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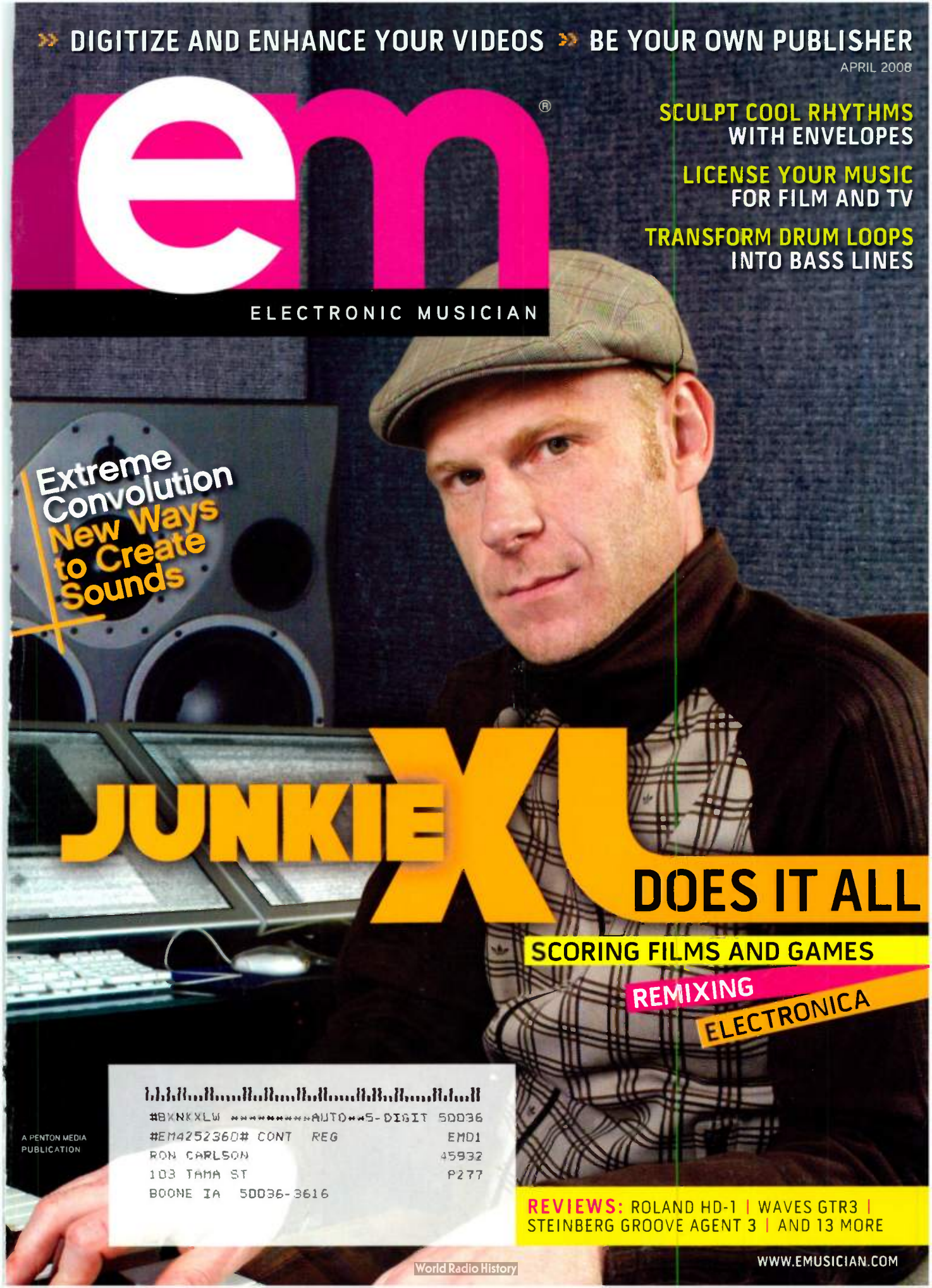

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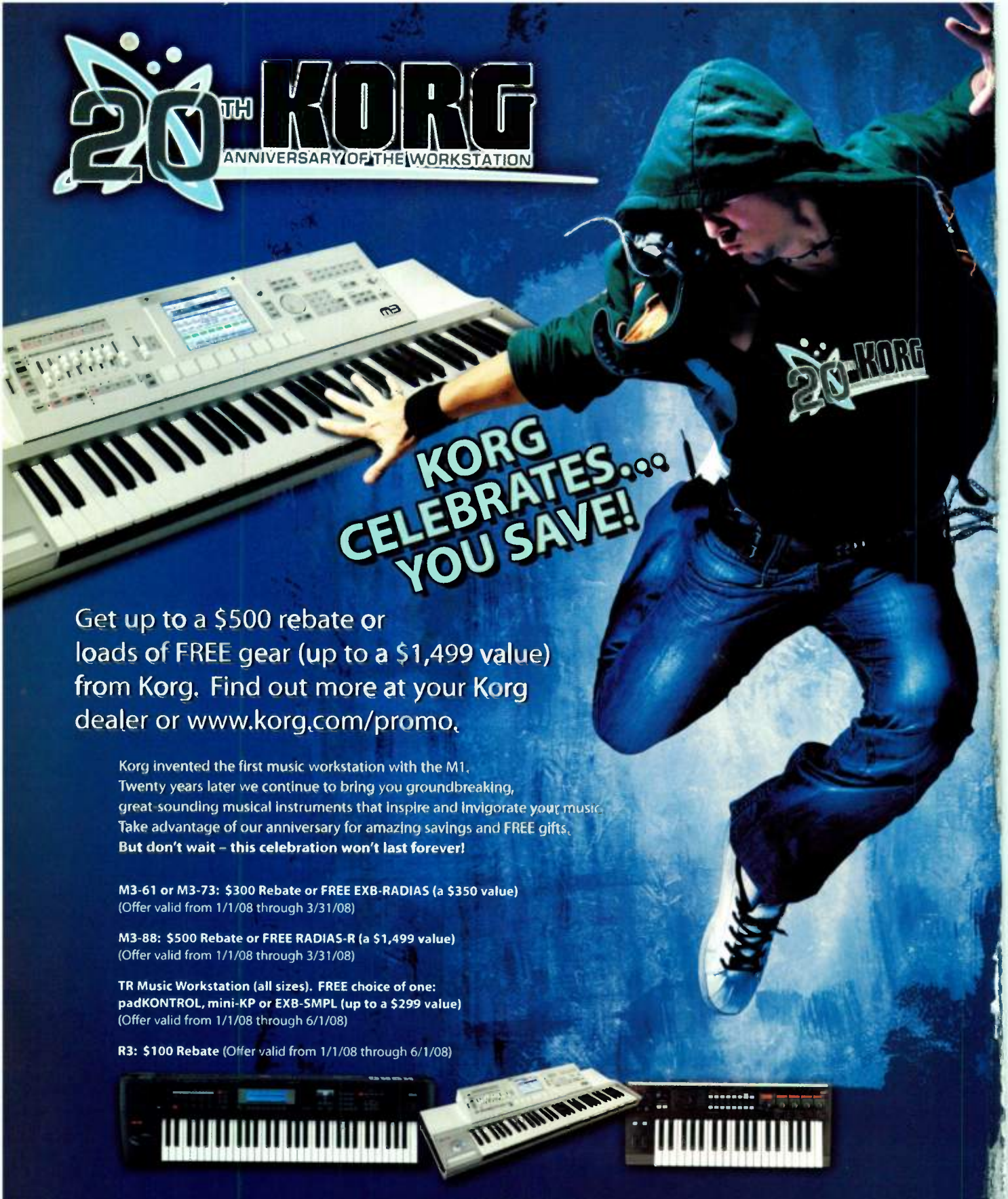

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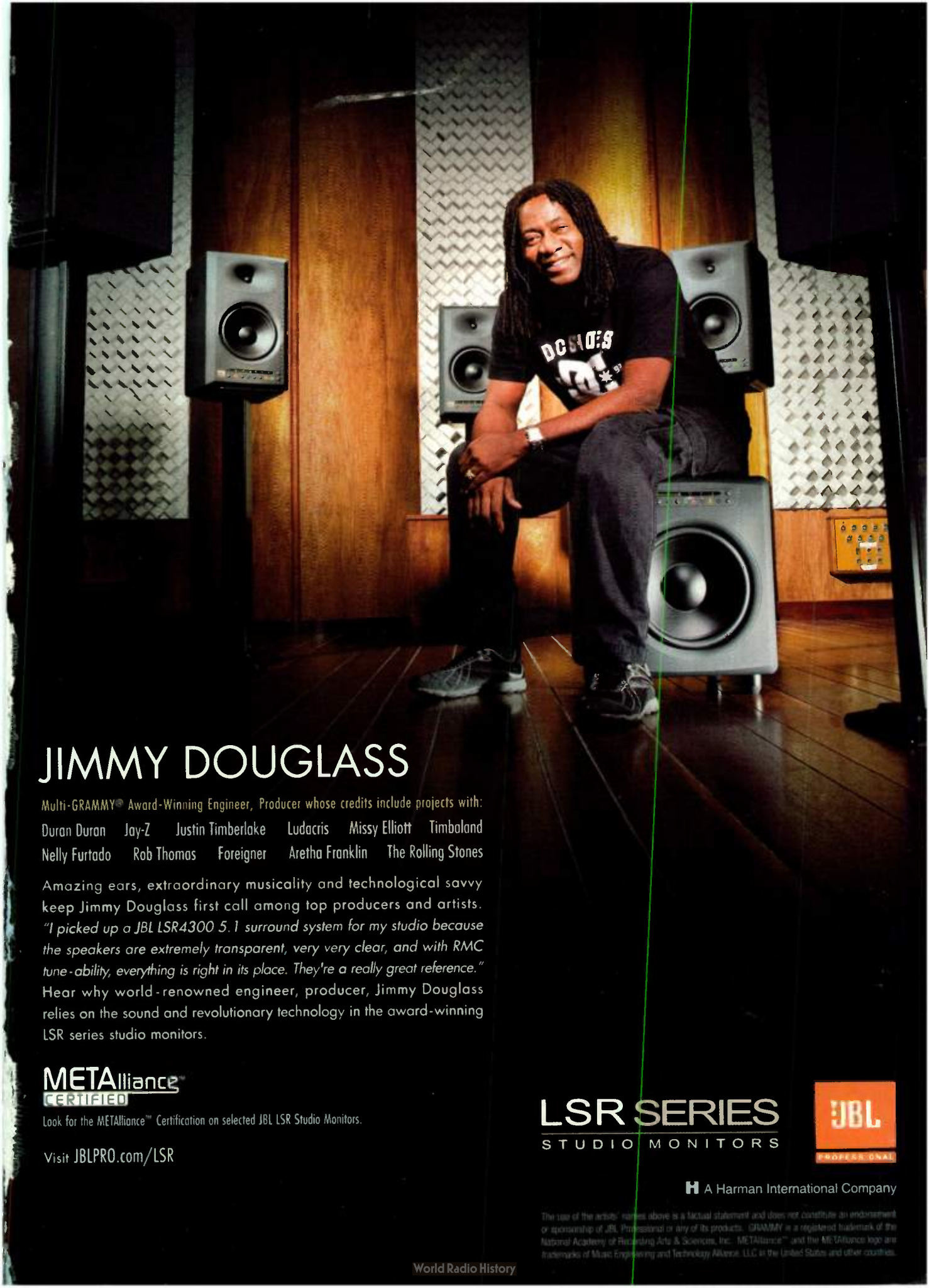

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ELECTRONIC MUSICIAN

APRIL 2008 VOL. 24, NO. 4

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JASON VAUGHN

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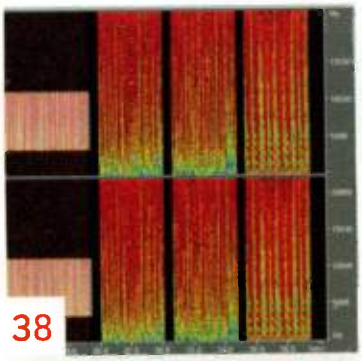
STUDIO JUNKIE

Tom Holkenborg (aka Junkie XL) talks about the different approaches he takes for composing and recording music for video games, movies, and his own projects. He also discusses his multicomputer studio, remixing, and how the L.A. film-music scene works.

By Mike Levine



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MASTER CLASS: AUDIO ALCHEMY

Explore the various ways convolution can be used, and learn how to get more out of it than simply re-creating rooms.

By Dennis Miller

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SELF-CONTROL

We explain how to start and oversee day-to-day operations for your own music-publishing company, from PRO affiliation, inventory, and demo production to preparing licenses, registering copyrights, pitching songs, and more.

By Michael Cooper

DEPARTMENTS

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- >> Steinberg **Groove Agent 3.01 (Mac/Win)** virtual drummer
- >> Avant Electronics **Avantone CK-40** stereo microphone
- >> XLN Audio **Addictive Drums (Mac/Win)** virtual drummer
- >> Chandler Limited **Germanium Compressor** analog compressor
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Lydia Kavina: Fundamentals of Theremin Technique

Lydia Kavina was Leon Theremin's last protégé and is currently the world's leading theremin virtuoso. In this tutorial from the archives, Kavina describes her performance techniques, including arm, hand, and finger position for accurate pitch and volume control. **emusician.com/tutorials/swimming_air**

By Olivia Mattis

PARKER PETERS

ANDRE M. NEWTAN

EM Spotlight

Alex Lifeson: Rush Limbo

So what are you doing for *your* summer vacation? When supergroup Rush took an extended holiday after a grueling world tour in 1994, guitarist Alex Lifeson went home to cut a solo album, *Victor* (Atlantic Records, 1996). **emusician.com/em_spotlight**

By Greg Pedersen

EM Cast

Our twice-monthly Podcast features an interview with mix engineer Charles Dye, who analyzes an example of his work and talks about Turn Me Up (turnmeup.org), his organization dedicated to putting dynamics back into popular music. And check out the interview with Shavo, the bass player from System of a Down, about his new Web site for musicians, ursession.com. **emusician.com/podcasts**

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— Trevor Peters, Galloway, OH

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Strange Influences

Often a person working outside the limelight of notoriety creates something influential. Composer, educator, and author Allen Strange (1943–2008), who died on February 20 at the age of 64 after a bout with cancer, was one such person.

Strange's innocently titled book *Electronic Music: Systems, Techniques, and Controls* (Wm. C. Brown Co., 1972) was published at a time when sophisticated electronic music-making instruments were finally becoming affordable to everyday musicians. It not only introduced in layman's terms the components and techniques used in creating and processing sound, but, just as importantly, suggested the vast possibilities that electronic instruments offered. For example, his "Miscellaneous Equipment" chapter included a description of a multihead tape-loop board, while his "Live Electronic Music" ("Performance Electronics" and "Scores for Analysis and Performance" in later editions) chapter provided installation and patching diagrams from actual compositions that combined photocells, contact mics, tape decks, and synth modules. The possibilities seemed endless, and they were as exciting then as circuit bending and game-controller hacking is to many musicians today.

JANE RICHEY

Although Strange noted that he would not "attempt an aesthetic appreciation of electronic music" in his book, it was clear to many readers that his approach had West Coast leanings, exemplified by the instruments created by Donald Buchla, which eschewed conventional keyboards as controllers and went beyond the basic VCO-VCF-VCA paradigm of sound building.

In one chapter, he said, "In the early days of electronic music, composers were limited to very basic classical techniques that were quite time consuming, and often the end results did not justify the means involved. Because of limited techniques, and in part due to interest in serial and pointillistic techniques, the composer was still quite concerned with conventional composition processes, and the nature of the sounds were many times of a secondary concern." Strange advocated a holistic approach to electronic music that wasn't precious or created by men in lab coats—a direction that went against the dominant paradigm of *serious* music in the late '60s and early '70s.

In fact, Strange's own prolific output often had a refreshing element of humor and playfulness. He was just as likely to offer up an homage to Johnny Cash or Bob Wills and His Texas Playboys as he was to Bach. (One of his last works, *Brandy*, was based on the *Brandenburg Concertos*.)

Strange was a founding member of the Electric Weasel Ensemble with Buchla, utilizing several Music Easels in live performance. He even wrote the instrument's dense but intriguing manual, *Programming and Meta-Programming the Electro-Organism*. With his wife, violinist Patricia Strange, he cofounded the live-electronics quartet Biome, which used the band members' biorhythms to control EMS Synthi AKS synthesizers. Together they authored *The Contemporary Violin: Extended Performance Techniques* (Scarecrow Press, 2001), designed to shake up string players in much the same way that *Electronic Music* did composers. Beyond the influence of his books, Strange inspired generations of musicians while on the faculty of San Jose State University for 32 years.

Throughout his life, Strange had an independent, maverick spirit that was evident in his work. "There's a quote in his obituary that, when asked as a child what he wanted to be when he grew up, he answered, 'A criminal,'" Patricia Strange recalls. "His music is very much that of being the outlaw, of doing something totally different."

Although I never met Allen Strange, I've felt his influence throughout my career and have met many others who feel the same way. My hope is that his legacy will continue to inspire artists to take chances, to go beyond the conventional, and to learn all there is to know about the music technology we work with.

Gino Robair
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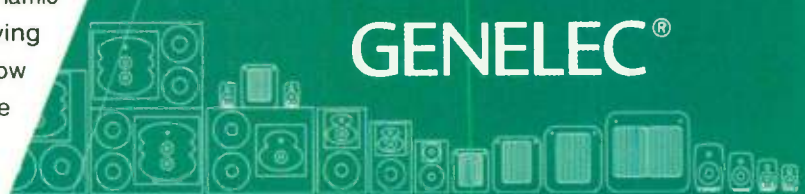

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LETTERS

OverClocked ReMix

Hi, everyone at EM! I saw your review of OverClocked ReMix in the latest issue ("Front Panel," March) and was quite pleased. I have been a member of the site since 2003, which is also when I started producing music. I subscribed to EM last September and have been very satisfied with the content in the magazine. From coverage of indie artists to what's going on in the video-game industry, EM does a great job covering the world of electronic music. Keep up the great work!

—NICOLE ADAMS, VIA MYSPACE

EFFECTIVE PERSPECTIVE

I have been an *Electronic Musician* reader for years and have consistently benefited from the myriad topics covered. But I have to say that Nick Peck's article "Fun and Games" in the December 2007 issue, which summarizes the variety of challenges one faces getting into and working within the game-audio industry, takes the cake for its depth of vision, effective perspective, and expansive coverage beyond even the finest of EM offerings.

I am currently forming my own music and sound-design company, and as part of my business model I have specifically excluded games from my service offerings, the reason being that I had read enough (probably in EM) to believe that it is not yet the right niche for me. While Nick's superior advice reconfirmed that I made the right decision, it has actually motivated me to begin taking the necessary steps toward proving my ability to compete in such an exciting yet highly competitive industry. Not only is that article a must-read for anyone who has ever considered getting into game composition or sound design, but it should be used as a model for the type, level, breadth, and honed focus of information to be provided in any other similar articles. I look forward to the day when I, too, can provide fellow musicians with this level of insight and professional wisdom.

TIM RUMBAUGH
DEEP PLAY MUSIC DESIGNERS
VIA EMAIL

Author Nick Peck replies: Thanks, Tim. It's feedback like this that makes all the hard work worthwhile. I'm delighted that the article was of use to you and hopefully to many other folks who are trying to find their way in the audio arts.

HERE'S TO HIGH RES

This is in response to Mr. Robair's and Mr. Kunkel's editorials (see the March 2008 issue). It's good to finally see a serious effort to push lo-fi recordings to the sidelines. This has been a topic of discussion for five-plus years now. Music is infinitely more important than the technology it's recorded on. It must always come first. The METAlliance sounds like a THX-like oversight committee that will hold the industry to a higher standard. Bravo, guys.

I have been a vocal advocate for hi-res CDs and downloads since 2001, when I started archiving my music into my computer. I rip my CDs as WAV files for several reasons:

No loss in sound quality. Digital compression is bad.

No DRMs. I decide when, where, and how often I listen to my music.

No platform-specific incompatibilities. Ogg Vorbis on an iPod? I think not.

500 to 750 GB hard drives are cheap. No need to fear the 30 MB music file anymore.

Apple and iTunes have been instrumental in the acceptance of poor sound quality from today's music. 128 Kbps AAC files sound bad. 256 Kbps files are better but still lacking. iPod earbuds are atrocious, but people won't justify buying $150 to $300 earbuds when the player costs roughly the same price. This is ironic given how many Macs are used to create this music in the first place.

I am confident that in the second decade of the 21st century, we will be able to download WAV files and HD content in a timely manner. The bandwidth made available by the DTV transition will help here.

Thanks for highlighting this encouraging movement.

R. EPPS
VIA EMAIL

KURZWEIL SP2X AS A CONTROLLER?

EM reviewer Nick Peck stated that the Kurzweil SP2X can double as the primary controller in a modest live rig (see the February 2008 issue). This was the very reason I bought the keyboard. Let me warn prospective buyers: as great as this keyboard sounds

WE WELCOME YOUR FEEDBACK

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NEXT MONTH IN EM

MAY 2008

COVER STORY
Large-Diaphragm Mics Under $100

In this roundup, we compare five inexpensive condenser mics for sound quality and craftsmanship.

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COLUMNS
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Industry Insider: Q&A: Derek Sivers

CD Baby founder and president Derek Sivers offers his opinions on the best ways for independent musicians to gain recognition and success.

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LETTERS

and feels, it's no controller. As confirmed by Jean Robert Bellefeuille from Kurzweil user support, there is currently no way to control the MIDI destination (whether to an internal or external destination) of each zone independently. The keyboard is either globally Local Off or On. What this means to players is that if they are triggering sounds on an external module, there is no way to silence the internal sound on the SP2X. An internal sound is always assigned to each zone. Jean Robert says that this functionality may be added in a future system update. But until such time that this rudimentary control feature is added, controller status for the SP2X is revoked.

DANIEL A WEISS
VIA EMAIL

Author Nick Peck replies: Daniel, thanks for your insightful comment on this unfortunate oversight in the SP2X's design. I have independently confirmed your finding. While the inability to set internal zones to no program causes no real problem when using it as a controller in the studio, it certainly is a drawback in a live setting if you are not using it to layer external sounds with the internal ones. Fortunately, there are two work-arounds, though they may not be as sophisticated as we might like. The first, as you pointed out, would be to disable local MIDI control. The second is to simply lower the master volume fader on the keyboard. This will silence the SP2X, albeit globally, but will not affect the volume of external MIDI devices.

EM'S MAKEOVER—ATTRACTIVE OR ABOMINABLE?

I love the new look of EM. The larger graphics make it easy to get a good look at the new equipment. As a longtime subscriber, I especially love the downloadable version of the magazine. Not only can I now read it on my computer or take it with me on my laptop, but I won't have to store it on my bookcase forever. I have hundreds of issues occupying my bookcases that I just can't part with. This way, when I get enough issues, I can copy them to CD or DVD and responsibly recycle the paper issues without worrying about being able to go back to an old issue. Maybe you could make some back issues available for download, too! Thanks for leading the way.

DAVE WHITE
MARLBORO, NEW YORK

After receiving the February 2008 issue, I reached the conclusion that it is not readable. Please remember that not all of us who read the magazine are twenty-somethings with perfect eyesight. The very tiny font is not readable, even in good light. Please reverse the size of the type and the spacing between lines and you'll get the same amount of copy in, but one would actually be able to read it. The current font/leading combination requires so much concentration to read that the concept of what is written is lost.

I value the information EM has each month, but I'm not about to bring out a magnifying glass to read it.

TIMOTHY RUF
MILWAUKEE

BRUTAL KUDOS

I want to thank EM for the article "Metalocalypse Now" (February 2008). I noticed that EM felt the need to explain the Dethklok cover, but it needed no such introduction. I was only recently exposed to the work of Brendon Small, and I for one am blown away. He has demonstrated beyond a shadow of a doubt the sonic carnage one person and a computer can unleash, not to mention a superb command over original humor. I, too, am a one-man band, so I find his labor nothing short of inspirational. My earliest awareness of electronic music included Mannheim Steamroller and other instrumentalists of that era. Depeche Mode and various new-wave bands ensured my survival during high school. As my tastes get heavier with age (atypical, I know), I find myself innately challenged to coax a decidedly organic and often aggressive sound from my Mac—so far, so good. My next single, *Coma*, will indeed be brutal.

Thank you for aiming a technical spotlight at the musical marvel known as Dethklok. For the record, I listen to and create music in multiple genres, some of which are quite relaxed and serene. I am by no means a metal aficionado; I just know good music when I hear it and a forward-thinking magazine when I read it.

ALIEN IMPLANT
VIA EMAIL

> The very tiny font is not readable.

[ERROR LOG]

January 2008, "Toft Audio Designs ATB Series," p. 102. The Trident 80B did not have Q knobs on the low- and high-mid EQ bands. em

Reference monitors you can wear.

Introducing the

Studiophile Q40 Dynamic reference headphones

The M-Audio engineers who created the industry's best-selling studio monitors are advancing mobile monitoring with the new Studiophile Q40 reference headphones. Working closely with the LA recording community, M-Audio set out to design a headphone that delivers a true studio monitor experience. While some headphones have a hi-fi EQ curve, Studiophile Q40s deliver the flat frequency response and precise imaging needed for professional mixing and tracking. Their closed-cup, circum-aural design results in optimal isolation, making them perfect for recording in noisy environments. With 40mm Mylar drivers and fine-tuned enclosures, the Studiophile Q40 headphones provide what matters most–an accurate listening experience you can trust.

- **flat frequency response from 10Hz to 20kHz**
- **tight, percussive bass**
- **mids that don't fatigue**
- **crisp highs without the bite**
- **40mm Mylar drivers**
- **comfortable for hours of use**
- **sturdy and collapsible for travel**
- **detachable, replaceable cable**

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M-AUDIO

www.m-audio.com

20 years

Odd Instruments Inspire

FIG. 1: The Sea Organ is a man-made instrument played by the waves and enjoyed by all.

Have you ever made a noise unintentionally and found the sound so pleasing that you did it again for the sake of recording it? Or maybe you're a hard-core modifier and you enjoy fusing unexpected sound sources together. If that sounds like you, you'll get a kick out of Oddmusic.com, a Web site that features photo galleries and detailed descriptions of some of the coolest, most inventive instruments of our time. The Sea Organ (see **Fig. 1**), for example, is a 230-foot-long organ built into a stone staircase on the shores of Croatia. Located below its steps are 35 tubes with whistle openings that produce sounds when waves push air through the structure.

Oddmusic.com is also home to dozens of other musical creations, including the Serpentine Bassoon (a double-reed instrument that controls synths and effects machines) and the wind-operated Weather Harp. In addition to photos and educational text and diagrams, the Web site provides audio clips that demonstrate the sounds each instrument is capable of producing.

When it comes to making music, we all appreciate a well-designed plug-in and sample library. But sometimes it's more rewarding to create that special sound yourself.

OPTION-CLICK By David Battino

High-Quality Telephone Recordings

Incorporating long-distance interviews is a great way to add spice to your Podcasts, but telephone audio quality is horrendous. Here's an old radio trick you can use to get broadcast-quality sound. The technique is called a two-ender because each person speaks into his or her own phone as well as into a separate, high-quality mic and recorder. Afterward, the producer simply imports the two high-quality audio files into two adjacent tracks in a DAW and lines them up (precise sync usually isn't necessary). The resulting mix sounds as though the two speakers were in the same studio.

Of course, this technique requires the person at the other end to be audio savvy. But I heard a variant recently on NPR's *This American Life*, in which the interviewer sent an assistant to the scene with a digital recorder, and then directed the interview over the phone. You can hear this two-ender interview at http://tinyurl.com/2awtq7. (For more about David Battino's work, visit www.batmosphere.com.)

Another benefit of the two-ender technique is its support for multitrack productions. Here, my interviewee recorded his voice and his guitar to separate tracks. I then imported those tracks and my side of the conversation into Ableton Live and synced them up. Track 2 contains the telephone audio, which I recorded as a backup and sync reference; it will be muted.

Early Electronic Instruments

1876
Musical Telegraph
Elisha Gray's keyboard creates and transmits sound over a telegraph line using electromagnet-activated metal reeds

1901
Telharmonium
Thadeus Cahill's 200-ton instrument transmits music through New York telephone lines

1915
Audion Piano
Lee De Forest's keyboard uses one of his Audion triode tubes for each octave

THIS MONTH'S SOUNDTRACK

Those who embrace the DIY approach to music making will always hold a place in our hearts. These albums set the standard for the EM attitude.

1. Various Artists: *Wait til the Ice Melts*
2. Bob Siebert: *Rrrring Tones!*
3. Burnt Fur: *Unfurl*
4. Radio Massacre International: *Rain Falls in Grey*
5. Evol Intent: *Era of Diversion*

1.

ERNEST GONZALEZ

VARIOUS ARTISTS
Exponential Records has done it again, compiling some of Texas's best indie electronic, down-tempo, and glitch hop artists in one album.

BOB SIEBERT
Performed on a circuit-bent Casio SK-1, these works earned Siebert a place at the Spark Festival of Electronic Music.

BURNT FUR
More crunchy than furry, this debut album from the Boston-based band is a modern take on retro '80s dance and pop.

RADIO MASSACRE INTERNATIONAL
RMI's electronic/space rock hits the psychedelic note with conventional instruments and electronics.

EVOL INTENT
Drum n' bass beat mashing, and perspectives on global affairs come together to wake us up to the issues that truly matter.

JOWE ESGER BE

4.

JONAS LARA

5.

BOB SIEBERT

2.

BURNT FUR

3.

EM POLL

Which method do you find yields the best results? a) Mixing completely within your computer ("in the box"), b) mixing through a digital mixer, c) mixing through an analog mixer or summing box, d) I have no preference. Submit your answer to this and other polls at emusician.com. Your participation allows the editors of EM to learn more about you!

1916 **Optophonic Piano**
Vladimir Baranoff Rossine's instrument projects lighted patterns on the wall when pitches are selected on the keyboard

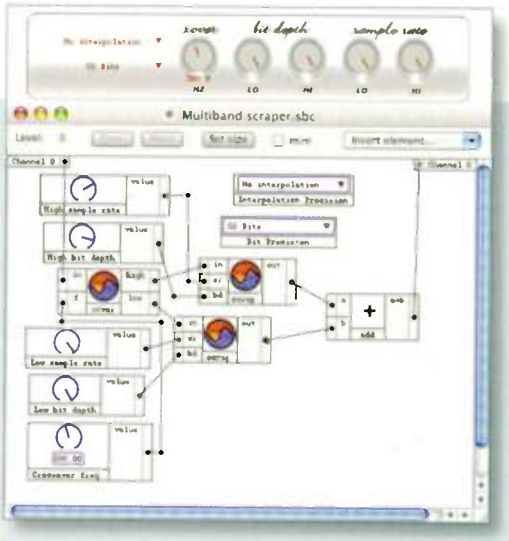
1919

Aetherphone (aka Theremin)
Invented by Leon Theremin, it's the first electronic instrument that can be played without being touched

1929

Trautonium
Friedrich Trautwein's invention is played by pressing a wire to a metal bar

Download of the Month



Antoine Missout

SonicBirth 1.3 (Mac)

By Len Sasso

SonicBirth (free) began as a student project at Ecole Polytechnique de Montréal by Antoine Missout. It is a tool for creating virtual instrument and effects plug-ins in AU and VST format and has grown steadily since its inception. SonicBirth is similar in spirit to Plogue Bidule, Native Instruments Reaktor, and Cycling '74 Max/MSP. The SonicBirth framework must be installed for the plug-ins to work, but the framework is completely transparent.

At the most rudimentary level, you start with basic modules, hook them together with virtual cables, design a graphical user interface (or not), and hope it all works. Like its brethren, SonicBirth comes with an assortment of prebuilt modules that are interesting in their own right. The best path into this jungle is to first play with these modules—then, if you want to get more involved, modify them or design some simple circuits of your own. At first try, it took me about an hour to build a basic ring modulator with a custom GUI.

SonicBirth user Ulrich Reuter's Buff Rice is among my favorites of the included plug-in effects. It comes without documentation, but it grabs chunks of incoming audio and lets you control various aspects of their playback, including pitch, repeat rate, and phase. Presets like Darth Asthma and Fragmentolettes point the way. The factory plug-in Multiband Scraper is another favorite. It splits incoming audio into two bands, then applies bit crushing and downsampling with different settings for each band. That's great, for example, for adding crunch to the high end of an electric piano while leaving the bass range untouched (see **Web Clip 1**). Whether you build your own or stick with the growing collection of factory plug-ins, SonicBirth is well worth downloading (http://sonicbirth.sourceforge.net).

ONLINE BONUS MATERIAL

Bands in Demand

Community seems to be the keyword in recent music-promotion trends. In an effort to keep music alive, many bands and artists are giving listeners the power to influence anything from the method of distribution to the price of a song or album. Now, through the online promotional service Eventful Demand (www.eventful.com), fans can help choose where their favorite artists will perform. The site generates grassroots-style competitions that allow the most loyal of fans to "demand" that popular performers visit their city.

Like most community sites, Eventful Demand has gained popularity primarily through word of mouth. People search for artists on the Web site, sign in to their geographic location (San Francisco, for example), and then demand that the artist stop there on the next tour. Serious fans then tell their friends to do the same by linking back to Eventful with customized widgets and links, thus increasing the likelihood of a much-desired band visiting their town.

Not all performers, however, may be aware of how popular they are, so in order to view the location and demographics for their demands, they need to sign up for the service (it's free). Signing up also allows artists to communicate with their fans and initiate competitions that encourage people to generate as many demands as possible. After a competition ends, the artist then performs in the cities with the highest number of demands. The service has already been used by bands such as Presidents of the United States of America and National Product.

