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December 2004

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## FEATURES

### 28 DAWS R US

Personal-studio owners push their computers to the limit, eking out as many tracks and plug-in instantiations as their computer can handle. Business and general-purpose PCs aren't built for that, so you often have to spend endless hours installing, customizing, configuring, and troubleshooting—unless you buy a Windows machine that's customized for music. EM surveys the new landscape of preconfigured musical PCs to help you choose the right machine for your needs.

*By Brian Smithers*

### 36 COVER STORY: ALL THINGS GREAT BUT SMALL

EM's 2004 holiday gift guide celebrates the miniaturization of the personal studio by focusing on items that fit in the palm of your hand. With 31 gift ideas and prices ranging from \$2.45 to \$995.00, we're sure you'll find something for everybody. Just don't forget to make your own wish list!

*By Gino Robair*

### 42 AMBIENCE CLINIC

There's more to adding space to a mix than simply cranking up the reverb send. We offer tips and advice on such topics as adding subtle ambience to a track, getting a delay to kick in on a precise line, saving CPU resources while still getting cool-sounding reverb, using tempo-synced pre-delays, and more.

*By Julian McBrowne*



36



Cover photo by Bob Montesclares

## DEPARTMENTS

8 FIRST TAKE

12 LETTERS

16 WHAT'S NEW

134 2004 ARTICLE INDEX

140 AD INDEX

141 MARKETPLACE

145 CLASSIFIEDS



28



## COLUMNS

- 24 TECH PAGE: True Stereo**  
If you think you know what "stereo" means, think again.
- 26 PRO/FILE: Gold Standard**  
Maggi, Pierce, and E.J. mine acoustic instruments for *Gold*.
- 48 SQUARE ONE: Master of the Universe**  
The facts about mastering and the role of the mastering engineer.
- 54 WORKING MUSICIAN: Pounding the Virtual Pavement**  
Tips for using the Web more effectively to promote your music.
- 154 FINAL MIX: I'm Not Like Everybody Else**  
The blessing and curse of original thinking.



## REVIEWS

- 62 ABLETON Live 4.0 (Mac/Win)** digital audio sequencer
- 70 ARTURIA Storm 3.0 (Mac/Win)** software-synth workstation
- 74 ANTARES Auto-Tune 4 (Mac/Win)** pitch-correction plug-in
- 80 M-AUDIO Octane** 8-channel mic preamp and A/D converter
- 84 STEINBERG WaveLab 5 (Win)** multitrack audio editor
- 90 VIRSYN Cantor 1.02 (Mac/Win)** virtual instrument
- 96 EASTWEST/QUANTUM LEAP Symphonic Orchestra Platinum Edition (Mac/Win)** sample library
- 106 RANE C4 Quad Compressor** quad compressor/limiter/de-esser
- 112 CYCLING '74 Mode 1.0 (Mac)** plug-in bundle
- 116 QUICK PICKS:** Native Instruments Elektrik Piano (Mac OS X/Win) virtual instrument; Neumann BCM 104 condenser microphone; Cakewalk Kinetic (Win) digital audio sequencer; Bigga Giggas John Rekevis Saxophone Library (Giga, Kontakt) sample library; Eventide Reverb (Mac/Win) reverb plug-in; Best Service Galaxy Steinway 5.1 Piano (Mac/Win) virtual instrument; Bag End M-6 and Infra-12 Pro studio monitors and subwoofer; Sonic Reality Sonic Refills Vol. 12: Acoustic Folk sample library

## A Reviews Extravaganza

**P**roduct reviews are arguably EM's most popular articles, and we publish a lot of them. In 2004, we published 134 reviews, not counting product roundups that included evaluations. In the average issue, we publish between 9 and 12 of these stories. But this month we decided to clear out the backlog, so I chose some shorter features, reshuffled the columns a bit, and made room for—count 'em—17 reviews! I don't know whether that's a record for EM, but it's certainly a wealth of product coverage. That's in addition to the many products we've included in our annual holiday gift guide ("All Things Great But Small," on p. 36). If you are a gear and software junkie, this issue will feed your habit in a big way.

We can't review all of the products that we would like to, so each month, Senior Editor Gino Robair, with input from me and our other editors, carefully selects the products we think are particularly important, interesting, and useful for personal-studio owners. Gino shepherds the reviewers through the entire process and stays on top of questions that arise.

Even with a capable shepherd like Gino, though, it's hard to get reviews in print immediately after the product ships, and still meet our quality standards. For starters, we don't review beta software or hardware prototypes, so we can't begin our research until we get the final, shipping product. In addition, all of our reviews are practical field-tests, and we expect authors to use the products extensively and on real projects to the greatest extent possible. Sometimes we allow extra time to investigate a thorny problem or resolve a controversy, and we occasionally find out about an imminent software update that is worth waiting for.

Once in a while, especially with microphones, we receive products that are damaged in ways that aren't immediately obvious, and when we detect a problem, we have to wait for a replacement. That's one reason we always request pairs of mics for review. (We also want to test consistency.)

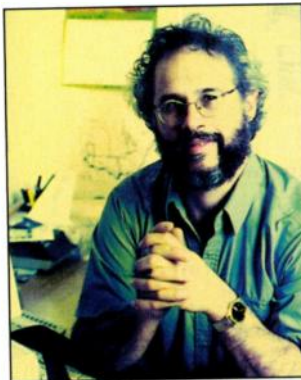
To top it off, we're gear and software junkies, too, and we can't resist assigning as many reviews as we can fit in each issue. In fact, we usually go overboard and assign more reviews than will fit, and when things go smoothly, and no reviews are delayed, that results in a backlog. The upshot is that we aren't always the first magazine to review a particular product. We aren't necessarily happy about that, but we'd rather be late and do a top-quality job than hurry and miss something important or publish a superficial review.

This year, we decided to give you a special holiday gift by jamming absolutely every possible product review into this December issue. And of course, we are already refilling the review hopper for 2005, because we have no lack of promising products to cover. So we will be ready to rock with a big, fresh batch of reviews in the coming year.

Have a happy, healthy holiday season!



Steve Oppenheimer  
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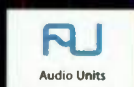
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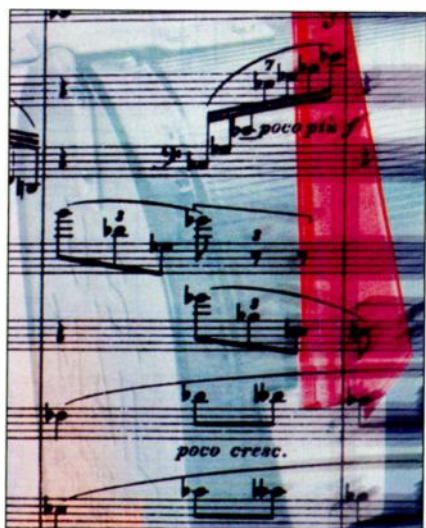


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LIZ HEAVERN

## MAC ENTHUSIAST

**Y**our editorial in the September 2004 issue of EM ("First Take: Can We Still Count on the Big Five?") contained a misstatement: "A trend started when Avid, a maker of pro video-editing products for Windows, bought Digidesign." I could be wrong, but to characterize Avid as a Windows company for pro video-editing was a little misleading.

Avid Technology started out developing products for the Mac, and it remains a strong Mac developer. I would wager that its pro video-editing products for the Mac still generate most of its sales. Although Avid's Softimage 3-D animation software and related products are only for the Windows platform, its Avid Media Composer runs on Mac OS X and Windows 2000.

**Bob Santoro**  
via email

*Bob—You are correct, and I should have known better. In fact, according to an Avid representative, the company's pro video-editing product sales are about the same for Mac OS and Windows.—Steve O*

## THE CAT'S MEOW

**T**hanks for Jim Bates' excellent article about managing Mac OS X

("Tracking the Big Cats," September 2004). As a support professional, I have a few additional thoughts.

Readers should be warned that many of the recommended modifications should not be made to a general-purpose Mac OS X system. Such nonstandard changes increase the risk of a system problem. For a dedicated studio computer, the benefits may outweigh the risks. But for a general-purpose system, these changes can affect many different areas of the system.

For example, disabling fonts and languages may not immediately pose a problem, but a future revision of an application may depend on one of those items. How will the application react? Will it fail gracefully, or will it simply crash without providing a reason? Will an OS upgrade require something that you've removed? I always recommend that my general-use clients install the system without customization to minimize the chance of a failure at a later date.

Many studio users keep audio data on a separate drive from the system and applications. Doing so allows one to make a full backup of the system drive using any of several utilities designed for this purpose. Carbon Copy Cloner, available from [www.bombich.com](http://www.bombich.com), is one such utility. In the event of a system failure, you can restore the entire system fairly quickly and get it going without wasting valuable studio time.

I don't agree with Bates' recommendation to defragment the disk. Panther already has built-in defragmentation and hot-file relocation. Defragmenting an audio drive may be important, but I don't touch the system volume.

Also, beginning with Mac OS 10.3.4, there is no longer a need to optimize prebinding. Doing so can actually impose a performance penalty! Many installers, however, still include this step; they have not yet been updated.

All in all, Bates' article provides great insight into how OS X can be fine-tuned for studio performance.

**Rick Auricchio**  
**Macs Only**  
**Cambria, California**

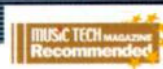
*Author Jim Bates replies: Rick—Thank you for your thoughts and suggestions. I agree that my suggested changes are not for general users, which is one of the reasons I proposed writing this article for EM, rather than Macworld.*

*I recommended relocating fonts into the non-DAW (general-use) account, not disabling them. If any question arises, it is best to leave the fonts alone. The resulting boost in speed is negligible, and as you say, a future update could possibly require those fonts. Languages and printer drivers, however, are another matter, as they occupy disk space and slow down the system. However, languages won't cause a problem as long as you do the following: in the Finder menu under Preferences/Advanced/Languages, select only the languages that are installed.*

*Regarding Panther's defragmentation features, Panther inspects any open file and automatically defragments it while relocating the file. This means that individual files are defragmented while the arrangement of files on the disk become fragmented. As you say, it is a good practice to keep the System files and audio data on separate drives (or partitions) for this very reason. In practice, I defragment my audio-data partition only occasionally but defragment the System and Applications partition regularly.*



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Jon Musgrave, Future Music

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Finally, regarding the issue of optimizing prebinding, Apple still uses the optimization procedures on the 10.3.4 and 10.3.5 installers, so I don't know how applicable it is. If running optimization does, in fact, hamper performance, how do you upgrade to 10.3.5 without optimizing, since the installer runs it anyway? I am not refuting the point; it is something to keep an eye on, as Apple is pushing the envelope in that direction.

In "Tracking the Big Cats" (September 2004), author Jim Bates suggests creating a separate user account for your DAW system. I agree with that approach, but I have one major problem: neither Jaguar nor Panther allow different users to have different energy-saver preferences. For instance, Pro Tools LE recommends setting the system so that it will not sleep or turn off the display, and so on. I assume that other major DAWs recommend these settings, as well.

Of course, I would prefer having different day-to-day energy-use preferences, because I use my laptop for both audio and general use. If there's an elegant solution to this problem, I'd love to hear about it. I would really appreciate the convenience of the user-account idea.

David Tallacksen  
via e-mail

Author Jim Bates replies: David—You are correct: OS X doesn't allow separate settings for energy-saver preferences among users on the same partition. So, there are two solutions: have your DAW and day-to-day systems on two different partitions (which unfortunately requires a reboot to change modes), or use the Unix command "pmset" for modifying power-management settings. Open a terminal window and type "man pmset" (without the quotes). You will then see the manual entry for pmset.

You can obtain a script for this procedure by visiting [www.macosxhints.com](http://www.macosxhints.com) and searching for "pmset." That Web site offers several good scripts.

## INTERIOR DECORATION

My girlfriend and I live in a one-bedroom apartment with hardwood floors and sheetrock walls. I can't afford to buy acoustic-treatment products or the more affordable DIY solutions.

I saw polystyrene sheets on sale in a hardware store for \$10. They are about an inch and a half thick. My idea is to affix a foam-mattress cushion to one side of the polystyrene and cover the whole affair with some thin fabric for cosmetic purposes. I could put eyelet screws in the ceiling, run fishing line through the material, and suspend the polystyrene sheets from the ceiling at different angles to eliminate some standing waves and tame the room's echo. The polystyrene is also available in cubes that measure one foot-by-one foot, so I thought of covering those cubes with plush carpet and using them as bass traps.

Is this worth trying? It's certainly far cheaper than most DIY solutions. I

would be happy to do more intensive things to the apartment (condensed fiberglass insulation, drilling, and so on) but I'm renting the apartment and don't want to do anything more severe than mounting a picture frame. I also promised my girlfriend that I would not let this project completely uglify the room.

Please let me know if you think these methods will yield sufficient absorption and diffusion. Keep up the great work!

David Trampe  
St. Paul, Minnesota

Author and acoustician Bob Hodas replies: David—Your solution could work to eliminate floor-to-ceiling problems, but I can think of a cheaper solution that is also more environmentally friendly (resulting in no outgassing).

Use half-inch soundboard with Ultra-Touch R-13 insulation on one side. Ultra-Touch insulation is made from recycled cotton and is available from many larger hardware and building-supply stores. I don't know the density of the cubes so I don't know if they would be effective, but you could try stacking them in the corners. Remember that most foam-corner traps work down to about only 100 Hz, which isn't exactly a deep bass frequency.

## ERROR LOG

October 2004, "First Take: Buying In," p. 8. According to M-Audio, 80 percent of its products are designed by its own engineering and product development team, not by contractors. Also, M-Audio founder Tim Ryan will not join Avid's board of directors; rather, he will participate in Avid's executive-staff meetings as a member of Digidesign's executive staff.

## WE WELCOME YOUR FEEDBACK.

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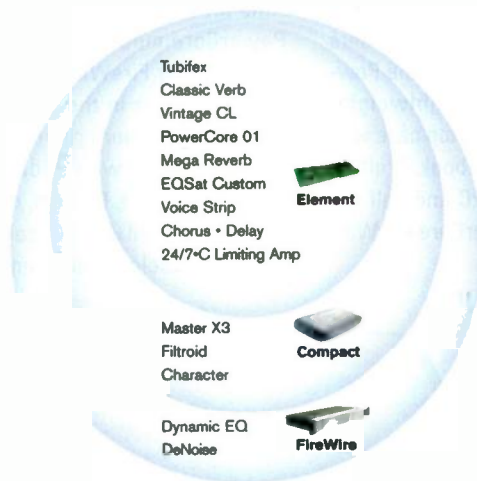
# Compact access to a world of processing



## The doorway to portable production

PowerCore Compact, the newest member of the PowerCore family, brings a world of processing to VST and AU supported applications\*. Lightweight and with FireWire connectivity, it is designed for artists and studios on the move. Right out of the box you get all of the well-known plug-ins from PowerCore Element plus the Master X3, Filtroid, and the Character, a new plug-in from Noveltech. PowerCore Compact is the doorway to professional production and mastering possibilities from TC Electronic as well as unlimited processing power from 3rd party developers. For more information on the complete PowerCore range, visit: [www.tcelectronic.com](http://www.tcelectronic.com).

### Included plug-ins



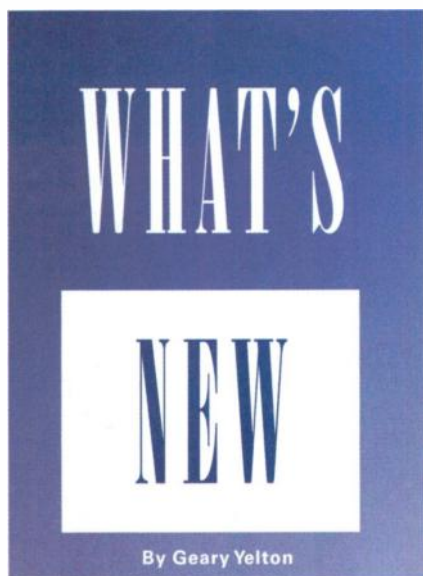
### Optional plug-ins from



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ULTIMATE SOUND MACHINES

\* RTAS support with FXpansion VST-RTAS wrapper. See [FXpansion.com](http://FXpansion.com) for details.

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**WWW.TCELECTRONIC.COM**



### ▲ ALIENWARE OZMA-M

**A**lienware's Ozma-m (\$2,915 and up) is a notebook computer that's custom-built for pro-audio applications. Based on a Hyper-Threading Pentium 4/3 GHz running Windows XP Professional, the Ozma-m contains an Nvidia Quadro FX Go1000 video card. The computer offers a choice of a 16.1-inch UXGA 16:10 or a 15.4-inch WideSXGA+ LCD display. The M-Audio FireWire 410 interface is included as standard equipment.

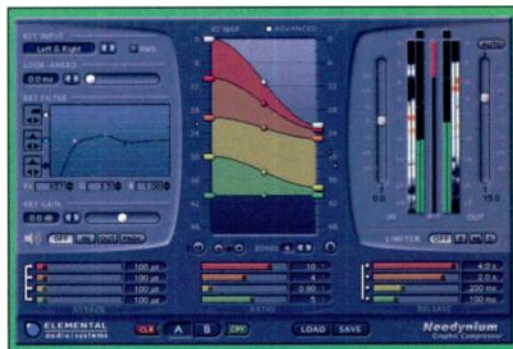
The 7.5-pound base model comes with 512 MB of PC3200 RAM and a 40 GB, 7,200 rpm hard drive. Removable bays house the main hard drive, a DVD+RW/CD-RW combo drive, and an optional second hard drive. Standard features include Gigabit Ethernet, a FireWire port, three USB 2.0 ports, a media-card reader, four built-in speakers, and an infrared multi-function remote control. A selection of optional software is available. Alienware Corporation; email [support@alienware.com](mailto:support@alienware.com); Web [www.alienware.com](http://www.alienware.com).

### ▶ ELEMENTAL SYSTEMS NEODYNIUM

**Y**ou seldom see a totally new approach to dynamics processing, but some companies never do anything ordinary. Case in point: Elemental Audio Systems, developer of the EQ plug-ins Firium and Eqium, has introduced Neodymium (Mac/Win, \$159), a plug-in that takes a unique approach to compression and dynamics processing. Instead of turning knobs and viewing transfer curves as you do with other compressors, you interact with a graphic representation of Neodymium's compression settings. It displays a color image of your signal's audio levels and the amount of compression applied to those levels, allowing you to visualize compression as never before.

Neodymium applies compression or expansion to user-determined level ranges, rather than to frequency ranges as a multi-band compressor does. You can define as many as four compression zones, each with independent attack, release, and ratio settings. Cloud meters indicate where audio levels are concentrated, and compression

meters indicate the effect of your settings. You can select key input from the left channel, the right channel, both channels, or a



sidechain, and choose peak or RMS analysis of your selected key. Neodymium also offers an auto-limiter, automatic gain compensation, look-ahead capabilities, target and processed key meters, and as many as three key filters from seven filter types.

Neodymium supports sampling rates to a maximum of 192 kHz and is available in VST, RTAS, and Audio Units formats. Elemental Audio Systems; email [customerservice@elementalaudio.com](mailto:customerservice@elementalaudio.com); Web [www.elementalaudio.com](http://www.elementalaudio.com).

### ▼ TC ELECTRONIC POWERCORE COMPACT

**W**hen TC Electronic first unleashed the PowerCore, it took the load off of computer processors by supplying additional horsepower for running audio plug-ins; the PowerCore FireWire did the same, but without the need for expansion slots. Nevertheless, some notebook-computer users wanted something smaller. Enter the PowerCore Compact (\$995), a lightweight, portable unit that fits into a laptop case with your PowerBook or PC notebook. It offers the same 266 MHz PowerPC and half the Motorola DSPs as the PowerCore FireWire at just over half the price.

Included with the PowerCore Compact are a dozen plug-ins (Mac/Win) ranging from a soft synth to dynamics and effects. One of these is Noveltech's new Character plug-in, a nonlinear adaptive filter that reshapes

audio material in response to its content. Other bundled plug-ins include the Filtroid dual filter bank, the Tubifex guitar-amp simulator, and the Master X3 virtual Finalizer.

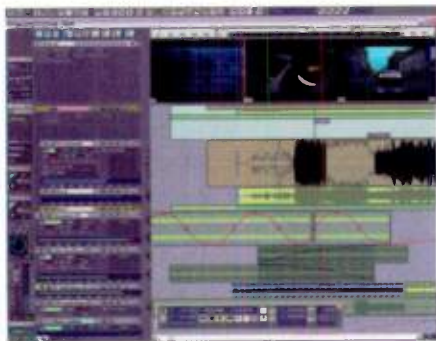
The PowerCore Compact works with any VST or Audio Units host application and runs all the same plug-ins as previous PowerCore models. It connects to your computer by FireWire, for portable processing power in the studio and on the road. For even more power, it can be used in combination with additional PowerCores—Compact, Element, or FireWire. TC Electronic; email [infous@tcelectronic.com](mailto:infous@tcelectronic.com); Web [www.tcelectronic.com](http://www.tcelectronic.com).





# LET GO AND FLOW

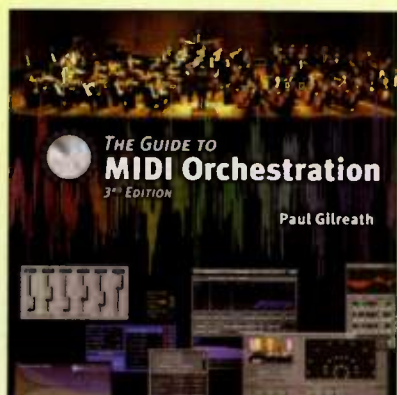
SONAR Producer Edition has earned a reputation for delivering powerful production tools in a streamlined interface. Now in version 4, the new recording, editing, comping, and navigation tools give today's professionals like you the freedom to flow. They're so fast, you just have to see it to appreciate it. And the ride doesn't stop there; version 4 adds innovative surround and AV capabilities, along with precise engineering tools—seamlessly combined together to make SONAR 4 Producer Edition the definitive audio production environment on the Windows Platform.



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# GET SMART ▲▲▲▲



## ▲ MUSICWORKS ATLANTA

Composer Paul Gilreath's third edition of *The Guide to MIDI Orchestration* (\$69.95) contains more than 700 pages of instruction for sequencer users. This massive hardbound text concentrates on creating realistic emulations of symphonic arrangements using samplers, dynamics and effects plug-ins, and most other computer-based tools found in the virtual studio. Gilreath combines explanations of orchestration techniques with discussions of recent advances in soundware, particularly the use of high-end orchestral sample collections from a variety of developers.

After a brief introduction to the traditional orchestra and numerous composers, the first few chapters focus on the various orchestral instrument families, with illustrations of instruments, transcriptions of their ranges, and details of their idiosyncratic playing techniques. From there, the author gives a 30-page lesson in basic orchestration, followed by suggestions on how to apply those techniques to computer-based arranging and composition. Gilreath explains audio interfaces, soft samplers,

monitor speakers, mixers, control surfaces, plug-ins, and other tools familiar to most electronic musicians.

The chapters that follow touch on subjects such as soft samplers, mixing strategies, and studio construction. An especially revealing chapter features interviews with several well-known soundware developers, composers, and mastering engineers. Almost one-fourth of the book is devoted to reviewing specific sample libraries. MusicWorks Atlanta; email [orders@musicworks-atlanta.com](mailto:orders@musicworks-atlanta.com); Web [www.musicworks-atlanta.com](http://www.musicworks-atlanta.com).

## ▼ ADOBE PRESS

One of the newest titles in Adobe's *Classroom in a Book* software-training series is *Adobe Audition 1.5* (\$45), a beginning-to-intermediate-level tutorial on using the multitrack audio editor. As with other books in the series, the 283-page text includes a CD-ROM containing audio examples. Each of the 13 chapters is a self-paced lesson that covers various aspects about using Audition for creating CDs and multimedia soundtracks.

Lesson 1 introduces the basic concepts of working with loops and tracks, adding effects, using noise reduction, changing tempo, and exporting to MP3 format.

From there, you learn how to maneuver the windows and the toolbars, edit stereo waveforms, work with multitrack files, create and edit loops, and perform other basic tasks. Additional lessons address specific noise-reduction techniques, EQ, and mixing. The two final

lessons describe how to create audio CDs and how to use Audition to edit audio tracks for video production in Adobe Premiere. Adobe Press/Peachpit Press (distributor); Web [www.peachpit.com](http://www.peachpit.com).

## ▼ COURSE TECHNOLOGY PTR

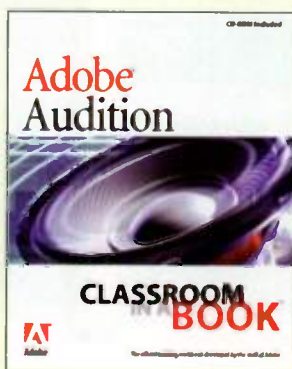
Course Technology's impressive series of software tutorials continues to grow. The series has two lines of instructional books—*Ignite!* and *Power!*—offering beginning and more advanced users a paperbound education in how to use specific software programs for music and audio production.

Books in the *Ignite!* series offer step-by-step introductions to each program's

commands and functions. In *Sonar 4 Ignite!* (\$19.99), for example, EM author Brian Smithers outlines how to perform the basic tasks covered in Cakewalk Sonar 4. He discusses subjects ranging from customizing Sonar and working with groove clips to using drum maps

and optimizing your CPU resources. Mark Johnson's *Finale 2005 Power!* (\$29.99) shows how to create sophisticated musical scores using MakeMusic's flagship notation program.

Additional titles in the more advanced series are *Reason 2.5*, *Nuendo*, and *Sampling and Soft Synth Power!*, with *Sonar 4*, *Digital Performer*, and *Pro Tools 6 Power!* right around the corner. Other introductory books released this year include *Adobe Audition*, *Soundtrack*, *GarageBand*, and *Home Studio Ignite!* All books cost either \$19.99 or \$29.99 and are around 300 to 450 pages long. Course Technology; email [ct.retail@thomson.com](mailto:ct.retail@thomson.com); Web [www.courseptr.com](http://www.courseptr.com).





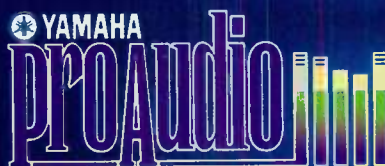
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# DOWNLOAD OF THE MONTH ▲ ▲ ▲ ▲

## X-WHEEL OF FORTUNE PRO

X-Wheel of Fortune Pro (Win, \$38) is an algorithmic-composition tool from Günter Hager ([www.flomo-art.de/se](http://www.flomo-art.de/se)). Created in SynthEdit ([www.synthedit.com](http://www.synthedit.com)), X-WoFP is a VST instrument plug-in and requires compatible Windows VSTi host software. X-WoFP automatically generates five audio parts—bass, solo, pad, voice-atmosphere, and percussion—that can be independently muted, mixed, and panned. Each part has its own synthesis engine, its own algorithm parameters, and its own feedback delay line, allowing individual parts to be as busy or as sparse as your taste dictates. Global parameters include transposition mode (keyboard, algorithmic, or both), transposition rate in bars, and a choice of scale (major, minor, whole tone, pentatonic, and so on). X-WoFP can be synchronized to the host's tempo or free running.

X-WoFP's bass and solo synthesizers feature a single oscillator followed by a lowpass filter with ADSR envelopes for output level and filter cutoff, as well as a multiple-waveform LFO for filter cutoff. The pad synth is more complicated, offering three oscillators, one of which takes its shape from a



built-in sound font containing 22 waveforms. The percussion generator offers five tracks of sample-based percussion. Track 1, intended for kick or snare sounds, offers individual beat programming, whereas the other tracks generate their rhythms algorithmically and are best suited for percussion sounds. The fifth part combines a wavetable-based voice-atmosphere generator and a WAV file player with a multimode filter. A joystick-like x-y controller offers user-assignable control of all five parts.

X-WoFP is capable of giving you a wide range of styles, as is amply illustrated by the variety of factory presets, of which **Web Clip 1** is an example. A multichannel MIDI-controller layout facilitates real-time interaction as well as host automation for each of X-WoFP's parts. X-WoFP is a great background generator, an interesting composition starter, and just plain fun. For a test-drive, download X-WoFP's free sibling, X-Wheel of Fortune, from [www.algomusic.nl/freeware](http://www.algomusic.nl/freeware).

—Len Sasso

## SE ELECTRONICS GEMINI

Until recently, microphones manufactured in China have been exclusively imported as OEM models by companies that sold them under their own brand names. Sonic Distribution USA, in partnership with Chinese manufacturer SE Electronics, has formed SE Electronics International, offering a full line of condenser mics. One especially nice company policy is that SE Electronics will loan qualified prospective buyers any mic for one week. In addition, if a mic that's returned for repair can't be fixed within a week, it will be replaced with a new one.

Holding down the top of the line is the

Gemini (\$1,499), a dual-tube condenser with a 1.07-inch gold-sputtered diaphragm and a fixed cardioid polar pattern. Instead of a traditional transformer, the Gemini contains two pretested, dual-triode vacuum tubes: a 12AX7 on the input stage, and a 12AU7 on the output stage. SE Electronics says that the result is a detailed and intimate sound that is similar to that of classic tube mics.



According to specifications, the Gemini handles an SPL of 130 dB with 0.5% THD, and its impedance is rated at 200Ω. This model is recommended for close- or ambient miking, stereo x-y recording, or any application in which off-axis rejection is crucial onstage, on location, or in the studio. It has an external power supply and an internal shock-mount. SE Electronics/Sonic Distribution (distributor); email [sales@sonic-distribution.com](mailto:sales@sonic-distribution.com); Web [www.seelectronics.com](http://www.seelectronics.com).



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LIMITLESS

## REV UP ▲▲▲▲



### ▲ MOTU DIGITAL PERFORMER 4.5

**R**ecent months have been very exciting for audio software users on both major platforms, and MOTU is doing its part to keep Mac OS X users happy. Digital Performer 4.5 (Mac, \$795; upgrades from \$149) introduces enhancements that include drag-and-drop Apple Loops import, audio tempo analysis, and sample-accurate latency compensation for plug-ins. If you're a Digidesign user, DP offers dozens of new features for Pro Tools HD, Accel, and Mix systems, with support for RTAS and AudioSuite plug-ins.

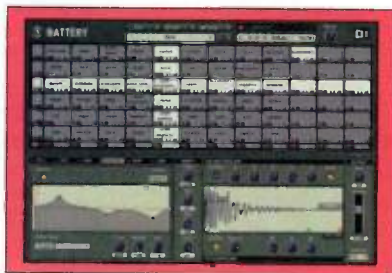
DP 4.5 makes manipulating audio more like working with MIDI. When you import audio files, the new Beat Detection Engine automatically aligns the imported material to fit your project's tempo. You can edit the location and the Velocity of each beat. Quantize beats within Soundbites and snap your edits to a grid. Create seamless crossfades with the new Smooth Audio Edits feature. You can even extract grooves and apply grooves to audio data, just as you can with MIDI data.

A new customizable Consolidated window lets you perform various tasks by selecting tabs instead of selecting separate windows. Other new features include MP3 export, an improved busing architecture, a maximum of 20 sends per track, and as many as 297 audio voices and 198 bus channels. The update also includes MasterWorks EQ, a 5-band equalizer with four EQ types. Mark of the

Unicorn (MOTU); email [info@motu.com](mailto:info@motu.com); Web [www.motu.com](http://www.motu.com).

### ▼ NATIVE INSTRUMENTS BATTERY 2

**N**ative Instruments is shipping a new generation of its drum sampler, Battery 2 (Mac/Win, \$229; upgrade \$119). Unlike previous versions, its user interface can be customized to contain from 9 to 72 cells, accommodating drum kits of almost any size while conserving screen space. You can even rearrange the cell matrix as desired. Battery 2 supports 256-note polyphony, hard-disk streaming, and more sample formats than before, including Giga and REX files.



Each cell now has an additional envelope generator, an extra LFO, a compression section, and a 6-pole resonant filter and equalizer with 15 types ranging from lowpass to comb and vowel filters. An expanded selection of modulation sources lets you modulate as many as eight destinations per cell. Each sample can play up to four loops with tuning, crossfade, and alternating-loop functions. Loop-point visualization and loop previewing simplify loop-editing tasks. A new mapping editor manages up to 128 sample layers per cell, and you can overlap polyphonic voice groups.

The sample content, which exceeds 3.5 GB and includes an updated version of the original Battery library, supplies a

total of 23 acoustic and electronic drum kits. Native Instruments; email [info@nativeinstruments.com](mailto:info@nativeinstruments.com); Web [www.nativeinstruments.com](http://www.nativeinstruments.com).

### ▼ AUDIO EASE NAUTILUS BUNDLE V2

**W**hen Audio Ease introduced the Nautilus Bundle (Mac, \$299; upgrade \$99.95), it gave Digital Performer users a fistful of capabilities that no other plug-ins could achieve. Until recently, however, only DP3 users could use RiverRun, Deep Phase Nine, and PeriScope. Now Audio Ease has updated all three plug-ins to support five formats—Audio Units, VST, MAS, RTAS, and HTDM—on any DAW running in Mac OS X.

RiverRun uses real-time granular synthesis to divide sounds into millions of tiny, user-definable particles, and then manipulate them using various processes.

Deep Phase Nine is a stereo phaser that visually plots LFO motion in real time. Each channel has as many as 24 notches swept by a selection of five low-frequency waveshapes.

PeriScope is a phase-accurate 32-band equalizer that performs continuous, real-time frequency analysis. It has up to +36 dB of boost and -144 dB of cut, with bandwidth as narrow as 10 Hz. Most parameters respond to sequencer automation. Audio Ease; email [sales@audioease.com](mailto:sales@audioease.com); Web [www.audioease.com](http://www.audioease.com).





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## True Stereo

Most electronic musicians would probably apply the word "stereo" exclusively to 2-channel audio systems. So you might be surprised to learn that stereo has nothing to do with the number two per se; it is derived from "stereos," the Greek word for "solid." The word stereo was applied to 2-channel sound systems when they first became available because those systems rendered a solid sonic image. With 2 channels, the placement of individual audio elements (instruments, voices, and so on) is much more specific than monaural systems. Similarly, 5.1-channel surround-sound systems (with one low-frequency subwoofer and five full-range speakers placed in an array around the listener) are far more "stereo" than 2-channel systems.

The Fraunhofer Institute for Digital Media Technology, located in Ilmenau, Germany, is extending this concept even further with its IOSONO system ([www.iosono-sound.com](http://www.iosono-sound.com)). Designed primarily for commercial cinema and other public-venue applications, IOSONO (pronounced EE-oh-so-no) places literally hundreds of individually addressable speaker drivers around a room, forming a continuous line that completely encircles the audience. The drivers include 1-inch dome tweeters and 5.5-inch midrange cones mounted in rectangular panels. Each panel holds 8 pairs of drivers and 16 amplifiers to power them (see Fig. 1). Several powered subwoofers are also placed around the room to handle the low frequencies.

