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Electronic Musician

OCTOBER 2007

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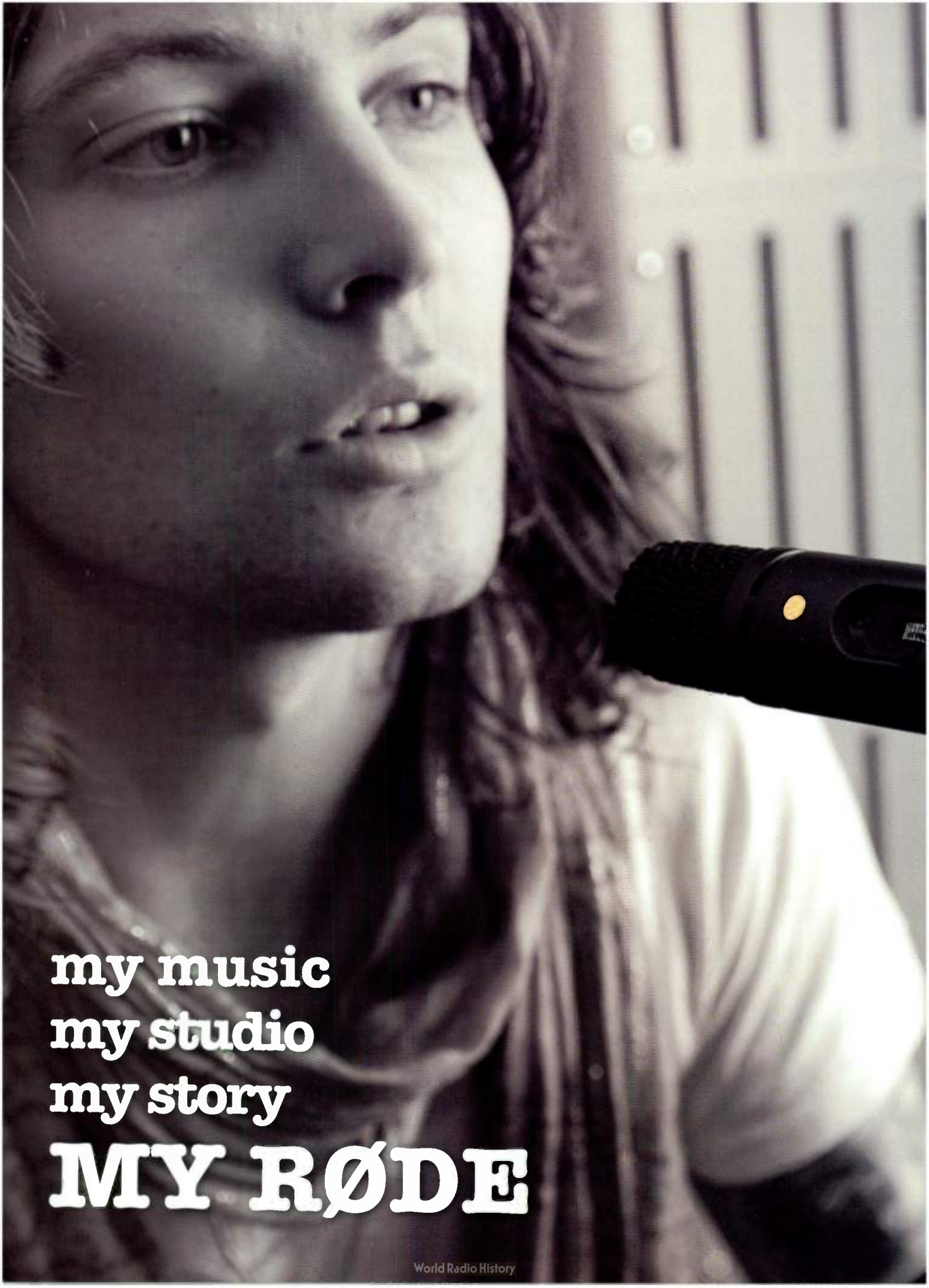

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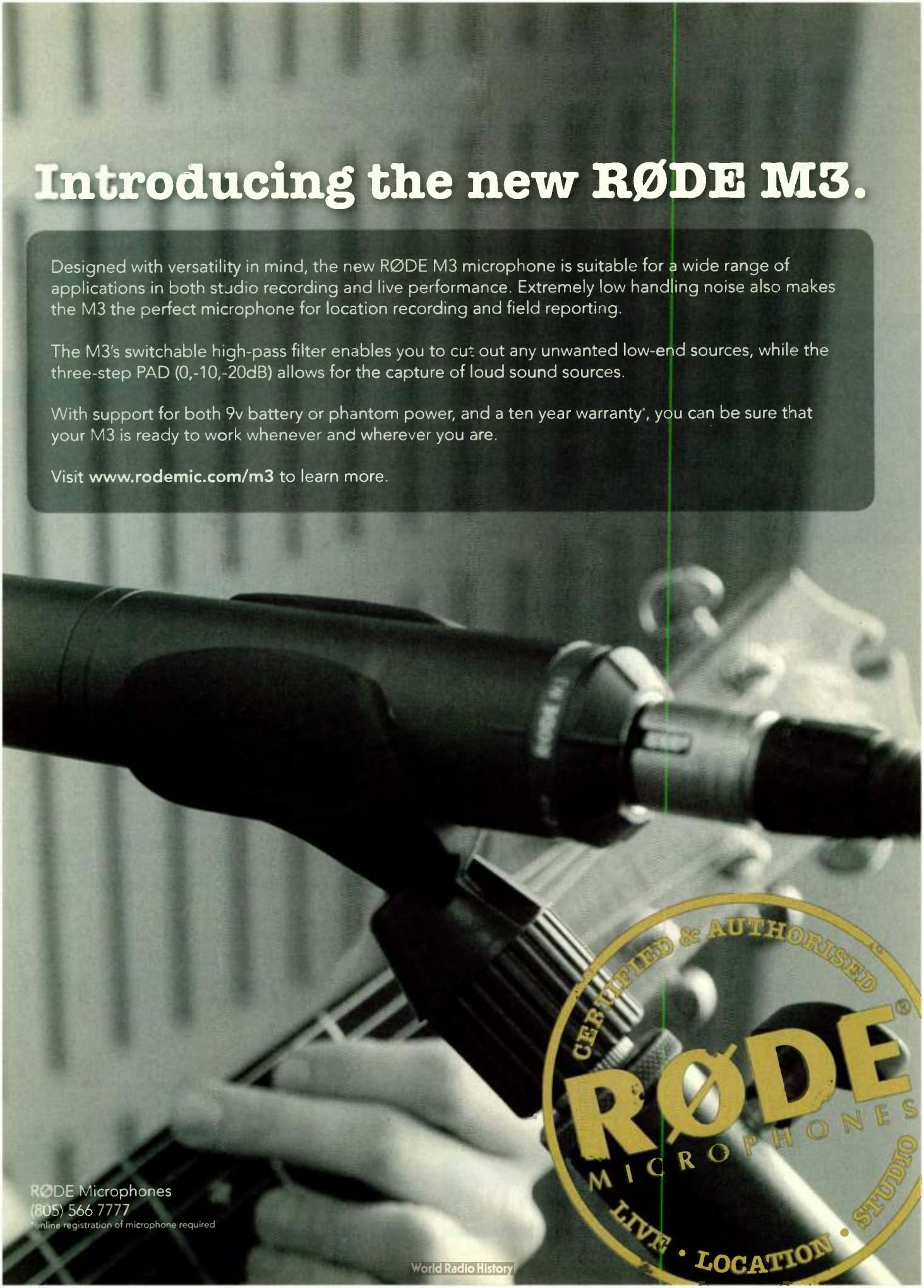

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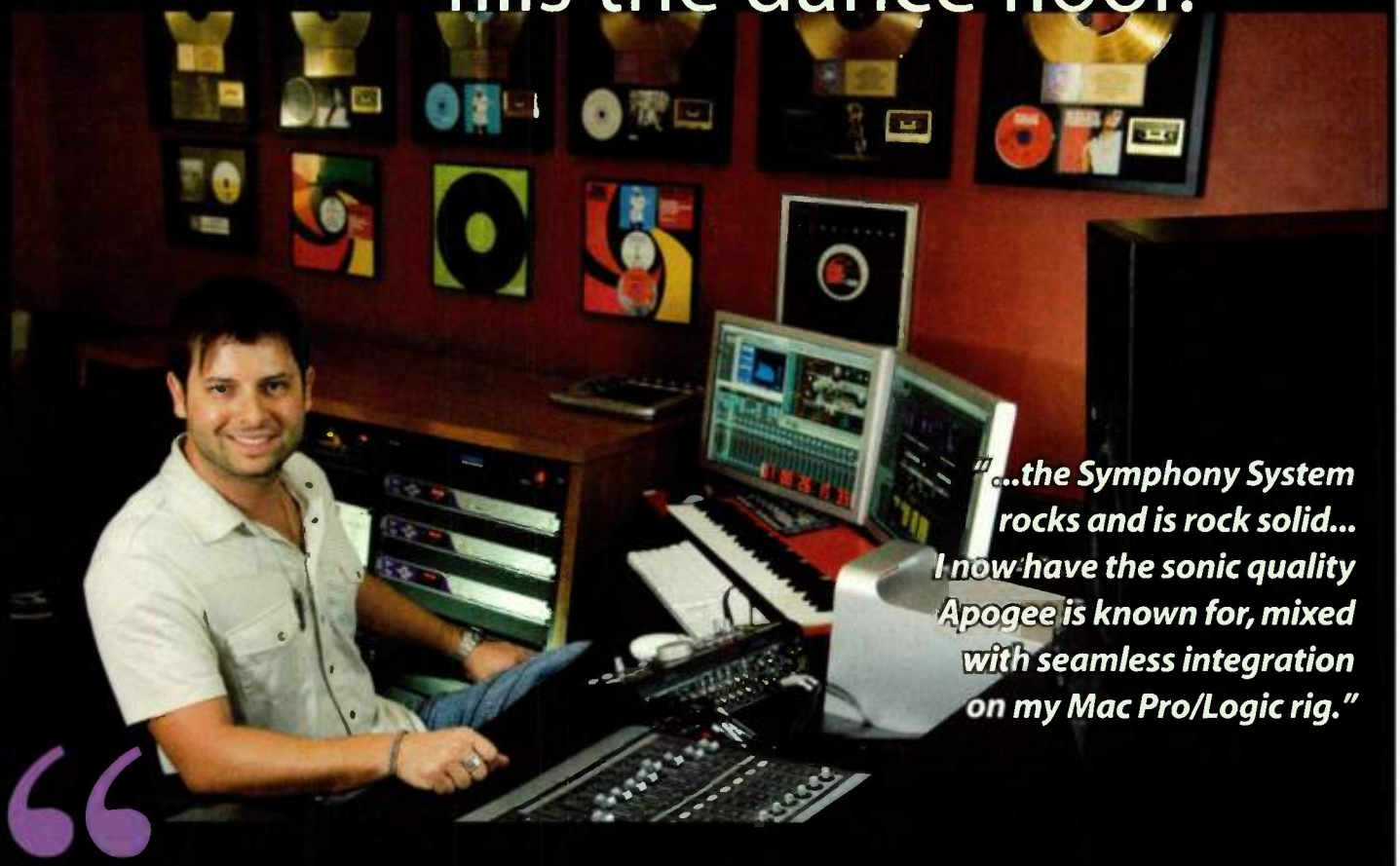

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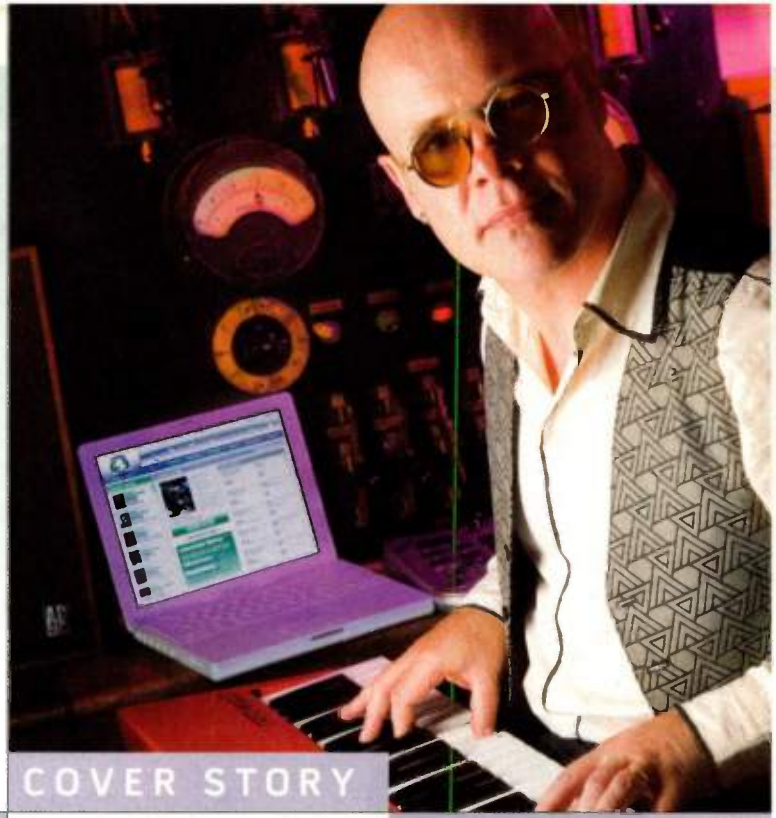
Electronic Musician
October 2007

INSIDE



PAUL BOX

FEATURES

COVER STORY

31 MASTER CLASS: PITCH FIXERS

When used subtly, pitch correction can make the difference between a mediocre vocal track and a stellar take. We show you how to get the most from your pitch correction plug-ins. By Michael Cooper

38 THE WORLD IS YOUR WORKSTATION

Online collaboration services let you record, jam, and network with players around the world, including top-name studio musicians and mix engineers. We take a look at these services and how they work. We also ask Thomas Dolby about his experiences with remote collaboration. By Marty Cutler

53 DIY: CHAMBER MADE

There's nothing like the natural reverb of a real room to add life to your mix. Learn how to build your own echo chamber—it's easier than you think! By Dave Simons

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DEPARTMENTS

Electronic Musician
October 2007

130

INSIDE

COLUMNS

106

REVIEWS

112

112 QUICK PICKS

Mojave Audio MA-100 tube microphone

FabFilter Timeless 1.0 (Mac/Win) delay plug-in effect

Samson VR88 ribbon microphone

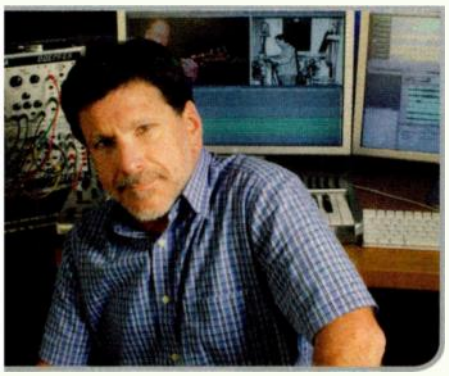
Eiosis ELS Vocoder 1.2 (Mac/Win) vocoder DSP effect

Are You an Audio Insider?

If you are a regular visitor to emusician.com, you've probably noticed that some of our articles are now accessible only with a paid registration. In early August we launched an exciting new premium-content site called Audio Insider (AI). However, the transition has been confusing to some of our readers, so before I give you the scoop on AI, let me explain how *Electronic Musician* and emusician.com relate to one another.

Last month I introduced the digital edition of EM, which is identical to the print version but adds the convenience of clickable links. An annual digital subscription costs the same as for print ($23.97); for $6 more ($29.97) you can get both the electronic and paper editions. Digital edition subscribers receive EM in full before it hits the newsstand.

Beginning this month, much of the current issue will go online at emusician.com immediately. Many articles will be available for free, such as "What's New," the review section, product roundups, "Square One," and "Tech Page." Keeping "Square One" free allows us to refer readers to important articles about audio and recording fundamentals. (In fact, we will soon launch eMusician 101, a free area on emusician.com that conveniently aggregates all such articles.) On top of that, more multimedia content is being added to emusician.com on a monthly basis, including Podcasts and videos. The remaining features and columns will become part of Audio Insider when they go online each month.



JANE RICHEY

But you get more from being an AI member than the ability to see the current issue on the Web. You'll have access to EM's most sought-after archive articles, as well as downloadable sounds and exclusive video tutorials and Podcasts. The standard membership also includes a subscription to the digital edition of EM, and lets you read articles from *Mix* and *Remix* so you can further expand your knowledge about music technology. To sweeten the deal, you'll receive benefits with music-industry services from major players: a duplication discount from Discmakers; 10 minutes of free tech support from Obedia; a year of free Web hosting on Broadjam; and discounts on purchases at MixBooks.com. If you're not sure you're ready for a yearly commitment to Audio Insider ($49.95), you can try it out for a month ($5.95).

If you are serious about audio production, check out the premium AI membership ($99.95), which gives you an annual digital-edition subscription to all three magazines. We'll even send you a Mix UA-1 large-diaphragm condenser mic when you sign up for the premium level of AI. For more details, visit us online.

EM will continue to put cool stuff on emusician.com. For example, Senior Editor Mike Levine has posted an interview with Thomas Dolby, who graciously gave us a few moments of his time as he prepared for a new album and tour. TD last appeared on our cover in June 1986, and it seemed appropriate to include him in our feature on Web-based collaboration because his career epitomizes the DIY attitude toward music technology that is at the core of EM's coverage.

Many other things are in store as we keep you abreast of new technologies. So stay tuned!

Gino Robair
Editor

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LAURA WILLIAMS

Letters

Emotional Recordings

I readily identified with the discussion of capturing emotion in recordings (see "Production Values: Pushing the Right Buttons" in the July 2007 issue of EM). In particular, I could relate to the million-dollar question: why do performances sound so gripping on analog?

As a veteran of countless hours of sessions, both analog and digital, dating from the early 1970s until now (and on both sides of the control room glass), my answer to that question is that there was a greater number of gripping performances taking place in studios in the analog days. Technology required it. The studio clock was ticking, editing options were limited, and even punching in was a suspenseful event for all involved (particularly for the person pushing the red button). A bad punch was not undoable and could be very costly. Consequently, on an analog recording session, the energy level on both sides of the glass was high. That energy could be heard in the performances.

While I don't deny the sonic differences between analog and digital, the fact is that engineers are still discovering new ways to make digital technology more expressive, just as they did with analog, in both cases over a period of many years. But never does the emotion come from the equipment. That can only come from the performers. Bill Bottrell's approach—namely, to go for early takes and immediacy—is an excellent one for capturing emotion. If more sessions were still done as if you couldn't pitch-correct, cut and paste, or even punch in, we would hear a lot more of that old emotion in contemporary recordings, regardless of which recording technology is used. Of course, that approach would also cost a lot of "artists" their careers, and that, more than any technological advancement, would pave the way for better music recordings.

Daniel O. Baker
via email

Electronic Musician is an essential aspect of learning for any progressive musician, engineer, or producer.

Networking to Success

We would like to thank you again for your support and for allowing us the opportunity to express how we have been blessed during the past year.

We (Dehn and Tania from the band Pavmire) joined MySpace last June. Since then we have been getting booked for shows in downtown Houston, Texas, and have been recognized by DJs, record labels, promotion companies, and magazines, all because of MySpace. We also met DJ Ambition, who is now a third member of our band.

Our songs were being played at well-known clubs, and we're very grateful about that to this day—but how many times should your songs get played until you get signed? When we finally realized how good of a promotion site MySpace is, we extended our music to magazines, radio stations, and so on, and then we met you.

Since you wrote about us in your e-newsletter, eMusician Xtra, a lot of opportunities have emerged: a horror movie project starting production next spring, possible deals with two record labels, bookings for electronica/industrial events, collaborations with other bands (including a compilation CD with the electronica band Dyksick), a contact from Paul Cooke (former member and founder of Sade) wanting to produce a track for us, and more fans. So many wonderful things are happening to us, and we think we left out a few!

When we met, Dehn was the only member of Pavmire, and Tania had just come from serving a year in Iraq. Both of us had big dreams of being famous musicians, and now, because of MySpace and you, it is all happening. Anything that not only helps you be heard but also builds your résumé will increase the possibility of making it big. Years ago, it was very difficult just to get record labels to

MM6

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The MM6 synthesizer not only features sounds from the Motif, but the quick edit knobs and arpeggios to control them. You can jam over the top of the street smart grooves with layered or split sounds in Performance mode. When you're ready to record your music, you can record the grooves and keyboard parts directly to the on board song sequencer. For even greater flexibility, connect to your computer via USB and use the bundled Cubase software. Whether you're just jamming with friends or working on complete music productions, the MM6 lets you hit the streets in style.

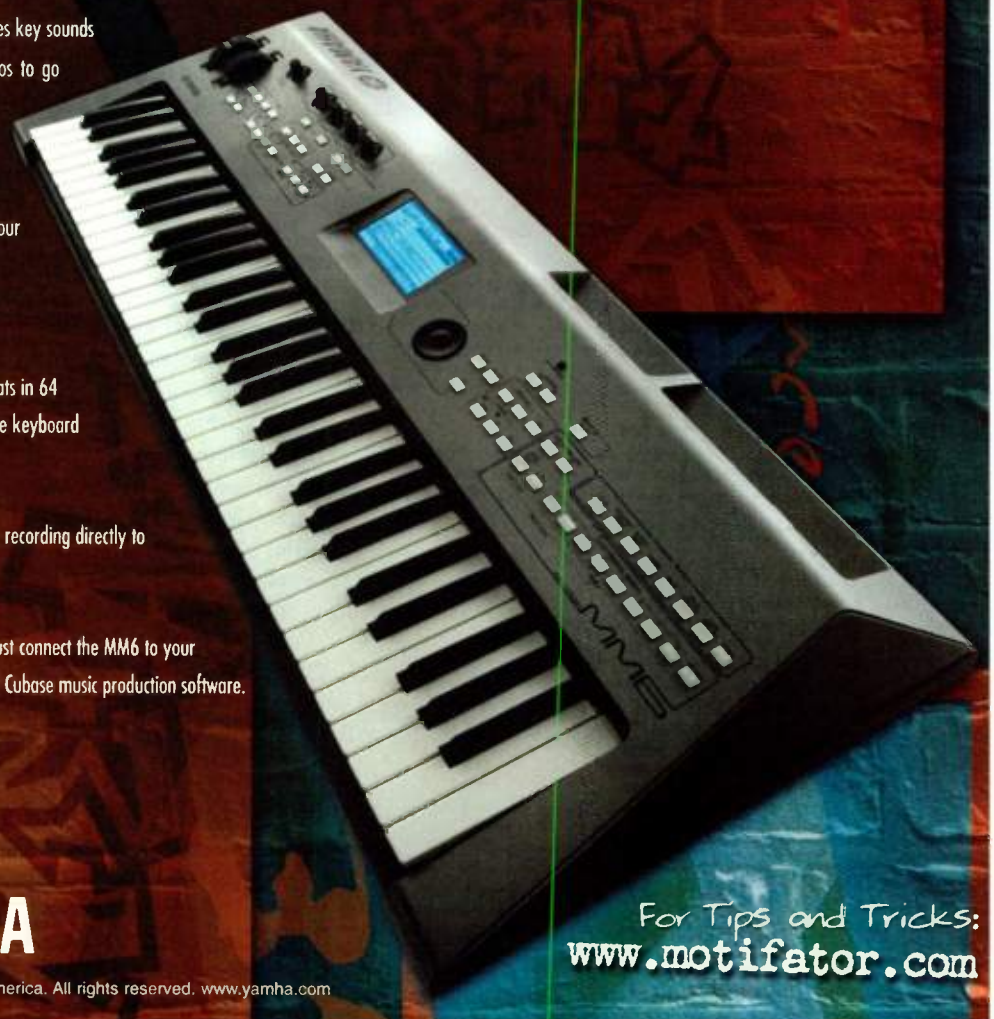
PLAY – The MM6 not only features key sounds from the Motif, but also the arpeggios to go with them and the category search function to make them easy to find.

TWEAK – Your sounds, your way in real time using four dedicated control knobs.

JAM – Over tons of street smart beats in 64 User editable performances that include keyboard splits and layers.

CREATE – Your own songs by recording directly to the on board 16 track sequencer.

Produce – Your music, just connect the MM6 to your computer via USB and use the included Cubase music production software.



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Next Month in EM

COVER

Using Large-Diaphragm Dynamic Mics

They're not just for recording kick drums! We show you how large-diaphragm dynamic mics can be used in a variety of ways, including voice and brass tracking.

FEATURES

Production Values:
Omar Hakim

This legendary drummer has played with superstars such as Miles Davis and Sting. Learn how Hakim mics his acoustic kit and works with electronic drums in his unique personal studio.

Dramatic Special Effects

With just a few basic tricks, you can bring mechanical and synthesized sounds to life and create surrealistic effects for film and games.

COLUMNS

Making Tracks:
Automation in FL Studio

Use FL Studio's Peak Controller and Formula Controller to create complex modulation contours for track parameters such as level, panning, and EQ.

Sound Design Workshop:
Monster Patch

Where's the beef? Look no further—stacking waveforms can help you get thicker, heftier synth sounds.

Square One:
Vocal-Processing Basics

Brush up on your skills with these proven techniques.

. . . and much more

Letters

listen to your demo. Now MySpace has made it easier.

Thanks again. We are forever indebted to you for your support. Next time, we just may be on the cover! (Hint, hint.) Lots of love to the staff at *Electronic Musician*.

Pavmire
www.myspace.com/pavmire02
via email

KP3-Inspired Tips

I just wanted to let you know how much I enjoy your magazine's helpful reviews and articles. In the July 2007 issue of EM, I read the Korg KP3 review by David Battino, even though I already own one.

Some good news for EM readers: I've installed the latest firmware updates, and the MIDI sync issues have been resolved. (I can't speak for Auto BPM, as I don't have a need for it.)

I am already a staunch devotee of the KP3, so the reviewer's "Loop Trigger Hack" was a real gem of a tip! It would be great if all your reviewers went to the depth that Mr. Battino has, providing the reader with useful undocumented features.

Lastly, I suggest that EM readers not go into a KP3 purchase with any preconceptions of how they plan to use it. Rather, let it inspire you to all the possibilities. Thanks again.

Mark Kunoff
Bloomington, Indiana

OurSpace

Electronic Musician keeps me informed about the latest upcoming and existing technologies I need to maintain a modern studio. As a sound designer and producer, I rely on *Electronic Musician* to bring diverse resources together in one format, saving me much time when searching for new devices and methods of sound production.

Electronic Musician is an essential aspect of learning for any progressive musician, engineer, or producer. Thanks, and keep up the great work!

Benjamin
www.myspace.com/geodemosaic
via MySpace

You guys always come up with great ideas for each issue. The article on common mixing mistakes (see "Twelve Common Mixing Mistakes" in the July 2007 issue) was a genius idea. Good job and thanks to all the staff at EM. From the editors to the people taking the pictures, you guys set the standard when it comes to making a music magazine.

Nico Canada
www.myspace.com/nicocanadamusic
via MySpace

We Are All Musicians

I was amazed and pleased to see that you did a story on the many musicians who have physical disabilities (see "Overcoming Adversity" in the May 2007 issue of EM). These people always get overlooked and deserve recognition like everyone else. Thank you for taking the time to acknowledge *all* people that create music.

Carmen Rizzo
Hollywood, California

Error Log

September 2007, "Build a Personal Studio on Any Budget," pp. 56 and 58. The correct name of the remote stereo recorder in the killer postproduction and sound-design studio is the Korg MR-1000. EM

We Welcome Your Feedback

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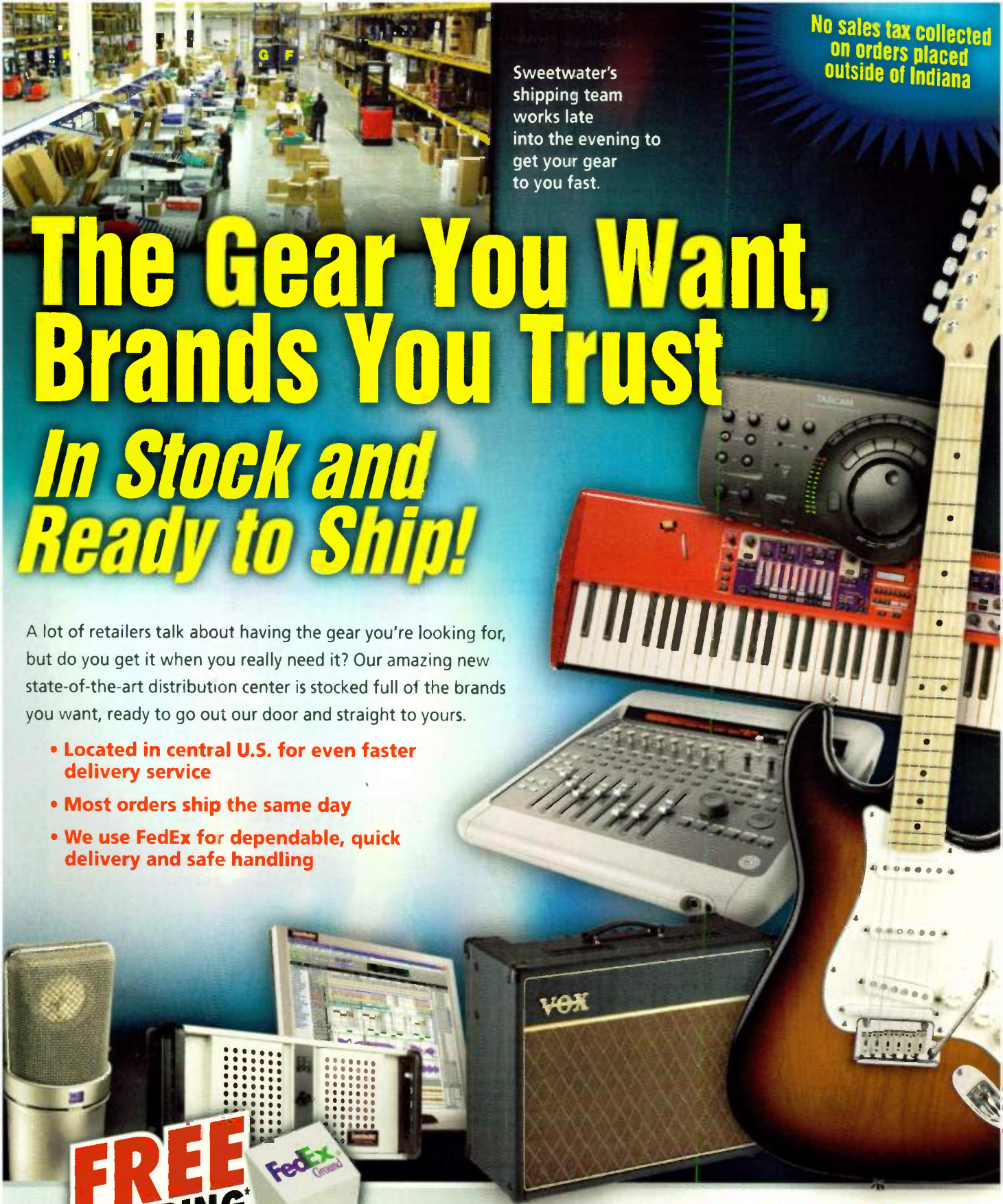

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EMspotlight

Musician in Transition: Thomas Dolby

Over the years, Thomas Dolby has tackled nearly every aspect of the creative process, from songwriting and production to video direction and ringtone design. In this archive interview from 1987, Dolby talks about film scoring, collaboration, and why he refers to himself as an "inventor." By Craig Anderton. emusician.com/em_spotlight

EXCLUSIVE REVIEWS

Read all about the SoundToys Native Effects bundle and the TC Electronic Classic Booster + Distortion and Classic Sustainer pedals. Only on emusician.com.

PODCASTS

Thomas Dolby completely off the grid? In our exclusive Podcast interview, TD talks about his new album, the fall tour, and powering his studio with a wind generator and solar panels.

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By Len Sasso

Hosa Technology Cue 5

Hosa Technology (www.hosatech.com) has introduced a cost-effective alternative to analog monitoring. The new Cue 5 all-digital monitoring system ($899) keeps the signal entirely in the digital domain until it reaches the speakers. A 5.25-inch low-frequency woofer and a 1.5-inch silk-dome tweeter are mounted in a bass reflex enclosure with an oblong rear port, which minimizes turbulence and distortion. Each enclosure measures a compact 7 by 10.2 by 8.9 inches, and they have a combined weight of 22.5 pounds.

The key to this system is Hosa's proprietary Binary Drive all-digital signal path with integrated Class D amplification, which delivers 30W per channel to a 6Ω load, according to the manufacturer. Binary Drive accepts 24-bit signals at up to 96 kHz via optical or coaxial S/PDIF inputs, performs amplification and crossover in the digital domain, and provides the low- and high-frequency signals to separate digital-to-analog converters that feed the woofers and tweeters. Included control software for the Mac and PC allows you to tailor the sound to your environment. The software includes 7-band parametric EQ along with independent volume, treble, bass, balance, and mute controls. If you're not quite ready to go all digital, you can feed the Cue 5's analog signals through balanced XLR, balanced ¼-inch TRS, or unbalanced RCA connectors.

Kurzweil SP2X Stage Piano

The new SP2X Stage Piano ($1,390) from Kurzweil Music Systems (www.kurzweilmusicsystems.com) is designed for practice, songwriting, live performance, and studio recording. The instrument features 64-voice polyphony and 16-part multitimbral operation, and you get 16 multitimbral setups with 3 zones each for layers and splits. A built-in USB interface with MIDI In, Out, and Thru is used for data transfer and operating-system updates. The SP2X owes its 48-pound heft to a fully weighted, 88-note, hammer-action, Velocity-sensitive keyboard. The front panel houses a 3-character LCD, a volume slider, four multifunction knobs, buttons for program recall, and pitch-bend and modulation wheels. On the back, a stereo headphone jack and balanced ¼-inch TRS outputs are fed by 24-bit digital-to-analog converters.

The SP2X comes loaded with 64 factory programs covering acoustic pianos, electric pianos, strings, pads, mallets, and voice. A user-configured quick-access bank keeps 16 programs instantly available. Kurzweil is particularly proud of the sampled Triple Strike Grand Piano. For practicing, the unit includes 64 prerecorded drum grooves and a metronome. You also get a dual effects processor with 64 algorithms that cover reverb, distortion and enhancement, time-based effects, compression and EQ, and spatial processing. The SP2X contains Kurzweil's 24-bit Mara chip and is AC powered. You can purchase an optional piano-style double footswitch and a continuous controller pedal ($49.95 each).

Native Instruments Audio 8 DJ

Native Instruments (www.native-instruments.com) has just released the second in its line of USB 2.0 audio interfaces. As the name implies, the Audio 8 DJ ($449) has eight inputs and eight outputs and is performance optimized for DJ applications. It was designed around Native Instruments Traktor 3 software for DJs, and a lite version, Traktor 3 LE (Mac/Win), is bundled with the interface. You can upgrade to the full version for $119 or to Traktor Scratch for $299.

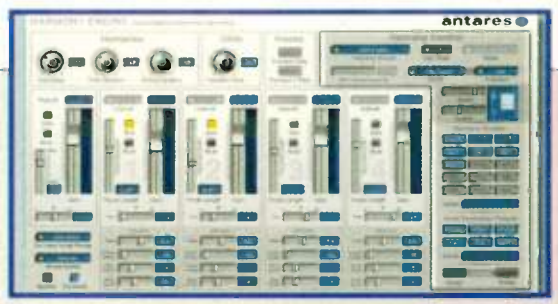
All inputs and outputs are on RCA connectors to accommodate turntables, CD players, and DJ mixers. Two of the four stereo inputs have software-switchable phono preamps, and you also get an alternative mic input for doing voice-overs. All inputs and outputs use studio-quality 24-bit, 96 kHz digital-to-analog converters from Cirrus Logic. A separate ¼-inch headphone output has its own level knob. Native Instruments' fourth-generation drivers achieve latencies as low as 4 ms. MIDI I/O allows synchronization to external MIDI gear and connection to MIDI controllers. The unit is bus powered, obviating the need for any AC connection. The top panel contains a full spate of LEDs to indicate status and levels.