Eventful Demand provides the ultimate marketing strategy—artists can hype up a new album, connect with people, and perform where they are most wanted. More important, the promotional service gives listeners a pivotal role in determining their favorite band's musical direction. em

Early Electronic Instruments

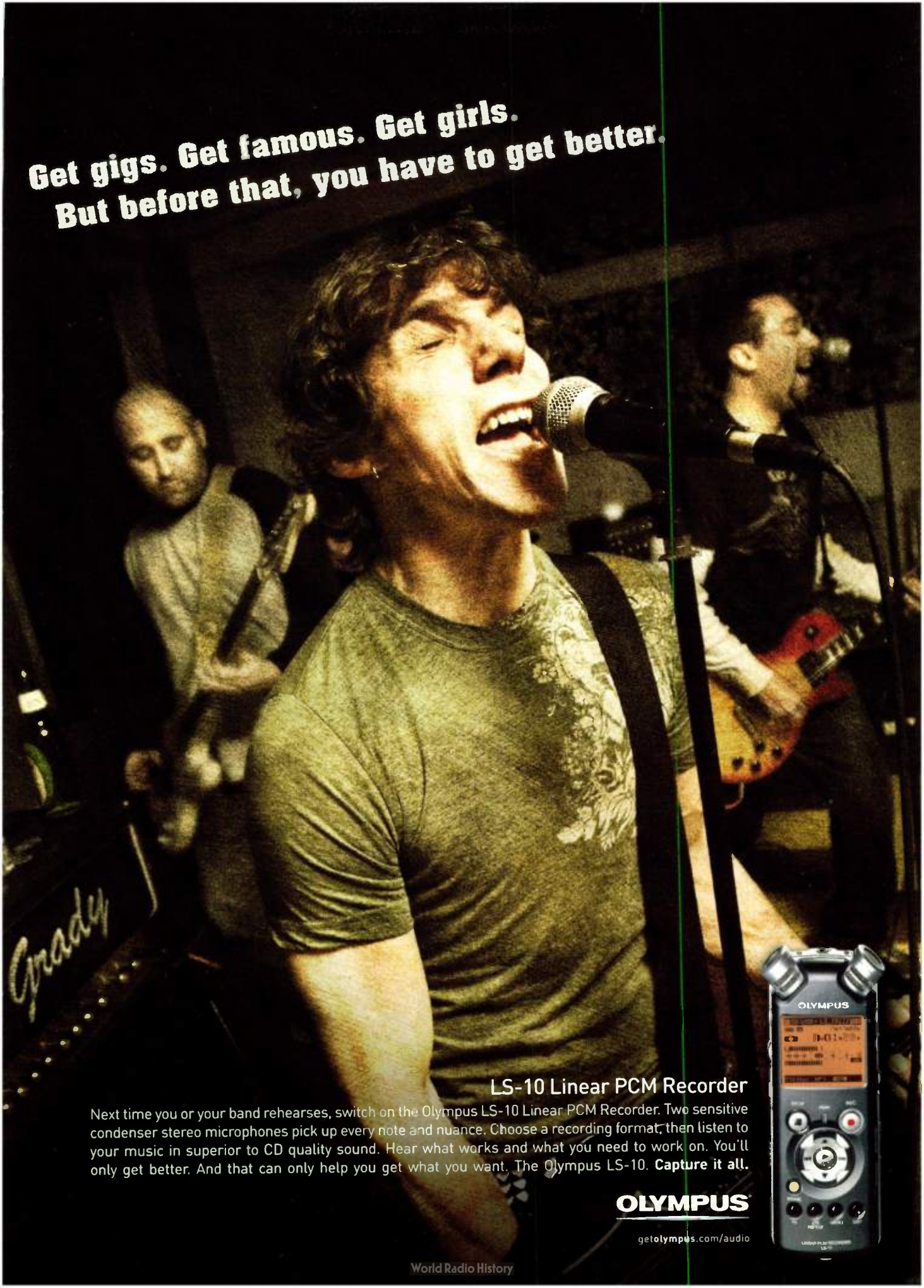
Ondes Martenot
With Maurice Martenot's device, one hand pulls a ring to change pitch, while the other hand and knees control various parameters

1930
Rhythmicon
Developed by Henry Cowell and Theremin to produce rhythms unplayable by humans

Theremin Cello
Tones are produced by pressing against a touch-sensitive fingerboard, while volume is controlled with a lever

1935
Hammond Electronic Organ

Laurens Hammond's keyboard instrument uses spinning tonewheels to produce sound



By Len Sasso

IK MULTIMEDIA STOMPIO-1

MORE ON THE FLOOR

IK Multimedia (www.ikmultimedia.com) has put the power of its acclaimed AmpliTube software at your feet. The StompIO-1 (Mac/Win, $899) bundles five software products—AmpliTube 2, Ampeg SVX, AmpliTube Jimi Hendrix, AmpliTube X-Gear, and, for registered AmpliTube 2 users, AmpliTube Metal—with rugged stompbox hardware to deliver trouble-free stage and studio real-time control. Using only your feet, you can create, save, and recall 4,000 presets in five play modes, and you get 150 models with a total of 74 effects. Ten metal switches, six assignable knobs, and two displays—and jacks for six expression pedals (one is included)—give you total control. You get a USB 2.0 audio interface with instrument input, balanced and unbalanced analog output, and S/PDIF digital output.

MACKIE 402-VLZ3

WHEN SPACE IS AN ISSUE

Mackie (www.mackie.com) has incorporated most of the features of its popular VLZ3 series of mixers in a small, portable unit. The 402-VLZ3 ($129.99 [MSRP]) is an ultracompact 4-channel mixer that's perfect for smaller sound-reinforcement and recording applications. Two phantom-powered mono channels with mic preamps, highpass filtering, and 2-band EQ accept balanced or unbalanced, mic, instrument, and line-level signals through XLR and TRS jacks. You also get a line-level stereo channel and assignable RCA tape inputs. LED metering, mic-preamp gain controls, and separate main, headphone, and tape outputs round out the 402-VLZ3 control panel. For eight channels in a compact package, check out the new 802-VLZ3.

MOTU 828MK3

AFFORDABLE FIREWIRE AUDIO

MOTU (www.motu.com) has raised the bar for its 828 series of FireWire audio interfaces without raising the price. The new 828mk3 (Mac/Win, $795) gives you an onboard, 32-bit floating-point digital mixer and features no-latency effects processing (with reverb, compression, and parametric EQ); 192 kHz operation, digitally controlled analog input trims; ADAT/Toslink optical I/O; and MIDI I/O. You get eight balanced TRS, 24-bit analog inputs and outputs, along with two additional mic/guitar preamp inputs and two XLR main outputs. The 828mk3 is equipped with Direct Digital Synthesis, a DSP-driven internal clock source, and two FireWire ports for daisy chaining. Cross-platform CueMix FX control software is included.

Prism Sound Orpheus

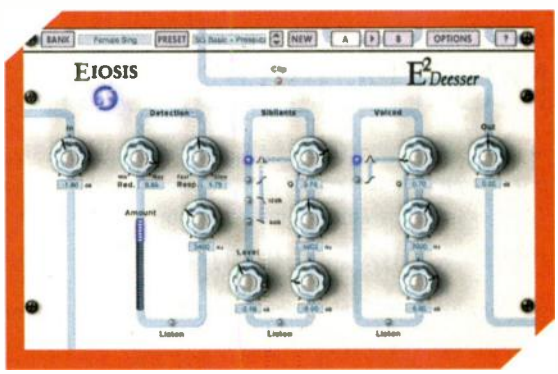
A NO-COMPROMISE AUDIO SOLUTION

Prism Sound (www.prismsound.com) has brought the quality of its renowned ADA-8XR A/D/A converters to a FireWire audio interface designed for the serious project studio. The Orpheus (Mac/Win, $4,995) delivers eight channels of analog I/O simultaneously with ten channels of digital I/O (ADAT and switchable S/PDIF or AES3) and a separate stereo headphone bus with sampling rates of up to 192 kHz. You get four balanced TRS line-level analog inputs, along with four balanced, autosensing mic/line inputs served by Neutrik combo jacks. Built-in mic preamps provide 65 dB of boost, and each input has Prism Sound Overkiller to prevent overloads before A/D conversion. Included software makes the Orpheus fully controllable from either a Mac or a PC.

EIOSIS E²DEESSER

GET THE ESS OUT

The E²Deesser (Mac, $222) is the first product in the Eiosis (www.eiosis.com) E²Processor series. This iLok-protected AU, RTAS, and TDM plug-in takes a different approach from other de-essing software by splitting the signal into voiced and unvoiced parts (like a vocoder), and then letting you EQ, mix, and apply effects to the parts independently. Sibilants make up the unvoiced part, and de-essing is accomplished by both gain reduction and filtering. Separate processing for the voiced part opens the way for a broad range of unusual effects.



AUDIO EASE SNAPPER

IT'S A SNAP

Audio Ease (www.audioease.com) has just released its long-awaited audio-auditioning utility, Snapper (Mac, $74). Snapper hides in the background until you select an audio file in the OS X Finder, when it pops up below the active Finder window displaying the selected file and, optionally, playing it. (You can also trigger playback manually by pressing the Spacebar.) Snapper's other tricks include varispeed playback; drag-and-drop file-segment extraction; file-format conversion, including MP3 encoding; and Spot-to-ProTools. Snapper supports most audio file formats, and a generous 100-day demo is available for download.

Get Smart

A K Peters *Audio Anecdotes III*

Audio Anecdotes III: Tools, Tips, and Techniques for Digital Audio ($79), edited by Ken Greenebaum and Ronen Barzel, continues publisher A K Peters's (www.akpeters.com) wide-ranging series of essays on audio-related topics. Its 27 essays touch on digital audio recording and mixing, sound and voice synthesis, signal processing with emphasis on speech, spatialization and synchronization, music composition, and psychoacoustics. Articles range from the highly technical "Modal Synthesis for Vibrating Objects" to the philosophical "Why the Audiocomputer Is Inevitable." The volume's contributors include experts from academic institutions and commercial firms.

Course Thompson PTR *Audio Post-Production in Your Project Studio*

Casey Kim's *Audio Post-Production in Your Project Studio* ($29.99 [MSRP]), from Course Thompson PTR (www.courseptr.com), devotes 464 pages to all aspects of post-production for the project studio. The material is not DAW specific and covers audio editing, mixing in a DAW, software-effects processing, monitoring, and mastering. The final chapter discusses how to run your project studio. Kim is a partner in postproduction studio Dark Red Audio (www.darkredaudio.com) and was a major contributor in the development of M-Audio *ProSessions* sample libraries.

HowAudio.com

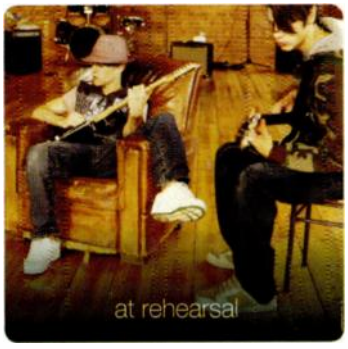
HowAudio.com (www.howaudio.com) is a new video-tutorial subscription service that has more than 1,000 videos that cover most major music applications (for example, Ableton Live, Propellerhead Reason, and Digidesign Pro Tools). Also covered are general topics such as "How to Maintain and Repair Your Guitar," "Demystifying B-3 Drawbars," and "Fundamentals of EQ." Monthly ($19) and yearly ($199) subscriptions give you full access to the tutorials. You can also buy individual tutorial DVDs. All tutorials are taught by working professionals; authors include Les Claypool (Pink Floyd, the Killers, Massive Attack), Carmen Rizzo (Seal, Coldplay, Alanis Morissette, Paul Oakenfold, BT), and PJ Morgan (Bobby Jones, Yolanda Adams, Al Green).

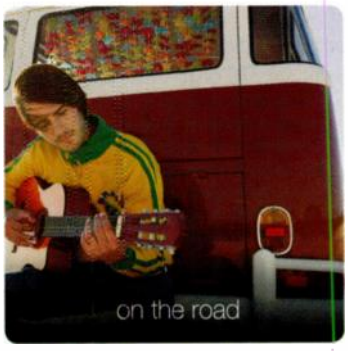
MU TECHNOLOGIES MU VOICE

INSTANT BACKGROUND VOCALS

Mu Voice (Mac/Win, $279 box, $239 download) is a VST-, AU-, and RTAS-format iLok-protected plug-in for generating background vocals from a solo lead vocal. Developer Mu Technologies' (www.mu-technologies.com) primary goal is to make the process as simple yet as flexible as possible. You start by creating voicing presets, which determine the voicing and character of the harmony parts. You then define a chord scheme, each of whose elements contains a chord definition, the voicing preset to use, and the position on the host song's timeline where it should occur. When you feed Mu Voice a lead part, either recorded or live, it follows the chord scheme to generate the background parts.

Professional recording—straight to your iPod





No matter where you make music, capture your performance perfectly with an iPod and the iMultiMix8 USB.

8 channels > 4 mic preamps > guitar inputs > 3 band EQ > USB recording > built-in effects

iMultiMix8 USB

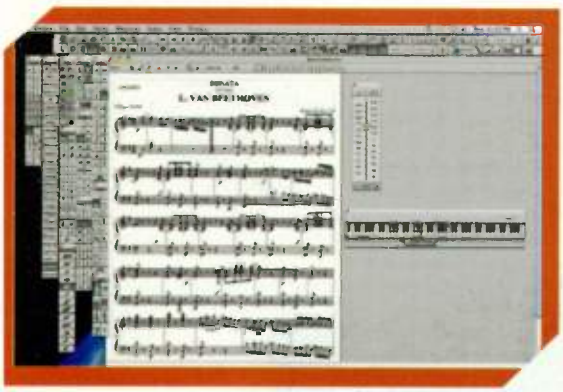
Records to any 5G iPod or 2G Nano

ALESIS

GVOX ENCORE 5.0

Gvox (www.gvox.com) has upgraded the Mac version of its Encore scoring software. Encore 5.0 ($399) is easier to use; offers more-flexible page layout, including guitar tablature; and features full MIDI playback with support for Garritan Personal Studio, DLS, and SoundFonts. A new Score Wizard and 30 score templates make it easy to get started, and, as a bonus, you get hundreds of preformatted scores of works by J. S. Bach. The Windows and Mac versions of Encore share the same format and are backward compatible, which, together with XML and MIDI file support, makes collaboration transparent.

A NOTABLE UPDATE



Sound Advice

PowerFX *World Loop Spice Rack* (Mac/Win, $79) is the latest in PowerFX's (www.powerfx.com) selection of downloadable sample CDs. The 598 MB compressed download expands to 890 MB of loops and riffs from around the world. Its 1,220 Acidized WAV files are split between melodic and rhythmic material. One of PowerFX's aims was to sample rare instruments—such as the Afghani Rebab, the Indian Sarod, and the Chinese Pipa—that have not been overdone in world collections. All loops were recorded by PowerFX especially for this collection and capture performances by indigenous masters of their instruments.

Sonic Reality (www.sonicreality.com), in collaboration with Allen Sides and Steven Miller, has just released *Ocean Way Drums* (Mac/Win, $895 Gold, $1,795 Platinum). Recorded at Sides's famed Ocean Way Studio, this library has 19 kits with 6 presets each in snare-on and snare-off versions. Each kit comes with Sonic Reality's proprietary I-Map drum mapping, and a new mapping for Roland V-Drum users. The Gold version is delivered on DVD and

contains 40 GB of 24-bit, 48 kHz samples. The Platinum version comes on a 10,000 rpm, 150 GB USB 2.0/FireWire 800 combo drive and contains 80 GB of 24-bit, 96 kHz samples.

SoundSnap (www.soundsnap.com) is a free Web 2.0 site for sharing original sound effects and loops. Founder Tasos Frantzolas says you won't find sounds from commercial libraries; everything here is royalty-free and created by members of the SoundSnap community. The site has more than 35,000 original sounds and has attracted notable contributors such as sound designers Paul Virostek and Rick Viers. The site's promotional partners include industry leaders Ableton, Digidesign, Native Instruments, and Propellerhead Software.

SOLID STATE LOGIC DUENDE MINI COMPACT DSP

Solid State Logic (www.solid-state-logic.com) has released a little brother to its Duende Classic DSP hardware. The Duende Mini (Mac/Win, $995) is a 1/3-rackspace desktop FireWire unit with 16 mono channels of plug-in processing at up to 96 kHz. You can upgrade it to 32 channels and run two Duende Minis on a single computer to have 64 channels. The unit ships with the SSL EQ and Dynamics Channel plug-in. Other available Duende Plug-ins include Stereo Bus Compressor, Drumstrip, X-EQ, and X-Comp. Duende Mini supports all major DAWs on the Mac and the PC.

Axel, BEHRINGER Germany Systems Engineer, was the proud father of the ground-breaking XENYX mic preamp.

Thomas, BEHRINGER Germany Technical Director drove the technology of the 2442FX to the limits of physics and then half a kilometer beyond.

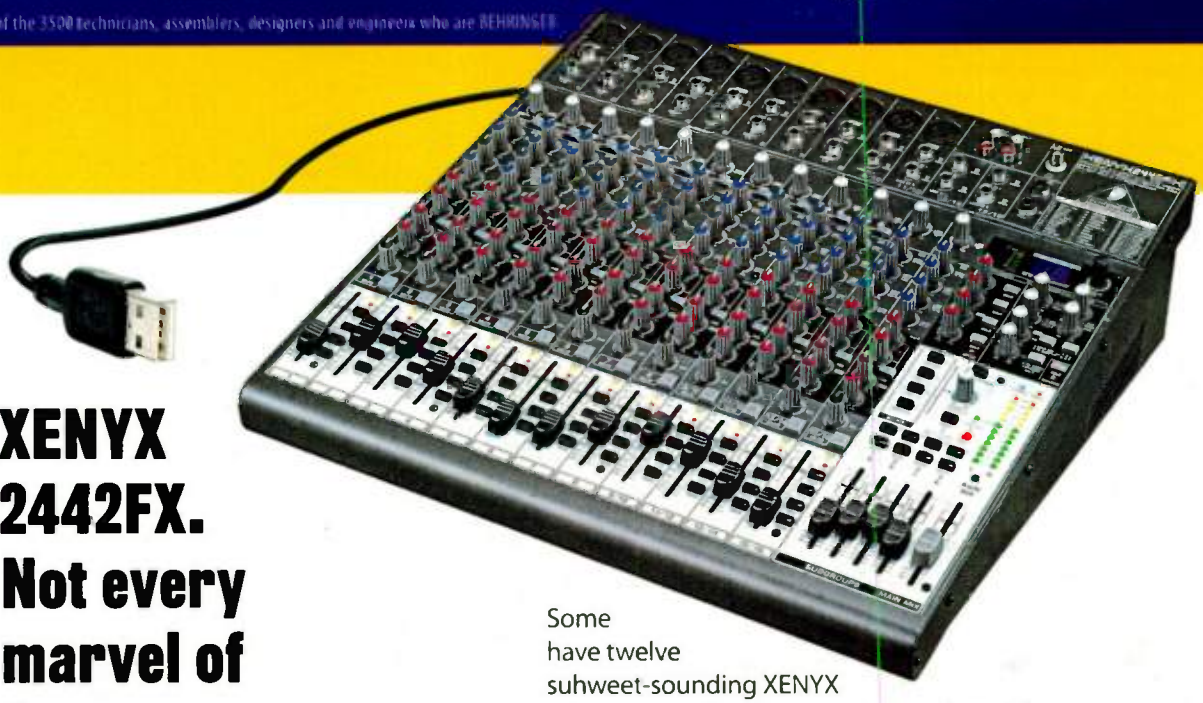
Thomas, BEHRINGER Germany Software Engineer, steered the USB interface and ASIO drivers for the 2442FX.

Shou Long helps assemble the XENYX 2442FX at BEHRINGER City, our highly advanced manufacturing complex. He may very well have built a 2442FX 4U!

Bing, one of our R&D Assistant Test Engineers, helped make sure that the prototype 2442FX complied with all internationally-recognized safety and RF emissions standards.

GEAR GRINDER **HARD DRIVER** **BIT MECHANIC** **PIT CREW MEMBER** **SAFETY FREAK**

These are some of the 3500 technicians, assemblers, designers and engineers who are BEHRINGER.



XENYX 2442FX. Not every marvel of German engineering has four wheels.

Some have twelve suhweet-sounding XENYX mic preamps, four buses and an outboard 2-in/2-out USB interface. But the Thomas's, Alex and the rest of the BEHRINGER Germany development team didn't stop there. They included four bands of mellow "British" EQ on each channel. And, so you don't have to spend more bucks on plug-ins or outboard processors, they added 100 24-bit effects including reverbs, delays, phasing and flanging.

Uli Behringer (center) isn't an easy person to please.

When everyone, including the hyper-picky Uli Behringer was satisfied, the XENYX 2442FX emigrated to BEHRINGER City where it underwent grueling stress, life cycle and safety testing...and then final meticulous production.

Learn more about the 2442FX and other XENYX mixers at your BEHRINGER dealer. And then get behind the knobs of a truly fine piece of high-performance German design.

There are 13 XENYX mixer models from which to choose. Two and four mix buses. Five to twenty-four inputs.

www.behringer.com

BEHRINGER

KAZUNARI TAJIMA AND CHARIS BRILEY

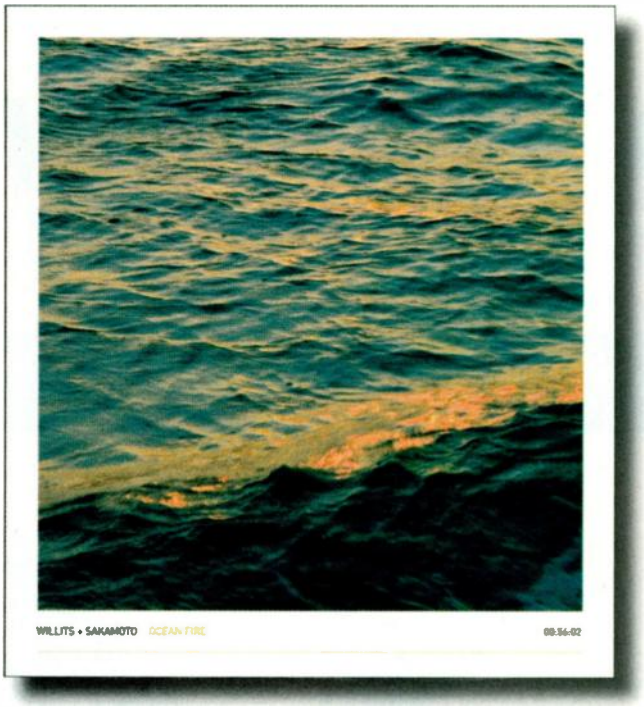
RYUICHI SAKAMOTO AND CHRISTOPHER WILLITS

Home bases: New York, San Francisco, Tokyo

Key software: Cycling '74 Max/MSP

Sequencers of choice: Ableton Live 6, Digidesign Pro Tools HD

Web sites: www.sitesakamoto.com, www.christopherwillits.com



Ocean Fire

Making Waves

Ryuichi Sakamoto and Christopher Willits improvise *Ocean Fire*.

Neat categories have never been a hallmark of Ryuichi Sakamoto's music. From bubblegum pop ditties to avant-garde classical fugues, the Japanese-born pianist and composer has pretty much done it all since going solo in 1984 after playing with the internationally renowned synth-rock trio Yellow Magic Orchestra. His most recent work stems loosely from his "chain music" experiment—an ongoing "chain letter" of built-up compositions involving nearly 30 different producers to date.

By Bill Murphy

Recently Sakamoto recruited San Francisco Bay Area guitarist and producer Christopher Willits to record *Ocean Fire* (12k, 2008), a many-layered sonic canvas of improvised ambience based on a 4-hour session that took place at Sakamoto's New York studio in early 2007. "I always have lots of audio files in my [Apple MacBook] laptop for writing," Sakamoto says. "Some are field recordings—like noises from the street—some are from synthesizers, and some are acoustic or electric piano sounds. I just picked up some of these, and Christopher and I started playing."

For both musicians, Cycling '74's Max/MSP programming software was a vital creative tool. "When I improvise like this," Sakamoto says, "I usually use Max/MSP. I've been developing VST plug-ins and patches with a friend of mine for performance and improvising, so I can play lots of audio files randomly. I can also change the pitch or reverse it—things like that—and change three or four plug-ins at a time if I want."

Willits took a similar approach but also relied on Ableton Live 6 as a host for his custom-made Max/MSP plug-ins. Using a MIDI foot controller, he manipulated multiple electric guitar loops and created what amounts to an orchestra of processed sound. Eventually he edited and mixed the results of the *Ocean Fire* session in Digidesign Pro Tools, maintaining a light touch when it came to EQ and additional processing.

"This whole project was really a trip," Willits raves. "When we first got together, I was just floating along with the prerecorded, processed piano sounds that Sakamoto was tweaking live, and before we knew it, both of our eyes were closed and we were diving deep into this whole soundscape. Sometimes things would happen and we'd look at each other like, 'Was that you or was that me?' That's when you feel everything totally merging."

Beginning with the contemplative sustained chords of "Toward Water," the sense of a liquid convergence between two artists is palpable. As Sakamoto's organlike riff moves through frequency modulations of varying intensity, Willits initiates a series of rhythmic pulses by indexing small pieces of guitar samples, creating the feeling of a slow, deliberate descent into the depths. On later cuts—specifically the ominous, echo-laden "Chi-Yu"—both the piano and guitar become unrecognizable, disappearing under layers of processing, only to be recast as gleaming weapons of the future in the feedback-driven closer "Ocean Sky Remains."

As Sakamoto tells it, *Ocean Fire* was the inevitable title for a project that reflects the concerns he and Willits share about climate change. "The heat of the oceans, because of global warming and the loss of the ice caps, is a big part of what inspired it," he says. Of course, isn't the oceanic theme reinforced by the overall sound of the album? "That's true, yes," Sakamoto agrees. "It's sometimes deep, sometimes shallow. You never know where the current will take you." em

To Do:

- ☑ Record entire band
- ☑ Program drum beats
- ☑ Comp together guitar solo
- ☑ Fix vocal pitch problems
- ☑ Tighten timing in bridge
- ☑ Add string section
- ☑ Add synth bass
- ☑ Warm tracks with VC-64
- ☑ Add convolution reverb
- ☑ Mix with 64-bit engine
- ☑ Create dance remixes
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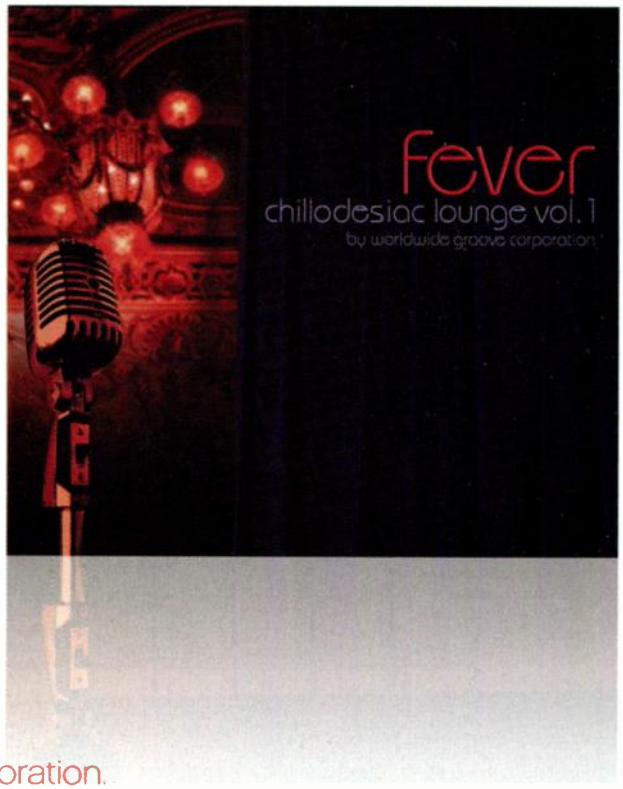
Main gear: Wurlitzer student electric piano, Rhodes 88 suitcase, Roland JX8P, Korg Wavestation SR

Web site: www.worldwidegroovecorp.com



>> *Chillodesiac Lounge Vol. 1: Fever*

Lounge Fever

Jazz meets chillout in Worldwide Groove Corporation

If you're a fan of the meditative side of jazz—sometimes known as "cool"—that Miles Davis pioneered and Nina Simone and Alice Coltrane expanded on, and you're open to getting your beats buttered on the down-tempo funky side, then chillout music might be for you. That, in a nutshell, is the intuitive leap that led the production team of Ellen Tift and Kurt Goebel, aka Worldwide Groove Corporation, to start building tracks for what became their latest album, *Chillodesiac Lounge Vol. 1: Fever* (Fabulation, 2007).

By Bill Murphy

"We were actually at a release party for one of the *Verve Remixed* CDs," Tift recalls, referring to the eminent jazz label's raid-the-vault series. "I love the idea in theory, but I felt like they didn't really follow through on the atmosphere that those original sounds were creating. That's when it dawned on us that we should just do chillout versions of jazz standards. Even for an audience that's unfamiliar with what's called chillout, if they think it's cool the way we've taken 'My Funny Valentine' and reworked it, then that's what we're after."

Using Propellerhead Reason, Apple Logic, and her trusty Roland JX8P synth as a controller, Tift began experimenting with arrangements for "My Funny Valentine," the Rodgers and Hart classic, eventually settling on a stripped-down bass line and a Spectrasonics Stylus RMX–generated drum pattern. From there, Goebel added processed keyboards and liquefied sonic textures, including a pitched-down flute sample. Tift sang the breathy lead vocal, availing herself of the song's natural melodic changes to capture its melancholy mood.

"There's a fine line between chillout and smooth jazz," she explains, "and we didn't want to get into smooth jazz at all. So we had to figure out how melodies like these—which are very chromatic and happen over these really rich harmonic progressions—could fit over a simple harmonic plateau."

The solution, as Goebel describes it, was to arrange and mix the track—as well as the rest of *Chillodesiac Lounge*—with an ear toward the lush, psychedelic, and stereo-active soundscapes and rhythms that have been the lifeblood of down-tempo music from early Massive Attack to the latest Thievery Corporation. "It comes down to the way we arrange a song and then treat it with effects," he says, "but it's also in the beat library we've built up over the years using Reason and Stylus RMX and old hip-hop drum sounds—the dirtier the better. We go for lo-fi loops, and when those don't have quite enough punch on the bottom, we just layer in a kick. So usually we put it in Ableton Live to get the right tempo, and then I bounce it into Logic to double the kicks and snares if I need to."

Although the album's title track, with its live-sounding rhythm section, leans more toward the organic, signal processing played a key role. Lead singer Missi Hale's vocal went through the Super CamelPhat effects plug-in for EQ scooping and simulated tape delay, while the piano was recorded, resampled, and run through Live's Auto Filter with some added ping-pong delay. Overall, "Fever" evokes a sultry, simmering club mood.

"It's easy to just throw up a synth pad and a drum loop for five minutes and call it chillout," Goebel says when asked about the four years of meticulous studio work that went into the making of the album. "We really wanted to craft a cool sonic experience."

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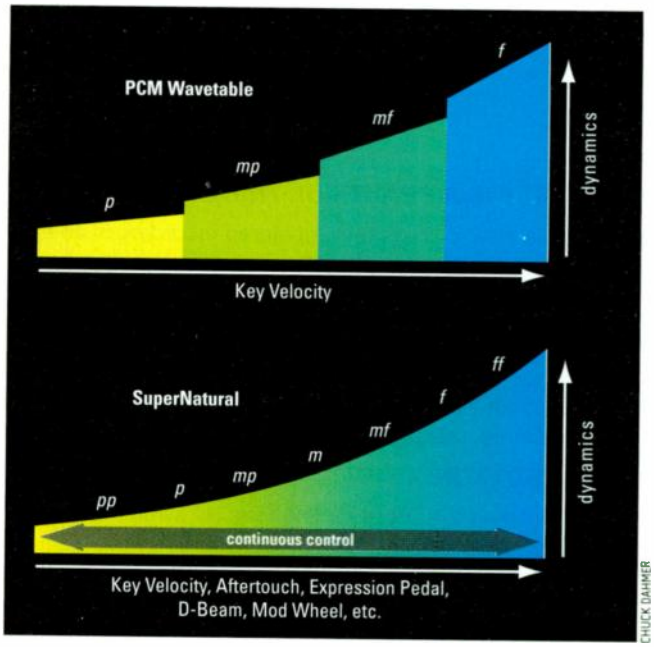

FIG. 1: SuperNatural sounds continuously morph in response to changing Velocity or continuous Control Change messages. This provides greater expressive potential than simple sample-based programs, which rely on crossfading between only a few samples that cannot change their basic sonic character once they start playing.

What Goes Around Comes Around

Roland brings a 20-year-old idea into the 21st century. | By Scott Wilkinson

When I worked as a product specialist at Roland (www.rolandus.com) more than 20 years ago, I saw several major new synthesizers arrive at the office before they were introduced to the world at various NAMM shows. Among them was a rackmount module called the MKS-20, which was dedicated strictly to preset piano sounds.

What is the big deal about a piano module, you ask? Well, this was not just another sample-based sound generator—it was the first to use Structured Adaptive (SA) synthesis. SA was an innovative combination of additive and sample-based synthesis, in which the sound and behavior of specific pianos was painstakingly analyzed and resynthesized using complex waveforms as additive elements rather than simple sine waves. The result was a level of expressive capability impossible to achieve using sampled sounds alone.

In the years that followed, Roland introduced several digital pianos that used SA synthesis. But SA soon disappeared from the product lineup, primarily because creating new sounds was very labor intensive, and musical microprocessors weren't powerful enough to do much more with the technology.

Fast-forward 20 years. At the 2008 Winter NAMM show, I attended Roland's press conference and heard company reps announce a new type of synthesis called SuperNatural, which will be featured in the RD-700GX digital piano and in some expansion boards for the Fantom G keyboard workstation. The reps were talking about enhanced expression, behavior modeling, and continuous timbre changes rather than crossfading on sounds ranging from violins to trombones to drums. SuperNatural sounded just like SA, but it applied to a much wider variety of instrumental sounds!

After the press conference, I talked with Toshio Yamabata, the director of Roland R&D; Shun Takai, an engineer who has been working on the technology directly; and Mike Kent, manager of technical relations for Roland R&D. They confirmed that SuperNatural, which the company has been quietly developing over the past two decades, is indeed an outgrowth of SA.

As was the case with SA, the first step in creating a SuperNatural program is separating the various elements of the target sound—for example, the string and bow of a violin as well as the frequency, time, and phase components. These elements are then utilized to reconstruct the sound using an additive technique with complex waveforms from the original sound, along with modeled components and wavetable synthesis.

Yamabata, Takai, and Kent explained that SuperNatural programs can smoothly morph from one sound to another in response to changing continuous Control Change or Velocity messages (see Fig. 1). By contrast, conventional samples must be crossfaded, and once a sample starts playing, it can't be changed without sounding completely artificial.

Another advantage of SuperNatural is its ability to control various "acoustic" characteristics of the sound, much like physical modeling. For instance, you can change the shape of a snare drum body and the corrosion of the tines in an electric piano. Many programs also include modeled microphones and speaker cabinets that can be tweaked to produce different sounds.

In the NAMM demo, the violins and cellos were quite realistic, as were the electric pianos. As a trombone player, I was not as impressed with the trombones (I know the real thing far too well), but the saxes were reasonably convincing, and the drums were fantastic.

The promise of this technology can finally be realized thanks to much more powerful processors than were available 20 years ago, though new sounds still take a long time to develop. I look forward to hearing more of what SuperNatural can do in the future. em

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HOW TO USE CONVOLUTION TO TRANSFORM YOUR SOUND FILES.

Lurking inside your computer are dozens, perhaps even hundreds, of unique sound effects. No, I'm not referring to some random sample libraries that have mysteriously appeared on your desktop. Rather, I'm talking about all of the audio files you own, each of which can become a source for creative and one-of-a-kind effects processing if used as an impulse response with a convolution program.

Convolution is a powerful technique that multiplies the spectra of two files (one file is the source, or *carrier*, and the other is the impulse response) to produce a vast range of effects. If the impulse response (IR) is the "acoustic signature" of a real space—a large concert hall, for example—the result of the convolution process will be reverb, which many of the convolution programs currently on the market try to achieve (see "Trading Spaces" in the October 2004 issue of EM, available online at emusician.com). An endless number of filtering effects can also be created using very short, percussive IRs—such as a single clave or marimba hit—with the results sounding like lowpass, highpass, or even comb filtering. And you can create many types of exotic echoes and delays using different types of synthetic-waveform spectra.