The IOSONO system utilizes Wave Field Synthesis (WFS) technology. WFS is based on the work of 17th-century Dutch mathematician and astronomer Christiaan Huygens, who proposed that the wave field of a single source can be accurately emulated by many closely spaced sources located on the perimeter of the original wave field. Thus, any virtual sound source can be realistically reproduced by an array of actual sound sources, such as the drivers in the IOSONO panels.

*Finally:*

*stereo*

*done*

*right.*

Sounds reproduced by IOSONO can come from any playback system, including a DAW. Each input is encoded with localization coordinates for that source and other metadata. Information about the physical configuration of the speaker array and the room in which it is installed is also encoded.

WFS algorithms render signals for the speaker array in real time to simulate the sound of the original sources at the designated coordinates. That involves more than simple amplitude panning; complex changes in a signal's phase, delay,

and spectrum are also important components of the process. The software lets a mixing engineer control the position and movement of each sound source graphically on the screen. Using multiple computers, the current system has enough horsepower to render as many as 32 separate sound sources in this manner, and the signals are transmitted from the computers via MAD1 (Multichannel Audio Digital Interface), which is converted to ADAT Optical format in each panel.

I recently attended a demonstration of the IOSONO system at Todd-AO in Los Angeles. That system had 38 panels (304 2-way speakers) and 8 subwoofers. The panels were fed by 8 rendering PCs, each equipped with a Pentium 4/2.8 GHz CPU and 1 GB of RAM. The demo material included specially produced clips that had many sound sources moving around and a single-source "whispering ghost" that attendees could move around the room with an electronic pen and tablet.

The effect was quite startling and much more natural sounding than even 5.1 surround-sound systems, in which the sweet spot is often relatively small. In this demo, the

sweet spot essentially encompassed the entire room, and the sonic image remained completely stable no matter how I turned my head. Even the apparent distance from each source was clearly evident. It was one of the best holographic sound demos I've ever heard, expanding the sound field well beyond the physical boundaries of the room—the true epitome of stereo audio reproduction. 🎧



FIG. 1: Each IOSONO panel has 8 tweeters, 8 midrange drivers, and 16 power amps.



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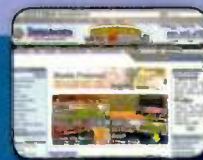
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## Gold Standard

Philadelphia-based singers, songwriters, and multi-instrumentalists Maggi, Pierce, and E.J. have cultivated a deceptively simple sound. Their quirky music is rooted in folk but cleverly incorporates rock, jazz, country, and more. *Gold* (EMP Records, 2004) is the band's fifth album and their first completely self-recorded effort. It well presents the band's intricate vocal harmonies and a smorgasbord of musical instruments.

For *Gold*, the band endeavored to capture acoustic guitar, bass, and drums, as well as a variety of instruments, including sax, oboe, trumpet, harmonica, violin, cello, accordion, tuba, harmonium, tabla, turntables, and found objects. "We wanted a guest instrument on each song, but we didn't want to repeat the instrument," Pierce explains.

Pierce studied recording tutorials but found success in trusting his instincts. "I rely on my ears, starting with raw sound and then seeing what's needed," he says. The band tracked *Gold* in their house in rural Pennsylvania. "If we record at night you can hear the crickets [in the resulting track]," Pierce says.

"A friend of ours, Lane Massey, brought over a 12-channel Soundcraft 200 Delta [mixing] board, his old RCA ribbon mics, some tube mics, [Shure] SM57s and SM58s, and AKGs," Pierce says. "I learned a lot of miking techniques from him. For example, we stuck an SM57 under the bridge of an upright bass, facing its neck, and got the most amazing sound."

"The drum set was in the middle of the living room," Pierce says. He close-miked the drums and used a pair of Marshall MXL 2001 condenser mics as overheads. "I'd compress the kick or the snare with a dbx 166A [stereo compressor], and I sent [the bass guitar] through our Joemeek VC1 solid-state pre-amp," Pierce says. The bass

*Maggi, Pierce, and E.J. capture acoustic magic in their home.*



amp faced away from the drums. Pierce placed his guitar amp in a bathtub. "I miked it from five feet away," he says. Their dining room served as a control room. "I sent a huge snake into the living room," Pierce says. "I was in the dining room with headphones, and I couldn't see Maggi or E.J."

Maggi, Pierce, and E.J. recorded all but two songs to half-inch tape using their Tascam TSR-8 8-track reel-to-reel tape deck. "With eight tracks, you're forced to create a spacious sound where you can hear everything going on," Pierce says. "I'd throw [extra tracks] onto a Sony CDR-W33 CD burner. We would send eight tracks into Pro Tools [for mixing] and fly in the extra CD tracks, hoping that they would line up."

They experimented with recording setups and sounds to lend character to each song.

"We put the drums in the laundry room, which is all cement, for a natural reverb," Pierce says. "We set up a CAD e200 in the cellar facing up the steps into the laundry room as a distance mic, and had an Optimus PZM hanging in the laundry room. We have an old baby grand piano that has a honky-tonk sound, so it was perfect for 'Memphis.' The piano is out of tune, so I had to pitch the 8-track machine to get it in tune with the piano, as close as I could. I also tried to create a plate reverb with the piano."

While visiting New York City, Pierce used a handheld tape recorder to record a street performer playing sax and edited the results into "Coffee Song" in Pro Tools during the mixing stage. "It's cool to have a kooky sounding album with all these different shades and colors," he says.

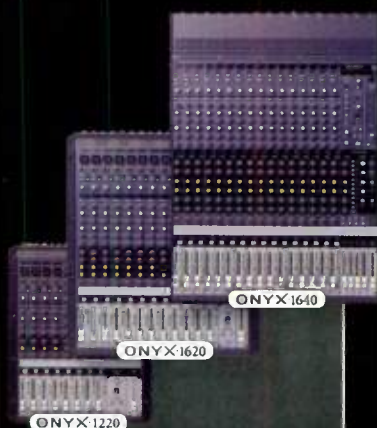
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*Gold/Maggi, Pierce, and E.J.*

HOLLACE DETWILER

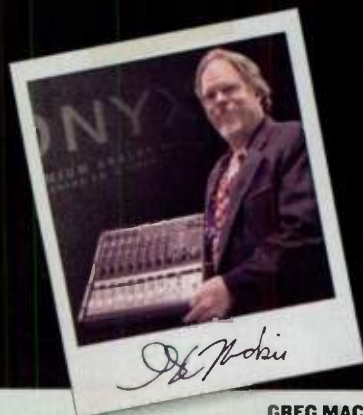




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LAURA WILLIAMS

**Investing a few extra dollars in a preconfigured music PC can pay big dividends.**

**F**our years ago in the August 2000 issue of EM, I declared that the preconfigured audio computer had come of age. Today, however, of the four companies that I covered, only one remains in business.

Although only one company mentioned in the August 2000 article is still in business, many new companies have come into existence since then. There are now enough companies building and configuring music- and audio-production computers that I am unable to review all of them here. Audio professionals now have the option of researching the best company to build their PC rather than researching the best components, manufacturers, software, hardware, and system tweaks.

#### **WHY NOT DIY?**

Mass manufacturers build and configure their products for the average com-

puter user, and yet audio professionals are anything but average users. Audio professionals routinely push their CPUs to the limit. When a system comes up short or fails outright, there is the potential for a loss of creative opportunity and money.

At the very least, audio professionals must tweak mass-market computers to remove unnecessary applications and features, configure the Windows OS so that more processing power is allocated for background applications, enable DMA

on IDE drives, and disable automatic virus scanning. If those tweaks sound odd or

confusing, then you're a prime candidate for purchasing a preconfigured digital audio workstation (DAW). While some audio professionals might bring home a carload of boxes to assemble their own DAWs from scratch, others have neither the time nor the inclination to build their own computer.

**By Brian Smithers**



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Phil Collins, The Rolling Stones

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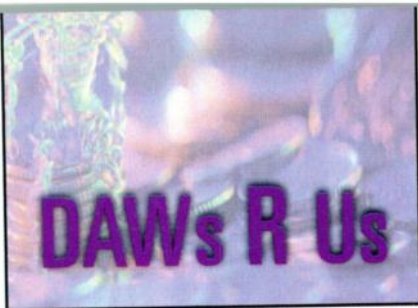
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Shopping for the right computer components and ensuring that they all work together (in addition to working with your current audio software and hardware) takes a lot of research. A custom DAW vendor has already done the homework for you, so you can spend your time making music. If you run into any glitches, the vendor's tech support is there to guide you. If the vendor has properly done its job, then you should have little if anything to do other than plug and play.

Expect to pay for the vendor's time and expertise; the time you spend creating instead of tweaking, however, may well cover that cost. Component prices from the vendors that I surveyed were only slightly higher than typical computer-warehouse prices. By the time you add everything up for a complete DAW, you can expect to pay a premium of approximately \$200 more than you would for a mass-marketed PC. The premium increases as the complexity of the system grows, and it varies from vendor to vendor. It pays to shop around.

### WHERE THE DAWs ARE

Digital Audio Wave has a dizzying array of DAW configurations, including a number of audio-hardware and



**FIG. 1:** The compact, lunchbox-style DAWin QB-4 Mini PC DAW (pictured above) from Digital Audio Wave requires a specially shaped motherboard but still fits full-size PCI cards.

-software options. The company's Web site ([www.digitalaudiowave.com](http://www.digitalaudiowave.com)) explains the types of tweaks that make a preconfigured DAW worthwhile, from disabling unnecessary background services to minimizing noise from fans and drives.

Digital Audio Wave's products include standard towers, laptops, and handy lunchbox-size cases (see Fig. 1). Audio interfaces from M-Audio, RME, Aardvark, Lynx, and other manufacturers are available, as are most of the common DAW applications. The company will even install and configure the hardware and software that you already own.

Carillon Audio Systems has been around for several years and features

▼

**Audio professionals  
now have the option  
of researching the  
best company to  
build their PC.**

systems designed as GigaStudio farms, road rigs, and Pro Tools HD systems ([www.carillondirect.com](http://www.carillondirect.com)). Its unique rackmountable case is heavily insulated for noise reduction and has transport controls, MIDI controller knobs, optional removable drive bays, and even a Neutrik connector on the front panel (see Fig. 2).

A wide variety of application-specific configurations is available, including systems tailored to guitarists that have amp simulators and a foot controller. Alternatively, you can start with a core system and customize to your heart's content. Carillon also offers laptop configurations, although the company's Web site doesn't provide much detail about them. Audio and MIDI interfaces from several major audio manufacturers are available.

Wave Digital Systems makes desktop, tower, rackmount, and lunchbox-style systems as well as laptop DAWs ([www.wavedigital.com](http://www.wavedigital.com)). It is also a reseller

for Apple and Carillon systems. The company's Sonar- and Cubase-specific systems come in Basic, Intermediate, Professional, and "Ludicrous" (high-powered) configurations.

Sonic Blade Systems manufactures the 2U-rackmount SonicBlade DAW ([www.sonicblade.com](http://www.sonicblade.com)). The company is known for its all-aluminum chassis, which efficiently dissipates heat. Other configurations are lunchbox-style and three different 4U-rackmount models, one of which, called SonicSymphony, is a dual-processor system. Sonic Blade Systems has audio interfaces from M-Audio and RME; alternatively, the company will install your existing interface at no charge.

pcAudiolabs goes beyond preconfigured DAWs, offering hardware and software, educational CD-ROMS, user forums, manufacturer and interest-based links, and free information about optimizing your Windows XP DAW ([www.pcaudiolabs.com](http://www.pcaudiolabs.com)). The company also has custom DAWs of every description. pcAudiolabs' simple and informative custom configuration applet allowed me to quickly and easily design a \$4,700 DAW. If its computers are in the same league as its Web site, pcAudiolabs is worth checking out.

Vision Digital Audio Workstations sells a variety of computer configurations, from rackmount to notebook ([www.visiondaw.com](http://www.visiondaw.com)). Systems can be preconfigured with GigaStudio and the EastWest/Quantum Leap *Symphonic Orchestra* sample library, an attractive setup for the composer who wants something to play right out of the box.

Alternate Mode, makers of the DrumKAT and other MIDI controllers, has the PowerRack and HyperCube systems ([www.powerrackpc.com](http://www.powerrackpc.com)). These turnkey systems can be used as sound sources for Alternate Mode's controllers or as DAWs in their own right.

Central Computer Systems has audio-specific configurations as well as systems that are more traditional ([www.centralcomputer.com](http://www.centralcomputer.com)). The company offers options that run the gamut of audio interfaces and software.



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Open Labs makes standalone DAWs and an extremely powerful computer-based keyboard called the OMX OpenStudio ([www.openlabs.com](http://www.openlabs.com)). This lean, mean workstation can be configured with dual AMD Opteron processors for a high-performance host-based machine. The OpenSynth neKo is essentially the same computer built into a keyboard controller that has a touch screen and configurable controllers. It may be the ultimate synthesis of host-based virtual instruments and a controller. Open Labs has stripped down the Windows XP OS so much that the company has even bypassed the Explorer shell. If you are interested in something to power all of your VST instruments, then this may be what you're looking for. You need to be aware, however, that unlike other vendors' systems, you are dependent on Open Labs for any Windows XP bug fixes and updates. If Open Labs discontinues support for any reason, then you'll be stuck.

### THE X FACTOR

The gaming industry has grown enormously during the past few years, even though the movie and music indus-

tries have been in a slump. Serious gamers build and customize their own computers, trade performance tweaks online, and purchase preconfigured systems from game-savvy specialty companies. The needs of audio professionals and gamers overlap significantly—they both need streamlined, powerful processors. As a result, some gaming-computer manufacturers have focused their attention on audio computers.

Alienware ([www.alienware.com](http://www.alienware.com)), for example, produces a case that looks like something out of an H. R. Giger painting, which is a brilliant strategy to win the hearts and minds of gamers (see Fig. 3). The company also sells business computers and workstations for creative professionals such as video- and audio-content developers. The specs for Alienware's Ozma line of audio workstations are powerful CPUs, ample memory, upgradability, and capacious storage. The graphics cards may be more than what a DAW needs. On the other hand, as audio applications come to depend more heavily on high-resolution graphics, the conventional wisdom that DAWs are better served by minimalist graphics cards may become less accurate.

The only audio cards currently offered in Alienware's DAW line are the Delta 66 and Delta 1010 from M-Audio. Although they are fine cards, more options would be welcome. Several audio applications are available with the Ozma, such as Steinberg Cubase, Cakewalk Sonar, Adobe Audition, and Sony Sound Forge. Be aware, however, that those applications do not come pre-installed, so installation and configuration is up to you. That is unfortunate, because it moves Alienware closer to being a generic manufacturer than an audio-friendly boutique.



**FIG. 3:** The award for the coolest-looking custom DAW goes to the Alienware Ozma, which looks as though it were designed under the influence of H. R. Giger.

XleratedAudio ([www.xleratedaudio.com](http://www.xleratedaudio.com)), which is a division of Xlerated-PC, is another gaming-computer manufacturer. The company's AudioStation and SampleStation systems are available in three performance levels, with AMD Athlon 64 processors ranging from 2800+ to 3400+ and as much as 1.5 GB of RAM. For audio I/O, XleratedAudio has the RME series of audio interfaces. The AudioBox is a rackmountable configuration that, according to the company, occupies a half rackspace. Although AudioBox is a half rackspace in width, it is 8¼ inches high and 13¼ inches deep. AudioBox offers several M-Audio interfaces as well as the RME products.

XleratedAudio will install and configure an array of audio applications, such as Tascam GigaStudio, Steinberg Cubase SX or SL, and Propellerhead Reason. The company can also configure the system for various applications that you may already own. The configuration applet even allows you to request specific customizations that are not listed on the menu.

### BETTER SHOP AROUND

When you're ready to begin shopping around for a DAW, start by checking



**FIG. 2:** Carillon's unique rackmount (4U) case is designed to be especially quiet. Extra features such as the transport controls and Neutrik connector add to its convenience.



out several company Web sites and compare their configurations and prices. That will give you a good idea of what you can get for your money. Spend time studying the special features that manufacturers build into their systems. Once you've done your homework, email or call manufacturers to ask any follow-up questions that you may have.

Unless you plan to put your computer in a quiet enclosure, pay special attention to vendors that use quiet components, mount the drives with rubber gaskets, and insulate the cases to prevent sound transmission and rattles. Keep in mind that quiet for a gamer's PC is not necessarily quiet by an audio professional's standards.

Ask vendors what features make their products superior to others. Vendors may not want to give away every trade secret, but they should be more than happy to brag about their expertise and give you some concrete examples of it.

Make sure that you compare apples to apples, and don't forget to factor in the cost of audio and MIDI interfaces, video monitors, and shipping. If you opt for a custom configuration, be sure to get the price in writing before giving the company your credit card number.

Last but not least, don't forget to check with your favorite music retailer. Many of them provide custom-configured DAWs as a service to their customers. You may already know the right people to talk to if you encounter a problem. If the retailer knows you're a loyal customer, then that may help you get a good deal, good support, or both.

When it comes to DAWs, audio professionals have their pick of qualified pros that can assemble an optimized system. Research is the key to purchasing a custom system that meets your specific needs.

**Brian Smithers** teaches Music Technology at Stetson University in Deland, Florida. He is the author of *SONAR 3 Ignite!* (Muska & Lipman, 2004).

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– **Eric Clapton** from *Vintage Guitar* magazine, June 2004

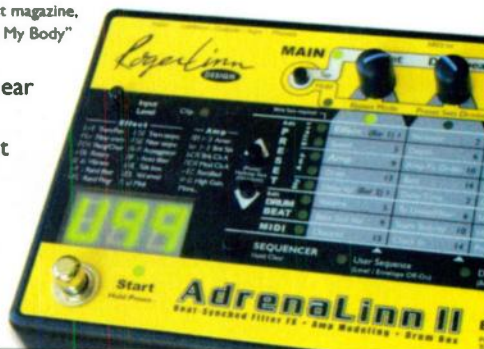
"I started messing around with the AdrenaLinn and very soon found this combination of the beat and the arpeggiator. I've never heard a guitar do that before. I just stayed there in that room for like two or three hours...I remember thinking to myself, this is really strong, this really makes me feel good."

– **John Mayer** from *UK's Guitarist* magazine, November 2003, on creating his hit "Bigger Than My Body"

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# ALL THINGS GREAT BUT SMALL

AROUND THE STUDIO

## 31 holiday gift ideas that fit in the

The old adage "good things come in small packages" has never been more true than it is for the personal studio. This year's holiday gift guide celebrates the diminutive desktop, the pint-size studio, and the wee workspace by focusing on items that fit in the palm of your hand. Our list includes something for everybody—from gadgets for the guitarist to gizmos for the gear geek. Prices range from \$245 to \$995, so no matter what your budget permits, you can share something fun with a friend or loved one this season. So sit back, kick up your feet, and enjoy our latest gift recommendations. Happy Holidays!

By Gino Robair

All photography by  
Bob Montesclaros

**1** With the cleverly designed **Audio-Technica AT8459** dual-swivel mic clamp (\$54), positioning a microphone has never been easier. A single knob controls a pair of gimbals that gives you unprecedented control—perfect for spot miking in tight places. Web: [www.audio-technica.com](http://www.audio-technica.com).

**2** The American-made **Josephson Series Four C42** (\$480 each; \$1,060 matched pair) is perfect for both studio and live recording. This cardioid condenser microphone has an exceptional transient response and is capable of capturing an impressive amount of sonic detail. The pair comes with a sturdy black plastic Pelican case and heavy-duty shockmounts. Web: [www.josephson.com](http://www.josephson.com).

**3** Following the success of the Ball powered dynamic mic, **Blue Microphones** has released the **8-Ball** (\$279), a cardioid condenser with discrete Class-A circuitry. The base of the mic has a threaded swivelmount for added positioning capabilities, and the handy LED on the front indicates that the mic is receiving phantom power. (Stand not included.) Web: [www.blumic.com](http://www.blumic.com).

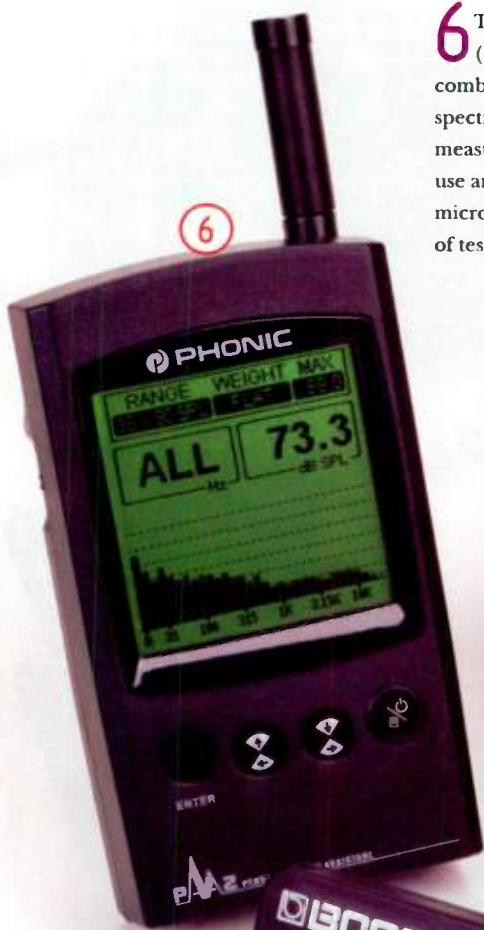
**4** The diminutive **Zoom PS-4 Palmtop Studio** (\$359.99) from **Samson Technologies** can record 2 tracks at a time, play 4 tracks simultaneously, and hold 40 virtual tracks using SmartMedia cards. The built-in omnidirectional mic, onboard drum and bass samples, and 1/4-inch and 1/8-inch analog I/O give you extra recording flexibility. Web: [www.samsontech.com](http://www.samsontech.com).

**5** The **Zoom PFX-9003 Palmtop Effects Processor** (\$259.99) from **Samson Technologies** isn't much bigger than a deck of cards, but it has a mic, 1/4-inch and 1/8-inch I/O, a rhythm machine, a phrase sampler, a tuner, and a karaoke function. The effects have tempo-sync capabilities and include amp simulation, compression, noise reduction, EQ, and reverb. Web: [www.samsontech.com](http://www.samsontech.com).





palm of your hand.



**6** The **Phonic PAA2 Personal Audio Assistant** (\$469) is a portable audio test device combining a 31-band,  $\frac{1}{3}$ -octave real-time spectrum analyzer with SPL and line-voltage measurement capabilities. The PAA2 is easy to use and has a built-in omnidirectional microphone, a case, an AC adapter, and a CD of test signals. Web: [www.phonic.com](http://www.phonic.com).



**7** If you're serious about recording direct, check out the **BBE DI-1000** (\$299.99). Featuring a Jensen output transformer and a BBE Sonic Maximizer circuit, it can be used as an active or passive DI and offers two pad levels and a ground-lift switch. Web: [www.bbesound.com](http://www.bbesound.com).



**8** The **Boss Dr. Beat DB-60** (\$89) isn't your average metronome. It lets you program rhythms and supports time signatures with as many as 17 beats per measure. It also has tap tempo, loop functionality, a tuner, a stopwatch, and a timer. Dr. Beat DB-60 can even store song tempos. Web: [www.bossus.com](http://www.bossus.com).



**9** The **Korg MM-2 MetroGnome** (\$35) is a miniature time keeper that hooks onto your ear. The metronome has 39 tempos, ranging from 40 to 208 bpm, with as many as 7 beats per bar. The volume control lets you set the tiny piezo speaker to a suitable playback level. Web: [www.korg.com](http://www.korg.com).

ALL THINGS  
GREAT  
BUT SMALL  
HOLIDAY FOR 6 STRINGS

**10** Peterson thought of everything when it designed the StrobeStomp (\$309). The tuner offers 1/10-cent accuracy and can be used with guitar or bass. The device can also be used as an active DI, and the 9V DC output can provide power for other stomp boxes. You can also program your own tuning temperaments. Web: [www.petersontuners.com](http://www.petersontuners.com).



**11** The Z.Vex Nano Head (\$499) is a colorful 0.5W tube guitar amp with two little duotriodes that are strong enough to power a 4x12 cabinet. The controls include a 3-position highpass switch, a 3-position lowpass switch, a brightness switch (for low-volume use), and a volume control. Web: [www.zvex.com](http://www.zvex.com).



**12** Need some space between your instrument and amp without going wireless? The Little Labs STD Mercenary Edition (\$140) goes the distance without sacrificing tone or increasing noise in the line. The included cable has a discrete buffer circuit that allows you to use a mic cable or tie line to extend the distance of your instrument cable. Web: [www.littlelabs.com](http://www.littlelabs.com).

**13** Whether you are reamping your guitar or bass or running a vocal track through a stompbox, the Radial X-Amp (\$200) helps you maintain the proper impedance. This Class-A device has an output-level control, two 1/4-inch outputs (one with transformer isolation and a polarity switch), and separate ground-lift switches on the input and output. Web: [www.radialeng.com](http://www.radialeng.com).



**14** The DVForge JamPlug (\$59.99) is a tiny amplifier that plugs directly into your electric guitar or bass, so you can practice anywhere (even while walking around). The amp, which can be driven into distortion, is powered by a single AAA battery and comes with matching earbuds. Web: [www.jamplug.com](http://www.jamplug.com).



**15** The latest version of the venerable EBow, the PlusEBow (\$120) offers greater sensitivity, a smoother drive, and an additional setting that is strong enough to pull out harmonics. But the PlusEBow is not just for guitarists: try it on piano, mandolin, banjo, dobro, and even snare drum. It's a sound designer's dream. Web: [www.ebow.com](http://www.ebow.com).



**16** Monster knows cables, so it's no surprise that the company created one especially for desktop recording. With its stylish Apple-chic design, iStudioLink (Mac/Win, \$19.95) combines a 1/4-inch jack and a 1/8-inch plug for direct-to-computer interfacing, whether you're using Apple GarageBand, Cakewalk Guitar Tracks Pro 3, or another digital-audio sequencer. Web: [www.monstercable.com](http://www.monstercable.com).



**17** The Yamaha Magicstomp (Mac/Win, \$299.95) lives up to its name by offering a wide range of editable amp models and effects, as well as USB connectivity and an editor/librarian. The presets include distortion, modulation effects, reverb, pitch shifting, delay... the works! Just plug it in, and you're on your way. Web: [www.yamaha.com](http://www.yamaha.com).



**18** The Planet Waves Pro-Winder (\$12.99) is a durable plastic string winder with a built-in wire cutter that folds into the handle when it's not being used. As a bonus, the winder has a notch for pulling out bridge pins on an acoustic guitar. Web: [www.planetwaves.com](http://www.planetwaves.com).



**19** The Wedgie Micstand Pick Holder (\$3.99) easily wraps around a stand and holds ten standard guitar picks. The 3-inch-long holder is made of a tough, flexible rubber that is designed to last a tour's worth of gigs. The Wedgie (\$2.49), which attaches to the strings on your guitar's headstock, holds two picks. Web: [www.wedgie.com](http://www.wedgie.com).





**20** The HFI-650 (\$249) closed-back headphones feature Ultrason's distinctive S-Logic Natural Surround Sound technology, which offsets the drivers in a forward position so the sound reaches your ear naturally. The headphones have an exceptional frequency range (10 Hz to 25 kHz) and fit comfortably. Web: [www.ultrasoneusa.com](http://www.ultrasoneusa.com).



**21** If you're looking for a USB audio and MIDI interface with a small footprint, the Edirol UA-25 Audio Capture (Mac/Win, \$295) fits the bill. This portable device supports 24-bit, 96 kHz audio and has a pair of phantom-powered mic preamps, a built-in limiter, a +4 dBu balanced output, and MIDI I/O. Best of all, it's USB powered. Web: [www.edirol.com](http://www.edirol.com).



**22** The TC Electronic PowerCore Compact (Mac/Win, \$995) is a lightweight and portable version of the company's popular FireWire-based DSP host. It supports VST and Audio Units plug-ins and 24-bit, 96 kHz audio. It also comes with 12 plug-in effects, including Noveltech Character, Filtrid, and Master X3 Virtual Finalizer. Web: [www.tcelectronic.com](http://www.tcelectronic.com).



**23&24** The Griffin iTalk (\$39.99) turns your Apple iPod (Mac/Win, \$399 for the 40 GB model pictured here) into a portable recorder. Just plug it in and start recording. In addition to the built-in mic, the iTalk has a speaker for playback, and the 1/8-inch jack on top supports an external mic or stereo headphones. Web: [www.griffintechology.com](http://www.griffintechology.com).



**25** The Philips Wearable Digital Camcorder (Win, \$249) encompasses an MP3 player and a 2-megapixel camera. The camcorder records 25 minutes of MPEG4 video, and you can download your files and charge the battery using your PC USB port. Headphones, external battery, and remote control are provided. Web: [www.ThingsToDoYourThing.com](http://www.ThingsToDoYourThing.com).

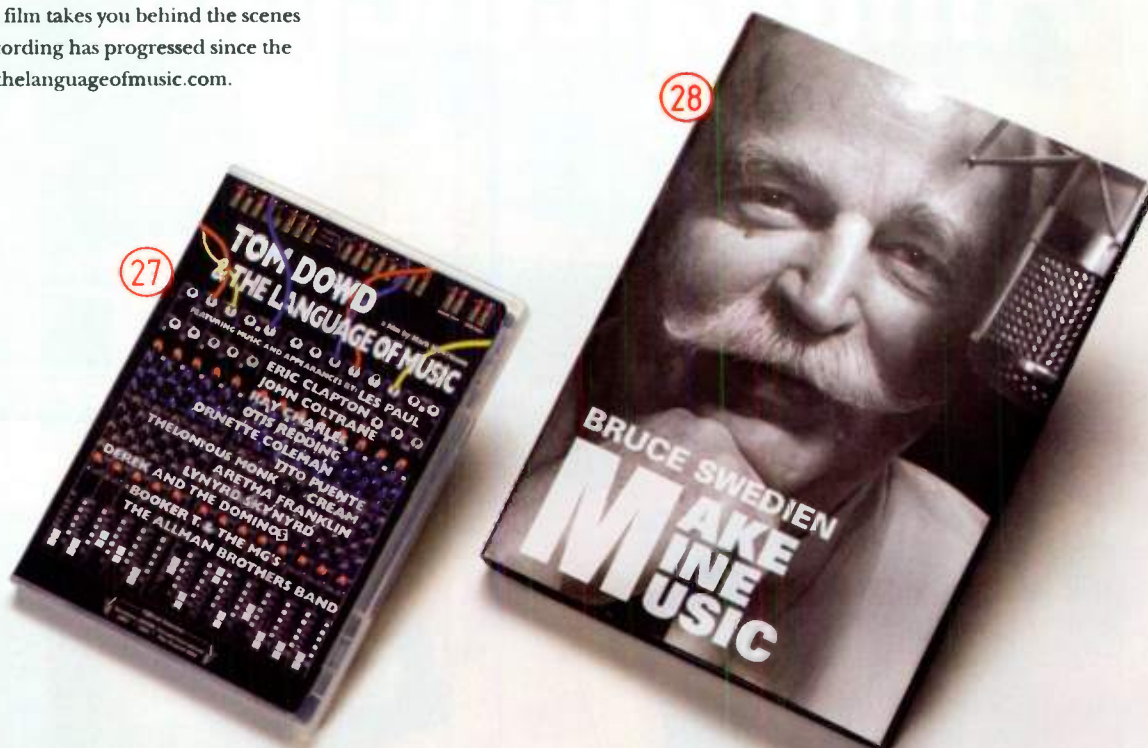


**26** The TerraTec Producer MIDI Hubble (Mac/Win, \$99) combines a USB hub and MIDI interface in one box. From a single USB 1.1 port, it runs three additional USB 1.1 ports and two sets of MIDI I/O ports. This handy device is bus powered, but it also accepts a 6 VDC adapter. Web: [www.terratec.com](http://www.terratec.com).



**27** What do Aretha Franklin, Eric Clapton, Thelonus Monk, Bobby Darin, and Ray Charles have in common? You'll find out in *Tom Dowd & The Language of Music* (DVD, \$24.99) an engaging documentary about this legendary producer and recording engineer. In addition to interviews with Dowd and a star-studded line-up, the film takes you behind the scenes for a look at how recording has progressed since the late '40s. Web: [www.thelanguageofmusic.com](http://www.thelanguageofmusic.com).

**28** Bruce Swedien discusses his life and work in a homespun and informal way in this part how-to book, part autobiography called *Make Mine Music* (\$29.95). The book covers his sessions with Count Basie, Quincy Jones, Michael Jackson, and Jennifer Lopez, with anecdotes and specific recording techniques peppered throughout. Web: [www.musicdispatch.com](http://www.musicdispatch.com).

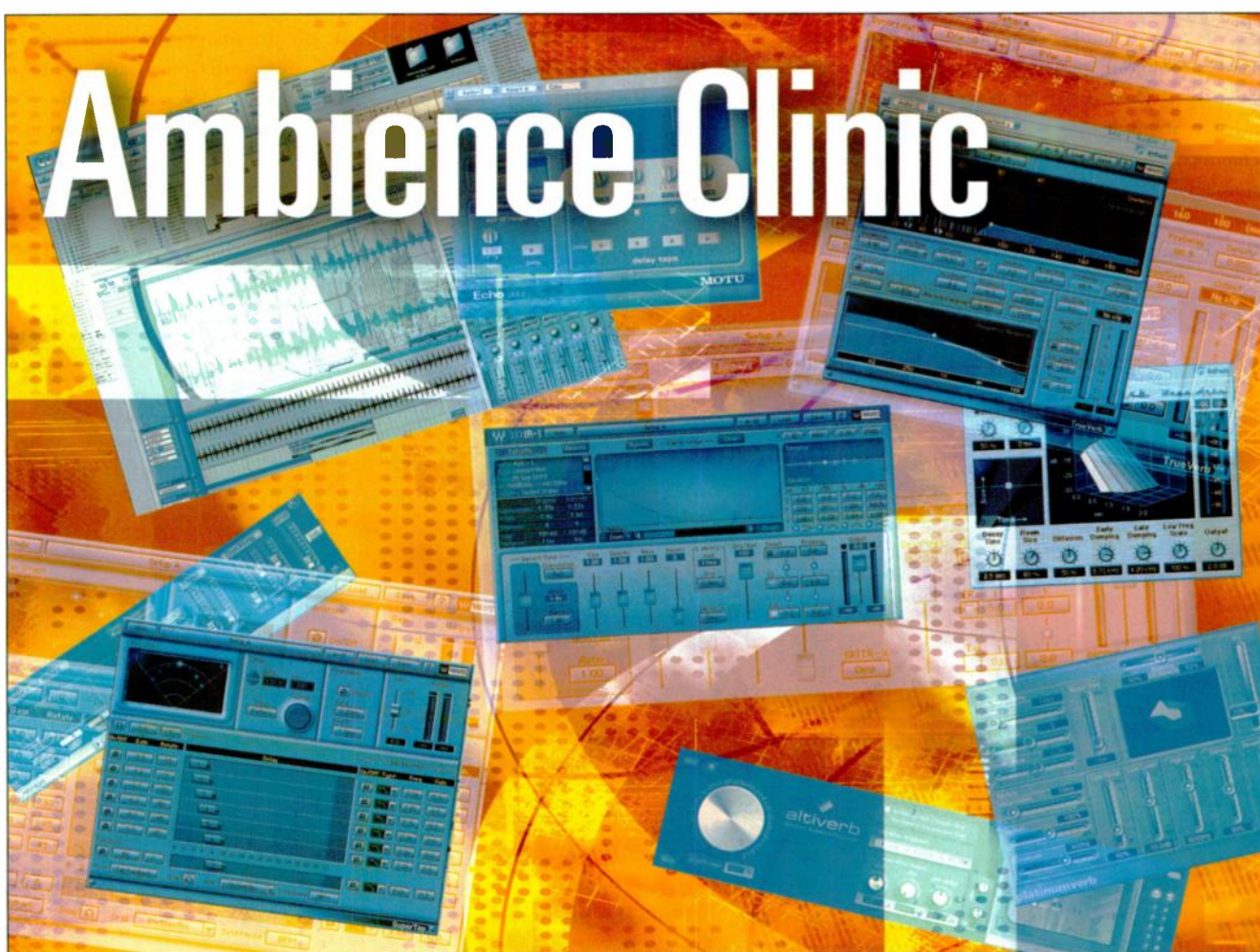


**29-31** The Tipbooks (\$9.95 each) are pocket-size guides for beginners of nearly every musical subject. *Keyboard & Digital Piano* covers the buying, setup, and use of electronic keyboard instruments. *Amplifiers & Effects* introduces the reader to amplification and signal processing. *Music on Paper* presents the basics of musical notation and theory. Web: [www.musicdispatch.com](http://www.musicdispatch.com).