Audio Impressions Realtime Strings

Audio Impressions (www.audioimpressions.com) is now shipping the first installment of the massive orchestral sample library compiled over the last three years by film and TV composer Christopher L. Stone. Realtime Strings is available as either a complete Windows-based turnkey system ($11,999) with all the necessary hardware and software, or as a sample library (Win, $3,499) utilizing proprietary performance software together with Native Instruments Kontakt 2. The software-only system requires at least two PCs—one for the proprietary software and one for the sample library—and three are required to play all 70 stringed instruments in real time at 44.1 or 48 kHz sampling rates. Higher sampling rates require more computers. The turnkey system includes three rackmount PCs.

Beyond the high-quality samples of all orchestral strings with dozens of articulations at up to 192 kHz, what sets Realtime Strings apart is the proprietary DVZ RT and Space software. DVZ RT (which implements the divisi orchestral scoring method) gives you total real-time control of voice allocation across a fixed complement of string players, eliminating organ-style voice buildup as parts are added. Space is a mic-bleed simulation application that lets you control room size, acoustics, and player positions, generating anything from 7.1 surround to mono output.

Antares Harmony Engine



Based on the throat-modeling technology first featured in its Avox series of plug-ins, Antares Audio Technologies' (www.antarestech.com) Harmony Engine (Mac/Win, $349) makes easy work of generating vocal harmonies. It simultaneously generates four formant-corrected voices with individual character, vibrato, and pan settings. The plug-ins are available in AU, VST, and RTAS formats. The PC versions are Vista compatible, and the Mac versions are Universal Binary.

Harmony Engine offers everything from automatic harmony generation to precise control of each note. You can specify a key and the desired scale intervals, provide a chord sequence complete with inversions and vocal ranges, or use real-time or prerecorded MIDI to control the individual parts. Real-time MIDI control can be polyphonic (one channel) or multitimbral (four channels). You can even create special effects by freezing formants and pitches. With Voice and Harmony preset matrices, you can instantly recall favorite setups.

Sound Advice

The newest ReFill from **Propellerhead Software** (www.propellerheads.se) is *Abbey Road Keyboards* ($229), a unique 16- and 24-bit collection of seven sampled instruments. All of them have resided at Abbey Road Studios in London since the 1960s and have been heard on titles ranging from the Beatles' *A Hard Day's Night* and Pink Floyd's *Dark Side of the Moon* to all three movies in the *Lord of the Rings* trilogy. Instruments include a 1905 Steinway Vertegrand piano with lacquered hammers, intentionally tuned to sound out of tune and affectionately known as "Mrs. Mills"; a Challen upright piano; a Hammond RT-3 and Leslie 122; a Mannborg Harmonium; a Schiedmayer celesta; Premier tubular bells; and a Mellotron 400 with strings, cello, and flute tapes.

Think you can't afford Vienna Instruments? **Vienna Symphonic Library** (www.vsl.co.at) has recently released *Vienna Special Edition* (Mac/Win, $445 Standard, $595 Extended, $1,040 Full), a "best of" collection at a down-to-earth price. The Standard Library supplies 28 sampled instruments and ensembles from the strings, brass, woodwinds, and percussion families, as well as harp, celesta, and Bösendorfer Imperial piano. Instead of offering additional articulations, the Extended Library gives you 35 more instruments, adding to the collection's timbral variety. They include saxophones, acoustic and electric guitar, and subsets of the Vienna Konzerthaus organ, Chamber Strings, and Epic Horns collections. All in all, the Full Library contains 80 GB of 24-bit, 44.1 kHz samples comprising a complete orchestra in AU and VST plug-in formats.

—Geary Yelton

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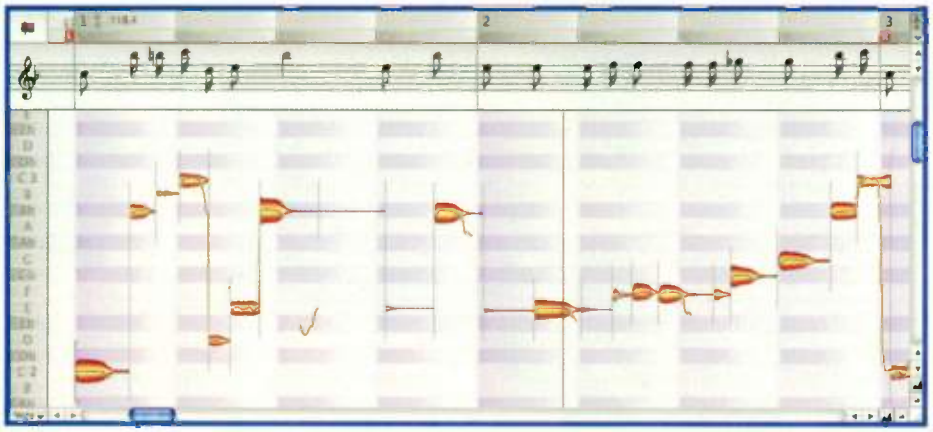
Celemony Melodyne 3.2

German software developer Celemony (www.celemony.com) has just released version 3.2 of its flagship pitch-shifting and time-stretching software ($699). Updates are free for current Melodyne Studio and Melodyne Cre8 users. The new release fixes a number of bugs and has several important user enhancements as well as a major new feature: Polyphonic Formant Tuning (Studio version only). With that, you can pitch-shift polyphonic tracks by relatively large intervals without introducing the unwelcome artifacts caused by formant shifting. You use the simple Formant Tuning slider that appears when a polyphonic part is analyzed to tell Melodyne how much formant correction to apply. That ranges from none, for standard pitch-shifting, to the default medium setting that usually produces the most natural results, to extreme settings for special effects. Extreme settings are especially useful for percussion parts.



Although they don't get Polyphonic Formant Tuning, Melodyne Cre8 users do get an improved algorithm, called Percussive 2, that raises the level of percussion processing to that of Melodyne Stucio. Operational improvements include new combination vertical and horizontal scroll/zoom sliders, the ability to open arrangements with missing audio files, better RAM and CPU optimization, and Activation Assistant software for easier online authorization.

Download of the Month

POLYFRACTUS MODEL 1.1 (MAC)

Model 1.1 (freeware) is an AU plug-in for the Mac from French musician and software designer Dragan Petrovic. The plug-in's name is a contraction of the words *modulation* and *delay*, both of which it does in the extreme. Delay times for its cross-feedback stereo delay range from 1 ms to 1 second. The primary source of modulation is a souped-up LFO for controlling the delay time. You get seven preset LFO patterns, and you can draw your own. For stereo enhancement, you twist a handy phase knob to shift the phase relationship of the LFO waveforms applied to the right and left stereo channels.

Once you have things moving around, you can inflict further damage with the built-in decimator and ring-modulator circuits. The decimator's effect is as enigmatic as the ring-modulator's is straightforward. Next in line are low- and high-shelf filters with a dedicated envelope follower for modulating their levels. The signal path ends in a static, resonant lowpass filter that is useful for toning down the often-edgy results from the preceding stages. MIDI remote control and automation are up to the host, but most modern DAWs offer both.

Model comes with a goodly assortment of factory presets ranging from subtle rhythm enhancers to typical feedback delays to extreme modulation and distortion (see **Web Clip 1**). The documentation is minimal, but not much is necessary. You'll find several other shareware and freeware effects on the Polyfractus Web site (www.polyfractus.com). If you still have Mac OS 9 lurking somewhere, try the multiple-loop player MMP.

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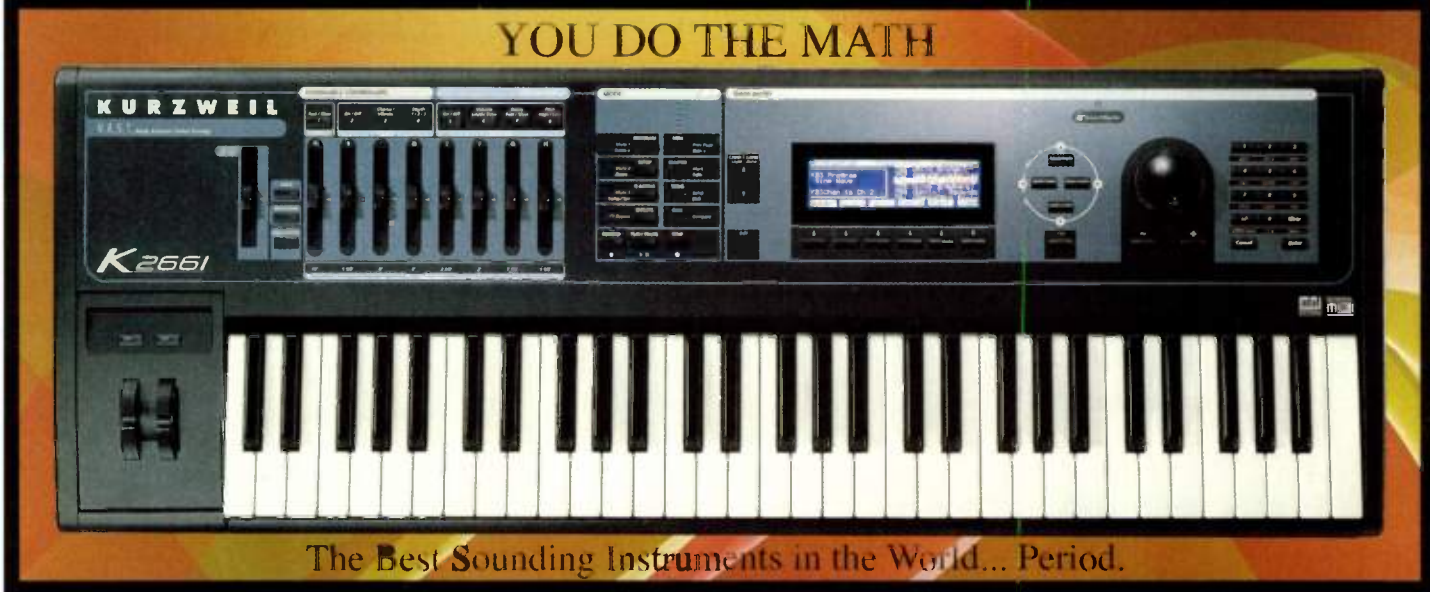

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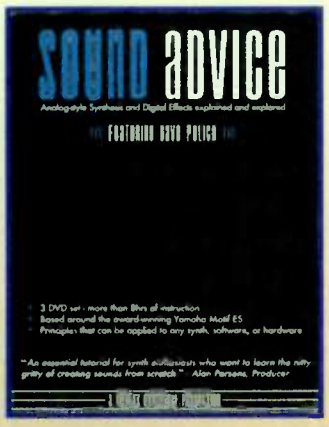
Image Line Software Morphine

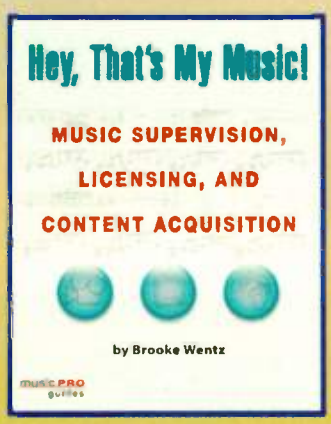
Image Line Software's (www.image-line.com) flagship sequencer for the PC, FL Studio, is known for its built-in collection of synths that sound and look different. Its latest synth, Morphine (Mac/Win, $159), breaks the mold by being cross-platform and running both standalone and as a VSTi and AU plug-in. It is a 4-layer additive synth with full resynthesis capability, and it promises both low CPU drain and ease of use.

A Morphine layer starts with one or more harmonic snapshots (additive spectra), which you can draw in or generate automatically by analyzing any audio clip. Looping breakpoint envelopes are used to morph through snapshots. When more than one layer is active, you can also control the mix of layers using MIDI or envelopes. Realism (through analysis-resynthesis) and motion are the keys here. Added goodies include a fifth sound generator for mixing in sampled sounds such as onset transients, PWM filters for each layer, and a chain of five effects: chorus, delay, reverb, EQ, and distortion. A collection of 340 presets covers the bases for anyone disinclined to get down and dirty with additive synthesis.

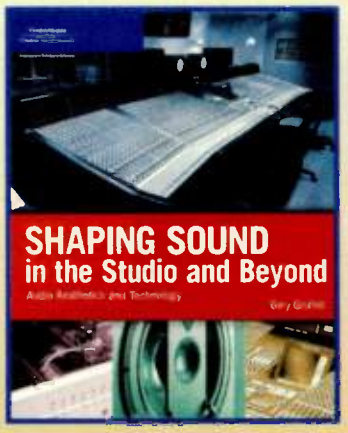
Get Smart

Almost anyone who records music nowadays needs to have a thorough understanding of synthesizers and effects processing. To that end, **Keyfax** (www.keyfax.com) has released *Sound Advice* ($79.99), a 3-DVD video tutorial billed as "analog-style synthesis and digital effects explained and explored." Using the Yamaha Motif series as a platform, sound designer Dave Polich presents nearly nine hours of instruction that applies to virtually any synth and any effects software or device. On disc 1, Polich begins with an explanation of how to create basic sounds and progresses to specific programming techniques. Disc 2 examines the building block of synthesis, and disc 3 takes a detailed look at different types of effects and their parameters.





If you dream of hearing your music on TV or in film or game soundtracks, then *Hey, That's My Music!* ($24.95) should be essential reading. Written by intellectual-property-rights expert Brooke Wentz and published by **Hal Leonard** (distributed by www.musicdispatch.com), the 218-page book unravels the mysteries of music supervision and licensing. For the musician, the author gives real-life examples of placement scenarios and detailed explanations of music rights and the clearance process. For the music supervisor, she covers content acquisition and the complexities of securing music for a variety of formats. The book also includes interviews with industry professionals and provides templates of various forms and agreements.

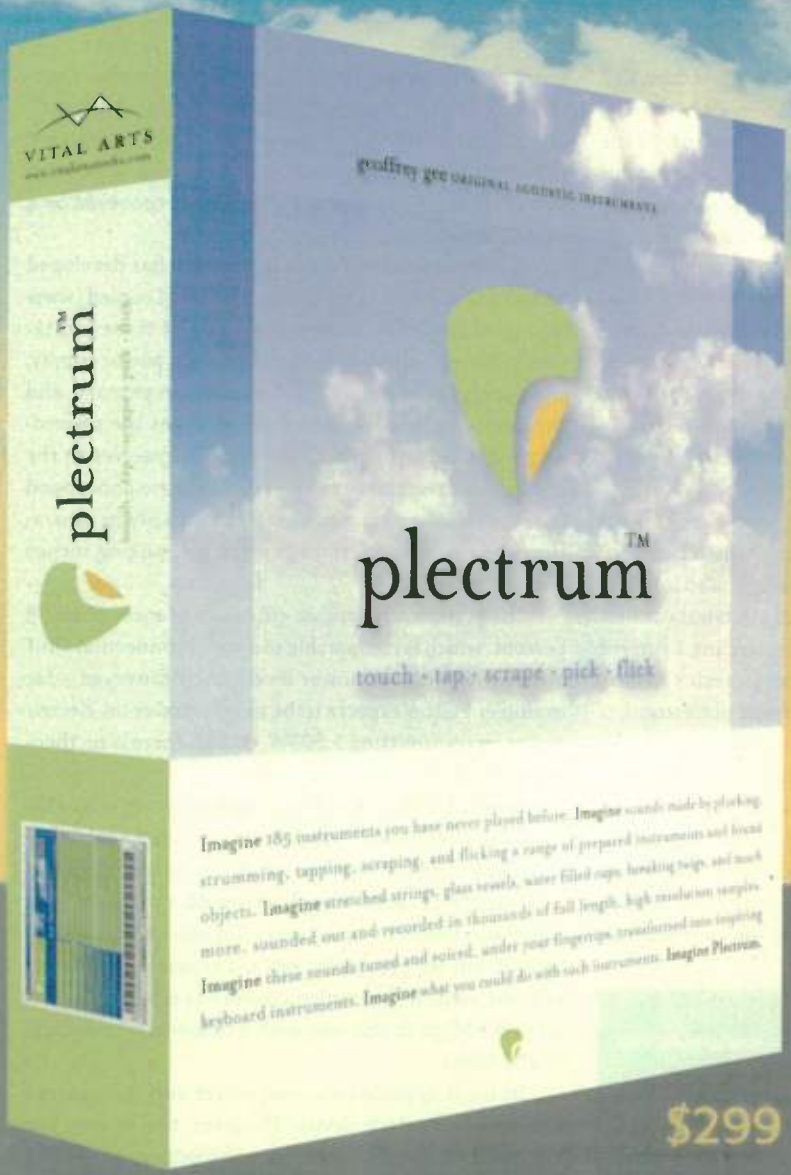


In *Shaping Sound in the Studio and Beyond* ($34.99), from Thomson Course Technology PTR (www.courseptr.com), author Gary Gottlieb presents an introduction to the recording studio and investigates the aesthetic side of audio engineering. Taking a comprehensive view of technology as it applies to music production, Gottlieb discusses everything from microphones and speakers to signal processing and mixing, with an emphasis on learning to develop your critical listening skills. Three major topics are covered: basic audio theory, understanding audio equipment, and audio methods and operations such as editing, sound design, and studio procedures. The 400-page book is well suited to anyone who wants to pursue a career in recording or improve his or her studio communication skills.

—*Geary Yelton* EM

touch · tap · scrape · pick · flick

Remember Why You're a Musician.



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Look Ma, No Wires!

By Scott Wilkinson

Inductive coupling could cut the power cord forever.

It seems that everything is going wireless these days. Cell phones, Wi-Fi local area networks, even citywide networks like WiMAX all cut the cords that bind us. In the realm of music technology, wireless microphone systems are becoming ever more popular, especially as new technologies are used to circumvent old problems (see "Tech Page: What Was Old Is New Again" in the September 2007 issue of EM, available at www.emusician.com).

However, there's one cord that has yet to be cut—the power cord. All the tools and toys we love to use must get their power from somewhere, usually a wall outlet. Of course, many low-power devices can use rechargeable batteries, but they must be connected to AC power periodically to remain functional.

One way to eliminate the need for power cords is a technique called inductive coupling, which has been around since 1880, when Nikola Tesla first used it to illuminate a vacuum tube with no direct electrical connection. The principle is relatively simple: sending a current through a coil of wire, called the primary, creates an electromagnetic (EM) field around it. If you place another coil of wire, called the secondary, near the primary, the EM field induces a current in the secondary with no electrical connection between the two (see Fig. 1).

So why isn't this technique being widely used to power devices without power cords? For one thing, the primary and secondary must be very close to each other, and the relative orientation of the coils must be precisely controlled. In addition, the primary and secondary must be carefully "tuned" to resonate with each other, and the amount of power that can be transferred is limited by the inefficiency of the process, which can lose more than 30 percent of the energy conveyed by a wired connection.

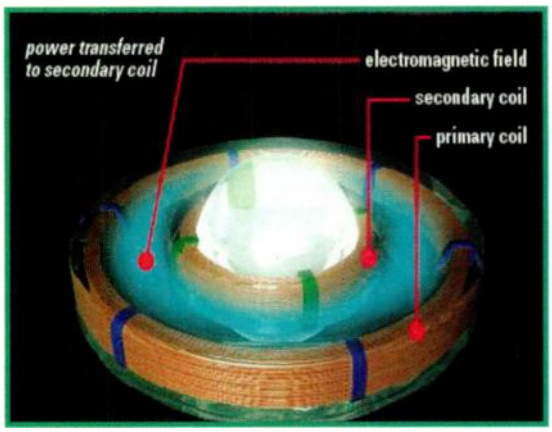

FIG. 1: Sending a current through the primary coil sets up an electromagnetic field, which induces a current in the secondary coil without any electrical connection between them.

A company called Fulton Innovation has developed an inductive-coupling technology called eCoupled (www.ecoupled.com) that overcomes many of these limitations. The eCoupled system comprises a power supply, which plugs into the wall and houses the primary, and the device to be powered, which includes the secondary. These circuits dynamically tune themselves to the appropriate resonance frequency in the neighborhood of 100 kHz, allowing much greater flexibility in separation and orientation, though we're still talking inches apart, not feet.

The system achieves an efficiency of more than 98 percent, which is comparable to a wired connection. This allows much higher power levels to be conveyed—for example, Fulton expects to be able to power an electric skillet by transmitting 1,500W, though there is no theoretical limit.

Another hallmark of the eCoupled system is its ability to send data along with power. This is not enabled by inductive coupling directly, but it can be accomplished in a variety of ways. Piggybacking data on the power signal can transmit up to several hundred kilobits per second, but for greater bit rates, a separate set of coils must be used. The eCoupled system has achieved speeds up to 3.3 Mbps in this way, with a theoretical maximum of 200 Mbps.

In most applications, one power supply is paired with one secondary device. However, the system can also power several devices from one primary, in which case the ideal resonance frequency is calculated according to the combined inductance of all devices.

Clearly, this technology has great potential for electronic musicians who depend on power for their studio and stage equipment. With something like an eCoupled system, all you'd have to do is place power supplies around the area and put the gear where you want it rather than near a power outlet. Not only that, but the digital music data could also be transmitted between devices, providing an entirely wireless system, the ultimate in technological freedom. EM

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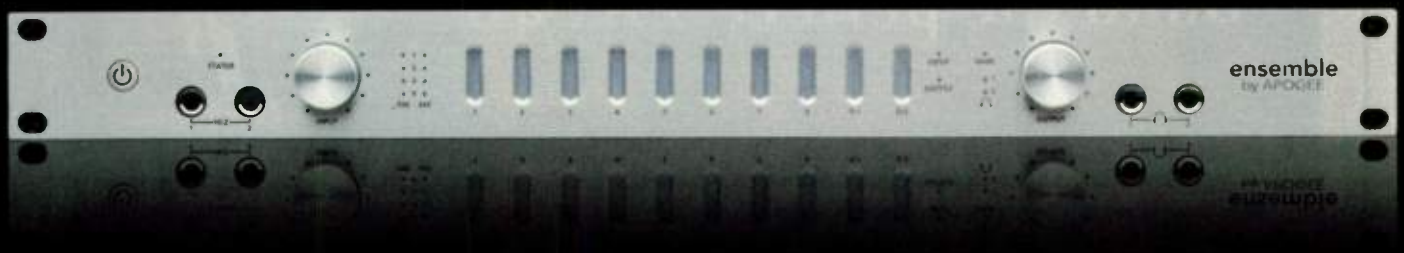

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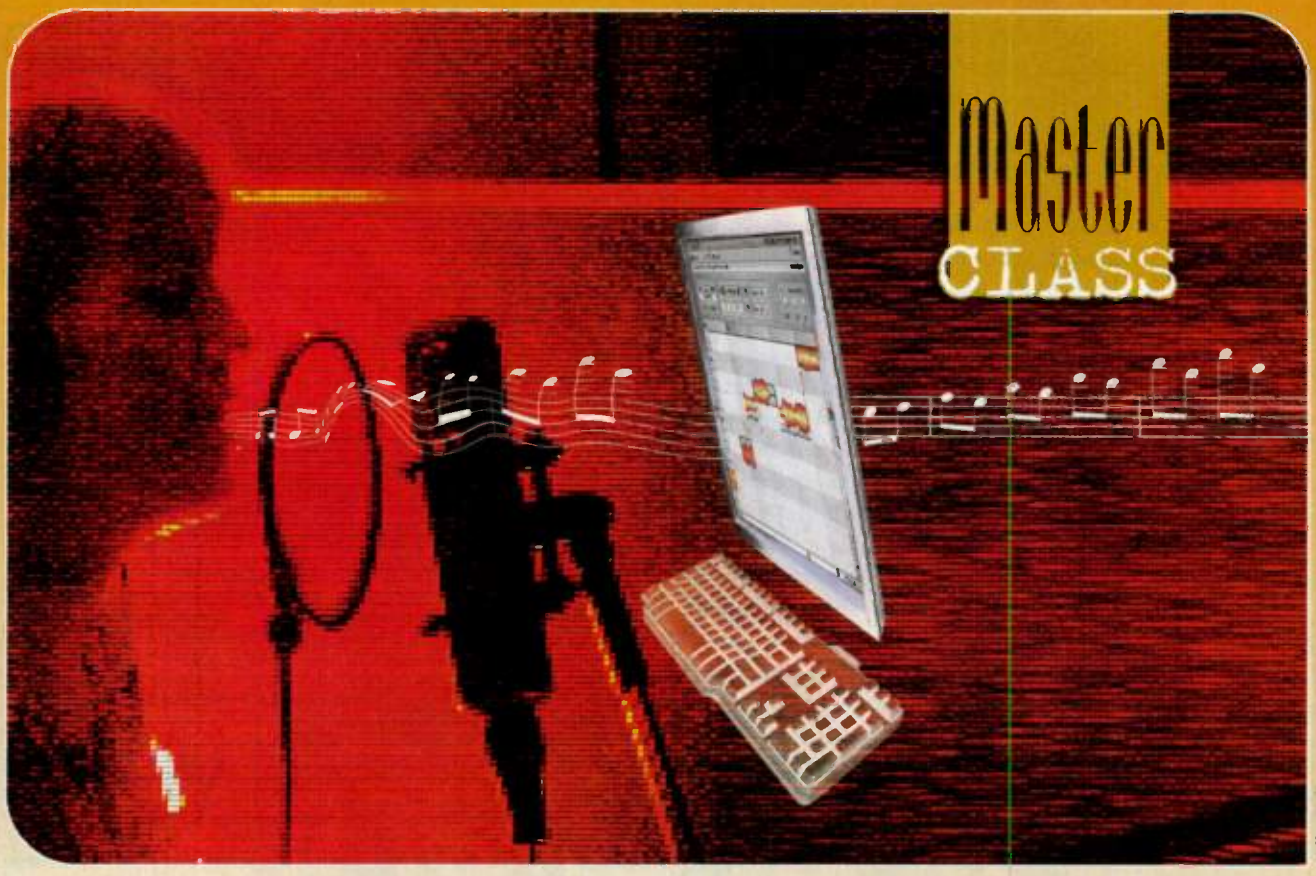


DMITRY PANICH

Pitch Fixers

By Michael Cooper

Keep your singers in tune with these tips.

Despite their detractors, pitch-correction tools and techniques have enjoyed widespread use in the studio, and for good reason. Used judiciously, pitch correction makes tracks sound sweeter and more harmonious. True, those characteristics may not be desirable for some styles of music. But for others, pitch correction is an indispensable technique that gives a production that extra bit of polish.

In this article, I'll offer practical, hands-on tips for getting the best results from pitch-correction software. I'll cite examples of how to use three of the most popular pitch-correction plug-ins: Antares Auto-Tune, Celemony Melodyne Plugin, and Waves Tune. The focus will not be on feature lists of each plug-in but on real-world uses to arrive at the best-sounding tracks. Because this is a master class, I'll skip most of the basics and assume that you already have some experience with at least one of the showcased plug-ins.

Space constraints don't permit a discussion of pitch transposition of polyphonic material or harmonization here. This article's emphasis will be on correcting the pitch of "off-key" monophonic tracks, specifically vocals. Much of what I will discuss can also be applied to other monophonic tracks, such as guitar melodies and bass lines.

Bursting at the Seams

I'll dive into plug-ins in a moment, but first a few pointers about DAW editing vis-à-vis pitch correction are in order. Before I apply pitch correction to a vocal track, I make sure any edits within the track have ultrasmooth transitions in order to reduce pitch-processing artifacts. This usually requires that any seam between adjoining audio regions occur at a zero crossover point for both regions. Failing to choose a zero crossover point results in instantaneous

changes in level at the edit point, which can cause pitch

MIDI Madness

Auto-Tune offers a number of useful features for MIDI mavens. When a song includes one or more key changes, you might be tempted to choose a chromatic scale in Automatic mode to properly treat notes that don't belong to the key signature that starts off the song. But for more-exact pitch discrimination, try using Auto-Tune's Learn Scale From MIDI mode to select all the notes from both scales (and no others) for pitch-correction processing (see **Fig. 1**).

To do this, first create a new MIDI track in your DAW and assign your keyboard controller to its input. Send the MIDI track's output to Auto-Tune. For example, in MOTU Digital Performer (DP) assign the output to "Auto-Tune 5 (*mono*): *name of vocal track*: *insert position*." Then click on Auto-Tune's Learn Scale From MIDI button. Doing so will automatically change the current scale type to chromatic and activate the plug-in's virtual keyboard.

Next, click on either the Octave As Played or Octave All button to make your subsequent note selections active only in the specific octave range you play them in or across all octaves, respectively. Then play on your MIDI keyboard controller all the notes that occur in your song's melody. The timing for note entry is not important, so take your time. If you enter a wrong note by mistake, click on the Learn Scale From MIDI button twice and start over, or simply activate the Keyboard Edit's Remove button and click on Auto-Tune's virtual keyboard on the notes you want to remove.

Once all of your melody's notes are entered, Auto-Tune should handle all of your key changes—unless, of course, some notes are sung more than 50 cents off-pitch and get pulled to a target pitch for another key used elsewhere in your song. In such a case, standard operating procedure in Auto-Tune is to enter Graphical mode and draw the target pitch for that note using the Line tool. (Waves Tune also offers a Line tool for graphic editing, which I'll discuss shortly.) By holding down the Option key (Mac) or Alt key (Windows) on your QWERTY keyboard while drawing, you can make Auto-Tune's Line tool draw a perfectly horizontal line on the pitch graph to keep the target pitch from fluctuating. Auto-Tune 5's new Snap To Note function goes one better, forcing the curve to be drawn to the nearest semitone.

MIDI-philes can accomplish the same result without ever entering Auto-Tune's Graphical mode. Simply click on the Target Notes Via MIDI button and play into your DAW the MIDI note that corresponds to your desired pitch. (You can also record it into a new MIDI track within your DAW.) Play the MIDI note *immediately* after the onset of the sung note and sustain it for the full duration of the note.

Mellow Dining with Plug-ins

In Melodyne Plugin, errant notes are moved to their pitch center simply by double-clicking with the Pitch tool on their Blobs (graphic representations of sung notes). The Pitch tool can also be used to drag an unintentionally nondiatonic note to the correct pitch belonging to the melody's scale. For this application, Melodyne Plugin's Scale Snap function is a real time-saver (see **Figs. 2a and 2b**).

After playing the offending note into Melodyne Plugin's analysis engine, select Scale Snap from the drop-down menu in the lower left corner of the plug-in's window. In the Note Ruler along the left edge of the window, click on the letter name that corresponds to the current key signature; Shift-clicking toggles the scale between major and minor keys having the same tonic note.

Now drag the off-key Blob to its desired pitch using the Pitch tool. As you drag the Blob up or down, it will snap to notes belonging to the scale you chose in the Note Ruler. However, any offset from exact pitch center that existed before dragging will remain after the Blob is dragged to the new note. If you want the Blob's pitch to be corrected fully, simply double-click on the Blob with the Pitch tool (after first dragging the Blob to its new note in Scale Snap mode).

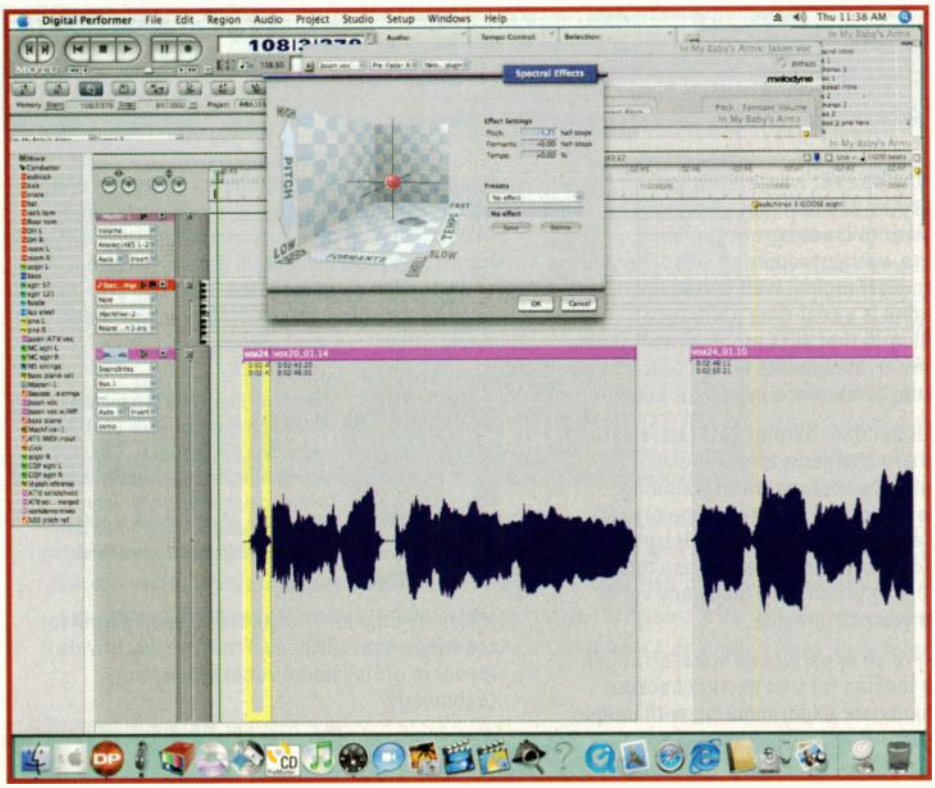
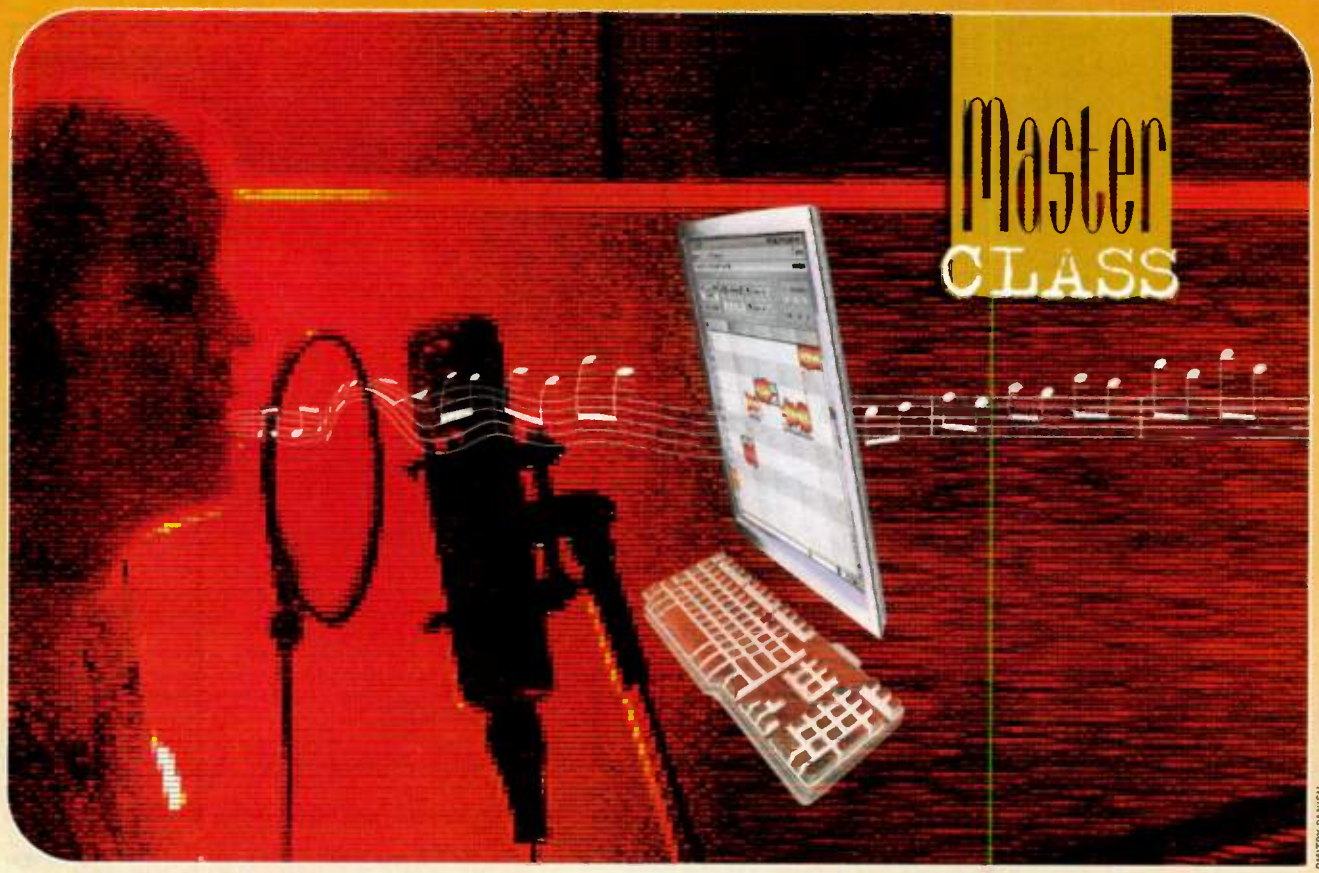


FIG. 3: DP's Spectral Effects processing can be used to transpose a selected sound bite (highlighted in yellow) to the desired pitch.