You get many of the most unique and original sounds, however, when you use two standard audio files. This often results in a form of *cross-synthesis*, in which one file takes on some characteristic of the other: a sustained chord sung by a choir, for instance, could adopt the rhythmic pattern of a drum loop, or a stream of white noise could be molded into a 4-note seventh chord. Clearly, the sound-design potential is unlimited.

We've covered convolution in several previous articles (see "Sound Design Workshop: Convolution Reverb and Beyond" in the April 2005 issue and "Square One: Convolution Number Nine" in the June 1999 issue). But this time I'll go into a lot more depth about the creative uses of the technique. I'll discuss how to pick good files to produce interesting pairings and crossings, what tweaks you can make to your IRs to improve their potential, and how you might add convolution to your work flow. Many of the tips and tricks come from Virtuasonic's

Alessandro Camnasio and Spirit Canyon Audio's Darrell Burgan, both of whom produce libraries of IRs intended specifically for sound-design purposes (see the sidebar "Dedicated Collections"). There are numerous programs that support convolution, so look around your desktop to find out what you might already own or see the **online bonus material** "Get in the Game" for a list of some of the best options.

Before discussing specific tips, both our experts stressed the importance of lowering the volume on your playback system as you conduct your convolution experiments. It's likely that you'll pair two files with strong peaks in the same region, which will produce resonances with very high amplitudes. At all times, be sure to moderate your listening level to avoid damage to your speakers and your ears (you have been warned!). Fortunately, many convolution programs offer gain adjustment in case you need to make a rapid move for the mouse.

Filter Fun

Getting started with convolution means finding IRs that you want to use and then deciding how to put the process into play. If you want to start simply and explore convolution's filtering potential, look for some short drum sounds, interesting sound effects (machines, clicks, gears, and such), or other broad-spectrum samples. On the PC, most convolution programs let you use any WAV file as an IR, so you should already have loads of material to work with.

On the Mac, different formats are supported by different programs: Apple Space Designer supports SD II, AIF, and WAV, among others, while Audio Ease Altiverb (also available on Windows) requires split-mono files. Check to see what the options are for loading IRs into the software you plan to use, then consider copying potential IRs to a dedicated folder so you won't waste time during a work session searching for them all over your drive.

Burgan describes what some of convolution's potential for filtering is and how to get good results. "The output of convolving an IR with a signal is the spectral overlap of the two signals. Another way of saying this is to say that only the frequencies that are present in both signals will end up in the convolved signal. Musicians can use this to filter signals arbitrarily," he says. "If they want to have as much of the spectrum of the original signal as possible, then the IR should contain as much of the audible spectrum as possible—white noise, for example."

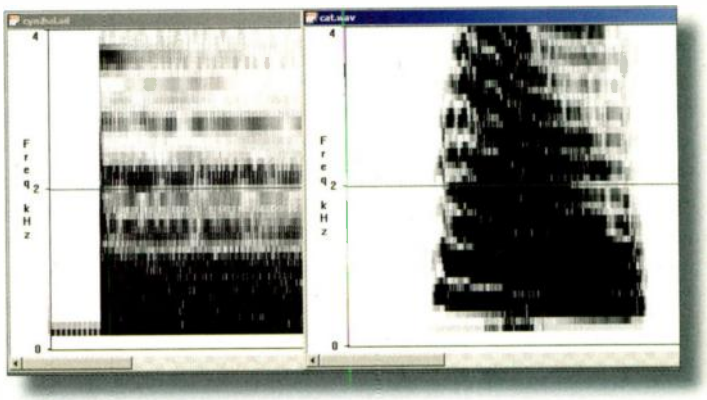

FIG. 1: This image shows the spectra of a ride cymbal (left) and a cat's meow (right). Note the overlapping frequencies.

Burgan continues, "Much fun can be had by using IRs that have a much smaller spectral range, however. You could ensure that an IR causes a highpass-filter effect simply by ensuring that the IR itself has no frequencies below the cutoff. Taken to the logical extreme, if an IR has a discernible pitch—in other words, only one dominant frequency (say, A 440)—then anything convolved with that IR is going to sound like it has that pitch. If the pitch matches the pitch of the song, very interesting things can result." According to Camnasio, using multiple convolution passes on the same source and filtering each differently (highpass, lowpass, bandpass, and so on) gives you even more possibilities. This would allow you, for instance, to keep only some desired range of frequencies in the final output.

For examples of convolution as a filtering effect, see **Web Clips 1 through 6.** In these examples, I've used the same male vocal sample with different IRs, each of which produces a different result.

Moving On

To move past the filtering approach, there aren't too many hard-and-fast rules. Convolution is a technique that is well suited to experimentation—you can try convolving just about any two files and see what happens. You can also tweak the settings of many convolution programs to improve your initial results if they aren't totally satisfactory (see the section "Tweaking Time"). There are, however, a few guidelines to consider when matching up files for convolving.

For starters, the two files you choose to convolve should have some frequency components that overlap. That is because when the two spectra are multiplied, the regions that they have in common are emphasized, and the regions that have nothing in common produce only long strings of zeroes in the resulting audio file. Camnasio says, "When the spectra of the two files overlap, it is quite easy to obtain a well-balanced convolution, especially if your source has a wide spectrum. This makes drums and other forms of percussion sounds good candidates for fast and very easy convolution. You can often get away with little or no equalization, depending on your personal taste." He also points out that vocal samples have a lot of potential for convolving.

You can probably determine whether there is any overlap just by listening carefully—no doubt you'll notice, for instance, that a cat's meow and a cymbal share spectral content (see **Fig. 1** and **Web Clip 7**). But if you want a more accurate opinion, open the spectral-analysis window of your favorite audio application and compare the content of the two files. If you don't own a suitable program, check out Praat (www.praat.org) or Christoph Lauer's Sonogram (www.christoph-lauer.de), both of which are cross-platform. Or pick a more basic spectral-analysis tool from your favorite music-software download site.

If you want to use only a portion of the IR's spectrum (everything between, say, 100 and 1,500 Hz over the first 3 seconds, for example), then simply cut or trim away the part you don't need. You can easily do spectral-domain editing

of this type with Mike Klingbeil's excellent cross-platform analysis-resynthesis tool, Spear (www.klingbeil.com/spear). Adobe Audition and Steinberg WaveLab 6 (among others) also have similar spectral-domain editing features (see Fig. 2).

The duration of the files you use shouldn't be a limiting factor, nor do the IR and the carrier need to be the same length—it doesn't hurt to try files of different lengths to see what type of results you get. But keep in mind that many convolution programs limit the length of the IR. Sony Acoustic Mirror, for instance, found in the Effects menu of Sound Forge (all recent versions), has a 12-second limit, and Waves IR-1 limits the IR to 6 seconds. But Altiverb and Cakewalk Sonar Perfect Space impose no limit (see Fig. 3). As Burgan notes, the duration of the IR correlates directly with the amount of "smear" that happens when that IR is convolved with an audio signal. You can either shorten the IR directly by using your audio editor or use the convolution engine's envelope function to limit its duration. (Voxengo's Pristine Space, Christian Knufinke's SIR2, and others offer IR envelopes, which I'll cover in a moment.)

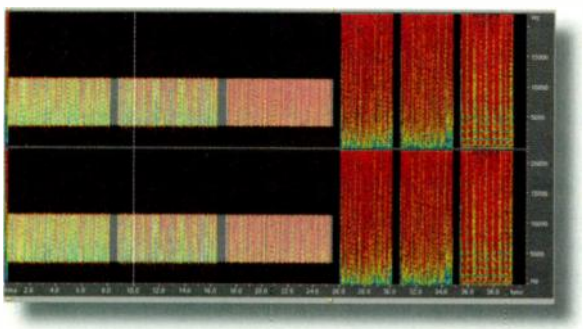

FIG. 2: You can isolate any region of frequencies in Adobe Audition's Spectral Frequency display. In this figure, middle regions of both channels (left) have been trimmed away from the rest of the file.

Choosing files with the same tempo can also produce good results. Burgan explains, "Let's say you have a song that is 100 bpm. Let's also say you have an IR that has some kind of modulation or motion in it that comes and goes in a tempo that matches 100 bpm. Also assume that the IR and the signal have the same sample rate. Now, if you convolve a 100 bpm signal with this 100 bpm IR, the beats will line up and very interesting things happen, particularly if you run something percussive through the IR, like a drum loop. Our IR collection *Kaleidoskopy* provides a large number of bpm-synced IRs for precisely this purpose. Run a 100 bpm loop through one of the 100 bpm IRs, and you can get some truly fun tempo-synced drum madness." Web Clip 8 illustrates this approach. (You can find other examples on the Spirit Canyon Audio Web site at www.spiritcanyonaudio.com.)

NO DOUBT YOU'LL NOTICE THAT A CAT'S MEOW AND A CYMBAL SHARE SPECTRAL CONTENT.

Time and Again

Once you've identified a pair of files you want to convolve, there are many ways to put them to use. In most cases, using your convolution software as a plug-in effect on an audio track is the most efficient way to try out different IRs on a source. For instance, maybe you're doing vocal effects for a video game and have to create numerous variations on the voice of a character. Using the vocal sample on a track in your digital audio sequencer or editor, you could apply the convolution engine as an insert effect. This works well with programs like Altiverb and SIR2, both of which run as a VST (or other format) plug-in effect.

Another option, suggested by Camnasio, is to place the convolution plug-in on the audio output track of a soft synth. Set the wet to 100 percent and the dry to 0 percent, and you'll have endless new variations on your synth sound set. Consider using short IRs in this context so that you can switch IRs in real time without a glitch from overloading your computer's processor. And be sure to disable any effects processing on the synth patch—too much reverb, for example, can lead to a muddy sound very quickly (see Web Clip 9).

You can also use multiple instances of your convolution engine in a single session and process your source file, whether audio or the output of a synth, using serially arranged instances: the output of the first becomes the source for the second, the output of the second becomes the source for the third, and so on. Another option is to use the convolution engine as the input to a vocoder—try it as both carrier and modulator to see what happens—or dial in just a bit of convolution using a send slot to add a little spice to your audio track.

Burgan recommends using a different convolution instance in the left channel than in the right, each with a unique IR (see Web Clip 10). He says, "There is nothing in the world that says the L and R channels of an IR must have any relationship. Musicians can put different waveforms into the L and R channels, and the convolution engine will produce the corresponding different L and R output, which can be useful for some things. For example, let's say

FIG. 3: Unlike some other programs, Sonar's Perfect Space imposes no limits on the length of the IR. The IR shown here lasts 45 seconds.

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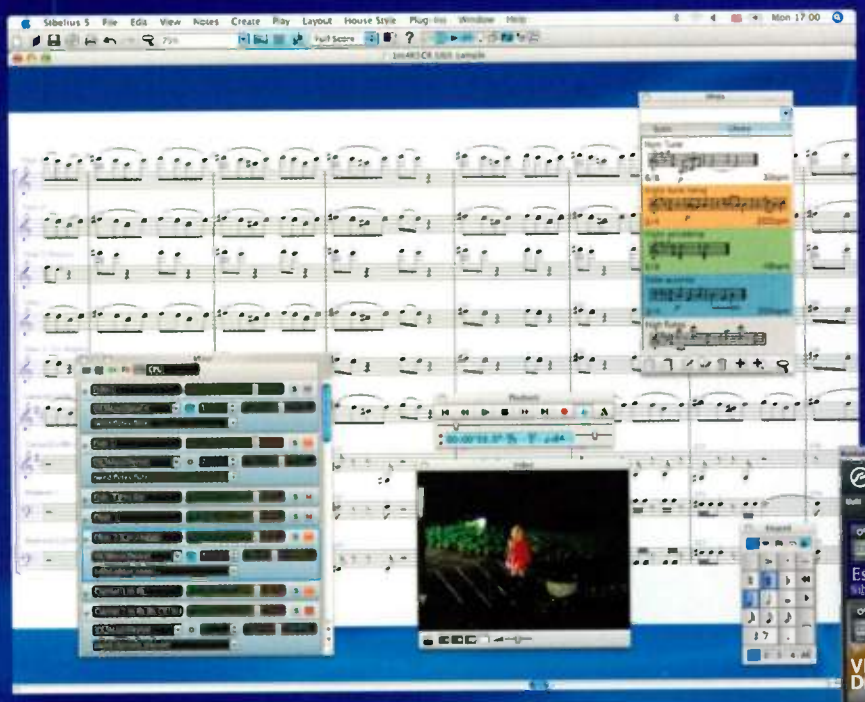

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you convert an audio signal to mid-side (M-S) encoding. Then, when you convolve that signal with a stereo IR, effectively the convolution engine will convolve the M with the IR's L channel, and the S with the IR's R channel. When you convert the signal from M-S back to L/R after the convolution engine, you will have different apparent spectral signatures for the center of the panning zone versus the sides of the panning zone. Done carefully, you can apply convolution *only* to the mid or to the side, which can result in spectacular effects."

He continues, "Imagine convolving a signal that has a lush saw-waveform pad in it, such that the mid channel remains untouched but the side channels are mostly convolved signal. You can get very unique evolving pads this way. Some downstream delay or reverb can give the pad even more motion." To hear this effect, see **Web Clip 11**. (Note that SIR2 has a utility that will build a stereo IR file using two different mono files as input. It then adds the new file to its IR list automatically.)

Burgan also suggests freezing tracks if you plan to use multiple convolution instances simultaneously. As you'll soon discover, convolution is one of the more CPU-intensive effects. Finally, don't forget the option of processing a live audio signal. That can be a great approach in a live performance or just for experimenting with your voice or some other acoustic source. If your audio software doesn't support live processing, then consider a program like Tobybear's MiniHost (Win; www.tobybear.de/p_minihost.html), a standalone VST host that can load a convolution plug-in and process any incoming ASIO audio input signal.

Tweaking Time

If you aren't happy with the initial results you're getting, you can do lots of things to the IR to get extra mileage from it. But before looking at those options, remember that one of the great things about convolution is that the same IR can produce different results depending on what source you pair it with. Even if you don't get good results the first time around, there's no reason not to try the same IR again with a different audio file.

As Burgan notes, "The effect a particular IR will have cannot usually be fully predicted because it is dependent on both the IR and the signal it is being convolved with. IRs based on true white noise or IRs that contain only one frequency are an exception. This makes it difficult to have a favorite IR, because an IR that sounds good on one signal may produce useless effects upon another signal."

One way to tweak your results is to explore the parameters of your convolution program. For instance, as mentioned previously, many programs have an envelope function that lets you determine how much of the IR you want to apply to your sound and how the IR's amplitude changes over time. **Web Clip 12** illustrates the use of the envelope feature in SIR2. SIR2 even has a feature to generate a few repeating envelope shapes automatically (see **Fig. 4**). The 16-segment sawtooth, for example, will create a pulsing effect on any sustained sound.

According to Burgan, "The envelope of the IR is imposed on the carrier file when the two files are convolved. For example, if an IR has a very abrupt ending, the convolution 'tail'

Dedicated Collections

Though it's possible to match up any two files for convolving, there are several excellent collections that provide a massive number of IRs created specifically for sound-design purposes. These collections are organized in ways that make it easy to find an IR at a certain tempo or one that produces a desired quality in your sound. Note that none of these files come in split-mono format, so you'll need some software that can do the conversions for you if your host program requires it. On the Mac, Monkey Tools Sound Grinder (http://monkey-tools.com) is an inexpensive option; on the PC, several audio editors (Sound Forge and WaveLab, for example) include batch-processing features.

Spirit Canyon Audio

www.spiritcanyonaudio.com

Spirit Canyon's three collections are *Kaleidoskopy* ($34.99; 2,000-plus IRs), *Spectral Relativity* ($24.99; 850-plus IRs), and *Sanitarium* ($34.99; 500-plus IRs). Each collection comes both on CD-ROM and by download, and each is well organized in categories covering specific tempos and timbres (Colors, Cosmic, and Industrial, for instance). The IRs come only as WAV files and are 24-bit, 44.1 kHz (*Spectral Relativity* is 16-bit), with durations ranging from under a second to a few seconds. You'll find lots of audio examples and free IRs from the different collections at the manufacturer's Web site.

Virtuasonic

www.virtuasonic.com/synesthesia.htm

Virtuasonic produces a single IR library called *Synaesthesis* ($64.95) that consists of more than 1,000 24-bit, 44.1 kHz IRs in WAV or AIF format. The files are grouped into folders listed by letter (A, B, EF, GH, and so on), so it's a little tricky to track down a file if you have a specific purpose in mind. But given that experimentation is the name of the game with convolution, there's no reason not to start at the top and work your way down the alphabet. The manufacturer also includes a searchable HTML-based list of all the IRs, so clicking on categories such as Swirling or Metallic can point you in the right direction.

Emmanuel Deruty

www.1-1-1-1.net/pages/impulses/index.htm

Sound designer and composer Emmanuel Deruty has put together a unique set of IRs collected from his research activities and other sources. Some use Lorenz functions to generate spectra that are then synthesized as audio files for use as IRs, and others are sampled from acoustic sources such as musical instruments. The entire collection is offered as donationware.

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FIG. 4: Christian Knufinke's SIR2 has a feature that allows you to create several envelope shapes automatically. The impact on the IR can be dramatic.

that you get when you convolve a signal with it will have the same abrupt ending. One of my favorite tricks is to create an IR that has a very long, slow fade-in over multiple seconds, then an abrupt ending—the convolution tail will have the same envelope. This can be useful for creating near-real-time 'time reversal' effects. Try putting a signal containing someone talking through such an IR, and the result will sound almost as if you reversed the signal that had the person talking—but you can do it while streaming live!" See Web Clip 13 for an example of this approach.

Many convolution programs also let you swap channels, reverse, or filter or EQ an IR. You should also expect to find a bypass switch and wet/dry mix feature. Programs designed primarily for reverb will also have predelay, room size, tail length, and other options, which offer even more resources for exploration. Altiverb's Decay parameter, for example, imposes an exponentially decaying envelope over the loaded IR. This can produce unexpected results, depending on how well the program can track the amplitude curve of the IR. Altiverb's Size (room) parameter is also useful for shifting the pitch of the carrier (see Fig. 5). Listen to Web Clips 14 and 15 to hear the impact of using different room sizes on a single low piano note being convolved by a drum loop.

Modify the IR

Rather than adjusting an IR in your convolution program or using an unedited audio file as an IR, you can modify the IR file in a variety of ways using your audio editor to make even more unique sounds. For instance, you can crossfade two IRs to impose a modulation between two keys, or you can reverse or time-stretch an IR (see Web Clips 16 and 17). Lowering the bit depth of an IR also has an impact on the resulting file.

According to Burgan, equalization really helps improve the results of the audio convolution. He notes, "It's very important to balance the spectrum, especially if there is too much energy (resonance) in a narrow range of frequencies. Moving a medium/narrow bell at +10 dB through the entire frequency range of the IR is an effective and fast way to search for undesired or disturbing frequencies. When you find the unwanted frequency, try to adjust the bell Q and lower the gain until that frequency disappears [see Web Clip 18]." Burgan reminds readers to lower the main volume when starting this procedure, or you might burn your speakers (and ears) with unexpected resonances.

Many times, convolution results in a dull sound with little or no high end. Camnasio makes these suggestions: "When the resulting sound is too dull, I try to equalize the IR in the low range with a low shelf or a highpass filter. This comes from a method that is well known to mixing engineers, used when you wish to add a touch of reverb to the mix and don't want to lose definition in the low frequencies. You can also try to boost the high frequencies with a high shelf on the source material before using it for the convolution."

Camnasio adds, "When your source sound has a narrow spectrum, the result of the convolution process will depend very much on the pitches it contains. For instance, take a piano melody and try to convolve it with different IRs. You should notice that some perform well, and others less so; some produce a balanced spectrum, while others generate strong resonances that you may want to remove with equalization. If you stretch the IR, the resonances are going to change. So this could be a very interesting method to refine the IR to suit your specific source material."

LURKING INSIDE YOUR COMPUTER ARE DOZENS. PERHAPS EVEN HUNDREDS. OF UNIQUE SOUND EFFECTS.

Postprocessing

Even after you've performed the convolution, there are still some techniques that can make

FIG. 5: Altiverb's Size (room) parameter can be used to change the tuning of the IR.

your files more useful. Burgan describes some ways to process your final convolved files to improve their sound. "Because of the nature of convolution," he says, "resonances can occur very easily. For example, let's say a frequency of 600 Hz is strong in both the IR and in the signal being processed. The convolved result will have a very strong signal at 600 Hz, because the two signals resonate with each other at that frequency. There is no way to avoid this, nor can one predict in advance where resonances will occur, because it depends both on the IR and on the signal being processed. Therefore, it is a good idea to always follow a convolution engine with a good parametric EQ so that you can tame the resonances that will inevitably appear. In this case, I'd use a steep notch filter at 600 Hz to reduce the amplitude at that frequency, assuming you don't find the resonance useful."

Burgan concludes, "People who have really mastered the art of convolution processing will create IRs specifically for the signal they wish to process with a goal in mind, applying the notions of spectrum, envelope, and duration to craft an IR that accomplishes the desired goal."

No doubt making your own IRs is the "power user" approach, and if you have the time and inclination, it may be the best way to ensure that you'll get the results you're after. But more than likely, you already have many files on hand that you can use to explore convolution, and the collections from Spirit Canyon Audio, Virtuasonic, and others offer endless additional material for experimentation.

Convolution has vast potential for sound-design and compositional purposes and is one of the most underrated resources around. No matter what type of music you produce or which tools you use for that purpose, the files sitting on your hard drive could be just right for creating new, unique, and colorful sounds. Give convolution a try and see what types of happy accidents you come up with. em

Associate Editor Dennis Miller uses convolution in the soundtracks of many of his mixed-media works. Listen to them at www.dennismiller.neu.edu. He wishes to thank Alessandro Camnasio and Darrell Burgan for their help with this article.

PHOTOGRAPH BY JASON VAUGHN

Studio Junkie

Games, film, remixes, electronica—Junkie XL does it all.

By Mike Levine

When Tom Holkenborg was a young musician growing up in Holland, he spent so much time playing music and recording that his friends dubbed him "Junkie." The name has stuck—he now records under the moniker Junkie XL—and so has his obsession with music making. From recording his newly released album of hard-edged electronica, *Booming Back at You* (Artwerk Music, 2008), to writing music for hit games such as *The Need for Speed* and *SSX Blur*, composing music for films like *Blade* and *Dead or Alive*, and remixing songs by artists such as Coldplay, Elvis Presley, and Britney Spears, Holkenborg has developed a busy and diverse career.

Ground zero for Holkenborg's work is his impressive project-studio complex, a few blocks from the boardwalk in the Venice district of Los Angeles (see Web Clip 1). Here, Holkenborg has built a studio that would be the envy of any recording musician (see Fig. 1), complete with a maxed-out Digidesign Pro Tools HD system; a separate Mac for running Apple Logic Pro, which he uses for MIDI work; several additional PCs for running Native Instruments Kontakt; two huge Apple displays; Dynaudio and M-Audio surround speaker systems; a collection of guitars, basses, and effects pedals; and much more—and that's just for *his* studio. There are also two other setups in the building at which his assistants, Sam Estes and Andre Ettama, work.

I had a chance to visit Holkenborg's studio recently. And with a cappuccino in hand from the studio's espresso maker (another key piece of gear), I sat down with him to talk about recording, equipment, and his career.

I notice there is an absence of outboard gear in your studio; there are just a couple of Empirical Labs Distressors that I can see. Are you recording pretty much all in the box these days?

Not really. I've got an outboard gear rack in the other room. And then I still have a full-blown analog studio in Amsterdam that I'm dismantling step-by-step and just getting stuff out here. I've got a 132-channel analog desk with Neve EQs, a 24-track Studer, a 2-track Studer, Fairchild compressors, Klein and Hummel compressors and equalizers, Telefunken compressors. I've got all the synths made by Korg since the very beginning: Yamahas, an Oberheim 4-voice and an 8-voice. I've got about 50 synths.

Did you do this most recent CD here, in Amsterdam, or in both places?

I did it all here. One of the main reasons why I work almost completely digitally these days is time. When you work on video games or movies or you work on commercials, everything needs to be done yesterday. And you need total recall to change the slightest little detail. And after directors and film studios and ad agencies have signed off on a certain product that you have delivered, you can't deliver something else afterwards that is even slightly different from

what you sent them before. When I work on my artist material, that's the only situation where I can really take the time and just noodle with sounds forever until I'm happy with them.

I was particularly impressed with the synth sounds on your new CD. Did you program those all yourself?

I work like this nowadays: with music, it goes back and forth between different programs all the time [see Fig. 2]. For instance, I program a kick drum, just as a kick click, and then I start jamming with the bass guitar. And then I come up with this bass riff, and I just jam and jam and jam—and then at some point it's like, "Oh, that's pretty cool." So then I take that section, and I bounce out the bass guitar sound. And then I go to Sam, and I say, "Sam, I've got eight bars of bass guitar here. Load that up in [U&I Software] MetaSynth, and then I want you to do this and this and this with it." Then I go to my other guy, Andre, with the same bass line, and I say, "Why don't you program 15 or 20 sounds in that synth, in that synth, or in that synth, and copy whatever you did with the bass line?" Within half an hour, I've got both those things back, and I start noodling around with the results from MetaSynth and from [Native Instruments] Reaktor, for instance. I come up with a new sequence, I chop it up, I do my own stuff with it. (I've got [Symbolic Sound] Kyma running here as well. I do a lot of things in Kyma.) That results in a new bass line. Again, it goes back to Sam and it goes back to Andre. So the process is adding sounds to a riff, and then resampling it, chopping it up, reworking it. And then it goes back to the software programs, gets resampled, goes back in. At the end, you're listening to sounds that people are like, "What is that? What synth is that?" It's not a synth, it's not a bass guitar or whatever. It's like a complex sound that has its origins sometimes in three or four different things at the same time.

What other kinds of processing do you use a lot when coming up with your sounds?

We do a lot with cross-convolving, where we do like FFT envelope-filter analysis and apply that to something else. Let's say that you want to create an airy pad, but it doesn't have the quality of a pad; it has the quality of something unique.

FIG. 1: Guitar is one of the many instruments Holkenborg plays, and he likes to come up with ideas for sounds by playing through an array of (mostly Electro-Harmonix) effects pedals.

What you can do, for instance, is to take a crash and take the section of the crash where the volume of sounds is really loud, like just after the attack. And just take a section and loop it forever so you have *[he makes a* shhhhhhh *sound]*. So take that section, do a filter envelope of the frequencies in there. And then, for instance, play guitar; you play the chords of the song, and then you apply the frequency analysis that you got for the crash and apply it to the guitar. The result that comes out of that is already insane. But what if the result of that gets cross-convolved with a female choir? And what if *that* gets cross-convolved with the lead vocal that you have in your song? You get all these weird frequencies that are working with each other, and at the same time it's getting all this melodic information from different instruments—like the guitar, like the choir, and like the female voice—to create these really complex harmonic sounds that are impossible to make with one synthesizer or two synthesizers.

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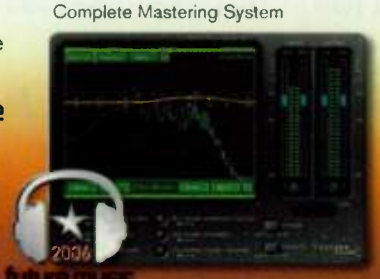

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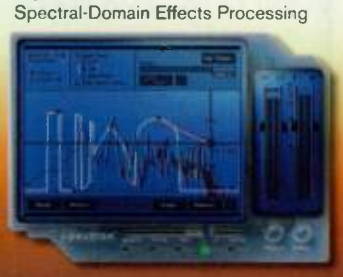

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Junkie XL: Selected Credits

Albums
- *Radio JXL: A Broadcast from the Computer Hell Cabin* (Koch, 2003)
- *Saturday Teenage Kick* (Roadrunner, 1998)

Singles
- "Today" from *Today* (Roadrunner, 2006)
- "Beauty Never Fades" from *Radio JXL: A Broadcast from the Computer Hell Cabin* (Koch, 2003)
- "Future in Computer Hell" from the Sasha CD *Global Underground 013: Ibiza* (Global Underground, 1999)

Remixes
- Britney Spears, "Gimme More" (Jive, 2007)
- Justin Timberlake, "What Goes Around" (Jive, 2007)
- Coldplay, "Talk" (Capitol, 2006)
- Elvis Presley, "A Little Less Conversation" (RCA, 2002)
- Rammstein, "Feuer Frei!" (Motor Music, 2001)

Film Music
- *Blind* (Klas Film, 2007)
- *Catwoman* (Warner Bros. Pictures, 2004), "Who's in Control" remix
- *Chronicles of Riddick: Dark Fury* (Universal Studios, 2004)
- *Resident Evil* (Sony Pictures Entertainment, 2002)

Game Music
- *Need for Speed* series (Electronic Arts, 1995–2007)
- *Forza Motorsport* (Microsoft Game Studios, 2005)
- *The Matrix: Path of Neo* (Atari for PlayStation, 2005)
- *Quantum Redshift* (Microsoft Game Studios, 2002)

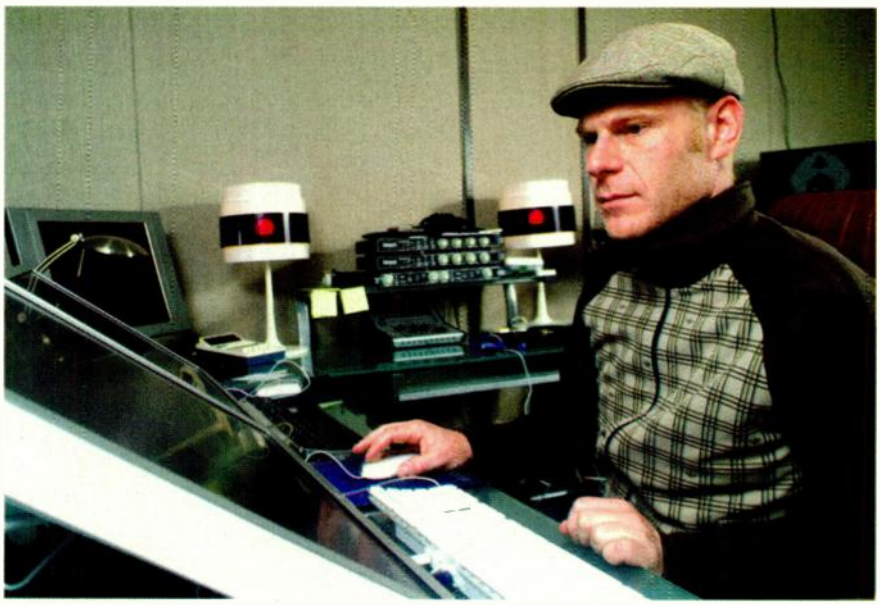

FIG. 2: Holkenborg, often with the help of his two assistants, puts a lot of time and energy into programming custom sounds, using a wide range of plug-ins and processing programs.

On your new CD, there was a really cool, elastic-sounding bass line on the song "Booming Back at You." How did you come up with it?

That was actually not really hard. That was just a saw wave that sounded really fat. It's funny that every plug-in synth and every hardware synth out there can produce a saw wave, but if you play that same note on 40 different keyboards, it will sound completely different. It's the same note, it's the same saw wave. But it sounds completely different.

Because the rest of the synth architecture is different?

Well, I'm talking with all the filters off. Everything off. Just play it on one synth, and it has full overtones and undertones—whatever they're called. It's almost like picking up ten Gibsons. Like those two Gibsons *[pointing to his two Les Pauls]* are technically identical. But if I played the E string on one guitar and the E string on the other one, they have a completely different flavor. The guitars feel different, yet they're the same model.

Then again, you get the differences of wood and all that on guitars. Theoretically, that's not the case with a synth.

You would say that, but there's still a difference. With that thing [the "Booming Back at You" bass sound], the trick was to find a saw wave [with] bigness to it, and then just edit it a lot with portamento and glide so that the timing sort of felt right.

How does your work split up percentage-wise between film scoring, game scoring, your own albums, and so forth?

Film and games are 60 percent a year. That includes commercials, video games, movies, doing a title song for a video game, or doing a special version of a song for a movie. Then 5 percent is remixing, and the rest is Junkie XL being the artist and going on the road and

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doing gigs. Because I work a lot of hours in a year, 5 percent is still a lot of time. Last year I did Coldplay, I did Bloc Party, I did Justin Timberlake, Britney Spears, and Avril Lavigne. I usually do about four or five remixes a year.

Let's focus on your remixes for a moment. I guess that you have to take a completely different approach for them than you do when you're producing tracks for your own solo efforts.

Absolutely. You work with a song that is great or horrible or challenging, or a ballad, and you turn it into something completely different. But I always try to keep the original song in mind, and then do something with it that has a lot of the original flavor in there, even though it's a completely different [type of treatment of the] song.

Besides the vocal track, what are you usually given for source material? Do you get any stems of the other tracks?

It depends. Certain types of mixes, like with Britney Spears, sometimes I get the full Pro Tools session, and sometimes I get just a stereo track with her vocal, with all the backing vocals, and with all the processing and the reverbs—the whole shebang—and that's what I have to deal with. With Coldplay, for instance, I got the full multitrack [session]. Even including the demo recordings and all the 20 vocal takes that Chris Martin did, including the one that they comped, and so that was pretty interesting.

Does having so many of the original tracks make it harder, in a way, to get away from the original feel?

No, I like it. When I remixed Depeche Mode a couple of years back, I got the full multitrack, and I was like, "Damn, those guys were ill—just 24 tracks to create that massive sound." And I was able to listen to all of the sounds individually and say, "Mmm, that's how they did that. Mmm, that's how they did that."

I read about your remix of an Elvis Presley song you did a few years ago. Tell me about that.

That was a bitch, because there were no outtakes or multitracks. That was just a mono file that I chopped up into thousands of pieces to work with a click track.

A mono file of his vocal?

No, of the whole song, that was it. And I had to make it work with programming, and I was recording a lot of instruments. I recorded a Hammond organ and lots of female vocals on top of it, and extra brass. I recorded a bunch of guitars and a live bass line, and I programmed drums. The only reason I got away with it was because, luckily, in those days, the vocal was mixed way too loud in the track. That was really hard because there was a percussion player playing on the original song who was all over the place.

A Tale of Two Sequencers

Although Holkenborg's main recording software is Pro Tools, he also uses Logic a lot and has two Macs (each with its own Apple Cinema Display) at his main work area.

Jon Holkenborg's studio, two is better than one when it comes to sequencer software. He uses Digidesign Pro Tools for his audio needs and Apple Logic Pro for some of his MIDI work, especially orchestral arrangements. Both applications run on separate Macs and are synced using MIDI Machine Control. "So if I press start, stop, or record on one computer, the other will follow," Holkenborg explains.

"Logic, for me, is just a very expensive sampler," he says. "I just look for the sound that I want, I hit it, I record it into Pro Tools, and I do everything in Pro Tools. When it comes to film scoring and video-game scoring, same thing—all the electronic parts are recorded into Pro Tools, and then I edit everything. But then, all the orchestration for an orchestra happens in Logic and stays in Logic until everything has been approved by a director. And then everything gets written out, and [then] recorded with real instruments."