# Ambience Clinic



## Tips and tricks for dialing up cutting-edge reverb and delay effects.

Anyone who has ever mixed a piece of music knows how important ambience is. Adding space to an instrument or to a vocal track can bring it to life and give it a sense of depth. For many years, delay and reverb were used heavily and often without much subtlety. From the tape slap and echo chambers used in '50s music to the over-the-top effects of '80s pop, conspicuous ambience was frequently applied.

Musical tastes have changed since the '90s, and it's become fashionable in pop music to mix the vocals drier. Clients and producers specifically request less reverb, but they still want to hear space around a vocal, a dramatic coloration for a solo instrument, or a heightened sense of separation between foreground and background. Applying

ambience has become trickier than it was in the old days—you can't just crank up the reverb send anymore. Instead, you have to be subtle and use a range of techniques.

This article discusses ways to tweak reverbs and delays to create other ambience options that go beyond the "same old thing." Chances are that your current setup has the potential to dial in unusual and original effects.

By Julian McBrowne

### REVERBERANT PARAMETERS

Reverb and delay are the two basic building blocks of ambience. Reverb is designed to simulate the sonic characteristics of a real physical space: room type, size, and surface. After selecting an appropriate setting, you can then determine its virtual size by manipulating the decay time.



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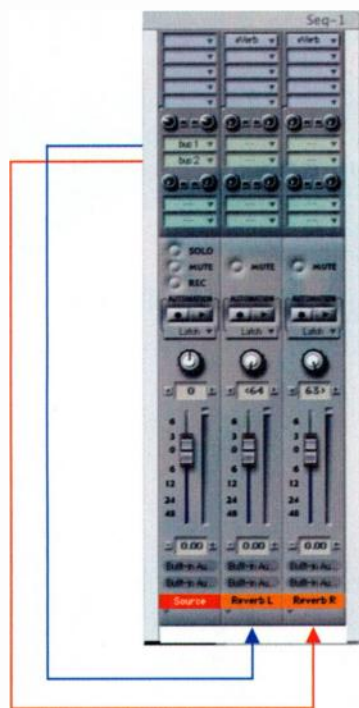
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# Ambience Clinic

One way to achieve a subtle yet effective ambience is to drastically reduce the decay time of a reverb patch. More intense presets such as churches, large plates, or concert halls—which typically have decay times of three to four seconds—work best for achieving subtle ambience. Decrease the decay time to 0.5 seconds, and increase the predelay to 100 ms or more to create a sound that's spacious without being wet. That technique allows you to retain the sonic character of the space in a shorter, more concentrated package, although you may have to increase your send levels to make those effects work in your mix.



**FIG. 1:** Using two mono reverbs can be a good alternative to using a stereo reverb. In this example from Mark of the Unicorn's (MOTU's) Digital Performer 4.12, the source track is bused to two mono instances of MOTU's eVerb plug-in, which are panned left and right.

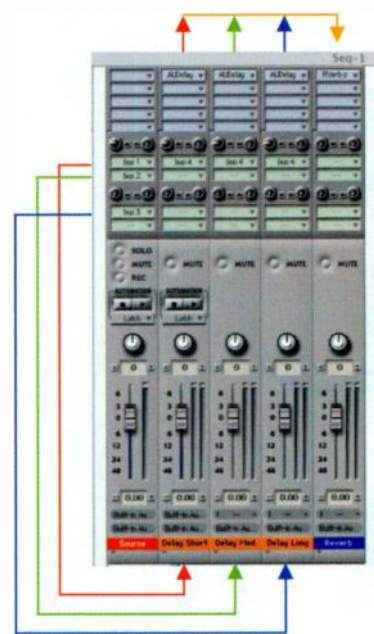
Many reverbs also include EQ controls. Highpass and lowpass filters are the norm, but some processors have even more elaborate EQ capabilities. Using a lowpass filter to reduce the high-frequency content of the ambience can quiet a noisy track. Cutting highs in the reverb on an acoustic guitar track, for example, can subtly deemphasize occasional finger squeaks. Similarly, a not-so-bright reverb may be a better choice for a snare track that has lots of hi-hat leakage. At the other end of the sonic spectrum, adding highs to a short, intense reverb can increase the impact of the effect.

More elaborate reverb processors allow you to go even deeper and manipulate the balance between the room reflections (called early reflections) and the sustained reverb sound. You can experiment with creating ambiances that are all reflections, all reverb, or a blend of your choice. Experimenting with ambiances also allows you to see how your processor is able to simulate so many different spaces with so few controls.

## DOUBLE-DIPPING

When working in a DAW environment, it's always tempting to use multiple instances of your most expensive reverb plug-ins—the ones that have the most features and the longest list of presets. Unfortunately, those plug-ins can significantly tax your CPU. Even if you have a reasonably powerful system, you may still need to find effects alternatives as you run out of processor power. One way to lower CPU usage is to set up the reverb as a bus effect and send multiple tracks to the same plug-in, rather than using individual inserts that require an instance of the plug-in for each insert. You can also bounce tracks to disk or freeze them once you've applied effects.

Another way to save CPU resources is to use two instances of a power-efficient mono reverb plug-in to create a unique stereo effect (see Fig. 1). That approach offers interesting sonic possibilities and also works with hardware processors. If your hardware effects unit has multiple effects engines, then you can build a powerful stereo patch with an individual



**FIG. 2:** In MOTU's Digital Performer 4.12 (pictured above), a single reverb plug-in is being fed by three different-length delays, which are functioning as predelay.

engine dedicated to each side of a stereo return.

Whether in software or hardware, start with each side of a stereo return set to the same patch, and then modify one side. One way to accomplish that is to add a hefty amount of predelay, which results in the reverb sounding as though it's moving across the stereo spectrum. Keep in mind that the ambience doesn't have to be symmetrical. If you choose a predelay time that has an exact rhythmic relationship to the tempo of the song, then you can create an ambience that throbs with the beat.

## RHYTHM NATION

Delay times that are synchronized with a song's tempo can help generate bounce and flow in a mix. To make that happen, you'll have to accurately compute the delay times that fit your song's tempo. Many delay plug-ins automatically calculate that for you. If, however, you are using a hardware-based processor or your song was recorded into a DAW without a click, then you may need to calculate the delay times. Shareware or freeware



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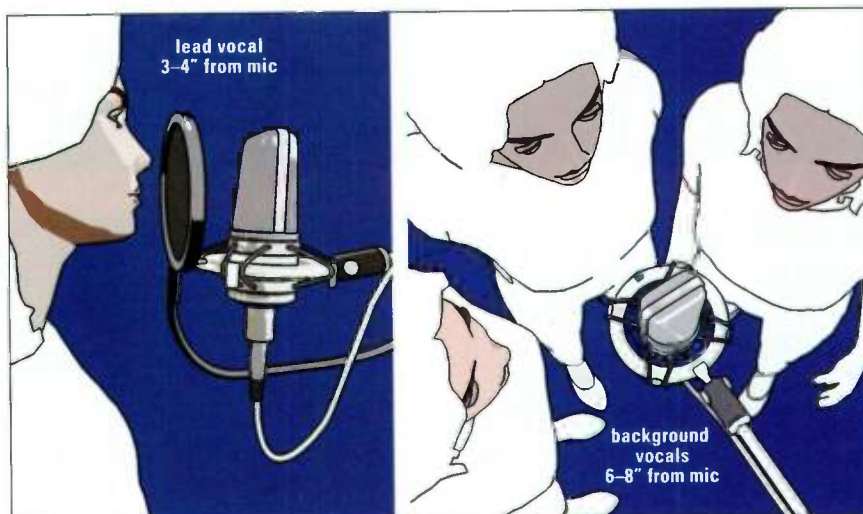


# Ambience Clinic

delay calculators are available on the Web (you'll need to know the song's tempo to use them), or you can use simple math (see sidebar "Finding Delay Tempos").

If you mix live music, then you may have developed a knack for turning the delay knob at the right moment to send a phrase or word into a sonic spin. When mixing in the studio, however, there are more accurate ways to set a delay to kick in at a precise moment. In a DAW environment, one method is to generate a dedicated delay-effect track.

To make a dedicated delay-effect track, create a new track with the same output assignments as those on the original track. Copy and paste the section (a word, note, or phrase) that you want delayed into the new track. Set the track's aux send to a reasonable



**FIG. 3:** Using differing mic distances creates a natural sense of space between the lead and background vocals.

level, set the aux send to prefader, and then turn the track's volume all the way down. Put a delay on the aux bus or aux track (depending on your software), and set the delay to 100 percent wet with a tempo setting that works with the song. When the song arrives at that section on the delay

track, the delayed signal from the targeted section will play back precisely at the appointed time.

By applying long delays to whole phrases, it's possible to create rhythmic call-and-response effects. To achieve cascading rhythmic repeats, increase the amount of the regeneration or feedback. Higher feedback levels increase the number of repeats. Shorter delay times increase the frequency of the repeats.

Mixes featuring rhythmically delayed phrases are in fashion in contemporary pop music. The delayed portion, however, is often not a sonic replica of the original line. It's often treated with an extreme effect, such as telephone EQ, deep distortion, or a rotating speaker sound. An extreme effect can help focus attention on the delayed line.

Despite the popularity of rhythmically timed delays, they don't benefit every song. Sometimes it's better to throw away the bpm chart and dial in the delay that feels right.

## PUTTING THE PRE IN DELAY

One very useful way to tweak a reverb patch is to postpone its onset with pre-delay. A reverb with pre-delay adds simulated depth to a close-miked recording because it imitates the delayed reflections of a larger space. A definitive separation between the dry sound and the simulated reflections of a reverb helps to

## FINDING DELAY TEMPOS

If you're working in a DAW and your song is in sync with its metronome, the software can calculate the delay time for you. But what if your song wasn't recorded in a software-based environment or recorded to a click? Below are tips on how to figure out delay times in ms so that you can set your delays and predelay.

To calculate the tempo in beats per minute (bpm), count the number of quarter notes that go by in ten seconds, then multiply the result by 6:

$$6 \times (\text{number of quarter notes in 10 seconds}) = \text{bpm}$$

Next, divide 60,000 (the number of ms in a minute) by the bpm of your song. The result will be the length of a single quarter note expressed in ms:

$$\frac{60,000}{\text{bpm}} = (\text{quarter-note value in ms})$$

You can multiply or divide that number to find the ms value of different note lengths:

$$\frac{(\text{quarter-note value in ms})}{2} = (\text{eighth-note value in ms})$$

$$2 \times (\text{eighth-note value in ms}) = (\text{half-note value in ms})$$

Assuming that you're in 4/4 time, multiplying the quarter-note value by four results in the whole-note value. If you're in a more relaxed dub-style mix, you might want to know the quarter-note-triplet value, which can be calculated by dividing 40,000 by the bpm:

$$\frac{40,000}{\text{bpm}} = (\text{quarter-note-triplet value in ms})$$

Once you've found some useful values, jot them down in your mix notes and use them for all of your effects settings.



maintain clarity even with an extreme effect. Many engineers set predelay values that are related to the tempo. (Usually you have to use shorter note values than quarter-note or even eighth-note delays; otherwise, your predelay will be too long.)

Unfortunately, the predelay built into many reverb plug-ins and processors sound muddy and indistinct. One way to get a cleaner-sounding (and potentially longer) predelay is to use a dedicated delay line before the reverb. Turn the reverb's predelay off, and dial it in from the dedicated delay processor or plug-in. If it's patched the right way, then it's possible to make one reverb return do double or triple duty with several different predelay values (see **Fig. 2**).

I created a short, predelayed hall reverb and panned it to the rear channels recently for a surround mix of a track featuring a spunky, percussive horn arrangement. Every horn stab from the front resulted in a short reverb kick from the back of the surround space. That effect works in a stereo environment as well and can give a horn section (or other percussive element) a memorable ambient space.

## TIME MACHINE

A classic technique for creating depth without an obvious reverb effect is based on a popular Eventide Harmonizer patch called Micropitchshift. The idea is to create a slightly detuned, slightly delayed effect on either side of the primary signal. It's best if the delay values are small and are different for the left and right sides.

Delay times of 12 to 14 ms and de-tuning as slight as plus or minus 5 or 6 cents can be effective. Traditionally, one side is pitch-shifted up and the other side is pitch-shifted down. I recommend configuring that as a bus effect rather than an insert because a little bit goes a long way. If you're too heavy-handed with that effect, then it will send your song straight back to the '70s.

## WORKING THE MIC

Some ambience qualities are determined before the signal even reaches

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the microphone. The sonic character of your recording space impacts everything you commit to tape or disk. Take advantage of a great-sounding room to create ambience that is based purely on mic technique.

If you record a lead vocalist three-to-four inches from the mic and the backing vocals six-to-eight inches from the mic, then the lead vocal will always sound more present or up front than the backing vocals. Even in mono, the difference in depth is clear (see **Fig. 3**). The farther the vocalists are from the mic, the more the mic will pick up the ambient or room sound.

## THE FULL MONTY

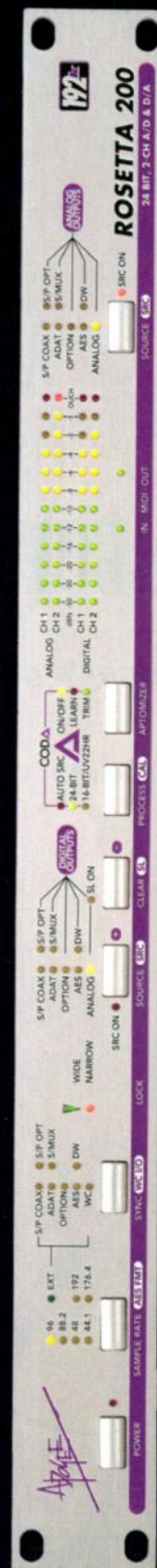
This article has mainly focused on techniques for creating small, intense spaces that are subtle. But when the time comes for that big-ballad lush reverb, lots of predelay combined with a rich vocal plate is the way to go. Predelay values in the neighborhood of 110 to 120 ms produce a clear distinction between the vocal and the space around it. That is the time to bring on your most luxurious sounding reverb.

A real plate reverb or a live chamber can make this ambience truly spectacular. If you're working in a DAW environment, this might be the time to crank up that CPU-hungry, convolution plug-in.

## SPACING OUT

When working with ambience processors, the bottom line is that there are no rules. You do want to keep the ambience subtle most of the time, but don't be afraid to try some arrhythmic delays and asymmetrical effects. An unusual or a seemingly inappropriate effect can sometimes rocket your mix to exciting and unexpected heights. A willingness to experiment and to take a counterintuitive approach can lead to new discoveries and push your music into uncharted territories.

**Julian McBrowne** is an engineer, producer, and self-styled digital-audio guru who lives in southern Vermont.



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**SOUND AMAZING**



# Master of the Universe

*A beginner's guide to mastering.*

By Brian Smithers

**V**ery little in the field of audio engineering is more shrouded in mystery than the thing we call mastering. Does the name come from the idea of creating a master disc or from the stature of the master engineers that do such work? If mix engineer Bob Clearmountain is so good, why does he need mastering engineer Bob Ludwig to second-guess him before his work is mass-produced?

The proliferation of affordable mastering plug-ins, -programs, and -hardware

devices has arguably replaced mystery with confusion. If I can create a viable Red Book CD, why do I need to spend money on mastering? If I own a Finalizer (see Fig. 1), can I offer my services as a mastering engineer?

This article will attempt to clear away the mystery and confusion by exploring the history and modern reality of mastering. We'll look at the craft's principles and techniques and discuss what an experienced mastering engineer brings to your project. We'll also discuss how best to use the services of a mastering engineer and what types of things you should consider when you want to go it alone.

## WAY BACK WHEN

Back when musical performances were recorded directly to acetate masters, tracking, mixing, and mastering were done in a single step rather than independently as they now are. The role of the mastering engineer developed later, growing from the process of transferring tape recordings to acetate. Engineers who understood the complexities of the record groove could produce LPs that had a hotter overall level, more uniform tonal balance, and better signal-to-noise performance.

The role of the mastering engineer





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FIG. 1: The TC Electronics Finalizer is one of several products that encouraged mastering in home studios by bringing multiband compression to the masses.

started with two essential functions: creating the physical master from which the product was mass-produced, and optimizing the audio for the sonic characteristics of the playback medium. In the early days of vinyl records, creating the physical master required very expensive and specialized gear. Therefore, mastering engineers were traditionally employed by record labels. Eventually, however, independent mastering houses sprang up, and that became the norm.

With the advent of the compact disc, a different manufacturing chain was required, but it would be more than a decade before average musicians had the capability of creating CDs on their own and sending them to be replicated. The mastering engineer continued to be the link between a finished mix and the manufacturing of discs. The process required digitizing analog content, formatting it according to the Red Book specification, and delivering it to the manufacturer, usually on Sony PCM-1630 digital tape.

In their sonic characteristics, CDs brought their own advantages and disadvantages, and mastering engineers adapted their tools and skills to optimize the sound. Seeing the power of talented mastering engineers to manipulate audio levels, for example, record labels began to push for louder and louder product in an effort to stand out from the competition on radio. For better or worse (see the sidebar “The Loudness War”), the role of the mastering engineer came to include making it loud.

## MODERN MASTERING

Now that CD burners and Red Book-savvy software are abundant, why would anybody spend the time and money to have a project professionally mastered? There must be some reason, as virtually every major release bears an acknowl-

edgment of the contributions of a mastering engineer.

Perhaps the most important function of a mastering engineer is providing independent judgment at the last stop in the line of audio-quality control. Unbiased and unaffected by peripheral concerns—like the producer’s insistence on eight revisions of each mix or bickering between the lead guitarist and lead vocalist—the mastering engineer brings objectivity to the creative process. With fresh ears and an open mind, he or she can do much to shape the final outcome.

To that end, the mastering engineer prizes two tools above all others: experienced, trained, and sensitive ears, and an exceptionally accurate monitoring system. Whereas a mix engineer can (and must) focus on creating a unique and original sound, a mastering engineer sees every song in context with other projects in the same genre. The mastering engineer knows how to make a mix translate well on a broad range of playback systems, from boom box to home theater, as well as how to make it come off well on the radio.

In a mastering house, the acoustics and monitors are optimized for the most accurate and honest reproduction possible. Any glitches, clipping, or stray noises can be found and fixed in this pristine environment. Defects can easily be missed in surround mixes, making a quality-control pass even more important.

The mastering engineer is responsible for shaping a bunch of tracks into a cohesive album. If the project includes mixes created at different times in different facilities—even by different mix engineers—that can be a major challenge. How should the songs be ordered? How long should the gap between tracks be? Should engineer A’s mixes be brighter or engineer B’s darker to make them fit together?

## TOOLS OF THE TRADE

The mastering engineer can’t actually revise a finished mix, but by manipulating its tonal balance and dynamics he or she can make it smoother, edgier, or louder, or even change the relationships between different mix elements. Primary mastering tools include equalizers and compressor/expanders, but they are usually different than the units found in a mix room. A mix engineer will often turn to a “character” EQ or compressor, one that affects the sound in ways that go beyond the nominal settings. A mastering engineer, on the other hand, customarily uses the most neutral-sounding effects available. Such effects are ideal for surgical tweaks such as emphasizing a vocal that’s too soft, but without affecting the rest of the mix.

Two special dynamics processors that have garnered much attention in recent years—both as weapons in the volume wars and enabling technologies for DIY mastering—are the limiter and the multiband compressor. The mastering engineer uses a limiter to reduce the highest peaks of a song so that its overall level can be boosted without clipping. For example, if a song has only periodic peaks above, say,  $-3$  dBfs, those peaks can be reduced in volume, allowing the volume of the rest of the song to be increased by 3 dB. Multiband compression allows the manipulation of dynamics within multiple independent frequency bands. It can be a powerful tool in reining in the behavior of a kick drum and bass without adversely affecting vocals and guitars. (For more on multiband compression, see “Let’s Split” in the January 2004 EM.)

Other processes may be required, depending on the needs of an individual project. A touch of additional reverb may help soften a mix. The stereo (or surround) image may require repair using middle-side processing or other specialized tools. (I



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have heard mastering engineer Bob Katz salvage a track by creating a believable stereo mix from a stellar live performance that was accidentally recorded in mono.) It's even appropriate in some cases to print an all-digital recording to analog tape for the warm, friendly distortion that only tape can provide.

## MASTER ME

If you intend to take your mixes to a mastering engineer, you can maximize the results and minimize unnecessary costs in several ways. For starters, communicate with your mastering engineer to be sure you understand each other. Let him or her know the nature and the extent of the project so that proper time is allotted.

Find out exactly what delivery media the facility can handle. In general, the less you do to the final mix the better. If you have mixed to analog tape, let the mastering house digitize the results from that tape. They have ultra-high-quality A/D converters just for that purpose. If you've been working in the digital domain, deliver your mixes at the highest bit depth and sampling rate your system can handle. When it's time for the final conversion to CD-quality files, the mastering house has the best tools with which to accomplish this task.

Files can usually be delivered on data CDs and DVDs, hard drives, or one of various data-tape formats (DLT, Exabyte, and so on). Any PCM file format (WAV, AIFF, or SDII) is likely to be viable, but under no circumstances should you send a version that has been subjected to lossy data reduction such as MP3, RealAudio, or Windows Media Audio. You can, however, save time and money by delivering materials that can be used directly without any format conversion or lengthy file-copying procedures. Audio CDs are less than optimal because of their 16-bit resolution and the time it takes to extract the audio. Again, communication is critical.

All materials should be documented thoroughly so that you won't have to waste time trying to remember which verse of a ballad needs fixing or which file has an alternate mix. It may be wise to come armed with alternative versions such as "vocal up" or "vocal down" to give the mastering engineer options.

Don't trim your files or tapes too tightly. A little breathing room at the



**FIG. 2:** The L1 Maximizer plug-in from Waves is highly regarded for its ability to tame peaks transparently, allowing the overall gain of a track to be increased without affecting its perceived dynamic range.

top and tail of a song gives the mastering engineer more flexibility in creating appropriate gaps between tracks. You may also discover too late that you clipped a reverb tail, and although such an error can usually be repaired, it will cost you time and money.

## GOING IT ALONE

Should you decide to master your own project, your best asset is time. Building in sufficient time helps you in two ways. First, it allows you to set your mixes aside long enough to gain some objectivity. Only by taking a few steps back can you be sure you're seeing

## THE LOUDNESS WAR

Much to the chagrin of many mastering engineers, there is a de facto competition among record labels to see who can have the loudest songs. It is an established truth that, all things being equal, humans associate "louder" with "better." To the record labels, that means there's cash value in being louder than the song before or after on the radio or in a CD changer, and they push mastering engineers to make this happen.

There are two problems with this approach. First, severely reduced dynamic range fatigues our ears quickly. Musicians build their craft on notions of tension and release, and when a song is squashed so that the gentle moments

are as loud as the intense moments, all that's left is tension. In the September 2003 issue of EM, mastering engineer Bob Ludwig expressed his frustration with this situation: "Never in the history of the human race have people been exposed to sounds as compressed as in the past few years."

The other problem is that highly compressed CDs can actually sound worse over the radio because of the behavior of broadcast processors. How can they tailor the dynamic range of a song for broadcast if the song has virtually no dynamic range?

Because radio is not yet an issue for surround music, mastering

engineers feel more freedom to retain dynamics in such projects. However, the ability of multidisc DVD players to shuffle between CD and DVD tracks may eventually lead to upward pressure on the loudness of DVDs.

To strike a blow for dynamic range, compare your mastering efforts to CDs, not to radio. Be sure to include some examples that are more than a couple of years old, before we reached current levels. Take your mixes to an experienced mastering engineer without having already mashed it with your bus compressor. Trust his or her judgment on the appropriate amount of compression to use.



the forest instead of obsessing over individual trees.

Second, extra time gives you the opportunity to listen to your mixes on a variety of playback systems. Checking your sound in the car, on a boom box, over big and small speakers, and with or without a subwoofer helps level the playing field between you and the mastering engineer who has 20 years' experience and a monitoring system worth tens of thousands of dollars.

Because one of your primary goals is to end up with a cohesive product, you should start by experimenting with the order and spacing of songs. That will give you a sense of the overall pace of the album—does the musical style and feeling flow sensibly from song to song? Once your songs are in a good order, consider how the songs compare sonically. Is one much brighter than the others? Is your ballad so loud that it fails to provide a respite between two driving songs?

Resist the urge to normalize all of your tracks. Normalizing raises the level of a track so that it peaks at 0 dBfs, and novices expect that this will put all their songs at the same level. Unfortunately, our ears don't perceive loudness based upon peak level—we make loudness judgments based on average level. To avoid clipping, you want the highest peak on the whole album to be a fraction below 0 dBfs, but the song-to-song balance needs to be determined by ear. If your software features RMS metering, that is more useful than peak metering for comparing loudness, but your ears are still your best tools.

If you want your songs to compare well to most commercial CDs, you'll want to be sure they're loud enough. The first step is to use a limiter to tame the highest peaks so you can raise the overall level. If you use a reasonably neutral-sounding limiter such as the Waves L1 Maximizer (see Fig. 2), this step will buy you additional volume without significantly affecting the sound or dynamics of your songs. Some engineers will instead search out peaks manually in the Waveform view, select the peak as tightly as possible, and process a gain

reduction on just those few samples. Although time-consuming, this is a viable (and inexpensive) alternative to limiting.

After limiting, most commercial mixes are compressed, often quite severely. This is an aesthetic and pragmatic judgment—is it more important to preserve the dynamics of your mix or to “compete” with others' work? In making this judgment, though, be sure you are comparing apples to apples. Don't compare your mixes with what you hear on the radio, as radio engineers compress music even further for broadcast. Compare with the CD versions of songs in your genre, and let radio take it from there.

Try to maintain 24-bit resolution throughout the process, and dither when you bounce the mastered versions. Most good dithering software offers multiple noise-shaping options, so experiment with the different types to see which one is best for your music. Note that the differences lie purely in how noticeable the dither noise is in the context of your finished tracks.

### FINAL MASTER

Letting your ears be your guide is the primary point in mastering. The process—the songwriting, the performance, and the mix decisions—is mostly, if not purely, emotional, and objectivity is hard to come by. That is especially true for those of us who are songwriter, performer, and engineer all at once. Mastering sets aside the decisions, compromises, fatigue, joy, and angst that come with the creative process, and evaluates the sound of a project in its entirety.

For more information on mastering, I highly recommend *The Mastering Engineer's Handbook* by Bobby Owsinski and *Mastering Audio* by Bob Katz. You should also check out the article “Masters on Mastering” in the September 2003 EM and online at [www.emusician.com](http://www.emusician.com) for interviews with mastering legends Bob Ludwig, Stephen Marcussen, and Steve Hall.

**Brian Smithers** is a musician, engineer, and educator in Orlando, Florida.

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the warmth



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The rich, warm sound takes you back to the classic F.E.T. studio microphones. But there's nothing remotely old-fashioned about the technology behind that vintage sound. The AT4047/SV studio condenser's dual-diaphragm capsule design maintains precise polar pattern definition across the full frequency range. With a wide dynamic range, incredibly low self-noise and high SPL capability, this versatile microphone excels on vocals, strings, acoustic guitar, instrument ensembles, small vocal groups and voiceovers.

**AT4047/SV.** It's another in a venerable line of studio artists' dreams come true: the 40 Series, from Audio-Technica.



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# Pounding the Virtual Pavement

*Effective Internet promotion requires more than just a presence.*

By Ravi

Getting yourself online is perhaps the best boost you can give to your career. In almost every industry, being accessible over the Internet is as commonplace as having a business card. With 700 million users at the end of 2003 and a projection of twice that many by 2010 (according to a 2004 Bear Sterns report), the benefits of online promotion are immeasurable. Furthermore, rapid technological developments make the platform ideal for music businesses and will likely

serve as the basis for the future music-industry model.

The only aspect of music business that's not yet dominated by the Internet is live performance. Many vital live-performance details, however, such as booking, promoting, and postperformance sales can be maximized online. If you aren't online, you *will* be left behind.

## **KNOCK, KNOCK**

Email is the most common and the least intrusive form of business-related communication today. Musicians lacking an email address aren't taking advantage of using the preferred method of making contact, and are therefore potentially losing gigs. Email coming from fellow musicians can give you a wealth of information, including venues, festivals, and places to sell your music.

Replace your mailing list with an email database, and eliminate the need for paper, ink, staples, stamps, and the time it takes to compile them. Get an address from everyone you encounter. Have sign-up sheets at gigs and provide incentives to join. Hold random drawings from the list during set breaks and buy the winner a drink. Many club-goers would gladly give up an email address for a chance to win a cocktail.

DMITRY PANICH







# “I’ve Built a Career from Deals Made Through TAXI”

*B.Z. Lewis – TAXI Member*

**P**eople always ask me if it’s a good idea to join TAXI. There was a time when I asked myself that very same question. I don’t ask it anymore.

My name is B.Z. Lewis, and I can tell you from first-hand experience that if you’ve got the right music for the right opportunity, then you can definitely get deals through TAXI.

## How much success do you want?

For me, it all started with a song my band “Sugar Danks” did called, “Wide Open”. I recorded it on a very basic, 8-track home recording rig back in 1997. TAXI got that song placed in more than 10 different films and a platinum-selling video game.

I’ve had music placed in TV shows on all four major networks: ABC, CBS, NBC, and Fox. I’ve also had several placements on MTV, and various songs of mine have been in 15 different movies... so far.

My songs have also been featured in two Nissan commercials, and my video game placements resulted in sound design gigs for the world’s leading video game manufacturer.

If you counted up all the other jobs that I’ve landed from my TAXI contacts, it would *really* blow your mind.

## Am I *that* different from you?

I’m not a kid anymore. I’m married, I have a son named Max, and I live in the burbs. Some of the music I make is instrumental rock — some of my tracks have lyrics. I feel blessed to earn my living from making music.



## What else can you do?

Let’s face it; a flight to Los Angeles, New York, or Nashville will cost you more than your TAXI membership. The hotel, rental car, and food will cost much, much more!

And what will you do when you get there? How much time and money will it take to bring you 1,200 opportunities a year like TAXI? This is the opportunity you’ve been waiting for your entire adult life.

Why would you hurt your own chances of success by *not* trying this amazing way to get your music heard by the people who have the power to sign deals? TAXI even offers a Money-Back Guarantee on your membership fee, so there’s no risk at all!

TAXI is the kind of company that you’ll always want working for you. Call their Toll-Free number right now to get their FREE information kit, and let TAXI help you make your dreams come true.

# TAXI®

*The World’s Leading Independent A&R Company*

## 1-800-458-2111



**FIG.1:** In addition to being a place to sell CDs, the artist pages on CDBaby.com offer musicians the chance to display press blurbs, background information, various listening options, and links to other artists.

Automated services, such as Topica and Lyris, compile addresses from those subscribing to your email list, which enables you to compose and distribute

entire list in parentheses or blind copy (bcc), protecting the privacy of each recipient. To guard against outgoing spam, some Internet service providers

mass emails at the click of a mouse (see the sidebar "Recommended Resources" for the services mentioned in this article). These services send instant email confirmations requiring a response from the prospective member. That works well for those joining your email list online, because they can immediately confirm. The downside is that when you add names from gig sign-up sheets, intended members may not respond to the confirmation request.

Alternatively, you can build your list in a database program such as Microsoft Excel and paste the list into a standard email. Enclose the

such as AOL limit the number of outgoing emails in a given time frame. Check your provider's terms and inquire about possible exceptions.

Countless online forums, message boards, and chat rooms are dedicated to exactly what you do. You can also create your own forum through a number of free services (AOL, Yahoo, Google, MSN, and so on). However, given the effort involved in trying to drive users to your forum, you may find it more advantageous to join a service that has an existing membership. Promote gigs, merchandise, and your Web site (if you have one, and you should) in these targeted online marketplaces.

Many online businesses exist to serve independent musicians and are changing the way that the industry does business. CDBaby is the most popular place to sell independent music, providing access to many unsigned artists (see Fig. 1). JamBase promotes concert information for free from any band

# Forward Into the Past!

## TIMEWARP 2600

**Way Out Ware has perfected the first software synth version of the classic ARP 2600 analog synthesizer: the TimewARP 2600.**

By developing our own proprietary and optimized virtual analog oscillators and filters, WOW brings a remarkable digital simulation of the 2600's fat and distinctive analog sound to your desktop. All of the original control features from the ARP 2600 are there plus a generous helping of new technology and patch and controller management.

The original ARP 2600 synthesizer helped define the music of an era. Edgar Winter's "Frankenstein," The Who's "Who Are You," The Tubes, Jean Michel Jarre, Deep Purple, and on and on. We're sure the new TimewARP 2600 will do the same.

- ▶ Serious flexibility to create sounds not possible with any other virtual synth.
- ▶ Hundreds of unique and useful (and some just plain weird) patches included.
- ▶ Extensive MIDI capabilities including velocity and aftertouch control for every slider and switch.
- ▶ Onboard Ring Modulator, Sample & Hold, and either classic monophonic or new polyphonic mode.
- ▶ Mono and Stereo signal processing via ProTools I/O bridge.
- ▶ Route a guitar, microphone or audio feed directly into the TimewARP 2600

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The Entertainment eClassifieds are the user friendly, affordable way to connect buyers, sellers, job seekers and employers.