DMITRY PANICH

Pitch Fixers

By Michael Cooper

Keep your singers in tune with these tips.

Despite their detractors, pitch-correction tools and techniques have enjoyed widespread use in the studio, and for good reason. Used judiciously, pitch correction makes tracks sound sweeter and more harmonious. True, those characteristics may not be desirable for some styles of music. But for others, pitch correction is an indispensable technique that gives a production that extra bit of polish.

In this article, I'll offer practical, hands-on tips for getting the best results from pitch-correction software. I'll cite examples of how to use three of the most popular pitch-correction plug-ins: Antares Auto-Tune, Celemony Melodyne Plugin, and Waves Tune. The focus will not be on feature lists of each plug-in but on real-world uses to arrive at the best-sounding tracks. Because this is a master class, I'll skip most of the basics and assume that you already have some experience with at least one of the showcased plug-ins.

Space constraints don't permit a discussion of pitch transposition of polyphonic material or harmonization here. This article's emphasis will be on correcting the pitch of "off-key" monophonic tracks, specifically vocals. Much of what I will discuss can also be applied to other monophonic tracks, such as guitar melodies and bass lines.

Bursting at the Seams

I'll dive into plug-ins in a moment, but first a few pointers about DAW editing vis-à-vis pitch correction are in order. Before I apply pitch correction to a vocal track, I make sure any edits within the track have ultrasmooth transitions in order to reduce pitch-processing artifacts. This usually requires that any seam between adjoining audio regions occur at a zero crossover point for both regions. Failing to choose a zero crossover point results in instantaneous

changes in level at the edit point, which can cause pitch-correction algorithms to produce pops and clicks—even in cases where the unprocessed edit point might not offend.

Additionally, edit points that consistently handle pitch-correction processing the most transparently are those at which both audio regions' waveforms are progressing toward the same polarity (that is, positive or negative excursion). What you don't want, for example, is for audio in the leading region to be heading into a negative waveform excursion at its zero crossover point, only to be whipsawed into a positive excursion after the trailing region's adjoining zero crossover point. Such a fast reversal in polarity often results in pops and clicks or warbly-sounding artifacts once pitch processing is applied to the track.

Where it is not possible to find an edit point at zero crossover points with smooth polarity transitions, applying a crossfade over the compromised edit seam will often gloss things over. Just make sure the crossfade is no longer than it needs to be. A crossfade extends the leading audio region farther along the timeline and the trailing region earlier along the timeline while crossfading between the two where their extensions overlap. Audio that fluctuates wildly in level or pitch, but which voices within the crossfade zone, can also cause pitch-correction artifacts. So listen carefully to any crossfades to see if they sound transparent after pitch correction is applied.

Quick and Not So Dirty

One of Auto-Tune's biggest strengths is that its Automatic mode can be used to correct pitch on the fly (that is, without having to first preload the audio into the plug-in for analysis). This lickety-split action is a godsend when you're pressed for time, such as when mixing demos for clients on a very thin budget.

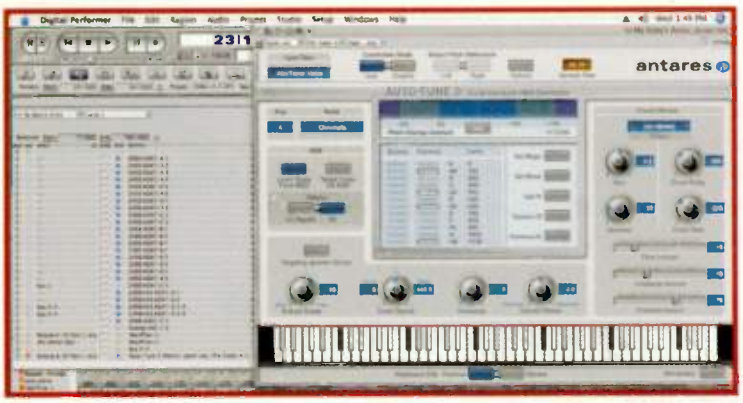


FIG. 1: Auto-Tune 5's Learn Scale From MIDI function. In this example, all diatonic notes for the scale of A minor are selected along with an F# (by inputting MIDI notes) to accommodate a song's temporary modulation into the key of G major. Note the I/O assignments for the record-enabled MIDI track (shown in Digital Performer's Track Overview window on the left) that feeds Auto-Tune.

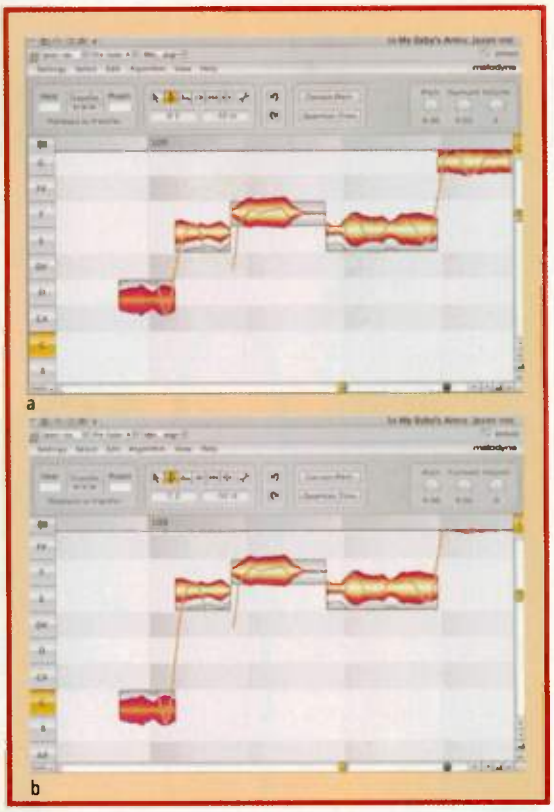


FIG. 2a: The first note shown in this screen shot of Melodyne Plugin is sung as D-natural, before being transposed to C-natural using the Pitch tool and Scale Snap function. FIG. 2b: After transposing the note to C-natural, the original offset from concert pitch remains and the note is still a little flat (as shown by the gray outline—representing pitch center—above the red Blob). Double-clicking on the note with the Pitch tool will move the note to its exact pitch center.

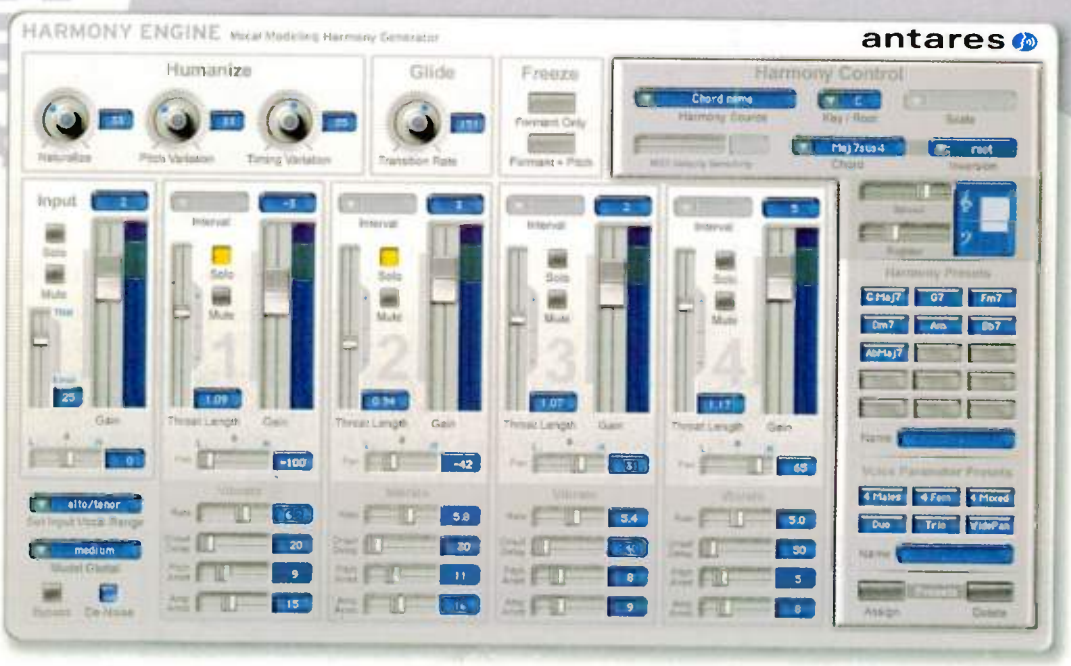
Quick phrases that contain severely off-pitch notes may prompt you to use Automatic mode's faster Retune settings to attain sufficient pitch correction before the offending notes pass. However, such a heavy hand can also increase warbly- or phasey-sounding artifacts.

One solution is to chain two Auto-Tune plug-ins together in series to create a soft-knee effect. The first instantiation is set for a slow Retune time of roughly 50 to 90 ms in order to gently nudge the track's pitch closer but not all the way to where you want it to be. The second Auto-Tune instantiation is set for a faster Retune time of perhaps 20 to 30 ms, moving the pitch even closer to center. With this setup, neither plug-in has to work too hard, thereby (usually) reducing artifacts.

Whether you're working in Auto-Tune's Automatic mode or Graphical mode, applying pitch correction to a vocal track that has a heavy dose of tube distortion can cause pops and clicks. These artifacts can often be completely eliminated by setting the Tracking control to 1, its lowest setting. The Tracking control is accessed in Auto-Tune 5 by clicking on the Options button.

Heads Up!

Introducing Harmony Engine.
The quickest, easiest tool for creating vocal harmony



If you've ever wanted a quick, easy-to-use tool that gives you the power to create great sounding harmony parts, without requiring an advanced degree in vocal arranging, well, heads up! Harmony Engine is a real-time harmony generating plug-in that puts professional-quality vocal harmony arrangements within reach of any songwriter, producer, musician or engineer.

With four independent harmony voices, a variety of powerful harmony generating modes, humanization features for natural sounding performances, and a flexible real-time preset system for harmony and vocal type, Harmony Engine provides incredibly easy-to-use tools to quickly and easily produce virtually any vocal arrangement you can imagine.

Whether you're an experienced vocal arranger, a songwriter looking for that perfect backup vocal, or a composer experimenting with unique vocal effects, Harmony Engine gives you entirely new ways to create the harmony parts you hear in your head. In fact, experimenting with different harmonies is so easy (and, dare we suggest, fun), you may find yourself using Harmony Engine to explore harmonic alternatives you may have never otherwise considered.

Harmony Engine is available in Native formats for Mac OS X and Windows XP and Vista. Check it out at your local Antares dealer or come to our website for more details, audio demos, and a fully functional 10 day trial version.

Harmony Engine. The quickest, easiest tool for creating vocal harmony. From the worldwide leader in professional vocal processing technology.

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FOR ALL THE VOICES IN YOUR HEAD

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MIDI Madness

Auto-Tune offers a number of useful features for MIDI mavens. When a song includes one or more key changes, you might be tempted to choose a chromatic scale in Automatic mode to properly treat notes that don't belong to the key signature that starts off the song. But for more-exact pitch discrimination, try using Auto-Tune's Learn Scale From MIDI mode to select all the notes from both scales (and no others) for pitch-correction processing (see Fig. 1).

To do this, first create a new MIDI track in your DAW and assign your keyboard controller to its input. Send the MIDI track's output to Auto-Tune. For example, in MOTU Digital Performer (DP) assign the output to "Auto-Tune 5 (*mono*): *name of vocal track*: *insert position*." Then click on Auto-Tune's Learn Scale From MIDI button. Doing so will automatically change the current scale type to chromatic and activate the plug-in's virtual keyboard.

Next, click on either the Octave As Played or Octave All button to make your subsequent note selections active only in the specific octave range you play them in or across all octaves, respectively. Then play on your MIDI keyboard controller all the notes that occur in your song's melody. The timing for note entry is not important, so take your time. If you enter a wrong note by mistake, click on the Learn Scale From MIDI button twice and start over, or simply activate the Keyboard Edit's Remove button and click on Auto-Tune's virtual keyboard on the notes you want to remove.

Once all of your melody's notes are entered, Auto-Tune should handle all of your key changes—unless, of course, some notes are sung more than 50 cents off-pitch and get pulled to a target pitch for another key used elsewhere in your song. In such a case, standard operating procedure in Auto-Tune is to enter Graphical mode and draw the target pitch for that note using the Line tool. (Waves Tune also offers a Line tool for graphic editing, which I'll discuss shortly.) By holding down the Option key (Mac) or Alt key (Windows) on your QWERTY keyboard while drawing, you can make Auto-Tune's Line tool draw a perfectly horizontal line on the pitch graph to keep the target pitch from fluctuating. Auto-Tune 5's new Snap To Note function goes one better, forcing the curve to be drawn to the nearest semitone.

MIDI-philes can accomplish the same result without ever entering Auto-Tune's Graphical mode. Simply click on the Target Notes Via MIDI button and play into your DAW the MIDI note that corresponds to your desired pitch. (You can also record it into a new MIDI track within your DAW.) Play the MIDI note *immediately* after the onset of the sung note and sustain it for the full duration of the note.

Mellow Dining with Plug-ins

In Melodyne Plugin, errant notes are moved to their pitch center simply by double-clicking with the Pitch tool on their Blobs (graphic representations of sung notes). The Pitch tool can also be used to drag an unintentionally nondiatonic note to the correct pitch belonging to the melody's scale. For this application, Melodyne Plugin's Scale Snap function is a real time-saver (see Figs. 2a and 2b).

After playing the offending note into Melodyne Plugin's analysis engine, select Scale Snap from the drop-down menu in the lower left corner of the plug-in's window. In the Note Ruler along the left edge of the window, click on the letter name that corresponds to the current key signature; Shift-clicking toggles the scale between major and minor keys having the same tonic note.

Now drag the off-key Blob to its desired pitch using the Pitch tool. As you drag the Blob up or down, it will snap to notes belonging to the scale you chose in the Note Ruler. However, any offset from exact pitch center that existed before dragging will remain after the Blob is dragged to the new note. If you want the Blob's pitch to be corrected fully, simply double-click on the Blob with the Pitch tool (after first dragging the Blob to its new note in Scale Snap mode).

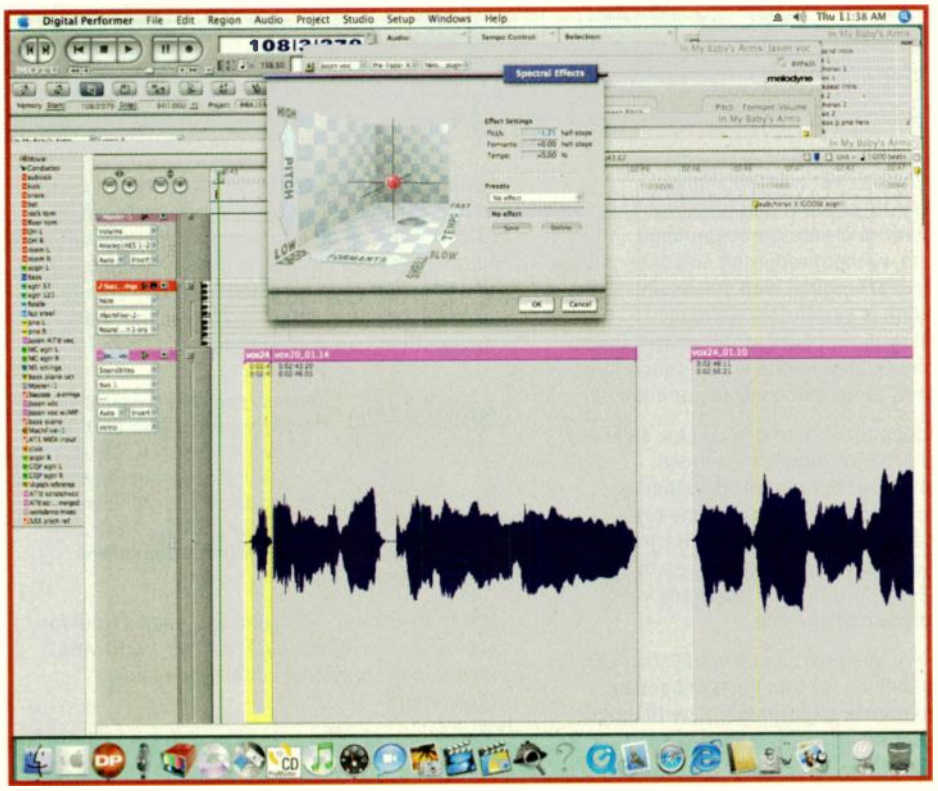

FIG. 3: DP's Spectral Effects processing can be used to transpose a selected sound bite (highlighted in yellow) to the desired pitch.

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INSTRUMENTS

If you don't own any pitch-correction software, your DAW probably has a pitch-shifting function that can be used to transpose isolated notes in a similar fashion (although the process will likely be tedious). For instance, I've used DP's Spectral Effects processing (see Fig. 3) to transpose pickup notes (fleeting notes sung before the downbeat of the first full bar of a phrase). Even great singers often sing these notes off-key by as much as a major third or more, and fixing each of these wild pitches can have a subtle yet noticeable impact on the overall performance.

If you use DP, make a time-range selection for the offending note. Be sure to select slightly more material than you think you'll need at both the start and end points of the time-range selection; you can always trim these sound-bite edges back afterward. Because Spectral Effects is a "constructive" process that creates an entirely new audio region whose edges cannot be extended after rendering, selecting a slightly larger region gives you more flexibility in placing transparent-sounding edit seams with any preceding and following audio regions.

Once your time-range selection is made, audition it by using the Option-Spacebar command and guesstimate how much you need to transpose the audio to place its pitch right on the money. Then call up DP's Spectral Effects command under the Audio menu and enter the required amount of pitch-shift in half steps and hundredths of a half step. The exact amount of pitch-shift needed will be a hit-and-miss determination best made by applying Spectral Effects processing, auditioning the result, and undoing and reapplying (with different pitch-shift amounts) as needed until it sounds right.

Catching a Vibe

Sometimes it's not a note's pitch center but an excessive amount of vibrato that causes a performance to sound off-pitch. Melodyne Plugin's Pitch Modulation tool is extremely effective in taming over-the-top vibrato, and using it is child's play.

After playing the offending portion of the performance into Melodyne Plugin, select the Pitch Modulation tool from the Pitch tool's drop-down menu. Then simply move the tool's cursor over the sound Blob that exhibits the excessive vibrato and drag downward with your mouse. The farther down you drag, the more the vibrato is reduced—to the point of complete elimination, if you want (see Web Clips 1 and 2).

Excessive vibrato can cause Waves Tune to graphically split one held note into multiple note segments having different pitches (see Fig. 4a). If this occurs, set a high Note Tolerance (in the plug-in's Segmentation controls section) and rescan the offending phrase. The high Note Tolerance setting should preclude segmentation into multiple pitches, while also creating a tighter pitch-correction curve that doesn't swing over such a wide pitch range (see Fig. 4b).

With Tune's audio analysis tweaked, now it's time to tame that unruly vibrato. Turn on Tune's Natural Vibrato function (located in the Vibrato controls section in the plug-in's lower right corner) and reduce the Amount value to decrease the track's vibrato effect. If the vibrato becomes excessive only at the end of a sustained note, you can increase the Vibrato Attack time so that your programmed vibrato reduction kicks in only during the problematic portion of the note. To completely flatten the vibrato effect so that there is no pitch fluctuation, you may need to lower Tune's Speed control to 0.

Of course, you can also reign in wildly fluctuating pitch by drawing a flat (constant) pitch target with

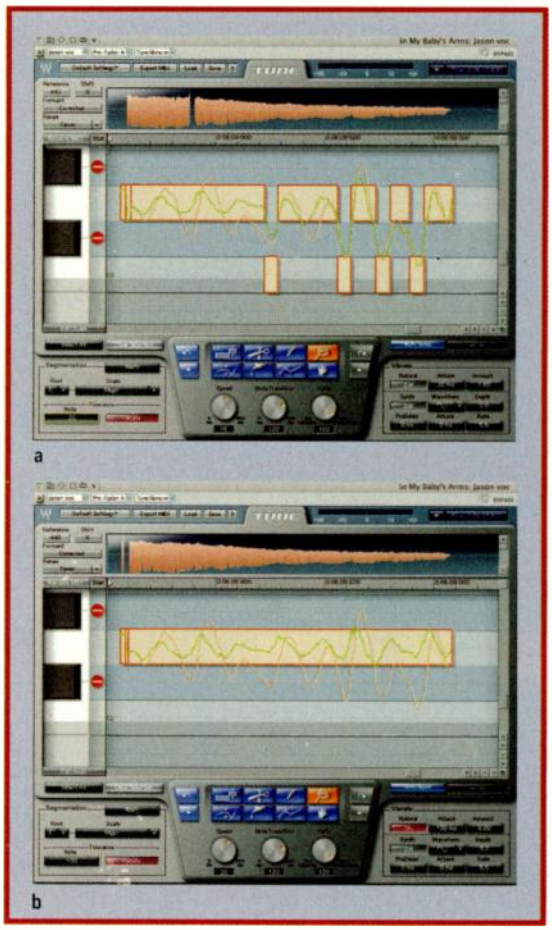


FIG. 4a: Multiple note segmentations in Waves Tune can be caused by excessive vibrato when the plug-in's Note Tolerance is set too low (in this example, to the default value of 20). The orange detected-pitch curve seen here shows that the vibrato is deviating over a range of three semitones, causing the green pitch-correction curve to fluctuate over a range of roughly two semitones. FIG. 4b: Setting the Note Tolerance to 100 in Tune constrains the segmentation of the held note to occur within a range of one semitone. It also creates a tighter pitch-correction (green) curve. The vibrato effect is reduced by turning on the Natural Vibrato function and lowering the Amount parameter to 0.00, its lowest possible value. An Attack time of 100 ms is set here to delay the onset of vibrato reduction.

Tune's Line tool. Click on your desired pitch with the Line tool in Tune's Pitch Edit Area and draw a line from the start to the finish of the offending phrase, double-clicking at the end of the phrase. Use of the Line tool will automatically change Tune's Speed, Note Transition, and Ratio values, so be sure to readjust them to taste.

Stick to Me Like Glue

Looking at Fig. 4b again, check out the two short, additional segments at the onset of the held note. These are unwanted and unnecessary note segments that only complicate editing in Tune. Clicking on them with Tune's Glue tool will join them to the following long segment, making one segment out of all three.

Where note segments are of different pitches, you can join them together and simultaneously tune them all to one pitch. Simply select all the segments and then click on the one that has the desired pitch with Tune's Glue tool.

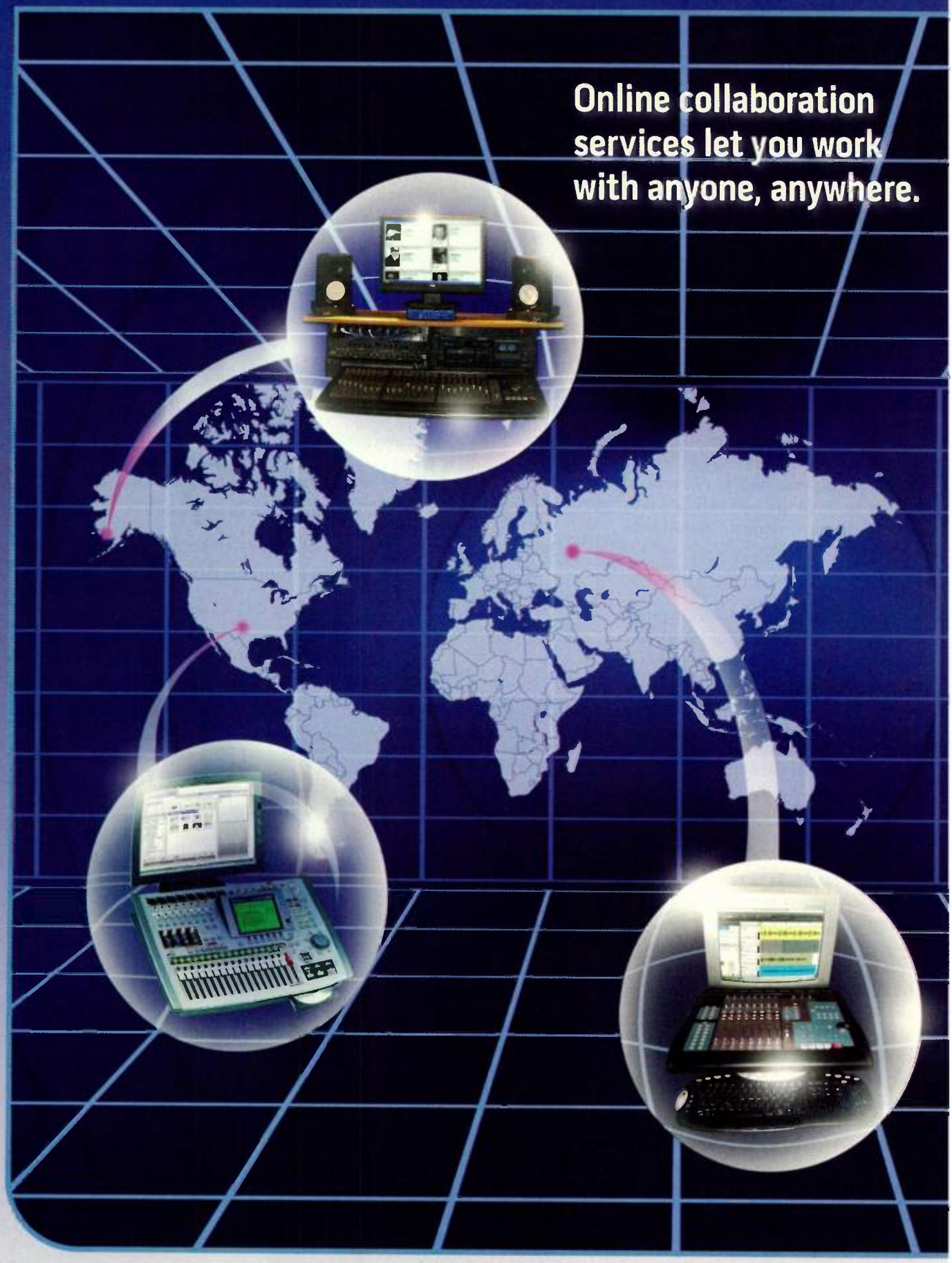
The Right Tool

Your needs will dictate which pitch-correction tool is best for the job at hand. Auto-Tune's Automatic mode makes it the easiest and quickest pitch-correction plug-in to use. Both Auto-Tune and Tune can set pitch targets by inputting MIDI notes. Tune also offers microtonal tuning and ReWire-style control over the host's basic transport functions. But unlike Auto-Tune and Melodyne Plugin, Tune doesn't support tempo changes and will introduce pops and clicks when confronted with them. Melodyne Plugin is the most complicated but by far the most powerful plug-in of the lot; in addition to pitch correction, it can do things that Tune and Auto-Tune can only dream of, such as intelligent harmonization, timing quantization, and time compression and expansion.

As with other types of production tools, sparing usage and a deft hand are key to getting the most natural-sounding results. Use your ears and don't overdo it. Then enjoy the sweet sound of success. EM

EM WEB CLIPS

EM contributing editor Michael Cooper is the owner of Michael Cooper Recording in Sisters, Oregon. Visit him at www.myspace.com/michaelcooperrecording.



DMITRY PANICH

By Marty Cutler

THE WORLD IS YOUR WORKSTATION

Almost ten years ago, I produced a MIDI project for PG Music called "The Bluegrass Band." The work flow started with recording basic rhythm tracks with a MIDI guitar and a custom banjo controller. I would sequence and email the MIDI data to a musician friend who had the rare combination of expertise with a sequencer and the ability to translate his bluegrass chops through a MIDI mandolin controller. He would record his parts into his sequencer, then email MIDI files to me, at which point I checked the tracks, balanced the Velocities, and cleaned up the data. If I needed something different, I asked for another take.

What I didn't know at the time was that the remote collaboration I was engaged in was a precursor to what is now being implemented, mainly with digital audio files rather than MIDI files, by a number of Web-based services. Thanks to the growth of broadband, today's musicians can share digital audio files and utilize Web-based audio-and-video communication technology to create a virtual studio environment with others in remote locations. These days, many musicians independently engage in online collaboration, especially for session work. All that's needed is a reasonably fast connection and a bit of file-transfer savvy.

Sensing a business opportunity in facilitating online collaboration, an increasing number of Web-based companies have emerged, offering a wide variety of services and features ranging from the hiring of session musicians to social networking to two-way MIDI programming, online jamming, live-band showcases, and more.

It's impossible to fully cover all the online collaboration services in the space allotted, so, given EM's focus on recording, I have narrowed my scope to those for which recording is the main activity, or at least a major one. I'll provide a basic overview of what these services offer and what you'll need for a successful and fruitful collaboration. I'll cover digitalmusician.net (DMN), eJamming, eSession, Indaba Music, i-Studio.net, and SessionPlayers. To get firsthand experience using an online collaboration service, I did a test project in eSession, which I'll talk about later in this story.

What You Need

It may be obvious, but I'll start by saying that at minimum, you'll need a high-bandwidth Internet connection. The speed of your connection will affect not only download and upload times, but also any audiovisual and data-streaming features you may use. Dial-up is, of course, out of the question, and cable and DSL remain the most popular choices, although fiber-optic service (FiOS), if it is available in your area, offers higher and

Collaborative Tools

The basic modes of operation for these online services are remarkably similar. Some share conceptual roots in the Performing Artist's Network (PAN), which was arguably the first collaborative online musical network.

Although a few of the online collaboration services offer real-time monitoring and communication during the recording process, the promise of real-time, full-bandwidth-audio recording for the masses across the Internet is not yet a reality. However, compressed streaming audio is, albeit with some latency. Many of the services support in-session audio-and-video conferencing and instant messaging (IM).

> I particularly appreciated eSession's elegant, clean organization.

The World Is Your Workstation

THOMAS DOLBY GOES REMOTE

Among the musicians involved with online collaboration is synth-pop and music-technology icon Thomas Dolby. This fall Dolby is touring the U.S. and U.K., after which he'll embark on a new album project, recorded totally off the grid—that is, using only renewable energy sources. On it, he plans to use eSession to record remotely with a host of musicians in various locales. Dolby spoke to EM in late August from England, where he'd just finished recording on an eSession project. (For more of this interview, go to the Podcasts page at www.emusician.com.)

ESession's model is an offline one, where files are worked on independently and sent back and forth. Do you prefer that to real-time online collaboration, which can have latency issues?
Yes, and I don't think we'll ever get around those latency issues, certainly not in this Internet generation. But as far as collaboration goes, a couple of things are key: the first is that there's really no substitute to two or more people sitting in the room, running the track, listening to it, and having a shared experience. All the best producers I know have an ability to become the audience and then respond to that by saying, "We need a bit more of this and a bit more of that." I'm not even talking about jamming; I'm talking about the process of production in layers. Once you've had that experience and you have established a rapport, it's just fine to work remotely. I think live phone calls or videoconferencing are really helpful as well.

So it's beneficial to be able to see and hear each other when you're working, but not to try to send the audio back and forth in real time.
Personally, I've got broadband access, and I get fairly good quality out of Skype videoconferencing, which is free to another computer. Or iChat, same deal, [with] iSight on a Mac. I think it's great to have that open, and I think if someone is just showing you a part, that's very sufficient. But I think that as soon as you get something you like, you should revert to the high-res [file-sharing] process.

Talk about your experience working on eSession.
It's very seamless to the end user. All of the previewing and emailing and the negotiations and the high-res tracks are [handled] within the application itself, and the user interface is very straightforward.

Do you see a future where everyone will just be in their home studios, playing remotely, and never meeting in a studio?
I would think that theoretically, that would be possible. But part of the beauty of a bunch of musicians being in a room playing together is that you respond absolutely in real time. That's something I especially appreciate, because machines don't do that.

—Mike Levine

PAUL BOX

By Marty Cutler

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Because each company examined here differs somewhat in its features, your system requirements and hardware choices may dictate which one you use. These companies are working hard to accommodate all popular platforms and baseline audio systems.

> I particularly appreciated eSession's elegant, clean organization.

Collaborative Tools

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For two-way audiovisual communication during a session, you will need at least a FireWire- or USB-capable Webcam. Some services allow any ASIO-compliant microphone as an audio connection, but of course, the better the audio interface, the better the outcome.

According to Joey Finger of SessionPlayers, "An Internet camera complete with a microphone can turn your computer monitor into the control room window. Production ideas and arranging can be every bit as easy as if you were in the same room."

Digitalmusician.net (DMN) provides three applications tailored for online collaboration: Digital Musician Link (DML), Digital Musician Messenger (DMM), and Digital Musician Recorder (DMR; see Fig. 1). DML is a VST plug-in for Mac OS X 10.3.7 and Windows XP computers. Inserted on a single track, it transmits time-stamped MIDI and audio data between computers connected to the DMN site. Real-time playback is compressed to MP3, but high-resolution files can be sent through DML when the recording is finished.

If you only require real-time monitoring with post-take audio and MIDI file sharing, you can use the DMM plug-in. It supports a wider range of formats than DML, including AU, VST, and RTAS. It provides for monitoring of the master output of each participant's sequencer, and, like DML, communication through video and IM. DMR is a standalone 16-track recorder that can be used as a ReWire client.

FIG. 1: digitalmusician.net's standalone DMR application is a multitrack recorder that lets you log in to a session without your browser. You can also use it as a ReWire app in conjunction with your favorite digital audio sequencer.

THOMAS DOLBY GOES REMOTE

Among the musicians involved with online collaboration is synth-pop and music-technology icon Thomas Dolby. This fall Dolby is touring the U.S. and U.K., after which he'll embark on a new album project, recorded totally off the grid—that is, using only renewable energy sources. On it, he plans to use eSession to record remotely with a host of musicians in various locales. Dolby spoke to EM in late August from England, where he'd just finished recording on an eSession project. (For more of this interview, go to the Podcasts page at www.emusician.com.)

ESession's model is an offline one, where files are worked on independently and sent back and forth. Do you prefer that to real-time online collaboration, which can have latency issues?
Yes, and I don't think we'll ever get around those latency issues, certainly not in this Internet generation. But as far as collaboration goes, a couple of things are key: the first is that there's really no substitute to two or more people sitting in the room, running the track, listening to it, and having a shared experience. All the best producers I know have an ability to become the audience and then respond to that by saying, "We need a bit more of this and a bit more of that." I'm not even talking about jamming; I'm talking about the process of production in layers. Once you've had that experience and you have established a rapport, it's just fine to work remotely. I think live phone calls or videoconferencing are really helpful as well.