When working in Logic on orchestral parts, Holkenborg doesn't use the notation features. "I usually edit it in the grid [piano-roll] mode," he says. "I got really used to the grid mode from Pro 24 even, and the early Cubase. I'm so stuck on that."

I asked him what he thinks of Logic Pro 8, Apple's latest version. "The new Logic Pro is a massive update compared to what they had before," he says. He calls the program's MIDI capabilities "phenomenal." But despite his affection for, and use of, Logic, Pro Tools is the final destination of all his projects. "When it comes to audio, to me, Pro Tools [HD] is absolutely superior. It comes with massive DSP."

What was the song?

"A Little Less Conversation." And I did that for a Nike commercial for the soccer world championship in 2002. Besides the fact that Elvis is massive in America, and massive outside America, soccer outside of America is like mayhem. So that campaign had a lot of money put behind it by Nike. And that track just started living a life on its own, and it got to No. 1 in more than 26 countries.

What are some of the films you've done, and have you actually scored them, or contributed songs, or what?

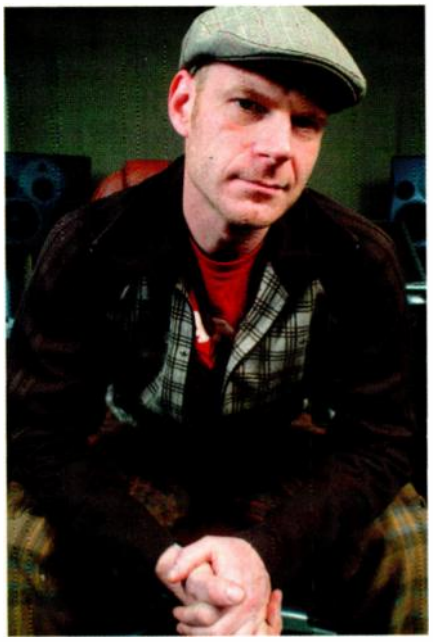
How it starts with film music is that you do a couple of little things on a movie. Or you work together with one of the big film composers in this town, and you become one of his assistants/ghostwriters—and you deliver music for that person because he's more overseeing the film. And sometimes you get a credit for it, and sometimes you don't get a credit for it. That's the world that we live in, and everybody has to go through that.

So it's fairly common that a big composer will sort of subcontract out some of the work?

Not even subcontract; those guys are already working for them. That's just the system—that's how it works, and you just have to fight your way through there. A really good example is Hans Zimmer. He doesn't necessarily work on all the movies himself, but he just orchestrates all those people [working for him] and makes sure that there's quality control. He's always in charge of the vibe. It's been very beneficial for the school of composers that have worked for him. A huge amount of people that worked four or five years for Hans have become supersuccessful on their own.

Where do you fit in this film-scoring scene?

I've worked with all those people, and I've done stuff for Hans and for Harry Gregson-Williams and for a couple of other people, and you just get experience. You pick up on how things work, what the whole organization is, how people communicate with each other—like what's the tone of how people talk to each other—and you just sit on the sideline. Even though you do the bulk of the work, you sit on the sideline and you watch all that, and you learn, and you absorb what goes on in that world. And then at a certain point you break out of that, and you start doing things on your own. But since I'm an artist, I've already done a lot of stuff on my own, like little bits and pieces that you get the full credit for.



Holkenborg's diverse workload includes albums; movie, game, and TV music; remixes; and touring.

Like a song in a movie, that kind of thing.

Yeah. Or like a scene or two scenes. Like when I worked on *Blade* in '96 and '97, I was approached as Junkie XL. "We want your sound. We want whatever you do for that scene. Can you do it?" And then of course you get full credit for that. But with some of the movies that I worked on here in town—like, for instance, when I worked on *Catwoman*, which was a Hans Zimmer gig, and they had some issues with some of the modern things and some of the modern music in the movie, and I got approached, it was like, "Hey, can you help us out with that?"—then you work with stuff that's already there. There's already orchestra recorded, and you take that and put like a bunch of beats around it and make it sound as cool as you can. And then your function is completely different. For instance, when I did *Dead or Alive* last year, they approached me like, "Hey, we want you to do the whole film," so then it's a Tom Holkenborg score or a Junkie XL score no matter what. The same thing goes on in video games. I've been doing video games longer, and I've had more success in the end result of the video game. So I'm way further in the video-game-composer career—I'm pretty much at the top, with scoring games like *SSX Blur* and *Forza Motorsport* and *Need for Speed*. Those are the flagship games of those companies, and they trust those games to me. That's comparable to, I don't know, a *Spider-Man* movie or *The Simpsons Movie*. In the movie world, I'm far from being there. I'm still in the growing process.

But you're heading that way?

Yeah, the only way is up for me.

Regarding video-game composition, I guess you have to be really careful writing melodies, knowing that they're likely to be repeated so much, right?

If you make music for a movie, it's a linear experience: movie starts, movie ends. It goes like this and like that, and then a grand finale, happy ending, whatever. So you see all that, and you just have to be sure that the music really fits. But a video game is a dynamic experience; it's interactive. Yeah, you start a race, but you don't know when it's going to end. It might end here *[he plays a low note on the piano]*, and it might end over there *[he plays a high note]*. And you might play it for 55 minutes. So it's hard to make a linear piece of music for a game. So you're talking in-depth and interactive, and that's the hardest part. Especially when game consoles are getting more sophisticated, with

> ***"If you make music for a movie, it's a linear experience: movie starts, movie ends."***

more DSP and more processing. It allows you to do such crazy stuff with the music, and that whole market is breaking open at the moment.

You mean breaking open in terms of what you can do musically in games?

Yeah. For instance, with *Need for Speed: Pro Street,* we analyzed every race lap, and we said, "Okay, what can happen in every race lap that will trigger some sort of emotion with the player?" And we came up with about 20 or 30 things—like a great start, or if you take your first corner and you're doing really well, or if you hit somebody in the back and your front end is falling off—all the kinds of things that trigger some sort of emotion with the player.

And you try to reinforce that musically?

Yes. So you need software that allows you, without any weird glitches or weird musical vibes, to go to a different musical section when the player does something, so you can underscore that specific moment the best. You also need to translate all those emotions into music. It's like, "Hmm, how am I going to do that?" When somebody gets hit but the car is slightly damaged, how do I translate that into a musical vibe? Then, if you win, obviously it's euphoric; those are the easy parts. But it's the little things in between. And then you go back and forth with the technical team of those games, the audio leads, or the programmers. It's like, "How do we make this happen?" I end up sending every track that I made—like up to 100, 150 audio files, and sometimes way more—that contain transition files that contain multiple layers that can be played at the same time and [with] different balances. It's a lot of technical blah blah and a lot of thinking about that. Because yes, it's really technical, but at the end of the day, it should sound completely natural, as if it was meant to be like that.

The game software is what controls what triggers which piece of music, right? You just have to deliver the music to the game developer, and they figure out how to make that work?

That's what you do hand in hand [with the game developer's tech team]. They say, "What can you do?" And I say, "I can do this, but are you guys able to implement that and that and that in the game?" And they say, "Yeah, we can do that." And the software that they use is all secret company stuff. But they'll send me beta versions of that audio software, and I'll try it here in the studio and say, "Man, that's not working." And then they're like, "Okay, well maybe we should do this and that." And then it's dead-on, and it's awesome. And then once you've set it out, then it's the bulk process of applying that to all the pieces of music that you've done.

How long does it take you to score a game?

Usually you have three months to do it. But sometimes it's a rush job—another composer fell through or they have different ideas out of the blue for how a game needs to be done. On *Need for Speed,* I had like close to four months to do it, and I was very active that whole time period. And on *SSX Blur,* I only had four weeks to do it.

So your assistants probably come in really handy during game jobs.

With movies and video games, there's no way that you can do it on your own. It's just too much work.

Finally, with all the different kinds of jobs you do and the huge amount of synths and audio material that you draw from, how do you keep track of all your sounds? You must have about a million of them.

That's the weirdest thing. My girlfriend tries to explain to me over and over again how to program our microwave at home. And every time I just mess it up. Or DirecTV or something—it has a logic to it that works for consumers, but it doesn't work for me. It's not logical, you know? But then again, if you ask me where that kick drum is that I used five years ago on that song, it's like, "Oh, it's on drive 83, and there's that folder in there that I think I made yellow, and there's a folder in there that's called 'Heavy S**t,' and it's in there." I have like a photographic memory when it comes to that kind of stuff. I just know where everything is.

(Editor's note: For more of this interview, in Podcast format, go to emusician.com/podcasts/elecmus_podcasts.) EM

Mike Levine is EM's executive editor and senior media producer and the host of the twice-monthly Podcast "EM Cast" (emusician.com/podcasts).

Self-CONTROL

A whirlwind guide to setting up and managing your own music-publishing company.

By Michael Cooper

Perhaps the most common career-oriented question that unsigned songwriters ask is, "How can I get my songs published?" Many of these same writers have only a vague notion of what it means to be published. In fact, some musicians who want to be published already are, without knowing it!

If you've already sold recordings of your songs to the public, you are a published songwriter. The federal 1976 Copyright Act defines *publication* (the act of publishing) as "the distribution of copies or phonorecords of a work to the public by sale or other transfer of ownership, or by rental, lease, or lending." *Phonorecords* are defined as "material objects in which sounds . . . are fixed" and include vinyl records and CDs.

There are a lot more ways to make money from the use of one of your songs, however, than just selling your own recording of it. Other artists may *cut*, or record, the song. It might be used in a movie, a movie trailer, a TV series, a TV special, a music video, a video game, for commercial advertising, for a ringtone, or for myriad other uses. Promoting, licensing, and getting paid for such song uses is the job of a music publisher.

Many unsigned songwriters would love to hand off business-oriented tasks to a music publisher so they can focus solely on the creative task of writing songs. Unfortunately, the moment you sign on the dotted line with a music publisher, you give away your copyrights and half the revenues the songs covered in the contract will earn (unless you're already so successful that you've got the bargaining power needed to strike a better deal). For these and many other reasons, many songwriters choose to keep all the profits and self-publish their songs.

This article will explain the basics of how to start up and operate your own music-publishing company. Some of the topics I'll discuss are copyright registration and transfer, affiliation with a performing-rights organization (PRO), the inventory needed to execute day-to-day operations, demo production, making industry contacts, song promotion, and preparing the documents needed to license your songs.

In order to keep this article to a manageable length, my focus will be on publishing your own songs. Signing other writers or their individual songs to a publishing company typically requires far greater preparation and funding. Writing *underscore* (background or theme music for film or TV) and jingles for commercial products or services is also beyond the scope of this article. (When they're written for national accounts, they often present few opportunities for retaining copyright ownership of your work.)

Before I get to the nuts and bolts of becoming a music publisher, however, let's examine both the benefits and drawbacks of doing so. As you're about to see, starting your own music-publishing company is not a decision to be made lightly.

All by Myself?

There are many reasons to self-publish your songs. Keeping 100 percent of the royalties and one-time fees a song earns is just one reason. You also retain greater control over how your songs may be used and what those uses will pay. And assuming that you're highly motivated, nobody will promote your songs more than you. If, on the other hand, you were signed to a large music-publishing company with dozens of writers on staff, your songs might get lost in the crowd and never get the promotion they need to get cut. Furthermore, most song-publishing contracts specify that the music publisher keeps all copyrights to songs covered in the contract—even after the term of the contract expires and regardless of whether or not the company ever secures a cut for your songs.

Still, many songwriters sign with a music publisher for good reasons. It is extremely difficult and very time-consuming to make the required industry contacts with record-label A&R (artist and repertoire) staffers, music producers, recording artists, music supervisors, and film and TV studios—contacts that major publishers already have. Being your own publisher also means taking on the financial onus, which includes demo production and replication, potential attorneys' fees,

inventory, postage, phone bills, printing, and more. And while all that money is going out, you've got to find a way to have some coming in to pay your overhead. A songwriter signed to a staff-writer deal with a publisher typically receives a monthly stipend to keep the credit hounds at bay. Even before (or despite never) getting their first cut, the staff writer earns a living doing what they love most—writing songs.

An experienced music publisher might also secure revenue-generating uses of your songs that you might not have thought of on your own, including sheet music, karaoke, video jukeboxes, and musical greeting cards. They probably already have the contacts you lack with print publishers and subpublishers. The latter collect mechanical royalties for record sales and synchronization fees for the use of songs in TV shows and films abroad. (I'll discuss licensing the various uses of songs in more detail in a bit.) Many successful publishers hire influential song pluggers to pitch the songs in their catalog, greatly increasing the chance of getting a cut. And many a fruitful collaboration between songwriters has been facilitated by major publishers having strong networks throughout the creative community.

A startup music-publishing company must be prepared to receive hundreds or thousands of rejections.

You might be thinking at this point, "Screw the do-it-yourself approach. Give me the publishing contract." Unfortunately, it's not that easy. As a highly successful producer and friend recently explained to me, the big publishing companies are interested in signing only songwriters who already have a track record of writing hits. Yet it's "almost impossible" (in his words) to get your first song cut—even if you have high-level industry contacts listening—without an influential publisher or song plugger pitching your song. It's a catch-22.

Despite the sobering realities of independent song plugging, I love the business side of music publishing. I find managing my own music-publishing company to be exciting and self-empowering. But as you'll learn, it's also a *lot* of work.

Baby Steps

An in-depth discussion of the legal requirements and tax consequences of starting your own music-publishing company is beyond the scope of this article, so I'll only briefly summarize them here. As is the case when starting any other business, you should first choose a legal business structure (such as a sole proprietorship or limited liability company) and business name. A sole proprietor may conduct business under its own name or use an assumed or fictitious business name (otherwise known as a "doing business as" name or "dba"). If you want to use an assumed name, check your state's business registry database to see whether it's available or has already been taken by someone else.

You may also need to apply to the Internal Revenue Service for a federal tax identification number (EIN). Go to www.irs.gov/businesses/small/article/0,,id=97872,00.html for a list of circumstances that require an EIN. Also, find out from your state and local agencies what the business-license requirements are for your area. I recommend you consult with a CPA (certified public accountant) for help with all decisions—and their tax consequences—related to starting your new business. State and local governments also offer helpful online resources for do-it-yourselfers.

You'll also need to affiliate your new company—and yourself separately as a songwriter—with a PRO. The PROs operating in the United States are ASCAP (American Society of Composers, Authors and Publishers; ascap.com), BMI (Broadcast Music, Inc.; bmi.com), and SESAC (Society of European Stage Authors & Composers; sesac.com). They collect and disburse to their publisher and songwriter affiliates (or "members" in ASCAP parlance) *performance royalties*. These are revenues earned from the uses of a song in radio and Internet broadcasts, TV programs and commercials, and movies played in theaters outside the United States. Put another way, PROs are essentially clearinghouses for licensing the performances of a song as opposed to licensing the sale of physical copies or downloads, the synchronization of the song to picture in films and on TV, and other uses. If you don't belong to a PRO, you'll have to individually license, keep track of, and collect payments for performances of your songs everywhere in the world—an impossible task for widely used songs.

ASCAP, BMI, and SESAC all have different requirements for joining and use different payment schedules. You can belong to only one PRO at a time, but you can switch from one to another when your contract with your present PRO is up for renewal. ASCAP and BMI have a much bigger presence in the United States compared with SESAC, a fact that may have a bearing on the size of an affiliate's royalty payments for a hit in this country.

You might also consider joining the Harry Fox Agency (HFA; harryfox.com). The HFA is a licensing clearinghouse and royalty compliance watchdog for the use of your songs in phonorecords and digital services, including downloads and on-demand streaming. The HFA does not issue synchronization and master-use licenses (for film and TV placement), provide sample clearance, or license performance and print (sheet music) rights. It charges an annual membership fee and service commissions per license issued, so many startup companies choose to do their own mechanical and streaming licensing until their level of success justifies the added expense of joining the HFA.

Copyright Registration

Once your music-publishing company is set up, you'll want to protect all the songs currently in your catalog from potential copyright infringement before making any preexisting demos broadly available for other people to hear. Protecting your songs entails establishing a creation date for each with an unaffiliated third party. One way to do this is to register your songs with the Copyright Office.

Registration forms can be downloaded for free (www.copyright.gov/forms). Use form PA (Performing Arts) for registering sheet music with the Copyright Office. Alternatively, you can use form SR (Sound Recording) to register

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Leave a Tip

Tip sheets are an essential, subscriber-based service for music publishers. As a publisher of country music, I only know of tip sheets for this genre of music. Here are the two best, both of which include the label, artist, producer(s), contact person(s), and recording schedule for each project:

Pitch This Country Music Tip Sheet, Pitch This Music (www.pitchthismusic.com). This is the most comprehensive listing of current projects for major-label and second-tier (prominent indie and joint-venture) companies. Published monthly, this tip sheet is generated by successful, Nashville-based song pluggers and often includes difficult-to-obtain details on what specific types of material are being sought for each project listed (for example, "Soulful, real-life lyrics with range and attitude").

Row Fax, Music Row (www.musicrow.com). *Row Fax* is published weekly and contains solicitations for songs by major, second-tier, and small independent labels; unsigned artists; music publishers; and TV and film music supervisors and producers. The main thrust is country music pitches to labels, but solicitations for other genres of music, songs for demo projects, and performance-oriented opportunities are also occasionally listed. Subscribers also gain access to Music Row's outstanding online industry-news service and directory and are emailed weekly the company's valuable *Week-At-A-Glance*. *Week-At-A-Glance* includes links to audio clips of current and next week's releases of country music singles and lists of upcoming CD releases, Nashville-based industry events, and upcoming artists' appearances on syndicated and pay TV (for instance, HBO).

both an audio recording of the song and the underlying composition—melody, lyrics, and arrangement—at once. The recording needn't be the fully produced version of the song; it only has to clearly convey the music and lyrics in order to protect the underlying song.

When you register your new songs with the Copyright Office, make sure you list your publishing company (not yourself) as the copyright owner, noting in the appropriate section of the registration form "transfer of all rights by the author(s)" as the means by which your company procured copyright ownership from the songwriter(s). By registering your company as the copyright owner, you give it the authority to issue licenses and collect revenues for the song's use by others.

You'll also want to transfer to your publishing company any songs previously copyrighted under your name. You may record this transfer with the Copyright Office, but it's an expensive way to go: currently $95 for one song title and $25 for each additional group of ten songs. The only practical reason to record copyright transfers with the Copyright Office, however, is to protect yourself from conflicting transfers (that is, someone else claiming that the song's copyright was transferred to them and not to you). This is moot if you're the only author of the song, as nobody can register a conflicting transfer unless you gave them your contractual consent to do so.

A valid, no-cost solution for transferring a song written solely by yourself to your publishing company is to draw up a simple document—signed by you and listing the title of the song being transferred—that agrees to the transfer (see the **online bonus material** "From Me to Me" at emusician.com). You may then freely substitute the name of your publishing company in lieu of your personal name on all copyright notices for the song, such as on CDs and lyric sheets.

More Cost-Saving Strategies

Initial registration of songs with the Copyright Office is fairly expensive. Fees at the time of this writing were $45 for paper filing of PA and SR forms and related materials. Electronic filing will be available soon at $35 per registration.

You can decrease your cost per song by registering multiple songs at once as a collection, paying a single fee for the entire lot. For example, the title of your collection might be "Collection of songs from New York: 1. I Love You Dearly, 2. Baby, Don't Leave, 3. I Hate You for Leaving," where the collection's title is arbitrary and followed by the titles of each song you want to register. The Copyright Office recently announced its intention to charge a fee of $1 per title for electronic claims and $3 per title for paper claims listing titles of individual works in song collections. This isn't simply price gouging on the part of the Copyright Office; the additional fees help pay for keeping track of individual songs in a collection so that they will show up in a database search. That way, someone won't have to know a song collection's provisional title in order to locate an included song's copyright owner. Current copyright registration fees are listed at www.copyright.gov/docs/fees.html.

MasterWriter (www.masterwriter.com) offers its Web-based Songuard service as an alternative means of protecting your songs at greatly reduced cost. When you buy MasterWriter software, which is an outstanding songwriting application (see the review in the April 2004 issue at emusician.com), you get a free one-year subscription to the Songuard service; the fee for the service is $30 annually after the first year. Songuard registers and stores the date of creation of your song's melody and lyrics on the company's server. That's useful in protecting a song in its development stage. Once the song is published, however, there are important benefits to registering it with the Copyright Office, including the right to be reimbursed for attorneys' fees in a successful copyright-infringement proceeding.

Songs that were previously registered with the Copyright Office when they were unpublished need not be registered again after publication. However, you will need to deposit two complete phonorecords of the published sound recording's "best edition," along with any phonorecord packaging, with the Copyright Office. (Go to www.copyright.gov/circs/circ07b.pdf for more information.) If this isn't done within three months of publication, you'll be levied a hefty fine. It's a silly, antiquated requirement, but it's the law. Songs available only as Internet downloads are currently exempt from this requirement.

Nuts and Bolts

To run a smooth operation, you'll need to maintain a modest inventory for your company. Obviously, you'll need business letterhead and either custom mailing labels or preprinted mailers that include your company's logo and

address. For making copies of your song demos, you'll need blank CDs with printable surfaces and a color printer that can print directly on CDs. The printer will likely come with software you can use to develop a template file for printing song titles and contact information on your CDs and importing your company's logo as a background graphic. Don't use CD labels—if they are applied out-of-round to your CDs, the discs won't play on some players. Buy extra ink tanks or cartridges before you run out. And keep a good supply of slimline CD cases or clamshells on hand for securing your CDs inside mailers.

Print several lyric sheets for each song in your catalog so you'll always have them on hand for urgent mailings. Lyrics should also be stored in electronic form so you can quickly paste them into emails when sending MP3s to industry contacts.

Demo Production

An entire book can be written on the subject of producing demos, so I'll focus only on some of the points you're less likely to read elsewhere. First of all, don't let anyone tell you that production values don't matter and that the song's quality will be heard regardless of your demo's sound and arrangement. A producer or A&R manager might listen to hundreds of demos each day. Which one do you think will grab their attention, the one that sounds like a hit record or the one that has an out-of-tune vocal sung to a lone acoustic guitar recorded with a Radio Shack mic?

Preproduction is of paramount importance. Whenever possible, compose catchy instrumental hooks for your songs before recording them. Make the intro short—no more than 10 seconds if possible. Keep solos to a maximum length of eight bars or cut them out completely. The more deliberate, fast-paced, and powerful your arrangement is, the more the demo will retain the listener's attention and sell the song.

Unless you are Prince, resist the temptation to play all the instruments and sing all the parts on your demos. Having ace union musicians and singers perform on your demos can make them sound like hits. That said, doing so will also likely eliminate those demos from being considered for placement in film and TV projects. In order to use any of the instrumental tracks played by union musicians in a sync-to-picture (film or TV) placement, they must first be upgraded to "phono" status with the American Federation of Musicians (AFM). Phono status essentially makes the demo recordings eligible to be used in new media (film, TV, record release, and so on) as a "new use." The upgrade from demo to phono status requires that all the musicians on the session be paid master scale, which equals roughly double the demo scale rate you already paid them, and be given pension-fund payments for the entire session. This is required even if you will use the demo recording for only one song recorded during a multisong session.

The production company must convert the demo recording to motion picture use (a new use) at considerable cost. Yet they cannot do so unless and until the demo recording is upgraded to phono status. They will typically insist that you pay for the upgrade. The production company may also ask you to make any required "additional payments" (royalties) to union musicians in connection with the song being licensed, which you should refuse to do.

All this haggling may be moot, however, as many TV placements must be negotiated from soup to nuts during your first phone conversation with the show's producer, in order to meet an imminent airdate. Therefore, most producers feel there is no time to work out AFM arrangements. In most cases, they want a song whose rights are already "cleared." Similar issues arise with demo singers who belong to SAG (Screen Actors Guild). So if your main thrust as a music publisher will likely be film and TV placements, make sure your demos are either completely performed by yourself or by nonunion musicians and singers whose talents are contracted for in a one-time buyout.

The Direct Approach

Industry directories are a must-have for music publishers. While they do not guarantee successful relationships with important industry decision makers, they do provide you with the information you need to make that first contact. The following list provides the name of each directory, its publisher, the publisher's Web site, and, where applicable, notes of interest.

A&R Registry, the Music Business Registry (www.musicregistry.com). A comprehensive international directory of A&R staff and company executives for major and independent record labels. It also includes a useful list of music conferences and conventions.

Music Attorney, Legal & Business Affairs Registry, the Music Business Registry. A comprehensive international directory for contacts working in entertainment law.

Film & Television Music Guide, the Music Business Registry. An international directory of record labels, music publishers, film and television music departments and trailer houses, music supervisors, music placement and video game companies, composers, composer agents, orchestras, music editors, score mixers, music-clearance departments, and more.

In Charge, Music Row (www.musicrow.com). This is the most comprehensive and up-to-date directory for the country music industry I've seen. Subscribers to the company's excellent *Row Fax* tip sheet also gain access to Music Row's expanded online directory.

Pitch This Music Directory, Pitch This Music (www.pitchthismusic.com). While this is a very limited directory for the Nashville area, it contains some exclusive, invaluable listings I've not seen elsewhere.

Producer & Engineer Directory, the Music Business Registry. Contains thousands of domestic and foreign listings for producers, engineers, and their agents.

Music Publishers Registry, the Music Business Registry. Do-it-yourself music publishers will find this international directory helpful in locating publishers for subpublishing and administrative deals. An administrative publishing deal is essentially one where a larger company handles royalty collections and disbursements, and sometimes licensing and promotion, for a smaller company such as your own.

A Good Education

To be successful, a music publisher must be thoroughly educated about the complexities of the music business. Here are three books I recommend:

All You Need to Know About the Music Business, 6th ed., by Donald S. Passman (Free Press, 2003). This is a must-read for music publishers, especially those who are also performing musicians or aspiring recording artists.

Music, Money, and Success, 5th ed., by Jeffrey Brabec and Todd Brabec (Schirmer Trade Books, 2006). Reviewed in the November 2007 issue of EM, this is the most comprehensive reference book for music publishers and other industry professionals I've read to date. The last chapter contains five sample contracts.

This Business of Music, 9th ed., by M. William Krasilovsky and Sydney Shemel (Billboard Books, 2003). Considered by some to be "old school" and short on dollars-and-sense advice, this book nevertheless includes excellent chapters on copyright law.

Getting to Know You

After you have a few song demos ready to pitch, it's time to develop a list of contacts who will be willing to listen to them. This is the most difficult aspect of music publishing, as literally tens of thousands of people vie for the attention of the industry's decision makers, who can't possibly communicate with them all.

There's no one way to make industry contacts, but here are some strategies in brief. Enter your best songs in prominent songwriting competitions (see the online bonus material "They're Playing My Song"); a contest win will often give A&R managers and producers incentive to listen to an otherwise unknown writer. Try to perform at one of the songwriter showcases sponsored by your PRO; industry contacts often attend these and may approach you if they are impressed by your performance and writing skills. Attend songwriting conferences at which A&R reps and producers are scheduled to participate. And ask any well-connected friends you might have to introduce you to their contacts. Networking is a must.

Several excellent industry directories are available that list contacts' names, job titles, addresses, and sometimes direct phone numbers (see the sidebar "The Direct Approach"). Make a separate list of the personal contacts you've already made, and update it often. Present this list by any polite means possible to those new contacts you want to make. Everyone wants to hear a writer who is already being listened to by other top dogs in the industry. Your list will grow in rolling-snowball fashion.

Unless you're already extremely well connected, you'll need to subscribe to tip sheets (also known as pitch sheets) that list which artists are currently looking for songs to record for upcoming projects (see the sidebar "Leave a Tip").

A song typically has to be a hit before it has a shot at being used in a national advertising campaign. The exception is a song that is a "work made for hire," or one written by an employee of or subcontractor for a production company handling the ad campaign.

To get an unknown song placed in a TV or film project, you need to know what projects are currently in development or production. A list of both domestic and foreign projects can be found at Variety.com. Successful placement is also likely predicated on your living in or near Hollywood, where you can form the necessary relationships with TV and film studios, music supervisors, and the like.

Alternatively, seek out a music publisher who already has film- and TV-industry connections and negotiate a revenue-sharing agreement in return for them placing your songs. Just be sure to limit their entitlements to only those revenues generated from the TV and film placements they successfully negotiate (and possibly any follow-on deal, such as release of a soundtrack album). You don't want them to participate in monies from unrelated record deals you secure on your own. A good directory for finding film- and TV-oriented publishers to collaborate with is the Music Business Registry's *Film & Television Music Guide*.

Here Comes the Pitch

Once you get permission to pitch a song to a new contact, verify their mailing address. Some record companies (such as Curb Records in Nashville) have several unpublished addresses. You want to make sure you're sending your package to the right office. Also, ask if there is anything you need to write on the outside of your package so it will not be mistakenly discarded as unsolicited material.

Include in your package a CD containing your songs, along with lyric sheets and a very brief cover letter. If applicable, also include a list of songs you've already had cut or which are on hold (reserved for possible recording). Skip the bio—nobody will read it. All materials you submit should include your company's name, phone number, and email address. The CD should also have the titles of the songs printed on it.

Never email an MP3 to an industry contact without their express permission to do so. It'll fill up their email account and hard drive and piss them off.

Unless you have a close personal relationship with a contact, don't follow up your pitches with a phone call or email them asking how they liked the songs. They don't have time to give feedback to the thousands of people pitching songs for each project. They'll call you if they're interested.

Keep a log of your pitches, detailing which songs were sent to whom and for which artists. Date each entry, and make sure you never pitch the same song to the same contact for any one project. Once they reject a song, you don't want to take up their time by pitching it again, unless it's for a different artist or a later album by the same artist.

Can I See Your License?

When you finally get a call from a company wanting to use one of your songs, you'd better have your license forms ready to do business. Prepare all the license forms you expect you might need ahead of time, leaving particulars such as signatory names, song titles, dates, royalties, and fees blank. They'll be filled in following negotiations.

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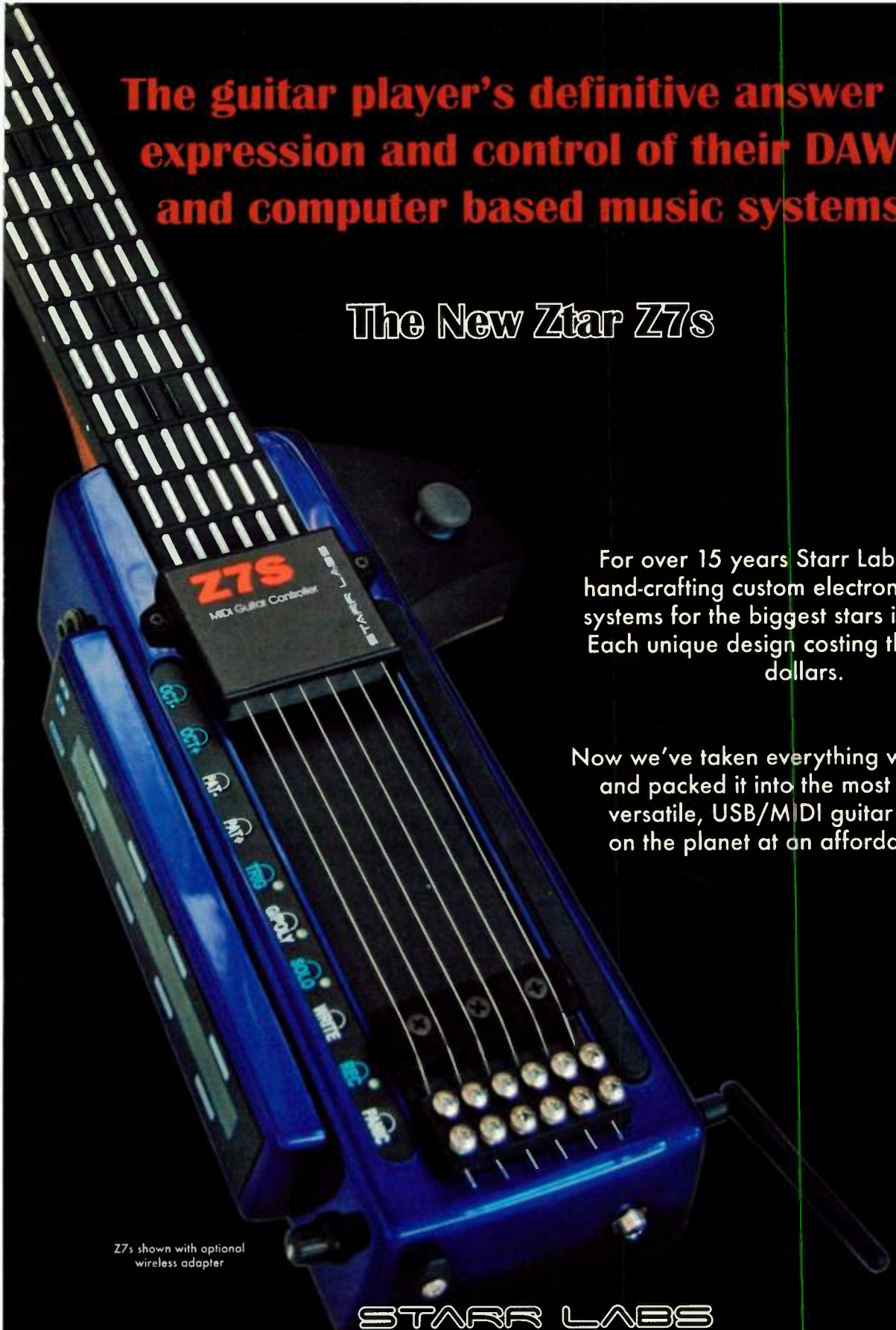

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There are many reasons to self-publish your songs.

phonorecords of a song to be recorded and distributed. You'll also want to prepare a separate mechanical license for authorizing digital phonorecord delivery (DPD), also known as Internet download. You'll need two different forms of streaming licenses to authorize streaming songs on the Internet: one for fee-based streaming on demand, and the other for promotional streaming such as that used by recording artists on MySpace. A master-use license permits all or some of a demo's recorded tracks to be used in a new recording or placed in a film or on TV. You'll also need to prepare separate synchronization licenses (permitting the song to be synchronized to picture) for placements in film, TV, and commercial advertisements. Additional licenses include those for use of your songs in video games and ringtones.

You could have a music-business attorney draw up these documents for you, but it'll likely cost you thousands of dollars, especially if license terms need to be tweaked during negotiations. A good entertainment lawyer typically charges between $150 and $750 per hour. Anyone can learn to understand and write the legalese required to fashion their own licenses, however, by studying the right books. (See the sidebar "A Good Education" for my recommendations on required reading for do-it-yourself music publishers.)

Once one of your songs is recorded, you'll need to register it with your PRO. If you don't, they won't know who to pay performance royalties to when the song title appears in their sample surveys of radio broadcasts and the like. Go to the PRO's Web site to download the proper registration form.

Deal Closer

Music publishing is a very complex subject, and space permits only a brief overview here. Also keep in mind that I am not an entertainment lawyer. You should view this article as a beginner's guide to do-it-yourself music publishing and not as advice for handling complex legal matters.

