array of new studio tools for Mac OS X



The new 17-inch PowerBook G4 17 inches of pure professional audio computing pleasure

With a display resolution of 1440-by-900 pixels, the new 17-inch PowerBook G4 delivers an eye-popping 1.3 million pixels on screen — the same viewing area as a 19-inch CRT monitor. You see more tracks, more mixer faders, more plug-ins, more virtual instruments, more everything in your Digital Performer virtual studio. At 15.4 inches wide, it sits perfectly on top of your MOTU 828mkII FireWire audio interface. The 1-GHz G4 processor delivers serious CPU horsepower — enough to run as many instances of MachFive and other virtual instrument plug-ins as you need, with plenty left over for your favorite plug-ins. Back up your projects to DVD-R with the built-in SuperDrive. The MOTU studio is now more powerful and portable than ever.

Remove the 828mkII's rack ears and slide it right underneath your TiBook — the perfect desktop system!



Waves Native Platinum

The ultimate Waves processing bundle for every MOTU studio

No studio is complete without Waves processing, and now Waves brings its entire line of award-winning plug-ins to the Digital Performer Mac OS X desktop. From the classic L1 UltraMaximizer to the exquisite Renaissance Series to the Masters and Restoration bundles — all of the Waves processing you've come to depend on every day can now be at your fingertips in the most advanced native audio recording system available. When only the very best signal processing will do, Waves plug-ins deliver.





photos by Doug Weiner
by Mitch Gallagher

Room with a VU

STUDIO: Sound On Sound Recording, Studio E
LOCATION: New York, NY
CONTACT: www.janfolkson.com
KEY CREW: Jan Folkson
CONSOLE: Digidesign Control 24
RECORDERS: Denon DN790R, HHB 850 CD recorder, Panasonic SV-3800 DAT, TASCAM DA30 mkII DAT, DA88
MONITORS: Quedest 2205, VS112 sub; Genelec 1031A [5], 1092 sub; Yamaha NS10m
OUTBOARD: ADL 1000, dbx 160SL, Empirical Labs Distressor [2], SPL Transient Designer, Summit Dual Program EQ [2], TLA100A [2], Universal Audio 1176
EFFECTS: Eventide Eclipse, Lexicon 480L, Lexicon PCM80, Line 6 Bass Pod Pro, Roland GP-100
MIC PREAMPS: Avalon M2 [2], Neve 3104, Summit TPA200A [2], Universal Audio 2108, 2610
MICROPHONES: Audio-Technica AT4033, Beyer M88, EV TL80, Gefell UM70, Neumann KM254, KMS105; Royer 122, Sennheiser MD421, Shure SM81, SM57 [3]; Sony C800G, Soundelux U95
COMPUTERS: Apple G4/867 MHz, Marathon PowerRack G4, Magma 64-bit expansion chassis, Rorke AVR Dual Hot Swap Enclosure, AIT+ tape backup drive, SoundChaser TK1 Windows XP
DAW: Digidesign Pro Tools|HD4, 192 I/O [3], Sync I/O, Frontier Dakota, Montana, Tango 24
SOFTWARE: Digidesign Pro Tools, Emagic Logic Audio Platinum, MOTU Digital Performer, Steinberg Recycle, Roxio Toast, Jam, Chicken Systems Translator, Sonic Foundry Acid Pro, TASCAM GigaStudio, Propellerhead Reason, Native Instruments B4, AAC Lounge Lizard, Yellow Tools Culture, Spectrasonics Stylus, lots of plug-ins

KEYBOARDS/MIDI: Akai MPC 4000, Korg Trinity Rack, Triton Rack, Wavestation EX, Wavestation SR; Kurzweil Micro Piano, Moog Minimoog, Nord Rack, Roland JD-990, JP-8080, JV-2080, S-750, S-760 [2], Yamaha EX5R, KX88, VL7, Waldorf Microwave XT, Digidesign MIDI I/O [2]

STUDIO NOTES: After spending 18 months in a studio that wasn't purpose-built, Jan Folkson partnered with New York commercial studio facility Sound On Sound Recording to create Studio E, a custom-designed studio within the larger studio's space. "Studio E is the room I've been looking for: a studio that sounds good and feels warm," Folkson says. "It meets all my needs for mixing, overdubbing, and editing. And Sound On Sound itself offers a strong infrastructure and wonderful support team from the general assistants on up to top management."

With a control room and isolation booth, Studio E is set up for both stereo and surround music production. "Studio E sounds great," says Folkson. "There's no dry wall. What's not lumber is fabric, so it's a very comfortable space. And it's a very true room acoustically: What you hear is what's going down."

"The studio is a full production suite," Folkson explains. "A composer or producer can come in, and we can create anything they want from scratch."

EQUIPMENT NOTES: Folkson's arsenal of MIDI gear, ranging from a vintage Minimoog to the latest synths, samplers, and drum machines, is one of the room's distinguishing factors. As a beta-tester for software manufacturers, Folkson keeps his room on the cutting edge. "My strength is combining the technical and the musical," he says. "While the technology is necessary, it's all about the music, and I'm able to live in both worlds."

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828mkII



*20-input
8-bus mixer*



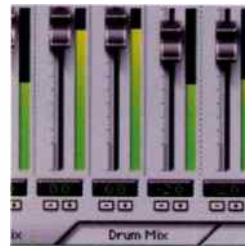
*Front-panel
programming*



*Stand-alone
operation*



*I/O and mixing
in one rack space*



*Software
control*

The 828mkII is not just a FireWire audio interface. It's also a 20-input 8-bus mixer. Run up to four separate 20-input monitor mixes while you track with your audio workstation software. Disconnect it from the computer, flip off the rack ears, tuck it in your gig bag and take it mobile as a stand-alone mixer. Need to tweak the mix? Make changes in seconds with the front-panel LCD. The 828mkII is your complete desktop audio interface and mixer.

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