So it's beneficial to be able to see and hear each other when you're working, but not to try to send the audio back and forth in real time.
Personally, I've got broadband access, and I get fairly good quality out of Skype videoconferencing, which is free to another computer. Or IChat, same deal, [with] ISight on a Mac. I think it's great to have that open, and I think if someone is just showing you a part, that's very sufficient. But I think that as soon as you get something you like, you should revert to the high-res [file-sharing] process.

Talk about your experience working on eSession.
It's very seamless to the end user. All of the previewing and emailing and the negotiations and the high-res tracks are [handled] within the application itself, and the user interface is very straightforward.

Do you see a future where everyone will just be in their home studios, playing remotely, and never meeting in a studio?
I would think that theoretically, that would be possible. But part of the beauty of a bunch of musicians being in a room playing together is that you respond absolutely in real time. That's something I especially appreciate, because machines don't do that.

—Mike Levine

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That functionality lets you audition tracks in sync with your main recording software, without having to import them. It also has facilities for finding players, buying and selling tracks, and more.

DMN's suite of software offers a lot of functionality, but I found the jumble of acronyms and applications to be a bit confusing. I hope they'll eventually develop a single, universal application. SessionPlayers also uses the DMR/DML software and gives you access to Source Elements' SourceConnect, another application for real-time collaboration.

The eSession Song Page (see **Fig. 2**) offers collaborators facilities to upload and download audio files, listen to MP3 files, and discuss aspects of the project through both blog and chat facilities. At the time of this writing, there is no real-time oversight of the recording process, but the company plans to soon release its Virtual Glass plug-in, which will support AU, RTAS, and VST streaming of audio and MIDI Time Code. (At press time it was in the alpha stage of development.) Virtual Glass will allow you to synchronize digital audio sequencers and MTC-driven devices but not transmit MIDI data.

FIG. 2: The Song Page at eSession neatly lays out each collaborator's tracks, including Stems and finished mixes. Note the chat application on the right side of the screen, and my local drives on the left.

At Indaba Music, members initiate sessions and post audio files (WAV, AIFF, or MP3) to the browser-based Indaba Session Console (see **Fig. 3**), which allows mixing and editing but not recording. Collaborators download the tracks to their DAW software, record their parts, and then upload the new tracks to the Session Console, where the session initiator can access them. Indaba Music's founders opted for this offline

ONLINE COLLABORATION SERVICES COMPARED

Service	Membership Fee	Fee for Studio Musicians	Online Storage for Audio Files
digitalmusician.net	free, Pro membership from about $13.50/month	optional/negotiated	yes
eJamming	free during beta, $9.95/month afterward	optional	no
eSession	free	negotiated	250 MB (free) to 150 GB
Indaba Music	free, Pro membership $10/month	optional/negotiated	250 MB (free); Pro: 10 GB
i-Studio.net	N/A	negotiated/suggested base rate $250 (for a 3-hour session)	yes
SessionPlayers	$25/year	varies per player; $250 minimum	yes

approach rather than implementing real-time streaming and recording over the Web, a process they feel is currently too problematic.

Although eJamming leans more toward jam sessions and social networking than recording, it does let collaborators exchange MIDI and 16-bit, 48 kHz audio files (see **Web Clip 1**). The service offers eJamming AUDiiO, a standalone audio-and-MIDI recorder that can synchronize with other musicians. You can join in on or offer sessions by invitation, which can be in the form of an audition to see if you are up to the task. Up to four players can be in on a session, and each can record a single audio track at a time, or a multichannel MIDI stack. The work flow is not very different from digitalmusician .net's software: although you receive audio from other musicians, the MIDI and uncompressed audio data from each participant is stored on their local drive and is not shared in real time.

Personally, I much prefer non-real-time, offline exchange and compilation of files. Intermediary recording software connecting collaborators over the Internet can add multiple layers of unnecessary complexity to an already complex recording process. There is an inherent amount of latency in streaming audio—compressed or otherwise—which is an issue when playing or recording using streaming online software such as DML or Source-Connect. As a consequence, you must wear headphones, ignore the acoustic sound of your instrument, and compensate by adjusting your playing to try to stay in the pocket. Not an easy way to groove.

What's more, if you don't want to use compressed, low-bandwidth audio in your final mix, you ultimately must resort to file sharing the high-bandwidth audio recorded locally on your hard drive (from your DAW), anyway. Considering all that, I found streaming online recording to be too troublesome to pursue. However, you may feel otherwise. Either way, you still have the option of offline file sharing if streaming proves too difficult.

FIG. 3: Indaba Music's Session Console gives remote collaborators a central interface to upload and download audio files and audition multitrack material.

What's in Store

Another advantage of using an online collaboration service is that any session data you record or transfer through its servers will be backed up, at least for the duration of your project. You can assume that the service takes care of and guards its storage better and more

Session Communication	Real-Time Streaming	Support	Optional Open Collaboration
audiovisual chat via DMR, DML, and DMM software	via DMR and DML software	email, forum, phone	yes
chat via eJamming AUDiiO	audio only	email, forum	yes
chat and blogging through Song Page, audiovisual chat via Virtual Glass software (not yet available)	via Virtual Glass software (not yet available)	email, forum, phone, Web conference, video tutorials	no
messaging and blogging	no	email	yes
no	no	email	no
audiovisual chat via DMR, DML software	via DMR and DML software, Source-Connect	email	no

often than you do. Gina Fant-Saez of eSession says, "We operate and maintain our own servers and have 128-bit SSL encryption for file transfers. We've implemented a comprehensive, layered security infrastructure that utilizes industry-standard security authentication and authorization. Data is protected at multiple layers—from the server infrastructure all the way up through the application layer."

SessionPlayers encrypts your session files before transmitting them, and backs them up to disk. At i-Studio.net, your session data is stored online and backed up to DVD. Some of these services will erase your files from their servers after the project is completed. At eSession, you also have the option to pay for long-term file storage.

FIG. 4: A number of online collaboration services offer access to A-list musicians for your sessions. This screen shot shows some of the keyboardists available at SessionPlayers.

What's My Line

If you have ever dreamed of recording with top-tier session players, you can do it through online collaboration. Besides the cachet of working with high-profile, experienced studio pros, you can count on these players to be adept at delivering excellent tracks quickly and professionally.

SessionPlayers and eSession host a dazzling roster of top-shelf musicians, but each takes a different approach to the process. SessionPlayers hews more closely to the model of a production service than a two-way musicians' network: you pay a membership fee, hire your choice of musicians from an array of first-call players (see **Fig. 4**), fill out a form listing contact information and session details, and upload MP3 reference tracks and charts. SessionPlayers will then contact you and discuss your recording options and offer production suggestions. If your needs (or your finances) are more modest, it can arrange demo sessions from a cadre of musician-programmers who will develop your arrangement with a sequencer using synthesizers and samplers. As with any of these services, musicians may choose to decline your project; Robben Ford, Leland Sklar, and Peter Erskine may think twice before playing on your hip-hop version of "Beer Barrel Polka." Then again, anything is possible.

A laissez-faire approach guides the work flow at eSession. You become a member (at present, membership is free for a basic account with 250 MB of data-storage space), locate your talent, and submit a work request, an MP3 demo of your song, and a flat $25 fee, and the offer goes to the talent. If they choose to play, the talent can set the rates on a project-by-project basis,

and you are free to negotiate until you can come to an accord (or not). Negotiations have their own page with a record of the transactions—a great idea should any disputes occur later. If the talent can't accommodate your project, your $25 fee is refunded; if they agree to play, you must arrange a 50 percent payment before the recording can begin.

I particularly appreciated eSession's elegant, clean organization of the entire online collaboration process. From account information to the Stem Banks to plentiful video tutorials to drag-and-drop capabilities for uploading and downloading of tracks, eSession's browser-based application really becomes part of your workstation. Other than the company touting its features on its home page, there are no flashing, animated banners or ads to distract (which you find with some of the others). The company offers a WebEx-based orientation that explains how its service works. You can sign up for this scheduled live tutorial—where you're free to ask questions whenever you want—as many times as you like.

Although i-Studio.net (see Fig. 5) offers the least frills of the services I looked at, it gives you access to plenty of top-shelf players, which is its primary mission. You may recognize several of the names involved in it from the popular Discrete Drums sound libraries. In fact, i-Studio.net is a spin-off of Discrete Drums, and now even offers custom sessions set up in the same multitrack arrangement as the original sound library.

The elite team of players at i-Studio.net have worked with an impressive list of artists, including John Lennon, Johnny Rotten, Pat Metheny, and Bob Dylan. The musicians ply their trade at select studios in New York, Los Angeles, and Nashville. This limited set of recording facilities ensures a consistent level of quality from project to project. At the i-Studio.net site, you can listen to MP3 demos of the various musicians' work to help you determine whether they're right for your project. The musicians start with a negotiable base fee of $250 for a three-hour recording session, and will record multiple takes for you within that time frame.

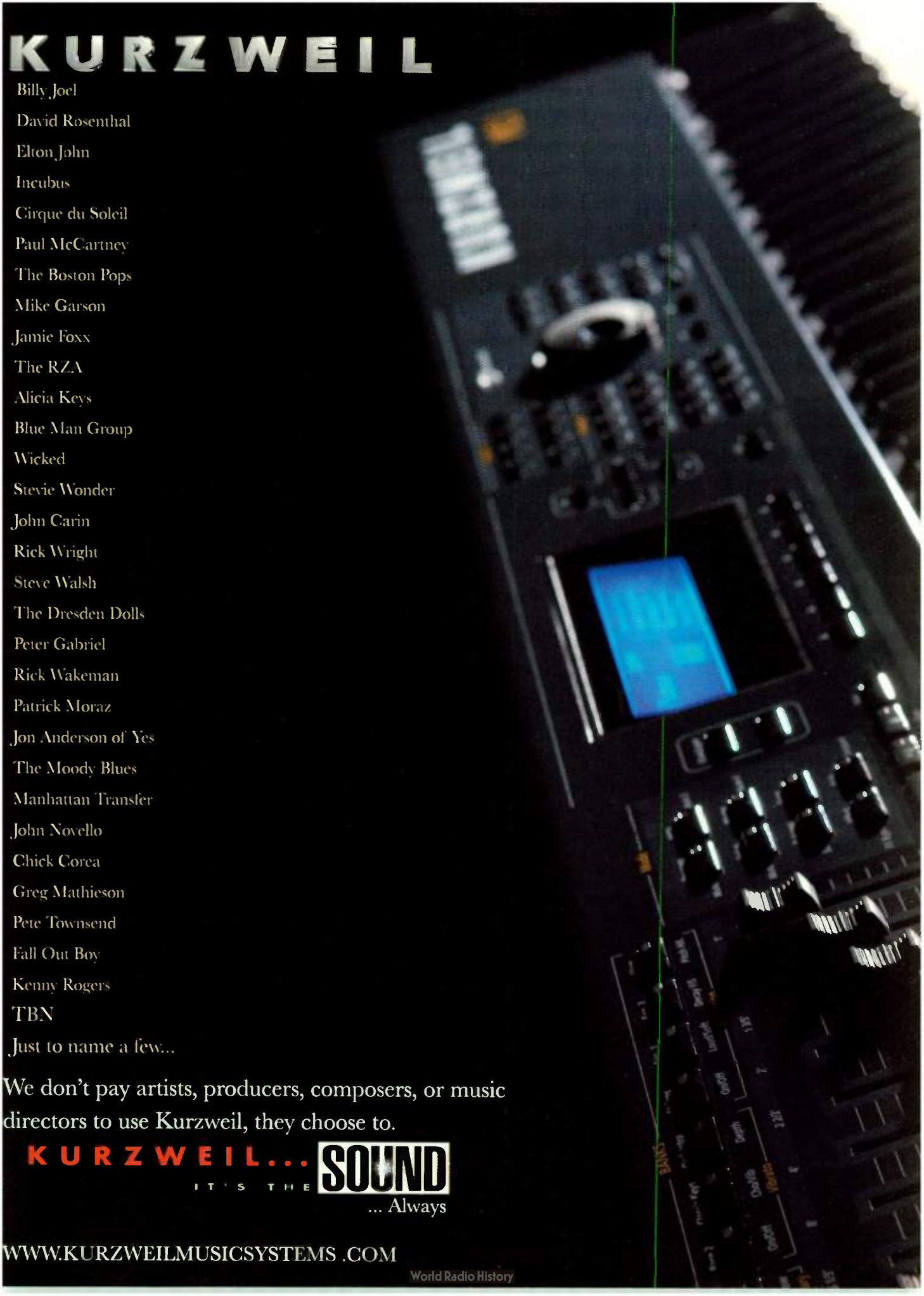
At DMN and eJamming I recognized fewer high-profile players, but you can choose from a menu of musicians from around the world to collaborate or jam with. The DMN home page lists projects, musicians in search of other musicians, special DMN events, the latest forum posts, and more. Projects can be free and completely open to participation, or closed sessions with a wide range of fees offered by the Administrator, who can be the owner of the project or a participant designated to grant access to the files. Because DMN is more global in scope, I found not only pianists, drummers, guitarists, and bassists to play rock and pop, but also banjoists, accordionists, and mandolinists looking to play progressive bluegrass and fusion (my musical styles of choice). This more eclectic

approach can be useful when you are looking for less conventional instrumentalists, although it is advisable to audition potential collaborators' MP3s first, to make sure you are on the same page, musically speaking.

Indaba Music boasts a membership of around 5,000 (about 25 percent of which are from outside the United States), and the site's extensive social-networking facilities make it easy to find and audition potential collaborators. You can ask any of the members to play on your project, or keep your session totally private. "We give the session owner complete control over who can download which files, and who they let into the session," says cofounder Matt Siegel.

FIG. 5: One of the player profiles at i-Studio.net, a service that doesn't offer a lot of extras but has a stable of solid studio players that you can hire.

With every service except i-Studio.net, you have the option of bringing in musicians who are not signed up with the group, either by recruiting them as new members or by granting them temporary access to your files on the company's server. With a paid Studio account, DMN lets you set up as many as seven subaccounts for nonregistered musical collaborators.



Into the Fray

My eSession project (see **Web Clips 2 through 4**) started with a MIDI arrangement of a spooky old modal mountain tune whose general melodic contours were easily adaptable to a modern electronic arrangement reminiscent of Weather Report—at least, that's what I had in my mind's eye. Fortunately, I found my old friends and collaborators Jimi Tunnell (guitar) and Jeff Ganz (bass) on eSession, and was able to negotiate a very reasonable fee. Because they were familiar with my eclectic mind-set, we were able to hash out the details of the arrangement quickly.

Each musician worked with three reference files: an MP3 of a full arrangement, an MP3 with its instrumentation stripped down to the basic rhythm-section instruments, and a 24-bit, 48 kHz stereo stripped-down mix of the track minus their particular instrument. We then sent suggestions back and forth either through phone calls, email, or the eSession chat application and fleshed out the details. We were not set up for a simultaneous online recording session, and I preferred to give my collaborators time with their ideas without pressure, so this method suited me perfectly (see **Web Clip 5**).

Despite the best of intentions, it's impossible to account for every individual musician's computer configuration, and collaboration through a Web browser can add a few layers of complexity. Don't be surprised by the odd hurdle here and there. Everything else being perfect, I found that my browser (Netscape on my PC) was not fully supported by eSession. It was an easily remedied problem (I downloaded a new browser), but it underscored the need for patience, a modicum of Web savvy, and a bit of research into the system requirements of the service that you choose.

A problem occurred when one of my Stem Bank files was inadvertently clocked to 44.1 instead of 48 kHz. This is where online collaboration shines. As soon as I discovered the problem, I converted the problematic track to 48 kHz, re-uploaded it, and deleted the original. In all, correcting the problem and getting the new file online took ten minutes—compare that with the best overnight delivery offered by your favorite carrier.

In another instance, one of my collaborators could not get my files to play back at the right pitch or tempo. Of course, this was another word-clock problem (for more on word-clock issues, see "Timing Is Everything" in the August 2007 issue of EM, available at www.emusician.com), and eSession's technical support was able to track it down to an incompatible word-clock setting in my partner's preamp.

Connectivity problems can be hard to troubleshoot. For example, one collaborator couldn't log in to respond to my work request. As it turned out, it was a matter of needing to update Java and Flash applications. Fortunately, eSession's well-informed

MANUFACTURER CONTACTS

digitalmusician.net www.digitalmusician.net
eJamming www.ejamming.com
eSession www.esession.com
Indaba Music www.indabamusic.com
i-Studio.net www.i-studio.net
The PAN Network http://pan.com
SessionPlayers www.sessionplayers.com
Source Elements www.source-elements.com

customer support solved the problem quickly.

Customer support (in the form of email, forums, and sometimes phone support) at the various online collaboration services is generally willing to help you track down problems whether they are due to bugs in their system, browser difficulties, connectivity problems, software or hardware glitches (with the third-party hardware and software in your setup), improperly configured audio drivers, or pilot error. Such support provides a wide-ranging body of knowledge issuing from one source, and it beats having to seek out customer support from the manufacturers of the individual products in your recording chain.

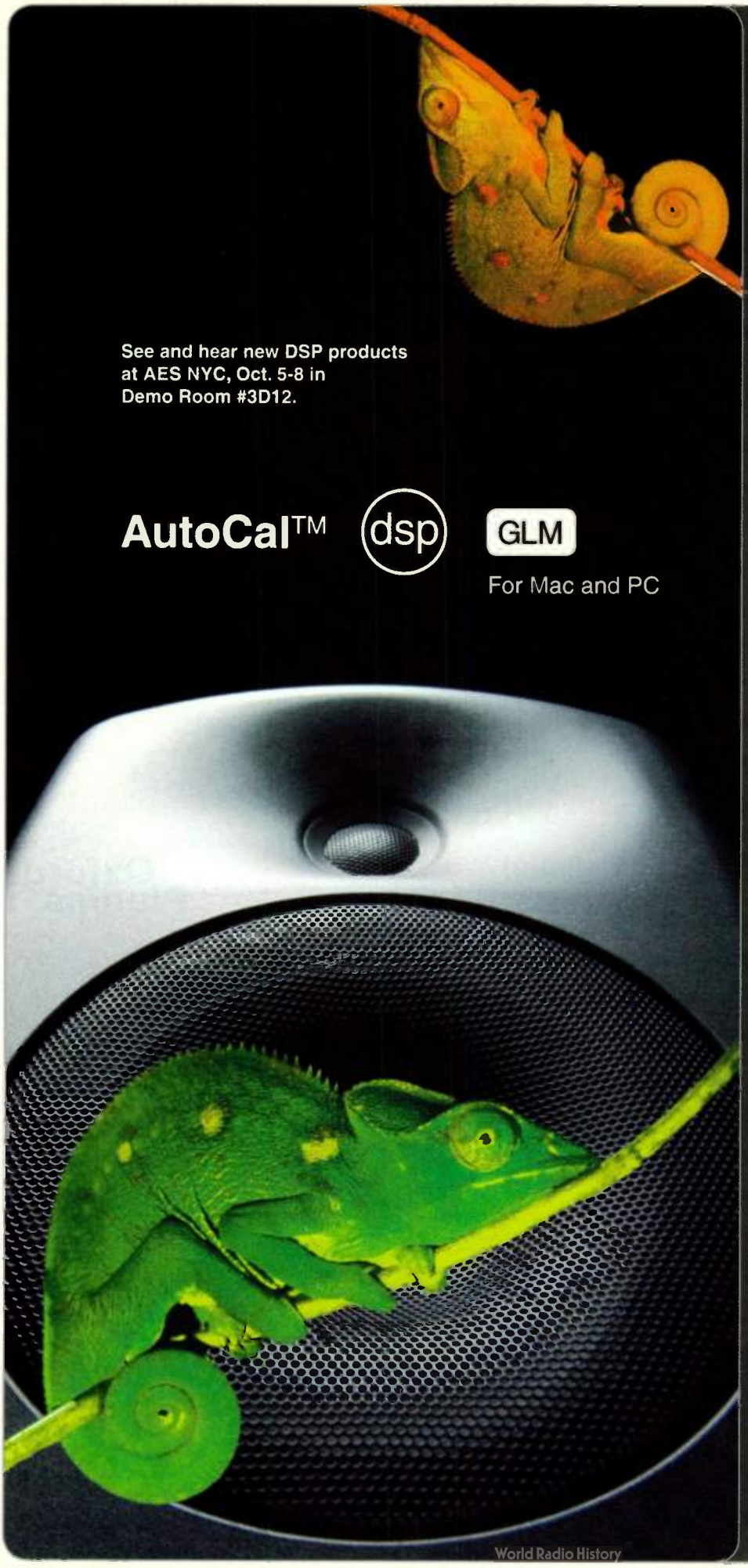
Collaborate, Collaborate

I can't say enough about how Web-based collaboration has helped me to realize ideas that have been in my head for years. I came to this story as a skeptic, and although none of the services are glitch-free, I'm convinced that the benefits of online collaboration outweigh any of its drawbacks.

Most of the services discussed in this article make it extremely easy and inexpensive to jump in and get your feet wet. If you are a composer in need of talent to realize the jingle that is due tomorrow morning, a songwriter up in the wee hours looking to develop the bridge you've just written, or a studio pro looking to find more work, there is sure to be something for you in one of these services. In fact, you'll probably find much more than you anticipated. EM

EM WEB CLIPS

Downbeat *magazine once labeled Marty Cutler's music as "Eclectically Madcap." The MP3s from this project proudly substantiate the claim. You can visit his Web site and get in touch at http://web.mac.com/martycutler/.*



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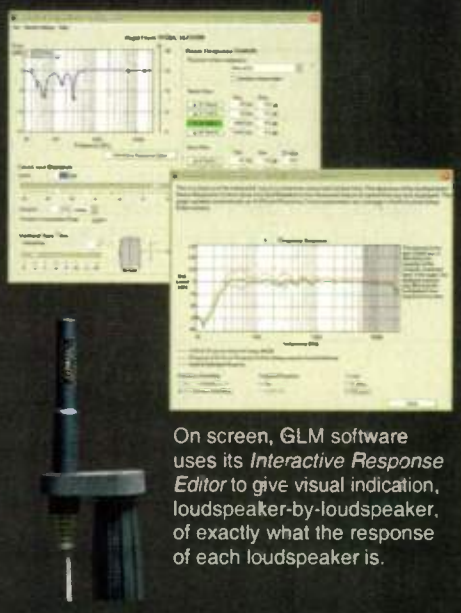

On screen, GLM software uses its *Interactive Response Editor* to give visual indication, loudspeaker-by-loudspeaker, of exactly what the response of each loudspeaker is.

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LAURA WILLIAMS

Chamber Made

By Dave Simons

Build a natural space for reverb effects in your studio.

These days even the most basic processors offer a wide variety of reverb options at the touch of a button. Years ago, however, the vast majority of recording engineers were wont to create their own reverberation effects using reflective rooms known as live echo chambers. Deceptively small (anywhere from 10 to 15 feet long on average, with a low ceiling) despite their enormous sound, echo chambers aped the kind of naturally occurring ambience heard in large concert halls. For years studio technicians would remedy a case of the dries by recording singers in adjacent stairwells or even bathrooms. By having a chamber on the premises, though, engineers could count on a dedicated, controlled space solely for the purpose of adding echo.

Rather than placing the performer inside the chamber, the engineer would send the signal from the console to a loudspeaker situated in a corner of the room. A microphone positioned at the opposite end (in order to maximize the echo effect) returned the reverberated sound back to the console, where it was then mixed with the original untreated signal. Adjusting the amount of reverb was simply a matter of increasing or decreasing the send or return signal, or even moving the microphone closer to or farther away from the speaker.

What is the hallmark of old-school echo? For one thing, it tends to be rounder and fuller (listen to any vintage jazz or vocal recording for proof), with none of the telltale crackling decay typical of inexpensive modern reverbs—in short, it sounds more like a real room. And because echo chambers were built by hand, history buffs can often tell where a song was recorded just by the sound of the chamber—Roy Orbison's "Oh, Pretty Woman" (Monument Studio, Nashville) and Steppenwolf's "Born to Be Wild" (American Recorders, Los Angeles) are just two examples of distinctive live echo in action. That concept caught my fancy, and not long after I'd finished writing

a book about some of that history entitled *Studio Stories: How the Great New York Records Were Made* (Backbeat Books, 2004), I built my own live echo chamber right off the drum room in my basement studio. Pretty extreme, I admit, but in all honesty the chamber echo sounds better than any of my digital reverbs, bar none. Most of all, it has a sound that's completely unique to this studio—and there's something very cool about that.

In reality, there's nothing all that complicated about building a chamber. The key is a hard masonry interior, and the most obvious place to find that kind of surface is the corner of a basement. Because you already have the concrete slab flooring and three concrete walls, all you have to do is put up one more wall and a ceiling, and presto—you have the framework for your chamber. (If you don't have a basement, hang on a bit; I'll discuss other options later.)

Getting Started: Framing the Chamber

I chose a remote section of the basement, far enough away from the main living space (for soundproofing purposes) yet easily accessible from the studio itself (see Fig. 1). The designated area measured 15 feet long and 8 feet high, but because of a nearby bulkhead it was only about 4 feet across. However, some very good chambers were also long and narrow. If you do it right, you can get echo in almost any size space.

Start by squaring off the chamber with a long wall made of Sheetrock, fastening the Sheetrock on both sides of the wall frame to a stud every 16 inches. If possible, angle the wall slightly inward (or outward) to create a trapezoidal space, so the sound waves can bounce in different directions. Use the Sheetrock to make a ceiling as well. For an opening, all you'll need is a simple cutout about three feet square, using a hatch made of soundboard for a covering.

FIG. 1: An unfinished basement is an ideal place to build your own echo chamber.

DAVE SIMONS

Now comes the important part: making an interior that's as solid, smooth, and reflective as possible. Some people use bathroom tile, which will work great but is ridiculously expensive. The majority of chambers are composed of plaster (a bargain at about five bucks per 50-pound bag) or, specifically, portland cement plaster, which is a standard plaster cut with some cement and lime. Once it's mixed, you have about 15 to 20 minutes to hang the plaster on the walls before it turns to rock. Therefore, mix the plaster in small batches and apply it in several layers

DAVE SIMONS

FIG. 2: Place a speaker near and facing into a corner of your echo chamber and adjust its position to get the sound you want.

to both the Sheetrock wall and the preexisting concrete wall, smoothing each layer with a large wet sponge once the plaster begins to set.

Another old trick involves adding hard rounded corners to your chamber to help keep the sound waves moving. Some of the best chambers were actually oval-shaped for this reason. Simply attach a length of Sheetrock or plywood to each corner of the room and then cover it with plaster in several layers.

To make the interior as reflective as possible, chamber builders typically covered their walls, ceiling, and floor with several coats of shellac or even oil-based marine paint (and given the lack of ventilation, nearly asphyxiated themselves in the process). To make sure you're around to enjoy the finished product, use a high-gloss latex paint instead. Be sure to cover the inside of the soundboard hatchway as well.

Though a good extension cable would suffice, it's not a bad idea to bring some dedicated power into the room. Wiring in a combination porcelain lamp holder/outlet box, or something similar, will provide you with light as well as juice—handy should you decide to use a condenser mic, for instance.

Once completed, give your chamber a preliminary test by sticking your head through the hatch—and only your head, because your body will absorb the echo if you stand inside the chamber—and then giving a good yell and clapping your hands. If the echo decays too rapidly or the tone seems fluttery, try the following:

1. Go back into the chamber and inspect for gaps of any kind, then get out the plaster and cover any potential offenders good and proper. This is crucial—in order to keep those sound waves in motion, the chamber should almost resemble the inside of a refrigerator, says producer Mark Neill, owner of San Diego–based

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THE FUTURE OF SOUND

can obviously present some soundproofing issues. In fact, I now do just the opposite—I use only a moderate amount of send level while boosting the return (hence the importance of the condenser mic).

Other Natural Reverb Solutions

If building a chamber isn't feasible, there are numerous ordinary household items that can provide organic reverberation in a pinch. A shower stall or tiled bathroom will do, as will a concrete bulkhead, a length of metallic heating duct, or even a galvanized garbage can. Simply wire up as you would a standard chamber. Other "found" spaces include hallways and stairwells; some of the best echo on record came from such environments. You can even make a chamber outdoors—Les Paul once built one into a hillside adjacent to his home. I even know someone who converted an old concrete septic tank into a chamber (and no, it didn't sound at all like crap).

"I don't think I really got the whole picture until I had a chamber of my own that was producing a recognizable reverb sound," says Liam Watson, owner of London's ToeRag Studios and producer-engineer for the White Stripes, among others. "It literally changed my life! The thing about an echo chamber is that until you've actually used one, you can't really understand how different the echo sound is from anything that's processed. There are studios that still have the old chambers but won't use them, even though it would only take them about half an hour to set them back up. But for me, it's been the biggest breakthrough ever."

Naturally, it's way easier to get reverb out of a box, and like all things analog, a live chamber requires some willingness to work and experiment. But if creating sounds that aren't just like everyone else's appeals to you, then a 4 × 15 room made of plaster and paint may be a good place to start. EM

EM WEB CLIPS

Dave Simons is a faculty adviser with BMI's online resource center Songwriter101.com. He is the author of Studio Stories: How the Great New York Records Were Made *(Backbeat Books, 2004) and* Analog Recording: Using Vintage Gear in Today's Home Studio *(Backbeat Books, 2006).*

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CHUCK DAHMER

FIG. 3: Point your mic away from the speaker and place it at the opposite end of the chamber.

Soil of the South Studios. "This guy once built a chamber using ceramic tile but neglected to grout between the tiles, and it was just dead in there," recalls Neill. "The second he finished filling in those little grooves, the thing rang forever!" While you're at it, get a caulking gun and carefully seal all ceiling, floor, and wall joints.

2. From the inside of the chamber, apply some pressure to the Sheetrock wall and make sure it's good and solid—even the slightest bit of vibration can kill the echo. If you feel any movement at all, reinforce the wall by adding extra Sheetrock screws at each stud until the entire frame is totally secure.

Setting Up the Chamber

To generate your effects send, you'll need a speaker situated at one end of your chamber, facing into the corner (rather than at the microphone, because you want the least amount of direct signal possible; see **Fig. 2**). A small speaker is preferable, since speakers with larger cabinets can add absorption and also tend to produce tubbier echoes. At the other end of the chamber, suspend a microphone on a boom stand, pointed away from the speaker toward one of the opposite corners (see **Fig. 3**). After much experimenting, I settled on a Røde tube condenser mic for the return, because a hotter mic would increase the amount of available signal from the chamber. However, even a basic dynamic mic such as a Shure SM57 would be suitable.

To drive your speaker, connect a small power amp to the effects send patch of your console. From the outputs of the amp, run some speaker wire out to the chamber, punching a hole in the walls just large enough to allow the wires to pass through, and connect the speaker. Then connect a long mic cable to the effects return of your console, and run that out to the chamber microphone. Incidentally, should you want a stereo effect, simply use two mic-speaker combinations, one for each side of the chamber.

There are a few tricks you can try to enhance the sound of the reverberation. Using predelay widens the gap between the untreated signal and the "chambered" return. (In the old days, engineers used a tape machine for this purpose, but a digital delay will work just fine.) Running the return through a compressor helps maximize the ringout, while placing a noise gate in the signal path can prevent extraneous sounds from intruding once the echo has faded. You can also equalize either the send or the return to the chamber, as needed. Hint: though the tendency is to add all effects after the fact, experts contend that you get far more echo out of the chamber when using it live.

Depending on the size of your space and your attention to detail, your chamber should ring anywhere from two seconds minimum to a possible four seconds for larger chambers (mine clocks in at around three seconds on a good day; see **Web Clips 1 through 5**). Some engineers insist that you have to crank the send to get the best sound out of the chambers, but this approach

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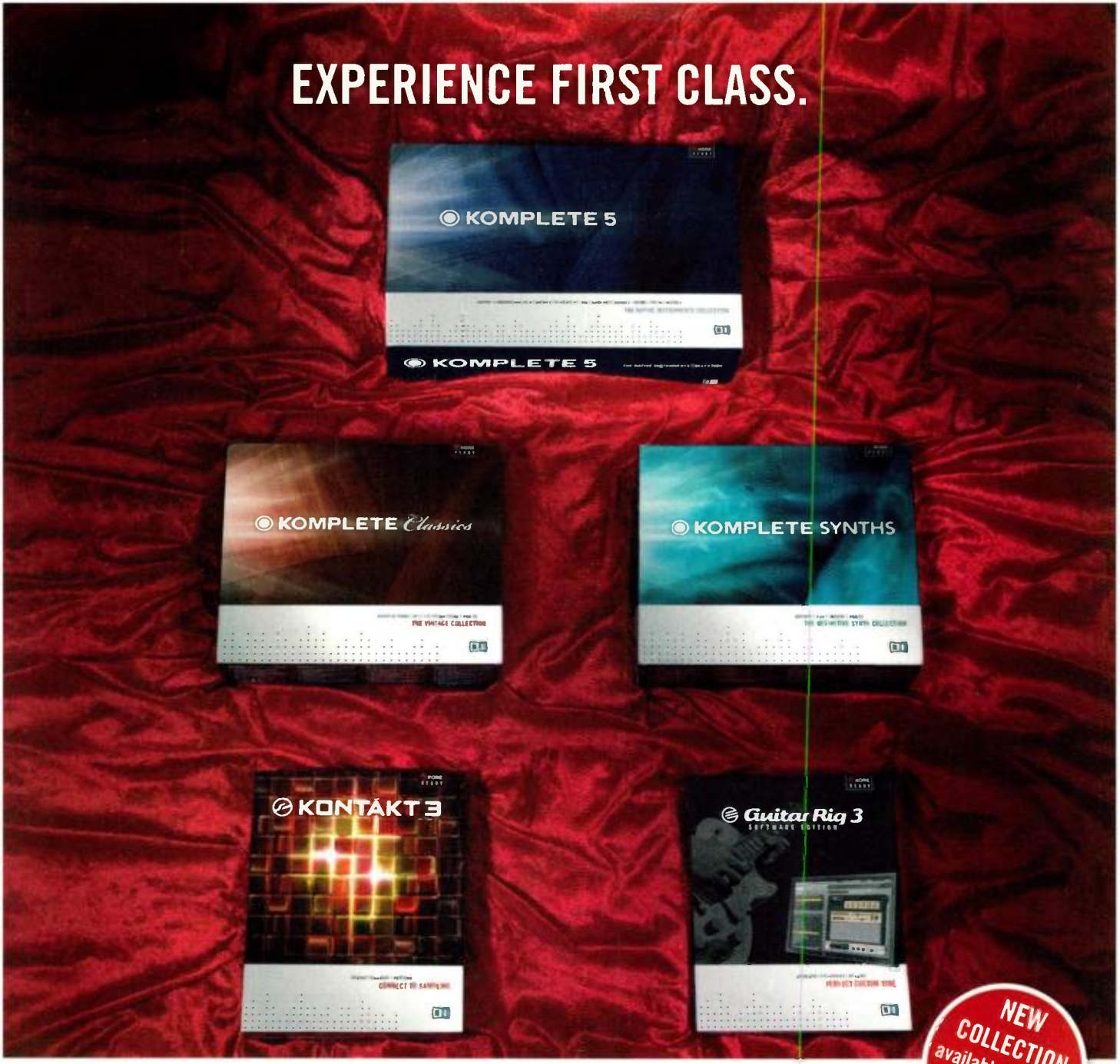

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can obviously present some soundproofing issues. In fact, I now do just the opposite—I use only a moderate amount of send level while boosting the return (hence the importance of the condenser mic).