That said, this isn't rocket science. But it is a ton of work. It can also be discouraging at times. A startup music-publishing company must be prepared to receive hundreds or thousands of rejections during the first years of operation before it has any notable success. If you're up to the challenge, hopefully this article has given you solid footing for the hard climb ahead. EM

EM contributing editor Michael Cooper is the owner of Michael Cooper Music. Visit him at www.myspace.com/michaelcooperrecording.

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Picture for Sound

How to digitize and enhance your band's videos. | By Rusty Cutchin

Musicians often have their hands full dealing with audio in their studios, but a new generation of low-cost tools may make adding basic video-editing capabilities irresistible. An entire setup, including a video-input interface and editing and DVD-authoring tools, can cost less than a DAW application.

I recently digitized a televised performance by a country-rock band I led in the early '90s. I had a single good-quality VHS copy of the telecast, which had been taped professionally by a local cable company. I wanted to edit the video and improve the audio using MOTU Digital Performer 5 on my dual 2 GHz Power Mac G5 with wide-screen display.

Getting Video In

The latest generation of low-cost video-input devices is surprisingly capable. I used the EyeTV Hybrid (see Fig. 1) by Elgato (www.elgato.com). The $150 package includes the versatile EyeTV digital tuner-recorder software. You can use the EyeTV software on any Mac with 256 MB of RAM running Mac OS X 10.4 or later. However, the hardware requires a built-in USB 2.0 port to capture video, and image quality depends on your processor. You'll need a fast Mac for standard-definition (640 × 480) video.

The hardware sports a coax cable connector for live TV signals, and composite and S-VHS connections for recording video from other sources. For PCs, Pinnacle's PCTV HD Ultimate Stick ($130; www.pinnaclesys.com) is a similarly designed product with extra tuner capabilities.

Splitting Audio Out

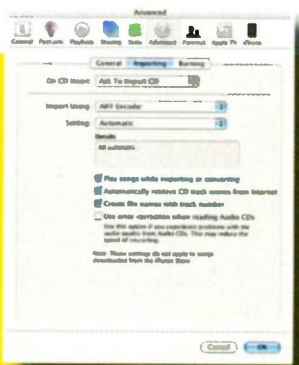
EyeTV records video as MPEG stream files, but I used the program's export function to convert the recordings to DV format for editing. For isolating the audio tracks, EyeTV can also export to AAC or Apple Lossless Audio. I didn't want to compress audio at this stage, so I chose the latter. Using iTunes I converted the Apple Lossless files to AIFF for import into Digital Performer. I then assigned each song its own track in DP.

I wanted to compress the audio (to bring the band up), add some reverb, and perform

STEP-BY-STEP INSTRUCTIONS

Step 1: Connect a video-capture device such as the EyeTV Hybrid to your computer's USB 2.0 port.

Step 2: Export the captured MPEG stream to a video format such as DV, and export the stream's audio track to a format such as Apple Lossless Audio.



Step 3: Use iTunes to convert the Apple Lossless Audio to AIFF for import into Digital Performer or another DAW.

a few minor edits. I used DP's MasterWorks Compressor, eVerb, and 8-band parametric EQ to bring out the bass on certain tracks. I used the EQ and compressor as inserts on each track, with each DP mixer channel accessing eVerb through an aux send. As each song's mix was finalized, I used DP's Bounce to Disk function to save an MP3 right to my Mac's desktop. As each MP3 appeared, I double-clicked on it to bring it into the iTunes library.

In the Life

For video editing, I found Apple iLife '08 ($79; www.apple.com) to be a major value. The suite includes the newly redesigned iMovie 7, iDVD 4, and GarageBand 7, along with iPhoto and iWeb. The new iMovie lets you edit a movie quickly and export it to a format ready to play on devices like iPods or to share on YouTube, as well as to burn onto a DVD.

The redesigned iMovie dropped some important features, like the ability to embed chapter index points at exact locations (you can place them only at fixed intervals). But surprisingly, you can add specified index points to imported video in GarageBand. I hope Apple will restore this capability in a future iMovie update.

To edit a video in iMovie, you import your DV files to the Event Library window. You select portions (clips) of these videos and drag them into a project window. The clips are played in sequence in a viewer. You can move the clips around easily, drop in new ones, change their length, replace a clip's audio, and so on.

Because iMovie syncs with iTunes and iPhoto seamlessly, you can drop in a still or a mix from the Media window by clicking on dedicated iTunes or iPhoto buttons. For each video clip of a song, I simply turned off the clip's embedded audio, grabbed my remix of the same audio from the iTunes pane, and dropped it under the clip. The new audio, called a voice-over, can be nudged or edge edited to line up with the video.

Home-Video Studio

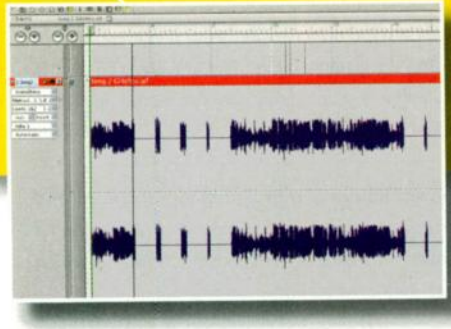
When my edited video's new audio was placed, I exported the whole thing to a new DV-format file. I then used iDVD's collection of themes, transitions, and effects to set up menus before importing my final audio-video mix and burning to DVD.

Apple iLife doesn't do everything that pro media apps do, but it provides many professional features for an amazing price. PC users have a wealth of video-editing options, including Sony Vegas Movie Studio 8 (www.sony.com), Adobe Premiere Elements 3 (www.adobe.com), and Pinnacle Studio 11. Each is available in more than one configuration, so check out versions and pricing online. For less than $300, I was able to add basic video capability to my studio, archive a valued analog performance, and impress some clients who have band videos of their own. em

FIG. 1: Elgato's EyeTV Hybrid plugs into a USB 2.0 port on a Mac and has connections for composite and S-Video cables from external video sources, as well as a coax connector to handle cable TV channels.

Rusty Cutchin is a producer, engineer, and music journalist in the New York City area.

Step 4: Import audio into your DAW and sweeten to taste. Export the finished audio to a format that can be added to the iTunes library.



Step 5: Import converted video into iMovie and edit as needed. Grab the new audio from the iTunes pane in the Media window and drop it under the corresponding clips. Save the final edit to your destination format.

Step 6: Use iDVD to create menus, select transitions, add or import chapter stops, and burn to DVD.

FIG. 1: I use settings similar to these in Sound Toys Filter Freak for drum-to-bass conversion.

A Different Drummer

Craft quasi-random bass lines from drum loops. | By Steve Skinner

You can craft interesting quasi-random bass lines from drum loops with the aid of a full-featured filter plug-in such as Sound Toys Filter Freak (see Fig. 1). The only requirements are that the filter must self-oscillate when the resonance is turned up all the way, and it needs an envelope follower to modulate its cutoff frequency.

Select a drum loop that has an interesting rhythm, perhaps with snare beats on something other than 2 and 4, and with accents in unusual places. Load that loop into an audio track of your DAW and insert the filter plug-in on the track. Turn the resonance of the filter all the way up and play the drum loop.

Good, Good, Good Oscillations

The filter will self-oscillate, producing something close to a sine wave whose frequency is the cutoff frequency of the filter. You can moderately vary the waveshape—and hence the timbre—by changing the filter slope (which Filter Freak indicates as Poles, but other filters may display in decibels per octave). Set the cutoff frequency so that the pitch is in the bass range. The filter may continue to oscillate when playback stops, which is annoying but normal. To control that, automate the filter resonance, or simply turn it down manually at the end of the bass sequence.

To go beyond a 1-note drone, route the envelope follower to modulate the filter cutoff frequency. The pitch of the bass will now follow the dynamics of the drum loop. The amount of modulation controls the pitch range. Experiment with any other envelope-follower controls that the plug-in offers, such as threshold, gain, and attack or release time. The key is to adjust the available controls until you get an interesting bass line. You don't have complete control of the pitch, but the results can be useful just the same.

You might modify the drum loop used to generate the bass line in a variety of ways. You don't need to have the altered drum loop in the mix, so radical changes that may not work as a drum part are fair game. For example, you might cut the drum loop into 16th-note slices and rearrange them to improve the bass line. You could then make the bass line longer by varying the pattern of slices over four or eight bars (see Web Clip 1).

ONLINE BONUS MATERIAL

Perfect Pitch

Bear in mind that the filter cutoff frequency will determine the lowest note of your bass part and the envelope modulation amount will determine the highest note. You can vary the notes in between by changing the volume of individual beats within the drum loop. To do that, insert a trim plug-in before the filter and automate the trim level to tweak the level of each beat to produce the desired pitch (see Web Clips 2 and 3). The process is time-consuming but gives you more control over pitch.

If you have Spectrasonics Stylus RMX, you can use it to mix things up further. Place the filter plug-in after Stylus. Choose a beat from Stylus, drag its MIDI file to a MIDI track, and play the beat in Slice mode. Then switch beats in the Stylus Beats menu, but use the MIDI file from the first beat you selected (see Web Clip 4). Because the two beats have different MIDI files, the resulting groove will be different from either of the selected beats, and the bass line will change considerably (see Web Clips 5 and 6). Use the Chaos feature of Stylus to create still more variations. You can do similar things with Submersible Music DrumCore, FXpansion BFD2, and other drummer software.

This technique is not limited to bass lines. Raising the cutoff frequency will produce a midrange or high part, but it might be harder to find an application for higher parts. Raising the frequency slightly will create a low midrange line. Filtering out the low end then leaves sonic space for a simpler bass line below the midrange part.

Quasi-random bass lines are not for every musician or type of music. But even if you end up not using the generated bass line, the other ideas that a random musical phrase can inspire may justify the effort. EM

Steve Skinner is a programmer, arranger, and producer. He has composed and produced numerous pieces for television, some of which use loop-created bass lines.

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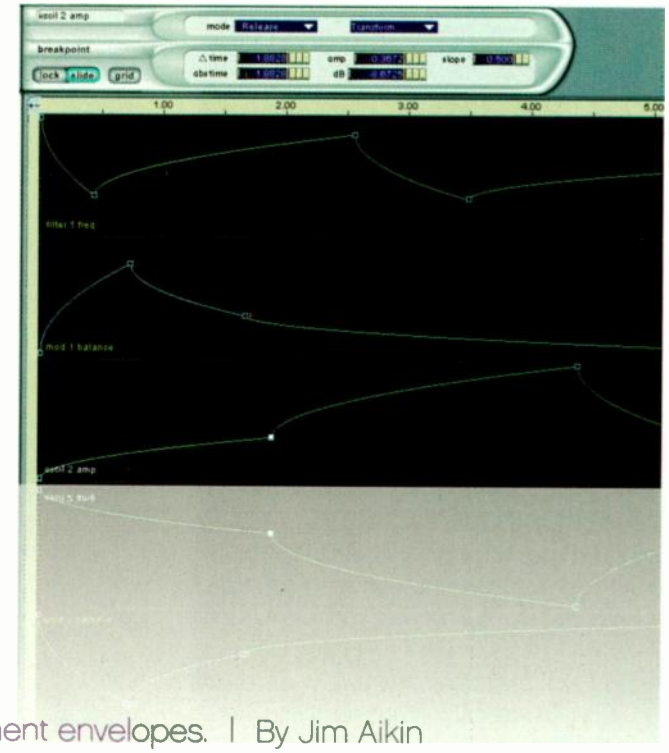

FIG. 1: This screen shot shows three multisegment envelopes in Native Instruments Absynth 4. The breakpoints are the small blue squares, and data for the selected breakpoint is shown in the upper area of the screen.

Super Looper

Create new rhythmic patterns using multisegment envelopes. | By Jim Aikin

Propulsive rhythms are a cornerstone of pop music, so it's no surprise that today's music tools offer a variety of ways to build rhythm loops. If loading a sampled drumbeat doesn't satisfy your craving for creativity, the looping multisegment envelopes found in a number of software instruments may be exactly what you're looking for.

The envelope generators in first-generation synthesizers (around 1970 to 2000) were used mainly to shape the tones of single notes. For this, simple envelopes worked fine, and the ADSR (attack, decay, sustain, release) envelope quickly became an industry standard. But if you wanted to hear a rhythm from a synth equipped with ADSRs, you pretty much had to play it yourself on the keyboard.

Some synths have arpeggiators, with which you can generate an automated pattern. But an arpeggiator plays a string of single notes, not an envelope-based groove. An arpeggiator's output, in other words, takes the place of a keyboard performance.

With a looping multisegment envelope, pressing and holding a s ngle "note" on the keyboard can produce a complex, infectious pattern—a chord rhythm, or perhaps a bass line layered with a beat that includes electronic kick and hi-hat. In this column, I'll discuss the main tools needed to craft this type of envelope.

Sources and Destinations

Before looking at the envelopes themselves, let's do a quick review. An envelope generator is a source for a modulation signal. The signal is called an envelope. You don't listen to the envelope itself—you listen to the tone it's modulating (usually the sound coming from an oscillator). One or more envelopes shape the tone while it's sounding.

> Propulsive rhythms are a cornerstone of pop music.

With a sophisticated synth, you have a number of parameters that can be modulated with envelopes, and you have several envelope generators to use as modulation sources. Typical destinations for envelope modulation include the pitch of the oscillator, the cutoff frequency of a filter, the amount of frequency modulation (FM) being applied to the oscillator's waveform, and the amplitude of the signal coming from the oscillator. Multiply that by three oscillators and three filters, and you can easily have a dozen envelope generators chugging away at once. By assigning the oscillators to different tasks, you can produce a seemingly polyphonic pattern from a single MIDI note (see **Web Clip 1**).

ONLINE BONUS MATERIAL

Break It Up

With a multisegment envelope generator, a complex envelope shape is defined using a series of breakpoints (see **Fig. 1**). Each breakpoint defines the amplitude (output level) of the envelope signal at a certain moment in time. The height of the point on the screen determines the level of the envelope, and the point's left-right position determines the time at which the envelope reaches

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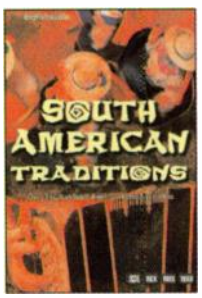

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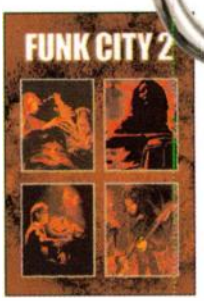

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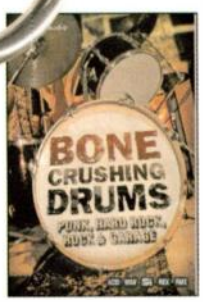

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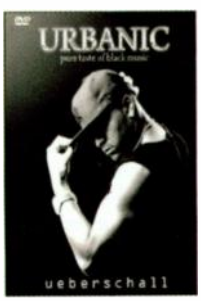

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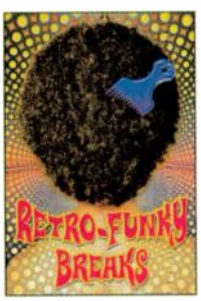

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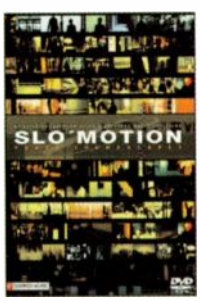

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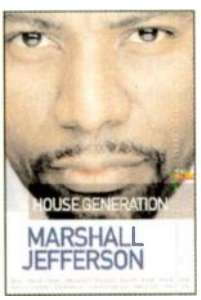

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> Poly mode is a great way to produce complex, hypnotic rhythms.

that level. Some multisegment envelope generators have 16 breakpoints; others have 64 or more.

Typically, you edit the envelope by dragging the breakpoints around with the mouse. When a few points are higher than others in the same envelope, the high points produce rhythmic accents. When some points are farther apart than others, you get sustained notes or rests.

The portion of the envelope that lies between two adjacent breakpoints is called a segment. If point 1 is high and point 2 is low, the segment between 1 and 2 will have a falling shape; the reverse is also true. If the two points are at the same height, the segment is horizontal.

These days, most envelope segments in software synths have a handle in the middle. This handle controls the curvature of the segment and can be dragged up or down with the mouse. A segment can be concave, convex, or linear. The difference in the results produced by these shapes is difficult to describe in words. Fortunately, they are easy to see and hear. If you have a synth whose envelope segments allow the curvature to be adjusted, you can easily make changes and listen to the results.

A few synths go beyond segment curvature to allow refinements such as stepped segments, which have a staircase shape; segments with built-in LFO-wave contours; and contour generators that have features of both envelope generators and step sequencers (see Fig. 2).

Some envelope generators can be set to either mono or poly mode. In mono mode, all of the voices you're playing use the same envelope(s); in poly mode, each note gets its own complement of envelopes. When poly mode is active, try playing a chord with different notes starting on different beats within the measure. This is a great way to produce complex, hypnotic rhythms.

On the Grid

When editing an envelope for rhythmic purposes, you'll probably want to switch on the snap-to-grid function. When this is active, dragging a breakpoint left or right causes it to "snap" to the nearest rhythmic value. Normally the grid will provide 16th-note rhythms, but some synths have additional grid settings.

With most synths, you can choose to edit only one point at a time or you can switch on slide mode. In slide mode, when you drag a given point left or right, all of the points to the right of it (the points that are later in time) also move. This is a convenient feature, especially with envelopes that have 20 or 30 points, as it saves you from having to edit points one at a time.

Snapping to a grid would be of little value unless the envelope generator could synchronize to the tempo of the host sequencer. Sync is often switched on by default in multisegment envelopes. A few synths, notably Native Instruments Massive, play their synced envelopes only when the sequencer's transport is running. If you audition Massive patches when the sequencer is stopped, you won't hear any rhythmic envelope patterns.

Most syncable envelopes don't sense the actual beats and subdivisions of the host sequencer's bars, only the raw tempo. If the note you play or record starts slightly late with reference to the beat, all of the envelope points of the synced envelope(s) will be late. After recording a sequenced track that will play a preset that uses synced envelopes, it's normal to use quantizing to align the start of each note cleanly to the beat. It's also useful to edit the ends of the notes carefully in a piano-roll display so that the rhythm pattern cuts off at a musically meaningful moment.

FIG. 2: The rhythm pattern played by Native Instruments Massive in Web Clip 2 is generated in a Performer module, which is a hybrid design incorporating elements of an envelope generator and a step sequencer. Only the first 8 of the 16 steps are active, but some steps have several envelope points.

You'll probably be able to choose any breakpoint as the start of the envelope loop and any later breakpoint as the loop end (see Fig. 3). When you play and hold a note, the envelope will advance until it reaches the loop end point, then jump back to the loop start point and continue.

If there are several points before the start of the envelope loop, the rhythm pattern will have a sort of "intro." If there are several points after the end of the loop, you'll hear these only after the MIDI note ends. The end segments can create an echo or fill at the end of the pattern.

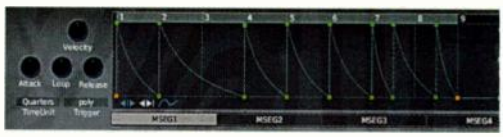

FIG. 3: u-he Zebra 2 has four multisegment envelopes. The loop start and end points are orange rather than green, and the loop is displayed as a gray bar in the time ruler (top).

After creating an envelope, you may be able to store it as a template. You can load it into a different patch or copy it to a different envelope generator in the same patch, then edit the copy and modulate a different sound parameter with the new envelope. This is a quick way to create complex rhythms that make some type of musical sense. If you're running several envelopes within one patch, they don't all have to be the same length. One of them might be an odd number of eighth notes long, producing a cross-rhythm.

Catch a Wave

With so many options and parameters to work with, coming up with a great envelope-based rhythm takes vision and patience. I usually start by auditioning the factory patches. Some work fine right out of the box, and others may need some tweaking (see Web Clip 2).

If you don't already have a software synth equipped with multisegment envelope generators, check the Web for downloadable demo versions of the synths used in this month's Web Clips. You'll be amazed at how much fun this feature opens up. em

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Jim Aikin writes regularly for EM and other music-technology publications. He also teaches classical cello, writes computer-based interactive fiction, and composes and records in his PC-based home studio.

INDUSTRYINSIDER

Follow-Up

Here is contact information for the companies and services Wentz mentions in this interview.

Film Music Network
A site that offers leads and information for film-music composers.
www.filmmusic.net

The Music Business Registry
You can subscribe here to a digital directory of film and TV contacts, which includes music supervisors.
www.musicregistry.com

Natural Energy Lab
A music-placement company to which you can submit music.
www.naturalenergylab.com

The Rights Workshop
Wentz's music-supervision and creative-clearance company.
www.rightsworkshop.com

Rumblefish
Another music-placement company that accepts artist submissions.
www.rumblefish.com

it's much more competitive, because filmmakers are going to other places to get cheaper music because of the cost.

How do music libraries fit into the market?
Music libraries are actually a cheaper way of getting second-rate music. However, a lot of the music libraries now, in order to add more cachet to their libraries, are using well-known musicians [to create content]. So what they're doing is great for musicians who have content or want to create content—that is, they don't want to tour anymore—or for sidemen who have been in bands to create content once they get into one of these libraries. They just get with their friends, rip out this stuff, and send it to the libraries. And when the libraries place it on television, they get residuals from it. That's really good.

How do you think independent musicians and composers should try to get their material licensed?
In my book, I talk about finding a music-placement person.

You mean a music supervisor?
No, a music supervisor is someone who receives music, and they place it in the projects they're working on. A music-placement person is someone who takes a catalog and tries to get it to the music supervisor. They're representing catalogs. A music supervisor doesn't represent catalogs.

> There are some supervisors who gobble up new stuff.

What's an example of a music-placement person?
I have a chapter in my book about it. There's one called Rumblefish. There's Danny Benair's company [Natural Energy Lab]. They're generally individuals in Los Angeles. Otherwise, you can go directly to the supervisors.

Are supervisors receptive to getting pitched by musicians?
It depends. Everybody's different. There are some supervisors who gobble up new stuff and they love hearing it. And there are other supervisors who don't.

Are there directories of music supervisors?
Sure there are. There's a business called the Music Registry, and they have a list of music supervisors in their film and TV issue. I think it costs $100.

You also mentioned a site called Film Music Network where you can get information.
That's Mark Northam's organization.

Any advice for how musicians should present their material to music supervisors?
List the stuff on the case, not on the CD. Also, what I hate is throwing a CD into my iTunes and then having to put the titles into the songs.

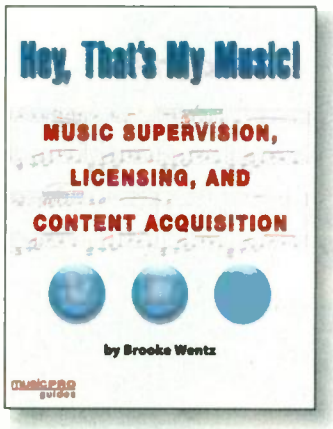

FIG. 2: Wentz's book gives thorough coverage on the subject of music licensing.

In other words, when you pop in a CD on your computer, you want to see what the tunes are?
Yes, the coding should be correct.

What if they send you an email with a link to play music?
If they email, I need an MP3 that I can actually take.

So it's got to be something you can download as well as just listen to. That way, you have it to play for other people.
Right.

Is it important for a musician or composer to go slowly if offered a deal, so he or she can check out the terms?
The worst thing a musician can do is agree to a fee and get all excited about the project and then have to hire someone to go in and try to renegotiate for him or her. I've had someone who did that, and he told the filmmaker they could have the music for $250, when essentially he should have gotten $5,000 for it. He didn't know what he was doing and then when I stepped in to negotiate for him, it was too late—[the filmmaker] was like, "No, this guy said I could do that. Well then, I'm going to take his music out."

The musician negotiated it himself, first?
Yeah, the filmmaker got in touch with the musician, and instead of the musician saying, "Give me the details of what the use is and I'm going to figure this out first," he got all excited and called me to do the deal, and there was nothing I could do.

So the lesson learned was . . .
Don't negotiate your own stuff unless you know what you're talking about. EM

Mike Levine is EM's executive editor and senior media producer and the host of the twice-monthly Podcast "EM Cast" (emusician.com/podcasts).

Q&A: Brooke Wentz

Expanding opportunities for music licensing.

The old refrain "You ought to be in pictures" usually refers to potential actors and actresses, but nowadays it could also apply to independent musicians—or, more precisely, to their music. The music-licensing market for TV and movies is expanding, and there is greater opportunity than ever before for savvy independent musicians and composers to get their music onto the big or little screen. To find out why this is happening, and to get some practical advice on how to make contacts in this field, I turned to Brooke Wentz (see Fig. 1), a longtime music supervisor who just wrote a book on the subject of music licensing called *Hey, That's My Music!* (Hal Leonard, 2007; see Fig. 2).

By Mike Levine

KATIE O'LEARY

FIG. 1: Brooke Wentz.

Who is your book aimed at?

It's written for musicians who want to know about licensing, anybody who's a copyright owner, or even a producer who wants to know how things are priced or all about the licensing area. It's also written for filmmakers or others who use content, like an ad agency or anyone, to show them how the process works and how difficult it is.

Are you still an active music supervisor?

Yes, I am—that's my primary source of income. I have my own business called the Rights Workshop. We predominantly do music supervision and clearance.

It's my impression that the music-licensing market is growing. Would you agree?

Yes.

Why is that?

Since 2000, record labels' sales have decreased. Record labels exist primarily as a business to sell records, just like Colgate's main source of income is selling toothpaste. All the record labels have a special-markets division, which handles anything other than selling records. Anything that comes through there is called ancillary income. And that means that it's money that comes in separate, aside from their main source of business. So any money that comes in for licensing music out for a compilation (meaning other labels' compilations) or for synchronization use (meaning in films, TV, or video games) for ringtones and for sampling, all comes through that special-markets division. Those are other sources of income that use their masters—which are the label's assets, essentially—to make money that doesn't cost them anything except for the person answering the phone.

And for the legal work.

Right, other than that and the lawyers who have to do some of the paperwork, it doesn't cost them anything. So what's happened is that because there's been a decrease in record sales, and they're still giving out those lovely large advances, they're making up for it by increasing their fees on the synchronization side. That's become one area where they've seen more income. And then you've got this huge amount of new platforms where people want to use their music. When I was at ESPN, which is what I did prior to this, the Discovery Channel was just starting up. Now you've got the Outdoor Network, Discovery 2, ESPN 7 *[laughs]* or whatever, you've got the toothpaste channel, the blue hair channel, and all these crazy channels that need music in the background. You also have a ton more documentary filmmakers and other independent filmmakers, because everybody can now technologically make things for themselves easily. You've got all this new content, plus all these Internet sites that want content. They want filmmakers to give them their films, and they want to brand their site using music. You have all these new platforms that want to use music to enhance their brand or [use] in their project, and boom—you've got a lot more people requesting licenses for projects.

You mentioned that labels have raised their licensing fees. Has that resulted in more people looking for independent music, which is presumably cheaper? There's so much independent music out there.

Yeah, there is. And you can go to MySpace or find other things. A lot of [film] composers are finding that


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Follow-Up

Here is contact information for the companies and services Wentz mentions in this interview.

Film Music Network
A site that offers leads and information for film-music composers.
www.filmmusic.net

The Music Business Registry
You can subscribe here to a digital directory of film and TV contacts which includes music supervisors.
www.musicregistry.com

Natural Energy Lab
A music-placement company to which you can submit music.
www.naturalenergylab.com

The Rights Workshop
Wentz's music-supervision and creative-clearance company.
www.rightsworkshop.com

Rumblefish
Another music-placement company that accepts artist submissions.
www.rumblefish.com

it's much more competitive, because filmmakers are going to other places to get cheaper music because of the cost.

How do music libraries fit into the market?
Music libraries are actually a cheaper way of getting second-rate music. However, a lot of the music libraries now, in order to add more cachet to their libraries, are using well-known musicians [to create content]. So what they're doing is great for musicians who have content or want to create content—that is, they don't want to tour anymore—or for sidemen who have been in bands to create content once they get into one of these libraries. They just get with their friends, rip out this stuff, and send it to the libraries. And when the libraries place it on television, they get residuals from it. That's really good.

How do you think independent musicians and composers should try to get their material licensed?
In my book, I talk about finding a music-placement person.

You mean a music supervisor?
No, a music supervisor is someone who receives music, and they place it in the projects they're working on. A music-placement person is someone who takes a catalog and tries to get it to the music supervisor. They're representing catalogs. A music supervisor doesn't represent catalogs.

> There are some supervisors who gobble up new stuff.

What's an example of a music-placement person?
I have a chapter in my book about it. There's one called Rumblefish. There's Danny Benair's company [Natural Energy Lab]. They're generally individuals in Los Angeles. Otherwise, you can go directly to the supervisors.

Are supervisors receptive to getting pitched by musicians?
It depends. Everybody's different. There are some supervisors who gobble up new stuff and they love hearing it. And there are other supervisors who don't.

Are there directories of music supervisors?
Sure there are. There's a business called the Music Registry, and they have a list of music supervisors in their film and TV issue. I think it costs $100.

You also mentioned a site called Film Music Network where you can get information.
That's Mark Northam's organization.

Any advice for how musicians should present their material to music supervisors?
List the stuff on the case, not on the CD. Also, what I hate is throwing a CD into my iTunes and then having to put the titles into the songs.

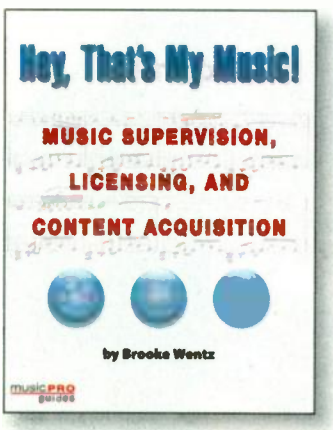

FIG. 2: Wentz's book gives thorough coverage on the subject of music licensing.

In other words, when you pop in a CD on your computer, you want to see what the tunes are?
Yes, the coding should be correct.

What if they send you an email with a link to play music?
If they email, I need an MP3 that I can actually take.

So it's got to be something you can download as well as just listen to. That way, you have it to play for other people.
Right.

Is it important for a musician or composer to go slowly if offered a deal, so he or she can check out the terms?
The worst thing a musician can do is agree to a fee and get all excited about the project and then have to hire someone to go in and try to renegotiate for him or her. I've had someone who did that, and he told the filmmaker they could have the music for $250, when essentially he should have gotten $5,000 for it. He didn't know what he was doing and then when I stepped in to negotiate for him, it was too late—[the filmmaker] was like, "No, this guy said I could do that. Well then, I'm going to take his music out."

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Prophet '08

The first polyphonic analog classic of the 21st century?

>> PRODUCT SUMMARY

polyphonic analog synthesizer **$1,999**

PROS: Lush, vintage sound. Flexible modulation routing. Detailed programmability. Thorough MIDI implementation.

CONS: No random-access program changes. No USB connectivity. MIDI can't address layers independently.

	1	2	3	4	5
FEATURES				4	
EASE OF USE			3		
QUALITY OF SOUNDS				4	
VALUE					5

Dave Smith Instruments
www.davesmithinstruments.com

>> In our reviews, prices are MAP or street unless otherwise noted.

ONLINE BONUS MATERIAL

By Geary Yelton

Ever since synth designer Dave Smith launched the Sequential Circuits Prophet-5 at the 1978 NAMM show, it has held a special place in the pantheon of synthesizers. It was the first truly polyphonic synth that could instantly call up every parameter in dozens of stored patches. Since then, its warm and punchy analog timbres have graced innumerable recordings and withstood the test of time, making it an enduring object of desire. The Prophet-5 rev. 3 and its subsequent offspring—the Prophet-10, Prophet-600, Prophet-T8, and the monophonic Pro-One—owe at least part of their sound to the Curtis Electromusic (CEM) integrated circuits Smith used to build them.

Fast-forward 30 years: Dave Smith Instruments (DSI) has unveiled the Prophet '08, a traditional subtractive synthesizer with a 61-note keyboard and two independent voice layers, each with two digitally controlled analog oscillators (DCOs), a voltage-controlled amplifier, a white-noise generator, three digital 5-stage envelope generators, and four LFOs. Like its predecessors from the '80s, the Prophet '08 incorporates a CEM-based analog lowpass filter for each layer. Although the instrument's signal path is entirely analog, it offers many of the advantages of digital electronics, including memory storage for 256 rewritable programs, a sophisticated modulation matrix, an arpeggiator, and a 4-channel, 16-step gated sequencer.

Peeling the Layers

For the most part, the Prophet '08's synthesis architecture and front-panel layout are very clear-cut. Each program supplies as many as two complete timbres in layers that load simultaneously—an arrangement that effectively doubles the number of oscillators, filters, and all the other elements that make up a sound. If a program contains only one sound or you split the keyboard, you can play as many as eight notes at the same time; programs that layer one sound atop another have 4-voice polyphony.

Functional sections containing knobs and buttons are arranged in two rows (see Fig. 1). The lower row contains sections for the Oscillators, Lowpass Filter, and Amplifier, as well as the Master Volume knob and buttons

FIG. 1: With eight analog voices and sophisticated programmability, the Prophet '08 is the most advanced analog poly synth you'll find in its price range.

for transposing octaves and enabling unison mode. Eight LEDs indicate which of the eight voices are firing, giving you instant visual feedback about the triggering mode. The upper row contains sections for Envelope 3, LFOs, Misc Parameters, and Modulators.

Knobs and buttons clustered around the LCD allow you to select programs and change whatever parameters are displayed. These parameters include global settings such as MIDI channel and damper-pedal polarity and program-specific settings that appear whenever you touch almost any knob or button. I was disappointed that the Prophet doesn't provide a means to instantly jump to any program by pressing buttons; you step through programs sequentially using the +/Yes and -/No buttons or by turning the Parameter knobs. If you want random access to programs, you'll need to send a MIDI Program Change from an external source.

Also in this section are buttons for stacking the two layers or splitting them on the keyboard; you can specify any note as the split point. Pressing the Edit Layer B button assigns all the control panel's knobs and buttons to the second layer. You can easily copy timbres between programs or from one layer to the other. Unfortunately, though, you can't address the two layers over separate MIDI channels.

DSI had to make some minor trade-offs to hold down the Prophet's cost. One of them is the display: rather than the generous (and costly) graphical LCD you find on many recent synths, it displays 2 rows of 16 alphanumeric characters. That's enough to convey the necessary information without cryptic abbreviations, and the bright-red characters are easy to read at any angle. Considering all the knobs and the lack of menus, a larger LCD is probably unnecessary, anyway. Another trade-off is the placement of the pitch-bend and mod wheels: they're mounted on the control panel above the keyboard rather than to its left, contributing to the instrument's somewhat compact form factor. I like the semiweighted keyboard, which has a slightly springy feel and predictable, adjustable Aftertouch. Its action feels consistent across its entire 5-octave range.

On the rear panel, audio connections comprise two main ¼-inch outputs, another pair of ¼-inch outputs for the second layer, and a ¼-inch stereo headphone jack (see Fig. 2). Two more ¼-inch jacks accommodate a sustain footswitch and a control-voltage pedal for controlling any of six assignable parameters. A 5-pin DIN Poly Chain jack for connecting a second Prophet '08 to double the polyphony accompanies the MIDI In, Out, and Thru jacks.