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**eClassifieds  
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**Find what you  
need, sell what  
you don't!**

**Hit the eClassifieds  
link at  
emusician.com**

## WORKING MUSICIAN

wishing to post gigs. Sonicbids is changing the traditional method of mailed bulky press kits to a postage- and paper-free electronic format (EPK). Using its template to create a streamlined online presentation, you can email the main page of your press kit to anyone (see Fig. 2). Once recipients click to view additional pages, they are automatically taken to your press kit at Sonicbids.com.

### PLANTING CYBER ROOTS

Having your own Web site enables the world to check in with you. It is a window into your art and business, viewable from anywhere in the world regardless of where you are at any given moment.

Your domain name is the unique identity that follows "www" in a Web address, technically referred to as a URL (Uniform Resource Locator). It should be used as a branding tool for your band name. Use your band name assuming that it is unique and not already taken. Otherwise, choose something memorable and reflective of you or your band. Avoid names that have more than one possible spelling or are not phonetically spelled. You will be promoting your URL from the stage, at parties, and on the street. Keep it simple and catchy.

The most common URL suffixes are ".com" and ".net." Most people automatically type ".com," making it the better choice. If you are John Doe and johndoe.com is already taken, think carefully before registering johndoe.net. Johndoeerocks.com may be a better alternative. On the other hand, if your name is "Brett," brett.net may ring better than brett.com. Test-drive several options with friends and family before committing. Because you can purchase multiple domain names and forward them to a single site, buy ".com" regardless, assuming it is available. VeriSign is one of several domain registration services where you can check availability and register (fees range from approximately \$15 to \$35 annually).

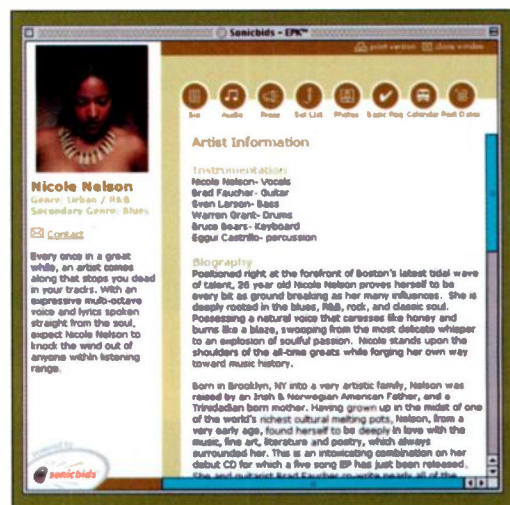
Hosting companies offer packages in all shapes and sizes.

Some include email accounts, while others only serve the site. You can also have email addresses incorporating your domain name forwarded to existing email accounts (for example, mail sent to ravi@heyravi.com arrives at heyravi@aol.com). Free hosting is also available, but it plagues your site with banner and pop-up ads that may annoy and confuse visitors. Something in the range of \$10 to \$30 per month should suffice. Shop around for the most storage capacity, highest bandwidth, and best customer support—when your site goes down, you want it back up before anyone else notices. Alex Kremer, CEO of Web site host Interplug.com, advises asking for an "up-time guarantee." "The better the guarantee," says Kremer, "the more you can be sure that the provider has its act together and is serious about keeping your Web site up and running all the time."

### DRESSING THE WINDOWS

Web-site design is usually the most expensive and time-consuming element. If you dabble in Pro Tools or are creative enough to write or play music, you can develop your own reasonably sophisticated site using desktop design software and Web-design programs such as Adobe's GoLive or Macromedia's Dreamweaver.

Whether you outsource your Web page design or do it yourself, keep it personal. "It can be a cold, mechanical world



**FIG. 2: The online press kits at Sonicbids provide the information that journalists are looking for, in an easy-to-access and easy-to-use format.**



online," writes Bob Baker, author of *Poor Richard's Branding Yourself Online* and *Guerrilla Music Marketing Handbook*. "The challenge is to make the experience warm and inviting—to create the feeling that a real human is on the other end of that product, service, article, newsletter, or Web site."

Organize your site from the first-time viewer's perspective. Advancing from page to page (and back) should flow

easily, and the design must be visually uniform and appealing. Schedule, merchandise, and contact information should be obvious. Browse other sites and evaluate what makes one more enjoyable than another.

Include your biography, schedule, "join mailing list" link (pointing to a list management service or opening a blank email addressed to you), audio samples of your work, and contact information. A direct email link to the artist makes fans feel more connected to you. A separate address for booking and publicity will keep your inbox organized.

Offer multiple music-file formats. Creating MP3s or RealAudio is not rocket science. Programs such as Musicmatch Jukebox or RealAudio Producer walk you through the entire process, offering downloadable or streaming files. Decide whether to post snippets or full songs, keeping in mind what best represents your artistry. Free downloading concerns many of us. You should consider the exposure, however, when calculating the risk. With today's limited radio access, offering full song downloads might be a welcomed alternative to paying high prices for possible spins on the airwaves.

Restrict the number of graphics and large files on your site. Visitors, particularly those using dial-up connections, will be frustrated by lengthy downloads and may exit your site prematurely. Frames will keep uniformity throughout the site and reduce loading time.

Add a press page with reviews, interviews, profiles, and other published news about your career (obtain publisher's permission or place a link to the story on the publication's site). Nice portraits and pictures from

## RECOMMENDED RESOURCES

### FURTHER READING

*Poor Richard's Branding Yourself Online*, by Bob Baker, (Spotlight Publications, October 2001)

### ONLINE MUSICIAN SERVICES

**Amazon Advantage Program**

[www.Amazon.com](http://www.Amazon.com) (CD sales)

**CDBaby** [www.cdbaby.com](http://www.cdbaby.com) (CD sales)

**JamBase** [www.jambase.com](http://www.jambase.com) (concert dates)

**Sonicbids** [www.sonicbids.com](http://www.sonicbids.com) (online press kits)

### EMAIL LIST SERVICES

**Lyriz** [www.lyriz.com](http://www.lyriz.com)

**Topica** [www.topica.com](http://www.topica.com)

### FREE NEWSGROUPS/MESSAGE BOARDS

**Google** [www.google.com](http://www.google.com)

**Yahoo** [www.yahooogroups.com](http://www.yahooogroups.com)

### WEB SITE TECHNICAL SERVICES

**Aplus** [www.aplus.net](http://www.aplus.net) (domain search and registration)

**PayPal** [www.paypal.com](http://www.paypal.com) (online payment service)

**Interplug** [www.interplug.com](http://www.interplug.com) (Web-site hosting)

**VeriSign** [www.verisign.com](http://www.verisign.com) (domain search and registration)

### WEB SITE DESIGN TOOLS

**Adobe GoLive** [www.adobe.com](http://www.adobe.com)

**Dynamic Drive** [www.dynamicdrive.com](http://www.dynamicdrive.com) (free online scripts)

**Macromedia Dreamweaver** [www.macromedia.com](http://www.macromedia.com)

### MUSIC FILE CREATORS

**RealAudio Producer** [www.realaudio.com](http://www.realaudio.com) (creating RealAudio files)

**Musicmatch Jukebox** [www.musicmatch.com](http://www.musicmatch.com) (creating MP3 files)

**Real syndrome.**  
Beginning: B.C. 2700. Population: 1,300,000,000.  
And the host country of the 2008 Olympic Games.  
You will be spellbound through the years...

**HOT**

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web special prices  
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live shows will also create interest. JavaScript and dynamic HTML will give movement to your pages, making them more captivating.

Guest books permit fans to post messages. They will feel more involved when their thoughts are imprinted on your site. You can also respond, developing a more interactive communication. Incorporate a chat room for fans to talk among themselves, creating a real-time online community revolving around you.

Once uploaded, you have the key ingredients for an online press kit. However, journalists and talent buyers have less time and tolerance for page loading than your fans do. Create a streamlined presentation using a separate cover page that directly links to the most relevant content. For example, instead of visiting [www.HeyRavi.com](http://www.HeyRavi.com), these time-taxed people can cut to the chase by visiting [www.HeyRavi.com/presskit](http://www.HeyRavi.com/presskit) (see Fig. 3).

Update your content frequently. A laptop will serve you well while you're on the road. Make changes offline in the bus and upload it in minutes at the hotel. Keep your schedule current—a list of past dates will discourage visitors from returning. Post a “song of the month” to keep fans coming back to sample the latest studio or live creation.

## CA-CHING!

Your site is also a potential revenue stream. Sell CDs and T-shirts online. Companies like PayPal allow members to create online “shopping carts” and accept credit card payments. Standard merchant accounts are difficult to get, require equipment, and may cost more due to minimum charges. Do the math based on your sales projections before investing in a merchant account.

Make it easy and secure for fans to purchase your products. Graphic representations should be clear and accurate. Give a 100 percent money-back guarantee. Research shows that the increase in sales will significantly outweigh returns. Offer quick shipment and reasonable freight charges. You have an obligation to your customer and a reputation as a merchant. Sloppy customer service will quickly land you in trouble and run you out of business.

If you sell your music online exclusively through merchants like CDBaby or Amazon, place a link pointing directly to your product on their site. Set this up through a referral program if available (for example, Amazon.com Associates Program). You will receive sales commissions in addition to your wholesale price for customers that you refer.

## NEW KID ON THE BLOCK

A Web site is only as valuable as its number of visitors. You are competing with millions of sites covering every interest known to man. Rarely will a prospective fan or talent buyer simply stumble across your site. Promote on message boards and in chat rooms that are related to your genre. Leave remarks including your URL on guest books of fellow musicians. Perhaps their fans will discover you. Email everyone you know asking them to email everyone they know. Clicking “send” is infectious, spreading exponentially. Use services like Google’s “adwords,” in which your Web site is highlighted when others search keywords that correspond to your profile. You will be charged a nominal fee each time someone clicks through to your site.

Link exchange is a common practice and an effective promotional tool. Trade links with fellow musicians and share your fans. Connect sites with local music stores and non-music-related businesses too. Perhaps your favorite restaurant would like to cross market.

Offline site promotion is equally important. Include your URL on every piece of publicity. Squeeze it on custom-printed guitar picks. Hang a banner behind the stage with both the band name and Web address. Make a rubber stamp of your URL and ask the club bouncer/doorman to use it for paid customer reentry. Everyone will go home with a tattoo of your address! Take digital photos of your fans and announce that you will post them the next day. They will be thrilled seeing their photo on your site and likely invite friends to share in the glory.

We live in real and cyber worlds simultaneously. Success lies in weaving the two and creating a uniform identity. The next time you pound the pavement, hit every road including the “information superhighway.”

**Ravi** ([www.ArtistConsultant.com](http://www.ArtistConsultant.com)), former guitarist of three-time Grammy Award-nominee Hanson, tours the country performing, lecturing, and consulting. He has also written an autobiography, *Dancin'* with Hanson (Simon & Schuster, 1999).

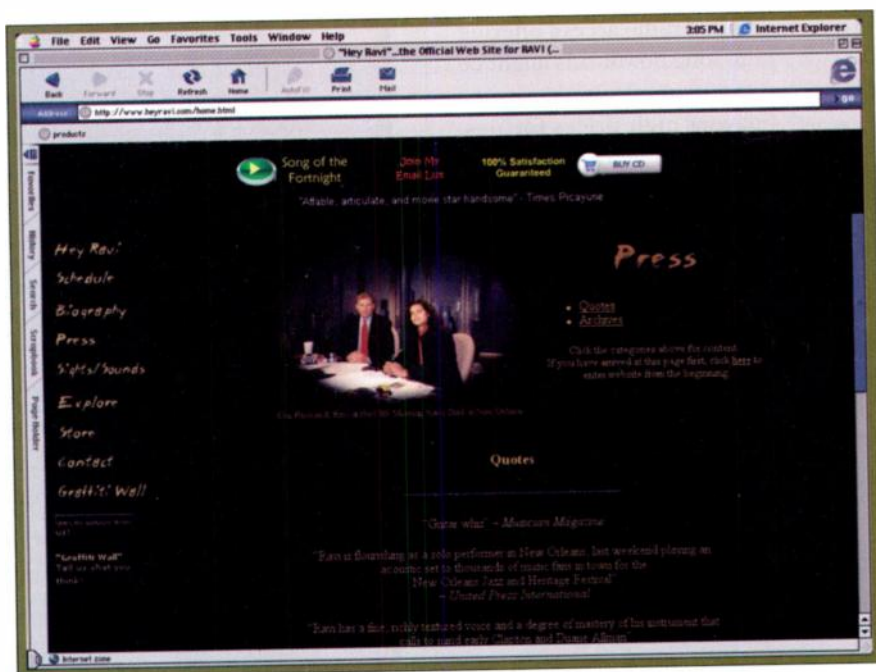


FIG. 3: The photos and pull quotes on the author's Web site press page disseminate important information in a graphically pleasing way.



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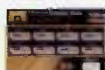
"A THOROUGHLY  
COMPREHENSIVE  
ORCHESTRAL LIBRARY..."

SOUND ON SOUND



"WHAT EXCITES US MOST ABOUT GPO IS  
THE WAY IT USES REAL-TIME MIDI CONTROLLERS...  
BUILD YOUR OWN ENSEMBLES INSTRUMENT-BY-INSTRUMENT  
FOR REAL SYMPHONIC EFFECT" COMPUTER MUSIC

GPO STUDIO INTERACTS WITH  
NOTATION PROGRAMS SUCH AS  
OVERTURE, FINALE & SIBELIUS



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NOTATION, SEQUENCER & MORE INCLUDED  
NO NEED FOR MANY LIBRARIES & PROGRAMS

NATIVE INSTRUMENTS  
KONTAKT PLAYER  
INCLUDED



WORKS AS A VSTi, DXi,  
AUDIOUNITS OR RTAS  
PLUG-IN OR STANDALONE

### STRINGS

Solo Spiccatissimo Violin  
Solo Giocando Violin  
Solo Cantando Violin  
9 Violins for Ensembles  
12 First Violin Section  
10 Second Violin Section  
Solo Viola  
3 Violas for Ensembles  
10 Viola Section  
Solo Cello (1 Soloist)  
3 Cellos for Ensembles  
8 Cello Section  
Solo Double Bass  
3 Basses for Sections  
7 Double Bass Section  
Harp (1 Violin)  
Harp (2 Violins)  
Gibson Harp

### BRASS

Solo Trombone (Two Solists)  
4 Trombones for Ensembles  
Horn Trombone Overlays  
Piccolo Trombone  
French Horn (Two Solists)  
4 Horns for Ensembles  
Horn Horn (2 Overlays)  
Solo Trumpet Trombone  
3 Trumpets for Ensembles  
Horn Trombone Overlays  
Horn Trombone (Two Solists)  
Tuba (Two Solists)  
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# REVIEWS

## ABLETON

LIVE 4.0 (MAC/WIN)

*Looping just got a new lease on life.*

By Len Sasso

**A**bleton has once again knocked the ball out of the park, this time with its Live 4.0 digital audio sequencer. The big news with Live 4.0 is the addition of MIDI clips and virtual-instrument hosting. Beyond that, a number of less dramatic but still noteworthy improvements have been made and features have been added, such as easier and more flexible signal routing, Automatic Jamming, tempo control on the Scene level, and automatic Scene advance. The new and upgrade prices are a bit higher than those of previous versions, but that seems well justified by Live 4.0's magnitude of change.

EM has given full coverage to Live's unique approach to real-time audio-clip sequencing, so I will concentrate on the new features for this review. For previous reviews see the June 2002, June 2003, and April 2004 issues of EM. You'll also find a Master Class article about Live in

62	Ableton Live 4.0 (Mac/Win)
70	Arturia Storm 3.0 (Mac/Win)
74	Antares Auto-Tune 4 (Mac/Win)
80	M-Audio Octane
84	Steinberg WaveLab 5 (Win)
90	VirSyn Cantor 1.02 (Mac/Win)
96	EastWest/Quantum Leap <i>Symphonic Orchestra</i> , Platinum Edition (Mac/Win)
106	Rane C4 Quad Compressor
112	Cycling '74 Mode 1.0 (Mac)
116	Quick Picks: Native Instruments Elektrik Piano; Neumann BCM104; Cakewalk Kinetic (Win); Bigga Giggas John Rekevic's Saxophone Library (Giga, Kontakt); Eventide Reverb; Best Service Galaxy Steinway 5.1 Piano (Mac/Win); Bag End M-6 and Infra-12 Pro; Sonic Reality <i>Sonic Refills Vol. 12: Acoustic Folk</i>



FIG. 1: In Ableton's Live 4.0, all three overdub passes of a one-bar recording are kept in the same MIDI clip, allowing previous takes to be selected using the loop markers.



# "I Switched"

**Who:** Gerhard P. Joost II

**Occupation:** Engineer / mixer / producer / audio maverick  
Chief Engineer, Groove Addicts, Los Angeles

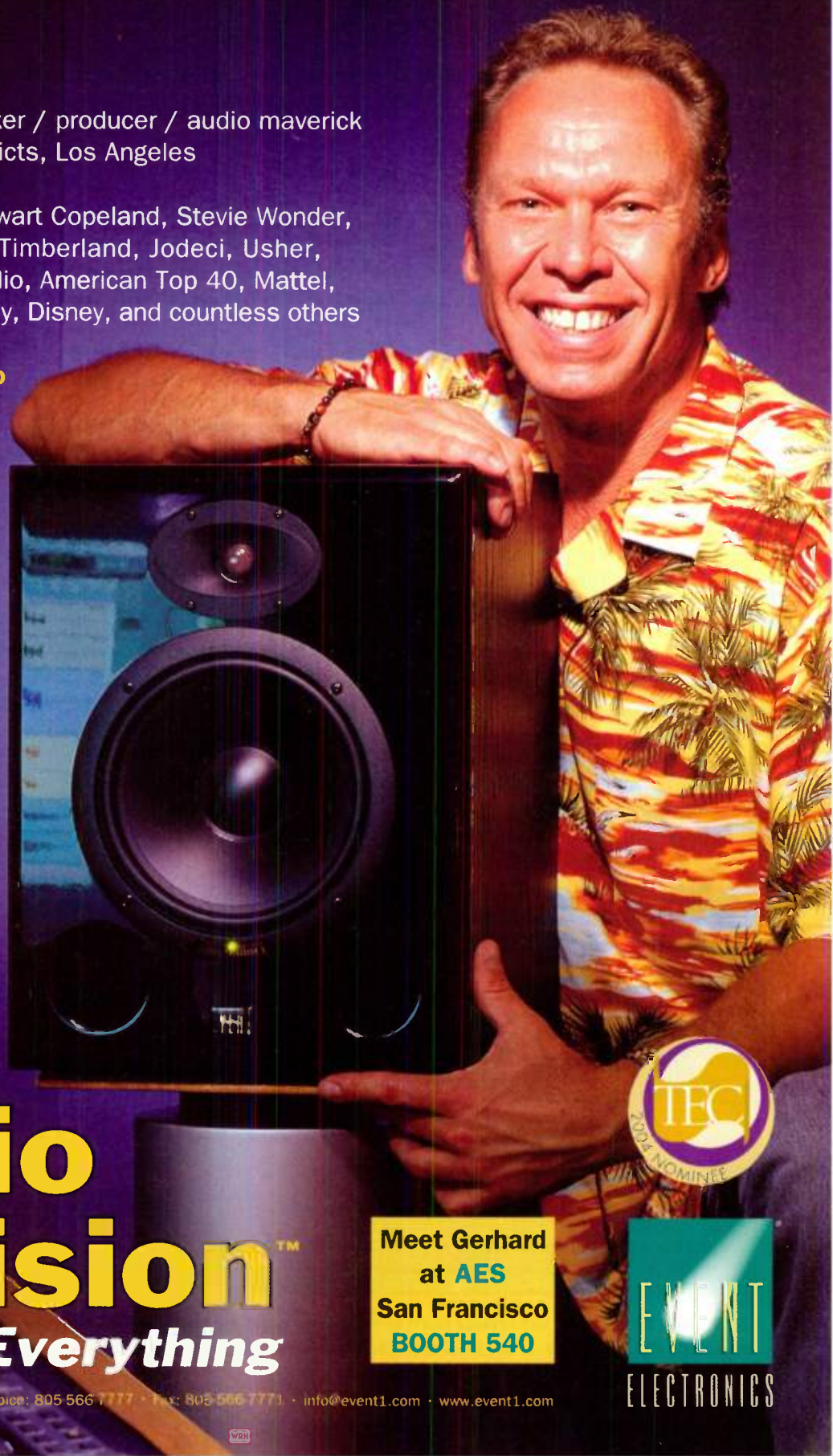
**Clients:** Danny Elfman, Stewart Copeland, Stevie Wonder, Teddy Riley, Missy Elliott, Timberland, Jodeci, Usher, Salt 'N Pepa, Silk, BBC Radio, American Top 40, Mattel, McDonalds, Budweiser, Sony, Disney, and countless others

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the December 2002 issue. All are available online at [www.emusician.com](http://www.emusician.com).

As the minimum requirements suggest, Live is CPU efficient. Nevertheless, to take full advantage of Live's real-time audio capabilities, you'll need a relatively fast computer. A good dose of RAM is also recommended. Although Live streams audio from disk by default, using its optional Clip RAM mode is more efficient, especially for machines with slower hard drives, such as laptops. For this review, I used a Mac dual-G5/2 GHz with 2 GB of RAM running OS X 10.3.4.

## MIDI IN, MIDI OUT

Live sports a reasonably sophisticated track-based audio sequencer and recorder, but its claim to fame is as a real-time audio-clip triggering device. Clips can be triggered individually or in groups, called Scenes, and MIDI messages and computer keys can be assigned to trigger clips and Scenes.

Clip management is carried out in Live's Session environment, which is organized in columns resembling mixer channels. (The columns are called tracks, because they correspond to the tracks in Live's time-based environment, called the Arrangement.) Ableton has taken all the tricks it developed for manipulating audio clips and applied them to MIDI. Along the way,



**FIG. 3:** Live's robust signal-routing scheme allows MIDI tracks to take their input from and send their outputs to any other track as well as any hardware or ReWire MIDI device.

Ableton made some obvious and not-so-obvious adaptations to improve MIDI and audio-clip management.

MIDI clips can be imported from Standard MIDI Files (SMFs), recorded using a MIDI controller or the computer keyboard, or entered graphically. Surprisingly, there is no provision for MIDI step entry, which would seem to be a natural inclusion.

Live has implemented a slick version of MIDI-file import that allows you to import individual tracks from most SMFs. If the MIDI-file tracks have been usefully labeled, it's a breeze to mix and match tracks from several MIDI files. The one thing you can't do is audition MIDI files directly from the Browser—the ability to do that would be a real time-saver.

## RECORDING LIVE

As with audio, MIDI input can be recorded directly in the Session or Arrangement environments. In either case, you can choose to have the incoming notes quantized on the fly, and you can undo the quantization. Overdub recording is also possible in both environments; the specifics differ slightly, however, between the Session and the Arrangement.

When overdub and cycle recording are enabled in the Arrangement, each new cycle extends the length of the recorded clip, and the new section contains a copy of the previous recording along with the new material. That allows you to go back and forth between takes by moving the clip's loop markers (see Fig. 1). In the Session environment or when cycle recording is off in the Arrangement, overdubbing works by adding the new material to the old. In that case, you need to use the undo and redo functions to move between takes.

You can record multiple tracks at the same time, and Live's flexible input and output routing makes that feature even more useful. Any MIDI track can take its input from any MIDI port and channel and from all ports and channels simultaneously. (One of the available inputs is the computer keyboard, which is automatically mapped to MIDI notes.) In addition, any MIDI track that does not contain a virtual-instrument plug-in can direct its output to any other MIDI track. That makes it easy to bounce several MIDI parts to one MIDI clip. MIDI output can also be



**FIG. 2:** Live's Simplifier (top) and Impulse (bottom) are enough to get you started with virtual instruments. The Chord, Random, and Scale MIDI effects manipulate incoming MIDI in real time.



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directed to any port and channel (hence, to external MIDI devices) and to any Propellerhead ReWire bus.

## CLICK AND DRAG

Live provides tools for graphic entry and editing of MIDI data. Although they are not on par with high-end digital audio sequencers, there are some interesting twists. Editing can be performed only in a piano-roll editor; however, key commands allow you to quickly switch be-

tween the editing and entry tool, and to manage the quantize grid. Note entry is drum-editor style—clicking on an empty space adds a note, and clicking on an existing note deletes it. Note editing includes moving, resizing from either end, and changing Velocity.

The Clip view, which doubles as the MIDI editor, is resizable and has a handy Fold mode that displays only pitches that contain notes. Fold mode is especially useful when you want to re-

## Minimum System Requirements

### Live 4.0

**MAC:** G3/400 MHz; 256 MB RAM;  
Mac OS 9.2 or OS X 10.1.5

**PC:** Pentium III/600 MHz; 256 MB RAM;  
Windows 98, 2000, or XP

strict note entry to certain pitches, as is commonly the case with drum parts, but it is also useful for pitched instruments (see Fig. 1).

As with audio, MIDI clips have associated clip envelopes that can be looped and sized independently. Clip envelopes are additive to track automation and can be used to control any mixer or plug-in parameter as well as any MIDI controller. With just a few mouse-clicks, you can, for example, create a one-bar LFO loop and apply it to pan position over a longer MIDI loop.

## SIMPLER IS BETTER

MIDI clips wouldn't be of much use without instruments to play them, and Live can host both VST and Audio Units virtual-instrument and effects plug-ins. To get you started, Live 4.0 has a basic sample player called Simpler, a drum sampler called Impulse, and a collection of basic MIDI effects.

Simpler combines a polyphonic single-sample player with the modules found on basic synths: a multimode filter, a multiwaveform LFO, and an Attack, Decay, Sustain, Release (ADSR) envelope generator. The sample can be looped or played as a one-shot. You can set the sample start, sample end, and loop start, but oddly you can't set the loop end (the loop always extends to the sample end).

As a pitched instrument, Simpler performs best when loaded with a single or multicycle waveform, as the 18 factory presets illustrate. But you can get a lot more out of Simpler by dragging clips from the Browser to its sample-display window. You can then use MIDI notes to trigger the clips, rather than triggering them from Session Slots. More importantly, you can use Simpler's tools to focus on and process parts of the clips. For example, if there's a particular note you like in a bass loop, you can use Simpler to


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turn that note into a bass instrument.

Impulse is an 8-pad drum sampler. The pads are automatically mapped to the white keys from C3 to C4. In Fold mode, the MIDI editor shows the drum names assigned to the pads, which greatly facilitates graphic note entry. Each pad holds its own sample with settings for Sample Start, Tune, and Stretch. Each pad also has its own Filter, Distortion, Decay, Pan, and Volume settings. Finally, the pads' outputs can be separately routed to other audio tracks for independent effects processing. As with Simplr, you can go way beyond the intended use by dragging clips from the Browser to Impulse's pads.

Live comes with five effects for processing MIDI notes: Chord, Pitch, Random, Scale, and Velocity. Others will undoubtedly be added in the future, and an arpeggiator and delay would be obvious choices. Pitch changes the pitch of incoming notes within a user-defined range, Velocity is a MIDI Ve-

locity compressor, and Chord allows you to add as many as six notes to each incoming note to produce chords. Random allows you to randomize incoming pitches with control of probability, pitch range, and pitch step size. Scale operates on pitch classes, allowing you to either block an entire pitch class or map it to another pitch class. (A pitch class has all notes of the same name, regardless of their octave.) For example, you might use Scale to throw away all incoming notes whose pitch, in any octave, is C, or you might use it to change any C to the D just above it. Random and Scale work nicely together to produce kaleidoscopic, nonrepeating patterns within a fixed tonality.

Fig. 2 shows Simplr and Impulse with the Chord, Random, and Scale MIDI effects. **Web Clip 1** makes use of both instruments together with those effects. **Web Clip 2** uses MIDI routing and the Chord effect to apply four-way close harmony to a random melody (see Fig. 3).

## MAKING THE SCENE

Scene- and clip-playback management take several leaps forward in version 4.0. Each Scene can now have its own tempo, which offers a lot more flexibility in real-time tempo control. (Scene tempo changes are given when recording the Session into the Arrangement.) An optional auto-advance preference causes the next Scene to be selected when a Scene is triggered, allowing you to use the Return key to launch a succession of Session's Scenes.

A new set of clip parameters called Follow Actions can be used to automate clip changes within groups of consecutive clips on the same track. Actions include replaying the same clip; jumping to the next, the previous, the first, the last, or a random clip within the group; and stopping track playback. The time between actions is set in bars and beats, and you can specify two different actions along with their relative probability. With those



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## PRODUCT SUMMARY

### Ableton

Live 4.0 (Mac/Win)  
digital audio sequencer

\$499

upgrade: \$119 (download), \$149 (boxed)

FEATURES	4.5
EASE OF USE	4.0
QUALITY OF SOUNDS	4.0
VALUE	4.5

#### RATING PRODUCTS FROM 1 TO 5

**PROS:** MIDI clip recording and playback. Virtual-instrument hosting. Extremely flexible audio and MIDI signal routing. Automatic Jamming.

**CONS:** Can't simultaneously adjust multiple clip parameters. No MIDI step entry.

### Manufacturer

Ableton/M-Audio (distributor)

tel.: (800) 969-6434 or (626) 445-2842

email: info@m-audio.com

Web: www.ableton.com

features (which, taken together, are called Automatic Jamming) and careful clip selection and grouping, Live becomes an effective tool for automated composition (see **Web Clip 3**).

You can now swing-quantize audio and MIDI clips. Each clip can have its own swing mode setting—straight, eighths, 16ths, or 32nds—and a global swing amount setting then controls the amount of swing applied. That introduces additional time warping for audio clips, so make sure that the clips warp well and are set to the best warp mode. Within those constraints, swing is a welcome rhythmic addition.

One inconvenience when using any of the clip options is that they must be set individually for each clip. You cannot select multiple clips and adjust common parameters either absolutely or relatively. Because a lot of Live action is in the clip parameters, that can slow things down significantly.

### DOCS AND PERCS


Live is very intuitive for all its complexity, but like any sophisticated software, it takes a while to master its

finer intricacies. To make things easier, Ableton has provided an excellent manual, implemented rollover help, and included seven interactive tutorials with matching QuickTime movies.

If you know nothing about Live, following the tutorials, which are special Live projects with an attached text window, will quickly get you up and running. Even if you are a seasoned Live user, completing the tutorials gives you a great refresher course and is a good way to learn the new features.

The manual comes in PDF and printed format (with the boxed version). The PDF manual has the advantage of being searchable and has copious links between topics. Both versions contain a complete index and table of contents.

As with previous versions, the boxed version of Live 4 has a CD full of royalty-free loops (more than 650 MB) in various styles. The entire collection is from Big Fish Audio and is organized by instrument and then by category, making compatible material easy to find. Some instrument offerings, such as the six horn loops, are minimal, whereas others, such as the 200 drum loops, are more generous. Overall, the collection is not as extensive or varied as it was in previous versions, but it provides ample material for learning and enjoying Live.

The addition of MIDI and virtual-instrument hosting is a giant step in Live's evolution. It transforms Live from an excellent audio-loop manipulation tool to a full-fledged performance and composition environment. Live's unique integration of real-time multiple-clip recording and playback with track-style arranging differentiates it from conventional digital audio sequencing software and all-in-one studio software with built-in sequencing. It may not be the best of either world, but it's definitely the best of both worlds in  the same package.

*Len Sasso is an associate editor of EM. He can be contacted through his Web site at [www.swiftkick.com](http://www.swiftkick.com).*

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# ARTURIA

## STORM 3.0 (MAC/WIN)

*Catch the eye of the storm with this must-have upgrade.*

By Len Sasso

Arturia's flagship all-in-one software studio, Storm, has been through a major upgrade with its latest release, version 3.0. Gone are the rackspace limit of four instruments and three effects, the separate Studio Builder and Composition windows, and the fixed-window and region sizes. Also gone is the VST version—all interapplication connectivity is now done using Propellerhead's ReWire 2. Notable additions include the ability to import Standard MIDI Files (SMFs); a General MIDI (GM)-compatible synth to play SMFs; and a piano-roll editor for

editing MIDI files, instruments' step-sequencer patterns, and automation.

Storm's basic features have not significantly changed from earlier versions, so aside from a brief overview, this review will concentrate on the new aspects of version 3.0. Check out the EM Web site at [www.emusician.com](http://www.emusician.com) to read EM's reviews of versions 1.5 (February 2002) and 2.0 (March 2003). For a comparison of all-in-one software studios, see the article "Virtual Workstations" in the March 2003 issue of EM.

Storm's graphical user interface (GUI) remains rooted in the Java Virtual Machine programming language, although all audio processing has been written in assembly language. In spite of numerous improvements, the GUI still has problems. Hot spots are hard to hit, graphics are slow to update (especially when zooming), keyboard shortcuts stop working when more than one window is open, pop-up menus don't always pop up, and the undo function works only for some actions. Although annoying, none of those problems are show-stoppers.

### Minimum System Requirements

#### Storm 3.0

**MAC:** G4/1 GHz; 256 MB RAM;  
Mac OS 10.3

**PC:** Pentium III/800 MHz; 256 MB RAM;  
Windows 98, XP

### RACK 'EM UP

The Storm studio is centered on a rack full of gear (see Fig. 1). Instruments and effects from Storm's built-in collection are dragged to the rack from the browser on the left. Unlike previous versions, the rack can have as many slots as needed, and the number of instruments and effects is limited only by your computer's capacity. Synthesis and effects processing are CPU-intensive tasks, however, and the rack shown in Fig. 1, which contains five instruments and four effects, runs Storm's CPU meter to 50 percent on my dual-G5/2 GHz Mac. Because the rack can now outsize available screen real estate, a handy scrollable overview has been added for navigation.

Unlike earlier versions of Storm, you can add and remove instruments and effects from the rack, as well as move them around within the rack—even while the song is playing. Each instrument and effect has three sends for routing its output, either pre- or post-mixer, to any effect. Those sends can be displayed in the rack as in previous versions, but now they also can be managed in Storm's mixer.

Storm's complement of instruments includes five drum boxes: four are sample based, and one, called Tsunami, is a drum synth. The remaining instruments are two mono synths (Arsenic and Bass 52), two chord-based synths (Equinox and Shadow), and two polyphonic synths (Orpheus and GMSynth). All except GMSynth are based on subtractive synthesis, though their programming techniques vary. GMSynth is sample based and uses GM program numbering. Finally, there are three sample players: EZ-Track is for playing and recording extended audio files; H3Oplus is a four-track, four-bar sample player



FIG. 1: Arturia Storm's studio is centered on a rack full of virtual gear. The rack includes the sequencer (top), mixer (bottom), and browser (left).





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primarily for loop management; and Scratch is a turntable-style sample player.

Storm's ten effects are four delay-based effects (Chorus, Flanger, Reverb, and Dual Delays), Distortion, Compression, two filters (LPFilter and SEQ Filter, which contains a built-in 16-step sequencer), a ring modulator, and a vocoder. The effects are standard fare, but you can get a lot out of them with automation and complex signal routing (see **Web Clip 1**).