Other Natural Reverb Solutions

If building a chamber isn't feasible, there are numerous ordinary household items that can provide organic reverberation in a pinch. A shower stall or tiled bathroom will do, as will a concrete bulkhead, a length of metallic heating duct, or even a galvanized garbage can. Simply wire up as you would a standard chamber. Other "found" spaces include hallways and stairwells; some of the best echo on record came from such environments. You can even make a chamber outdoors—Les Paul once built one into a hillside adjacent to his home. I even know someone who converted an old concrete septic tank into a chamber (and no, it didn't sound at all like crap).

"I don't think I really got the whole picture until I had a chamber of my own that was producing a recognizable reverb sound," says Liam Watson, owner of London's ToeRag Studios and producer-engineer for the White Stripes, among others. "It literally changed my life! The thing about an echo chamber is that until you've actually used one, you can't really understand how different the echo sound is from anything that's processed. There are studios that still have the old chambers but won't use them, even though it would only take them about half an hour to set them back up. But for me, it's been the biggest breakthrough ever."

Naturally, it's way easier to get reverb out of a box, and like all things analog, a live chamber requires some willingness to work and experiment. But if creating sounds that aren't just like everyone else's appeals to you, then a 4 × 15 room made of plaster and paint may be a good place to start. EM

EM WEB CLIPS

Dave Simons is a faculty adviser with BMI's online resource center Songwriter101.com. He is the author of Studio Stories: How the Great New York Records Were Made *(Backbeat Books, 2004) and* Analog Recording: Using Vintage Gear in Today's Home Studio *(Backbeat Books, 2006).*

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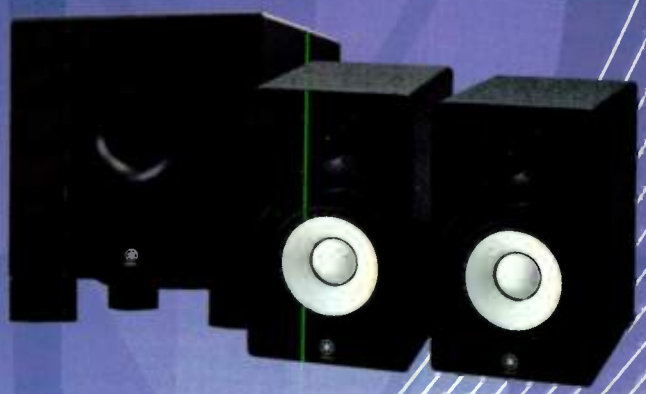

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Going DAW to DAW

By Brian Smithers

How to move projects between DAWs using OMF.

In a perfect digital world, collaboration with other electronic musicians would be a simple matter. Sessions would be passed seamlessly between DAWs. Unfortunately, you don't live in that world, and you probably won't—at least for a while. There are accepted standards such as Broadcast Wave (BWF) and Standard MIDI Files (SMFs), but what about your audio edits? That's what OMF and AAF files are for, though they're not perfect yet.

The Open Media Framework (OMF) is an interchange format devised by Avid in 1994. The Advanced Authoring Format (AAF) was developed by the Advanced Media Workflow Association (www.aafassociation.org) in 2000 to expand on OMF. Both enable a DAW or nonlinear video editor to export essential session parameters along with audio and video data in a format that can be read by another DAW or video editor. All of the major DAWs support OMF, and most support AAF, although Digidesign Pro Tools LE and HD require the $495 DigiTranslator add-on in order to use either OMF or AAF. (Pro Tools M-Powered does not support DigiTranslator.)

Picture Perfect

OMF and AAF provide a platform-independent file structure for describing media data, namely video and audio files, and *metadata*, or information about these files and how they are arranged in a project (see Fig. 1 and "Step-by-Step Instructions" on p. 64). In a common post-production scenario, the edited video session is exported as an OMF or AAF sequence and sent to the audio team to be imported into their DAW of choice. After cleanup, editing, ADR, sweetening, and mixing, a final mix is sent back to be integrated with the final video.

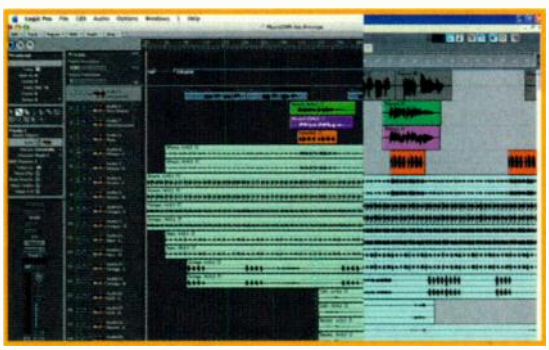

FIG. 1: OMF and AAF provide the common ground for different DAWs to transfer session data back and forth for collaboration.

Note that OMF/AAF in this case is a one-way street. The video-centric roots of OMF/AAF and the downstream-only perspective, as far as audio is concerned, limit its use in music production scenarios.

Because they are generic, OMF and AAF don't describe complex program-specific parameters such as plug-ins and internal busing. Track automation, fades, and slip-edits are described, but they may not translate perfectly. MIDI tracks, regions, and even tempo maps are not provided for in OMF/AAF sequences.

To make OMF work for you, then, you must approach it with realistic expectations. Do not expect to be able to take an Apple Logic mix that is 90 percent ready to fly and move it into Pro Tools for the final touches. Even if you had used only plug-ins that are available within both hosts, the routing and plug-in settings would not translate. OMF and AAF, however, are useful during tracking and overdubbing. For example, sending an OMF version of a Nuendo session to a Sonar studio for vocal editing and tuning should work just fine.

Ecumenical Export

From your DAW's Save As or Export function, choose OMF or AAF. Which is better? During informal testing with my Full Sail compatriots, we had great success moving OMF sequences between all the major DAWs until we tried to go between Pro Tools and Steinberg Nuendo. Fortunately, an AAF version of the same session translated perfectly between those two. Based on this, you might be inclined to trust AAF more, but alas, not all DAWs support AAF. Whenever possible, export both formats.

If you don't ordinarily use BWF files, convert to that format on export for best compatibility. You will most likely have the option of embedding audio files into the sequence or leaving the audio external, as in most DAWs. Embedding creates simpler file management, as there is only one file to keep track of. It also facilitates the workflow for some DAWs. For example, Cakewalk Sonar can extract information about the audio's sample rate and bit depth from an embedded OMF but requires you to enter that information manually otherwise. File size, however, can be an issue with embedded files. Pro Tools, for one, cannot read an embedded OMF or AAF larger than 2 GB.

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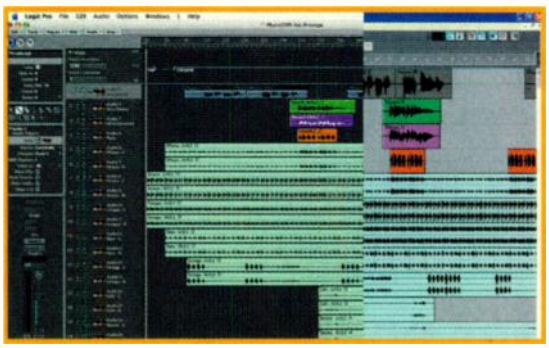

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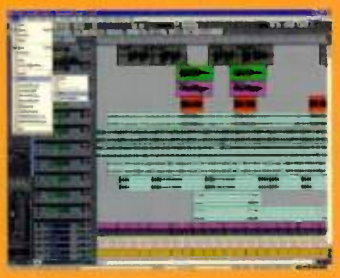


In Sonar, export the project as an OMF sequence (File→Export→OMF).

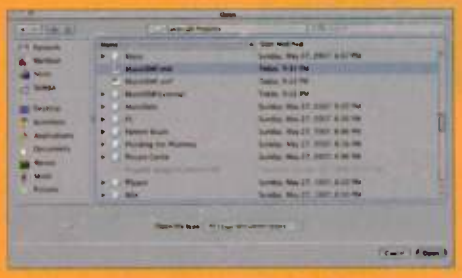
2

Choosing to embed audio within the OMF file helps avoid any file and path name confusion in the target DAW.

3

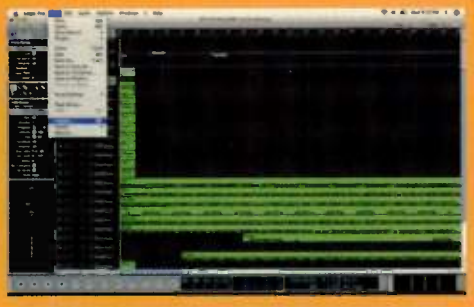
Save the project as a Type 1 Standard MIDI File (File→Save As) to convey tempo information.

4



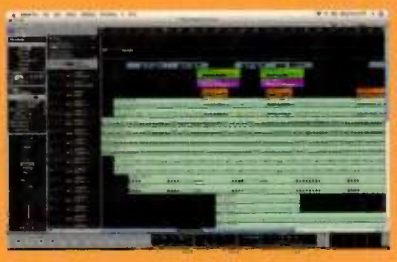
In Logic, open the Standard MIDI File (File→Open).

5



Import the OMF sequence and choose a folder for the audio files (File→Import).

6

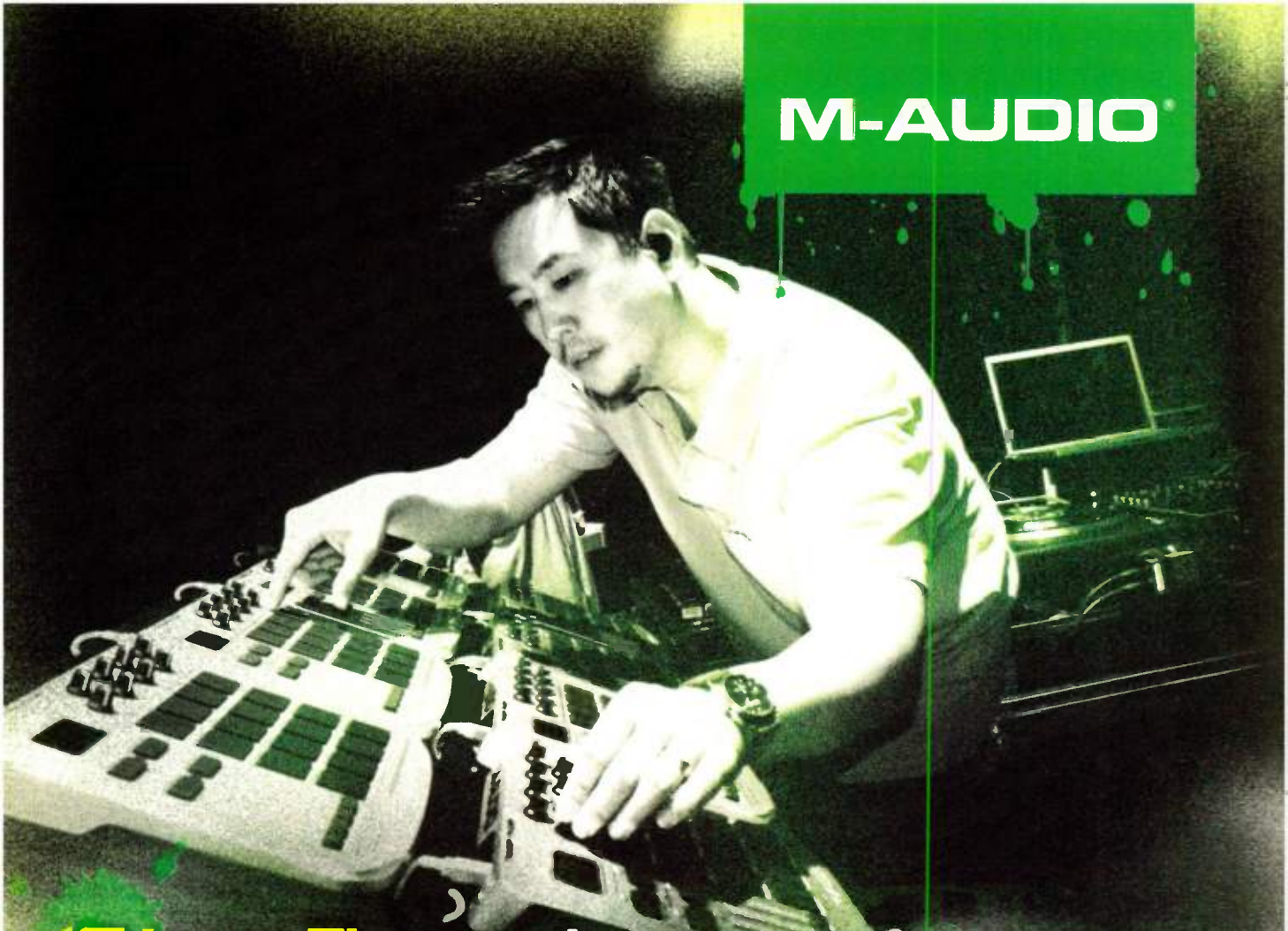


The essential content of the Sonar project is now the basis of a Logic song, ready for overdubs, further sequencing, editing, and mixing.

saving an SMF enables you to transmit tempo information to the destination DAW.

Document everything! Name all tracks, regions, and files before exporting. Track and session comments won't translate, so write down critical session information and tracking notes—tempo, frame rate, timecode offset, and so on—in a plain text file, and include that file with the OMF. If you plan ahead and allow time for surprises, OMF and AAF can be highly effective in bridging the gap between different applications. EM

Brian Smithers would like to thank his colleagues at Full Sail Real World Education for their hard-won expertise on OMF and AAF.



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Morphology

By Jim Aikin

Expand your sound palette with oscillator morphing.

The oscillators in early analog synthesizers could produce only a few simple waveforms, so the job of shaping the tone color was handled by filters. Today, digital oscillators are far more sophisticated. Filters are still incredibly useful, but you can produce many types of lively, animated sounds without resorting to them.

Among the most powerful of the new oscillators are those in u-he Zebra 2 (www.u-he.com). This modular soft synth has a lot of slick options for timbral manipulation, but the highly flexible sound of the Zebra oscillators starts with waveform morphing. You can work directly with the waveshape or with the additive overtone spectrum.

Fake Filter Sweeps

Starting from Zebra's initial patch, choose SpectroMorph for the Oscillator mode. In this mode, the graphic display shows the waveform's overtone spectrum, not its waveshape. Set wave 1 to produce a very muted sawtooth tone, and set wave 16 to produce a very buzzy highpass sawtooth (see **Fig. 1**). While wave 16 is selected, Command-click (Mac) or Alt-click (Windows) on the wave 1 selector box to write new waveforms to tables 2 through 15 that morph smoothly from wave 1 to wave 16.

In the Oscillator module, assign Env2 as the modulation input for the wave parameter, turn up the amount, and turn envelope 2's sustain down to 0. When you play a note, you should hear a sound much like a highpass-to-lowpass filter sweep. You can control the sweep's length by adjusting envelope 2's decay time. By creating more-complex frequency spectra for the two end points of the morph, you can generate a variety of sweep colors. By editing individual wave spectra in the middle of the series, you can create colorful bumps in the sweep. After doing any edits, reselect wave 1 to make it the end point for the envelope sweep.

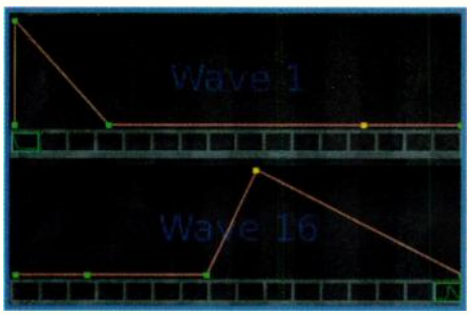

FIG. 1: These settings for the SpectroMorph oscillator produce a very muted sawtooth sound (top) and a highpass-filter sound (bottom). The display is a graph of overtone amplitudes.

In GeoMorph mode, the oscillator display shows the actual waveform rather than the overtone spectrum. For classic pulse-width modulation, drag the waveform points to create a very narrow pulse shape in wave 1, create a square wave in wave 16, and, as before, set up a morph from one to the other.

Shimmering Bell Overtones

SpectroBlend mode provides pinpoint control over the overtones. Choose wave 1 and click on a few places in the display to create a waveform with some random overtones. Option-Command-click (Mac) or Ctrl-Alt-click (Windows) on the next seven waves to copy your spectrum to each of them, then edit each one very slightly.

Choose Lfo2 as the wave-modulation input, turn up the modulation amount to about 3.6, and slow down the rate of LFO2. Select wave 4 as the starting point because the LFO waveform goes both positive and negative. You'll hear subtle animation produced by the LFO sweeping slowly across the slightly different waveform spectra.

When you have something you like, Ctrl-click or right-click on the word Default in the Oscillator module and save your settings as an oscillator preset. Create a second oscillator, load this preset into it, slightly detune the two oscillators from one another, and pan them left and right. Increase the release time on envelope 1 and strike a few keys. You should hear a rich bell sound in which individual overtones fade in and out in subtle ways.

Wave Sequencing

To imitate PPG and Korg Wavestation–style wave sequencing, choose SpectroBlend mode and create 16 different waveforms with a lot of variety. Turn the Resolution knob all the way up to create sharper transitions between waves when step modulation is used.

Choose Lfo2 as the input for the oscillator's Wave modulation and turn up the amount to about 7. Set the LFO to the user waveshape, its Restart mode to gate, and its Sync value to ⅛. Leave the LFO waveshape display in Steps mode and draw some random steps. Now the LFO will produce a rhythmic wave sequence.

You can enhance the effect by switching to the oscillator's FX page and using another stepping LFO to modulate the Formanzilla or Ripples effect. Alternatively, use a wave-sequencing oscillator as an input for one of Zebra's FM oscillators or a comb filter. With a little experimentation and a modicum of taste, you can achieve spectacular results (see **Web Clip 1**). EM

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Jim Aikin writes regularly for EM and Mix.

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Sawing Logs

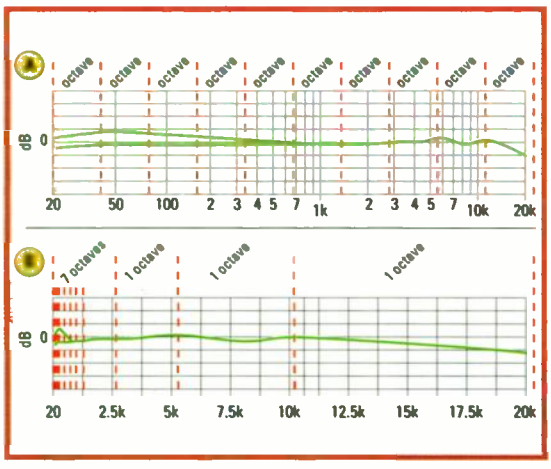
By Brian Smithers

Logarithms in music and audio.

Logarithm is a term that appears in many digital audio settings—logarithmic taper, logarithmic Velocity curve—but what does it really mean? It turns out that logarithms are useful in describing many of the concepts on which we depend. Frequencies, octaves, volume, and more behave in ways that would be awkward to describe without logarithms. In this article, I'll demystify the logarithm and explain its various applications in music and audio.

As electronic musicians, we deal with all sorts of numbers whose resolution changes drastically from low to high. Consider, for example, the relatively simple and familiar concept of musical octaves. Because an increase in pitch of one octave corresponds to a doubling of the fundamental frequency, an octave above 20 Hz is 40 Hz, whereas an octave above 1,000 Hz is 2,000 Hz. Between 20 and 40 Hz, a variation of 1 Hz represents 5 percent (1/20) of the octave—between 1,000 and 2,000 Hz, it represents only 0.1 percent (1/1,000) of the octave.

To put this doubling in mathematical terms, as the octave increases, frequency increases by a power of two: the frequency n octaves above a pitch P is $P \times 2^n$. Because n is literally the exponent of 2, this is called an *exponential* relationship. If pitch rises at a steady rate, as when a musician plays an ascending chromatic scale, frequency rises at an increasing rate. The distance in terms of frequency between each subsequent pair of notes is greater than the distance between the previous pair of notes, yet musically each is a semitone (half step). **Fig. 1** illustrates the relationship between musical intervals and frequencies.



CHUCK DAHMER

FIG. 1: The traditional display of a frequency-response graph (A) uses a scale that is linear with respect to pitch and logarithmic with respect to frequency. A linear frequency graph (B) compresses most of the octaves in the low end of the scale.

So what is a logarithm? The logarithm is n, the octave. A logarithm is the power to which a certain base b must be raised to equal a particular number x. In other words, if $b^n = x$, then $\log_b(x) = n$. A logarithm is the inverse of an exponent.

Logarithms solve two problems. First, they allow us to make meaningful comparisons of things, such as musical intervals, when the underlying numeric relationships vary according to range. An octave is still an octave whether it spans 20 Hz or 1,000 Hz. Second, logarithms enable us to describe very large and very small numbers with relatively simple numbers, as you'll see.

To Infinity and Beyond

Our ears can detect the sound of an insect's wings at arm's length, and our ears can be instantly damaged by a train horn at the same distance. In between are all the useful volumes. The ratio between the sound pressure of these two sounds is about a million to one. Imagine a manufacturer describing the signal-to-noise ratio of a new preamp in those terms!

Of course, this is why we use decibels (see the "Square One Classic" article "Decibels Demystified," parts 1 and 2, available online at www.emusician.com). Decibels define the ratio between two powers, so we can make meaningful comparisons between two numbers regardless of whether we're talking pascals or micropascals. They also narrow that million-to-one span to a range of 120 dB. A bel is the power to which 10 must be raised to equal the ratio in question—by definition, it's a logarithm. A decibel is simply a tenth of a bel. If sound A is 100 times louder than sound B, the ratio of their intensities is 100:1, or 100. Because $100 = 10^2$, the ratio is 2 bels, or 20 decibels. Mathematically, $d = 10 \log_{10}(I_A/I_B)$, with d representing the number of decibels and I_A and I_B representing the intensities of sounds A and B, respectively. The decibel, being a logarithm, allows us to describe the *relative* power of two signals regardless of whether their absolute powers are very small numbers or very large numbers.

The numbers tend to get a bit squirrelly when

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decibels are used to describe different things. If you double the power of a signal, it increases by 3 dB: because $10^{0.3} = 2$ (approximately), $10 \log_{10}(2/1) = 10 \times 0.3 = 3$. However, since power increases by the square of the voltage, doubling the voltage yields an increase of 6 dB. The math for this depends on the simple fact that squaring a number multiplies its logarithm by 2. We therefore use $20 \log_{10}(2/1) = 20 \times 0.3 = 6$. To double the subjective loudness of a sound requires about ten times the power, so "twice as loud" means 10 dB higher: $10 \log_{10}(10/1) = 10 \times 1 = 10$. If all the math just makes you reach for the aspirin, just remember that a decibel is a logarithmic unit that enables us to cover a million-to-one scale with ease and clarity.

Tapers and Curves

If a fader on a console were built so that voltage varied evenly across the fader's length, then it would lower the volume by only 6 dB at its halfway point, leaving the vast majority of the fader's useful range in the bottom half of its travel. This would make smooth fade-outs virtually impossible. Instead, a fader has a *logarithmic taper* (see **Fig. 2**) so that it makes much smaller voltage changes at the bottom of its travel than at the top. This configuration is sometimes called *audio taper*, and it allows the fader to change level consistently across its range. Another way to say this is that the fader is linear with respect to volume rather than linear with respect to voltage.

Synthesizer keyboards often feature logarithmic Velocity response so that the loudest volumes are reserved for only the highest few Velocities—those that require the greatest effort. This corresponds to the way acoustic instruments respond. Sometimes *inverse* logarithmic (aka exponential, of course) response can be assigned to controllers to allow finer resolution in the upper range of the control.

In the digital world, each bit of quantization doubles the resolution, so *n*-bit audio has a resolution of 2^n quantization intervals. (This is true of fixed-point quantization—floating-point works a bit differently. See "Square One: How Your DAW Does Math" in the April 2007 issue of EM, available online at www.emusician.com.) Simultaneously, each bit doubles the voltage range that can be measured, increasing dynamic range by 6 dB. If this sounds suspiciously similar to the logarithmic nature of analog audio, it's no coincidence. PCM digital audio takes a quite literal approach to describing the analog waveform, so its structure is appropriately logarithmic.

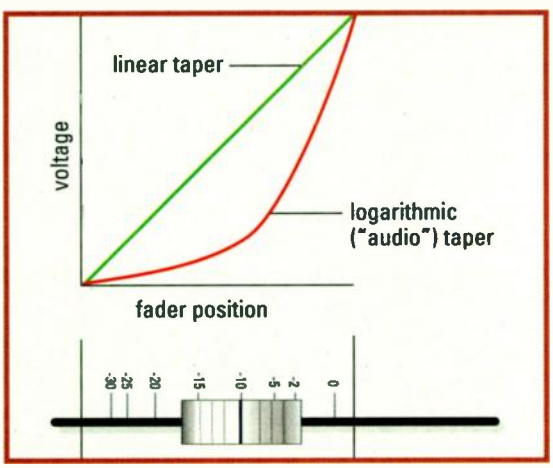

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FIG. 2: A fader's taper is logarithmic with respect to voltage, spreading the useful dynamic range more evenly across its length.

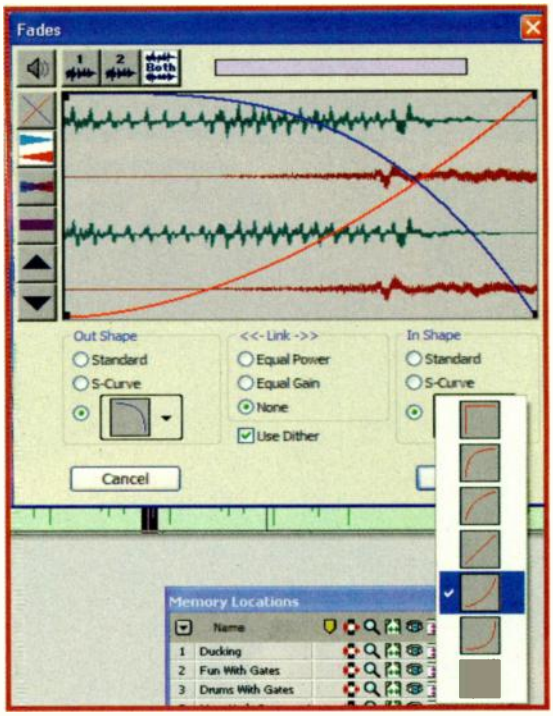

FIG. 3: Most DAWs offer a variety of linear, logarithmic, and exponential fade curves.

In most DAWs, a variety of exponential and logarithmic fade curves is available, in addition to a linear fade (see **Fig. 3**). Typically, a linear fade-out dies away too quickly at the end, just as a linear-taper fader has too little low-volume resolution. A logarithmic curve gets progressively shallower as the volume drops, yielding effectively better resolution at the bottom (see **Web Clips 1 and 2**).

Be a bit wary when you hear the terms *logarithmic* and *exponential*. If you exchange the *x* and *y* axes of a logarithmic curve, you get an exponential curve. For most musical purposes, we are using logarithms to describe exponential phenomena. This lets us speak in terms of decibels, minor thirds, and so forth and leave the serious number crunching to the pocket-protector crowd. EM

EM WEB CLIPS

Brian Smithers is course director of audio workstations at Full Sail Real World Education. His latest book is Mixing in Pro Tools: Skill Pack *(Thomson Learning, 2006).*

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Q&A: Ted Burger

By Ravi

Demystifying endorsement deals.

Artist endorsements are one of the most effective forms of advertising for musical-equipment manufacturers. Though musicians often boast about "being endorsed," in actuality they have entered into an agreement to promote a product by offering their public endorsement in exchange for manufacturer sponsorship (free or discounted gear, road support, and so on). Megastars can satisfy their commitment simply by using products in the limelight, but lesser-known artists have to work much harder to deliver results.

Fortunately, the Internet allows exposure to a broad audience, and that "cyber-reach," combined with a consistent local or regional gig schedule, can generate enough visibility to justify sponsorship of lesser-known acts. It may not be easy, but it's worth the pursuit; endorsement deals have been a significant form of support for my own career. The key is to create ROI (return on investment) for manufacturers by promoting their products to their target audiences. As long as you only endorse brands that you would use regardless of a deal, promoting products that contribute to your artistry is natural.

COURTESY TED BURGER

FIG. 1: Ted Burger handles endorsement deals for HHI, which owns Kustom Amplification and BC Rich Guitars, among others.

I asked Ted Burger (see **Fig. 1**), who handles artist relations for the multibrand music manufacturer Hanser Holdings International (HHI), to shed some light on who gets what and why. HHI artist endorsers include Joe Perry, Slash, and Kerry King for BC Rich Guitars; the Brian Wilson Band, Tracii Guns, Van Zant, and yours truly for Kustom Amplification; and Jason Newsted, Bootsy Collins, and others for the Michael Kelly Guitar Company and the Traben Bass Company, to name a few.

How important are endorsement deals in terms of an overall marketing strategy?

In our industry, I believe they are very important. Because music has to do with creativity, feeling, and emotion, there are many factors involved in why someone chooses to play a specific instrument, other than just physical specifications, price, etc. I don't know a single musician who didn't grow up idolizing some other musician because of his playing ability or "cool" factor. What that idol played is all a part of the memory and mojo of an instrument, if you will. I believe it still affects every musician, young and old. Having someone influential playing your instrument truly can give it a "cool" factor. Also, for a product that is in its younger stages of brand recognition, having it played by an artist who has mass appeal can really turn many people on to it.

Do artists receive free or discounted gear when endorsing products?

We do both. The level of endorsement is decided on a case-by-case basis. It depends on what we feel our return on investment will be. A musician who plays in front of a large crowd of our target audience every night is going to be at a higher endorsement level than one who has not proven himself to be that influential. I am not talking simply about an artist's crowd size and CD sales. That can be a factor, but I would rather have a guitar or amp onstage with an artist who draws a crowd of 1,000 people—600 of whom are guitar players—than a pop artist that may draw 20,000 nonmusicians. It is all about inspiring the target audience to go to the store and try out your instrument.

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Are deals contracted in writing?

I have represented companies that never use contracts and others that always require one. For a young company trying to establish a name by gathering a roster of young artists who they hope will break big, it is a good idea to have a contract because as the artist gains recognition, other companies will call. You don't want to invest a lot of time and money into an artist just to have them jump ship. For larger, more established brands, it is not necessarily as important because one specific artist may not make or break the company or its artist budget.

What are the primary responsibilities of each party?

In our agreement, the artist provides the company with pictures of himself using the instrument, quotes as to why he has chosen to use that instrument, and an agreement to use that instrument (and sometimes only that one) for appearances. The company agrees to supply that artist with a specified number of instruments per year or will grant him the ability to purchase them at reduced prices, depending on the deal. Some larger deals will also include a commitment by the company to use the artist in a certain amount of ads and promotions throughout the term of the contract. Also, in cases when signature instruments are involved, the artist can sometimes be paid a royalty per each one sold.

Beyond contractual obligations, what do you expect from the artist and what else do you provide?

There is definitely an unwritten agreement that the artist will promote the instrument in good faith by talking about it in interviews, using it during live performances, and generally representing the company in a positive light. If they have chosen to be associated with an instrument and company, it is in their best interest to do so anyway. Quite often we will do co-promotions with an artist in conjunction with CD releases, tours, special signings, and other promotions. That may consist of anything from providing giveaway instruments to providing other promotional materials for contests, giveaways, etc.

How many deal requests do you get in a given month from new artists, and what is the selection process?

I would estimate that I probably get 60 to 80 new requests per month (that is amongst all four major brands that I currently represent). As a musician, I would love to say that it is all about the talent and music. However, as much as that is a part of it, realistically from a business standpoint certain things stand out: the number of live shows per year the artist plays and the size of the crowds; the strength of their following, as well as its demographic (guitar players, keyboard players, nonmusicians); if they have a legitimate management company; if they are on a legitimate record label that I know will promote the band; if the artist is a good musician who would represent the instrument well; and recommendations from other artists whom I respect.

How can independent artists or bands who don't play to big crowds every night demonstrate endorsement value?

It's a judgment call and gut feeling on my part about the band. If they are playing a lot of dates consistently (not necessarily to huge crowds), seem to be organized, and have that "something" about them that makes us feel like it's a good fit, we would consider working with them on an artist-pricing level. This is a win-win situation because the band gets gear at a cheaper price and manufacturers aren't losing money or giving away their budget to an unproven band. However, manufacturers can't sell gear at cut-rate prices to every local band playing lots of gigs. Every manufacturer has a dealer network of retail stores that sell our equipment—that's the bottom line of our business and we cannot undercut our retailers. Our ultimate goal is to drive business into a retail store, not steal it away. So even at a local or regional level, there are lots of factors involved in making those decisions. That's why a band at that level must really stand out to get a manufacturer's attention—artists must work very hard to consistently move their careers forward and keep manufacturers informed of their progress. When it reaches a point where the relationship will be beneficial for both parties, it will happen.

How valuable are artists' mailing lists and other forms of promotion (local radio, cable TV, email signatures, etc.) if they include an endorsement of your product?

Any and all promotions and mailings would be looked at along with all other aspects when considering someone for an endorsement. While the number of fans they reach is important, it is also important to consider who their audience is and if it is made up of our target audience. Who they reach is definitely as important as how many.

How should an artist approach a manufacturer and what should they submit?

It's best to first contact me by email. Then I send out our standard endorsement application outlining all the materials and information that we need. Once the artist provides us with those, we can make a decision. EM

Ravi (www.HeyRavi.com), former guitarist of three-time Grammy nominee Hanson, tours the country performing, lecturing, and conducting guitar clinics. He writes for several magazines, and Simon & Schuster published his tour journal.

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CELEMONY SOFTWARE Melodyne Studio 3.2.1 (Mac/Win)

An excellent product gets even better.

By Len Sasso

Since its introduction six years ago, Celemony Software's Melodyne has earned its place in the pantheon of pitch- and time-processing software. And although still not cheap, Melodyne Studio 3.2.1, the company's flagship product, costs roughly a third less than version 1.0, which EM reviewed in the July 2002 issue (available online at www.emusician.com). It is also a far more sophisticated product.

Melodyne Studio 3 is standalone software, but it integrates with other audio software in three ways: It can act as a ReWire host or client. You can use the included Melodyne Bridge plug-in to route audio between Melodyne Studio and your DAW, a process similar to using ReWire but with 2-way audio linking. Finally, you can use the new Melodyne plug-in to perform Melodyne's more basic monophonic functions completely within your DAW.

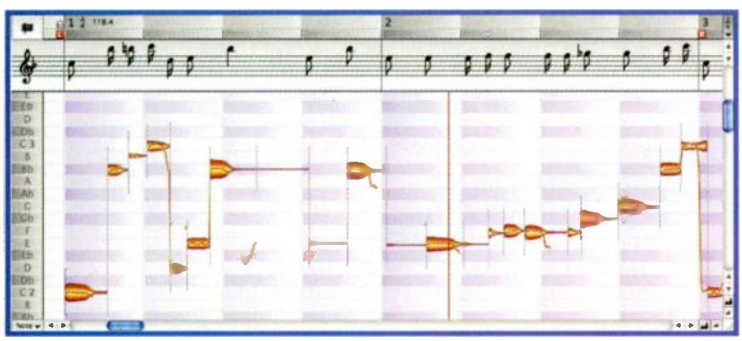

FIG. 1: Melodyne's Editor window displays notes as Blobs that can be relocated in pitch and time.

Up and Running

The standalone software and its attendant plug-ins are available for Windows XP and Vista as well as Mac OS X, including Universal Binary. The Melodyne Bridge plug-in comes in AU, VST, and RTAS formats, and the Melodyne plug-in additionally supports DXi on the PC. For this review, I installed Melodyne Studio 3.2.1, the Melodyne Bridge 3.2.1 plug-in, the Melodyne 1.0.2 plug-in, and Melodyne ReWire 3.2.1 on a dual 2 GHz Power Mac G5 running Mac OS X 10.4.8.

GUIDE TO EM METERS

5 = Amazing; as good as it gets with current technology
4 = Clearly above average; very desirable
3 = Good; meets expectations
2 = Somewhat disappointing but usable
1 = Unacceptably flawed

Authorization is accomplished online using the Melodyne Activation Assistant the first time the program is launched, but you can authorize offline if necessary. The authorization attaches to you rather than your computer, so if you change computers, you can request a new license. You can also choose to transfer your license to an iLok key.