Unlike virtually every other synth made in recent years, however, the Prophet has no USB

> The Prophet '08 delivers a lot of synth power for the money.

FIG. 2: In addition to the expected main outputs, pedal jacks, and MIDI ports, the Prophet '08's sparse rear panel furnishes a pair of separate outputs for the second layer of sounds.

connection. Depending on your setup, no USB may or may not be a problem. Your computer will need a USB/MIDI interface, even if it's only another synth or an audio interface with both MIDI and USB ports. A helpful Prophet '08 editor-librarian ($49.95) developed by Soundtower Software is available for Windows or Mac OS X (see Fig. 3); it exchanges data via the MIDI ports.

Step Closer

Knobs in the Oscillators section control the frequency, waveshape, and glide rate of each of the two DCOs, as well as the white-noise level and the balance between the oscillators. Independent glide rates let you create patches with really thick portamentos (see Web Clip 1). Four analog waveforms are available: sawtooth, triangle, variable-width pulse (in 1 percent increments), and a combination of triangle and sawtooth. The Sync 2→1 button enables classic hard-sync sounds. You can find additional oscillator parameters in Misc Parameters. One of them, Oscillator Slop, introduces a bit of randomness to simulate the drift typical of analog oscillators that aren't digitally controlled.

In the Lowpass Filter section are knobs for controlling cutoff frequency and resonance, and the depth of four modulators: a dedicated envelope generator (EG), Velocity, key tracking, and noise. The 4-Pole button toggles between 12 and 24 dB-per-octave cutoff slopes, approximating the lowpass responses of classic Oberheim and Prophet-5 lowpass filters, respectively. Five additional knobs control the filter's EG, which adds an initial delay stage to the standard ADSR envelope. Being able to delay the attack is especially useful for programs with a second layer. Although the fast response times of analog EGs usually give them an edge over digital EGs, the Prophet's digital envelopes sounded sufficiently snappy to me. The Audio Mod knob lets you create clangorous FM sounds by applying one oscillator to modulate the filter's cutoff frequency.

The Amplifier section furnishes an identical DADSR generator, as does the Envelope 3 section on the control panel's upper left. The third EG is capable of looping, and its Destination knob allows you to assign it to any one of the Prophet's 42 available modulation destinations. Likewise, you can assign each of the LFOs to modulate any destination. You can also select from five LFO waveforms (including random) and press the Key Sync button to restart the cycle from zero whenever you play a new note. For additional FM-type sounds, LFO frequency can spin up into the audio range, as high as middle C. Because they're digital, the LFOs can also sync to the sequencer's tempo at rates ranging from 16 cycles per step to 1 cycle every 32 steps.

Only two knobs are in the Misc Parameters section, one for selecting the parameter and another for selecting its value. These control a dozen program-specific parameters printed just below them, including glide mode, Aftertouch sensitivity, and pitch-bend range. This section works a lot like synth interfaces in the early days of MIDI—you just dial up a parameter and then dial in its value.

The Modulators section provides four flexible modulation routings. Each routing lets you choose from 20 sources—ranging from any of the four sequences to any of the three EGs—to modulate one of the 42 available destinations. Destinations include several uncharacteristic but creatively useful choices, such as noise level, output pan, and audio modulation amount.

> It sounds every bit as warm and punchy as its forebears.

Just to the left of the display are two knobs and two buttons for controlling the rather basic arpeggiator and the analog-style digital sequencer. Because you must play a note to trigger the sequence, it's called a gated sequencer. You can route each of the four sequencer tracks to affect any modulation destination, with at least one of them usually (though not necessarily) controlling oscillator pitch. When you press the Edit Sequencer button in the Modulators

FIG. 3: Prophet '08 Sound Editor provides a graphical user interface for your Mac or PC, making it easy to instantly access any parameter in either layer.

section, LEDs alongside 16 knobs in the Low-pass Filter and Amplifier sections blink at the sequencer's tempo, and those knobs control the value of 16 individual steps. Values range from 0 to 125, and you can also specify that a step is a rest or the final step in the sequencer. With careful programming, you can even create sequences that play notes of varying duration.

Return of the Prophet

In terms of functionality, the Prophet '08 is light-years ahead of the Prophet-5 and all its previous progeny. Even without two layers for each program, it has more of everything, including more envelopes, more LFOs, more versatile modulation, and more user parameters. Its MIDI implementation runs rings around most instruments; you can address absolutely every parameter with MIDI, and almost every knob sends MIDI Control Changes. All these features wouldn't mean much if it weren't a great-sounding synthesizer; happily, it sounds every bit as warm and punchy as its forebears. It cuts through in a mix, and Prophet '08 tracks layer quite well with other Prophet '08 tracks (see **Web Clip 2**).

Like its predecessors, the Prophet '08 delivers a hands-on immediacy that makes it loads of fun to play. Its two patch banks are stuffed full, with 256 expertly programmed factory patches shamelessly flaunting the variety of lush, animated sounds it's capable of producing. Most remarkably, it sells for about two grand, making it the most affordable synth of its kind in decades (see the **online bonus material**). No doubt about it: the Prophet '08 delivers a lot of synth power for the money.

Still, I bet many users would pay a little more for some additional features. I don't miss having an onboard effects processor, but instead of the glowing pitch-bend and mod wheels, leopardwood end panels, autographed overlay, and editor-librarian software included with the Special Edition ($2,449), I'd prefer traditionally mounted pitch-bend and mod wheels, even though that would increase the instrument's footprint slightly. I'd also want to address the two layers on different MIDI channels.

At the 2008 NAMM show, DSI announced a tabletop/rackmount version that retails for $1,649. Thanks to the instrument's Poly Chain port, the new module should address the needs of Prophet '08 owners who want more polyphony (and more of everything else).

Most buyers will choose the Prophet '08 for its sound, its economy, its programmability, and, compared with older analog synths, its dependability. On all those counts, I feel confident that none of them will be disappointed.

EM associate editor Geary Yelton wrote and published the first edition of The Rock Synthesizer Manual *in 1983 and has been writing about electronic musical instruments ever since.*

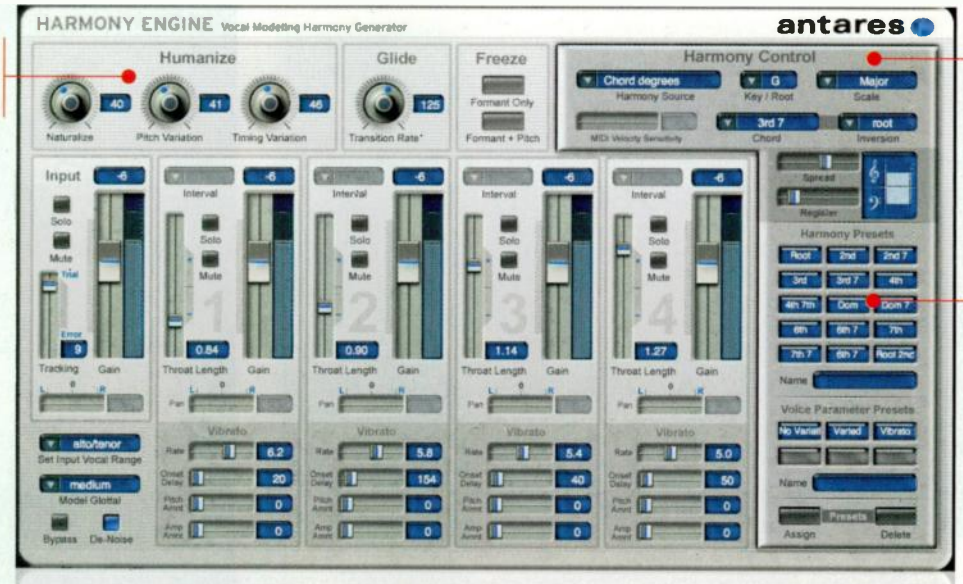

FIG. 1: Harmony Engine's user interface is centered around a 5-channel mixer, with harmony setup and preset controls on the right and voicing controls at the top and bottom.

Antares Audio Technologies
Harmony Engine 1.0 (Mac/Win)

Zplane.Development
Vielklang 1.1.2 (Mac/Win)

Different approaches to harmony backing tracks.

By Len Sasso

PRODUCT SUMMARY

Antares Harmony Engine 1.0
harmony-generating software **$299**

PROS: Easy setup. Real-time harmony generation. Flexible array of harmony modes and voicing options. Good documentation.

CONS: No MIDI preset recall. Output options not fully implemented in all hosts.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
AUDIO QUALITY	1	2	3	4	5
VALUE	1	2	3	4	5

Antares Audio Technologies
www.antarestech.com

ONLINE BONUS MATERIAL

Antares Harmony Engine 1.0 and Zplane Vielklang 1.1.2 apply different strategies to perform the same musical task: generating harmony parts from solo vocal leads. Although their approaches differ, they share the goal of offering an automatic solution, together with options to take complete control. Both programs do an excellent job.

Harmony Engine is a plug-in effect, and Vielklang is a plug-in instrument. Both are cross-platform and come in VST, RTAS, and AU formats. Harmony Engine may be purchased as a download from Antares or in a box from authorized dealers, and it uses Pace iLok copy protection. Vielklang is purchased and downloaded directly from Zplane and is password protected.

Although harmonization is a computationally intensive process, my dual 2 GHz Power Mac G5 easily handled each plug-in in isolation. With most DAWs offering some form of track freezing, you can use either product within a project, even on a moderately powerful machine.

Different Strokes

To generate a viable harmony part, you need to start with a clean solo (not merely monophonic) lead. For convenience, I'll call it the melody. The melody is not restricted to vocals, but both plug-ins' settings are vocal oriented, and they work best with vocals. You should apply de-essing, noise reduction, compression, pitch correction, and EQ as needed to clean up the track before harmonizing. Special effects such as reverb, chorus, and delay should come after harmonization.

The biggest difference between Harmony Engine and Vielklang is how they handle the melody. Harmony Engine takes real-time audio input and generates its harmony parts on the fly (see Fig. 1). Vielklang loads the melody into

FIG. 2: Vielklang's piano-roll-style editor (center) and mixer (bottom) are color coded, with the melody always in orange. Harmony and Snapshot controls appear on the right.

its own memory for analysis before harmonization. At first glance, that might seem like a huge difference, but when you consider that the melody needs to be carefully prepared for best results, it doesn't make that much difference whether you load an audio file into the plug-in or place it on a DAW track for processing. You can sing or play a part directly into Harmony Engine, which is useful. On the other hand, Vielklang gives you a piano-roll-style graphic of the melody and harmony parts that you can manipulate directly. The program also has its own time-stretching to follow your host's tempo changes. Most important, by analyzing the melody in advance, Vielklang can apply voice-leading and voice-arranging algorithms to generate its harmonies (see Fig. 2).

Harmony Engine generates as many as four harmony parts, which it outputs in mono, stereo, or on five separate channels (one for each part and one for the melody). In the hosts that I used, Ableton Live 7 and Apple Logic Pro 8, the output options were more limited. Live supports only separate-channel output, and you need to route those outputs manually (see the **online bonus material** at emusician.com). Logic supports only stereo output.

With Vielklang you choose either 2- or 4-part harmony (which can include the melody), and you get a stereo mix or a separate stereo output for each part. Both plug-ins offer various methods to generate the harmony parts, and both provide humanization controls such as pitch and time randomization, legato glide, and so on. Vielklang lets you shift formants. Harmony Engine's formant correction is automatic, but it lets you adjust throat size using Antares Avox Throat Modeling technology.

Harmony Engine

The first step in using Harmony Engine is to select the manner in which harmonies are generated, or a Harmony Control mode. Two Interval modes let you choose the pitch interval relative to the melody for each harmony part. In Fixed Interval mode, the interval is measured in semitones, whereas in Scale Interval mode, it is measured in scale degrees. In the latter case, you specify the root and type of scale (C major, for example). That's the fastest way to generate scale-corrected harmony parts, but because the parts move in parallel, it's not the most interesting.

In Chord Degrees mode and Chord Names mode, you specify the chord either by scale degree and inversion or by name. For instance, you could specify a Dm7 as built on the second degree of the C major scale (in Chord Degrees) or as a minor seventh chord whose root is D

PRODUCT SUMMARY

Zplane.Development Vielklang 1.1.2 harmony-generating software $299 (MSRP)

PROS: Piano-roll-style editing of individual parts. Harmony Snapshots recallable by MIDI. Melody analysis with optional scale correction and time-stretching. Exports harmony parts as audio and MIDI files.

CONS: Relies on host preset management. Zooming and editing could be smoother.

FEATURES	4
EASE OF USE	3
AUDIO QUALITY	3
VALUE	3

Zplane.Development
http://vielklang.zplane.de

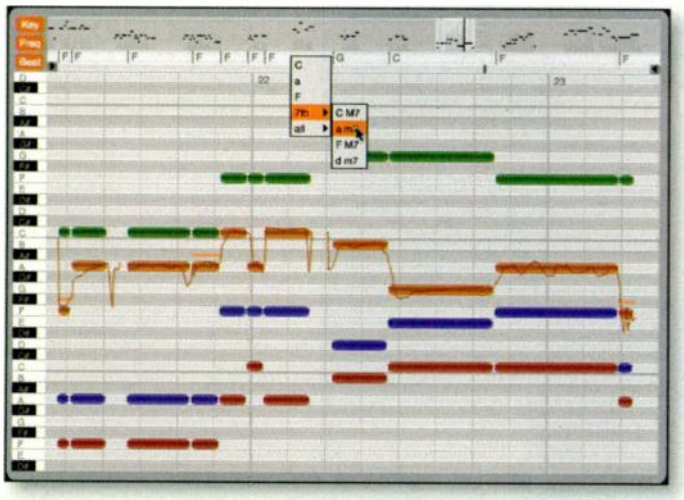

FIG. 3: Vielklang chooses chords based on its melody and scale analysis, but you can change the chord selection manually.

(in Chord Names). In these modes, you select a range and spread for the voices, but Harmony Engine chooses the specific notes.

Three MIDI modes let you select the chord notes using your MIDI keyboard. In Chord Via MIDI mode, Harmony Engine uses the pitch classes (note names) of the held notes but, as in the Chord modes, chooses the notes based on the specified range and spread. In MIDI Omni mode, the chord is made from the held notes, but you can't predict which Harmony Engine voice plays which note. For that, you use MIDI Channels mode, in which a note's MIDI channel routes it to a specific voice. (MIDI Channels mode is not supported in Live 7.) The Interval and Chord modes are the easiest to use, but the MIDI modes give you more control.

The Interval and Chord modes may sound a little inflexible, but 15 harmony presets let you change chords on the fly. Presets save all Harmony Control settings except scale roots and types, which are purposely omitted to allow the same batch of presets to serve different scales. You use plug-in host automation to recall presets and scales, and thereby make Harmony Engine follow your song. It would be nice to be able to recall presets with MIDI Note or Control Change messages.

His Master's Voice

Harmony Engine gives you a fair amount of control over the voices it creates. Each voice has its own mixer channel. Beyond the standard mixing controls (mute, solo, pan, and volume), you get a Throat Length slider and four vibrato controls. Throat length has an effect on gender and vocal quality similar to, but subtler than, formant shifting.

You use the vibrato controls to set the rate, predelay, and amount of vibrato and tremolo. Because each voice has independent settings, the generated vibrato and tremolo can be very effective, but they may conflict with natural vibrato, so they need to be used with care. Alternatively, use the Naturalize control in the Humanize section to dial back natural vibrato and other pitch gestures in the melody. The Humanize section is also where you introduce random variations in pitch and timing of the harmony voices.

Two other voicing controls, Glide and Freeze, round out the voice settings. Glide induces portamento between legato notes. Freeze locks in the formants or the formants and the pitch of the harmony voices. The latter is useful for holding a chord with the harmony voices while the melody moves on, and of course you can automate the Freeze buttons. You get six voice presets, and as with the harmony presets, you use host automation to make voice presets follow your song.

Vielklang

As mentioned, you need to prepare the melody beforehand and load it into Vielklang's memory. If you want the same instance of Vielklang to harmonize separate melody clips, you must first combine them in a single audio file. You do not, however, need to have the timing of the clips within that audio file match their timing in your project. Vielklang lets you create segments within the audio file and store them, along with all harmony settings, in Snapshots, which you trigger manually. If you do preserve the timing, you have the option of letting Vielklang follow the host's transport rather than triggering the clips manually.

You get 32 Snapshots, and you can freely assign MIDI Note messages to trigger them. Use your host's preset load and save operations to store complete Vielklang setups, which include voice settings and all Snapshots. The Snapshot system is convenient for triggering different segments within the audio file, and for triggering the same segment with different harmony settings.

> The biggest difference between Harmony Engine and Vielklang is how they handle the melody.

Vielklang analyzes your melody for harmonic content. It then assigns a root and scale and corrects the melody to that scale. But you can change the scale settings as well as turn scale correction off.

Harmonic Solutions

Harmony parts can be generated by two different methods: Parallel and Intelligent. Parallel harmony corresponds to Harmony Engine's Scale Interval mode. You select the intervals, and then get scale-corrected parallel harmony. Intelligent harmony uses the melody along with voice-leading algorithms to create chords within the chosen scale. You can change each chord individually (see Fig. 3). When you have

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–Adriana Balic, Keyboardist, Background Vocalist, Pink, Il Divo, Jersey Boys, Sheila E., Peabo Bryson, Brenda Russell, Norman Brown

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something that's close to what you want, switch to Edit mode and change or mute individual notes in the piano-roll display.

Like Harmony Engine's, Vielklang's voice settings are independent of the harmony settings, and they are not saved with Snapshots. In addition to mixing controls, you can introduce random variations in timing, smooth out pitch transitions, set the amount of pitch quantization, choose the formant shift, and apply a different fixed delay to each voice. You use your host's plug-in preset-management system to save and recall full setups, which include all Snapshots, audio files, and voice settings. (I was occasionally prompted to locate the audio file when recalling a preset, so keep it handy.)

One reward for spending the extra time it takes to compile, trim, and load audio files is the option to save the results directly from the plug-in, rather than bouncing tracks in your host. Furthermore, you can export the harmony parts as MIDI files and use those to play other synths or samplers. If your host supports it, you can even drag-and-drop MIDI parts directly to MIDI tracks.

Perfect Partners

Harmony Engine and Vielklang are different enough from each other to justify your having both if you frequently generate harmony parts and you have the budget. Harmony Engine is the quicker of the two to set up and a bit easier to use. Vielklang gives you more precise control, MIDI triggering of Snapshots, and the aforementioned export options.

The generated harmonies of both plug-ins sound very good when heard in context. Because no amount of formant shifting or throat modeling can turn a soprano into a baritone, the parts in isolation can sound a bit unnatural. That's not their intended use, but listening to the individual parts is a great way to tweak them (see **Web Clips 1 and 2**).

Both companies offer downloadable demos, and if you need to choose just one program, it's worth your time to try them both out. You'll quickly discover which conforms best to your work methods.

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

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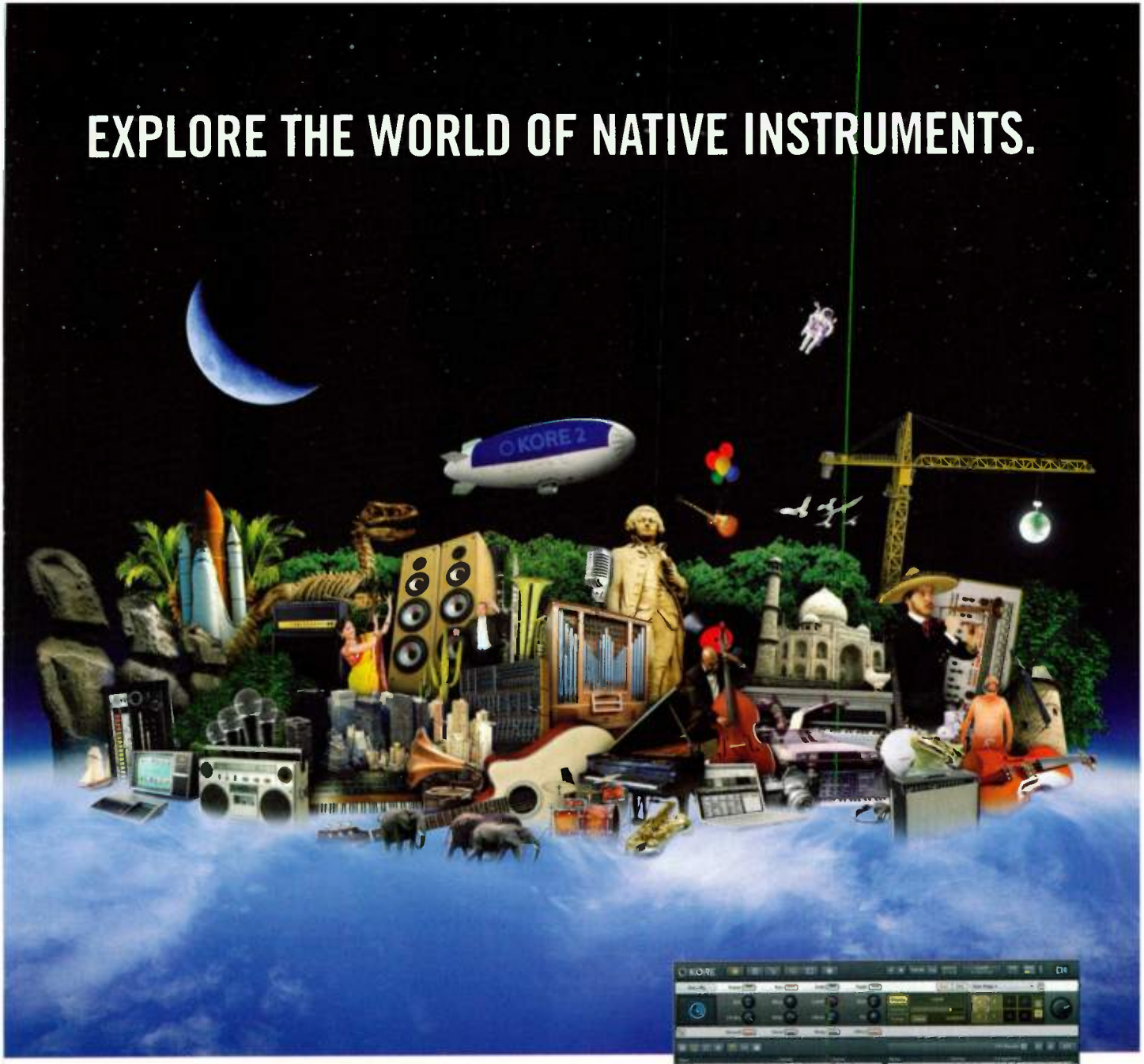

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Roland

HD-1 V-Drums Lite

The right combination of quality and affordability.

>> PRODUCT SUMMARY

electronic drum kit **$999 (MSRP)**

PROS: V-Drum sounds, feel, and response at an affordable price. Painless setup. Easy MIDI triggering.

CONS: Limited pad position adjustment. Only ten drum kits. No kit customization. Wobbles a little on carpet.

	1	2	3	4	5
FEATURES			●		
EASE OF USE					●
QUALITY OF SOUNDS				●	
VALUE				●	

Roland
www.rolandus.com

ONLINE BONUS MATERIAL

By Markkus Rovito

Roland's V-Drums have consistently set the standard for playability in electronic drum controllers. Recently the company hit a sweet spot in the market with the HD-1 V-Drums Lite, the first V-Drum kit to have a retail price of less than a grand.

The HD-1 successfully targets two disparate groups: first-time and/or hobbyist drummers who want the convenience that an electronic set provides, and project studio owners who want a MIDI-capable kit that doesn't take up a lot of space. To achieve the low price, Roland reduced the contents of the sound module to ten kits, removed the editing features, and included only one of the patented mesh-head drum pads (the snare pad). But although you get less of what the V-Drums are famous for, this kit has other charms. Its ultracompact frame is less than 3 feet wide and 4 feet high when fully assembled, making it ready to tuck away in a corner.

Setting up the HD-1 is a breeze, because the kit comes partially assembled with three tom pads already attached to the stand and arm pipes. In addition, the snare, three cymbals, the kick and hi-hat pedals, and the sound module attach easily, so you can start rocking in less than half an hour. For beginners, I would recommend getting the HD-1PAK ($1,295 [MSRP]), which includes the matching PM-01 Personal Drum Monitor, a drum throne, sticks, a minijack cable, and earbuds.

Beatbox

The sound module is fairly simple to use. It has a MIDI Out port, a stereo ⅛-inch line-level output, an ⅛-inch stereo headphone jack, and a stereo ⅛-inch Mix In jack so that you can practice along with any audio source—a great touch. Five numbered buttons activate kits, and the Variation button activates the second kit for each number. Pressing and holding a numbered button triggers example patterns. You can also adjust the global pad sensitivity by holding down the Variation button until it blinks and then choosing 1 through 5 for low to high sensitivity.

The metronome on/off button starts a click sound (selectable from Click, Cowbell, or Maraca), and the Tempo knob varies the speed from 40 to 220 bpm. The Volume knob adjusts both the kit and the metronome volume, but fortunately you can choose three overall metronome levels through a series of button pushes.

The HD-1 manages to cover a lot of bases with its ten kits, including rock, jazz, metal, hip-hop, dance, ethnic, and special-effects sounds. They all deliver the expected Roland fidelity and are multisampled so that each pad triggers two or three separate samples according to Velocity, rather than merely a single sample played at varying volumes. For instance, hitting the ride hard triggers a bell, and hitting the snare softly produces a nice ghost note. A few of the kits, such as World, Voices, and Droid, played entirely different sounds according to Velocity, and I enjoyed the odd rhythms that came from adjusting my dynamics. I also appreciated the Double Bass kit, an open hi-hat/double kick kit suitable for your heaviest rock 'n' roll daydreams.

Getting Down

At first I thought that the HD-1's compact playing area and small pad surfaces handicapped my drumming. But after a couple of hours of woodshedding, I came to enjoy the instrument. Naturally, the mesh snare was my favorite pad on the kit. Its bouncy response measures up to that of the heads of high-end V-Drum kits, making everything from languid paradiddles to tight rolls feel good. The cymbals are not the deluxe chokeable numbers from the more expensive kits, and the rubberized toms aren't nearly as exciting as mesh. What's important, however, is their excellent responsiveness. The exception is that I had to hit the cymbal pads harder than the drum pads to extract the high-Velocity sounds.

The beaterless pedals—a new concept for V-Drums—cut down on some of the noise of traditional pedals and are well suited to both heel-down and heel-up playing. If anything, I thought they were a little less forgiving of lax technique than an acoustic kit, so they're good for working on foot chops.

In general, the HD-1 has limited adjustability, but some pad rotation and vertical adjustment is possible. Experienced drummers may not like the fact that the position of the pedals cannot be changed, for example. I tested the kit on a thin carpet with padding underneath, and it swayed back and forth a bit when I played hard, though it never threatened to actually fall or collapse. The ideal floor would be hardwood or concrete covered with a thin, firm rug.

Play What You Want

The HD-1's ace in the hole for project studios is that it's a low-cost and compact way to have

a full kit for recording MIDI parts into a DAW or triggering sounds from an external MIDI module. While its onboard kits are fine, they'll probably be little more than practice fodder for computer-based musicians. I would much rather play the sounds from a software instrument or record MIDI parts and substitute the sounds I want later.

> I'm hooked on it as a combination practice kit and MIDI drum controller.

As you would expect, the HD-1 transmits standardized drum-kit MIDI Note Numbers for its pads on channel 10 through the module's MIDI Out. (Although it may have increased the price slightly, a USB connection for transmitting MIDI would have been an ideal feature for Roland to have included.) The Number and Variation buttons also transmit Program Change numbers 1 to 10.

I hooked the HD-1 to the M-Audio iControl, a $100 control surface with a MIDI input. From there, all I needed to do was create a software drum track, and it mirrored the HD-1 sounds perfectly without any adjustment required. This made it fast and easy to record MIDI drum parts with a full kit, which is more satisfying for a drummer than playing a keyboard or MPC-style pads. It was also no problem to play standalone instruments or plug-ins, such as FXpansion BFD.

It's a Hit

Whether for a beginning drummer or a project studio owner or both, the HD-1 V-Drums Lite makes good on Roland's promise to deliver the essential highlights of the V-Drum series in a compact, inexpensive package. Personally, I'm hooked on it as a combination practice kit and MIDI drum controller.

Markkus Rovito is Remix *magazine's technology editor by day and a drummer, computer musician, and DJ by night.*

FIG. 1: Guitar Rig 3 features a newly redesigned and optimized user interface. Enhancements throughout make everything cleaner, more efficient, and intuitive.

Native Instruments

Guitar Rig 3 (Mac/Win)

NI's cyberguitarist's toolbox gets an upgrade.

By Babz

PRODUCT SUMMARY

guitar amp– and effects-modeling software with hardware controller Kontrol edition	**$499**
software edition	**$299**
software edition update	**$99**
hardware and software update	**$349**

PROS: Redesigned user interface with many new features and improved work flow. Excellent new amp and effects models. Hybrid technologies offer new sonic potential.

CONS: Not all emulations are totally faithful to original devices.

FEATURES	4
EASE OF USE	4
QUALITY OF SOUNDS	4
VALUE	3

Native Instruments
www.native-instruments.com

ONLINE BONUS MATERIAL

Guitar Rig 3 is the latest version of Native Instruments' guitar amp– and effects-modeling software. Like its predecessors, it comes with the latest model of the Rig Kontrol hardware controller (see the sidebar "Rig Kontrol 3"). You can also buy the software by itself.

Guitar Rig 3 (see Fig. 1) provides much more than just modeling—it's an all-around guitarist's toolbox. You get a suite of integrated tools, including a tuner; a metronome; dual software Tape Decks (with a sync function) for recording, playing, and learning tracks; and the fantastic Loop Machine for overdubbing multiple layers of sound on the fly. This review will concentrate mainly on new features. (For details on legacy features, see the Guitar Rig 2 review in the June 2006 issue of EM, available at emusician.com.)

Amped-Up Amps

Four new amp models are included in Guitar Rig 3: Ultrasonic, Citrus, High White, and Tweed Delight (see Fig. 2). These additions bring the total number of amp models to 12, rounding out an already-broad palette that contains Marshall, Vox, and Roland emulations, an Ampeg bass amp model, and more.

Ultrasonic emulates the Bogner Überschall, an exotic and highly aggressive-sounding heavy-metal amp. The real amp has separate clean and high-gain channels, but the Guitar Rig 3 (GR3) model conserves screen real estate by providing an onscreen toggle to select between the two. The Clean channel sounds great and is an excellent starting point for inserting one of GR3's many distortion effects. The Overdrive channel will take you to instant übersonic metal heaven (or hell, as you may prefer). It is a deliciously silky, hard-driving metal sound with tons of low-end chunk. From Sabbath to Slayer, you're in the zone (see Web Clip 1).

Citrus is an emulation of an Orange amp, a British-made tube amplifier. The High White model conjures up a 100W Hiwatt. Both seem well suited to that crunchy middle ground between clean and full-blown distortion. This is often the Achilles' heel of amp emulators, but both models excel wonderfully in the realm of

FIG. 2: Guitar Rig 3 offers four new amp models: Ultrasonic, High White, Citrus, and Tweed Delight.

semidirt. From fat chord chops to arpeggiated open strings, they serve up a palpable sense of real amp-cabinet response with both grit and definition (see **Web Clip 2**).

Tweed Delight is modeled after an early Fender combo amp with relatively low wattage and few controls. It puts out a warm tube-amp breakup that would make it a great choice for early rock 'n' roll, country, or blues styles. With a little tweaking to the Warm Delight preset, I was able to create an inspiring straight-ahead rock tone that reminded me of a *Sticky Fingers*–era Rolling Stones sound (see **Web Clip 3**).

Effects Nouveau

The update also includes six new effects modules: Sledge Hammer, Tape Echo, Delay Man, Ring Modulator, Real Wah, and Custom EQ (see **Fig. 3**). Sledge Hammer is modeled after the Marshall Jackhammer overdrive/distortion pedal, and it adds a distinctive new flavor to the Guitar Rig distortion menu. It has a low-end-heavy character but is highly tweakable and capable of delivering a range of harmonic overtones, from a bit of drive to infinite sustain.

Tape Echo re-creates the classic Roland Space Echo tape delay, including tape hiss (which fortunately can be dialed down in NI's model), and Delay Man is based on the Electro-Harmonix Memory Man. Both of these models offer much more than just echo. With a little knob tweaking, you can get chorus, reverb, tremolo, and all sorts of insane whammy-type effects.

Ring Modulator is another exciting new offering. Loosely based on the Moog Moogerfooger MF102 pedal, it offers more experimental types of sounds. The presets demonstrate a range of sound mangling, from bizarre warbling, metallic, pitch-shifting, and throaty effects to tamer effects like vibrato and tremolo (see **Web Clip 4**). The 6 new effects extend the Guitar Rig effects arsenal to 44. That's a lot of stompboxes.

UI Enhanced

Guitar Rig has been reworked in numerous ways to make it easier to use. Larger fonts and a high-contrast platinum-and-pale-orange skin are much easier on the eyes. The Browser and its factory banks and presets have been given a thorough makeover. The banks are now organized by a variety of categories, including amp type and styles, and amps appear at the top of the list. Many presets have "SC" (single-coil) or "HB" (humbucking) after their name to key the user in to the suggested pickup choice. You get a hefty helping of new factory presets, including Signature Sounds (designed to emulate the sounds of various guitar heroes). One consequence of the overhauled preset section is that many presets from Guitar Rig 2 weren't carried over to the new banks. However, they are fully compatible, and if you upgrade from version 2, they can be imported from your hard drive. New users will be able to download them from the NI Web site.

Banks are organized into categories that can be filtered to display only your choice. Presets can be tagged with various attributes and keywords, and this metadata is integrated into a new and improved search engine. (Unfortunately, one simple improvement is still lacking. On the Mac, hitting Return to initiate a search is not supported; you must actually click on the Find button with the mouse.) When editing presets, the new Save As button instantly saves your edit to the current bank, allowing you to tweak away while ensuring a secure and efficient work flow.

> Guitar Rig has been reworked in numerous ways.

FIG. 3: Sledge Hammer, Tape Echo, Delay Man, and Ring Modulator are among the six new effects modules introduced in Guitar Rig 3.

Other new enhancements include a Matched Cabinet feature and a Live view. Matched cabinets expedite creating your custom rig by automatically marrying an appropriate cabinet and mic to your amp choice and offering simplified mic adjustment controls. (Hint: sliding the Dry/Air slider to the right gives just about any preset more life and realism.) At the same time, all the more detailed cabinet and mic customization is retained from the previous version in case you need it. Live view presents a simplified view with larger fonts that can be more easily read in a live-performance situation (see **Fig. 4**).