## SEQUENCE UP A STORM

Storm's sequencer has been upgraded in several important ways: it's resizable and has resizable tracks; it can be hidden or detached; and, in conjunction with the new piano-roll editor, it can be used to record, import, and edit MIDI data. In previous versions, the sequencer was limited to recording pattern changes and parameter automation.

Storm's MIDI file import function couldn't be easier: you select a MIDI file, and Storm imports the tracks and places GMSynth instruments in the rack to play them. If the tracks contain MIDI program changes, the GMSynths will set themselves to the correct program; otherwise you can set them manually. If you want to use a different Storm synth to play a track, put it in the rack and copy and paste the data from the GMSynth track to the track for the new synth (see **Web Clip 2**).

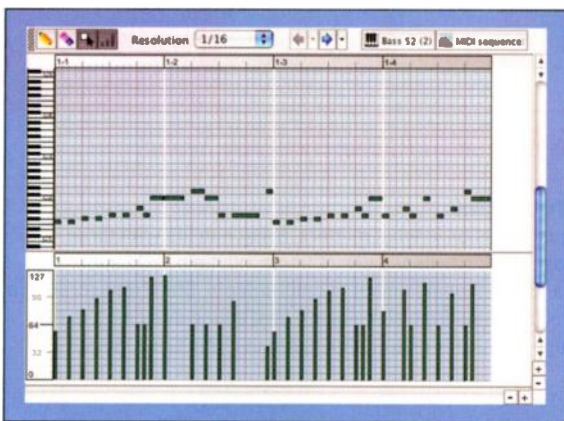
One of the important advantages of

adding MIDI to the sequencer's bag of tricks is that you can now convert a string of pattern changes in Storm's sequencer to a MIDI sequence on tracks for the standard synths: Arsenic, Bass 52, GMSynth, and Orpheus. That makes it easier to copy or move the string of patterns to a new location on the same track. More importantly, it makes it possible to move it to a different track and to modify the notes in the patterns using the piano-roll editor. It would be nice to be able to do the same thing for the other synths—especially the drum machines—and also to be able to export the edited patterns as MIDI files. Perhaps those capabilities will be implemented in a future release.

## A NEW ROLL

Storm's piano-roll editor can be invoked by double-clicking in the sequencer or selecting Edit in the context menu (right-click on the PC, Control-click on the Mac) of any device in the rack (see **Fig. 2**). The context menu of a device presents a handy submenu for selecting which controller or pattern data to edit. From the sequencer, the editor opens immediately, displaying the selected data. Once the piano-roll editor is open, you can navigate to any pattern or controller data for any device by using a menu or forward-backward navigation arrows. Inconveniently, you can't navigate directly to a MIDI sequence unless you've previously invoked the editor by double-clicking on that sequence.

The piano-roll editor at best can be described as rudimentary. There are separate tools for selecting, deleting, and altering notes, and they must be selected, using the mouse, from the toolbar at the top-left side of the editor. Modifying data is difficult at high zooms. When quantization (called Resolution) is invoked, it applies to all of the data, not



**FIG. 2:** Storm's piano-roll editor is basic, but it gets the job done. It can edit step-sequence patterns, MIDI sequences, and automation.

## PRODUCT SUMMARY

### Arturia

Storm 3.0 (Mac/Win)  
software-synth workstation

\$149

upgrade \$50 (free for users  
registered after November 2003)

FEATURES	3.0
EASE OF USE	2.5
QUALITY OF SOUNDS	3.5
VALUE	4.0

### RATING PRODUCTS FROM 1 TO 5

**PROS:** Quick generator of complex patterns that almost always sound good. Composition Wizard sports seven new styles, single-window operation with resizable panels.

**CONS:** Java-based user interface is difficult to control. Minimal set of key commands. Sound library hasn't been expanded.

### Manufacturer

Arturia  
email: sales@arturia.com  
Web: www.arturia.com

just the selected data, and it cannot be undone. Fine-scale controller editing is tedious with the tools provided. On the other hand, controller editing of any kind and note editing, other than in the built-in instruments' pattern editors, was impossible with previous versions of Storm. The current implementation is a vast improvement.

Storm's mixer has been improved in several ways (see **Fig. 3**). Like the sequencer, it can be hidden, resized, and detached. Each track now has a three-band EQ, and the middle band is parametric. Effect sends, which can be either pre or post, can be controlled directly from the mixer. Finally, each track has a solo and a mute button.

Storm's browser is now part of the Composition window and has been upgraded with the addition of sample browsing, which used to require opening a separate window. Like the other sections, the browser can be hidden and resized.





**FIG. 3:** Storm's mixer has channels for each instrument and effect. Three-band EQ and effects-send displays are optional.

### SOUNDING OFF

Storm's sample library is unchanged from version 2.0, but it contains a well-chosen if somewhat sparse collection of samples in a variety of styles. You also get access to Storm Hall, where you can theoretically

share audio files, Storm songs, and ideas with other Storm users. I've never spotted any files or users, however, in Storm Hall.

Storm 2.0 introduced the Composition Wizard, which is a fast, enjoyable, and instructive way to build songs in

Storm. Version 3.0 adds 7 new styles, for a total of 12: House, Electro Pop, R&B, Hard Rock, Tribal Trance, Ambient, Drum and Bass, Jazz Funk, Dub, Discovery (a tutorial version of the Dance Wizard), Dance, and Hip Hop. Most of the Wizards come with their own audio files and pattern sequences. That significantly expands the Storm library, although commercial rights to the samples may be reserved (see **Web Clip 3**).

Storm is an excellent piece of software for the price. GUI issues aside, it can put you on the fast track to composing pattern-based music in a variety of styles. It might not be all you need for a complete composition, but it integrates smoothly as a ReWire 2 slave, and you can easily route each of its instruments and effects to a separate bus in your ReWire host software. If you're already a Storm user, this is a must-have upgrade. If you've never tried Storm, the demo is **EMWEB** **GROUP** well worth a look. ☺

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# ANTARES

AUTO-TUNE 4 (MAC/WIN)

*An essential production tool gets even better.*

By Michael Cooper

**A**uto-Tune 4 is the most powerful, flexible, and user-friendly version yet of Antares's popular pitch-correction plug-in. It offers numerous new tools and functions, an improved ergonomic layout, and support for sampling rates up to 192 kHz.

It runs as a VST, MAS, RTAS, and TDM plug-in on the Mac, and as a DirectX or RTAS plug-in in Windows. (According to Antares, a TDM version of Auto-Tune for XP should be released by the time this review is printed.) I reviewed version 4.1.2 in MAS format under Mac OS 10.2.8 and OS 9 (running Digital Performer 4.12 and 3.02, respectively), using a dual 867 MHz G4 loaded with 1.8 GB of RAM. Installa-

tion was straightforward, and authorization used the challenge-and-response method.

For those readers who are unfamiliar with Auto-Tune 3, the software is designed to correct inaccurate pitches in monophonic vocal and instrument performances. It has two modes of operation: Automatic mode, in which notes are corrected based on a user-selected, preset or custom scale; and Graphical mode, in which notes are displayed as lines in a graphical display and can be corrected by being manually redrawn.

## AUTOMATIC IMPROVEMENTS

Many of Auto-Tune 4's improvements consist of refinements and helpful additions to existing features. For instance, in Auto-Tune 3 you can define scales by playing them on a MIDI controller while using the Learn Scale From MIDI function. Alternatively, you can target specific pitches on the fly by playing a MIDI controller in real time while using the Target Notes Via MIDI function. But these features, which are also in version 4, are inaccessible to users who lack a MIDI controller or who have DAWs that can't send MIDI data to plug-ins. Auto-Tune 4 adds a virtual keyboard

## Minimum System Requirements

### Auto-Tune 4

**MAC:** OS 9 or OS X; VST, MAS, RTAS, or TDM compatible host

**PC:** Windows 98, 98SE, NT, 2000, ME, or XP; DirectX-compatible host (8.0 or later); Windows XP: RTAS-compatible host

(see Fig. 1), which can be played with a mouse in Automatic mode to define target notes for correction.

The virtual keyboard spans the plug-in's pitch-detection range. Its black-and-white keys turn blue to indicate the pitch of the audio as it plays, providing useful visual feedback. If you click and hold your mouse on the Hold button (located just below the pitch-change indicator), the blue detected-pitch indication on the virtual keyboard will freeze along with the display on the pitch-change indicator. The latter indication can be especially useful for determining how far out of tune fast-passing notes are, and the intensity of Auto-Tune 4's corrective action.

In older versions of Auto-Tune, you removed or added scale notes using the Edit Scale display. Although that feature has been retained, Auto-Tune 4 lets you accomplish the same thing by clicking on individual keys on the virtual keyboard. The newer method allows you to edit the Remove and Bypass status of target notes of the same name but that are in different octaves. (Removing a note takes it completely out of a scale so that any input note on or close to it would be corrected to the nearest remaining scale note. Bypassing a note allows pitches on or close to it to remain unaffected.)

This octave-specific treatment of notes is now available when using Auto-Tune 4's MIDI-input functions. While using the Learn Scale From MIDI or Target Notes Via MIDI functions, you can click on the Octaves As Played button to determine target-note behavior in specific octaves, or the All Octaves button to do the same throughout Auto-Tune 4's usable range.

Both Momentary and Latching modes are available when clicking on the virtual



FIG. 1: One of the improvements in Auto-Tune 4 is the Virtual Keyboard, which shows the currently detected pitch (blue key), scale notes (white and black keys), bypassed notes (brown keys), and removed notes (gray keys). Scale notes can also be input from the keyboard.



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keyboard with a mouse. Latching mode toggles the Remove or Bypass status of a note each time you click its corresponding key. Momentary mode, on the other hand, changes the Remove or Bypass status of a note for only as long as you click and hold the mouse on its corresponding key, providing an easy way to treat isolated notes on the fly while leaving the pitch-correction setup for the rest of the phrase or track intact. The virtual keyboard is active only for major, minor, and chromatic scales, but that covers most popular-music applications.

Auto-Tune 4 has useful new scale-editing shortcuts to supplement the Set Major Scale and Set Minor Scale functions. The Set All button deletes all current Remove and Bypass settings to return an edited scale to its default state. The Remove All button removes all notes from the scale in all octaves, while the Bypass All button bypasses pitch correction for all notes.

## TREMULOUS NOTES

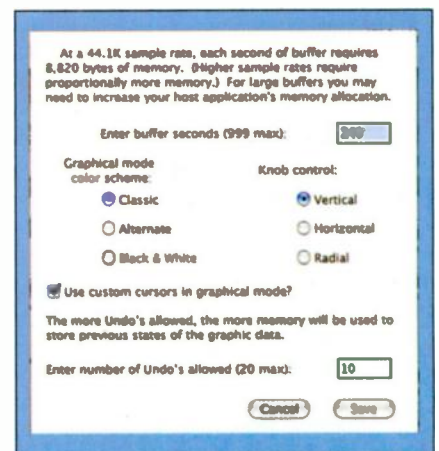
Auto-Tune 4 has improved controls for creating vibrato. In addition to the Shape, Pitch (called Depth in Auto-Tune 3), Rate, and Onset Delay controls for pitch modulation, Antares has added new virtual knobs for modulat-

ing amplitude and formants (timbre).

A new Onset Rate control allows you to fade in pitch, amplitude, and formant modulations (after the Onset Delay time has expired) to reach maximum effect after the elapsed time you set. Yet another new control, Variation, sets the amount of randomization for all modulation-depth and modulation-rate controls, which gives a humanizing effect. Together, these controls let you add more realistic vibrato effects to vocal tracks and are an outstanding addition to Auto-Tune's feature set.

Also new is a defeatable Improved Targeting function, which prevents the wide pitch variations in excessive vibrato from whip-sawing pitch correction back and forth between neighboring notes. Improved Targeting is not always effective, but it's a welcome addition.

One of the few disappointments I encountered with using Auto-Tune 4 is that it does not support automation of plug-in parameters in Digital Performer. (The automation did work when tested in Emagic's Logic Pro running the VST version of Auto-Tune 4, converted to an Audio Unit with Expansion's VST-Audio Unit Adapter.)



**FIG. 3:** Auto-Tune 4's preferences, such as the Graphical mode's color scheme, the number of Undos, and the buffer size, can be set from the Options dialog box.

## GRAPHIC NATURE

Auto-Tune 4 offers more new tools—plus enhanced functionality for legacy tools—in Graphical mode (see Fig. 2). The Pitch graph now automatically scales its display to include all tracked audio, foregoing the need to scroll around in search of the generated pitch curve.

Pressing your QWERTY keyboard's Shift key while drawing with the Line Tool causes your generated line to snap to the nearest semitone. Double-clicking with the Arrow tool can now add (or remove) handle points on existing lines, depending on where you click.

A new Scissors tool breaks an existing line in two, so you can manipulate each of the two new lines independently. A new Hand tool drags the Pitch and Envelope graphs to show the area you want to work in. A new Vibrato Scaling function allows you to increase or decrease the amount of vibrato for audio selected with the I-Beam Tool while preserving the original shape of the vibrato curve.

When using Auto-Tune 4's Graphical mode in Digital Performer 3.11, I discovered that the plug-in works as an insert only from the mixer window. It doesn't work if you try to use DP's file-based (destructive) processing from the Audio window. I didn't encounter this problem in DP 4.

Auto-Tune 4 offers 20 levels of Undo and Redo in Graphical mode, giving you plenty of room to experiment. You



**FIG. 2:** Auto-Tune 4's Graphical mode includes useful new tools for the Pitch graph and the Envelope graph, and a better-organized layout of navigation controls.



## PRODUCT SUMMARY

### Antares

Auto-Tune 4 (Mac/Win)  
pitch-correction plug-in  
native versions \$399  
TDM version \$599

FEATURES	4.0
EASE OF USE	4.0
QUALITY OF SOUND	4.5
VALUE	4.5

#### RATING PRODUCTS FROM 1 TO 5

**PROS:** Virtual Keyboard expands editing and real-time pitch-correction capabilities, especially for non-MIDI users. Greatly enhanced vibrato functions offer more realistic effects. Notes can be edited independently in different octaves. Graphical mode has been substantially upgraded to provide a speedier and more powerful interface.

**CONS:** Does not support automation of plug-in parameters in Digital Performer. Graphical mode doesn't work as a destructive plug-in Digital Performer, version 3.11 or earlier.

### Manufacturer

Antares Audio Technologies  
tel.: (831) 461-7800  
email: info@antarestech.com  
Web: www.antarestech.com

set the maximum number of Undos desired in the Options dialog box (see Fig. 3), where you can also set preferences such as buffer size, color scheme, and knob control (to allow changing parameter values with vertical, horizontal, or radial mouse movements).

### THUMBS UP

Auto-Tune 4 brings powerful new tools and expanded functionality to the party, gift wrapped in an improved user interface. I got better results in a shorter amount of time than when working with previous versions. Auto-Tune 4 is a winner.

*Michael Cooper is an EM contributing editor and the owner of Michael Cooper Recording in Sisters, Oregon. Cooper's studio offers recording, mixing, and mastering services.*

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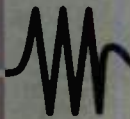




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# M - A U D I O

## OCTANE

### *An 8-channel preamp and A/D converter that delivers.*

By Karen Stackpole

**M**-Audio has built a reputation for manufacturing affordable quality hardware for music-production applications. A case in point is the company's new Octane preamp, which has features that enhance the analog interface of any digital multitrack at a price that won't break the personal-studio budget.

The Octane is an 8-channel microphone preamp and A/D converter, replete with ADAT Lightpipe digital outputs and 1/4-inch TRS analog outputs. The unit also has -20 dB pads, insert options, phase-reverse switches on four of the channels, phantom power, two direct instrument inputs, and selectable M-S matrix encoding circuitry on channels 7 and 8 for stereo-recording applications.

#### 'ROUND FRONT

The 2U Octane offers individual gain controls and a three-color LED for each of the eight mic preamps. The meters indicate levels of -20 dBu, -10 dBu, or clipping (green, yellow, and red, respectively). Channels 1 and 2 include an instrument input with a 1/4-inch TS jack and separate gain control (see Fig. 1).

These inputs have dedicated high-impedance instrument preamps that are designed to give a better signal-to-noise ratio than what you'd get from a unit that shares a single preamp for the mic and direct inputs. Plugging into the instrument input disables the mic preamp on that channel.

Channel 1 also has a low-cut filter with a 12-dB-per-octave slope below 80 Hz, which affects the mic and instrument inputs. In addition, the even-numbered channels have phase-reverse switches, which are useful for correcting phase problems that arise when more than one mic is used on a single source.

The M-S matrix encoder on channels 7 and 8 is engaged with the In/Out button next to the Width control. The three-position Sample Rate selector has settings for 44.1 and 48 kHz sampling rates for the A/D converter, and an external (Ext) setting that locks the Octane's digital output to an external source connected to the rear-panel word-clock input. A pair of buttons are used to send phantom power to sets of four mic channels, which are grouped 1 through 4 and 5 through 8.

#### BEHIND THE SCENES

The rear panel has eight XLR mic inputs, eight 1/4-inch TRS analog preamp outputs, and eight TRS A/D line inputs (see Fig. 2). The preamp outputs can be used to send analog signals to the analog inputs on a mixing board or digital interface, or they may be used to insert a dynamics processor into the signal path. These outputs are half-normaled to their respective A/D Line Inputs, allowing them to be used as insert sends for connecting to, for exam-

**PRODUCT SUMMARY**

**M-Audio**  
 Octane  
 8-channel mic preamp and A/D converter  
 \$749.95

FEATURES	4.0
EASE OF USE	4.0
AUDIO QUALITY	4.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

**PROS:** Versatile. Good-sounding preamps and A/D converters. Channel inserts. Pad switches on every channel. Phase-reverse switches. M-S matrix encoding.

**CONS:** Plastic 1/4-inch jacks unanchored to the chassis. AC plug doesn't insert all the way into jack. Phantom power only in groups of four.

**Manufacturer**  
 M-Audio  
 tel.: (800) 969-6434 or (626) 633-9050  
 email: info@m-audio.com  
 Web: www.m-audio.com

ple, a compressor/limiter. Returning the processed signal to the A/D line inputs breaks the normaled connection of the XLR Input, just like inserts wired up in a patch bay.

If you want to use the Octane's converter, the A/D line inputs accept 1/4-inch connections from any line-level device. Inserting a cable into the line inputs breaks the connection of the XLR mic input to the A/D converter. However, the preamp output is still active, and the mic signal can be sent from that jack to the input of an external A/D converter or digital-recording device.



FIG. 1. The M-Audio Octane is a versatile 8-channel mic preamp and A/D converter that features dedicated instrument preamps on channels 1 and 2.



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The rear-panel ¼-inch jacks are constructed of molded plastic. Although the connections seem solid, I am a bit concerned about the long-term durability of these jacks. There are no nuts and washers to anchor the jacks to the chassis and provide strain relief for the circuit-board connection points.

Jutting out about two inches from the rear of the unit is a heat sink, and to the right of that is the unassuming Lightpipe digital output and two female BNC jacks for word-clock I/O. An AC input jack accommodates the large lump-in-the-line power supply that comes with the Octane. While the connection seems solid, I noticed that the plug does not insert completely into the jack. As a result, the housing is not flush with the chassis.

## HIGH PERFORMANCE

I used the Octane at my home studio—recording to Alesis ADAT XT20 and Digidesign Pro Tools LE—and at the studio facilities of the Ex'Pression



**FIG. 2.** In addition to XLR mic inputs, the Octane gives you preamp outputs and A/D line inputs for each channel, word-clock I/O, and an ADAT Lightpipe digital output.

College for Digital Arts in Emeryville, California, where I recorded to a Pro Tools setup. The sources I recorded included nylon- and steel-string acoustic guitars, electric bass, female vocals, a drum kit, and a variety of percussion instruments.

The Octane performed admirably in all cases, giving an honest representation of the sound sources, with little coloration. When I used the Octane for the drum mics during a blues session and a rock session, its sound was clean and clear, and the setup was straightforward. The Octane's mid-range is round with plenty of body, which served to accentuate the toms when miking the kit. It also had a

crisp high-end response.

Considering its moderate price tag, the Octane sounded surprisingly good and was quite punchy on the drum kit. It imbued the kit's small bass drum with a somewhat compressed sound, which allowed the kick to fit nicely into the mix.

## MORE OPTIONS

The midside option on channels 7 and 8 was an added benefit, allowing me to use the M-S configuration on a stereo-mic array for the drum room. I used a pair of the multipattern Shure KSM44s to set up the cardioid center mic on channel 7 and the bidirectional side mic on channel 8. With the M-S Matrix switch engaged, I was able to increase the width for a more expansive sound. Although the Octane lacks an onboard limiter, I appreciated its insert capabilities.

I tried out one of the Octane's instrument inputs with an Epiphone Sheridan semi-hollowbody electric guitar and later a Fender bass, and it delivered a clean and defined signal on both occasions. I was impressed with the Octane's A/D converters, which were good for a unit in this price range.

## PREMIUM RATING

Overall, the Octane's features are comparable to more expensive 8-channel preamp/digital converter combos. If you are looking for an affordable analog front end for a Lightpipe-compatible digital multitrack system, the Octane is well worth considering.

*Karen Stackpole teaches Studio Maintenance at Ex'pression College for Digital Arts and operates Stray Dog Recording Services. Special thanks to Steve Orlando, Assaf Lotan, and Kevin Patzelt.*

Octane Specifications	
Analog Inputs	(8) XLR mic, (2) ¼" TS instrument
Analog Outputs	(8) ¼" TRS
Additional Analog Ports	(8) ¼" A/D line inputs
Digital Ports	(1) ADAT Lightpipe 24-bit optical format, (2) BNC word clock
Bit Depth	24-bit
Sampling Rates	44.1 kHz, 48 kHz
Input Impedance	3 MΩ (front-panel instrument inputs), 20 kΩ balanced, 13.3 kΩ unbalanced (rear-panel line inputs)
Signal-to-Noise Ratio	120 dB, A-weighted, mid gain (XLR inputs); 110 dB, A-weighted (A/D inputs); 133 dB, A-weighted, mid gain (instrument inputs)
Frequency Response	20 Hz–20 kHz, ±0.11 dB, mid gain (XLR inputs); 20 Hz–20 kHz, ±0.04 dB (A/D inputs); 20 Hz–20 kHz, ±0.03 dB, mid gain (front panel instrument inputs)
Phantom Power	48V, switchable in groups: channels 1–4 and 5–8
Low-Cut Filter	–12 dB/octave below 80 Hz (channel 1 input only)
Power Requirements	18 VAC (16.5 VAC minimum) @ 3.5A inline power supply
Dimensions	17" (W) × 3.5" (H) × 5" (D)
Weight	7.1 lbs.





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# STEINBERG

## WAVELAB 5 (WIN)

*An audio-editing  
powerhouse adds even  
more features.*

By Dennis Miller

Steinberg WaveLab has been one of the biggest names in the Windows multitrack audio-editing world for several years, with a reputation as a solid and reliable performer. Recently, however, it has been losing ground to competitors that provide support for more types of media, MIDI and video, for example. While WaveLab has retained the look and feel and the features of previous editions, version 5 adds important elements that raise it up to the level of the competition—and in some key areas, it even surpasses the competition. Among the most important new features are tools for DVD-Audio (DVD-A) authoring and pro-

duction, an integrated video track, and track-based effects and level controls. Combined with the large number of professional-quality VST mastering and effects plug-ins, WaveLab 5 is a powerful media production environment.

EM has covered WaveLab on a number of occasions, most recently in the November 2002 issue. For this review, I'll focus on the new features of version 5 and the patches and updates that have been released since EM's last review.

### SPLIT IT UP

WaveLab has somewhat of a split personality, offering a dedicated stereo audio editor called Wave Editor and a multitrack area called Audio Montage (see Fig. 1). It's easy to move files between the two: if you're editing a stereo file, create a new Audio Montage, right-click on a track, and choose Insert All Open Waves (WaveLab supports numerous file types, not just WAV). You can also select an entire file or a region in the Wave Editor and drag it directly onto an existing Audio Montage track (files in the Wave Editor must be the same sampling rate as those in Audio Montage for that to work) or use Create Audio Montage

### Minimum System Requirements

#### WaveLab 5

Pentium III/500; 256 MB RAM; Windows 98/XP/2000; WaveLab version 5.01a

from the Wave Entry option in the Edit menu if you don't have an Audio Montage open.

If you're in the Audio Montage area, choose Source/Edit from the menu that appears when you right-click on a clip, and the file will open in the stereo editor. You can also create a new file from a clip or an entire track by choosing Render Clip to New File, then selecting a destination on your system. Most of WaveLab's windows are not modal, which means you can move to and work in any open window without closing any other. You can even have multiple instances of WaveLab open, but you can't drag-and-drop files from one instance to another.

### CATCH THE WAVE

There's not much new in the Wave Editor—you'll find the same Processes (Time Stretch, Pitch Correction, and the like) as the ones in version 4 and the same set of commands in the right-mouse-button menu. I've always liked the fact that WaveLab lets you change many of its interface elements on the fly—just right-click and pick the elements or colors that you want to configure. As in past versions, WaveLab 5 integrates its editing and CD-burning features nicely—to turn an audio file into a CD track, right-click and select Create CD Track from the Selection option. If you already have a CD project open, you can select a file and drag it into the CD Project window. (DVD-A projects are more involved because they need to be "rendered.") Once you've added tracks to a CD Project, you can convert the Project into a new Audio Montage. WaveLab 5's capabilities are well integrated.

Although each work area has its own unique tool set, a menu bar that gives access to a number of common features appears at the top of the interface regardless of which screen you are

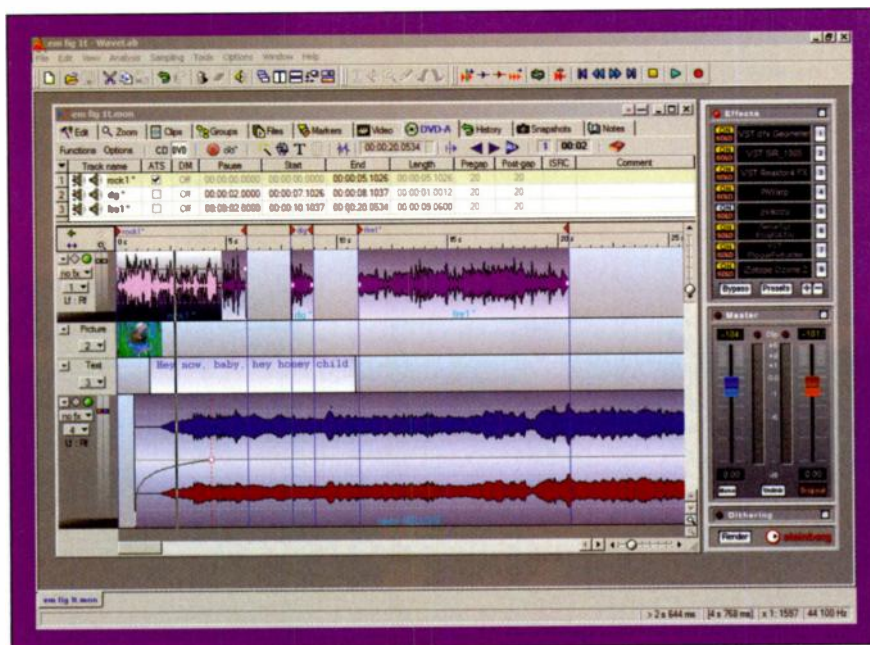


FIG. 1: Steinberg's WaveLab 5 has a dedicated stereo editor and a multitrack work screen called Audio Montage (shown above). Audio Montage supports audio and video tracks as well as text and picture tracks for use in DVD-Audio projects.



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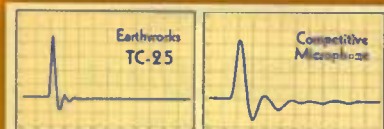
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to another system for previewing or remixing). To work with multiple outputs, either select one of the Surround modes, which give you a choice of various 3-, 4-, 5-, and 6-channel configurations, or pick a setting called Non DVD-Audio Configuration, which gives you eight channels to address freely. When you pick a Surround mode, you can then assign each individual track of an Audio Montage to a surround channel (Lf, Rf, LFE, and so on), whereas the Non DVD-Audio Configuration option lists only ASIO 1–8 as choices.

I tested WaveLab 5 with an E-mu 1212m system that had eight physical outs. When I first installed WaveLab 5, I ran into a problem: all of the output channels read ASIO. There was no way to determine which channel would go to which output (through the E-mu Patch-Mix mixer). Downloading the 5.01a patch, which numbers the ASIO channels but doesn't support E-mu's channel-naming convention, fixed the problem.

Automating a surround mix is easy in WaveLab, but that task is not as intuitive as it is in other programs. To perform automated surround panning, assign tracks to the desired surround channel (while in DVD-A mode). A small surround-panner icon will appear in the Track Control area. Clicking on the icon brings up a larger window in which you can associate specific surround locations with envelope breakpoints that you create on a clip (see Fig. 3). It would be nice if you could enable a "surround-record" feature, then drag the surround-position icon around on a surround stage in real time while your music was playing back.

#### HELP IS ON THE WAY

WaveLab's support is excellent—the comprehensive printed manual is more than 700 pages. It opens with a useful overview of many of the main features before moving on to more thorough coverage. There is online support through the Help menu op-

tion in addition to context-sensitive help for many of the program's features. There is also an active users forum at <http://forum.cubase.net>, which is moderated by WaveLab's principal developer, Philippe Goutier.

So who needs this upgrade? If you're a WaveLab owner and are interested in exploring DVD-A or are already doing audio for video, release 5 will be right for you. If you aren't planning on using these new features, then there may not be enough incentive to spring for the upgrade. On the other hand, if you're looking to move into a multitrack audio editor that supports many of the hottest new-media technologies available today, has a friendly interface, and can help manage not only your audio assets but also all of the files on your system, WaveLab is an excellent choice.

EM Associate Editor **Dennis Miller** lives in the suburbs of Boston.

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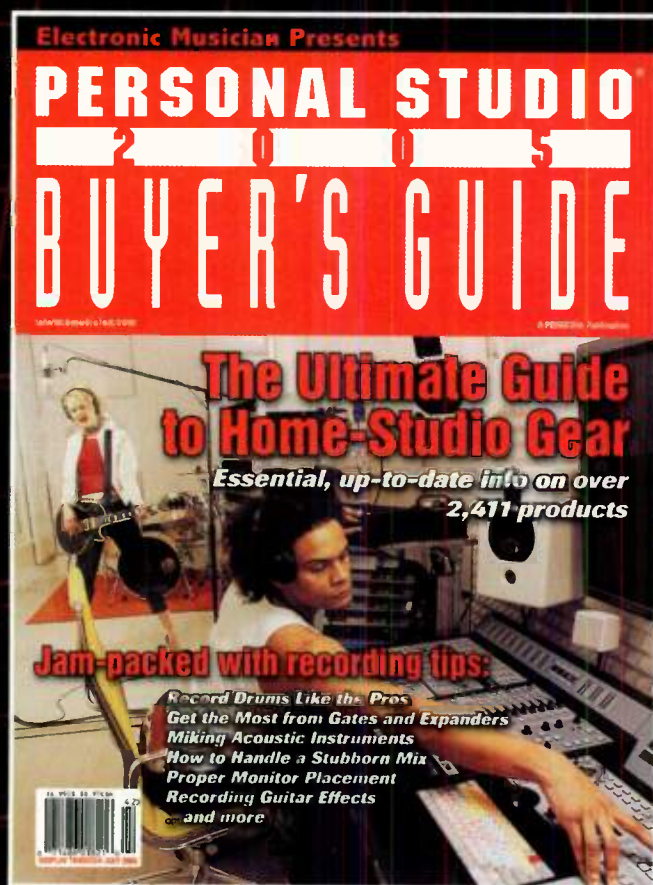
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# V I R S Y N

CANTOR 1.02 (MAC/WIN)

## *A song of singing.*

By Len Sasso

To be clear at the outset, your lead singer is in no danger of being replaced by Cantor, VirSyn's new voice-synthesis software. Desktop speech synthesis has not yet reached that level, although it may in the future. To quote Cantor's designer, Harry Gohs, "Keep in mind that Cantor was not built to replace humans in this field; its main goal is to open a new playing ground for composers and sound designers to explore the exciting new area of 'language sound systems.'" To that end, Cantor does not disappoint.

Cantor has a standalone application as well as VST and AU format plug-ins for Mac OS X and Windows XP. Support for RTAS and Propellerhead's ReWire is planned for a future release.

Speech synthesis is a complex process. You'll need a fast CPU for Cantor to "sing" multiple parts while other audio tracks and plug-ins are playing. For ex-

ample, using Cantor standalone to sing four-part harmony on a 3.4 GHz Pentium 4 processor running Windows XP or a dual G5 2 GHz processor running Mac OS X gobbles up roughly 25 percent of the CPU.

### IN A WORD

Speech synthesis—first mechanical, then electro-mechanical, and finally digital—has fascinated humans for several hundred years. (For a survey of the field, see "Voices from the Machine" in the February 2004 issue of EM.) Until recently, attempts to synthesize the human voice have mostly been the province of academic researchers using high-end computer systems. But high-speed microprocessors have brought speech synthesis within reach of the desktop musician. Cantor, along with Yamaha's Vocaloid technology, is the first of what is sure to be a continuing flow of software for synthesized singing. (For a review of Zero-G's Vocaloid 1.02 Leon and Lola, see the August 2004 issue of EM.)

Cantor can sing eight monophonic parts, each with its own notes, lyrics, and voice. The notes and lyrics are entered in a piano-roll-style Score editor, in which you can also enter automation for various voice parameters. Voice programming involves two separate editors: Voice and Phoneme.

### Minimum System Requirements

#### Cantor 1.02

MAC: G4/400 MHz; 256 MB RAM;  
Mac OS 10.2

PC: Pentium III/600 MHz; 256 MB RAM;  
Windows XP

Voice is a synthesizer for simulating the vocal cords and breath, and Phoneme is a morphing formant filter for generating phonemes, the basic building blocks of speech. Cantor converts lyrics, entered as text, to phonemes using a 120,000 word Pronouncing Dictionary provided by Carnegie Mellon University.

Cantor's user interface is divided into five pages: one for each of the three editors just described (Score, Voice, and Phoneme); an effects page (FX); and a mixer page (Mix). Each of Cantor's monophonic parts has its own editor settings as well as settings for three insert effects (Distortion, Delay/Echo, and Chorus). The mixer mixes the eight parts and controls the reverb-send level for each part. On the Mix page, you can specify a MIDI channel and note range for each part. Those apply when Cantor is played live or is used as a plug-in.

### STEP BY STEP

Cantor's Score editor is used to enter and edit notes and their associated lyrics (see Fig. 1). It contains tools for entering, selecting, moving, deleting, copying, and pasting notes in a familiar piano-roll display. Knobs along the left edge of the Score page control a variety of voice parameters including vibrato, brightness, balance (between voiced and unvoiced phonemes), gender bending, breathiness, and vibrato.