Although pitch-shifting, time-stretching, and formant manipulation are at the core of Melodyne's technology, these processes are only the beginning. In addition to monophonic, melodic material, you can process both polyphonic parts and unpitched material such as percussion. Furthermore, the standalone program is a multitrack audio sequencer, and although it is rather limited compared with most professional DAWs, its multitracking is perfect for creating background harmonies for a melody and for pitch- and time-matching different audio parts.

The Intrepid Blob

Whichever approach you take—standalone, ReWire, Bridge, or plug-in—you start by loading or transferring audio to the program for processing. It then presents you with a pitch-and-time analysis of the audio that you manipulate in an Editor window. Audio events are represented by Blobs in the Editor (see **Fig. 1**).

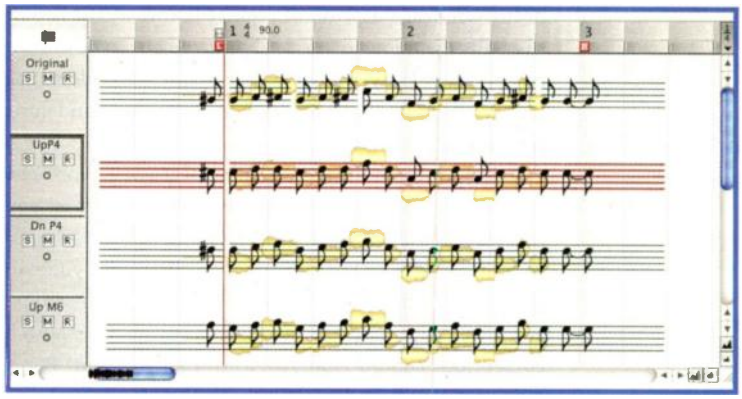

FIG. 2: Melodyne's Arrangement window is laid out like a basic multitrack audio sequencer.

For melodic material, a Blob's vertical position indicates its average pitch, and a thin line within the Blob indicates transient pitch changes such as scoops, falls, vibrato, and so on. The vertical width of the Blob represents instantaneous amplitude, so the Blob is, in effect, an amplitude envelope. Blobs are arranged horizontally on a timeline with vertical lines connecting adjacent Blobs.

The resemblance to a MIDI piano-roll editor is no accident; you have much the same control over audio events as you have over notes with MIDI. For example,

notice the transcription of audio to score at the top of the Editor window in Fig. 1. That turns out to be uncannily accurate, and you can export it as a MIDI file or use it to play virtual instruments directly in the standalone program.

You get tools for editing all aspects of a Blob. You can move a Blob vertically by semitones or cents, you can reshape its pitch transients, you can alter its amplitude envelope, you can move it in time, and you can time-stretch it from either end (adjacent Blobs adjust automatically). You can also effect key changes, pitch correction, tempo changes, and quantization. For a quick fix, you'll find tools in both the standalone and plug-in versions to automate pitch correction and quantization.

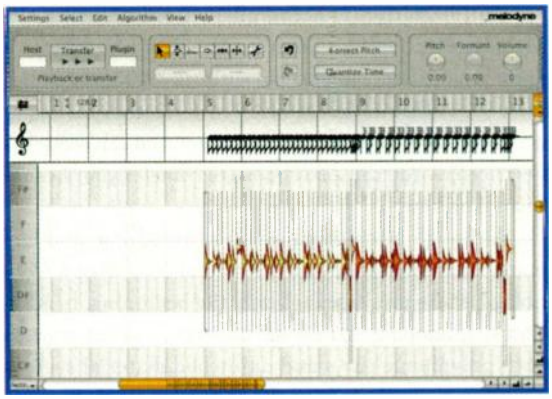

FIG. 3: With the Melodyne plug-in, you can directly process individual audio tracks in your DAW.

All Together Now

One of the program's best tricks is quick creation of thickening tracks—multiple parts with slight variations in pitch, timing, and timbre. In any multitrack instance of the application (standalone, ReWire, or Bridge), doubling a part with small random variations on a new track is as easy as selecting all its notes in the Editor window and then Alt-Shift-clicking. Alternatively, you can drag-and-drop the Blobs vertically to create a harmony part, and you can even force the notes to stay within a designated key signature. In any case, the new part is placed on the closest empty track in the Arrangement window for multitrack playback. Repeat the procedure several times, and you have an instant horn section or background vocals. Creating new parts this way is never quite as authentic as separately recording parts, but a little hand editing of formants and pitch transients can add a lot of realism (see **Fig. 2** and **Web Clip 1**).

You can easily double a part with a synth track by routing Melodyne's audio-to-MIDI analysis to a virtual instrument track in the standalone application. But the most flexible approach is to export the MIDI track and use it in your DAW, because Melodyne does not offer MIDI editing. Alternatively, you can route MIDI in real time using ReWire or an internal MIDI bus, but latency issues make that the least convenient approach.

Melodyne Studio works surprisingly well with polyphonic material, including complete mixes. It does not detect individual notes within chords, so their relative pitches always remain the same. But it does now offer formant correction for polyphonic material, and the results are surprisingly good. You can shift the pitch of chordal loops such as guitar, piano, horns, and strings up or down a few semitones with barely noticeable artificiality (see **Web Clip 2**). With some material, you can even shift whole mixes. That's enough to add life to your worn-out loop library.

Not by Pitch Alone

Melodyne's time-stretching is exceptional compared with most DAWs' built-in time-stretching as well as with that of other dedicated time-manipulation software. I was usually able to make melodic, polyphonic, and percussion parts at least 30 percent longer or shorter without noticeable artifacts. The range is somewhat lower for ambient material and a bit higher for tight, unpitched parts, which I was often able to double or halve in tempo.

You can create tempo changes in a multitrack arrangement, but you can't draw smooth tempo curves. One alternative is to save a tempo track from a MIDI sequencer (your DAW, for instance) and have Melodyne extract its tempo changes from that. But it's probably easier to use one of the methods of integrating the program with your DAW, in which case it will follow your DAW's tempo changes. I tested that process with a 4-track arrangement in Ableton Live 6 using a separate instance of the Melodyne plug-in for each track. The results were better sounding than with Live's already excellent time-warping, and the added CPU drain was negligible.

Because the program treats audio events like MIDI, you can also quantize and modify their timing in other ways. Although you can do this one way or another in most DAWs, Melodyne makes it almost a no-brainer.

PRODUCT SUMMARY

CELEMONY SOFTWARE Melodyne Studio 3.2.1

pitch- and time-shifting software
$699

FEATURES	5
EASE OF USE	4
AUDIO QUALITY	5
VALUE	4

RATING PRODUCTS FROM 1 TO 5

PROS: Top-quality pitch and time manipulation. Plug-in convenience or standalone operation. Excellent printed manual. Generous authorization policy.

CONS: Rudimentary multitracking implementation. No MIDI editing.

MANUFACTURER
Celemony Software
www.celemony.com

By Any Means

ReWire is the most straightforward way to integrate the program with your DAW. For one thing, it's a familiar process: two standalone applications, each loaded with its own project, are linked in terms of audio, MIDI, tempo, and transport.

Melodyne Bridge goes a step beyond ReWire in that it transfers audio from your DAW to Melodyne tracks. You edit the audio in Melodyne Studio, and then Bridge takes care of playing it back in your DAW. You do not need to load and position audio tracks manually, but the process of transferring the audio is akin to real-time recording, and when you move audio around in your DAW, you need to transfer it again. Once I got used to the process, I preferred using Bridge to using ReWire when I wanted to access the full power of the application's multitrack editing from within my DAW.

The third alternative is the new Melodyne plug-in (see Fig. 3 and **Web Clip 3**). The plug-in inserts a single track of processing in a DAW audio channel and does not launch or rely on the standalone application. That's the easiest way to accomplish basic pitch and formant correction. When I wanted to process multiple tracks, for example to follow a tempo track, I often found that using several instances of the Melodyne plug-in was still the quickest and most transparent solution. The plug-in is included with Melodyne Studio, but if it is all you really need, you can purchase it separately for $299.

This and That

I might quibble about the lack of some convenience features in its implementation of multitracking, but that's ancillary to the program's main purpose. The printed manual and online documentation are excellent. Earlier versions came with a CD of demo sounds from the Ueberschall Liquid Instrument collection, developed in conjunction with Celemony. These are handy but not essential for learning the program, and the titles in the collection are now available from Celemony as the Melodyne Sound Library.

Melodyne Studio is a standout product. It is priced at the high end for vocal-processing software, but it also goes well beyond basic vocal processing. From tracking to mixing to postproduction and remixing, I can't think of a part of the musical process that wouldn't benefit from its presence in your arsenal. EM WEB CLIPS

Len Sasso is an associate editor of EM. For an earful and free refreshments, visit his Web site at www.swiftkick.com.

FIG. 1: The Remote Zero SL fits neatly between your computer keyboard and monitor. The back panel houses all necessary jacks.

NOVATION Remote Zero SL (Mac/Win)

See Product Specs @emusician.com

A versatile and compact MIDI control surface.

By Len Sasso

The Remote Zero SL is the latest in Novation's Remote SL series of USB MIDI control surfaces. Previous models come with 25-, 37-, and 61-key MIDI keyboards, whereas the Zero has no keyboard (hence the name). In the interest of saving space, the *x-y* touch pad and joystick controllers have also been left off, but the sacrifice is worth it—the Remote Zero SL tucks neatly between computer keyboard and monitor, making it one of the most ergonomic control surfaces I've ever used.

With the recent release of the Automap Universal technology, the Remote SLs have three modes of operation: Standard, Mixer Automap, and Plug-in Automap. Standard mode uses a host's or plug-in's MIDI Learn feature. Mixer Automap uses your DAW's control surface setup to control both the DAW mixer and hosted plug-ins. Plug-in Automap controls plug-ins directly by wrapping them and installing Novation's own version of MIDI Learn. All three modes have their uses, and you can switch modes during operation.

The Remote Zero SL is class compliant; for standard MIDI operation, you simply need to connect it to a USB port. For Mixer and Plug-in Automap operation, you do need to install drivers, which are provided on DVD but are best downloaded from the Novation Web site. I installed the drivers without any problems on my dual 2 GHz Power Mac G5 running Mac OS X 10.4.8. Updating to the latest drivers and the Remote Zero SL operating system was equally painless.

What You Get

The Remote Zero SL control surface houses 8 short (1.625-inch) sliders, 8 standard knobs, 8 rotary encoders, 24 buttons, 8 touch pads, increment and decrement buttons, 6 transport controls, and a rotary encoder for data entry (see Fig. 1). Two huge 144-character, 2-row LCDs show control labels in the top row with values beneath. Additional front-panel buttons toggle the display between the knobs and sliders as well as change pages for multipage Automap setups. In the Automap modes, communication is 2-way, and values are automatically updated from the DAW or plug-in being controlled.

The rear panel sports four MIDI jacks, the USB jack, a power switch and external power jack (external power supply not included), and ¼-inch jacks for expression (continuous) and control (on/off) pedals. In the absence of USB power or an external power supply, you can power the unit with four C batteries.

"Radial makes a DI box that does exactly what it is supposed to do. No compromise."

Paul Boothroyd
(FOH engineer - Paul Simon, AC/DC, Paul McCartney)

"I'm really happy... I replaced my old DI's and found the J48's to have more output and less coloration. Acoustic music has never sounded so good."

Jerry Douglas
(Alison Krauss & Union Station, 12-time Grammy winner)

"I thought Radials only worked on cars, but since my sound man hooked them up to my guitar, I like them even better. Great clear and pure sound!"

Phil Keaggy
(world renowned guitarist/performer)

"It is nice to find great sounding industrial grade equipment still being made today!"

Daniel Lanois
(U2, Robbie Robertson, Bob Dylan, Peter Gabriel)

"Over the past 13 years I have used a variety of DI boxes. The Radial J48 is without a doubt the best, cleanest and most versatile DI I've ever used."

Paul Richards
(California Guitar Trio)

"With a Radial DI, the difference is surprising and dramatic. The sound is punchy, warm, solid and accurate. There's no going back!"

David Oakes
(Front of house engineer - Pat Metheny group)

"When it comes to sonic integrity, nothing touches Radial. Great gear built by great guys."

Steve Stevens
(Billy Idol, Atomic Playboys, soundtrack - 'Top Gun')

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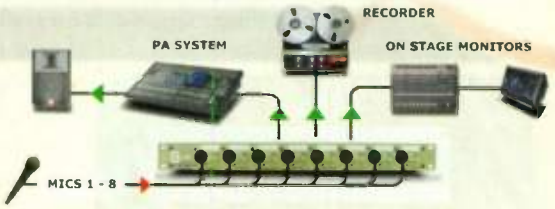
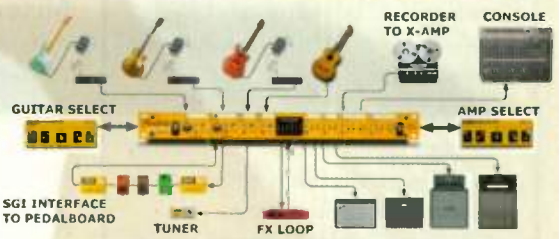
...for Power Players

Radial SW8 Auto Switcher
Multi-channel switcher for backing tracks ensures your audio keeps playing even when your playback recorder fails. Choice of balanced or unbalanced inputs plus eight built-in Radial DI boxes for remote stage use. Fully expandable with manual, remote or auto switching.

Radial 8ox Mic Splitter
8-channel splitter lets you split mic signals and drive three separate feeds to the front-of-house console, monitor mixer and recorder. Radial transformer equipped for exceptional signal handling without distortion and the 8ox eliminates buzz & hum caused by ground loops.



Radial JX44 Air Control
Guitar amp and effects routing system lets you remotely select between four guitars and drive up to six amps plus your tuner at the same time. Equipped with Radial SGI long-haul guitar interface, Radial JDI direct box and Radial X-Amp for post-production.



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The Remote Zero SL has three USB MIDI ports and two standard MIDI ports, one with In, Out, and Thru jacks and the other with an Out jack only. You can freely route MIDI data through any of these ports, but USB ports 2 and 3 are used for Mixer and Plug-in Automap, respectively, so it's best to use USB port 1 for standard operation.

By MIDI Alone

Even as a standard MIDI control surface, the Remote Zero SL is an impressive box. For one thing, it comes with 80 virtual instrument and DAW templates, and for another, it makes it extremely easy to create your own. You use the template management application RemoteSLEditor to configure sliders, knobs, and buttons and then to upload your creations to the unit, where you can save them in any of 34 memory locations (see Fig. 2). Six additional memory slots are allocated to Automap configurations.

Programming a control couldn't be easier. You right-click on its image in the editor to open a dialog box for selecting the message type (CC, NRPN, RPN, or SysEx), LCD name, and MIDI information such as port, channel, value range, and behavior. For instance, you can configure buttons as normal (press sends value), momentary (press and release send alternate values), toggle (repeated presses send alternate values), and step (each press increments the value by the step size). You can copy and paste a control's setup, which really speeds things up. Once a program is uploaded to the Remote Zero SL, you can also quickly change any control's function directly on the unit. Oddly, in the RemoteSLEditor application, you cannot set the eight encoders to work as real rotary encoders for incrementing and decrementing the target control, but you can do so once the template is uploaded to the unit.

PRODUCT SUMMARY

NOVATION Remote Zero SL

USB MIDI control surface
$499

FEATURES	4
EASE OF USE	3
DOCUMENTATION	2
VALUE	3

RATING PRODUCTS FROM 1 TO 5

PROS: Compact, easy-to-use control surface. Extralarge LCDs. Lots of controls. Complete programmability in MIDI and Automap Universal modes.

CONS: Documentation is scattered and incomplete. Automap Universal wrapping of plug-ins usually needs editing. Some wrapped plug-ins were unstable.

MANUFACTURER
Novation
www.novationmusic.com

Mixer Automap

As mentioned, the Remote SL series now has two Automap modes. Mixer mode is the original version of Automap, and it relies on your DAW's implementation of control surface support. Separate presets are provided for Propellerhead Reason, Ableton Live, and DAWs that use the Mackie HUI protocol (Digidesign Pro Tools and MOTU Digital Performer, for example). Other applications (Steinberg Cubase and Nuendo, for instance) are supported by a generic Mixer Automap template. In all cases, you need to have the Remote SL Automap drivers installed and activate control surface support for the Remote SL in your DAW. In the DAWs I tried—Apple Logic 7.2, Cubase 4, and Live 6—the process was quick and trouble-free.

Despite the name, Mixer Automap mode allows both mixer and plug-in control. In Live, the rotary encoders and the buttons above them control the selected plug-in, the sliders and buttons on the right control Live's mixer, and you can assign the bottom row of knobs and the buttons above them to any control using Live's MIDI Learn. In Reason, the Remote SL controls the device on the Reason track currently selected for MIDI input. In Logic and Cubase, you switch manually between mixer and instrument modes. In all cases, the LCDs indicate the parameters being controlled, and the values update to reflect the current value of the parameter. In short, you can freely jump back and forth between changing values onscreen and on the Remote SL without ever getting out of sync.

You do need to be careful about having two Remote SL–controlled programs active at the same time—when ReWiring Reason to your DAW, for example. I found it easiest to deactivate Remote SL control temporarily for one of the applications. (You can use two Remote SLs to control different applications simultaneously.) You also have to guard against MIDI Learn conflicts. If you have the control surface Remote SL port (usually port 2) also active for MIDI input, you could wind up with Remote SL controls affecting both Automap and MIDI Learn–assigned parameters. It's best to use USB port 1 for MIDI Learn.

Plug-in Automap

Novation recently implemented a new strategy, called Automap Universal, to wrest control of plug-in mapping from the host application. Automap Universal creates a wrapper for AU plug-ins on the Mac and VST plug-ins on the PC, and the wrapped plug-ins are addressed directly by the Remote SL rather than through the host's control surface support. (RTAS support on both platforms and VST support for the Mac are planned for a future update.)

Plug-in Automap is the Remote SL template you use for Automap Universal control of any plug-in. You switch between Mixer and Plug-in Automap by changing templates. Be aware that presets for some Automapped plug-ins are not currently saved with the host project. Novation says an update fixing this problem is imminent.

Automap Universal comes with an application called AutomapServer that must be running when Automap Universal is used. AutomapServer launches

automatically in the background the first time an Automap-wrapped plug-in is instantiated, and you also use it to choose which of your plug-ins are wrapped.

Wrapped plug-ins have a control bar added at the bottom of their GUI (see Fig. 3). You use that to view and modify the mapping of the Remote SL knobs, encoders, sliders, and buttons. When you instantiate a wrapped plug-in, it will have the factory mapping if there is one (about 25 major plug-ins have been factory mapped). Otherwise, the first 144 parameters reported by the plug-in are mapped to three pages of Remote SL controls. Each page maps the rotary encoders and knobs, the buttons directly above them, the sliders, and the buttons directly below them; that's 48 controls on each page.

The factory mappings tend to be sparse, with only a few of the 144 possible controls mapped, and aside from the standardization that the sliders are mapped to virtual instrument amplitude and filter ADSR settings when they exist, the assignments tend to be haphazard. In other words, plan on creating your own mappings for the plug-ins you use frequently, and perhaps forgetting about Plug-in Automap mode for the others. Fortunately, creating your own maps is easy and fairly intuitive, albeit time-consuming.

FIG. 2: The RemoteSLEditor software makes creating your own plug-in and mixer templates a breeze.

The Automap control bar at the bottom of the plug-in GUI amounts to a powerful MIDI Learn panel customized for the special features of the Remote SL. Once MIDI Learn is activated, you click on a control on the plug-in GUI and then move a control on the Remote SL to assign it. A pull-down menu offers continuous learn and clear modes, along with options to load, save, clear,

FIG. 3: Automap Universal wrapped plug-ins have a control bar added to the bottom of their GUI. You use that to create and edit settings on the fly.

and revert all settings. For buttons and rotary encoders, you can also set minimum and maximum values and step size. Those affect the control's resolution, and they are usually set to a range of one step, so useful ranges almost always need to be entered manually.

The Swag Bag

As is now fairly common with hardware controllers and interfaces, the Remote Zero SL comes with additional content called the Xcite bundle. The Xcite bundle contains roughly 500 MB of WAV samples from a cross-section of Loopmasters sample CDs, and there are enough in each category to be worthwhile. For virtual instruments, you get the full Novation Bass Station and demos of the FXpansion BFD and Guru drum machines. Finally, there's a lite but still useful version of Ableton Live 5.

The Remote Zero SL is a first-rate control surface that Automap Universal makes even better. It puts mixing and tweaking right above your computer keyboard, and if you want to also spring for a Remote SL keyboard model, you can have the best of both worlds. As a bonus you get eight note-trigger pads, transport controls, tap tempo and a flashing tempo indicator (which fortunately you can disable), and MIDI program- and bank-select implementation.

Len Sasso is an associate editor of EM. For an earful, visit his Web site at www.swiftkick.com.

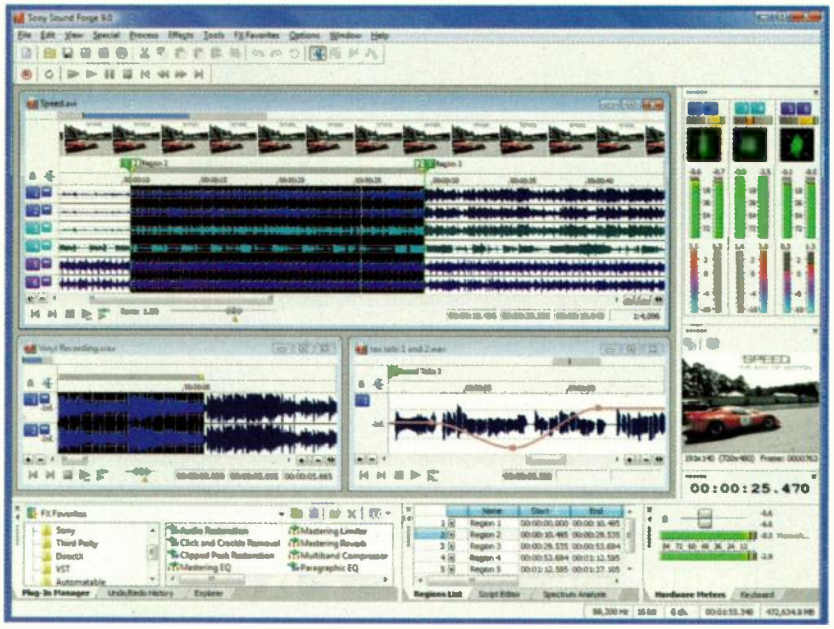

FIG. 1: Sound Forge 9 adds support for multichannel audio files, with up to 32 channels in each file. The program includes intuitive editing, import/export, and conversion capabilities.

SONY CREATIVE SOFTWARE Sound Forge 9.0a (Win)

This venerable editor gets a multichannel face-lift.

By Allan Metts

Sony Creative Software's Sound Forge has been a mainstay of the Windows audio-editing scene for well over a decade. When similar applications developed alternate personalities to take on multitrack recording and CD production, Sound Forge kept its focus and remained the go-to application for editing or mastering stereo audio files. (For background on Sound Forge, see the review of version 7 in the April 2004 issue of EM, available online at www.emusician.com.)

With the recent release of version 9, Sound Forge adds support for multichannel audio, making it well equipped to take on a surround sound mix or audio-for-video project. In addition, the program ships with the latest version of CD Architect, so you can get your project ready for the duplication house using this separate application (and Sound Forge itself can avoid the multiple personality syndrome).

I'm Surrounded

As expected, multichannel support in Sound Forge means you'll see a screen containing six or eight channels of audio (see **Fig. 1**). The program actually supports files with up to 32 audio channels, but 5.1 and 7.1 are the common surround configurations.

You can record multichannel files, provided your audio hardware has that capability. Any channel from your hardware can be routed to any channel of the file. Once you're set up, clicking on the Record button shows you the standard recording dialog box, only now with more channels. As before, the recording dialog box comes complete with level meters, 30 seconds of preroll recording, and triggering for the recording process using audio thresholds or MIDI Time Code.

Copy and paste operations are supported between channels, as is dragging-and-dropping audio. The behavior of these operations is both flexible and intuitive. For instance, when copying a single channel, the paste operation puts the audio into each selected destination channel (or into all channels if you haven't tagged any as "selected"). When copying multiple channels, the paste operation inserts the audio into selected destination tracks with appropriate warnings if the numbers of source and destination channels are different.

Pasted audio can be inserted or mixed with what

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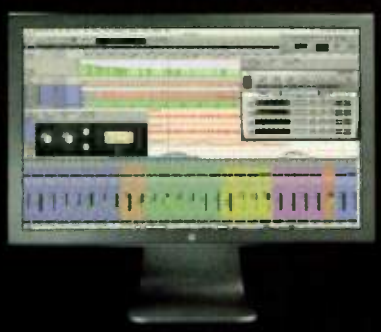
Be a Control Freak



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is already there. You have the same option when dragging-and-dropping (mixing is performed by default, but holding down the Control key while dragging initiates an insert operation). Interestingly, there is no "move" option when dragging-and-dropping—the source material always remains in place (you can achieve the same effect via cutting and pasting, however).

Sound Forge supports several file formats for multichannel audio, including WAV, AVI, Windows Media (both WMA and WMV), ATRAC (AAC and OMA), and Sony MXF. You can save Dolby AC-3 files, but only at 448 Kbps with a 48 kHz sampling rate. If you want to use anything else, you have to purchase the AC-3 encoder from Sony for $199.95.

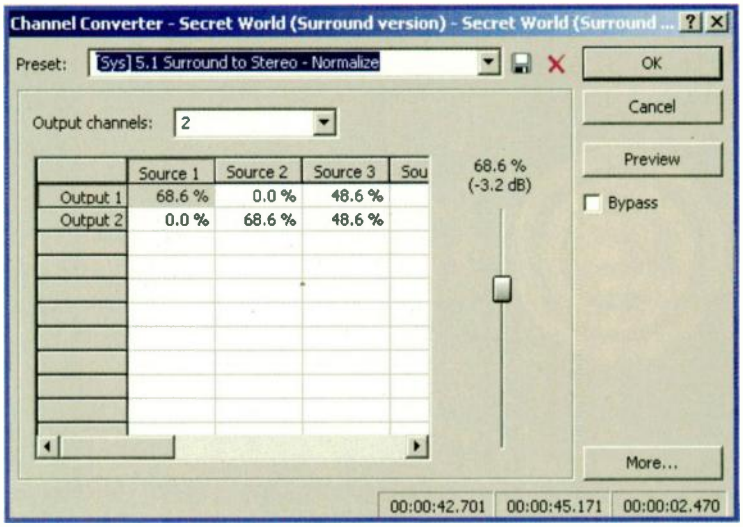


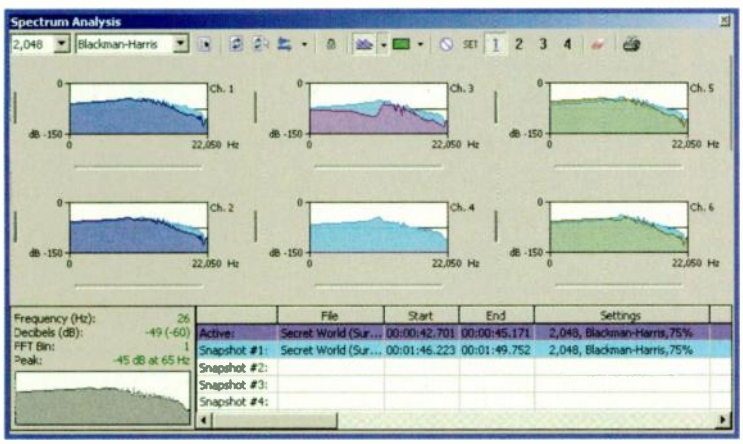
FIG. 3: Sound Forge's channel converter supports conversions between any channel configurations imaginable. Negative percentages indicate a phase reversal.

Point of View

Sound Forge's Spectrum Analysis view has been upgraded to support multichannel files (see Fig. 2). This window presents a graph representing the frequency content of your file or any portion of it for each channel. The graphs can also update in real time as you play or record audio. I happened to be writing this paragraph while traveling—I switched on real-time input monitoring and found myself watching the frequency content of a Boeing 767's cabin noise, captured using my laptop's microphone.

Several display algorithms and sample sizes are available, as is a sync feature that ensures you are viewing the same region of audio in each of the channel graphs. I particularly like the snapshot capability, which allows you to store four different sets of graphs using distinctive colors. The active display (or current real-time display) appears in a fifth color.

FIG. 2: Sound Forge's Spectrum Analysis window is multichannel capable. Several different views are available, as are snapshots that allow comparisons of different program material.



The channel converter has also been updated for multichannel capabilities (see Fig. 3). This tool was previously useful for stereo-to-mono conversion and channel swapping. Now it offers conversion capabilities using multichannel files as well.

The tool works by presenting a matrix of your source and destination material. Each channel in the source appears as a column, and each channel in the destination appears as a row. You specify how the conversion takes place by entering the amplitude (expressed as a percentage) of each source channel that should appear in each destination channel. Negative numbers indicate a phase reversal, and values greater than 100 percent are allowed.

Presets for common operations (such as converting 5.1 surround to stereo) are provided, as is a handy slider to help you set the values. Unfortunately, graphical pan controls or indicators to help you visualize the operation are missing. This would be a good place to show the spatial placement of an audio channel using a diagram of the stereo or surround field—a chart of percentages doesn't always provide intuitive feedback.

Beyond Multichannel

Multichannel capabilities aren't the only addition to Sound Forge. A new Hardware Meters view shows audio levels independently of the file's playback levels and provides a set of sliders for adjusting preview and playback levels.

Each set of Sound Forge meters (channel meters, hardware meters, and record level meters) now includes optional phase scope and mono-compatibility indicators.

Four different styles of phase-scope displays are available, and the online help includes illustrations on how to interpret each of them to identify phase cancellation problems.

There are improvements in the area of effects processing. The dialog boxes to control these effects are no longer modal, meaning you can go back to the audio to change the selected region (or open other audio files and effects, although only one effect can be active for a given file at a time). Also new are separate controls for wet and dry gain and fade-in/fade-out times, with 25 different choices for fading curves.

Setting effects fade and wet/dry gains in the dialog box works just fine, but even better is Sound Forge's ability to set these using envelopes in the audio itself. Special handles appear in the selected region. Sliding these back and forth changes the time it takes for the dry signal to fade away and the processed signal to fade in (or vice versa).

You can drag these envelopes up and down to change the wet and dry gain values. Note that these features work for all effects, whether or not you're using a plug-in that supports automation (controlling the automatable parameters of VST and DirectX effects is done using the Plug-in Chainer and a different set of envelopes).

Bundle of Joy

A number of other improvements have been made to the usability and features of Sound Forge. Cursor positions and other settings can be changed by simply double-clicking on the values that appear in the status bar; snapping has been improved; and additional color-customization operations are available. Keyboard shortcuts are now customizable, and the marker and region rulers show some usability enhancements.

Sound Forge comes bundled with additional plug-ins and applications, which in combination provide a formidable package for audio mastering, restoration, and CD preparation. Sony's own Noise Reduction plug-in is included, which comprises four plug-ins (one each for noise reduction, audio restoration, click and crackle removal, and clipped peak restoration). The noise reduction plug-in allows you to capture a noise print for use in subsequent processing.

Also included is Sony's CD Architect software. Though CD burning is nothing new, few applications provide extensive control over the subtle settings involved with Red Book audio CDs and the associated PQ lists. With CD Architect, you can configure index markers, track fading and pause times, and CD Text. CD Architect and Sound Forge have both been upgraded

PRODUCT SUMMARY

SONY CREATIVE SOFTWARE Sound Forge 9.0a

multichannel audio editor
$319.96 (boxed)
$299.96 (download)

FEATURES	4
EASE OF USE	4
AUDIO QUALITY	4
VALUE	3

RATING PRODUCTS FROM 1 TO 5

PROS: Extensive audio editing. Intuitive user interface. Support for multichannel audio files. Includes mastering effects and CD Architect application.

CONS: Customizable AC-3 encoding costs extra. No graphical surround panning.

MANUFACTURER
Sony Creative Software
www.sonycreativesoftware.com

for compatibility with Windows Vista.

The Mastering Effects Bundle Powered by iZotope, a set of four effects, rounds out the Sound Forge package. These effects are provided in DirectX format and include a mastering reverb, a multiband compressor, an IRC limiter/loudness maximizer, and a parametric equalizer. I found each of these to be intuitive to use, with a sound quality that is comparable to that of similar offerings elsewhere.

Like many current applications, Sound Forge's extensive printed manual has been relegated to a PDF file, but Sony has provided a printed quick-start and keyboard-shortcut guide for both Sound Forge and CD Architect. The program's online help is complete, and if you use the "?" toolbar button (not the F1 key as you might expect), it is context sensitive.

Overall, Sound Forge still shines as a comprehensive audio editor. If you've had to leave this old friend because it couldn't handle your surround sound needs, now is the perfect time for a reunion.

Allan Metts is an Atlanta-based musician, software/systems designer, and consultant. Check him out at www.sonicbids.com/AllanMetts.

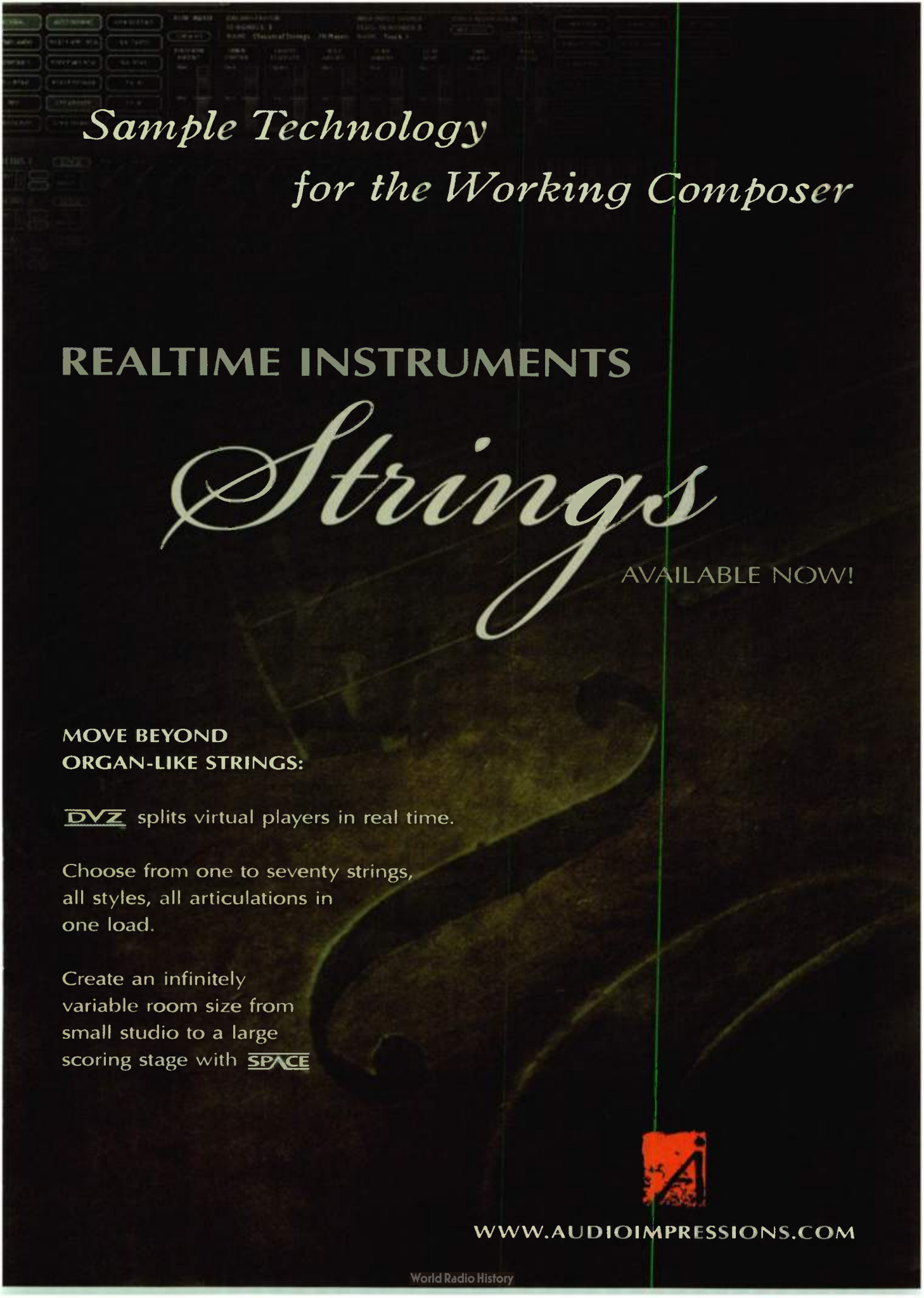


FIG. 1: The XLogic Alpha Channel fits several high-priced-mixing-board features, including a preamp, 3-band EQ, and A/D conversion, into a single-rackspace unit.