Rigged Up

Guitar Rig 3 doesn't do a perfect job of emulating every one of its devices. You'll need to get in there and tweak the presets and default settings to unlock its full potential. But while it may not be an exact replacement

FIG. 4: The new Live view offers a simplified screen that could be ideal for using Guitar Rig onstage with a laptop.

for hardware devices, it offers a means to combine a virtual music store full of amps and effects in countless new and exciting ways. And it does so for less than the cost of a single hardware amplifier. Beyond that, it lets you combine classic tones with new synth and cyber-age technology, such as the LFOs, envelopes, and sequencers in its Modifiers sections, to make your guitar sound like it never has before (see Web Clip 5).

I might go so far as to speculate that if Jimi Hendrix were alive today, he would be using something like Guitar Rig. Not necessarily to re-create his past, but to do what he was known for: use cutting-edge technology to create entirely new ways to process the electric guitar. And perhaps that is where the true promise of something like Guitar Rig lies.

Back in the days of classic rock, a computer was something bigger than a Marshall stack, attended by men in lab coats, and all those classic tracks still popular today were created without a single USB port or latency buffer in sight. But this is the cyber age, and we want every amp and guitar device in history, and we want to be able to sling them over our shoulder in a backpack. Guitar Rig 3 takes us one step closer to that dream, and a giant leap closer to the future.

(By the time you read this review, NI is scheduled to have released a free update, Guitar Rig 3.1, which the company says will include improved algorithms, a reduced amp-noise floor, enhanced external-software control capabilities, and more. —Ed.)

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

Rig Kontrol 3

The Rig Kontrol, which serves as a foot controller, preamp, and bus-powered USB 2.0 audio interface, has also been given a makeover (see Fig. A). New features include two additional footswitches, a black finish with clearly marked labels, I/O meters, and upgraded 24-bit, 192 kHz audio converters. It comes preconfigured to work with all GR3 presets but can also be easily programmed onscreen to take advantage of GR3's new simplified controller assignment options, such as Snapshots.

FIG. A: The revamped Rig Kontrol sports a new black finish with new labels and includes two additional footswitches, level meters, and upgraded audio converters.

You can now assign several functions to a button, so as many effects as desired can be switched on and off at once. Snapshots let you capture the state of complex combinations of multiple components within a preset and assign it to a single footswitch for recall. You can assign multiple Snapshots within the same preset (for intro, verse, chorus, and so on). Integrating the Rig Kontrol 3 into your system can be a bit complicated. For details, see Web Clip A.

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FIG. 1: Waves GTR3 includes the new Tool Rack in both standalone and plug-in formats. It incorporates all of GTR3's amps and effects in a single tabbed interface.

Waves
GTR3 (Mac/Win)
The third time's the charm for this virtual amp and effects rig.

PRODUCT SUMMARY

guitar amp– and effects-modeling software	
Complete System	**$375**
Software-Only Edition	**$290**

PROS: New standalone version. New Tool Rack plug-in. Excellent tuner. Great-sounding amp models.

CONS: Routing options not unlimited. Lacks emulations of classic stompboxes.

FEATURES	3
EASE OF USE	4
QUALITY OF SOUNDS	5
VALUE	4

Waves
www.waves.com

ONLINE BONUS MATERIAL

By Orren Merton

Competition in the field of guitar amplifier software has heated up considerably. Far from resting on its laurels, Waves has updated Guitar Tool Rack (GTR) to GTR3, adding an abundance of new software models and options. I reviewed Waves GTR 2.0 in the December 2006 issue (available online at emusician.com). In this review, I will focus on the changes made to it since then.

Guitar Collection

GTR3 is available in two different software versions. The GTR3 Complete System comes with the GTR3 software and the Waves/PRS Guitar Interface (WPGI), developed in collaboration with Paul Reed Smith Guitars. The GTR3 Software-Only Edition has only the software. In addition, the GTR Studio Guitar Interface package ($90) contains only the hardware interface. The hardware interface remains unchanged from previous versions (for details, see the online bonus material).

GTR3 supplies a bundle of plug-ins that support RTAS and VST in Windows and Mac OS X, as well as AU on the Mac. Unlike previous versions, the program also includes a standalone application. For guitarists who want to use GTR3 without having to instantiate it within a host, this is an extremely welcome addition. Both the plug-in bundle and the standalone software offer the Tool Rack plug-in, which has slots for two guitar amplifier simulations, slots for six stompboxes, and a tuner (see Fig. 1).

Previous versions of GTR supplied separate plug-ins for amplifier models and stompbox simulations, and GTR3 offers more than ever. One plug-in features an amplifier or dual amplifiers; three others give you two, four, or six stompbox slots; and another furnishes the aforementioned Tool Rack. I'm glad that the Tool Rack plug-in lets me create an entire GTR guitar setup in one interface. It conserves slots in my sequencer's channel strip and allows me to see my entire guitar signal chain at once. I find myself using the Tool Rack plug-in most often.

Face-Lift

GTR3 features an updated graphical user interface for its plug-ins. The effects pedals, though

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FIG. 2: Waves GTR3 features a new head-and-cabinet-style interface containing all the controls for the amp models.

still based on original Waves effects rather than models of hardware effects, have been given vintage stompbox graphics. Each effect has its own plug-in menu for presets and A/B settings comparisons.

The amplifier models no longer all share the same virtual-radio-style graphic. Instead, the four virtual amp heads share a control panel and have different-colored grille cloths (see Fig. 2).

All of the amp heads feature five tone knobs, an on/off toggle switch, and a pop-up menu for choosing an amp model. To the right of the amp controls are the cabinet and mic selection pop-up menus and bypass switch.

Huge Racks

The new Tool Rack plug-in has tabs for amp simulations, stompboxes, the tuner, and a preset matrix. The Stomp tab features the virtual pedalboard for effects. As with previous versions, you can insert any stompbox in any slot. GTR3, however, provides a slot for the amp models, allowing you to route selected effects before the amplifier and others after it.

The Stomp tab also lets you view the cable routings and select from parallel, split, or cascading cabling between slots (see Fig. 3). You can also directly adjust the input and output level for each stompbox in this view. I find View mode especially useful for making sure that I keep my levels reasonable between effects in a full pedalboard.

The Amp tab consists of two amplifier interfaces. The GUI for Tool Rack's amplifiers is different from that of the amp-only plug-ins. In Tool Rack, the amplifiers each have knobs to adjust the air (depth between mic and cabinet), delay, volume, and pan, as well as a switch to change the phase polarity. This setup allows you to blend the two amps and cabinets in various creative ways.

Tool Rack contains a tab for the tuner, which is excellent—my favorite tuner in any guitar-rig simulation package. A tuner may not be exciting, but many tuners are too fast or jittery to be of much use, especially if you're trying to tune quickly between songs. The GTR3 tuner offers advanced features such as a pop-up menu for selecting modes and alternate tunings, and the ability to adjust the reference tuning or toggle specific notes on or off. But its key feature is just how well it lets you quickly tune your guitar.

> Unlike previous versions, it includes a standalone application.

Of all the GTR3 plug-ins, I use Tool Rack the most. The standalone and plug-in versions of Tool Rack are identical, and presets created in one version are available in the other. You can save presets for each individual amp or stomp effect, so you can save your settings from the Tool Rack plug-in for each element

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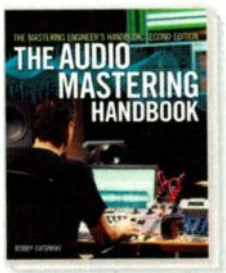

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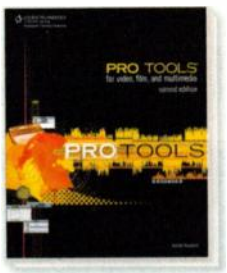

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Ashley Shepherd ■ $34.99

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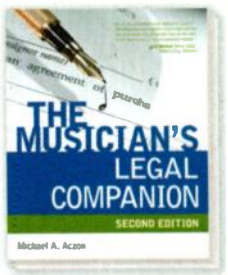
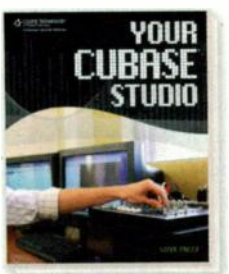


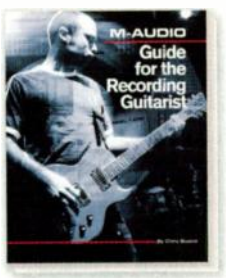
The Musician's Legal Companion, Second Edition
Michael A. Aczon ■ $26.99

Don't sign a recording contract before reading this book! In clear language it explains the difficult legal concepts you need to understand for a successful music career.



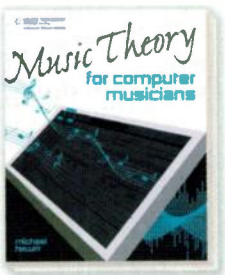
Your Cubase Studio
Steve Pacey ■ $24.99

This book goes way beyond the Cubase manual, showing you how to use Cubase in a practical recording, results-focused setting.



M-Audio Guide for the Recording Guitarist
Chris Buono ■ $34.99

This book helps guitarists work with M-Audio hardware and software so they can join the computer-recording revolution.



Music Theory for Computer Musicians
Michael Hewitt ■ $34.99

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separately and then use those settings in the other GTR3 plug-ins as well.

Amped Up

The bread and butter of any guitar-processing software is its guitar amplifier simulations. GTR3 increases the number to 19 models. The amplifiers modeled include Fender, Marshall, Mesa/Boogie, and Vox models, along with some unusual amps such as a 1968 Gibson Skylark, a 1966 Ampeg Gemini II, a Kotch combo, and numerous unspecified boutique and custom amps from Paul Reed Smith's private collection. There is also one Waves original simulation, Inferno, which, as its name implies, is a rather over-the-top high-gain model.

FIG. 3: With View mode selected in Tool Rack's Stomp tab, you can see the current cable routing and select from three different routings for the effects, both before and after the amplifier.

The amps modeled from more familiar brands all sound very good and true to the character of the originals. The Clean, Punchy, Edgy, and Crush simulations in particular sound very much like their hardware counterparts (see Web Clip 1).

The emulations of unique amps from PRS's private stock, such as the Warm, Scream, and Scorch models, also sound very realistic and dynamic. They retain their amplike qualities as you manipulate the signal using your guitar's volume knob and other performance techniques. Some of the higher-gain models have a nasally, notch-equalized sound and an overly compressed feel, but perhaps those are also qualities of the original custom amplifiers.

GTR3 is the first version of GTR to offer bass amplifier emulations, with six amplifiers and one DI box/preamp combination. The bass models cover many classic amps from Ampeg, Sadowsky, Hartke, and Mesa/Boogie. The bass amps all sound good; the Ampeg models have the punch and edge of their hardware counterparts, and the Hartke model has the articulation of the amp it models. These are a great addition to GTR3.

Let It Rip

In the past couple of months, I've played my Koll Tornado, Gretsch Duo Jet, and Carvin 12-string electric-acoustic through both the standalone and plug-in versions of Waves GTR3. With GTR3 running in Apple Logic Pro 8, I have also processed all kinds of prerecorded tracks, from guitar to vocals to drums, with excellent results. The new GUI is easy to navigate, and I can quickly dial up the sounds I want. The amps have a realistic, dynamic feel when I'm playing live, and they sound great on both live and recorded tracks.

Waves GTR3 doesn't have as many hardware simulations as competing software such as Line 6 Gearbox Plug-In Gold, nor does Tool Rack offer the unlimited routing flexibility of Native Instruments Guitar Rig 3. And though Waves effects can achieve excellent, lush sounds (see Web Clip 2), I would love to see emulations of classic '60s stompboxes included as well. Nevertheless, GTR3 is an excellent update to an already solid guitar effects suite. Users of GTR 2.0 will love this update, and anyone in the market for a guitar software bundle should definitely check out Waves GTR3.

GTR3 offers more than ever.

When Orren Merton isn't writing and editing music-technology books for Course Technology, he simulates being a guitarist for Ember After (www.emberafter.com).

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FIG. 1: Structure's patches and parts are organized hierarchically. The patch shown on the right consists of the component parts shown on the left.

Digidesign

Structure 1.0 (Mac/Win)

A sampler that integrates with Pro Tools.

PRODUCT SUMMARY

software sampler	
full version	**$499**
LE version	**$149**
free version	**$0**

PROS: Tightly coupled to Pro Tools. Some excellent sounds in the starter library. Nice-sounding effects, including convolution reverb. Intuitive, flexible patch and parts construction. Supports up to 7.1 surround.

CONS: Pro Tools only. Encrypted sample format. Samples are reauthorized every time you load them. Cumbersome file-loading interface.

	1	2	3	4	5
FEATURES				4	
EASE OF USE			3		
AUDIO QUALITY				4	
VALUE				4	

Digidesign, a division of Avid
www.digidesign.com

ONLINE BONUS MATERIAL

By Nick Peck

Digidesign has released Structure, an RTAS-based sampler plug-in for Pro Tools HD, LE, TDM, and M-Powered versions 7.3 and later on both Mac and PC. The software is available in three flavors: a full version, which is the focus of this review, and a limited edition and a free version, both of which have smaller feature sets. See Digidesign's Web site for a comparison of features across the different versions.

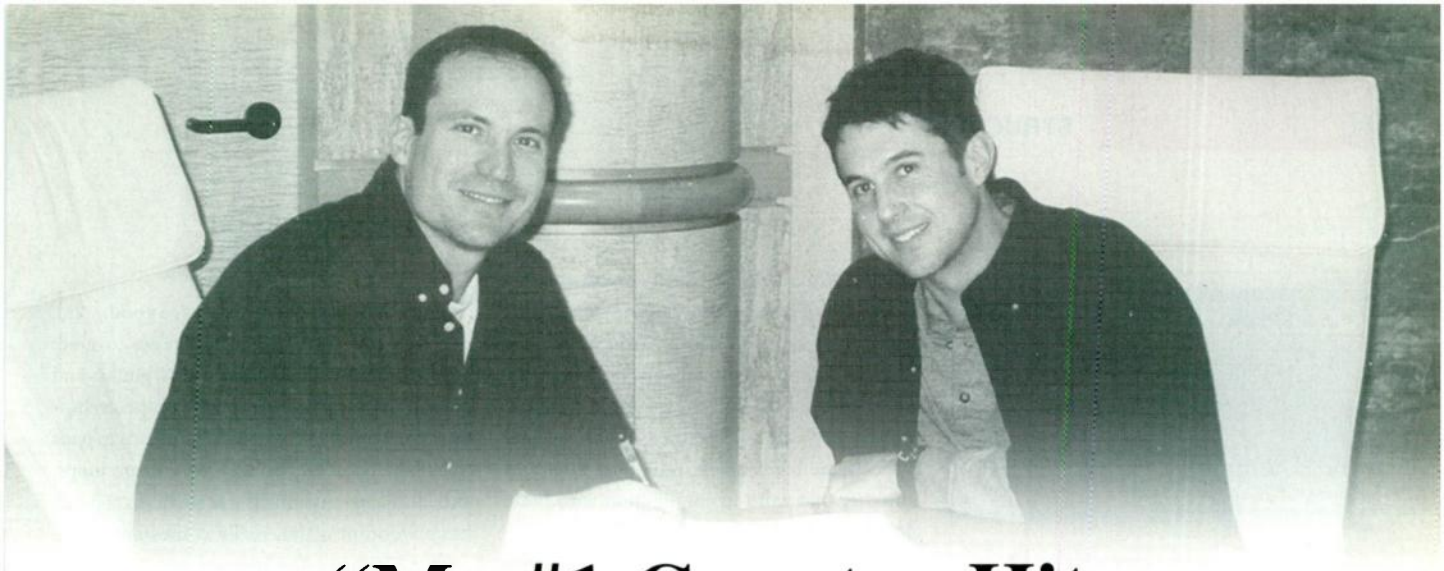
Conceptually, Structure is somewhat similar to other plug-in-based samplers, such as MOTU MachFive, Native Instruments Kontakt, and Apple EXS24; however, it is designed to run solely within the Pro Tools environment. If Pro Tools is your DAW of choice, then you will appreciate the tight coupling between this plug-in and the environment.

Like all current-generation software-based samplers, Structure is hungry for speed and RAM. Though 1 GB of RAM is a bare minimum, 2 GB is suggested. The faster the computer, the more simultaneous instruments and voices you will be able to play. Structure is RTAS only, so Pro Tools HD users won't derive much benefit from their TDM hardware and will still need a lickety-split computer to derive maximum benefit. I reviewed this sampler on a dual 2.5 GHz Mac G5 with 2 GB of RAM, Mac OS X 10.4.11, and Pro Tools 7.3.1. Making use of Structure's large patches and effects pushed the CPU to the point where I got dropouts and CPU errors fairly frequently. The situation improved when I expanded the buffer size in the playback engine, and when I bounced tracks to disk and then reimported them whenever I was done working on them.

Structure requires iLok authorization and ships with a 15 GB sample library to get you going. The library is in an encrypted, proprietary format. Every time you load up a new sample set, it takes several seconds to validate your authorization before loading the samples. Structure also ships with a 30-day free trial of the 40 GB Goliath sound library from EastWest ($399; EastWest's Symphonic Orchestra Gold Complete, Structure Edition, is also now available).

Patches and Parts

Structure's hierarchy is based on the notion of patches and parts (see Fig. 1). A patch is an



"My #1 Country Hit Started With a Phone Call to TAXI"

Elliott Park – TAXI Member

Photo: Elliott (left) with publisher, Michael Martin

I used to think that living in Clyde, Texas (Population 3,345) really limited my chances of ever having success in the music business. But all my friends and family members live here, so I've never wanted to move to Nashville.

Although I love to write songs, I felt isolated when it came to getting them heard by anybody in the music business. Then a friend told me that TAXI would bring real opportunities for my music right to my front door.

I Used a 4-Track

I signed up and sent in songs that I demoed with my digital piano in my little home studio. The A&R people at TAXI liked my songs and began sending them off to some pretty high-level people in Nashville.

All the sudden, doors started opening. With the connections I made through TAXI, I began to have meetings with some of Country Music's top executives, and signed a staff writer deal with a great publisher in Nashville.

Tim McGraw, Rascal Flatts and Faith Hill Put My Songs on Hold

Over the next three years, my songs were considered by a Who's Who of Country Music, but the "big cut" eluded me. I learned to be patient and worked even harder on my songwriting.

Then, my publisher hooked me up with veteran songwriter, Walt Aldridge. Together, we wrote a song called, 'I Loved Her First,' and finally, I hit pay dirt!

#1 Hit on Two Charts!

The group 'Heartland' cut our song and released it as a single. It started out slowly, then gained momentum, and eventually made it all the way to the Number One spot on the Billboard *and* R&R Country charts.

Could that have happened without TAXI? Probably not.

Although there were many people that helped me once I signed my publishing deal, it was TAXI that made that all important first connection for me. And I didn't have to leave my hometown to do it.

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FIG. 2: Structure's sample editor lets you fine-tune a sample's start time, end time, and looping range.

individual instrument with a defined MIDI channel, global volume, and so forth. Patches are made up of an arbitrary number of parts, which can consist of sample sets, effects, MIDI processing modules, and subpatches (patches within patches). The patch window can hold as many patches as computer resources allow, so you can effectively have a single instantiation of Structure host all the sampled instruments in your song. I really like this intuitive, hierarchical solution to grouping and organizing complex bundles of audio data.

Structure uses Digidesign's proprietary format but can also import SampleCell, Kontakt, and EXS24 libraries. Structure patches and individual parts can be saved as separate files. User samples can be saved along with the patches and parts, but any of the samples used in Structure's factory patches cannot. Digidesign has also chosen to use a custom file browser for saving and loading patches, rather than tapping into the Mac's native system. This method takes some getting used to and feels more cumbersome than the Mac's browser.

The included database offers faster file browsing. You can search by category and then refine your search by selecting from a list of keywords, or you can simply type a keyword into the search field. Either way, patches, parts, or samples that fill the bill show up in a selection pane that you can then choose from. As you create your own patches, you can add them to the database, assigning them categories and keywords.

Open Windows

When a sample set is selected, Structure's main window reveals five tabs that provide access to the Part, Filter, Amp, Mod, and Output subwindows. The Part section handles general, global settings such as transposition and key ranges. The Filter section offers some 20 different filter types to choose from. Both the Filter and Amp sections have AHDSR envelopes, with adjustable curves for the attack, hold, decay, and release portions. Note that each sample has its own individual filter and amplifier that work in conjunction with these global ones.

One of my favorite aspects of Structure is its Mod (Matrix Modulation) page. There are 16 slots for various modulation routings. Besides the standard source, destination, and modulation-amount controls, there is an additional modifier section in which another control source can modulate the main source to create even more subtle and complex effects.

An 88-key virtual keyboard and six virtual "smart" knobs take up the lower right-hand area of the main window. You can assign any control parameter to these knobs by simply Ctrl-clicking on the parameter within Structure. A pop-up menu assigns the parameter to the smart knob of your choice. You can even assign multiple parameters to a single smart knob. The smart knob's continuous-controller assignment can also be specified, providing quick, easy control of any sample parameter from your MIDI controller. I love control systems that let you pare down the focus to the parameters you really need, and Structure delivers in this department.

Clicking on the Wave tab when editing a patch brings up the sample editor (see Fig. 2). No new ground is broken here, but the editor's interface is clean and its functions are clearly laid out. You can set sample start and end time, cut and paste audio, set loops and adjust crossfades, and zoom in and out on the waveform.

Sounds Good

The 15 GB factory patch library is a good, solid, overview collection. All the basics are covered: acoustic and electric basses, drums, guitars and pianos, the various instruments of the orchestra, a variety of synth sounds (from leads to pads to bells), organs and vintage keys, drum loops, and ethnic percussion. The acoustic-bass patch has a woodiness that really comes out if you push the Velocity. The Steinway acoustic pianos are mellow and understated—Structure's ability to adjust the hall size using the smart knobs let me quickly tweak the patch to taste. The synth patches are nearly all taken from Digi's Hybrid and Xpand software-synth products.

I laid down a drum performance in Pro Tools with a Roland V-Drum and then assigned the MIDI data to Structure's Vintage Kit XXL patch. The performance made the translation nicely, requiring only some editing of hi-hat data to make it work. This patch's smart knobs allowed for adjustment of direct, room, and overhead mics, as well as reverb size and an SSL talkback-compressor emulation. The sound of this drum kit was open, acoustic, and natural (see **Web Clip 1**).

> There's no doubt about it: Structure is a hip, powerful, full-featured sampler.

Sound Design

As a sound designer, I've long wanted the ability to drag-and-drop regions from Pro Tools into a sampler, where I could quickly tweak sounds in a more intuitive, seat-of-the-pants manner than is possible with third-party plug-ins. With Structure, this is finally possible (for more information, see the **online bonus material** at emusician.com).

I experimented with creating a Pro Tools session where I grabbed a variety of debris sound elements—bits of ceramic pottery, an old watering can, part of a chain-link fence being dropped on the floor, and so forth—and

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FIG. 3: The ability to drag-and-drop regions from Pro Tools' edit window directly into Structure makes it a natural fit for sound designers.

threw them into Structure (see Fig. 3). Mapping them across the keyboard was quick and easy, and within seconds I was able to experiment with triggering the sample set from my MIDI keyboard in various permutations. Further tweaks with a small dab of convolution reverb to create a sense of distance, and modulating the pan and pitch with a random-number generator source, allowed me to dial in the sound to where I really liked it (see Web Clip 2).

Each Structure patch can have an arbitrary number of insert effects that are routed in series. In addition, there is a global-effects page that features four separate send channels and a global master channel, each of which has four effects slots. This means you can run up to 20 simultaneous global effects within a single instantiation of Structure.

The sampler offers a comprehensive, utilitarian set of effects algorithms, including chorus, compression, distortion, aural enhancement, parametric EQ, flanging, phasing, tremolo, convolution reverb, algorithmic reverb, delay, multitap delay, and rotating speaker. There are also surround versions of the EQ, convolution reverb, and algorithmic reverb, as well as a downmix effect function to collapse a 5.1 patch to stereo. The sound of the effects, on the whole, is good. I especially liked the shimmering multichorus, the optocompressor, and the soupy phaser patches. Of particular interest is the convolution reverb, which lets you use any WAV or AIFF file as an impulse response. Sound designers can quickly and easily experiment with radically changing the character of a sample by setting the convolution reverb's impulse file to exotic, unexpected sounds (see "Master Class: Audio Alchemy" in this issue for more on convolution).

Get Hip

There's no doubt about it: Structure is a hip, powerful, full-featured sampler. The large number of sample parameters, matrix modulation and MIDI processing, comprehensive effects section, and flexible, modular system allow for enough programming power for the most die-hard tweaker. The smart knobs help lessen the complexity of the instrument, letting you control the most important parameters from the front panel. And the good-sized starter library is filled with usable, high-quality samples.

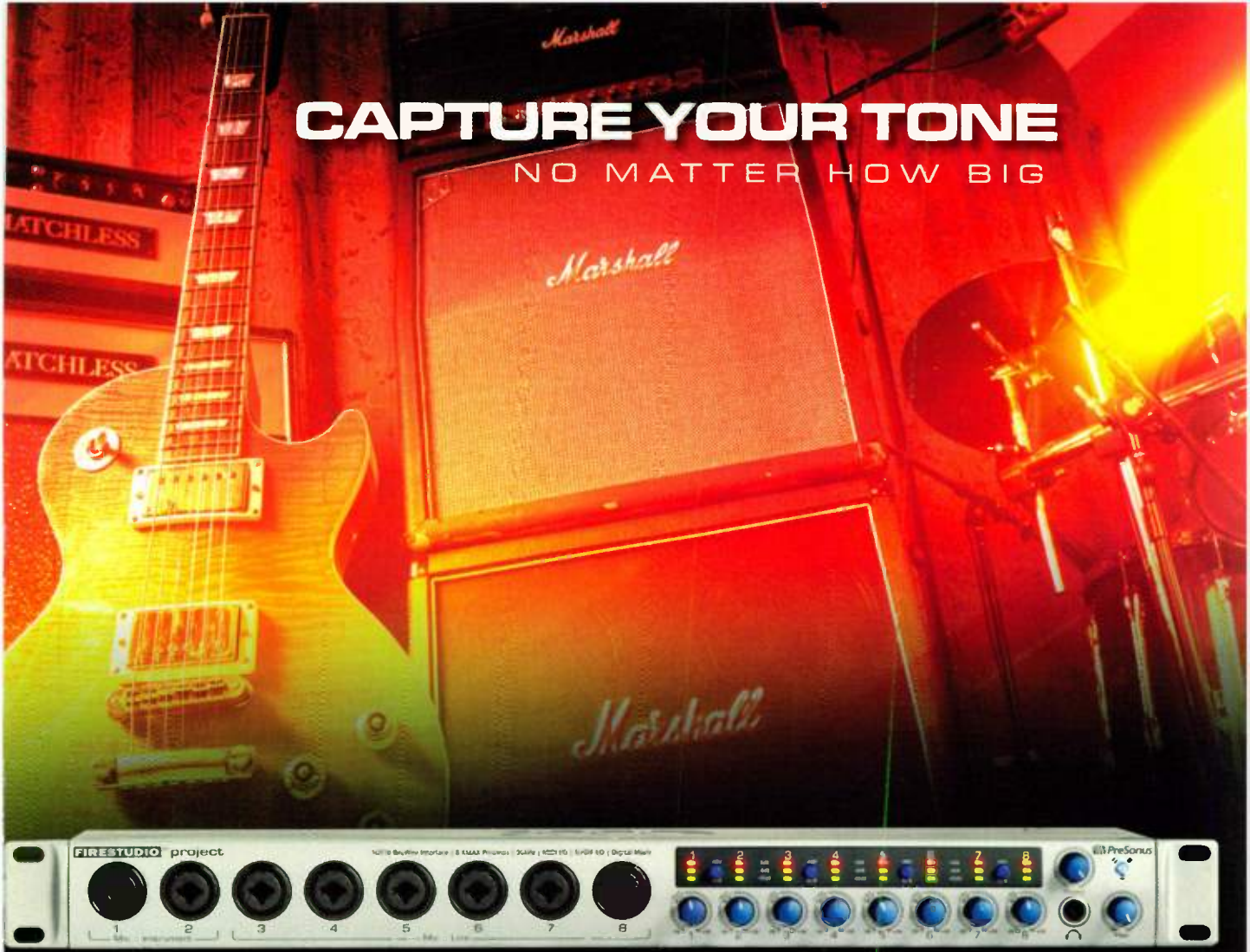
However, I'm not thrilled about the encrypted sample set, Digidesign's use of a custom file browser, or the fact that Structure seems to be hitting the iLok every time you load a patch to verify that you are legally able to. Of course, Structure is limited to use within Pro Tools—if you work with multiple DAWs or like to use standalone sample software, then this is not for you. Finally, like many other current plug-ins, Structure is quite CPU hungry, so owning a fast machine is a must.

If you do work primarily within Pro Tools and are looking for a powerful sampler that integrates cleanly into the system with a minimum of muss and fuss, and particularly if you like the idea of dragging-and-dropping audio regions from Pro Tools right into your sampler, then Structure may just be the solution you're looking for.

Nick Peck is a composer/keyboardist/sound designer in San Mateo, California. His latest album, Fire Trucks I Have Known, *is available through CD Baby.*

CAPTURE YOUR TONE

NO MATTER HOW BIG



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PreSonus

FIG. 1: The TubeFire 8's front panel provides easy access to all the controls for the individual channels and the main output, as well as jacks for instrument inputs and headphones.

ART

TubeFire 8

An affordable interface that sounds really good.

PRODUCT SUMMARY

8-channel preamp/FireWire interface **$529**

PROS: Nifty monitoring section. Great-sounding DIs. Reasonably priced.

CONS: Line inputs are routed through preamps. No digital I/O.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
AUDIO QUALITY	1	2	3	4	5
VALUE	1	2	3	4	5

Applied Research and Technology
http://artproaudio.com

By Rich Wells

Applied Research and Technology (ART) specializes in cost-effective analog and digital audio gear and over the years has released a slew of products for the budget-minded musician. Its new TubeFire 8 is a FireWire audio interface with eight tube preamps and a nifty low-latency monitoring section. It ships with software for both Mac OS X and Windows XP.

Up and Running

Installing the software on my Mac Pro was cut-and-dried, and I could instantly begin using the ART software interface to make necessary changes such as specifying the word-clock status and sampling rate (with a choice of 44.1, 48, 88.2, or 96 kHz at 16 or 24 bits). The PC software lets you adjust buffer depths to keep the latency at its absolute minimum, and although the TubeFire 8 has no MIDI capability, the Mac version provides a simple word-clock setup window.

The front-panel controls are laid out logically on the 1U-rackspace unit (see Fig. 1). Each channel sports a Gain knob, an Output level knob, and a 4-LED level meter with clip indicator, as well as pad, 100 Hz highpass filter, and phase-reverse buttons. All buttons are illuminated in their on position. Channels 1 and 2 also feature DIs with corresponding front-panel ¼-inch inputs.

To the left of the channel controls are two buttons that activate phantom power in channel blocks 1 through 4 and 5 through 8. To the right are a ¼-inch headphone jack and the Power button, along with four backlit buttons and a Mono/Stereo control knob that comprise a very cool Output Source section. These controls define how signals flow to the headphone output and to the rear-panel line outputs. The buttons control whether the signal sources of channel pairs (1-2, 3-4, and so on) are the preamps themselves or the computer's output, giving you fairly comprehensive control over a custom monitoring setup for recording overdubs. Logically enough, the Mono/Stereo knob controls whether the output is mono or stereo. In stereo, odd channels are hard-panned to the left and even ones are hard-panned to the right. Turning the knob to the center position mutes the output.

On the rear panel are eight balanced ¼-inch/XLR combination jacks for input and eight balanced ¼-inch jacks for output (see Fig. 2). A single button next to the outputs toggles the output level between +4 dBu and –10 dBV. A BNC word-clock input connector is hardwired to the BNC word-clock thru connector next to it. Two interchangeable FireWire 400 connectors allow connection to

ONLINE BONUS MATERIAL

your computer and to other FireWire devices, including additional TubeFire 8 units.

The included CD installs the ARTPanel control software, which lets you choose the TubeFire 8's word-clock sync mode. It also provides a path to Apple's Audio MIDI Setup utility, in which you can adjust the unit's sampling-rate settings.

It's in the Way That You Use It

Using a closely spaced pair of small-diaphragm condenser mics, I made several 2-track recordings of a variety of sources (including vocals, acoustic guitar, radio, and drums) to compare the TubeFire 8 and my RME Fireface 800, which admittedly costs about three times as much and has only four preamp channels with XLRs. I wanted to record with the two audio interfaces in as many combinations as possible; for each recording, then, I rerouted one or both of the mics. The goal was to compare both the converters and the preamps of each unit.

First, I routed the mics' signals to the separate units, with each signal amplified, converted, and routed to the computer entirely through either one box or the other. For a second set of recordings, I wanted to listen to the response of the converters and preamps separately. I used the Fireface 800 A/D converters, with one mic signal routed through a preamp on the Fireface and the other routed through a preamp on the TubeFire 8. I also routed line-level analog audio to the Fireface. For a third set of recordings, I mirrored the previous test, this time using the TubeFire 8's converters.

All three produced results that sounded just fine. Though I could detect slight differences among the different test methods, when I compared the TubeFire 8 with the Fireface 800, it had no noticeable deficiencies in either its preamp or converter (in fact, the preamps noticeably improved on my decade-old ART Tube Pac). The TubeFire 8's preamps have a very low noise floor and a reasonably pleasant sound. If anything, they may be a bit bright sounding, or possibly a bit underpronounced in the low mids.

Similarly, the sound of the DIs was solid, easily the equal of any of the many DIs I have, including the DIs in several standalone preamps. An electric guitar DI signal recorded without so much as 10 seconds of preparation sounded pleasant, clean, and full bodied—not tinny, as can sometimes be the case. I threw a guitar amp simulation plug-in onto the guitar track, and although I'm not generally a DI aficionado, I thought it sounded good enough to use in a pinch. Electric bass was especially full, with a nice, well-represented low end and a hint of a growl in the upper mids. I'd be completely confident using the ART DI on bass; it could easily fit into a mix with just a hint of compression and EQ.

FIG. 2: In addition to combo jacks for inputs and TRS jacks for outputs, the rear panel offers a pair of FireWire ports and word-clock I/O.

Eight Is Just Enough

If you're considering whether to buy the TubeFire 8, then rest assured, it's a fine product. If this is going to be your first interface, you'll want to make sure the 8-track maximum recording capability will suit your needs. Because the unit's I/O consists only of its eight analog inputs and outputs, you'll be using its A/D/A converters for everything. Fortunately, its FireWire port ensures that you can add more channels as your studio grows (see the **online bonus material** at emusician.com).

When routing analog line-level signals from other devices to the TubeFire 8 (for instance, if you want to use other preamps for different aural flavors), audio signals still go through the chosen channel's preamp. Several similar products bypass the preamp when using line-level signals, which is the most straightforward design. While the TubeFire did audibly represent seemingly subtle differences between its onboard preamps and other preamps coming in at line level, this may be an issue to those who want maximum transparency and minimal signal path.