Score is arguably Cantor's most important page, but not its most elegant. All note manipulation must be done onscreen (there's no MIDI note entry), tools must be selected with the mouse (there are no key commands), and the display is not vertically resizable, which results in small text-entry fields and the potential for notes to get cluttered. Those issues aren't



FIG. 1: VirSyn Cantor's Score editor is used for entering and editing notes and lyrics.



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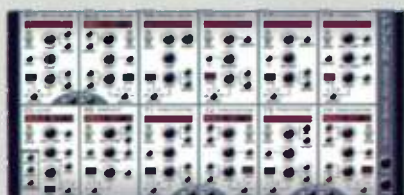
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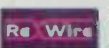
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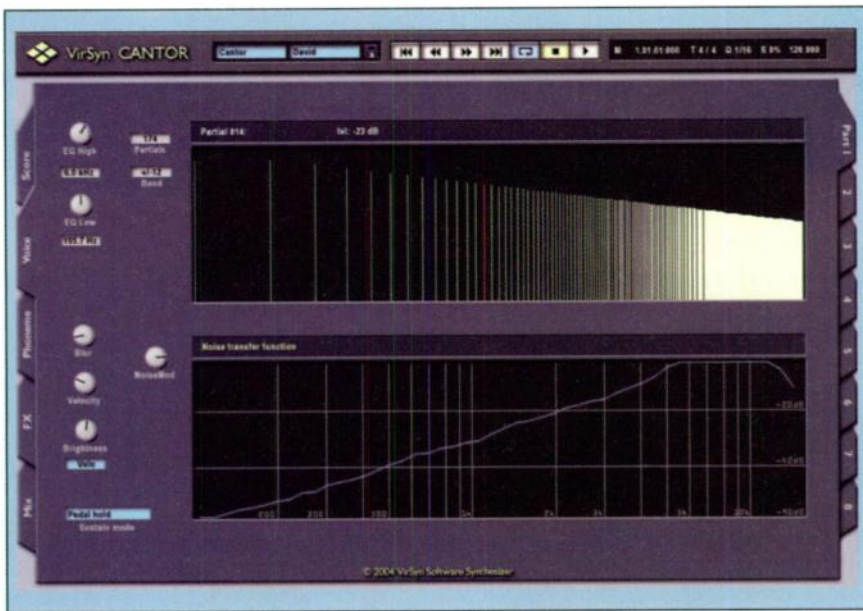
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**FIG. 2:** Cantor's Voice editor uses additive synthesis (top) to simulate the vocal cords and filtered noise (bottom) to simulate breath.

showstoppers, but some upgrading of the Score editor would be welcome.

Notes are entered by clicking on them with a pencil tool. Notes automatically get the one-syllable default lyric "La." Once a note is entered, you can click on its lyric with the pencil tool and type in text. You can enter polysyllabic words, but single syllables work best. You can follow a syllable with a hyphen to tell Cantor that the syllable is connected to the syllable in the next note. That gives you independent control of pitch and note-specific automation for each syllable, while still getting the correct phonemes from the Pronouncing Dictionary. You can optionally display and edit the phonemes that Cantor generates from your text. For a more creative approach, you can type in strings of phonemes and forget the text.

The smaller window below the piano-roll display is for editing note Velocity and for creating automation envelopes for some of the voice parameters previously mentioned. Envelopes are associated with individual notes, which gives you incredibly detailed control—for example, you can apply a different pitch contour to each note. Envelope editing is easy and intuitive.

## SPEAK TO ME

Once you have entered notes and lyrics, you can either let Cantor play the sequence or trigger individual notes in the sequence from your MIDI keyboard or from a host application when Cantor is running as a plug-in.

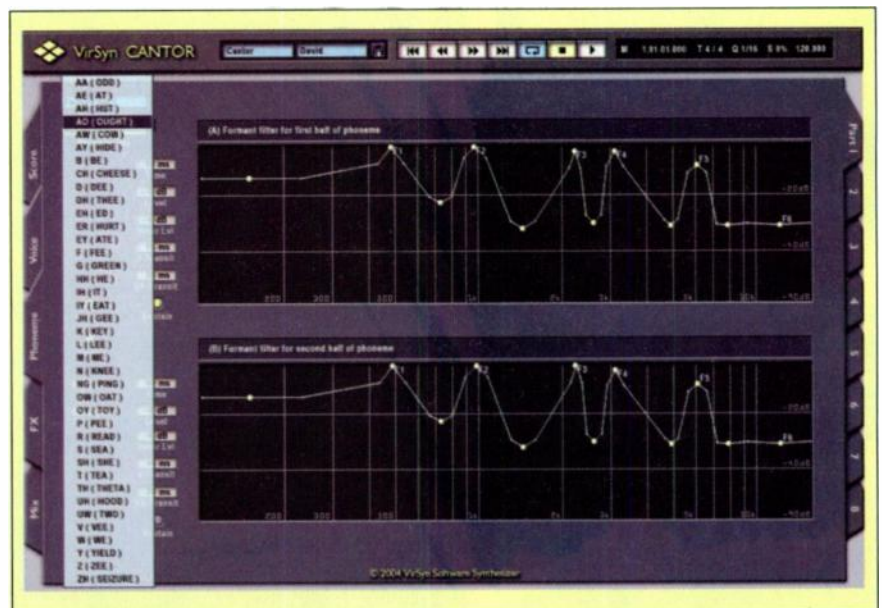
If Cantor plays the sequence, then the sequenced pitches, Velocities, and lyrics will be used. If you trigger the notes from

an external source (keyboard or host software), then the external source controls the pitch and Velocity. But the lyrics, and more importantly the note order, are still controlled by Cantor. You can step through the notes only in the order that they appear in Cantor's score. Aside from setting loop boundaries to control where the sequence starts and stops, you have no control over which notes are played. That inhibits Cantor's use as a live instrument to a certain degree, but it is not a fatal flaw. A future update will have MIDI control of note selection.

When Cantor is used as a plug-in, you can select between Automatic and Manual modes. In Manual mode, MIDI from the host is handled just as it is from a MIDI keyboard. In Automatic mode, Cantor plays the score as it does when it's running standalone, but the host controls playback tempo and position. A hybrid mode, in which the host controls tempo, position, pitch, and Velocity, would be a welcome addition.

## PHONE HOME

Cantor's voice is controlled from the Voice and Phoneme pages, and each of Cantor's eight parts can have a different voice. You can think of the Voice page as the synthesizer's sound generator and the Phoneme page as its filter. The



**FIG. 3:** Cantor's Phoneme editor consists of two formant filters. Phonemes are produced by morphing from the top to the bottom filter.



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sound generator simulates breath and vocal cords. The filter simulates the filtering effect of the mouth, tongue, and nasal tract.

The sound generator uses a combination of additive synthesis and noise sculpting (see Fig. 2). It is used only for voiced sounds; the phoneme set has complete control of unvoiced sounds. (The division of speech between voiced and unvoiced sounds is more complicated than differentiating vowels

from consonants, but that communicates the basic idea.) For voiced sounds, the additive synth controls the pitched component of the sound (vocal cords), whereas the noise synth controls the breath component (whisper). The Breath knob together with any Breath automation controls the mix of the two.

The Voice page will be familiar to you if you have used any of VirSyn's synths. The top half of the display is for editing

## PRODUCT SUMMARY

### VirSyn

Cantor 1.02 (Mac/Win)  
software instrument  
\$349

FEATURES	4.0
EASE OF USE	2.5
QUALITY OF SOUNDS	3.5
VALUE	3.0

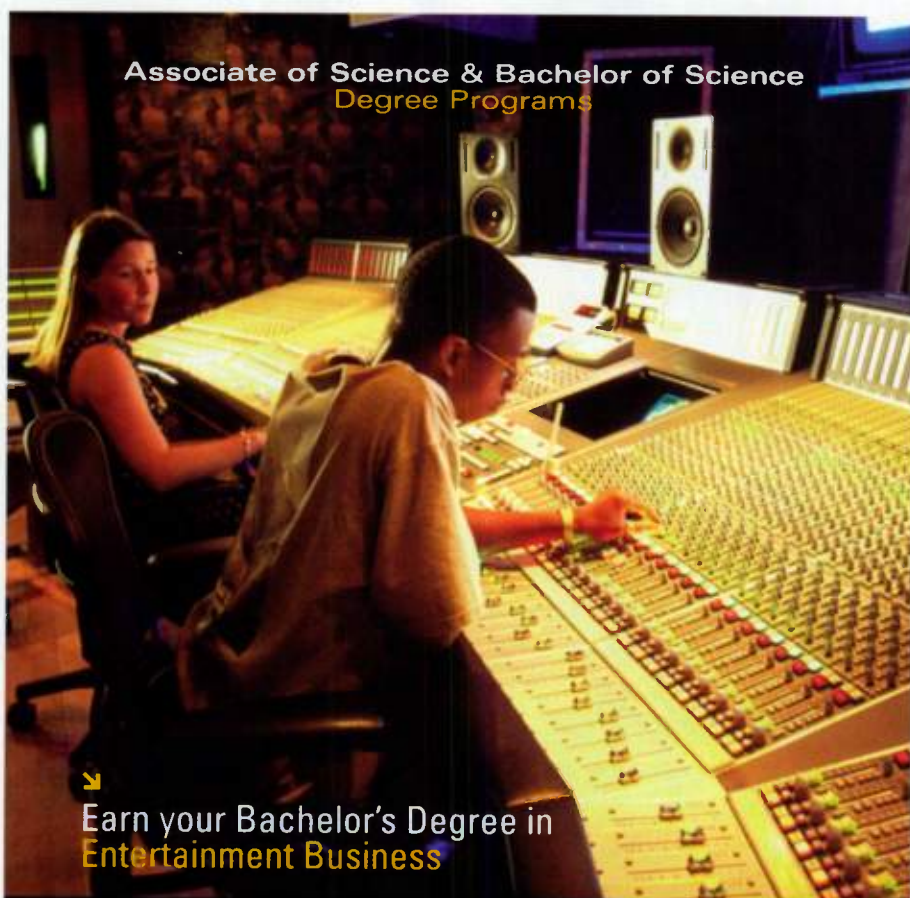
#### RATING PRODUCTS FROM 1 TO 5

**PROS:** Powerful and flexible additive-synthesis and formant-filter-morphing engine. Massive text-to-phoneme dictionary. Built-in song sequencer.

**CONS:** Note and lyric entry scheme is cumbersome. Limited ability to select lyrics with MIDI. No MIDI note entry.

### Manufacturer

VirSyn Software Synthesizer  
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the levels of the partials in the additive waveform. Each partial represents a sine wave at a whole-number multiple of the fundamental frequency—the leftmost being the fundamental, the next being an octave higher (2x), the next being a fifth above the octave (3x), and so on. You can have as many as 256 partials, but as you go higher, they are controlled in groups. The first 32 (the most important) can be set individually, and as you move the mouse over the window, the targeted partial turns red. Although all partials are always displayed, a scrolling numerical allows you to control how many are produced—fewer partials means less computation.

The window below the Partials window is for entering the noise-transfer function, which is a fancy name for a spectrum filter applied to white noise. You draw in the shape of the filter, then use the Breath control on the Score page to determine the mix of filtered noise with the output of the additive synth.

## PHONEMES AND FORMANTS

Try to say something without moving your tongue or jaw, and you will



immediately grasp the importance of Cantor's Phoneme page. You move your mouth to sculpt the sound of your vocal cords and breath into words. The mouth is an extremely complex filter.

Although complex, it takes only 39 filter pairs to sculpt all of the sounds needed to construct all of the words in the English language. (That number varies only slightly depending on the language and the speech-theory being used.) Two filters are used to reproduce the change that occurs for some phonemes—for example, the "ow" in "cow."

Setting up phoneme filters for intelligible speech is not a job for the faint-hearted. Fortunately, you do not have to take on that task. Cantor comes with six factory sets of English phonemes, and sets for other languages are planned for a future release.

Fig. 3 shows Cantor's Phoneme List.


If you choose one of the 16 user sets, which are filled with Factory Set 1 by default, you can edit the filters for each phoneme. A context menu allows you to copy and paste filters between phonemes, and you can produce some interesting language mutations by modifying the user phoneme sets. You can also enter phonemes directly in the score to produce vocal sequences that are not words. (If you plan to do that, printing out a screen shot of the phoneme list is a good idea.)

### THE LAST WORD

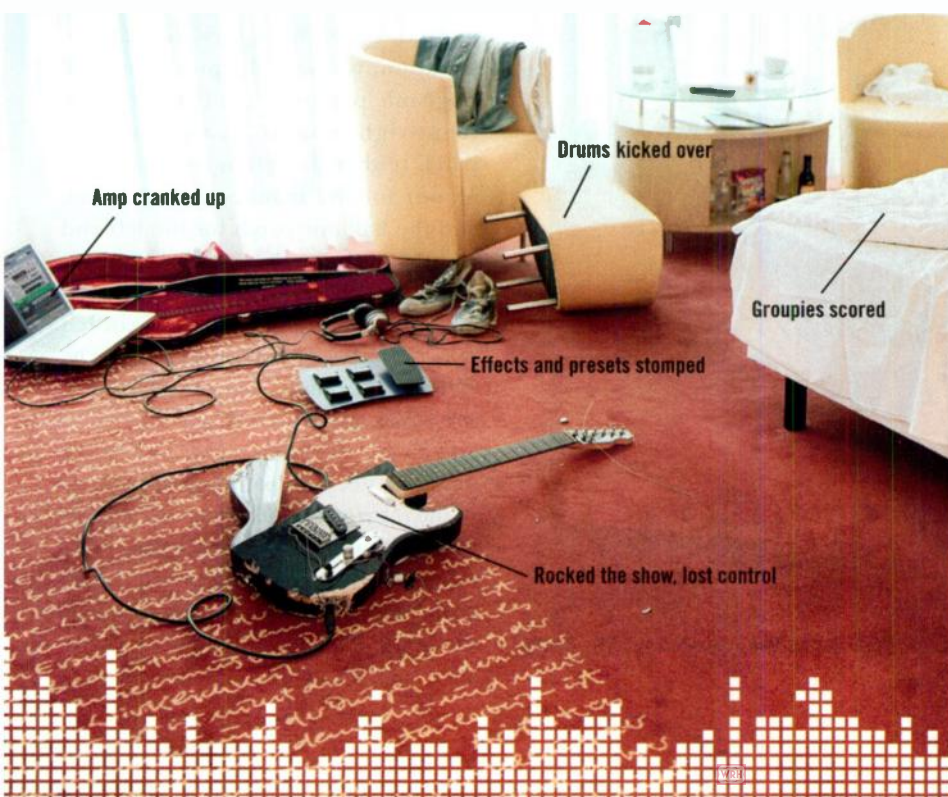
Cantor's three insert effects can have different settings (including off) for each part. Distortion has soft, tube, and tape models; Delay/Echo can be mono, stereo, or ping-pong; and Chorus has phasing and flanging. Reverb is global with an individual send for each part.

Cantor saves two kinds of files: proj-

ects and presets. Projects contain all information on all pages for all parts—in other words, a complete Cantor setup. Presets contain all voice settings for a single part, meaning all settings from the Voice, Phoneme, and FX pages, except for the reverb settings. That makes it possible to exchange voices between parts without affecting the notes or lyrics. Cantor ships with 29 voice presets covering everything from male and female singing voices to extreme effects (see **Web Clip 1**).

Some Cantor preset voices are considerably more intelligible than others. You can get understandable lyrics out of Cantor, but as mentioned, that is probably not its best use. It truly shines at producing a wide range of intriguing vocal sounds, which, used judiciously, can enliven a mix. You can download a save-disabled demo of Cantor as well as a variety of sound clips from VirSyn's Web site. 

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# EASTWEST/QUANTUM LEAP

## SYMPHONIC ORCHESTRA, PLATINUM EDITION (MAC/WIN)

*A powerhouse orchestral  
library with more than one  
perspective.*

By David Rubin

As computers become increasingly more powerful and mammoth hard drives become more affordable, desktop orchestrators are flocking to gargantuan multi-gigabyte orchestral libraries that would have been completely impractical just a few years ago. EastWest, in collaboration with Quantum Leap, has now joined the fray with its own impressive and truly unique four-volume library (see Fig. 1).

What sets the *Symphonic Orchestra* library apart from the competition, aside from its 24-bit resolution, is that every

sample is offered from three stereo microphone perspectives: close-up mics for detail and clarity with minimal reverb, a full mix from a cluster of stage mics, and a set of mics high at the back of the auditorium. That last perspective offers the full reverberant ambience of the modern American concert hall where the recordings were made, and it provides the necessary material to fill out a realistic surround-sound mix, if you are working in a multi-channel format.

### SOUND ON SOUND

The three mic perspectives were recorded simultaneously and assembled into three separate-but-complementary 44.1 kHz multisample patches for each instrument preset. Because the samples from the different mic positions have been accurately phase aligned, you can use them in any combination, and they sound perfectly natural. By playing all three patches for a particular instrument (they are provided as preset multis or individually), you can change the listener's perspective relative to the instrument by dialing in more or less of the different mic positions.

For example, you can produce a

### Minimum System Requirements

#### Symphonic Orchestra, Platinum Edition

**MAC:** G4/1.42 GHz; 1.5 GB RAM; Mac OS 9.2 or OS X; 70 GB hard-disk space

**PC:** Pentium 4/1.4 GHz (or equivalent); 1.5 GB RAM; Windows 98/2000/ME/XP; 70 GB hard-disk space

highly reverberant far-away sound by boosting the ambient patch and fading out the close-up patch. Or you can bring an instrument forward in the mix (for a solo, perhaps) by adding more of the close-up mics. EastWest refers to this feature as "audio zoom."

Moreover, the three-perspective approach virtually eliminates the need for outboard reverb, because you can blend in anything from relatively dry (close-up only) to fairly heavy (ambient only) reverb. Of course, you can use the close-up patches alone and add your favorite reverb, but then you'd lose the great sound of this excellent recording space.

The ambient hall mics often add more reverb than I need, so I like to blend the close-up mics (which add definition, especially on attacks) with the stage mics (which add a more expansive stereo image). This library, however, is also designed to accommodate surround mixes. In that application, you would typically use the stage-mic patch for the front-left and front-right channels, the close-up patch (either the left or right channel alone) for the front-center channel, and the hall-mic patch for the left and right rear channels.

All of the instruments in the *Symphonic Orchestra* library were recorded in their proper orchestral positions. The violins, for example, appear on the left, the violas are centered, and the cellos and basses are on the right. That eliminates the need for panning, because all of the instruments automatically appear where they should be in a mix. The close-up patches were recorded centered, and then panned later to match the other patches, so if you want to create a small ensemble—say a woodwind



FIG. 1: EastWest/Quantum Leap *Symphonic Orchestra, Platinum Edition* comes on 19 DVDs divided into four volumes.



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trio or a brass quintet—you could use the close-up patches alone, pan them where you want, and then process them separately as needed.

## FRONT-END WORK

Each volume in the *Symphonic Orchestra* library has been integrated with a customized version of Native Instruments' Kompakt (see Fig. 2). You can run Kompakt as a standalone program (each volume in the library has a dedicated version) or as a plug-in for programs that support VST 2, DXi 2, RTAS, and Audio Units formats. (For more on the installation process, see the sidebar "Registration Roundup.")

Kompakt provides up to eight slots for loading instruments (patches); you can open more instances if you need to add more instruments. A drop-down menu at the top lets you load any of the multi programs, which include all three mic perspectives. When you click on an instrument's name, the front-panel knobs and displays change to reflect that instrument's settings for such things as envelopes, filters, LFOs, output level, and effects (reverb, chorus, and delay).

Arguably the most important knob on the front panel is the output vol-

## REGISTRATION ROUNDUP

I'd suggest that you set aside the better part of an afternoon for installing the full Platinum version of *Symphonic Orchestra*. The process involves multiple steps, and it does take time.

For starters, each of the four volumes in the set must be individually registered with Native Instruments at its Web site. An exchange of serial number and authorization response is needed to complete the process each time. You also have to copy all of the

patches and multis from the DVDs in each volume to a fast hard drive. The entire library consists of 19 DVDs, so a lot of copying is involved.

After installing the library, you must then go to the EastWestWeb site to download the latest update, and you'll also need to download a separate disk-streaming driver from Native Instruments. The whole process can seem a bit arduous, but it went relatively smoothly for me.

ume knob, because it lets you adjust the relative levels of the three mic-perspective patches. Unfortunately, you can't see all three volume knobs at once—you have to switch from one instrument to another—which makes it a bit awkward to get the levels right without leaving the program.

## POWER PLAY

By now you've probably gotten the picture that this library is not only huge in size (more than 67 GB) but that it also takes a huge amount of processing to

fully use it. It isn't unusual, for example, for individual patches to take up more than a gigabyte of disk space, and with each multi providing three 24-bit, 44.1 kHz patches (for the three mic positions), that puts a substantial load on your CPU. And remember, that's just for one instrument part.

The owner's manual claims that you can run the library using a 500 MHz Mac G3 (or Pentium III) with as little as 256 MB of RAM, but that's really only enough to get Kompakt up and running. To use the library in any meaningful way, you'll need a top-of-the-line G4, or better yet, a G5 (or an equivalent PC). And don't even think about using this library with less than 1 GB of RAM. Although the library streams the samples from the hard drive, it still has a voracious appetite for RAM. I'm currently using the library with a dual-1.42 GHz Mac G4 and 1.5 GB of RAM, and I still get occasional Out-of-Memory warnings when I load some of the bigger multi-layer patches. For best results, EastWest recommends 2 GB or more of RAM.

You'll also need a fast hard drive. I've gotten acceptable performance from my 7,200 RPM FireWire 800 external drive, but for power users, EastWest strongly recommends a dedicated 10,000 RPM internal drive. If you're independently wealthy, you might try putting together EastWest's "dream system" of two or more high-end computers for each volume in the library. That would let you play back entire orchestrations with all mic positions in real time.



FIG. 2: Each volume in the *Symphonic Orchestra* library has a dedicated version of Native Instruments' Kompakt as the front end.





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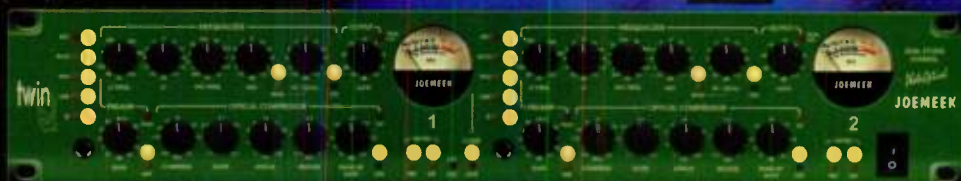
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WEB



For those of us who can't afford to set up eight or more computers, however, the library's demands aren't as overwhelming as they first appear. Several relatively easy compromises and work-arounds make *Symphonic Orchestra* practical, even with a single-computer setup. For starters, EastWest offers a couple of scaled-down versions of the library that reduce the price as well as the processing demands (see the sidebar "Orchestral Options.") But even

with the full *Platinum Edition*, it all comes down to managing your resources appropriately.

In my use, the stage-mic samples serve quite well as general-purpose patches, and you could easily use them alone for many of your projects. The stage mics have a good stereo perspective with a generous dose of reverb. If you're low on RAM, EastWest recommends initially working up your sequencer arrangements using only the stage-mic patches,

and then going back and rendering each instrument part individually—but this time using all three mic positions, each on a different audio track.

Once you've recorded each instrument part onto three audio tracks, you can use your sequencer's onscreen mixer to blend the mic perspectives for maximum effect. Of course, that will cause a 25-track score to suddenly balloon into a 75-track score, but it will also give an unprecedented level of control over the final mix. Moreover, if you keep the original sequence intact, you can always go back at a later time and remix everything in a surround format if the need should arise.

## SENSATIONS OF TONE

Aside from its high-resolution, three-perspective approach to sampling, this library also has a few other noteworthy features that set it apart from other libraries. For example, the library has separate release samples to give a more natural sense of ambience. That in itself isn't so unusual, but in *Symphonic Orchestra*, the release tails are "amplitude matched." When you release a key, Kompakt analyzes the sample's current amplitude and adjusts the level of the release tail to properly blend in.

Because Kompakt supports keyswitching, several patches in each volume take advantage of it. For example, in the brass and woodwind collections, keyswitching lets you change from sustain to staccato notes. With the string sections, keyswitching lets you select among several legato articulations.

The Modulation Wheel is usually used to increase or decrease a note's attack, but it also serves to crossfade between other articulations. Some of the larger keyswitching patches demand massive amounts of memory, so if you're planning on doing a lot of real-time keyswitching, you should bulk up on RAM.

## THE WOODWINDS

The woodwinds in this library are among my favorite patches. As a preliminary test, I plugged several of the patches into a MIDI file of a piece that

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I had already recorded in a large studio with live musicians. I was stunned at how closely the sampled instruments resembled the studio recording. The flutes are especially nice. The concert flute has a fine velvety timbre, and the flutist shapes the sustained notes beautifully. The alto flute is warm and lush.

The oboe is suitably reedy and woody. It's offered in an unusually wide dynamic range, from barely audible to downright squawky. Its timbre ranges from edgy in some patches to softer and more dulcet in others. The clarinet is smooth and clear, with a sound ranging from appropriately hollow in the lower register to a well-balanced timbre throughout the *clarion* register. The wide dynamic range lets you play notes from a hushed pianissimo to a honking fortissimo.

The bassoon patches are wonderfully rich with enough reediness in the low end to add plenty of character. The upper register offers a plaintive, satiny sound that is quite appealing. Other instruments in the woodwind section include English horn, bass clarinet, contrabassoon, and piccolo, as well as three-part unisons of flute, oboe, and clarinet. A couple of woodwind ensemble patches are also provided.

The Modulation Wheel patches give excellent control over the attacks in all of the woodwinds, enabling you to introduce just the right amount of tonguing between notes and phrases. Aside from various legato patches, the woodwinds have several other articulations such as staccato, trills, grace notes, and glissandos.

## THE BRASS

The *Symphonic Orchestra* brass instruments rival the woodwinds in quality and expressiveness. The solo trumpet, for example, ranges from a gentle pastoral sound at quiet levels to a brilliant glass-breaking martial sound at fortissimo. The solo trombone has a warm and mellifluous sound at soft and medium dynamics, with powerful *blatty* notes (among my favorites) when played hard in the lowest register. The solo French horn ranges from smooth and majestic at moderate levels to bright and brassy when played loudly.

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## ORCHESTRAL OPTIONS

*Symphonic Orchestra, Platinum Edition* is a formidable sample library that is targeted squarely at professional composers who aren't fazed by the \$2,995 price tag and the library's need for a top-of-the-line computer system. If, however, you can't quite scrape together the price of admission for the flagship product or your computer is less than state-of-the-art, EastWest has several options that may interest you.

For example, you don't have to buy the entire *Platinum Edition* all at once. You can individually purchase *Platinum Strings* (\$995), *Platinum Woodwinds* (\$995), *Platinum Brass* (\$995), or *Platinum Percussion* (\$495) and expand the library as your needs arise.

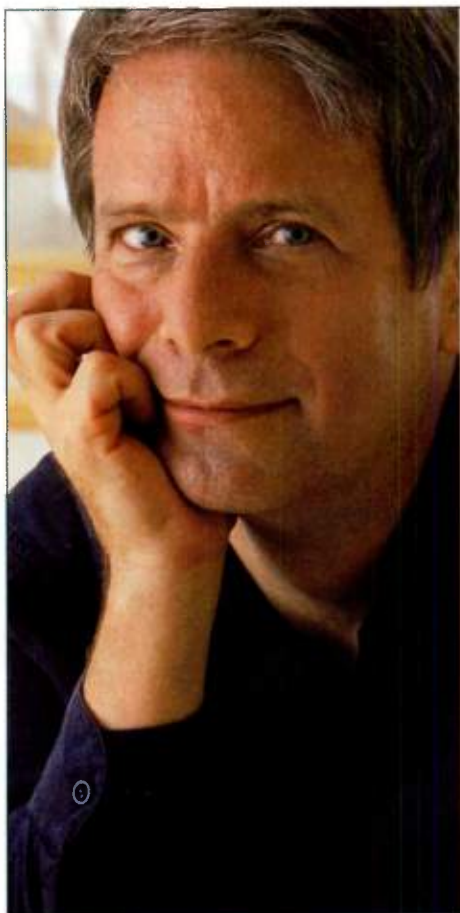
You can also purchase the *Symphonic Orchestra* library in the *Gold Edition* (\$995). It has most of the same instruments that the full library does, but instead of *Platinum's* 24-bit resolution and three mic perspectives per instrument, *Gold* has everything in 16-bit resolution with only the stage-mic patches. That provides a moderate amount of reverb and a very good sense of instrument placement, but it lacks the surround capability or the close-up detail.

Still, you get a fine stereo library with excellent performances with much less drag on your CPU.

If the *Gold Edition* is a bit too much, consider the budget-priced *Silver Edition* (\$295). Like the *Gold Edition*, it has 16-bit, single-perspective patches, but the *Silver Edition* has fewer articulations, making it a much smaller library. And unlike the *Gold* and *Platinum* libraries in which every instrument is chromatically sampled, the *Silver Edition* has samples that are spaced at minor-third intervals.

However, the *Silver Edition* has a few extras that the other libraries don't: a Steinway B grand piano (from EastWest), a pipe organ (from Post Musical Instruments), and male and female choirs (from Quantum Leap). These additional preexisting libraries were added to make the collection more suitable for the educational market, at which this edition is aimed.

Each edition of the *Symphonic Orchestra* library has the Native Instruments Kompakt front end, and EastWest has an upgrade policy if you decide to move into the upper ranks at a later date.



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instruments produces a nice ensemble sound if you pay attention to your technique. As with the woodwinds, Modulation Wheel patches let you fade-in more of an attack to each note, but with the brass instruments, the effect is more pronounced.

Aside from the solo brass patches, *Symphonic Orchestra* has several unison ensembles: four trombones (including a low octave of bass trombones), four trumpets, six French horns, and three Wagner tubas (an unusual but welcome addition). The six-horn section has a particularly long list of playing techniques, with sforzandos, staccatos, rips, slides, and shakes. It also has a stopped sound, which unfortunately is lacking in the solo patches.

In fact, there aren't any muted brass sounds in the library at all (except for the stopped unison horns), so if you're writing for big bands, you'll have to supplement the collection with other patches.

## THE PERCUSSION

*Symphonic Orchestra's* percussion collection is the smallest (two DVDs) of the library's four volumes, and its patch list is relatively conservative. It lacks such exotic instruments as gamelan bells, waterphones, and wind machines and focuses instead on the most important bread-and-butter sounds. These are offered in an array of types and sizes, and all are impeccably performed and recorded. I especially like the full assortment of cymbals, which includes several sizes of suspended cymbals with fluid, carefully modulated crescendos that begin with a barely perceptible shimmer.

The library also has several snare, tom, field, and bass drums with single hits and rolls. The snare drums (in three sizes) have separate right- and left-hand samples, and all allow a wide range in dynamics. Other patches are woodblocks, crotales, chimes, castanets, bell tree, vibes (with the motor off), xylophone, various metal sounds, and assorted toys.

Among my favorite instruments in the percussion section are the timpani patches. They include hard and soft mallets playing long and short crescendos and individual hits with separate

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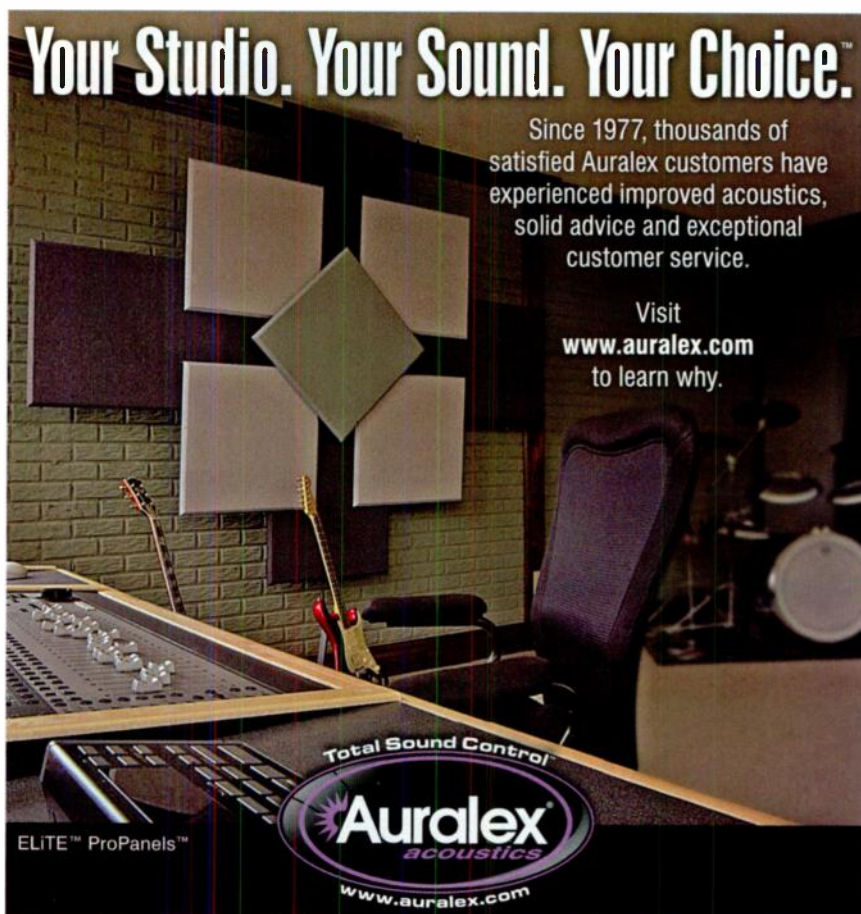
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left- and right-hand samples. The rolls are nicely played, beginning with an almost inaudible rumble and building to a rousing finish.

## THE STRINGS

At 28 GB, the string collection is by far the largest volume in the *Symphonic Orchestra* library. It has section patches for violin, viola, cello, and double bass as well as solo patches for violin and cello and a few basic harp patches. The vio-

lins are not offered specifically in first- and second-violin sections—as they are in some libraries—but instead are offered in a large 18-player section and a small 11-player section. You could treat these as first and second violins in most situations, although both sections are panned to the same position on stage.

Using all three mic positions enhances the string-section sound by filling it out and adding a more robust quality. In some cases, I prefer the 11-violin section

over its larger counterpart. For example, with the Butter Legato patch (an excellent general-purpose patch), the small section sounds tighter and a bit more focused than the large section. On the other hand, the large section shines in some places, such as the lovely slow Sordino (muted) patch. In the small section, I especially like the Expressive Diminuendo patch, and in both sections I like the terrific Short 3-Way patch that automatically plays a different staccato attack each time you repeat a note.

Unfortunately, in an effort to keep the library from growing unwieldy, the developers decided not to offer the large and small sections with strictly parallel patch lists. That may force you to use work-arounds if you're using the sections as first and second violins. For example, the small section includes spiccato, glissandos, and trills, which are not available in the large section. The large section includes pizzicato and tremolos, which are not offered in the small section. In addition, the large section has an extensive list of Modulation Wheel programs that are not available for the small section. I was also surprised that there is no patch that lets you keyswitch between legato and pizzicato.