SOLID STATE LOGIC XLogic Alpha Channel

See Product Specs @emusician.com

Pro console sound at a project studio price.

By Myles Boisen

Solid State Logic—better known as SSL—has long been famous for state-of-the-art automated mixing boards priced far beyond the budget of the average EM reader. But with the introduction of the affordable Alpha series of outboard processors, the SSL brand can now be part of any studio's gear roster.

The XLogic Alpha Channel is a single-channel mic/line preamp with a number of distinctive features. In addition to a versatile 3-band EQ, the SSL pre offers output limiting, digital I/O, and a variety of insert and stereo-linking options. Although it is designed for use with DAWs, the Alpha Channel is fully compatible with analog recording applications.

> The Alpha Channel definitely imparts a bit of extra high-end sheen.

Out in Front

The Alpha Channel's single-rackspace front panel is a straightforward affair, with a silver powder-coat metal panel, plain labeling, and color-coded plastic knobs (see **Fig. 1**). An illuminated plastic power button is located on the faceplate's extreme left. All the buttons are the same translucent, illuminating type, and glow white, green, red, or orange depending on their function.

Next to the power button is a combo XLR/unbalanced ¼-inch input jack. A series of four input buttons allow the selection of high-impedance input (1 kΩ disengaged, 10 kΩ engaged), –20 dB pad, 48V phantom power, and phase reverse. One very thoughtful innovation is a warning light built into the pad button; it flashes red to

Empirical Labs inc.

So I got the box, plugged it in on an Etta James vocal that I was having problems with... and it $#$%^&* rocks. This is a **great box** - I can see anybody with a DAW wanting to use this thing. I use the shelving, DS'ing and transformer out, and am just **thrilled**. It absolutely complements the digital crap that I am forced to use!

-Ed Cherney

...and on the third day, the big guy made the Lil FrEQ... and everybody went f*ck'in freaky!

-Michael Brauer

"The lil freq has the best de-esser I've ever used, the HF 'limiter' works like magic too."

-Mac Black, GearSlutz.com

LIL FREQ: THE EVIDENCE IS EMPIRICAL

"Let me put it this way... I've yet to not use it when mixing a vocal track. It's definitely one of those 'I wish I knew about this thing earlier' kinda devices in my rack."

-Yoda117, GearSlutz.com

"It is flat-out the most versatile unit I own ... I think I'm about to buy a second one—if there's one problem with Dave Derr's designs, it's that **you always want another one!"**

-Stuart Mac, GearSlutz.com

We have two Lil FrEQ's in our studio. They are without a doubt the first-call equalizer for all critical applications. Between the shelving EQ, the remarkable, accurate and musical sounding 4 band parametric EQ, and the best sounding De-essing system I have ever experienced, I could not imagine trying to work without these units. There is a definite reason why they the Lil FrEQ's are 'inputs one and two' in rack one of our outboard EQ arsenal.

-FLETCHER, MERCENARY AUDIO/THE METHODS AND APPLICATIONS LABORATORY

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FIG. 2: The Alpha Channel's rear panel is basic, with analog audio and S/PDIF I/O and links to daisy-chain additional Alpha Channels.

alert you when the input gain level reaches overload.

Also in the Input section, one red knob controls input gain (from +20 to +75 dB), and another controls SSL's unique Variable Harmonic Drive (VHD) feature, as found on the SSL Duality console. The VHD circuit colors the audio signal, initially by subtly boosting the proportion of second-order (aka even-order) harmonics. As you turn the VHD knob clockwise (you rockers will appreciate that this knob goes to 11), odd-order harmonics are added, contributing an edgier and more easily audible flavor of harmonic distortion.

The Insert section presents three buttons labeled In, Sum, and Post EQ. At first glance, these different insert modes are somewhat esoteric, but their functions are explained adequately in the multilingual manual. As with a mixing board, the Alpha Channel insert loop allows you to send the preamp signal to another audio device—typically a compressor or multi-effects box—and then return it to the preamp circuit for further processing or output to a recording device.

Engaging the In button sends and returns the insert audio signal before the EQ section. Selecting Post EQ places the insert point after the Alpha Channel's EQ module. Pressing the Sum button mixes the send and return signals internally, enabling such advanced uses as parallel compression processing and mixing in a second signal (such as a bass or guitar DI) when connected to the insert return jack.

PRODUCT SUMMARY

SOLID STATE LOGIC — XLogic Alpha Channel

microphone preamp

$1,995

FEATURES	4
EASE OF USE	3
AUDIO QUALITY	4
VALUE	3

RATING PRODUCTS FROM 1 TO 5

PROS: Quality mic/line preamp. Effective onboard EQ, insert, and limiting. Harmonic overdrive circuit. Input overload indicator. Phase inverter. Digital audio output.

CONS: Combo input jack requires repatching for mic or line input. No XLR output. No sampling-rate display or selector switch.

MANUFACTURER
Solid State Logic (SSL)
www.solid-state-logic.com

EQ and I/O

EQ controls take up about half of the Alpha Channel's front panel. A highpass filter section has two buttons offering a –3 dB rolloff at 40 and 80 Hz; they can be simultaneously engaged to achieve a 120 Hz low cut. An EQ in/bypass switch is located in the middle of the panel. The EQ knobs are divided into three panel sections: LF (switchable low shelving, 40 to 600 Hz; bell curve option, 35 to 500 Hz; black knobs), MF (fully parametric midrange, 300 Hz to 5.2 kHz, green knobs), and HF (shelf only, 1.5 to 22 kHz, red knobs). The EQ gain pots offer cut-and-boost ranges of ±15 dB (low bell), ±17 dB (mid parametric), and ±19 dB (high and low shelf), and they're detented at the zero-gain center point.

On the faceplate's far right is the output-level adjust knob (±20 dB), a button to engage the Lite Limit output-limiting circuit, an LED indicator for digital input and analog-to-digital converter (ADC) lock, and a ladder-type LED output meter (–36, –24, –12, –6, –3, and 0 dBfs) that indicates gain before the unit's internal ADC. While there is no actual gain-reduction meter for the limiter, the Lite Limit button varies its color from green to orange to red as greater amounts of gain reduction are applied.

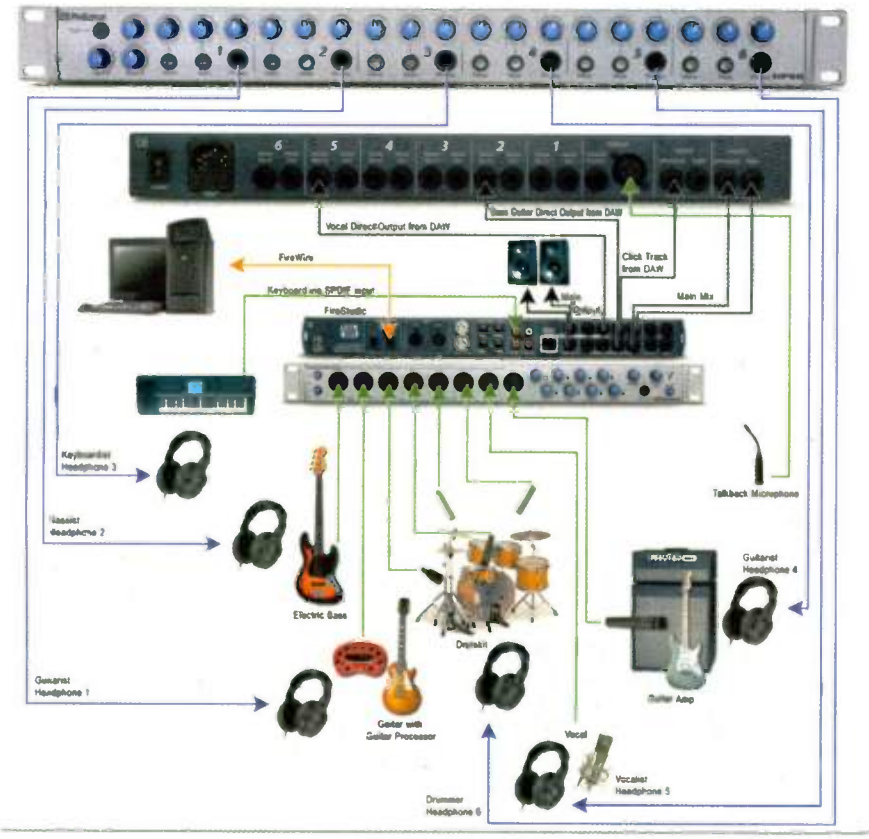
The Alpha Channel's rear panel is sparsely appointed (see Fig. 2). In addition to the standard IEC power connector, it has four RCA jacks (two for linking to other Alpha Channel units, and two for coaxial S/PDIF I/O) and three balanced ¼-inch TRS jacks for analog out and insert send and return. The S/PDIF sampling rate is set internally at 24-bit, 44.1 kHz, and can be changed only by the application of an external signal to the S/PDIF input. The Alpha Channel is not able to accept digital audio input, however, and the S/PDIF jack is for external clocking purposes only (from 44.1 to 192 kHz).

Guerrilla Sessions

I put the Alpha Channel through some rigorous real-world testing during a month of sessions at my Guerrilla Recording studio in Oakland, California. Throughout this period I did need the manual to clarify some digital-recording applications and illuminate the various functions of the insert modes. While the manual addressed most of these issues, it could provide more guidance for nonprofessional engineers on suggested setups and digital clocking issues. A tutorial of this type is available on the SSL Web site under Tips and Tricks (www.solid-state-logic.com/music/xlogic_achannel.html), although this feature has been newly launched at press time and is not clearly written.

The preamp's tonality was consistently pleasing and musical, with an exemplary clarity and detail that should please audiophiles and critical engineers alike. Compared with the solid-state preamps I regularly rely on, the Alpha Channel definitely imparts a bit of extra high-end sheen to most sources, but is rarely too

HP60 Six-Channel Headphone Mixing System



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bright and never lacking in tone or warmth.

With a Blue Bottle tube mic on a female vocalist, the SSL yielded a beautifully airy timbre. Acoustic guitar and bass were rich in harmonics and woody warmth, with a clear presence that helped these instruments stand out in a mix. A tambourine delivered immediate and realistic transients, with a crystal clarity that never got harsh through a Neumann TLM 103 condenser mic. Handclaps were also granted a rich sparkle on the same mic.

Recording several orchestral instruments on a session for the band P.A.F. gave me a unique opportunity to check out the SSL's performance in comparison to the highly regarded Grace 101 preamp. With a Royer R-122 ribbon mic on oboe, the Alpha Channel was excellent. The ample +75 dB input gain was a big help, with that quiet instrument miked at a distance of about three feet. Without resorting to added equalization, the SSL contributed some nice extra brightness on trumpet and trombone tracks.

However, on violin the Alpha Channel's high-end emphasis was too much, bringing a grating, sandy edge to a solo track recorded using the smooth R-122. Switching over to the Grace 101 preamp yielded a much more pleasing and listenable result. The SSL worked fine on cello with the relatively mellow-sounding Neumann KM 140 condenser mic, and it also performed well on bassoon with the same recording chain.

Classical clarinet sounded too dark with the Royer R-122–Grace 101 combination, whereas the SSL was just right in the high end. In periodic tests the EQ was always musical, and it was easy to hear the results at subtle settings.

Sparkling Performance

The Alpha Channel's Variable Harmonic Drive is an interesting and valuable feature that actually sounds good. I am always wary of enhancement circuits like this, which to my ear can sound grainy or overly colored as soon as the effect becomes audible. Although I tend to be cautious about using any kind of processing while tracking, setting the VHD about halfway gently enhanced most instruments, adding desirable tone and authority without distortion or excess coloration.

I was surprised to find that the VHD circuit had very little impact on a Hammond organ part, and its thickening effect on female vocals was pretty subtle. But it generally improved chordal guitar parts and was most useful on lower-register instruments.

Though not as versatile as the 4-band EQs on most mixing boards, the SSL EQ was transparent, easily audible, and a worthwhile tool all around. At narrow Q settings, filtering was very tight and surgical. On one session, I was able to effectively reduce the high whine of a digital guitar-harmonization pedal using the narrowest bandwidth without adversely affecting the rest of the frequency spectrum.

The Alpha Channel EQ was very transparent and sweet on a high-tech bass rig recorded with an AKG C 414 mic. In this

application, the VHD control also worked very well to bring bass transients forward in the mix, adding punch and definition.

The Lite Limit feature is of course very handy for digital recording, as well as for taming the wide dynamic range of percussion, direct bass, and guitar. Under typical tracking conditions, I noticed no distortion or adverse brickwall-limiting effects when engaging this option.

When feeding a line-level input to the Alpha Channel from a CD player (with the input pad engaged), I was also impressed by the SSL limiter's transparency. Moderate limiting was not audible, and it was only when the input level was dangerously hot, with the Lite Limit button glowing a solid, fiery red, that compression artifacts became apparent. Nonetheless, even with the SSL's output meter lit continuously at 0 dBfs, the unit still demonstrated ample headroom.

A few features on the Alpha Channel took some getting used to. Having only a ¼-inch out really took me by surprise. This choice presents no compromise in audio quality, but it felt like SSL was cutting corners by not including an XLR out for convenience in connecting. And the combo input jack, though a nice space-saving feature, is inconvenient when switching between microphone and line-level or guitar DI inputs during a session.

In addition, it's a shame that SSL put a high-resolution A/D converter in the Alpha Channel but didn't make the converter easier to use by implementing a sampling-rate selector switch. Simple studio setups that are limited to a single digital device, such as a basic DAW interface with only one S/PDIF in and out, may find it cumbersome to clock the Alpha Channel externally at sampling rates other than the unit's 44.1 kHz.

Irrefutable Logic

Clearly, the SSL XLogic Alpha Channel is a piece of gear that doesn't pretend to be flat, either in frequency response or sonic personality. With its glossy high-end timbre, powerful EQ, and effective VHD circuit, this preamp offers superior solid-state sound and a number of exciting permutations for spicing up miked or line-level sources.

Despite the Alpha Channel's proven ability to deliver great sounds, I found a few areas in which it could have justified its price tag by delivering greater value and usefulness to the personal-studio owner: The connection options are limited for a professional device in this price range. Also, I was disappointed by the lack of a sampling-rate display or a sampling-rate selector switch, both of which are standard features on many lower-priced units aimed at project studios.

Limitations aside, the Alpha Channel's major attractions—the SSL preamp, onboard EQ, limiting, and VHD processing—work very well. These features place it solidly in the pro channel-strip category.

Myles Boisen is head engineer at Guerrilla Recording in Oakland, California. Find out more at www.mylesboisen.com.

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Pro 1.0, and as a standard MIDI controller. Performance in Logic Pro relies on HUI emulation, and there are some unimplemented controls and occasional loss of contact with Logic. Both units performed well with Cubase 4, but the AlphaTrack gets the edge because of its native support. PreSonus plans to release a custom plug-in for Cubase 4 in the near future. The AlphaTrack also worked seamlessly with Reason and Soundtrack Pro, although the latter's control surface support is limited.

One Size Fits All

The guiding principle behind a control surface with a single channel strip is compactness. Both units meet that goal admirably; the FaderPort is a bit more compact, whereas the AlphaTrack has a few more goodies. They are ideal for portable computing in tight spaces but are also very handy on the desktop. I preferred having the controller adjacent to the mouse so that I could easily switch between them. That quickly became second nature.

The biggest difference between the AlphaTrack and the FaderPort is one of design philosophy. The FaderPort is designed purely for mixing, automation, and transport control. Its slider is dedicated to volume, and its rotary encoder is dedicated to pan. That makes the FaderPort extremely simple to use—you're never distracted wondering what mode a knob, fader, or button is in.

The AlphaTrack, on the other hand, is designed as a compact multipurpose controller, which is the primary reason for its LCD and three rotary encoders. The LCD tells you what's doing what, and you always have access to four parameters. Despite its limited number of controls, mode switching makes the AlphaTrack useful in a pinch as a standalone MIDI controller.

PRODUCT SUMMARY

FRONTIER DESIGN GROUP AlphaTrack

compact USB control surface
$249

FEATURES	4
EASE OF USE	3
DOCUMENTATION	3
VALUE	3

RATING PRODUCTS FROM 1 TO 5

PROS: A full-featured control surface in a slick, compact package.

CONS: Currently offers native support for only a few DAWs.

MANUFACTURER
Frontier Design Group
www.frontierdesign.com

AlphaTrack Specifics

For parameter control, the AlphaTrack has a 100 mm touch-sensitive, motorized fader; three touch-sensitive rotary encoders that also function as buttons; and a touch-sensitive ribbon controller (see Fig. 1). The targets of those controls are determined by mode buttons labeled Pan, Send, EQ, and Plug-in located just beneath the rotary encoders. A fifth button sets the DAW's automation mode for the selected track. A toggle-style Shift button calls up alternative functions for the fader, ribbon, encoders, and many of the other buttons. A handy Flip button swaps functions between an encoder and the fader for high-resolution control of the encoder's target parameter.

FIG. 2: The FaderPort's motorized fader and rotary encoder are dedicated to volume and pan mixing and automation.

In Pan mode in Cubase, the fader controls volume, the rightmost encoder controls pan, and the leftmost encoder changes tracks. You twist the center encoder to move between markers, and press it to add markers on the fly. The other modes focus the fader and encoders on various channel-strip and plug-in parameters. Touching any of the touch-sensitive controls toggles the LCD from generic to control-specific information. For example, the LCD, which is located just above the rotary encoders, normally indicates their function, but once the fader, the ribbon controller, or an encoder is touched, the LCD changes to display its value and a fuller description of its function. Touch sensitivity is also used for touch-mode automation, in which current automation is read until the control is touched, after which it is overwritten.

You use four function buttons (which in combination with the Shift button actually invoke eight functions) to step through parameter pages as well as to invoke user-defined functions. In Cubase 4, F1 and F2 step through parameter pages when multiple pages are available. For instance, in EQ mode they step through EQ bands, and in Send mode they step through send buses. F3 through F8 are user assigned using drop-down menus in Cubase's Devices Setup dialog box. When you plug a footswitch into the ¼-inch TS jack on the back, its function is user assigned in the same way. Record, Solo, Mute, and dual-function transport buttons round out the AlphaTrack panel.

The ribbon controller is one of the AlphaTrack's more innovative features. In Cubase it is used for navigation and scrubbing, and its action depends on whether it is tapped (jump between markers), dragged over with one finger (scroll), or dragged with two fingers (jog/shuttle).

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Used with the Shift key, the ribbon effects audible scrubbing.

FaderPort Specifics

The FaderPort is dedicated to mixing, automation, and transport functions and is, therefore, a much simpler device (see Fig. 2). It currently lacks native support for most DAWs, but in many cases, HUI emulation is sufficient for its tasks. For example, you won't really miss native support for user-assignable buttons or stepping through parameter pages because the FaderPort doesn't have these features. On the other hand, you do need native support to have the FaderPort follow as you change channels with the mouse, as well as to set and move between markers, and you will miss those features.

Like the AlphaTrack, the FaderPort has a 100 mm touch-sensitive, motorized fader—the same high-quality Alps fader used in the Digidesign D-Command. Here, touch sensitivity is used for touch-mode automation. A single rotary encoder is dedicated to pan. Mute, Solo, and Record buttons are next to the pan encoder, and Channel Select and Bank buttons are just below it. In Bank mode, the Channel Select buttons jump eight channels at a time, which is very handy. A separate Output button jumps immediately to the output channel strip, but that button also requires native support.

Read, Write, and Touch buttons select automation modes, and an Off button turns off the fader motor. That is nice in Read mode when you don't want to be distracted by the moving fader. Window View buttons show and hide the DAW's mixer, project, and transport windows. The Window View row also contains a dedicated Undo/Redo button. The standard transport buttons are augmented with Punch and Loop mode buttons and a user-assignable button, although that requires native support.

Back-to-Back

For native-supported DAWs—and there may be more of those by the time you read this—the choice between the AlphaTrack and the FaderPort is a choice between simplicity and flexibility. If your goal is mixing, automation, and transport control, the FaderPort has it covered with a minimum of fuss. My one quibble would be the separate power supply for the fader motor—that makes it less convenient for portable operation, but that is the price you pay for the high-quality Alps fader.

If you're after a compact but full-featured control surface, the AlphaTrack is for you. It is excellent for mixing, automation, and transport control, but if that's all you need, the extra stuff makes the unit a little larger, and perhaps more complicated than necessary.

For both units, native support for your DAW is key to functionality and hassle-free operation. So check the information and downloads on the Frontier and PreSonus Web sites and browse the companies' user forums before you buy.

PRODUCT SUMMARY

PRESONUS FaderPort

compact USB control surface
$229.95

FEATURES	3
EASE OF USE	4
DOCUMENTATION	2
VALUE	3

RATING PRODUCTS FROM 1 TO 5

PROS: Solid and compact. Covers mixing, automation, and transport control with a minimum of fuss.

CONS: Currently offers native support for only a few DAWs.

MANUFACTURER
PreSonus Audio Electronics
www.presonus.com

Len Sasso is an associate editor of EM. For an earful, visit his Web site at www.swiftkick.com.

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FIG. 1: Guyatone's Optical Series stompboxes have plenty of knobs and switches, multiple modes of operation, and customizable control options. The Ultron filter pedal offers autowah, envelope-controlled, and footpedal-controlled modes.

GUYATONE Ultron and Ultrem

See Product Specs @emusician.com

Are these boutique stompboxes the ultimate in their class?

By Babz

Autowah effects like the Musitronics Mu-Tron III have been around since the '70s. Stevie Wonder's "Higher Ground" and other funk classics made them popular, but I've never felt they were exploited to their full expressive potential. I've always wanted more far-reaching control over their resonant filters.

The pulsating swell of tremolo is another perennial favorite. Though tremolo has been used (and occasionally overused) on everything from twangy surf guitar to panning electric piano, its simplicity and potential for monotony have made it practically cliché. Thus, I was excited to try out the Guyatone Ultron and Ultrem stompboxes, which aim to push the limits of autowah and tremolo to their outermost reaches.

Uncommon Features in Common

The Ultron Optical Auto Wah GST-U05 and Ultrem Optical Tremolo GST-C04 are hybrid analog-digital stompboxes. They combine vintage-inspired optical circuitry with a digital low-frequency oscillator (LFO) and a control section that lets you manipulate lots of parameters in real time. Each unit is housed in a sturdy but lightweight Hammond chassis and is dedicated to one effects type. Each sports a full complement of LEDs, switches, and knobs, many performing dual functions, and a 4-character LED display (see Fig. 1). Their range of tweakable parameters is so extensive, they're almost mini sound-design workstations in stompbox form. I divided my time between stompbox operation and tabletop tweaking because I couldn't keep my hands off of all the controls.

I was delighted that each unit comes with an external power supply (a 9 VDC wall wart), but when I opened the box, I was a little dismayed to find no place to install a battery. Guyatone discovered during development that the digital CPU's power demands made battery operation impractical. Still, it would be nice to have at least a power switch, as unplugging the wall wart is the only way to turn the unit off. However, while poking around inside, I found a vastly more valuable feature: four DIP switches and a threshold trim pot you can use to optimize the units for different instruments, including keyboards. Nice!

Both stompboxes offer six LFO waveforms (triangle, sawtooth, reverse sawtooth, and three rectangular waves), LFO speed (displayed in bpm or milliseconds and as a bright green LED that flashes in time), a true bypass switch, and an input for an optional CV expression pedal (Guyatone recommends a Roland EV-5). You can manually dial in the LFO rate or set it using tap-tempo foot control. The tap-tempo footswitch also doubles as a switch for controlling various operational modes. The Ultron's and Ultrem's modes, many of which require expression

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I've already cut deals for more than 70 of my songs, and they're getting used in TV shows like Dateline, Law and Order SVU, and The Osbournes. And yes, I'm making money.

I was kind of surprised that the recordings I make in my little home studio were good enough. I guess size really doesn't matter;-)

Want to know what does matter? Versatility. Being able to supply tracks in different genres makes you even more desirable for Film and TV projects. I didn't know that until I became a TAXI member and started going to their members-only convention, the Road Rally.

If you joined TAXI and never sent in a single song, you'd still get more than your money's worth just by going to their convention. It's three days of incredible panels loaded with some of the most powerful people in the music business, and the cool part is that it's FREE!

Unlike some of the other conventions I've attended, the panelists at the Rally are friendly and accessible. I've never been anywhere that gives you so much great information, and so many chances to meet people who can help your career.

If you've needed proof that a regular guy with ordinary equipment can be successful at placing music in TV shows and movies, then my story should do the trick.

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pedal control, are really the key to unlocking the power of these devices.

Ultron Optical Auto Wah

Calling the Ultron GST-U05 an autowah is somewhat of a misnomer, because one of the features setting it apart from earlier units (like the Mu-Tron III) is that you can control the filter manually with an expression pedal. Each of the Ultron's three basic modes offers a different way to control the filter. Controlling it with an expression pedal is called Manual Pedal Wah mode, and it works like a traditional wah-wah pedal. Touch Wah controls the filter using pick attack or some other input signal, and Wave Wah controls it using the internal LFO.

Touch Wah (envelope-controlled) mode essentially nails the Mu-Tron III effect, but with even more user options. Control knobs include Peak (filter resonance), Frequency (filter cutoff), Threshold (envelope sensitivity), and Filter Mode (highpass, bandpass, lowpass, or notch). Toggle switches let you select the filter range (low, medium, or high), and filter cycle up (wah-wah) or down (ow-ow).

Wave Wah (autowah) mode places the filter under LFO control for a distinctly different wah effect. You can further customize the effects using the various controls, the six selectable waveforms, and manual or tap-tempo speed controls.

Manual Pedal Wah mode is one of my favorite options. It gives the player ultimate control, serving up super liquid-cooled extreme wah-wah filter tones that will leave envious shred-meister guitar rivals looking like crybabies (see **Web Clip 1**).

Even when you have selected one of the Ultron's three basic modes, you are not locked into it as a static choice. You have the ability to momentarily switch to another mode (Guyatone calls it a sub mode) using the footswitch labeled Control. For example, when in Touch Wah mode, pressing the Control switch takes you into Wave Wah mode. That allows you to do things like have autowah on choppy

PRODUCT SUMMARY

GUYATONE Ultron and Ultrem

effects stompboxes
Ultron $425
Ultrem $375

FEATURES	4
EASE OF USE	3
AUDIO QUALITY	5
VALUE	3

RATING PRODUCTS FROM 1 TO 5

PROS: Deluxe feature set. Exceptional versatility. Real-time control flexibility. Excellent sound quality. Solid construction. Quiet operation.

CONS: No battery operation. No power switch. Expensive.

MANUFACTURER
Guyatone
www.guyatone.com

chords and then suddenly invoke a pulsating wah on a sustained chord.

In addition to filter frequency, you can use the expression pedal to control the LFO's depth and speed. In any of the available pedal modes, you can use the Control footswitch to momentarily switch to envelope-controlled wah on the fly. As if all that wasn't enough, you also get two bonus modes that let you change LFO waveforms with the expression pedal.

Ultrem Optical Tremolo

Tremolo is a less flashy effect than autowah, and that's reflected in the Ultrem GST-C04's lower price. But the same deluxe treatment is evident in its design, which packs in as many features and control options as possible for a full variety of tremolo and volume effects, and more (see **Fig. 2**). The six selectable LFO waveforms cover everything from spot-on emulations of vintage tremolo tones to more modern and mechanical-sounding autogating effects. The Ultrem has stereo outputs for panning tremolo, and you can use an expression pedal to manually pan between amps or channels. You can also use an expression pedal to control volume as well as tremolo speed, depth, and waveform.

Like the Ultron, the Ultrem has three basic modes. Wave Tap lets you change tremolo speed on the fly using the tap-tempo footswitch. Momentary Wave mode allows you to toggle the tremolo on and off using the Control footswitch. And in Pedal Volume mode, the expression pedal functions as a standard volume pedal.

As with the Ultron, you can mix and match all the Ultrem's options in real time. It gives you countless variations using the Control footswitch and the same main mode and sub mode scheme. The Control switch also lets you control tap tempo, which in itself is a rare feature for a tremolo unit. One of my favorite Ultrem features is the Blend option, which mixes in a bit of dry signal to ensure that the initial note attack is not lost in a volume swell. In addition, the Ultrem offers a Saturation effect that allows you to dial in varying degrees of tube-overdrive emulation. It's a subtler tube crunch than a full-blown sustain or distortion effect. The effect is warm, pleasant, and musically useful; in fact, it's one of the best tube-saturation effects I've heard.

Ultimately . . .

I've owned quite a few stompboxes over the years, and it takes a lot to get my attention, but the Ultron and Ultrem immediately impressed me. I instantly became engrossed in exploring their extraordinarily flexible

performance options, and even after weeks of putting them through their paces, I've yet to come up for air. It is rare to find a device for which the answer to the question "Okay, but can it do this?" is most likely, "Yes, and several other tricks you hadn't even imagined."

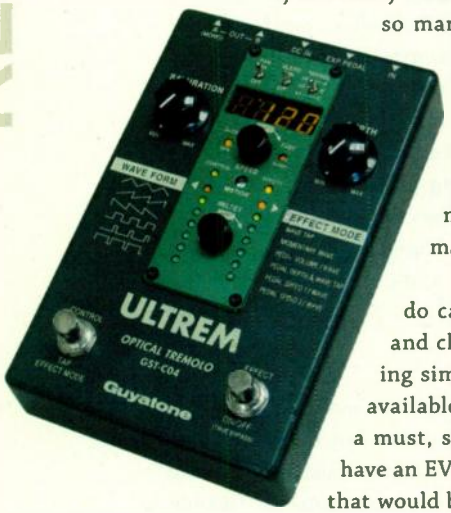

FIG. 2: The Ultrem offers a deluxe set of tremolo and volume effects paired with simulated tube saturation.

Both units also impressed me with their solid construction and pristine audio quality with nary a hint of noise. And even with so many knobs, switches, dual modes, dual-function controls, and tweakable parameters, I found the user interface to be quite ergonomic, requiring only minimal skimming of the manual for most functions.

The Ultron and Ultrem do carry boutique price tags, and cheaper stompboxes offering similar effects are certainly available. An expression pedal is a must, so if you don't happen to have an EV-5 pedal around (as I did), that would be an additional expense. Although other devices may do some of what these two stompboxes can do, I have yet to see anything else that brings together so many control options and features. Moreover, the ability to adjust input threshold to accommodate line-level sources makes them suitable for sound design, project studio recording, and a variety of audio processing needs, in addition to guitar and bass applications. Using both effects together, along with a little creativity, you can generate a wide range of electronic effects, taking a guitar (or other signal) through some pretty exotic timbral territory (see Web Clip 2).

Are the Ultron and Ultrem the ultimate autowah and tremolo stompboxes? I do wish for a power switch, though I suppose it would be unusual for a stompbox to have one. I also wish that adjusting the input gain didn't require opening the unit and messing with DIP switches. Those are relatively minor quibbles, though. The combination of exceptional real-time control flexibility, top-quality audio components, ergonomic design, and adjustable input level makes these devices if not the ultimate, then pretty darn close. EM WEB CLIPS

Babz is a composer, multi-instrumentalist, and music-technology writer in New York City.

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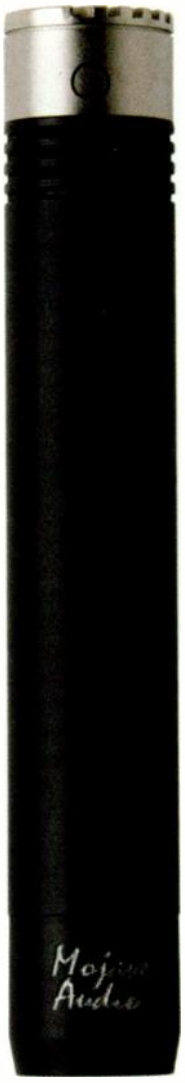
QUICK PICKS

MOJAVE AUDIO

MA-100

By Eli Crews

Mojave Audio, the company founded by David Royer to produce his condenser microphone designs, has a new mic on the scene. The MA-100 ($795) is a small-diaphragm tube mic that shares the black and silver color scheme of the company's large-diaphragm MA-200 (see the review online at www.emusician.com). Like its larger sibling, the MA-100 uses a military-grade JAN 5840 vacuum tube as well as a high-quality Jensen transformer, although the MA-100's transformer is in the power supply. Consequently, the power supply housing is much bigger than that of the MA-200—about the size of a small hardbound book.



The Mojave Audio MA-100 is an excellent, all-purpose small-diaphragm tube microphone.

The MA-100's accessories include an aluminum flight case, a foam windscreen, and a small clip (instead of a shockmount). But the true jewel in the box is an additional capsule, giving you the choice between cardioid and omnidirectional pickup patterns. The capsules screw easily onto the mic's body.

Present and Accounted For

My first test was to mic a full-range speaker playing program material in order to A/B the MA-100s against each other for consistency, as well as against the other small-diaphragm tube mics I own, two vintage Schoeps M 221Bs. My conclusion was that the Schoeps mics sounded more natural and closer to the original source, but the MA-100s sounded more exciting, with more presence and bite. The MA-100's frequency-response chart shows a significant bump around 6 kHz, which helps explain the perceived difference.

The MA-100's presence peak, in addition to its capacity to withstand high SPLs, makes it an excellent choice for a number of applications. When close-miking snare and toms (as recommended by Mojave Audio's president, Dusty Wakeman), as well as acoustic and electric guitars, the mic performed extraordinarily well. Using a pair of MA-100s as drum overheads, the full kit was well represented. Although the cymbals sometimes had a little more bite than I wanted, I got very good sounds with only a touch of subtractive EQ in the upper midrange. On a jazz drum set, the cymbals sounded better with the omni capsules, which smoothed out the ping of the ride while picking up the rest of the kit in a very natural way.

I also used the MA-100s on strings, horns, vocals, and even as room mics. In every case, they sounded remarkably good: bright without being harsh or lacking depth and body. Consequently, I've been reaching for them instead of the M 221Bs when I want a little extra edge on my sound.

Buzz Kill

The only problem I experienced with the MA-100s was a buzz in the audio signal: on one of the mics it was very slight, but on the other it was quite pronounced. Mojave sent me a replacement pair right away, and I had a similar problem with them (one slight buzz and one major buzz), although the pair had tested fine in the company's facility.

It turns out that the power in my building, although set up with an isolated ground for "tech power," was interacting unsympathetically with the MA-100s' power supplies. The solution was simply to use ground lifts on the supplies' power cables to eliminate any ground loops. This has not been an issue with any of my other tube mics (including my pair of MA-200s).

Mojave assured me that it's looking into why this happens with these power supplies in certain electrical situations. Sticking ground lifts on the power cables is a pretty easy fix, but it would be better to not have this issue at all.