On the other hand, the TubeFire 8 has an outstanding onboard mix feature that surpasses other similar (but simpler) 8-channel devices. It sports excellent metering, and its lighted buttons make it very easy to use from across a room. It is solidly made, with a nice feature set at a very respectable price. If you're okay with the few aforementioned caveats, this is a completely usable, good-sounding, and handy device.

Rich Wells runs the Supreme Reality (http://thesupremereality.org), a recording studio in Portland, Oregon.

M-AUDIO

Pulsar II Matched Pair

By Rusty Cutchin

M-Audio's Pulsar II small-diaphragm, cardioid condenser microphone nicely rounds out the company's line of low-cost transducers. Ideal for mono-miking acoustic instruments like guitar and violin and for capturing stereo images from drums and grand pianos, the Pulsar II aims to do the job in home studios that high-end pencil condensers, such as the Neumann KM184, have done for years in pro studios.

The Pulsar II has a ¾-inch-diameter, 6-micron-thick Mylar diaphragm, a solid brass backplate, and Class A FET electronics, with switches for a –10 dB pad and for bass rolloff (12 dB per octave at 80 Hz). M-Audio has improved the SPL handling of this second-generation mic by 2 dB over the original version to 134 dB, or 144 dB with the pad engaged.

For stereo situations, M-Audio offers the Pulsar II Matched Pair ($399.95), a boxed set with two mics that are guaranteed to have a closely matched frequency response—within ±1 dB from 20 Hz to 20 kHz. The mics come in a sturdy, velvet-lined oak box accompanied by a cloth bag, a windscreen, and a clip for each mic, as well as a stereo bar with mic riser, which lets you mount both condensers on one stand and turn them inward for XY recording.

NICE SOUND

Because the Pulsar II is touted as having the sonic characteristics of some popular pencil condensers I've used, I wanted to check out the matched pair on an instrument I know well: the acoustic guitar. I set up the mics on the stereo bar in an XY configuration, with the pad and rolloff switches off. Positioned 6 to 8 inches from the 12th fret of my Martin D-15 mahogany dreadnought, I aimed the capsules wide to form a 110-degree angle, expecting to get a little more bass from the guitar's lower body to mix with the brighter sound from the mic pointed at the neck.

That arrangement usually works well with the D-15, which has a slightly boxy sound compared with many standard dreadnoughts, but in this case the Pulsar IIs seemed to add to the boxiness. I narrowed the angle a bit, moved the mics a little farther back from the instrument, and pointed both capsules more toward the sound hole, which greatly improved the sound. It's nice to know that the Pulsar IIs don't require hours of repositioning to get the right sound, which is something that cannot be said for many other low-cost condensers.

Hoping for an equally quick return, I set the mics up as drum overheads during a rare visit to my studio from a live drummer. As he played along with an up-tempo jazz standard, I recorded the Pulsar IIs while testing other mics on his kick and snare. I liked the ambience that the pair captured straight out of the box. Their slight midrange coloration offset some of the excessively bright overtones that are hard to control in my ersatz drum booth.

NICE PAIR

Overall, I was impressed by the Pulsar II Matched Pair's readiness for stereo recording. The Pulsar II's sonic characteristics are adaptable to multiple recording situations, as the mic works well solo or paired.

The Pulsar II Matched Pair performs as promised and represents a bargain in small-diaphragm mics for studio and live work.

Value (1 through 5): 4

M-Audio

www.m-audio.com

M-Audio's Pulsar II Matched Pair comes with clips, windscreens, slipcovers, and a stereo bar that makes it easy to set up an XY configuration.

STEINBERG

Groove Agent 3.01 (Mac/Win)

By David E. Weiss

Unless you have the luxury of bringing in a session drummer every time you need a drum track recorded, you might want to consider a more practical alternative: virtual drummer software. A prime example is Steinberg's Groove Agent 3 ($249.99, upgrade pricing also available), a VST plug-in instrument that generates drum grooves that can be output through a choice of sampled kits or as MIDI files.

Groove Agent 3 also supports DXi and AU formats and can run standalone or as a ReWire slave. The latest version adds 27 new styles (for a total of 123), the ability to import user-created sounds, 2 new audio-only modules dubbed Special Agent (featuring recorded drum performances from Rasmus Kihlberg) and Percussion Agent (containing recorded percussion grooves), a built-in compressor and EQ, and a few new features that enhance the spontaneity, if not the soul, of this versatile virtual drummer.

GETTING THE GROOVE

The main screen of Groove Agent 3 has an uncluttered, intuitive interface. If you need to access its deeper editing features, you can do so with a single click. In previous versions, styles were organized chronologically, which could be daunting for the nonhistorian. In version 3, styles are organized into 15 genres, accessible with a slider that controls both style and kit (you can use any kit with any style). Alternatively, you can select styles and kits from a menu, which can sometimes be faster. Settings can be stored as Memories and recalled with the click of a button, even midmeasure. The first time Groove Agent loads a kit or style, it takes a few seconds, but after that, it's much faster because it's loaded into RAM.

You can choose from a wide range of variations on the same style using a 25-level Complexity Slider, which controls the intricacy of both the main pattern as well as the fill, together or separately. The first five levels of complexity provide basic grooves that are perfect for intros or vamps. The middle 15 offer a range of increasingly intricate patterns, and the last five sound a bit out of control. Because you can use any type of fill with any type of pattern, you can generate a good variety of grooves, from the straight-ahead to the downright zany. The Random button picks a different complexity level every measure (within four steps of your current level), and combined with the new Auto Fill function (which plays a fill every 2, 4, 8, 12, or 16 measures), it makes for some very fluid, interesting, and sometimes surprising patterns. Because Groove Agent 3 supports alternating (about three or four alternate samples per hit), patterns have a more natural sound than if each hit called up the exact same sound (see **Web Clip 1**).

ONLINE BONUS MATERIAL

The Edit panel lets you control individual aspects of the active drum kit, such as volume, pan, and ambience (featuring Steinberg's RealAmbience technology). It also lets you swap out parts of different kits to build your own.

DOUBLE AGENT

Groove Agent 3 introduces Dual mode, which integrates Groove Agent with the new Special Agent and Percussion Agent modules. In Dual mode, the interface is split in two, and any of the three modules can occupy the upper and lower slots. A control strip runs between the two, allowing you to start and stop either module (together or separately) and balance the mix between the two (see **Web Clip 2**).

Special Agent shares many features with Groove Agent, such as the Complexity Slider, Auto Fill, and Random buttons, but all patterns—as opposed to individual hits—are recorded live, and they have the unmistakable expressiveness of live performances. The samples are sliced so that the tempo and many other properties can be altered in the same way as with Groove Agent (within a reasonable threshold). You can even load your own sounds into Special Agent.

Steinberg's Groove Agent 3.01 is a VST instrument that triggers countless rhythms with uncanny versatility.

Percussion Agent lets you orchestrate up to eight voices of shakers, bells, sticks, cajóns, and other handheld acoustic instruments into rich arrangements. In Percussion Agent, complexity is reduced to five levels, but that's *per voice*, for a generous range of textures. A Groove Offset feature changes the accented beat for each voice, further increasing the possibilities. Finally, a per-voice Random button enhances the "happy accident" factor.

SEIZE THE MOMENT

The Groove Agent module can produce audio or editable MIDI tracks, but for the latter you'll need a host that can receive MIDI input from a plug-in, such as Steinberg Cubase SX or later or Cakewalk Sonar. Special Agent and Percussion Agent can output audio only. All three modules' parameters can also be controlled by external MIDI control messages.

Overall, Groove Agent 3 offers some significant improvements over past versions and is a very useful tool for drum track creation.

Value (1 through 5): 4
Steinberg
www.steinberg.net

AVANT ELECTRONICS

Avantone CK-40

By Eli Crews

The Avant Electronics Avantone CK-40 ($599 [MSRP]) is a Chinese-made multipattern, stereo FET condenser mic that challenges the assumption that you have to pay an arm and a leg for quality. The mic features a pair of large-diaphragm capsules stacked behind

The CK-40 is a stereo condenser mic that offers three polar patterns, and a pad/low-cut filter for each capsule.

rugged polished-nickel grilles. The upper capsule rotates 270 degrees.

Two small switches for each capsule—a pattern selector (cardioid, omni, and figure-8) and a dual-purpose pad/filter switch—flank the body of the mic. At nearly 11 inches in length and weighing almost 2 pounds, it needs a solid mic stand to hold it securely. The CK-40 comes in a padded flight case with a leatherette pouch, an oversize foam windscreen, and a spider-style shockmount.

The mic connects to a splitter box with the included 32-foot 5-pin cable, giving you a pair of XLR jacks labeled Output Lower (for the bottom capsule) and Output Upper (for the one on top). I question the use of an adapter box. I would prefer a Y-cable rather than a device that requires two additional XLR cables to reach my patch panel.

ALL AROUND THE STUDIO

My first test for the CK-40 was on percussion. Using a Focusrite ISA428 preamp, I recorded tambourine, and then shaker, through both capsules simultaneously. The instruments sounded great in all three patterns, although I settled on cardioid because it offered the direct-to-room ratio I was looking for. There was an ample amount of definition and presence, and the high end of the percussive hits didn't seem overbearing or brittle the way it often can with inexpensive condensers.

Over the course of the next few weeks, I ran the CK-40 through a variety of preamps (Blue, Millennia Media, Universal Audio, Vintech) on drums, vocals, piano, electric bass, and acoustic and electric guitars. In every scenario, the CK-40 impressed me, often standing up next to reference mics costing a lot more.

In cardioid mode, using only one capsule, the CK-40 captured the depth and fullness, but also the presence and growl, of the electric instruments. Grand piano sounded particularly open and natural using the Blumlein technique, where both capsules are set to figure-8 at 90 degrees from each other.

For male and female vocals, I again used only one capsule and the cardioid pattern. Although I favored my reference mic (a $1,000 tube-based model) a bit more for its slightly smoother high end, the CK-40 delivered comparable results. In an XY configuration (both capsules set to cardioid at a 90-degree angle), it sounded fantastic as a drum room mic and on solo acoustic guitar, picking up the fullness and presence of the instruments without sounding either boomy or harsh.

It may seem limiting to have a single switch for engaging either the 80 Hz (6 dB per octave) highpass filter or the 10 dB pad; both can't be on at the same time for a given capsule. As it turns out, I didn't need the pad, even in front of loud amplifiers, so this wasn't a problem for me.

However, I have two other, minor issues. First, the otherwise well-designed shockmount has thumbscrews that require a screwdriver in order to tighten it enough to grip the mic dependably. The second issue has to do with determining the orientation of the upper capsule: there is no clear indication of the exact front of the top capsule. There *is* a dot on the edge, but it is 90 degrees from either address side. Of course, a little trial and error and a tiny sticker will fix that, but it is bothersome.

2-IN-1

Nonetheless, it's hard to imagine getting much more of a deal than the CK-40 offers. For less than 600 bucks, you get a multipattern stereo microphone that sounds great on a variety of sources.

Although my gripes have to do with the functionality and accessories, I have nothing but positive things to say about the sound of the mic, which is what matters most. Kudos to Avant Electronics for not sacrificing audio quality just to save its customers money.

Value (1 through 5): 4
Avant Electronics
www.avantelectronics.com

XLN AUDIO

Addictive Drums (Mac/Win)

By Tony DiLorenzo

Every drum programmer has a personal approach to making tracks groove, but wouldn't it be nice to get the right feel

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EM HOT PICK

and sound without much effort? Addictive Drums ($249 [MSRP]) is an AU-, RTAS-, and VST-compatible plug-in with a huge library of more than 3,000 MIDI beats and fills. It comes with nearly 3 GB of high-quality drum and cymbal samples from DW, Latin Percussion, Paiste, Pearl, Sabian, Sonor, and Tama. All the samples were recorded using a multichannel microphone setup for realism, and then optimized to minimize loading times.

With its intuitive user interface and outstanding collection of realistic sounds and performances, Addictive Drums makes it easy to assemble satisfying drum tracks.

BREAK IT DOWN

Addictive Drums' user interface is divided into three sections. The top section furnishes buttons and displays for selecting, loading, and playing sounds and for getting help. Clicking on the Preset display opens a pop-up menu for selecting drum kits, and clicking on the Play button starts and stops the current MIDI file. You can choose from 115 kits arranged in categories such as Clean, Distortion, Electronica, Rock, and Xperimental.

At the bottom of the window, the Mixer section has eight mono channels for individual instruments, two stereo channels for overhead and room mics, a stereo mixdown bus, and a stereo master channel. All except the master channel have a level fader, a pan slider, and buttons for mute, solo, effects, and the like. Four buttons on the upper right—labeled Kit, Edit, FX, and Beats—determine what page appears in between the top section and the mixer.

The Kit page is divided into 12 Kitpiece Slots, much like the pads on a drum machine. Each slot displays the name and image of its assigned Kitpiece and has buttons to select from a list of instrument samples, adjust its level, and so on. You can click on any image to quickly audition samples, and all images are Velocity sensitive, meaning their Velocity changes depending on where you click.

The Edit page allows you to drill down into the sample engine and customize each sound. For most sounds, you can graphically adjust envelopes for volume and pitch, specify the bandwidth of a combination lowpass/highpass filter, and control the amount and panning of the signal being routed to the overhead and room mics. You can adjust the balance of the beater and front mics on the kick and the top and bottom mics on the snare. A Buzz parameter even lets you control how much the snare vibrates in response to playing the kick or toms. If you enable a Kitpiece's insert effects, you can click-and-drag breakpoints on a 3-band parametric EQ and control compression, distortion, and saturation parameters.

The FX page offers access to two simultaneous reverbs with Ambience, Hall, Plate, and Room types. You can tailor your reverbs with controls for PreDelay, Reverb Time, Damping, 2-band EQ, Volume, and Pan, as well as Pre or Post routing.

On the Beats page, you can browse and audition beats and fills and sync them to your host's tempo. Choose from a sizable collection of MIDI files at different tempos, ranging in length from 1 to 16 bars. Search by keyword, category, or time signature, and click-and-drag beats and fills to a list of Favourites. Twelve style categories include jazz, funk, blues, and six varieties of rock.

REAL-DEAL DRUMS

On my MacBook Pro, exporting drum grooves to Apple Logic Pro 7 couldn't have been easier—I simply dragged-and-dropped the beat or fill to a MIDI track and then easily manipulated the data in Logic. Once I assembled my performance, I could audition and assign kits, and even reassign individual sounds within a kit and play them with a MIDI controller (see **Web Clip 1**). For a jungle vibe, I changed the 90s Rock kit to a Machine kit and cranked the tempo to 150 bpm (see **Web Clip 2**).

ONLINE BONUS MATERIAL

The included MIDI files never sounded sterile or programmed. Flams, grace notes, and ghost notes added to their human feel. XLN Audio's samples are ready to print. The snares are lifelike, with plenty of pop, and the kicks are beefy and punchy. The toms have well-defined attack and tone, and cymbals and hats cut through the mix with lots of sizzle.

Anyone who has spent much time trying to get the perfect drum sound will appreciate Addictive Drums' flexibility and control. Intuitive design, attention to detail, and a generous library of convincing performances combine to make it a wonderful tool for the computer-oriented musician. Once you try it, you'll be hooked.

Value (1 through 5): 5
XLN Audio
www.xlnaudio.com

CHANDLER LIMITED

Germanium Compressor

By Eli Crews

The Chandler Limited Germanium Compressor ($1,680 [MSRP]) is a huge achievement in dynamics processors in terms of its sound, features, and implementation. What makes germanium—a semiconducting cousin to silicon, from which transistors, diodes, and other components can be built—so cool is its unique tonal and

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Affordable and easy to use, PoiZone looks and sounds like a classic analog synthesizer.

a 4-voice unison function, as well as ring and pulse-width modulation.

FROM THE TOP

I installed PoiZone on a MacBook Pro with a 2.16 GHz Intel Core Duo processor, 2 GB of RAM, and a 120 GB drive running Mac OS X 10.4.10 and Apple Logic Pro 7. PoiZone's clear-cut user interface resembles some of Roland's classic synths, like the Juno-106 and Jupiter 6. But the resemblance doesn't end there—a thick pad called Jupiter TC sounds a lot like an analog Roland synth (see **Web Clip 1**).

ONLINE BONUS MATERIAL

At the top left of the single-window interface is the Master Controls section. Its 3-line display simplifies mapping data from your controller to PoiZone parameters. When you adjust any parameter, its name will appear on the top line and its value on the second line. When you move a knob or a slider on your controller, the corresponding MIDI Control Change (CC) value will appear on the third line. Clicking on the Link button will pair the last tweaked parameter with the CC data received from your controller.

To the right of Master Controls, the Voice Controls section has knobs and buttons for parameters such as tuning, triggering, and glide. A pop-up Unison menu allows you to stack as many as four voices within a patch, and the Poly menu lets you specify the maximum polyphony. You can detune and pan the unison voices or put PoiZone in monophonic mode. Held, Static, and Glide Time controls all affect PoiZone's portamento. When Held is on, only overlapping notes will glide; when Static is on, glide time is independent and unaffected by the interval's size. In addition, you can fine-tune the oscillators by 100 cents up or down using the Micro Tune knob.

GO WITH THE FLOW

Signal flow is exactly what you'd expect from a virtual analog synth. In the Balance section, you can adjust the noise-generator level and the mix between Oscillators A and B. Each oscillator has a button to enable a pulse wave and a knob to adjust the pulse width; if the Pulse button is not engaged, the oscillator produces a sawtooth wave. In a future version of PoiZone, I'd like to see sine and triangle waves, too. Oscillator A has buttons to turn on ring modulation and to sync it to Oscillator B, and Oscillator B has knobs for adjusting its pitch and detuning. PoiZone's filter offers lowpass, highpass, and bandpass modes, making it easy to shape your sound from mellow pads to acid-dance timbres. However, I did notice that the highest and lowest knob settings for cutoff and resonance had little effect on the sound.

Experienced synthesists and newcomers alike will appreciate PoiZone's intuitive layout, and I liked most of the factory patches. I took a warm string patch called SYN PoizoneStrings, and with minimal tweaking I transformed it into a huge, arena-rock brass patch. A little experimentation with the arpeggiator and Trance Gate, and I was able to shape the same sound into an animated electronica patch (see **Web Clip 2**).

You can use PoiZone's Trance Gate function to chop the output with a 16-step pattern you can sync to your host sequencer. A Smooth knob lets you control the gate's attack. The built-in arpeggiator is pretty standard, but I combined it with Trance Gate and experimented with different step combinations to create some interesting rhythmic patches—nothing as deep as Korg's Wavestation or Karma, but very usable just the same (see **Web Clip 3**). You can also save and import gate patterns as FXP files. PoiZone's versatile Delay effect further increases your rhythmic possibilities (see **Web Clip 4**).

NOT FADE AWAY

PoiZone is clearly not trying to be the last soft synth you'll ever need, but it's very good at emulating a traditional analog synthesizer. Its user interface is clean and easy to navigate. The factory sounds are consistently good and work in a variety of musical styles. The Trance Gate function and arpeggiator are bound to be especially handy if you're producing dance music. And at this price, PoiZone should be on everyone's hard drive.

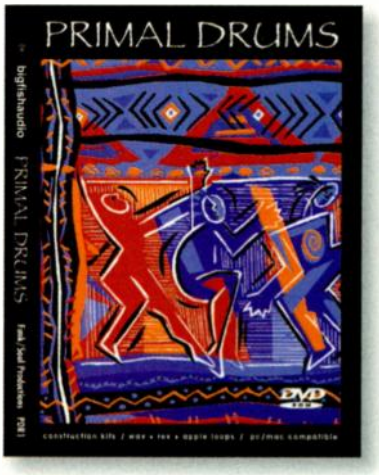
Value (1 through 5): 4
Image Line
www.image-line.com

BIG FISH AUDIO

Primal Drums

By Marty Cutler

Rhythm beds are the percussive equivalent of synth pads: complex and evolving textures of rhythm instruments that we can



Big Fish Audio's *Primal Drums* lets you build animated rhythm beds by layering expertly played drums, percussion, and sampled electronic instruments.

With sixteen inputs, the TASCAM US-1641 is the ideal choice for musicians to record the whole band to a computer. Eight mic/line inputs plus six line inputs gives you plenty of channels for a large ensemble, drumset, live recording or worship service. It includes Cubase LE4, Steinberg's latest version, for 48 tracks of 96k/24-bit recording power. Using the latest high-speed USB 2.0 technology, the US-1641 packs the interfacing power of a big console into only one rackspace. The well-connected TASCAM US-1641.....you're gonna need one.

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most often hear in film scores and commercials. They are equally useful in any musical endeavor that can benefit from textured, multifaceted rhythm tracks and larger-than-life grooves. In that spirit, Big Fish Audio offers *Primal Drums* ($99.95), a multiple-format collection of rhythm beds.

The single DVD-ROM includes a demo version of Ableton Live 6.03 and a 3.6 GB library of loops apportioned among REX2, Acidized WAV, and Apple Loop formats and sampled at 24-bit, 44.1 kHz resolution. These are not simple drag-and-drop rhythm beds, but construction kits that allow you to vary the density and dynamics of the groove by layering or subtracting the composite elements. I auditioned the WAV files in Cakewalk Sonar 6.0 and Ableton Live 7.01 and tested the Apple Loops in Apple Logic 7.1. I imported the REX2 files into Propellerhead Reason 4.01.

Each construction kit's folder includes a full-mix audio-file preview that isn't truncated or otherwise edited for looping. The preview's sole purpose is to provide a generalized, stereo-mix impression of the composite bed with reverb and other processing included. The processing is minimal on individual construction-kit elements, however, other than some sampled or synthetic drums and an occasional percussion element. Nonetheless, the loops avoid a stark, anechoic character. An unobtrusive natural ambience allows lots more latitude for customized sound design, from intimate roomlike mixes to cinematic, reverb-saturated, larger-than life rhythm sections.

PERCS OF THE JOB

For the most part, the collection relies on expertly played ethnic percussion, ranging from more familiar instruments such as congas and bongos to berimbau, rain sticks, tablas, chimba, and surdo. Standard drum kits and a judicious sprinkle of sampled electronic instruments often bolster the ensemble. The recordings offer nice detail, capturing lots of timbral nuance, snap, and ambience.

Individual grooves fit together beautifully. I found plenty of room to create entirely new feels by combining elements from different construction kits. Thanks to articulate and lively performances, the rhythms groove hard with life and momentum. Individual elements subtly push and pull against tighter interplay between the other instruments, imbuing the grooves with dynamism and tension (see **Web Clip 1**).

ONLINE BONUS MATERIAL

Not every loop has a clearly definable rhythm component; instead, many files supply timbral color to the overall bed. The coloration comes in the form of synthesizer drones, rain sticks, ocarinas, scraped hi-hats, cymbal rolls, bowed cymbal flourishes, and other effects, greatly emphasizing the exotic and dramatic character of the ensemble. In many cases, key percussion elements have multiple variations, helping to ameliorate obvious looping. If your ambitions don't extend to grandiose composite rhythm beds, most of the elements work together nicely in scaled-down combinations, or even by themselves.

In many cases, REX-file versions adapt to a remarkable range of tempos—loops with a designated tempo of 170 bpm easily stretched as low as 90 bpm with none of the graininess that other formats exhibit. Some up-tempo grooves, however, started to sound rushed at more than 10 bpm above the original tempo. The REX2 files deliver an added bonus: you can easily import and convert the groove elements to Spectrasonics Stylus RMX, enhancing their usefulness by an order of magnitude. When I applied RMX Chaos Designer, its musical randomness gave the loops a realistic improvisational character (see **Web Clip 2**).

The documentation is useful but flawed. Although it has clear, well-written instructions for using the various file formats, there's no explanation of the types of instruments used, nor is there a list of grooves or files, other than the folders. You might assume that other than a folder each of 6/4, 6/8, and 5/4 grooves, everything else is in 4/4; I was happy to find additional folders of odd-meter material, though they were not described as such. In one folder, a finger-snap loop is duplicated as a synth-percussion loop. In another folder, Conga FX and Filtered Congas are identical.

MAKE YOUR OWN BED

A few annoying blemishes do little to lessen my enthusiasm for *Primal Drums*. The grooves are nuanced and full of motion. Individual instruments furnish plenty of sonic detail, even while melding beautifully into the composite rhythm bed. Rather than locking you into a preset batch of loops, *Primal Drums* provides many great opportunities to comp your own beds. If you're looking to create exciting, dynamic rhythm beds with a personalized touch, give *Primal Drums* a listen.

Value (1 through 5): 4
Big Fish Audio
www.bigfishaudio.com

DAN DEAN PRODUCTIONS

Solo Strings Advanced (Mac/Win)

By Rob Shrock

When it was released several years ago, Dan Dean's *Solo Strings* library

Dan Dean *Solo Strings Advanced* includes new and improved versions of the samples from the original *Solo Strings* collection and now runs as a soft instrument under Kontakt Player.

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was widely sought after due to the high quality of the sample recordings. *Solo Strings Advanced* ($199) is an overhaul of the original sample collection and includes an even better-sounding software instrument with additional samples, more-advanced performance and sound-sculpting features, and a few other goodies.

ALL TOGETHER NOW

Native Instruments Kontakt Player now hosts the library as a software instrument, which enables performance capabilities not as easily realized in the original library. Specifically, there is a new patch for each instrument called All-In-One that uses keyswitching to select from the six provided articulations: arco vibrato, spiccato, pizzicato, tremolo, half-step trill, and whole-step trill. Once you memorize the keys that call up the various articulations, it doesn't take long to play very musical lines utilizing various articulations on the fly.

The library also employs a new Legato mode, activated by the sustain pedal. In Legato mode, the attack and decay of the notes are shortened in a way that lets you play more-realistic-sounding fast passages without the overlapped "smearing" of notes. The Auto-Alternation feature automatically switches between different takes of the same pitch for spiccato and pizzicato articulations to avoid an unnatural stuttering effect. A drop-down menu allows you to choose MIDI CC 11 (Expression), CC 01 (Modulation), or CC 02 (Breath) to control the level for dynamic shaping. MIDI CC 20 is hardwired to shape the envelope release, in case you want to further tighten up fast passages. A Cloaking feature is also on hand to further alter the tone of repeated notes throughout the library, which creates added variety.

The original samples have been cleaned up a bit to enhance their pristine quality, and I have no complaint about the sound of the samples. Additional samples from the original sessions have also been added, and there is now a completely new 2nd Violin instrument, as the original library provided only a single violin, viola, and cello (still no contrabass included). Unfortunately, the initial attack of the 2nd Violin does not have quite as gentle a swell as the other three instruments, making it stick out a bit in ensemble settings.

MODEL BEHAVIOR

One of *Solo Strings Advanced*'s unique features is the inclusion of both reverb and timbral impulses designed by Dean and Ernest Chokalis (creator of *DNA Groove Templates*) of Numerical Sound. You can use any of 26 reverb impulses to place your instruments in virtual rooms, studios, recital halls, and concert houses of various sizes and characters. Numerical Sound is known for its high-quality impulse responses, and

the models included here are excellent. Wet/dry mix, predelay, and bypass are all controlled from the front panel.

The timbre impulses are something new altogether. Utilizing Kontakt Player's powerful convolution engine, "fingerprints" of famous string recordings, sessions, and other source materials were used to model the recordings' overall tonal characteristics. There are 25 timbre impulses with which you can completely transform the character of an instrument. Several models are too drastic for my taste, but most are quite useful to quickly get the instruments to sit in a mix by completely transforming the EQ and timbre in a complex manner. A bypass button eliminates the timbral modeling altogether.

FROM ONE TO MANY

The bank of Voice Control *divisi* instruments is among my favorite features of this collection. Keyswitches or Mod Wheel can automatically select between 1, 3, or 6 (and even 12 in the Violins) players for adjusting the size of your ensemble on the fly. This makes it possible to accurately change the number of players when writing in *divisi* to reflect the number of players per note that results. I'm not sure what voodoo is being employed, but I hear no phasing or other negative artifacts one would expect using the same limited sample pool for multiple voices. *Solo Strings Advanced* is worth its price just for these incredible ensemble sounds.

Unlike with many larger libraries, you won't find different samples for dynamic levels—the only way to shape the dynamic curve is with Volume. Although a filter is tied to Volume in some of the patches, the timbre changes only ever so slightly. Obviously, the difference in timbre between notes played softly and loudly is quite varied in the real world; those tonal differences are largely absent. That said, *Solo Strings Advanced* is still very musical and quite capable. It will definitely find a home in my working environment.

An additional bank of Legacy Programming is provided that gives you one articulation per patch and uses keyboard Velocity to change dynamics. This bank should also work well with older sequences that employed the original *Solo Strings* library. All in all, *Solo Strings Advanced* is a great value that employs some advanced and innovative programming features to breathe new life into the original excellent collection of solo strings. EM

Value (1 through 5): 4
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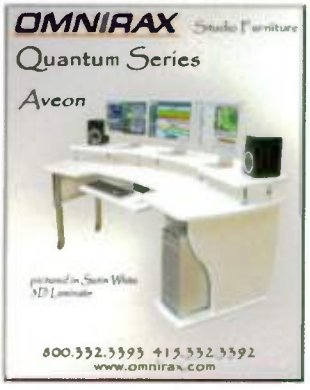

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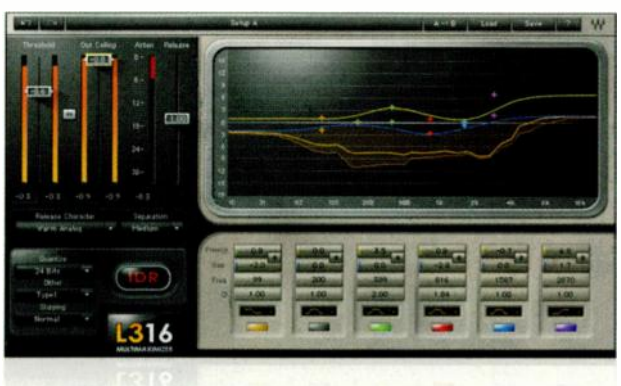

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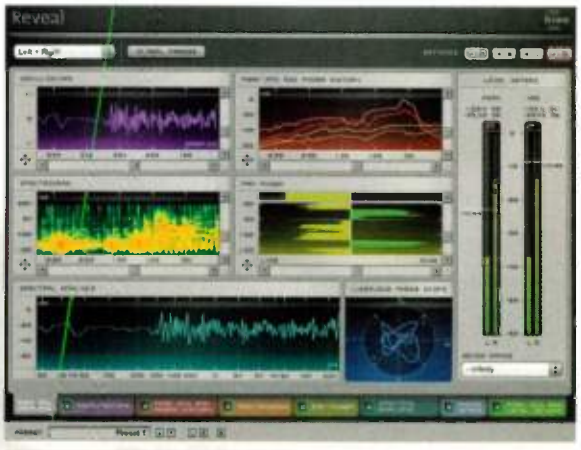

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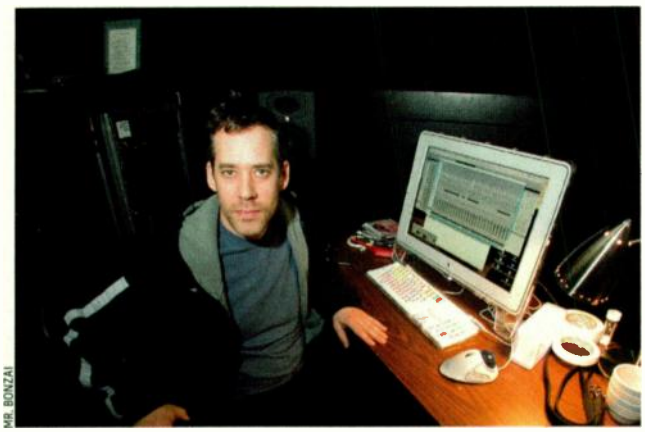
Why Do My Headphones Suck?

By Nathaniel Kunkel

In my opinion, few things are as important in the studio as performers' headphones. I can overcome a buzz in the system, and I can overcome bad converters. I cannot overcome how much a performance will suffer if the musicians can't hear themselves.

Hardly any studio I go to record anymore has a cue system worth a damn. The headphones are always blown up, the mixers rarely work, there is almost always a buzz, and no one seems to care. (There are, of course, exceptions.)

I have booked rooms for several thousands of dollars a day that don't have—and will not provide me with—working headphones. I kid you not. I have actually sent my assistant to a music store with my credit card to buy headphones for the artist because the studio cannot provide me with *one* working set. I am not talking about some tiny home studio. I am talking about major facilities.



MR. BONZAI

Just in case you are one of the few who actually care about the musicians' ability to really perform for you, I wanted to let you know it's time to raise the bar: it's time to start checking headphones before a session; it's time to get enough talkback microphones; it's time to no longer accept a huge buzz in a cue; it's time to provide consistent, quality audio to the people who need it most. I'm not talking about just ensuring that audio comes out of the headphones; I'm talking about ensuring that high-quality, balanced, gratifying audio comes out of them—inspiring audio that elevates the performances from the people who depend on it.

Here is a news flash for everyone: headphones don't last forever. I know, how can that be? Seems amazing. I mean, cars last forever, and strawberries last forever, right? Wrong. Drummers' headphones on a major tracking date will last a shorter period of time than a banana in a basket. If you think that using headphones on a tracking date for several weeks will not render them unusable, then you are mistaken. We need to think of headphones like any other expendable studio item. The new toilet paper, if you will. Just build it into your operating expenses. Every six months you need a new case of headphones.

"But that will cost me thousands of dollars," you say. Yeah, so what?

You can buy a networkable cue system for around $3,000 and a new set of good headphones for around $100 a pair. Hello? Do you think that might be more useful than a $9,000 plug-in package? Or would you rather edit for three weeks because your musicians couldn't get an inspiring cue mix? Remember, the richest man in the world can't buy a minute.

The most amazing thing to me is that when I complain to my studio-provided assistant about the horrible condition of the cue system, they always say the same thing: "Yeah, I know, everyone has problems with it." That, of course, makes me feel fantastic. I am getting reamed by the players and my producer, and all the while they knew that the cue system sucked on the last session.

So what do you think? Now that we can record 96 tracks at 96 kHz, tune it all, quantize it all, and send it across the world in an hour, do you think, just maybe, you can make my headphones not suck? em

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Nathaniel Kunkel is a Grammy and Emmy Award–winning producer, engineer, and mixer who has worked with Sting, James Taylor, B.B. King, Insane Clown Posse, Lyle Lovett, and comedian Robin Williams.

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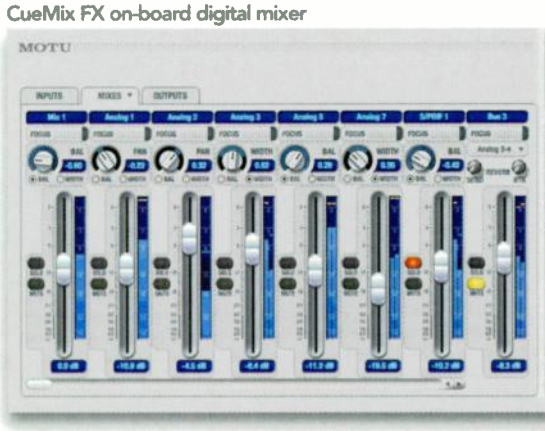

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