All in all, this library offers most of the essential playing techniques in one violin section or the other. The remaining sections include ten violas, ten cellos, and nine double basses. All of the instruments—from the highest violins to the deepest double basses—sound rich, full, and detailed, and all have a wide array of articulations. The solo violin and cello are particularly expressive and sonorous; they're a joy to work with.

## SHOW BIZ

*Symphonic Orchestra* offers a splendid collection of samples and articulations. Although it is well suited to traditional orchestral writing in a variety of styles, the library was born primarily of a desire to fill the needs of film and television composers, arrangers, and other musicians in the entertainment industry. The recording techniques and many of the content decisions, therefore, grew out of those needs.

*Symphonic Orchestra's* few shortcomings

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## PRODUCT SUMMARY

### EastWest/Quantum Leap

Symphonic Orchestra, Platinum Edition

(Mac/Win)

sample library

\$2,995

FEATURES	4.0
EASE OF USE	4.5
QUALITY OF SOUNDS	5.0
VALUE	4.5

#### RATING PRODUCTS FROM 1 TO 5

**PROS:** Excellent 24-bit recording quality. First-rate performances. Three-mic audio-zoom approach offers unprecedented control over natural ambience. Separate amplitude-matched reverb tails. Standalone and plug-in support. Full surround-sound capability.

**CONS:** Very high processing demands. Incomplete documentation. Lacks celesta, piano, and muted brass. No formalized first and second violin sections with matching presets.

### Manufacturer

EastWest

tel.: (800) 969-9449 or (718) 932-6328

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include its lack of a celesta and a piano and the aforementioned omission of muted brass sounds. (According to EastWest, a *Symphonic Orchestra-2* library is planned that will add celesta, muted brass, and other sounds.) The owner's manual is also poorly organized and provides only an incomplete patch list. Moreover, its scant descriptions sometimes offer little help in effectively using the patches.

These few gripes aside, however, I was greatly impressed with much of this library: the recording quality, the performances, and many of the layered programs make the *Symphonic Orchestra* library one of the best toolkits available for serious desktop composers. If you're interested, check out the EastWest Web site for some stunning MP3 demos.

Contributing editor David Rubin lives and works in the foothills outside of Los Angeles.



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# R A N E

## C4 QUAD COMPRESSOR

*Compression, de-essing,  
and limiting—times four.*

By Myles Boisen

**R**ane Corporation has created a unique combination of technologies with its new family of analog-controlled digital processors. The company's new addition to the family—the C4 Quad Compressor—is, like its G4 Quad Gate sibling, a 4-channel device with all-analog I/O and analog-style controls. (For a review of Rane's G4 Quad Gate, see the July 2004 issue of EM, available online at [www.emusician.com](http://www.emusician.com).) The unit's internal processing, however, takes place in the digital domain.

### FOUR-PLAY

The C4's front panel (see Fig. 1) contains four identical sets of independent compressor, limiter, and de-esser controls. All four channels can be used independently, and channel pairs 1-2 and 3-4 can be linked for stereo operation.

When two channels are linked, an LED above the Link toggle switch glows green, and the left channel (1 or 3) functions as the master. Compression results are based on the summed input of both channels. Limiting results are based on the hotter of the two linked signals.

A multifunction LED array at the top of each channel section indicates gain reduction levels and levels below

the set threshold. When the signal level is below the threshold, the green LEDs light up, indicating values between -12 and -1 dBr. When the signal reaches the selected threshold value, a central amber LED lights up. During compression or de-essing, the red LEDs light up for gain reduction values between 18 and 1 dB.

Each panel quadrant contains three rows of three knobs. All knobs are plastic with a raised pointer clearly outlined in white, and all parameter values are continuously adjustable. The top row of gray knobs governs basic compression settings. On the left is a large threshold knob. Ratio and makeup gain controls follow.

Below that are three black knobs that cover secondary compressor functions such as attack, release, and variable knee. When the release dial is rotated fully clockwise, a green LED indicates that Rane's auto-attack/auto-release program mode is engaged.

### CHAIN GANG

The C4 grants users a great deal of control over the sidechain signal. Few affordable compressors have the C4's combination of external sidechain input, built-in de-essing, and complete parametric equalization of the sidechain signal.

Parametric EQ settings for the sidechain control circuit—dubbed PEQ by Rane—are located on each channel's bottom row of black knobs. Bandwidth (0.5 octave to 10 octaves) is on the left, followed by frequency (20 Hz to 20 kHz) and gain (-12 to +12 dB with a center detent at 0 dB) controls.

A three-position toggle switch to the right of that row determines the channel's meter status and output mode: compressor, sidechain listen, or de-esser. Accompanying LEDs glow green,

### PRODUCT SUMMARY

#### Rane Corporation

C4 Quad Compressor

quad compressor/limiter/de-esser

\$999

FEATURES	5.0
EASE OF USE	4.5
AUDIO QUALITY	4.5
VALUE	5.0

#### RATING PRODUCTS FROM 1 TO 5

**PROS:** Extensive feature set. Parametric EQ of sidechain signal for compression and de-essing. Very low coloration. Useful brickwall limiter. Internal 24-bit, 48 kHz processing. Informative manual. Competitive pricing.

**CONS:** 25 ms minimum attack time is slow for some uses. No digital I/O. No provision for -10 dBV level operation.

#### Manufacturer

Rane Corporation

tel.: (425) 355-6000

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amber, or red, respectively. When the Listen mode is selected, the amber light blinks as a steady reminder that the sidechain signal is being auditioned.

Sidechain EQ can be used to boost or cut particular frequencies, thereby making the compressor's broadband response more or less sensitive to a specific frequency range. That technique can be used to reduce the low end on a drum track or rhythm section, so that strong bass signals don't trigger extreme attenuation or pumping.

### OTHER MODES

In the De-essing mode, bandwidth, frequency, and compression threshold settings are adjusted to compress only



FIG. 1: Rane's C4 Quad Compressor offers four channels with independent compressor, limiter, and de-esser controls and stereo linking.



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powered by



the desired EQ range in the C4's audio output. That dynamic EQ process not only suppresses vocal sibilance, but it also attenuates an unwanted frequency peak in any type of instrument or signal.

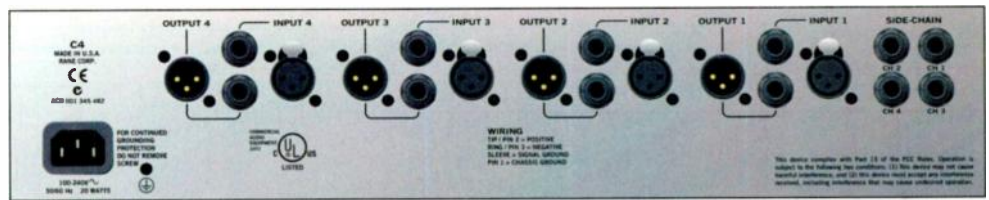
With Sidechain-listen selected, external sidechain signals or any changes to the EQ of the triggering circuit can be auditioned through the channel's audio output.

An additional gray knob controls the limiter threshold (–40 to +22 dBu). The limiter is a digital brickwall type and is set with an instantaneous attack time, a 25 ms hold time, and a 6-dB-per-second release time. A five-position LED meter indicates headroom before limiting (24, 12, 6, and 3 dB) and active limiting (0 dB). The meter does not display the amount of limiting gain reduction.

An active-bypass toggle switch in the upper-right-hand corner controls the compressor/de-esser circuitry. The bypass does not affect limiting or metering and must be switched individually on both master and slave channels when stereo linking is selected.

## REAR SUPPORT

The C4's rear panel (see Fig. 2) has analog input and output for each chan-



**FIG 2:** For each of its four channels, the C4's rear panel has analog inputs and outputs on both XLR and 1/4" TRS jacks and 1/4" TRS external sidechain inputs.

nel at a +4 dBu reference level. External sidechain inputs for each channel are grouped on the right. A standard IEC AC power-cord connector is also on the back panel. The unit has no digital audio I/O, a provision for analog –10 dBV audio levels, or an on-off switch.

The C4's two-rackspace all-metal case has adequate ventilation. The C4 uses 24-bit, 48 kHz A/D/A converters. Latency is low (1.2 ms), distortion and noise are negligible, and headroom is satisfactory at a +22 dBu maximum output.

The manual is outstanding. It provides thorough information for users at all levels. It also includes the company's expert manual on sound-system interconnection and wiring.

## ON THE JOB

After a few weeks of testing, I came to fully appreciate the C4's range of fea-

tures and sonic neutrality. The C4 goes about its work quietly without a characteristic sound or attitude.

While switching between Active and Bypass modes, there was no noticeable difference in the audio. Signal muting, switch clicks, or gain changes were not evident.

On some mixes, when I compared two identical mono signals that ran from a TC Electronics M2000 to the mixing board—with one signal feeding the C4 before the mixer—the C4 exhibited only a slight attenuation of low-bass frequencies.

The C4 stood out at processing rock-drum overhead mics in Stereo-linked mode. With careful adjustment of ratio, attack-release, and knee, the C4 squashed a fast drum track while keeping transients intact and adding a slightly aggressive edge to the sound. PEQ sidechain adjustments to a full drum mix made it possible to emphasize or downplay various parts of the kit.

While stereo linking always worked well, I ran into one latency-related problem when using the C4 on one channel of a stereo guitar amp signal. Because of the slight processing delay, the compressed channel lagged behind and lost presence when the two tracks were hard-panned. That problem and its related phase cancellation were easily remedied by running both guitar tracks through the C4.

## KNEE SURGERY

The C4's continuously variable knee parameter allows subtle yet effective refinement of the compressor's behavior at and around the threshold point. I generally favor soft-knee characteristics and welcomed the variable knee parameter. During studio

C4 Specifications	
Analog Inputs	(4) balanced 1/4" TRS, (4) XLR
Analog Outputs	(4) balanced 1/4" TRS, (4) XLR
Sidechain Inputs	(4) balanced 1/4" TRS
Sampling Rate	48 kHz internal, not selectable
Word Length	24-bit internal, not selectable
Internal Processing	48-bit
Makeup Gain Range	–12 to +12 dB
Frequency Response	15 Hz–20 kHz
Gain Reduction	18 dB maximum
Threshold	–40 to +20 dB
Compression Ratio	1:1 to 10:1
Attack Time	25–500 ms
Release Time	25 ms–2 sec.
Dynamic Range	106 dBA
Distortion (THD + Noise) @ 0 dB Input	0.02% (20 Hz–20 kHz), 0.006% (1 kHz)
Dimensions	2U × 5.25" (D)
Weight	7.3 lbs.



testing on a trumpet track, the variable knee control was just as crucial as ratio and attack for fine-tuning the compressor's character and keeping the soloist sounding natural and on top of the mix.

I liked the C4 on kick drum but would prefer an attack time faster than 25 ms for that job. On a direct Fender bass track, the C4 allowed enough control to keep the bass where I wanted it in the mix. But again, a faster attack time—for example, a standard 10 to 15 ms—would help control peaky bass transients.

The C4's sidechain EQ feature came in handy on a female lead vocal. The singer had a wide range but tended to push her head voice far above the level of her lower registers. The C4 was able to hold her voice perfectly in check, as a result of boosting a narrow notch around 3 kHz on its sidechain PEQ. The C4 helped to bring out vocal intelligibility and detail without notice-

able coloration on a male vocal track as well.

There was a remarkable lack of coloration or distortion on heavy rock guitar, even at a steady 8 to 12 dB of gain

▼

**Few affordable  
compressors have the  
C4's combination of  
features.**

reduction. The C4's limiter circuit also gets a thumbs-up for transparent and undistorted continuous peak limiting of a full-range blues mix. For these extreme applications, the C4 treats audio like a quality computer plug-in, while offering the convenient control of analog gear.


## OVERALL GAIN

The C4 impressed me as a versatile and consistently solid performer in recording sessions. The unit's A/D/A conversion quality is excellent, and the brickwall limiter works like a charm at moderate settings. My only quibble was with the unit's minimal attack time of 25 ms, which is too long to effectively grab transients on many sources.

The C4 is easy to set up, and its generous set of parameters makes it an ideal problem solver. For \$999, anyone who is after the most bang for the buck has to be impressed by what Rane has accomplished with the C4. With its smooth audio quality, bountiful features, and rugged build, the Rane C4 acts like a world-class compressor. The only thing missing is the world-class price tag.


*Myles Boisen is head fader jockey at Guerrilla Recording and The Headless Buddha Mastering Lab in Oakland, California.*

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# They *LAUGHED* when I said they could have **Perfect Pitch**

... until I showed them the simple secret  
—and they heard it for themselves!



David Lucas Burge

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**EXACT** tones and  
chords—**BY EAR!**

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- Enjoy richer, finer music appreciation
- Find your hidden talents...

The true story behind the worldwide  
#1 best-selling ear training method

by **David Lucas Burge**

*It all started as a sort of teenage rivalry . . .*

I'd slave at the piano for five hours daily. Linda would practice far less. Yet somehow she always shined as the star performer of our school. It was frustrating.

*What does she have that I don't?* I'd wonder.

Linda's best friend, Sheryl, bragged on and on to me, adding more fuel to my fire.

*"You could never be as good as Linda,"* she would taunt. *"Linda's got Perfect Pitch."*

*"What's Perfect Pitch?"* I asked.

Sheryl gloated about Linda's uncanny abilities: how she could name *exact tones and chords*—all **BY EAR**; how she could sing any tone—from *memory alone*; how she could play songs—after just *hearing* them; the list went on and on . . .

My heart sank when the realization came to me. *Her EAR is the key to her success.* How could I ever hope to compete with her?

But it bothered me. Did she *really* have Perfect Pitch? How could she know tones and chords just by *hearing* them? It seemed impossible.

Finally I couldn't stand it anymore. So one day, I marched right up to Linda and asked her point-blank if she had Perfect Pitch.

*"Yes,"* she nodded aloofly.

But Perfect Pitch was too good to believe. I rudely pressed, *"Can I test you sometime?"*

*"OK,"* she replied.

**Now she would eat her words . . .**

*My plot was ingeniously simple . . .*

When Linda least suspected, I walked right up and

challenged her to name tones for me—*by ear*.

I made her stand so she could not see the piano keyboard. I made sure other classmates could not help her. I set up everything perfectly so I could expose her Perfect Pitch claims as a ridiculous joke.

With silent apprehension, I selected a tone to play. (She'll never guess F#, I thought.)

I had barely touched the key.

*"F#,"* she said. I was astonished.

I played another tone.

*"C,"* she announced, not stopping to think.

Frantically, I played more tones, skipping here and there all over the keyboard. But somehow she knew the pitch each time. She was **AMAZING**.

*"Sing an E#,"* I demanded, determined to mess her up. She sang a tone. I checked her on the keyboard—and she was right on!

Now I started to boil.

I called out more tones, trying hard to make them increasingly difficult. But she sang each note perfectly on pitch.

I was totally boggled. *"How in the world do you do it?"* I blurted.

*"I don't know,"* she sighed. And that was all I could get out of her!

The dazzle of Perfect Pitch hit me like a ton of bricks. My head was dizzy with disbelief. Yet from then on, I knew that Perfect Pitch was real.



*"How in the world do you do it?"* I blurted. I was totally boggled. (age 14, 9th grade)

**I couldn't figure it out . . .**

*"How does she DO it?"* I kept asking myself. On the other hand, why can't *everyone* recognize and sing tones by ear?

Then it dawned on me. People call themselves *musicians* and yet they can't tell a C from a C#?? Or A major from F major?! That's as strange as a portrait painter who can't name the colors of paint on his palette! It all seemed odd and contradictory.

Humiliated and puzzled, I went home to work on this problem. At age 14, this was a hard nut to crack.

You can be sure I tried it out for myself. With a little sweet-talking, I'd get my three brothers and two sisters to play piano tones for me—so I could try to name them by ear. But it always turned into a messy guessing game I just couldn't win.

Day after day I tried to learn those freaking tones. I would play a note *over and over* to make it stick in my head. But hours later I would remember it a half step flat. No matter how hard I tried, I couldn't recognize or remember any of the tones by ear. They all started to sound the same after awhile; how were you supposed to know which was which—just by *listening*?

I would have done anything to have an ear like Linda. But now I realized it was way beyond my reach. So after weeks of work, I finally gave up.

**Then it happened . . .**

*It was like a miracle . . . a twist of fate . . . like finding the lost Holy Grail . . .*

Once I stopped *straining* my ear, I started to listen **NATURALLY**. Then the simple secret to Perfect Pitch jumped right into my lap.

Curiously, I began to notice faint "colors" within the tones. Not *visual* colors, but colors of *pitch*, colors of



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sound. They had always been there. But this was the first time I had ever really "let go"—and *listened*—to discover these subtle differences.

Soon—to my own disbelief—I *too* could name the tones by ear! It was simple. I could hear how F# sounds one way, while Bb has a *totally different sound*—sort of like "hearing" red and blue!

The realization struck me: **THIS IS PERFECT PITCH!** This is how Bach, Beethoven, and Mozart

could mentally envision their masterpieces—and know tones, chords, and keys—all by ear!

It was almost childish—I felt sure that *anyone* could unlock their own Perfect Pitch with this simple secret of "Color Hearing."

Bursting with excitement, I told my best friend, Ann (a flutist).

She *laughed* at me. "You have to be *born* with Perfect Pitch," she asserted. "You can't *develop* it."

"You don't understand Perfect Pitch," I countered. I showed her how to listen. Timidly, she confessed that she too could hear the pitch colors. With this jump start, Ann soon realized she had also gained Perfect Pitch.

We became instant celebrities. Classmates loved to call out tones which we would then magically sing from thin air. They played chords for us to name by ear. They quizzed us on what key a song was in. Everyone was fascinated with our "supernatural" powers, yet to Ann and me, it was just normal.

Way back then, I never dreamt I would later cause such a stir in the academic world. But as I entered college and started to explain my discoveries, many professors *laughed* at me.

"You must be *born* with Perfect Pitch," they'd say. "You can't *develop* it!"

I would listen politely. Then I'd reveal the simple secret—*so they could hear it for themselves*. You'd be surprised how fast they changed their tune!

In college, my so-called "perfect ear" allowed me to skip over two required music courses. Perfect Pitch made everything easier for me—my ability to perform, compose, arrange, transpose, improvise, and even sight-read (because, without looking, you're sure you're playing the correct tones). And because my ears were open, music just seemed richer.

I learned that music is definitely a **HEARING** art.

Oh, you must be wondering: *whatever happened with*

Linda? Excuse me, I'll have to backtrack...

It was now my senior year of high school. I was nearly 18. In these three-and-a-half years with Perfect Pitch, my piano teacher insisted I had made ten years of progress. And I had. But my youthful ambition still wasn't satisfied. I needed one more thing: *to beat Linda*. Now was my *final chance*.

The University of Delaware hosts a performing music festival each spring, complete with judges and awards. To my horror, they scheduled me that year as the *grand finale* of the event.

The fated day arrived. Linda gave her usual sterling performance. She would be tough to match, let alone surpass. But my turn finally came, and I went for it.

Slinking to the stage, I sat down and played my heart out with selections from Beethoven, Chopin, and Ravel. The applause was overwhelming.

Later on, I scoured the bulletin board, searching for our grades in the most advanced performance category. Linda received an A, which came as no surprise. I scored an A+.

*Sweet victory was music to my ears—mine at last!*

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- "Wow! It really worked. I feel like a new musician. I am very proud I could achieve something of this caliber." *J.M.*
- "Thanks...I developed a full Perfect Pitch in just two weeks! I don't know how it worked. It just happened out of nowhere like a miracle." *B.B.*
- "It is wonderful. I can truly hear the differences in the color of the tones." *D.P.*
- "I heard the differences on the initial playing, which did in fact surprise me. It is a breakthrough!" *J.H.*
- "I'm able to play things I hear in my head a lot faster than ever before. Before the course, I could barely do it." *J.W.*
- "I hear a song on the radio and I know what they're doing. My improvisations have improved. I feel more in control." *L.B.*
- "In three short weeks I've noticed a vast difference in my listening skills." *T.E.*
- "I can now identify tones and keys just by hearing them. I can recall and sing individual tones at will. When I hear music now it has much more definition, form and substance. I don't just passively listen to music anymore, but actively listen to detail." *M.U.*
- "Although I was skeptical at first, I am now awed." *R.H.*
- "It's like hearing in a whole new dimension." *L.S.*
- "I wish I could have had this 30 years ago!" *R.B.*
- "Very necessary for someone who wants to become a pro." *L.K.*
- "This is absolutely what I had been searching for." *D.F.*
- "Mr. Burge—you've changed my life!" *T.B.*
- "Learn it or be left behind." *P.S.*

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# CYCLING '74

MODE 1.0 (MAC)

*Get your sounds à la mode  
with this bundle  
of plug-ins.*

Len Sasso

**M**ode is a collection of three virtual instruments and two effects plug-ins based on Cycling '74's Pluggo technology. The instruments are a monophonic drum synth (Bang), a monophonic lead synth (Mono), and a polyphonic synth (Poly). The effects are a time-synchronized multi-effect called Spin and a unique multichannel delay effect called Wash. Together they form the basis of a classic synthesis kit aimed primarily at the retro crowd, but they are fully capable of blips and bleeps for any era.

Mode comes in Audio Units (AU), VST, and RTAS versions and is compatible with a variety of hosts. I tested the AU and VST versions and found them

to be stable, although somewhat CPU intensive. For example, eight instances of Bang pushed my dual-processor Mac G5/2 GHz CPU meter over 50 percent.

## BLINDED BY SCIENCE

Each of Mode's five main plug-ins consists of a number of submodules. Cycling '74 has made most of those submodules available as separate plug-ins. That allows the effects from Mono, for example, to be used with Pluggo-technology plug-ins as well as plug-ins from other manufacturers. The submodule plug-ins also save CPU power by allowing you to use only the features that you need. Several modulator submodules are also provided as separate plug-ins, but they require Pluggo technology and can therefore be used only with other Pluggo-technology plug-ins.

Mode's developers, the Creative-Synth team, made the unusual decision in their interface design to eschew numerical data display and entry; only a few of the sliders, knobs, and buttons give any indication of their value. The rationale for that decision is to promote programming by ear rather than by number. In many instances that seems like a good choice and probably saves some CPU cycles in the bargain, but in other cases, such as oscillator tuning and tempo-synchronized rate controls, the lack of visual feedback is a handicap.

## BANG ON A CAN

Bang is a drum synth that has three sound engines followed by an output section containing a distortion effect and a multimode filter (see Fig. 1). There is also a built-in stereo delay that operates as a send effect. Bang's distortion-filter output stage, sound engines, and stereo-delay effect are available as separate plug-ins.

## Minimum System Requirements

### Mode 1.0

MAC: G4/800 MHz; 512 MB RAM;  
Mac OS 10.2.8

Bang has no built-in sequencer and plays one timbre across the full MIDI Note range. Its purpose is to augment your drum kit with a few classic, synthy drum sounds, rather than to serve as yet another drum box.

For sound engines, Bang offers a one-shot (no looping) sample player, an FM synth, and a classic one-oscillator analog synth. The sample player draws its samples from a dedicated folder. The contents of the dedicated folder are displayed in a drop-down menu. The samples are standard AIFF files, and you can add your own to the folder as desired. A delay, attack, decay, sustain, and release (DADSR) envelope generator controls amplitude, and a bit crusher adds grit.

Bang's FM engine has multiwaveform carrier and modulator oscillators with DADSR amplitude envelopes for each. The oscillators provide sine, triangle, saw, square, and noise waveforms. The analog engine has a similar oscillator with amplitude and modulation envelopes. It has a resonant lowpass filter, and the modulation envelope can be applied to oscillator pitch and filter cutoff.

The oscillator tuning is different for the two synthesized sound engines, making it impossible to get them precisely in tune. In addition, the analog engine's keyboard tracking changes with its tuning. As a result, creating tuned percussion sounds, which should be one of the strengths of this synth, lies somewhere between difficult and impossible. These problems, however, should be addressed in a future release.

Tuning foibles aside, Bang is a capable sound-design tool, and as the documentation suggests, you can go way beyond the included presets. In particular, mixing the three sound engines, with varying pan positions and different send amounts to the stereo delay, can produce an array of



**FIG. 1:** Cycling '74 Mode's Bang drum synth has three sound engines: a one-shot sample player (left), an FM synth (center), and a classic analog synth (right). Distortion, filter and delay effects round out the module.



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\*\$249

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The TB202 valve (12AX7) mic pre-amp is a twin channel valve mic preamplifier that features independent switchable phantom power, phase reverse, -20dB Pad, optical compressor, and fully functional EQ all housed together in a single 1U rack mount chassis. With a warm valve sound and the addition of an Optical Compressor the TB202 is a tool for those who want that SPECIAL sound this type of equipment can produce. With XLR inputs and 1/4" inputs the unit can be used with microphones or instruments without the need for adaptors.



\*\$499

The Amazing OC8 is a rack-mount optical compressor. With eight discrete high-quality optical compressors. Optical compressors are sought after for the distinctive musicality they give to vocals, guitars and other instruments. The OC8's adjustable ratio, attack, release and output controls are calibrated to generate a distinctive soft, rich character while providing magnificent control over dynamics. Fantastic for use as inserts on your multi-channel recording or live tracks.

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## • MODE

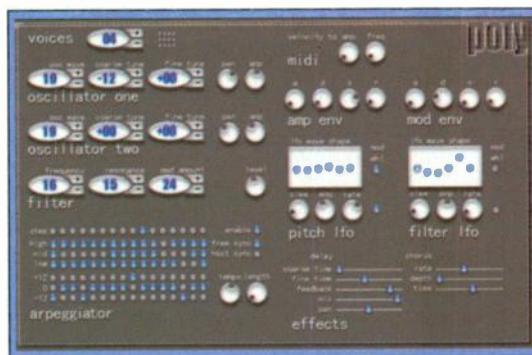


FIG. 2: Mode's Poly is a classic analog-style polyphonic synth with a unique three-voice arpeggiator.

interesting evolving sound effects. See **Web Clip 1** for a few examples.

## LEADING THE WAY

Mono is a one-voice FM synth with a built-in arpeggiator. Its synthesis engine has two identical FM operators. The operator outputs are mixed and sent to an effects section that consists of a waveshaping distortion effect, a multimode resonant filter, and a stereo delay. As with Bang, the synthesis engine, the effects section, and even the arpeggiator are available as separate plug-ins. The standalone arpeggiator, when inserted as an instrument plug-in, can be routed to any parameter of any Pluggo-technology plug-in to produce a pitch tracking effect. Due to limitations in the Pluggo technology, however, it can be used only to play notes in its built-in form.

Mono's FM operators have two oscillators: a carrier and a modulator. ADSR envelope generators control amplitude and modulation amount. The modulation envelope also can be applied directly to the carrier and modulator pitches, and the amplitude envelope can be applied to the modulation amount. A built-in sine-wave LFO can be applied to carrier and modulator pitch, and either oscillator's keyboard tracking can be turned off. You can add waveshaping, filtering, and stereo delay. As with Bang, there is a lot of room available for creative programming.

The arpeggiator can be either free-running with a range of 40 to 220 bpm, or synced to the host's tempo, in which case the range is in note increments from a whole note to a 16th note. Triplet- and dotted-note values are not supported, making tempo synchronization somewhat limited. Arpeggiator modes are up, down, up and down, up and down with repeated end points, and random. The note range can

be extended to four octaves, and the note duration can be extended beyond the step size, in which case repeated pitches are not retrigged. That makes for interesting complex rhythmic patterns. Finally, the note order can be played or sorted by pitch.

## POLY'S PAD

Poly is a classic digital synth and can play from 4 to 12 voices, depending on the selected voice count (see Fig. 2). The more voices you play, the more CPU power you use. Poly features two digital oscillators with a selection of 24 waveforms. The oscillators are followed by a resonant low-pass filter and two output effects: delay and chorus. The Poly synth and effects modules are available as separate plug-ins.

Poly's modulators include dedicated LFOs and ADSR envelope generators for pitch and filter cutoff. Rather than offering multiple waveforms, the LFOs are 6-step sequencers, with a slew control to set the glide between successive steps. With the minimum slew setting,

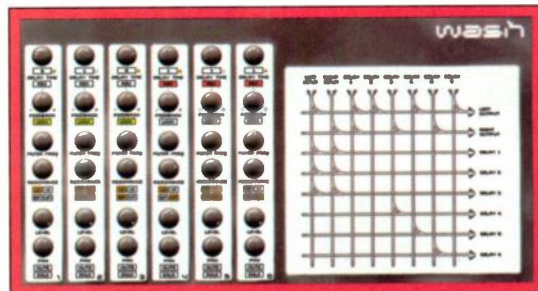


FIG. 3: Wash is a performance-oriented six-channel delay effect with complete control over the signal path.



## PRODUCT SUMMARY

### Cycling '74

Mode 1.0 (Mac)  
plug-in bundle  
\$199

FEATURES	4.0
EASE OF USE	3.0
QUALITY OF SOUNDS	4.0
VALUE	3.5

#### RATING PRODUCTS FROM 1 TO 5

**PROS:** Variety of synthesis methods. All synthesizer and effects submodules provided as separate plug-ins. Unique, performance-oriented multichannel delay effect.

**CONS:** Lacking some essential numerical displays. Limited tempo-synchronization options.

#### Manufacturer

Cycling '74  
email: [info@cycling74.com](mailto:info@cycling74.com)  
Web: [www.cycling74.com](http://www.cycling74.com)

the LFOs function like step sequencers, which is especially interesting when applied to pitch and used in conjunction with the arpeggiator.

Poly's most unusual feature is its 16-step polyphonic arpeggiator. It can be thought of as three step sequencers running in sync: one for triggering the highest note held, one for triggering the lowest, and the third for triggering all the notes in between as a chord. Each step can be transposed up or down an octave. When free-running, the tempo can be set from 60 to 200 bpm. When synchronized to the host tempo, the steps are always 16th notes—a limitation that will be addressed in a future update.

#### WASH AND SPIN


Mode's two effects plug-ins are a time-based multi-effects processor called Spin and a multichannel delay effect called Wash. Spin has a multimode filter, an overdrive and bit-crushing distortion effect, pan and volume modulation, and a stereo feedback-delay line.

Each of Spin's effects—except for distortion—is slaved to a master clock,

which can be free-running or synced to host tempo. When synced, the step size is set in 32nd note steps from 1 to 128. Each clock step represents a gate that can be applied in varying amounts to filter cutoff and pan position. The clock rate also determines the delay line's delay time and is used to advance a 16-step volume sequencer. Each of the effects is available as a separate plug-in.

Wash is a 6-channel, performance-oriented stereo feedback-delay line with a routing matrix that allows total control of the signal path (see Fig. 3). You can route either stereo input channel or the output of any of the six delay lines to the input of any delay line. You can also route the output of any delay line to either or both stereo output channels. Maximum delay time for each delay line can be set from 100 ms to 10 seconds, and a knob lets you control the actual delay time within that range.

Each delay line has a multimode resonant filter, and each of its modes—lowpass, highpass, bandpass, and notch—are simultaneously available. The most important controls, however, are each delay line's Record and Lock buttons. A delay line is inactive until you enable recording by clicking on the Rec button. When you click on the Lock button, the feedback is automatically set to maximum, recording is disabled, and the material in the delay line cycles endlessly, subject to manipulations of the filter, level, and pan settings. Recording can be reenabled for a locked delay line to allow for overdubbing. Multiply that description by six and add automation and you'll get an idea of how tangled things can become. Check out Web Clip 2 for an example. A single-channel Wash plug-in is also available.

The sheer variety of offerings makes the Mode bundle well worth investigating. While I might quibble with some of the user-interface decisions and the tempo synchronization options, each synth fills its roll, and the effects, especially Wash, have lots of possibilities. Each module sounds good, and unless you unleash all features of the complex modules at once, they are quite CPU efficient. 

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# Quick Picks

## NATIVE INSTRUMENTS

### Elektrik Piano

By Nick Peck

**N**ative Instruments Elektrik Piano (\$229) is a sample-based virtual instrument that focuses on four classic '70s-era electro-mechanical keyboards: the Fender Rhodes Mark I and Mark II, the Wurlitzer 200A, and the Hohner Clavinet. The designers opted for simplicity over programmability, offering a no-nonsense interface modeled after the Fender Rhodes.

Elektrik Piano uses a hardware-specific authorization process, requiring registration and reauthorization when you change major hardware elements or operating systems. However, you can authorize it on two different machines. Elektrik Piano ships with plug-in and standalone versions on three cross-platform CD-ROMs (Windows XP/Mac OS X 10.3). The plug-ins support VST 2.0, DXi 2, and RTAS formats under XP, and Audio Units and RTAS under OS X. The standalone version supports ASIO 2.0, DirectSound, and MME audio drivers under XP, and CoreAudio under OS X.

Elektrik Piano requires a fairly powerful computer to operate at peak efficiency and with appropriate polyphony. A Mac G4/1 GHz or a Pentium III/1.2 GHz are recommended. The instrument stores 2 GB of

stellar samples on your hard drive, and the minimum RAM requirement is 512 MB, although the more you have the better.

### Pianos, Pianos, Pianos

Elektrik Piano's presets are loaded through a pop-up window, then assigned to the F1-F8 function keys. There are four preset-specific parameter knobs; Tune, Pan, and Volume controls; and a hip-looking vertical VU meter. Presets cannot be stored individually, but must be saved in banks of eight instead.

Elektrik Piano's instruments sound accurate, true to life, and clean. The presets range from meat-and-potatoes unprocessed versions of the instruments to buzzy distorted pianos and funky filter-enveloped Clavinets. There are also some techno-oriented sounds, using sample-and-hold and delay-based filter changes, that take these classic keyboards in interesting, new directions. The presets are varied and well thought out, giving the player a wide range of instantly recognizable and musically useful timbres.

Because the samples are clean and dry, they might benefit from a bit of reamping (rerecording the output through a guitar amplifier) to give the sound a more aggressive attitude and some "air." And you'll certainly want to run the Clavinet patches through a wah-wah pedal to get an authentic funk sound.

### Direct-from-Disc Extension

The version of Elektrik Piano I received on CD-ROM played the samples from RAM. That made loading and removing instruments painfully slow, choking the

CPU and causing frequent dropouts in the audio. With this version, the performance was so sluggish that the instruments were practically unusable on my machine—a dual-processor Mac G4/867 MHz, with 768 MB of RAM, and running OS X 10.3.4.

To alleviate this problem, Native Instruments offers the direct-from-disc (DFD) extension for Elektrik Piano (as well as other Native Instrument products), which is available as a free download from the company's Web site. The extension allows Elektrik Piano to work like most modern sample-playback systems: it reads the samples from the hard drive as necessary, which requires much less RAM. Once I installed the extension, Elektrik Piano went from being unusable to smooth, supple, and easy to work with. Alternate versions of some of the factory presets, which require small and medium amounts of RAM, are also available online.