Quality and Value

Power supply issues notwithstanding, I have fallen in love with the MA-100 over the past few months. It sounds great on a multitude of sources, and having two polar patterns to choose from expands its usefulness further.

I highly recommend auditioning this mic if you are in the market for a small-diaphragm condenser or two. At $1,600 a pair, the MA-100 is not what I'd call entry level. But I consider that a fair price for what it has to offer.

Value (1 through 5): 4
Mojave Audio
www.mojaveaudio.com

FABFILTER

Timeless 1.0 (Mac/Win)

By Len Sasso

Software designers Floris Klinkert and Frederik Slijkerman are known for the great-sounding filters in their filter effects Volcano and Simplon and their virtual instruments One and Twin. Timeless ($129) brings stereo, cross-feedback delay to the mix and incorporates the latest ergonomic advances in FabFilter's graphical user interface. The drag-and-drop modulation routing scheme from Twin is of particular note, because Timeless is all about modulation. The plug-in comes in RTAS, VST, and AU format for the Mac and RTAS and VST format for the PC.

One of the best things about Timeless is that it's easy to grasp. You start with a pair of delay lines, feed those into a pair of filters, and throw in some modulation, and you're done. That makes it a snap to dial in your favorite delay setups and combine them with FabFilter's filtering technology. If you've worked with any of FabFilter's other plug-ins, a few minutes looking over the Timeless

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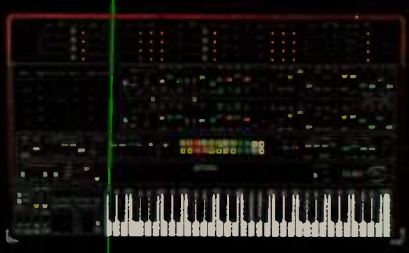

The V Collection Includes software recreations of : Moog Modular, Prophet 5, Jupiter- 8, Arp 2600, Minimoog, CS-80, Prophet VS

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control panel tells you pretty much all you need to know.

Wait a Second

Timeless's two delays are arranged in parallel at the beginning of the signal path, after an input-level control. One delay processes the left stereo channel, while the other processes the right. Direct and Cross feedback knobs set the amount of each delay's output that is fed back to itself and to the other delay. You can invert either feedback signal. Each delay also has a control for panning its output between the right and left channels.

You can sync delay times to host tempo or leave them free-running. In a nice touch, when delay time is tempo synced, you select a note value—quarter note, for example—and then use the Delay Time knob to adjust that value continuously between one-half and twice the note length. You can, therefore, smoothly modulate the delay time even for tempo-synced delays.

The delays have two modes of operation: Tape and Stretch. In Tape mode, changing the delay time produces a momentary change in pitch (think Echoplex). In Stretch mode, there is no pitch change.

You can lock the delay times and the feedback settings together for the two delays so that the affected parameters have the same setting for each. Alternatively, if you adjust any knob for one delay while holding the Alt key (Option on the Mac), the corresponding knob on the other delay will be adjusted relatively.

A Little Less

Timeless's two resonant multimode stereo filters hold no big surprises for anyone who has used FabFilter products. They have lowpass, bandpass, and highpass modes with 12, 24, and 48 dB slope. You get the same six filter characters as in Twin—FabFilter One, Gentle, Raw, Tube, Metal, and Easy Going—and they sound significantly different from one another. FabFilter One, Gentle, and Easy Going have a smooth, transparent sound, whereas Raw, Tube, and Metal are each edgy in their own distinctive way (see **Web Clip 1**).

In Timeless, the filters process the delay outputs, and three signal configurations are available: Serial (both delays feed the first filter followed by the second), Parallel (both delays feed both filters), and Per Channel (each delay feeds its own filter). The filters feed Timeless's output section, which consists of separate wet and dry amount and pan knobs. You can use the Dry Enable button to switch the dry signal off, and that setting is not saved with presets. That comes in handy for auditioning presets when Timeless is used as a send effect and you don't want any dry signal from the send bus.

Drag-and-drop modulation assignment makes modulation setup a snap in Timeless.

And for Motion

Timeless has two tempo-syncable multiwaveform LFOs and an ADSR envelope generator for modulation, and any Timeless knob is a potential target. All built-in modulation is routed through Modulation Slots, of which there are 24, accessed in groups of 8.

You can use Slot drop-down menus to assign sources and targets, but it's much easier to grab the handle associated with any source and drag-and-drop it to the target knob. That sets up the next unused Slot with the modulation routing, and you then use Slot controls for amount and polarity. In addition to the LFOs and ADSR, modulation handles are provided for MIDI Aftertouch, Velocity, Mod Wheel, Pitch Bend, and Note Number (keyboard tracking). Full-featured MIDI Learn is also supported for automation and control-surface mapping.

Timeless is a timely addition to the FabFilter product line, and it comes with a generous collection of presets ranging from classic to arcane effects (see **Web Clip 2**). Modulating the delay lines opens a host of processes not possible with filters alone. You can grab demos of all FabFilter products in a single download, and bundle prices are available for various combinations. The demos are definitely worth a trip to the FabFilter Web site.

EM WEB CLIPS

Value (1 through 5): 4
FabFilter
www.fabfilter.com

SAMSON

VR88

By Karen Stackpole

We've all been taught that applying phantom power to a ribbon mic is a big mistake. Recently, though, R&D has been putting new twists on old designs and combining technologies to throw some of our old notions for a loop. A good example of the innovations hitting the market is Samson's VR88 ($749.95), an accessibly priced active velocity ribbon microphone. It has an active output stage and requires a dose of phantom power to operate. According to Samson Technologies, the VR88 is the result of more than five years of engineering research and product development, and it's a limited production model crafted by hand.

Out of the Box

I received a pair of VR88s, each neatly packaged in its own lightweight aluminum carrying case fitted with form-cut foam to accommodate the microphone, a yokemount, a shockmount, and a

right-angle XLR mic cable. That's a nice selection of accessories for such an affordable mic. Ribbon mics of yore could hold down a stack of paper in a hurricane, but at 1.1 pounds, this streamlined newcomer is relatively light. Even with its 2-micron-thick corrugated-aluminum-foil ribbon, the mic is quite hardy, boasting an SPL handling capability of up to 138 dB.

The mic's housing is about 7 inches long and 1.25 inches deep. The flattened design makes it easy to handle, and it won't roll off the table if you put it down for a moment. The XLR connection at

The VR88 has a bidirectional figure-8 pickup pattern, like most ribbon mics, and its stated frequency response is between 30 Hz and 16 kHz. The phantom-powered output stage was incorporated to give the mic a hotter output. Most ribbon mics have a very low output, making it difficult to get decent gain from preamps not optimized for use with ribbon mics. The output stage makes the mic suitable for use with any mic preamp. The VR88 is touted as good for vocals and acoustic instruments and tough enough to use on drums and elec-

don't want to break the bank.

Value (1 through 5): 4
Samson Technologies
www.samsontech.com

EIOSIS

ELS Vocoder 1.2 (Mac/Win)

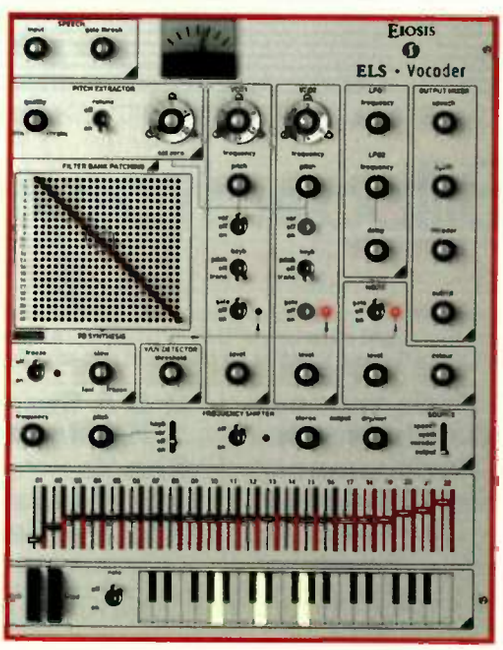
By Len Sasso

ELS Vocoder ($279) from Eiosis (formerly Eliosound) is about as classic as it gets

QUICK PICKS

as that of a frequency-shifter effect at the vocoder's output. That's handy when the modulator is a monophonic vocal or instrumental (see **Web Clip 1**). As with most vocoders, a voiced/unvoiced (V/UV) detector is provided to toggle the carrier between the synthesizer and a noise generator, and you can apply the pitch follower to the whole signal or only the voiced part. You can also quantize the pitch follower's output to semitones.

Most notably, the analysis filter bank, which you can configure with 20 or 22 bands, has a full-fledged mapping matrix. With that you can map any combination of analysis bands to control each processing band. Furthermore, each processing band



In ELS Vocoder, basic controls for all modules are accessible on a single control panel. The wedge at the bottom right of each module reveals a panel of expert controls.

has its own level meter and fader.

You can assign the MIDI Sustain pedal (CC 64) as well as either of the vocoder's two LFOs to freeze the analysis in its current state. You can apply freezing separately to the band levels, the V/UV status, and the pitch follower. Freezing by an LFO synced to host tempo adds an interesting rhythmic twist to vocoding.

Synthesize That

The built-in synth has two multiwaveform oscillators, and each has a static resonant lowpass or shelving filter. You can frequency and pulse-width modulate each oscillator with either of the two LFOs, the other oscillator, or noise. The oscillators are tunable in octaves, semitones, and cents; they can track the pitch follower; and they can be always on or gated by the V/UV detector. The lack of an envelope for the filter is a slight drawback of this otherwise capable synth.

The synth responds to incoming MIDI, and a 3-octave keyboard is provided for triggering the synth with the mouse. (Oddly, the keyboard range cannot be shifted.) In a nice touch, right-clicking or Shift-clicking on a note holds it on until clicked again. You can configure the keyboard as 16-voice polyphonic; monophonic; or 2-, 4-, or 8-voice detuned unison. Held notes are saved with vocoder presets, allowing you to save patches along with chords to play them.

Endgame

A frequency shifter (a single-sideband ring modulator) is available at the end of the vocoder's signal path, and you can feed it the full output or just the modulator, carrier, or vocoded signal. You can set output levels and pan positions independently for the dry signal, the lower sidebands, and the upper sidebands using the frequency shifter's back panel. It's unusual to find a frequency shifter on any synth, and being able to apply it to the incoming audio or the built-in synth is a welcome addition to this plug-in's bag of tricks.

ELS Vocoder comes with several hundred factory presets spread across 19 banks. That's plenty to get you started, and you can, of course, create your own presets and banks. Separate A and B memory slots allow you to compare presets quickly, which is handy when you're making incremental modifications. You can download a feature-limited demo from the Eiosis Web site, and it's worth your time to give it a spin. EM

Value (1 through 5): 4
Eiosis
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The mic's housing is about 7 inches long and 1.25 inches deep. The flattened design makes it easy to handle, and it won't roll off the table if you put it down for a moment. The XLR connection at the mic's base is threaded on the outside with a knurled collar that can be screwed off, so the mic can be placed in either the yokemount or the shockmount and secured by screwing the collar back on.

Both the specially designed yokemount and shockmount are made of die-cast aluminum with a custom mic holster made of molded plastic lining the inside with insulating foam rubber. The swivel stand adapter features a comfortable ergonomic knob to tighten the mounts to a stand, though the knob is made of plastic. Both mounts were easy to use and held the mic securely.

The Samson VR88 is a relatively affordable, handcrafted velocity ribbon mic that can handle most anything you throw at it.

The VR88 has a bidirectional figure-8 pickup pattern, like most ribbon mics, and its stated frequency response is between 30 Hz and 16 kHz. The phantom-powered output stage was incorporated to give the mic a hotter output. Most ribbon mics have a very low output, making it difficult to get decent gain from preamps not optimized for use with ribbon mics. The output stage makes the mic suitable for use with any mic preamp. The VR88 is touted as good for vocals and acoustic instruments and tough enough to use on drums and electric guitar, so I put the VR88 through its paces to see what it could deliver.

Testing—1, 2, 3

I used the VR88s as drum overheads and on cello, female vocals, baritone saxophone, percussion, and acoustic and electric guitar. In all applications, the mics performed admirably, and their sonic characteristics were pretty well matched. The active output gave them about 8 dB to 10 dB hotter output than some other ribbon mics I've used, which was a plus. It was nice not to have to crank up the gain and risk added noise.

Compared with the typically crisp and detailed response of a good condenser, the VR88s sounded a bit veiled and dark on drum overheads, but the sound was smooth and had decent definition—definitely usable. It captured plenty of resonance on steel-string acoustic guitar, but it was a bit dark for my taste and lacked sparkle.

Baritone sax sounded warm and smooth through the VR88. The mic's characteristics were also well suited for cello, sounding rich and full. A female vocalist with a smoky voice was well represented by the mic's velvety response. While not as present as a Royer R-121 on an electric guitar cabinet, it still held its own and captured great tone.

The VR88 exhibits the classic ribbon-mic response, sounding warm and smooth. Though it's a bit on the dark side when miking drums from above and on steel-string guitar, it's a real winner on cello, vocals, and saxophone. The new Samson VR88 is worthy of consideration if you want to expand your sonic palette with ribbon technology but you don't want to break the bank.

Value (1 through 5): 4
Samson Technologies
www.samsontech.com

EIOSIS

ELS Vocoder 1.2 (Mac/Win)

By Len Sasso

ELS Vocoder ($279) from Eiosis (formerly Eliosound) is about as classic as it gets when it comes to software vocoder emulations. It starts with a bank of bandpass filters coupled with envelope followers that analyze incoming audio (called the modulator) for the level of each frequency band. It uses this analysis to set the band levels of another bank of bandpass filters, which are used to process a different source (called the carrier). The modulator is usually speech, but any rhythmic, harmonically rich sound works well. A built-in 2-oscillator synth is provided for the carrier. The built-in synth is basic, but with an upcoming sidechain feature (which should be available by the time you read this), you can use anything in your audio library or arsenal of soft synths for the carrier.

ELS Vocoder comes as an AU, VST, and RTAS plug-in for both the Mac and PC. I tested it in a variety of host sequencers on a dual 2 GHz Power Mac G5. It is a great-sounding and versatile plug-in, but it is CPU intensive. A single instance using the built-in synth as the carrier (the least CPU-intensive option) easily pushed the CPU meter past 40 percent in Ableton Live 6, Steinberg Cubase 4, and Apple Logic Pro 7.

Analyze This

The vocoder's analysis section offers a few pleasant surprises. An attack-release envelope follower lets you gate the modulator with separate opening and closing thresholds. That's especially useful when using drum and percussion tracks as the modulator.

An optional pitch follower will analyze the pitch of the modulator, and you can use its output to modulate the frequency of the synth's oscillators and LFOs as well

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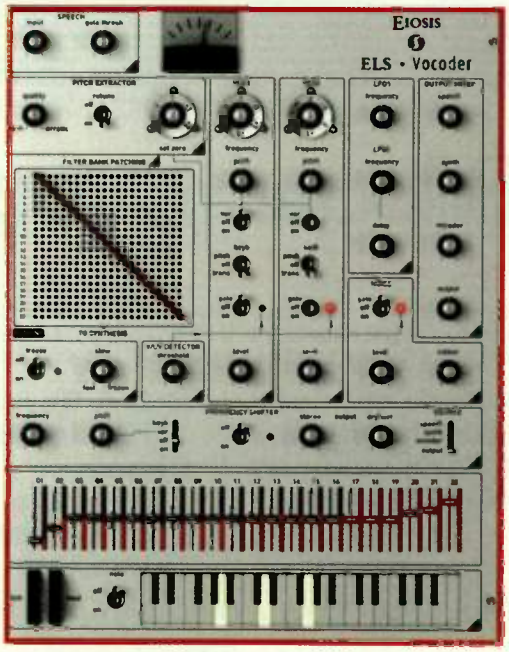

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Synthesize That

The built-in synth has two multiwaveform oscillators, and each has a static resonant lowpass or shelving filter. You can frequency and pulse-width modulate each oscillator with either of the two LFOs, the other oscillator, or noise. The oscillators are tunable in octaves, semitones, and cents; they can track the pitch follower; and they can be always on or gated by the V/UV detector. The lack of an envelope for the filter is a slight drawback of this otherwise capable synth.

The synth responds to incoming MIDI, and a 3-octave keyboard is provided for triggering the synth with the mouse. (Oddly, the keyboard range cannot be shifted.) In a nice touch, right-clicking or Shift-clicking on a note holds it on until clicked again. You can configure the keyboard as 16-voice polyphonic; monophonic; or 2-, 4-, or 8-voice detuned unison. Held notes are saved with vocoder presets, allowing you to save patches along with chords to play them.

Endgame

A frequency shifter (a single-sideband ring modulator) is available at the end of the vocoder's signal path, and you can feed it the full output or just the modulator, carrier, or vocoded signal. You can set output levels and pan positions independently for the dry signal, the lower sidebands, and the upper sidebands using the frequency shifter's back panel. It's unusual to find a frequency shifter on any synth, and being able to apply it to the incoming audio or the built-in synth is a welcome addition to this plug-in's bag of tricks.

ELS Vocoder comes with several hundred factory presets spread across 19 banks. That's plenty to get you started, and you can, of course, create your own presets and banks. Separate A and B memory slots allow you to compare presets quickly, which is handy when you're making incremental modifications. You can download a feature-limited demo from the Eiosis Web site, and it's worth your time to give it a spin. EM

EM WEB CLIPS

Value (1 through 5): 4
Eiosis
www.eiosis.com

SOFT SYNTHS vs. HARD SYNTHS

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Plug-ins give you endless virtual instruments and effects, but they punish your CPU, and playing live with a computer is risky.

Hardware synths and modules give you fast-access presets for playing live, but you're stuck with one set of sounds.

Why choose? Receptor is a reliable hardware unit that lets you store, mix and play plug-ins with or without a connected computer.

Instant access for live sound

Plug in a MIDI or USB keyboard, or plug a guitar into the instrument input, connect Receptor to a mixer or amplifier and you're good to go. Use Receptor's 16-channel mixer to sculpt your plug-ins into patches you can recall instantly using the front panel controls.

More processing power for your studio

Connect to your computer's DAW via MIDI, analog, S/PDIF, and/or ADAT, and your plug-ins are available on 10 outputs and 4 inputs. Or use UniWire™ to get 16 channels of I/O using a single Ethernet connection, which lets you open plug-ins right inside your DAW. Either way, your computer breathes easy while Receptor does the heavy lifting.

Plays pro plug-ins like Ivory, Atmosphere, EWQLSO Platinum, and Komplete 4*

Every Receptor comes with $400 worth of plug-ins free, and you can also order your Receptor loaded with Native Instruments Komplete 4. Receptor runs plug-ins from Applied Acoustics, Spectrasonics, Synthogy, East West, Toontrack, IK Multimedia, FXpansion, Big Fish Audio, and Garritan* to name a few.

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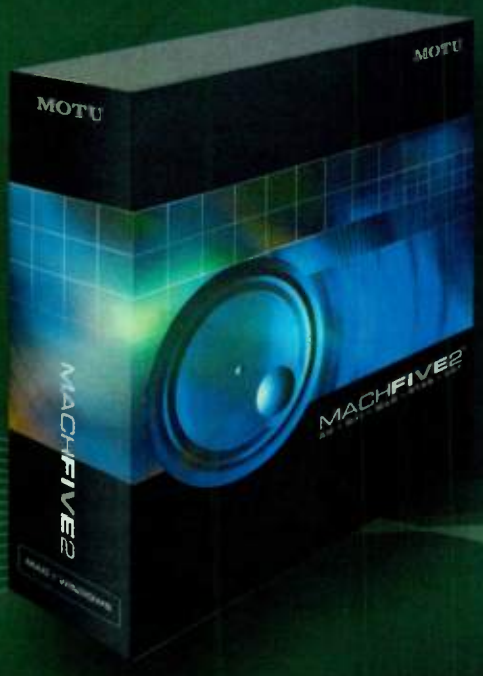
The Sleek and Powerful MOTU Studio

Run Digital Performer, MachFive 2 and your entire MOTU desktop studio on a new power-packed affordable Intel iMac, side by side with the very best names in audio recording software and hardware.

The all-new, all-in-wonderful iMac

The all-new, all-in-one Apple iMac packs a complete, high-performance computer into a beautifully thin design. Available in 20- and 24-inch widescreen models, iMac is striking to behold, with its anodized aluminum frame and glass cover. The glossy widescreen display makes Digital Performer, MachFive 2 and your other music production software tools come alive with rich color. Now iMac offers greater performance than ever thanks to faster dual-core Intel processors and a speedier frontside bus. iMac features the Intel Core 2 Duo processor at speeds up to 2.4GHz. And for maximum power, you can upgrade the 24-inch iMac to an Intel Core 2 Extreme processor at 2.8GHz. With their 64-bit processor architecture, the Intel Core 2 processors can manipulate data and execute instructions in large chunks to deliver advanced computational power to iMac. That adds up to exceptional speed and agility, improved performance you'll notice when working with large multi-track Digital Performer sessions running all of your favorite plug-ins and virtual instruments. Augmenting the advanced Core 2 processors is an equally advanced system architecture, which includes an 800MHz system bus and 4MB of shared L2 cache. With such substantial L2 cache, data instructions can be kept close to the two processor cores, greatly increasing performance and allowing the entire system to work more efficiently. Your MOTU desktop studio is now more stylish, powerful and affordable than ever.



32GB of instruments and loops

MOTU MachFive 2 is a universal sampler that includes a whopping 32GB of instrument sounds and loops to get you laying down tracks in no time. Got libraries of your own? MachFive 2 reads all major sampler library and audio file formats directly, with no time-consuming importing or conversions — even advanced Giga libraries with multi-layer "dimension" presets. MachFive 2 delivers tons of advanced features, including unlimited parts, pop-out full-screen editors, Loop Lab beat-slice editing, integrated synthesis and much more.

Waves native processing

Waves has long been synonymous with quality plug-ins, and the Waves Platinum Bundle contains a huge range of top-quality Waves processing for your DP5 studio. The Platinum Bundle now includes Waves Tune LT, L3 Ultramaximizer, and IR-L Convolution Reverb as well as all the plug-ins found in the Waves Gold and Masters bundles. Platinum brings extraordinary signal processing power to DP5, for tracking, mixing, mastering, and sound design. From dynamics processing, equalization, and reverb to pitch correction, spatial imaging, and beyond, Waves Platinum Bundle is a must-have for every MOTU studio.

The MOTU experts at Sweetwater can build the perfect MOTU studio for you. We'll help you select the right components, and we can even install, configure and test the entire system for you. Why shop anywhere else?

Legendary grooves & drumkits

Submersible Music Drumcore delivers access to twelve world-class drummers, such as Terry Bozzio, Matt Sorum, Sly Dunbar and Zoro. The perfect tool for songwriters and composers who need drums quickly in a multitude of styles. Features include an Audio and MIDI librarian (quickly find that perfect groove), "GrooveSets" (for easier songwriting), MIDI instrument (loaded with each drummers' MIDI drumkits) and the "Gabrielizer" (groove generator). Simply drag-and-drop from Drumcore to your Digital Performer 5 tracks or Clippings window.

Multi-pattern condenser mic

The flagship of the KSM line — and the new must-have mic for any multitrack MOTU studio, the Shure KSM 44 multi-pattern condenser microphone has an extended frequency response specially tailored for critical studio vocal tracking. Its ultra-thin, externally biased, large dual diaphragms provide precise articulation; extremely low self-noise (7 dBA) ensures that the KSM44 captures only the sound of the performance. Inside, the three polar patterns — Cardioid, Omnidirectional and Bidirectional — offer greater flexibility and uniformity in a wide variety of critical recording applications. Class A, transformerless preamplifier circuitry provides extremely fast transient response and no crossover distortion for improved linearity across the full frequency range.

Komplete control

For DP5 users who want it all: Reaktor5, Kontakt2, Guitar Rig 2 software, Absynth4, Battery3, FM6, B4II, Akoustik Piano, Elektrik Piano, Vokator, Spektral Delay and Pro-53 in a unified interface with hands-on control — Native Instruments KOMPLETE 4 and KORE put an infinite universe of sound at your finger tips. Every preset included in NI KOMPLETE 4, more than 8,500 in total, has been preconfigured and categorized in KORE with searchable musical attributes and hands-on controller assignments. This seamless integration of software and hardware turns Native Instrument's award winning synthesizers and samplers into tactile instruments. If you purchase today, you'll receive the KORE 2 software update FREE when it ships later this year!

Vintage EQ/Compression

The Focusrite Liquid Mix is another Focusrite first and a true one-of-a-kind. Based on the award-winning Liquid Technology, the Liquid Mix provides 32 channels of simultaneous DSP powered vintage and modern EQ and Compression plug-ins into your DP5 mix without affecting your host computer's CPU. 40 classic compressors and 20 timeless EQs are included. Each EQ and Compressor emulation is painstakingly created though a process called Dynamic Convolution which is a huge step beyond modeling. Through Dynamic Convolution, every frequency at every possible combination of settings is perfectly sampled. That means that you get the true sound and feel of a vintage or modern classic. Tens of thousands of dollars of gear is now right at your fingertips! Think how great your Digital Performer tracks will sound with the Liquid Mix.

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Music Instruments & Pro Audio

The Sleek and Powerful MOTU Studio

Keystation Pro 88 features

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- 24 MIDI-assignable rotary controllers
- 22 MIDI-assignable buttons
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88 Weighted Hammer-Action Keys

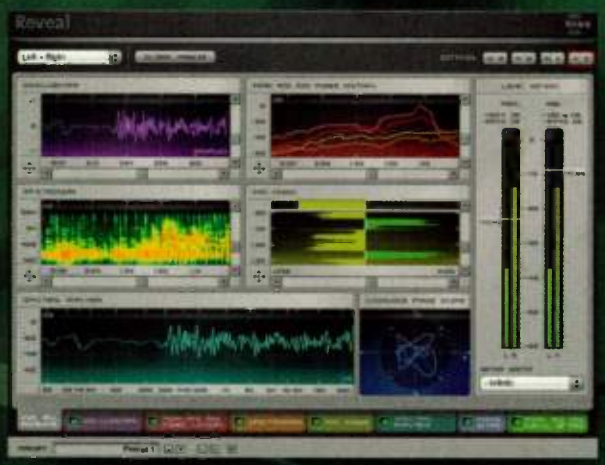
Digital Performer 5 gives you unprecedented control over your MIDI and audio tracks. And what better way to take advantage of this hands-on control than the M-Audio Keystation Pro 88. Regardless of whether you're a seasoned pro or just ready to take your music to the next level, these hammer action keys are so expressive that you just won't want to stop playing! The Pro 88 could easily become your sole keyboard in the studio or onstage. Yet the Keystation Pro 88 weighs only 47 lbs. — half of most weighted-action keyboards! And the Pro 88's extensive features make it the most comprehensive and competitive product of its kind!

Control room monitoring

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative music production process.

Mastering at its finest

BIAS Master Perfection Suite – Six stunning new audio plug-ins at a breakthrough price. Repli-Q provides unparalleled spectral matching for improving an improperly equalized track, mastering for different delivery formats, or applying the EQ of one mix or track to another. Sqweez-3 and Sqweez-5, two powerful multi-band compressor/limiter/expander plug-ins, feature advanced new linear phase equalization filters. PitchCraft offers super natural pitch correction/transposition and manipulation with minimal artifacts. Reveal integrates seven analysis tools in a single plug-in — Oscilloscope, Peak & RMS Power History, Spectrogram, Pan Power, Spectral Analysis, Lissajous Phase Scope and Peak & RMS Level Meters. SuperFreq offers ultimate 4,6, 8 and 10-band parametric EQ. GateEx provides high-quality gating and downward expansion. Available separately, or with Peak Pro XT, the Master Perfection Suite is an indispensable addition to your Digital Performer desktop studio.



Professional pad controller

The Akai Professional MPD24 is the velocity sensitive pad controller for musicians and DJs working with sampled sounds. The MPD24 features 16 MPC-style velocity and pressure sensitive pads plus transport controls for interfacing with Digital Performer and your virtual instruments. You get Akai's exclusive feel: either MPC 16 Levels or Full Level features for ultimate pad control. Now add four selectable pad banks totaling 64 pads, six assignable faders and eight assignable and 360 degree knobs for transmitting MIDI Control Change data. Included editor/librarian software gives you complete, intuitive programming and control for DP5 all of your other software titles. The MPD24 provides unprecedented creative freedom for manipulating sampled material.

The MOTU experts at Sweetwater can build your customized MOTU studio for you. We'll help you select the right components, and we can even install, configure and test the entire system for you. Why shop anywhere else?

New Mackie monitoring

The high-resolution Mackie HR824mk2 active studio reference monitor sounds as smooth as it looks. The new Zero Edge Baffle™ minimizes diffraction for a crystal clear image of your Digital Performer mix, and controls sound waves for wide, even dispersion. The rear-firing, mass-loaded passive radiator ensures tight, detailed bass extension, down to 35Hz. And thanks to remarkably linear frequency response, you always get accurate mix translation. Acoustic Space, LF roll-off and HF controls let you tailor the sound to suit your MOTU studio space—and your taste. With all this and more, the HR824mk2 turns your Digital Performer desktop studio's sweet spot into a full-on sweet zone.

New hands-on control for DP5

The new Mackie Control Universal Pro control surface gives you ultimate hands-on control of your Digital Performer desktop studio. Nine motorized, touch-sensitive Penny + Giles faders, eight V-Pots and more than 50 master buttons let you tweak parameters to your heart's content. Unlike generic MIDI controllers, the MCU Pro employs a sophisticated communication protocol that delivers ultra-precise control, makes setup easy - no mapping required - and enables you to see your mix in action with real-time visual feedback via the huge backlit LCD and eight LED rings. Apply the custom overlay for Digital Performer for dedicated labeling of DP-specific functions. The MCU Pro is the ultimate way to mix in DP5!

Purified power

To get the most out of your MOTU studio gear, you need the cleanest power possible. The negative effects of poorly supplied wall outlet AC power on your gear can be dramatic, without your ever knowing how good your gear can really sound with properly supplied power. Furman Sound introduces the all-new Power Factor Pro with its ground-breaking Clear Tone Technology™, which actually lowers the AC line impedance supplied by your wall outlet while storing energy for peak current demands — over 45 amps of instantaneous current reserve. Additionally, Linear Filtering Technology™ (LiFT) dramatically lowers AC line noise to unprecedented levels in the critical audio frequency band. Also included are Furman's unique Series Multi-Stage Protection Plus (SMP+) surge protection and automatic Extreme Voltage Shutdown (EVS), which protect you from damaging voltage spikes or sustained voltage overload. Equipped with the same LiFT and SMP+ features, plus EVS Extreme, the Furman Sound IT-20 II ultra-low noise balanced isolation power conditioner is designed for the most critical, ultra-low noise installations. Delivering an astonishing 80dB of common noise reduction from 20Hz-20kHz, you're assured the lowest possible noise floor for all the gear in your MOTU studio. The IT-20 II's toroid transformer design assures a contained magnetic field for complete isolation from sensitive studio components nearby. The ultimate in purified power.

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Music Instruments & Pro Audio

Music Without Borders

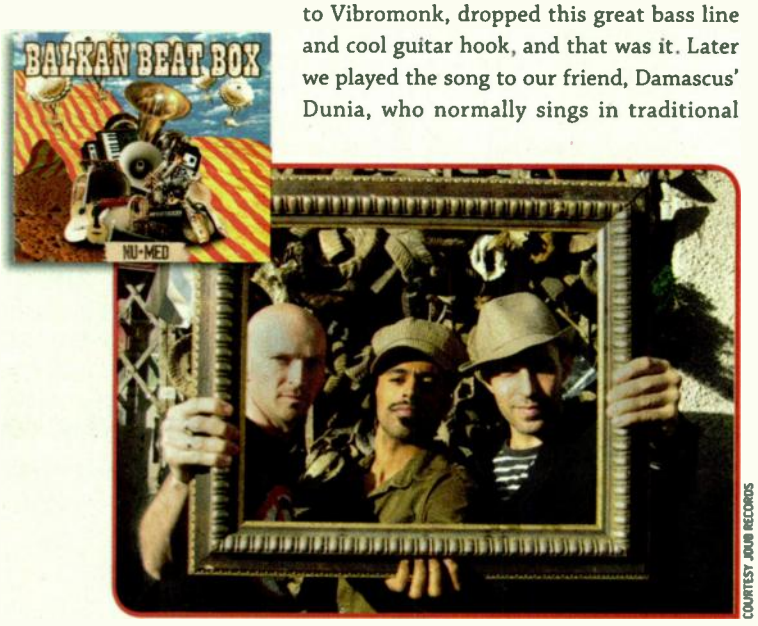
By Debbie Galante Block

Balkan Beat Box mixes styles and studio methods.

The music on Balkan Beat Box's (BBB) latest CD, *Nu Med* (JDub, 2007), is an original blend of Middle Eastern folk influences and electronica. The band describes its mix of organic and electronic elements as "musical nomadism." BBB cofounder and saxophonist Ori Kaplan says the new CD is a musical vision of what the music from the Mediterranean would sound like if borders were removed. "Musical connections are made by BBB that politics often keep separate," Kaplan says. Kaplan and Tamir Muskat anchor the BBB lineup, which also includes vocalist Tomer Yosef and a host of guest artists.

Nomadic is also an apt description of the recording process for *Nu Med*. Although BBB usually works at its own studio, called Vibromonk, in the Williamsburg section of Brooklyn, much of this CD was recorded with friends over the last two years as the band toured through places like Israel and Morocco as well as European destinations such as Bulgaria. "We traveled to record our favorite guitar player in Israel in a friend's living room, for example," says Kaplan. "Some vocals came from London via the Internet, and some vocals were recorded in the Middle East."

No formula exists for how BBB puts a song together, says Muskat. "The song 'Habibi Min Zaman' started as a drum beat with nothing on it. Then Itamar Ziegler came to Vibromonk, dropped this great bass line and cool guitar hook, and that was it. Later we played the song to our friend, Damascus' Dunia, who normally sings in traditional Egyptian style. He loved the beat. Then we sat down in the room and the song came together in a few hours."



COURTESY JDUB RECORDS

Nu Med/Balkan Beat Box (from left): Ori Kaplan, Tomer Yosef, Tamir Muskat.

"Joro Boro" evolved in the opposite way. Dessislava Stefanova, of the London Bulgarian Choir, recorded the vocals a cappella and emailed his track from London. "Everything else was built around those vocals," Muskat explains.

The CD features an interesting collection of instruments and sounds. "We used tones from electronic machines, such as old Korg and Univox drum machines, Moog synthesizers, and 1980s electronic drum pads," says Muskat. "We also used a lot of samples I collected from old recordings, or loops I prepared during the year."

When the band works on a song, they make a lot of mixing decisions as they go. This time "since we were traveling and recording anything we wanted without a board, we mixed the whole album on the computer first with plug-ins and analog stuff on the inserts that were recorded back to the computer. When we were done mixing, we were super happy with how the album sounded. I never thought I'd be able to sonically enjoy an all-in-the-computer mix," says Muskat. Still, he couldn't rest without mixing everything again through the board with all the "good analog gear" at Vibromonk.

"The second time, we kept the balance between the tracks, the EQs, and the effects the same as the first mix, but just went through the analog chain, preamp, compressors, etc. Those mixes took first place, no question about it; they were much larger and warmer," Muskat says.

For mixing, BBB used an MCI analog board and outboard compressors from Daking and Empirical Labs (the Distressor). The band also loves using analog effects such as plate reverbs and old Mica-Tone and Farfisa effects.

Muskat says the band won't change its freestyle method of recording. "It keeps our minds open, and you won't believe how many beautiful surprises we run into because we work this way." EM

RIFFS

Balkan Beat Box

Home base: Brooklyn, NY

Console used: MCI analog board

Dynamic duo: Empirical Labs and Daking compressors

Web site: www.balkanbeatbox.com

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