### Pianissimo

Although Elektrik Piano doesn't play exactly like the real thing, it comes pretty darn close. And it's a lot easier to carry to a gig. Overall, the patches sound great, and the DFD extension makes the instrument easy to work with.

### Overall EM Rating (1 through 5): 3.5

Native Instruments USA

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## NEUMANN

### BCM104

By Karen Stackpole

**N**eumann recently introduced the BCM104 (\$999), a transducer designed primarily for broadcast applications yet versatile enough for the recording studio. The large-diaphragm cardioid condenser mic is the first arrival from Neumann's new Broadcast line. Sporting jaunty angles, a rear-protruding XLR connector, and an integrated mount, the BCM104 makes quite an impression with its stout yet sleek profile and classy satin-nickel finish.



The Elektrik Piano virtual instrument gives you the sounds of the Rhodes, Wurlitzer, and Clavinet.



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Neumann's BCM104 was designed for broadcast applications but also sounds great for various recording tasks.

### On Deck

The BCM104 was designed for the broadcast announcer, and its open-weave cylindrical grille can be twisted off for cleaning (a handy hygiene-promoting feature in multiuser environments). An internal mesh pop screen (also removable) provides further protection of the capsule from plosives, moisture, and airborne detritus.

The BCM104's mount, which incorporates an elastic suspension to guard against structure-borne noise, is not adjustable. That makes the mic difficult to place in certain recording situations. Fortunately, the optional SG5 swivel adapter (available from Neumann) enables the mic to pivot on a 90-degree axis for more flexibility. The plastic threading on the stand adapter doesn't inspire confidence in its long-term durability, but the rest of the apparatus feels sturdy.

The mic features a selectable -14 dB attenuation pad and a low cut-filter that slopes off at 12 dB per octave at 100 Hz. The switches are hidden within the recesses of the XLR jack. It takes a screwdriver and a delicate touch to pull the insert from its moorings in order to activate the switches. Ready access to these functions is not that important in a broadcast instal-

lation, but in a recording studio I found reaching the selectable switches cumbersome. Nevertheless, once all was set to go, this mic showed truechutzpah.

### Out of the Gates

During the test period, the BCM104 performed admirably on a number of sessions. It picked up a tenor saxophone in a jazz quintet, captured kick drum on rock sessions, did justice to three male vocalists singing pop and folk tunes, and sounded fantastic on upright bass. I also examined the mic in some controlled tests with acoustic steel-string guitar, male and female spoken word, bass drum, and key chimes.

I recorded the results to 2-inch analog tape and a Pro Tools TDM system using Neve VR Legend, SSL 6000 Series, and Yamaha DM2000 consoles. I also recorded to a Pro Tools LE system using an M-Audio Octane preamp and a Focusrite ISA series preamp.

### Tearing Up the Turf

The BCM104 sounded great from the start, exhibiting a tight low end and the typical Neumann airiness above 10 kHz. It is a superb vocal mic and provided a clean, present, and natural sound for five voices and styles ranging from husky male pop vocal to female spoken word. The sound is similar to Neumann's TLM 103, though the BCM104 is brighter in the top end and has a tighter, more contained low-end sound. Both mics feature low self-noise rating of 7 dBA and a maximum SPL rating of 138 dB, which the pad switch can extend to 152 dB.

I especially liked the mic on upright bass; it captured a good balance of overall tone with plenty of low end and great definition. The BCM104 also excelled on kick drum, picking up a sound that popped through the mix like nothing else. With a tight low end, great presence on the beater attack, and plenty of depth, the BCM104 offered an exceptionally full, punchy sound with good balance between beater and low end on three different kick drums.

On sax the BCM104 was smooth, melodic, and airy, although during honky passages the mic tended to accent a brasher sound in the sax player's tone. The mic exhibited great off-axis rejection, barely pick-

ing up a drum set and a trombone in the same room during the jazz session. While the BCM104 was bright on a steel-string guitar, it still had a usable sound after a little taming with EQ in the high mids between 2 and 3 kHz. Key chimes came through clean and clear, though a bit bright.

### The Home Stretch

While its shape and features are optimized for the broadcast announcer, the BCM104 proved its mettle as a viable studio condenser mic. It's especially effective on vocals and upright bass and can pack a punch on a kick drum. The hidden low-cut and pad switches, the rigidity of the mount, and the plastic threading on the stand adapter notwithstanding, the BCM104 has a natural, articulate sound. It offers great detail, good tonal balance, and a tight, neat low end along with an airiness that makes it suitable for a number of studio applications. With a suggested list price of \$999, this is an affordable, large-diaphragm Neumann that is well worth a listen.

### Overall EM Rating (1 through 5): 4

Neumann

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Web: [www.neumannusa.com](http://www.neumannusa.com)

## CAKEWALK

Kinetic (Win)

By Rick Scott

.....

**W**ith its new digital audio sequencer, Kinetic (\$119), Cakewalk has set foot squarely in the land of the prosumer in terms of price—but don't let that fool you. Kinetic is designed for musicians of all skill levels—from beginner to professional DJ—and its low cost and high functionality are sure to make it a winner among groove creators of all persuasions.

Kinetic runs under Windows XP and 2000, and its minimum system requirements are an 800 MHz processor with 256 MB of RAM. I tested Kinetic on a Pentium 4/2.1 GHz machine with 512 MB of RAM, and it ran flawlessly, using only 30 percent of my CPU at full tilt.



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**Cakewalk Kinetic has a three-part workspace: Groove Picker and Groove Mixer (top), Pattern Browser and Pattern Editor (middle), and Song Arranger (bottom).**

### Forces in Motion

Kinetic is structured logically: the hierarchy, from the top down, is Song, Groove, Part, Pattern, and Patches/audio loops. A Song consists of as many as 64 Grooves arranged in a sequence, but only one Groove can play at a time. A Groove can be made up of 16 simultaneous Parts that repeat at a specified interval (all 64 Grooves will use the same 16 Parts). A Part consists of a Pattern and a synth patch or audio loop.

To create a Song, open a new project file and create the Parts, one by one, by assigning them a Pattern and Patch or audio loop. Part parameters, such as volume, pan, and patch settings, can be automated. Next, create the Grooves by assigning the desired Parts, and build the Song by sequencing the Grooves (for example, Groove A1 for four bars, followed by A2 for four bars, and A4 for eight bars). To test the Parts, Grooves, or Song at any point in this process, press the Play button.

Kinetic comes with a generous selection of Groove building blocks. More than 300 Patterns and Acid-format audio loops, in more than 30 styles, are included, covering genres such as house, drum and bass, hip-hop, industrial, jazz, lounge, techno, tribal, and trance, among others. You can

import loops and create new patterns. In addition, there are 500 patches using sounds from vintage Roland instruments (SH-101, TR-606, TR-808, and TR-909) as well as Cakewalk's PSYN virtual-analog synth.

Kinetic has a handful of Cakewalk Project5 effects, including filter, chorus, exciter, reverb, and flanger. You can use DirectX and VST effects (if you have a VST adapter) as well as ReWire to connect Kinetic to ReWire-capable sequencers, such as Cakewalk Sonar and Project5, and Steinberg Cubase. Additionally, you can export your Kinetic Grooves and Songs as WAV or MP3 files.

The best thing about Kinetic is its simplicity. Once you get the hang of the hierarchical structure and graphical interface, it's easy to create and hone your beats: everything is available within a few mouse-clicks. In less than an hour, I created this 2-minute song from scratch, using built-in Kinetic Patterns and Patches (see **Web Clip 1**).

### Hokey, Not Pokey

My biggest gripes about Kinetic result from Cakewalk's savvy decision to limit Kinetic's scope and keep it fast, cheap, and easy to use. For example, you can't exceed 16

Parts per Groove; you can use VST effects, but not VST instruments; you can't record audio; and when you start playing a Groove, you can play it only from the first bar, which limits groove-to-groove sequencing. And there is one potential hidden cost: the built-in MP3 encoder is time-limited trialware, requiring you to pay \$19 extra to unlock it.

What bugs me most, however, is that its built-in Patterns are, for the most part, uninspired and somewhat trite. Fortunately, you can modify the Patterns or build your own.

### Beat It

Overall, Kinetic is a powerful and flexible beat-creation tool. Beginners will have a great time mixing the included elements into catchy grooves and exporting them into audio files to share with friends. Experienced users can take the program to the next level by creating their own patterns, using custom audio loops, automating parameters, and running the program with an external sequencer. Kinetic is a program that offers something for everyone.



### Overall EM Rating (1 through 5): 4.5

Cakewalk

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Web: www.cakewalk.com

## BIGGA GIGGAS

John Rekevics Saxophone Library (Giga, Kontakt)

By David Rubin

.....

The solo saxophone is notoriously difficult to sample effectively because of the wide range of idiomatic sounds that the instrument can produce. Early sax patches with looped samples often yielded sax parts that sounded more like an accordion than the expressive reed instrument Adolphe Sax introduced in the mid-19th century.

Things are looking up, though. Bigga Gigas' four-disc *John Rekevics Saxophone Library* (\$340) offers 2.3 GB of unlooped soprano, alto, tenor, and baritone sax samples in a well-organized assortment of more than ten dozen 16-bit, 44.1 kHz patches.



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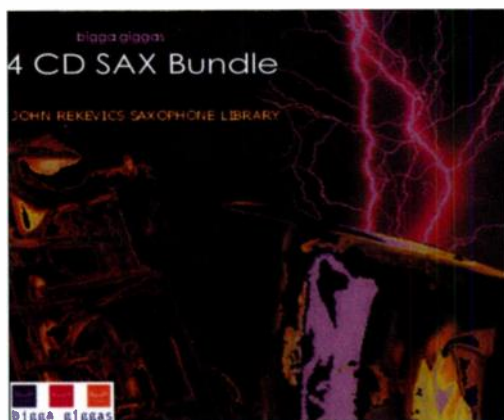
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WEB

**IK MULTIMEDIA**  
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**Bigga Giggas' John Rekevics Saxophone Library** has a complete set of high-quality soprano, alto, tenor, and bari sax samples in mono and stereo on four CDs.

### Sax Specs

All of the samples in this library were performed by Rekevics on vintage Selmer Mark VI saxes, and each instrument was sampled chromatically over its full range. The sustained patches (vibrato and non-vibrato) have four Velocity layers each; most of the others have two.

To maximize versatility, developer John Thomas recorded the samples in mono and stereo. For the mono recordings, he used a Neumann condenser mic in a traditional close-mic setup and ran the mic through a custom tube preamp to capture the warmth of early mono recordings. For the stereo samples, he used a matched pair of Shure KSM32 condenser mics and a solid-state preamp.

Unlike the mono setup, the stereo mics were placed at a moderate distance from the source, adding a bit more ambience to the recordings (no reverb or EQ was added to any of the samples). Because the mono and stereo samples were recorded at the same time, you can use them interchangeably or simultaneously. The latter option lets you blend the two mic perspectives, adding or decreasing the natural ambience as needed.

### Saxy Sounds

For most users, the workhorse instruments in this library will likely be the alto and tenor saxes, and Rekevics offers plenty of options to work with. Both instruments have a long list of patches, including standard playing techniques such as smooth, vibrato, staccato, sforzando, growls, flutters, and falls.

The library makes extensive use of keyswitching and crossfading to add as much real-time control as possible. For example, presets with "Dirt" in the label start out with a growl and let you crossfade into the smooth patch with the mod wheel. Other patches let you do the reverse. You can also use the mod wheel to introduce vibrato to a note as it plays by crossfading from a nonvibrato patch into one with vibrato; the transition is smooth and easy to control.

I especially enjoyed playing with the flutters and growls—two essential techniques for adding color to sax parts. You can create a wonderful effect by crossfading from a smooth, sustained patch into a nasty flutter. The tenor's patches are comparable to those of the alto and offer the same great-sounding falls and smooth transitions.

In addition to the multilayered patches that include the full range of dynamics, all of the saxes have patches that focus on one or two layers. One of my favorites is the Soft alto patch with its velvety sound and late-night bluesy quality.

The tenor is the only sax that has subtones, and it's a treat to have those breathy sounds. They're great for creating a smoky atmosphere. The other saxes include special "Xsoft" patches for combining with the subtones for section writing.

### High and Low

The Rekevics soprano sax is among the best I've heard in a sample library. Soprano saxes don't play growls, so they aren't included, but flutters, although difficult to perform and limited in range, are provided. The soprano isn't typically used as part of a sax section, but I found that the Soft Stereo patch, when played as a harmonized group, produced a beautifully evocative muted sound.

The baritone sax offers a rich and powerful low end, and it can be plenty aggressive when it needs to be. Because bari saxes don't play growls and flutters, Rekevics replaces those articulations with *honks* and *barumps*, those familiar two-note riffs that baris are famous for (think

*Pink Panther*). The library has them in four tempos based on Rekevics' analysis of old R&B and pop hits.

### Sax It Up

The *John Rekevics Saxophone Library* is a welcome addition to the world of desktop composing and arranging. The sforzando patches are all a bit too short, and the "dirty" patches are sometimes a bit too dirty for my taste, but those are nit-picky objections in an otherwise splendid collection. Moreover, the set's PDF documentation is extensive, thorough, and highly informative. All in all, this is a great assortment of super saxes.

### Overall EM Rating (1 through 5): 4.5

Bigga Giggas/Tascam (distributor)

tel.: (323) 726-0303

email: [biggagiggas@biggagiggas.com](mailto:biggagiggas@biggagiggas.com)

Web: [www.tascamgiga.com](http://www.tascamgiga.com) or

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## EVENTIDE

### Reverb

By Nick Peck

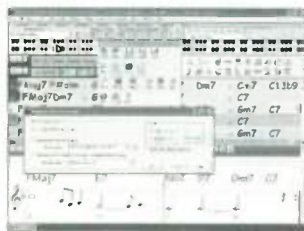
Eventide's succinctly named Reverb plug-in brings the reverb algorithms of their hardware-based processors to the world of Pro Tools plug-ins. Reverb retails for \$695 and requires Pro Tools|HD or Pro Tools|HD Accel under Mac OS 9 or OS X. Windows XP and ICON support should be offered by the time you read this.

Decent-sounding reverb requires a hefty amount of processing power, and Eventide Reverb is no exception. A single instantiation of the plug-in requires a full DSP chip on a Pro Tools|HD system, which is why Eventide has not released a native version; Reverb is necessarily aimed at the high end of the digital audio market. In fact, Reverb's processing requirements are so great that it will run only at 44.1 or 48 kHz sampling rates on an HD system; it requires HD Accel to run at 88.2 or 96 kHz.

Reverb is first and foremost a reverb plug-in, but Eventide places it within a signal-processing chain to create a wider variety of effects. The chain includes



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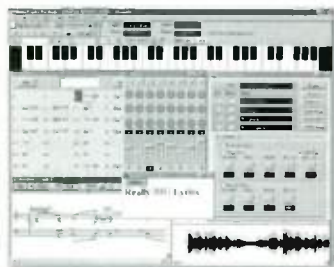
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**Eventide's Reverb brings Orville and Eclipse-style reverb to Pro Tools TDM for Mac.**

compression and 3-band parametric EQ (both of which can be pre- or postreverb) as well as stereo delay and lo-fi processing, that latter for adding a little digital grunge.

### Taking Control

Reverb's controls are intuitive and clearly laid out, with an eye to streamlined productivity. Most onscreen controls are sliders, which work particularly well with control surfaces such as the Mackie's HUI and Digidesign's Control|24. The EQ and compression sections include graphic representation. The snapshot pane is of particular note: it allows you to quickly store and access 32 commonly used presets using 16 individual buttons, which is great for quickly auditioning your favorite patches.

The reverb section boasts nine algorithms derived from Eventide's hardware processors: categories include halls, chambers, rooms, plates, and ambience. Some of the additional reverb parameters are decay time, predelay, diffusion, room size, glide rate, reverb level, early-reflection level, mod rate, and mod depth.

### Just for Effect

Reverb offers pre- and postreverb 3-band parametric EQ with adjustable Q and optional shelving for the high and low bands. Separate high- and low-shelving filters are given for reverb and delay. All four EQ curves are simultaneously displayed in a color-coded graphic interface. This visual concept is innovative and easy to use, and having such specific tone-shaping control over each aspect of the reverb chain is extremely cool.

The delay section is a textbook stereo processor, with adjustable left- and right-delay times, delay level, and positive and negative feedback. Delays can be used for early reflection applications or to create echo effects. I particularly enjoyed using a touch of high-frequency rolloff with delay EQ to create analog-style echoes that were darker than the source material.

Reverb also features an able-bodied stereo compressor, which can be inserted pre- or postreverb. Parameters include, ratio, threshold, make-up gain, attack and release and, in a nice touch, an adjustable knee. The compressor is not particularly colored, but judicious use of the attack and release parameters can help deliver a nice sharp punch to percussive transients.

### Hearing Is Believing

Eventide's hardware reverbs tend to emphasize colored, stylized reverb sounds rather than natural ones and, to my ear, Reverb follows that same approach. The built-in delay and compression features, combined with Eventide's particular reverb algorithms, focus on tough, rocking, aggressive sounds, different in character from, say, the pillowy encompassing sound of a good hardware Lexicon box or the liquid clarity of a convolution plug-in such as Altiverb.

Reverb has some excellent presets. SnareChamberComp is Reverb at its best, using compression and a medium chamber reverb to add serious muscle to a snare drum (see **Web Clip 1**). Strings Plate creates an appropriate space for a horn quartet (see **Web Clip 2**), and Small Guitar Room does a convincing job of giving a close-miked guitar amp some distance (see **Web Clip 3**).

Eventide has created a processor-intensive reverb plug-in that clearly captures the style and sound of their hardware boxes. The user interface is smooth, streamlined, and oriented toward professional production. Built-in delay, EQ, and compression give flexibility and a wide variety of reverb effects. In keeping with Eventide's philosophy, the overall character is flavored rather than natural. Reverb's price and hardware requirements position it at the professional

end of the market. A downloadable demo is available at the Eventide **EMWEB CLIPS** Web site.

**Overall EM Rating (1 through 5): 4**

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## BEST SERVICE

**Galaxy Steinway 5.1 Piano (Mac/Win)**

*By Nick Peck*

**T**he Galaxy Steinway 5.1 virtual instrument (\$299.95) from Best Service is a stereo-compatible 5.1-surround sampled-piano library. Best Service recorded a Steinway grand piano (details not disclosed) in a 3,440-square-foot hall with 26-foot ceilings at Galaxy Studios in Belgium. Five Brüel & Kjær mics were used for close-in recording, and Neumann room mics were used to capture the ambience of the hall. Recording was direct to Pro Tools HD using a Neve Capricorn console.

Galaxy Steinway can run standalone or as a virtual-instrument plug-in. The standalone version supports ASIO 2.0, DirectSound, and MME under Windows; ASIO 2.0 and Sound Manager under Mac OS 9; and CoreAudio under Mac OS X. The plug-in version comes in VST 2.0, DXi, Audio Units, and RTAS formats, making it compatible with all major software hosts. Product authorization uses an online registration tool, but you can run Galaxy Steinway for 30 days without authorization.

### Kompakt But Not Compact

Galaxy Steinway has six discrete channels of 48 kHz, 16- or 24-bit samples. There are no loops; each note is sampled for its full natural decay. Ten Velocity layers are used to capture the Velocity-dependent timbral changes of the piano. Every other note of the piano was sampled, so no note is transposed more than a semitone.

As you might imagine, the resulting sample library is gargantuan; the full surround version ships on three DVDs and takes up 6.5 GB of disk space. A smaller, stereo version requiring 1.2 GB is also provided, but



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This little treat is brand new from the producer of the legendary Off the Hook. Trip out on these construction kits, packed full of Off the Hook, signature guitar licks, piano chops, Rhodes nastiness, sexy strings, tripped out leads and pads, plus all those drum sounds you've been calling us about! 58-102 BPM, these kits are so produced and ready. Loop one up for your lady tonight.



## Ghetto Grooves Vol. 2

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**Best Service's Galaxy Steinway brings surround sound piano to a desktop near you.**

even a library of that size won't fit into most users' RAM. Galaxy Steinway uses Native Instruments' Kompakt sample player, which addresses the size problem by defaulting to Direct From Disc (DFD) playback.

Kompakt also has a number of effects that can be used to process Galaxy Steinway, including a resonant filter, EQ, reverb, chorus, and delay. Volume and filter envelopes along with four LFOs are given for modulation.

Kompakt does not directly support surround-sample playback but rather allows multiple stereo-sampled instruments to be driven by the same MIDI input and routed independently to different outputs. That means that adjusting some parameters—for example, reverb, delay, and chorus—has to be done separately for each pair of outputs.

### In Action

I reviewed Galaxy Steinway on a Pro Tools HD system running on a dual G4/837 MHz Mac with 768 MB of RAM under Mac OS 10.3.4. In the process, I discovered an undocumented problem with the RTAS version: RTAS plug-ins are assignable to only mono or stereo tracks in Pro Tools; they do not work with multichannel audio tracks. Therefore, assigning Galaxy Steinway to a 5.1 audio track is impossible, which effectively cripples Galaxy Steinway in surround mode under Pro Tools. I was able to instantiate the stereo version of Galaxy Steinway, which sounded fine and ran without incident. But the latency under my configuration made the instrument feel sluggish and pillowy. As the saying goes, "Your mileage may differ," depending on your host and your computer.

I had a more satisfying experience in standalone mode. Running it through my Digidesign 192 I/O using CoreAudio with DigiCoreAudio driver 6.5.2, I experienced mini-

mal latency. The piano was really able to strut its stuff in surround, and I was finally able to enjoy what the folks at Best Service worked so hard to create.

### Hearing Is Believing

I enjoyed the sound of Galaxy Steinway's low-bass strings. They are rich, deep, and huge, and they respond to Velocity smoothly, with an accurate and appropriate brightening in timbre as the key is struck harder. The midrange is well recorded, but I had a nagging sense of stasis as I played in that range; the notes felt somewhat pinched and frozen. The high end of the instrument is more satisfying, providing good detail particularly for the undamped strings near the top of the piano. To hear it for yourself, check out **Web Clip 1**.

Needless-to-say, Galaxy Steinway is not a perfect replacement for the real instrument; there are too many variables to be captured using a sample-playback paradigm. Nevertheless, Galaxy Steinway compares favorably with other sampled-piano libraries I've heard. It's clean and smooth and would work well in a supporting role within a recording. The Kompakt engine's sample effects are a nice touch if you're interested in processing the piano, but the main feature of the library is its detailed and beautiful piano sound. On that score, Galaxy Steinway delivers.



### Overall EM Rating (1 through 5): 3

Best Service/EastWest (distributor)  
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## BAG END

### M-6 and Infra-12 Pro

By Eli Crews

**B**ag End's passive M-6 monitors (\$596 each) are aimed at the personal- and project-studio market. About the same size as the ubiquitous Yamaha NS-10s, the M-6s are designed for close-field monitoring.

The speakers are black with a nylon grille cloth, and weigh 15 lbs. each. They feature a 6-inch woofer, a 1-inch Neodymium tweeter,

and binding-post connectors. With a pair of M-6s and the optional Infra-12 Pro subwoofer (\$1,980), you can assemble an integrated 2.1 system.

### In the Middle

Unlike many studio monitors, which have a slight frequency dip at their crossover point, the M-6s are quite flat in the midrange. That can be good or bad, depending on your point of view. I've always found that the midrange defines the sound of a mix more than the highs or lows. That's where the frequencies for vocals, guitars, keyboards, and snare drums mainly reside.

The M-6s give you a clear window into those frequencies, letting you zero in on the heart of your mix. The downside is that the speakers are putting out a lot of energy in the 2 to 4 kHz range, which can lead more quickly to ear fatigue and make it more difficult to judge a mix as a session progresses.

For context, I compared the M-6s with my regular studio monitors, a pair of Genelec 1030As. When I switched the reference mix from the 1030As to the M-6s, I immediately noticed that the cymbals receded a bit and the guitars and vocals got louder and more aggressive. On a solo acoustic guitar track, the shimmer went away somewhat and was replaced by a nice woodiness and a clearer picture of the room tone.

### Aligned in Time

A unique feature of the Bag End speakers is their concentric tweeter design, meaning



**When you team the Bag End M-6 monitors with the company's Infra-12 Pro subwoofer, you get a quality 2.1 system that gives you an accurate representation of what's going on in your mix.**



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that the tweeter sits right in the middle of the woofer. The idea is that the sound coming from both drivers (woofer and tweeter) will hit your ears at exactly the same time no matter where your head is positioned, helping to eliminate phase issues between them.

Bag End also uses a process called Time Align (Time Align is a registered trademark of E.M. Long Associates, from which Bag End licensed the technology), which ensures that the tweeter and woofer are putting out the same signal at exactly the same time, further reducing phase problems. The sweet spot of the M-6s is much wider than that of most speakers, without the phasing you sometimes get from moving your head a few inches.

#### On the Down Low

By themselves, the M-6s don't have a lot of bottom. They spec out down to 60 Hz, but they seem to drop off sharply around 80 or 90 Hz. It makes a world of difference, how-

ever, when you plug them in through the Infra-12 Pro subwoofer; you get a clean and focused low end.

A highpass circuit, built into the sub's outputs, allows you to plug your monitor mix in to two of its six XLR inputs (or all six for surround) and then take those channels' corresponding outputs out on XLRs to the power amp. You also get a switch for reversing the polarity of the collective bass signal, and one for cutting off the low-end response of the sub at 20 Hz instead of its impressive 8 Hz default.

The sub's Dynamic Filter Protection circuitry is designed to attenuate frequencies that are causing overload. A separate module containing an LED is provided, which plugs into the Infra-12 Pro and lights to indicate when the protection circuit is active.

#### Not Too Shabby

Although the 2.1 system featuring the M-6s and the Infra-12 Pro is expensive, the

quality is commensurate to the price. These are fine speakers, and I've enjoyed recording and mixing on them during the evaluation period for this review. My mixes on them translated quite well when listened to on other systems such as my home stereo.

With their flat midrange and passive electronics, the M-6s may not sound as pleasing as some other studio monitors, but perhaps that makes them more compatible with real-world listening environments. When you are able to hear a good representation of what is really going on in the music, it helps a lot, and that's exactly what this system provides. I give the M-6s a thumbs-up, but only when teamed with the Infra-12 Pro. Start saving for them now.

#### Overall EM Rating (1 through 5): 4

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*~Terry Howard, Recording Engineer (Ray Charles, James Taylor, Michael McDonald, Willie Nelson, Barbra Streisand, Ellis Hall)*

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## SONIC REALITY

Sonic Refills Vol. 12: Acoustic Folk

By Marty Cutler

It's not too difficult to find good acoustic guitar samples. But authentic, high-quality sounds for bluegrass and folk music are in relatively short supply. Sonic Reality *Sonic Refills Volume 12: Acoustic Folk* (\$49.95) for Propellerhead Reason does a terrific job of

filling that void. The CD-ROM holds 98 MB of 16-bit, 44.1 kHz samples for Reason's NN-XT sampler, as well as a Resources folder with 288 MB of additional files in WAV format.

To install the sounds, just drag the Refill file to the appropriate folder on your hard drive. To load the sounds into Reason, select the NN-XT sampler from the Create menu, navigate the instrument's browser to the newly installed file, and pick an instrument. Subsequent clicks on the browser present a drop-down menu of all available patches in

the Refill file. The separate Resources folder holds subfolders of samples for each instrument, and the sample file names have pitch information. Other than that, there is no documentation, except for a PDF that lists credits and installation instructions.

Most of the patches are variations of the instruments and feature multiple Velocity crossfades with ancillary performance artifacts, such as finger-slide noise and fret squeaks. In a few instances (as with the mandolin patch) the set has a minimal number of samples stretched in a single layer across the keyboard.

## Chop Shop

The banjo samples are nicely recorded, have a generous loop length, and originate from a high-quality instrument. Most banjo samples I have heard sound like cheap instruments with more inharmonic junk than fundamental. This batch is deep, rich, and plunky without sacrificing high end. In contrast, the banjolin samples accurately convey the brassy, more percussive, and ever-so-slightly out-of-tune quality of this comparatively obscure instrument—great for jug band and old-timey string-band arrangements.

The only fiddle patches available are either too short or the attack is too slow. A quick tweak of the NN-XT envelope generators solve the problem. An additional stroke

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Sonic Reality *Sonic Refills Volume 12: Acoustic Folk* offers samples of acoustic string instruments tailored for use in the Propellerhead Reason NN-XT sampler.



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## Quick Picks

of the bow in the sample makes this a great patch for bluegrass fiddle, because the second bowing is preceded by a nice volume swell. That allowed me to spin off rapid-fire fiddle solos with more expressiveness on sustained notes (see **Web Clip 1**).

In the context of a bluegrass band, the mandolin needs to "chop" a staccato chord and get out of the way with a minimum of ringing. Although the mandolin patch lingers longer than necessary, a quick tweak of the release stage makes this issue moot. The instrument sounds great, but suffers due to stretching a considerably lower sample count than most of the other instruments. I would gladly sacrifice the banjo and fiddle loops (which are mostly cliché-ridden and have no tempo information) for a more generous range of samples for mandolin.

Among the guitar patches, Acoustic Folk is a standout with nice Velocity crossfades and fret-squeak release loops. Acoustic Bass is an acoustic bass guitar—as opposed to the Upright bass patches—which

features a generous samplemap. The up-rights work fine within a folk music context: no fancy finger vibrato at the tail, just solid pizzicato samples for accompaniment.

### Steeling Away

Although the pedal-steel guitar isn't an acoustic instrument, I welcome its inclusion. Sonic Reality does a solid job in providing a variety of articulations, including picked notes with and without slides into the target pitch and notes played with a volume pedal. The patches don't account for the steel's ability to bend groups of notes upward and downward simultaneously, but that is easily accomplished with a second instance of the patch.

The Dobro is represented by a fine set of rich, resonant, and slightly metallic-sounding samples. Here, the set of instrumental phrases works better, because most are played rubato and are therefore not tempo-dependent.

The package also has several decent drum kits, including brushed samples. The

kits balance nicely with the stringed instruments, although I'd be hard-pressed to shoehorn some of the kit variants that have synthy, resonant filter settings into folk arrangements.

### Folked Up

These aren't the only instruments in the collection. You also get a steam calliope, harmonicas (with a terrific bass harmonica), a mountain dulcimer, and a harmonium (with a separate batch of pump-noise samples). All of the sounds are well balanced and work nicely in ensemble arrangements.

Despite a few minor cautions, the *Sonic Refills Vol. 12: Acoustic Folk* collection is a terrific value. These instruments are the new go-to sounds for my bluegrass and folk tracks. 

### Overall EM Rating (1 through 5): 4

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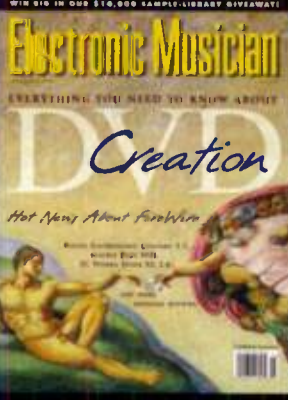
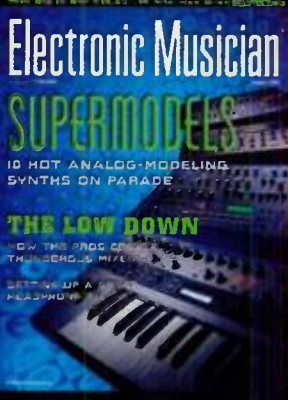
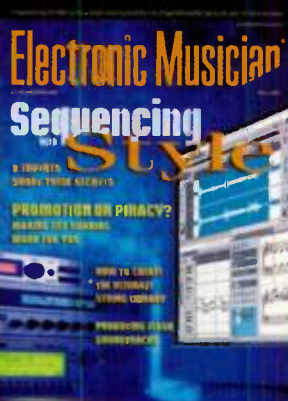
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# ARTICLE INDEX 2004

## Columns

### Desktop Musician

A Big Mac and a Side of Plug-Ins	
By Orren Merton	8/04
Colors of the Rainbow	
By Gary Hall	10/04
Conquering the DAW	
By Kevin Smith	6/04
Optical Media Wars: DVD versus SACD	
By Gary Hall	11/04
Phone It In!	
By Hayden Porter	2/04
Playing with Pd	
By Jim Aikin	4/04

### Final Mix

Every Which Way to Sunday	
By Larry the O	7/04
I'm Not Like Everybody Else	
By Larry the O	12/04
In Defense of the Lone Arranger	
By Larry the O	6/04
Is Better Best?	
By Larry the O	2/04
Measuring Up	
By Larry the O	1/04
Ogie Yocha	
By Larry the O	8/04
Pick Your Poison	
By Larry the O	9/04
Question Reality	
By Larry the O	10/04
Shoring the Foundation	
By Larry the O	11/04
Stupider Than Fiction	
By Larry the O	4/04
What's in a Word?	
By Larry the O	5/04
Where Do You Want to Go in This Life?	
By Larry the O	3/04

### Pro/File

Avant-Garde Party (Andre LaFosse)	
By Matt Gallagher	9/04
Band on the Run (Kinky)	
By Matt Gallagher	3/04
Between the Lines (Plink)	
By Matt Gallagher	2/04
Cloud Formations (Curtis Roads)	
By Dennis Miller	5/04
The Great Escape (Dave Wood)	
By Heather Johnson	8/04
Live from New York (Terry Silverlight)	
By Matt Gallagher	4/04
Planning Commission (Slicker)	
By Matt Gallagher	11/04
Gold Standard	
(Maggi, Pierce, and E.J.)	
By Matt Gallagher	12/04

### Recording Musician

Brass Tactics	
By David Summer	11/04

Captured in Concert	
By Jeffrey P. Fisher with Calvin Engel	1/04
Finding the Sweet Spot	
By Brian Knave	10/04
Recording Outside the Box	
By Pat Kirtley	3/04
Sizzle, Punch, and Groove	
By Brian Knave	6/04
The Winning Pitch	
By Sean Carberry	5/04
You Can Take It With You	
By Pat Kirtley	8/04

### Square One

About Phase	
By Dave Moulton	5/04
Can You Believe Your Ears?	
By Mark Ballora	11/04
Get with the Interaction	
By Mark Ballora	2/04
Look Through Any Window	
By Mark Ballora	7/04
Master of the Universe	
By Brian Smithers	12/04
Tricks for Tracks	
By Jim Aikin	3/04
You've Got the Power	
By Mark Ballora	9/04

### Tech Page

Charming the CobraNet	
By Scott Wilkinson	2/04
Cybersinger	
By Scott Wilkinson	4/04
Getting Found	
By Scott Wilkinson	3/04
Getting Holographic	
By Scott Wilkinson	5/04
In the Groove	
By Scott Wilkinson	11/04
Sonofusion	
By Scott Wilkinson	9/04
True Stereo	
By Scott Wilkinson	12/04
Wood and Dried Squid	
By Scott Wilkinson	7/04

### Working Musician

Cover Your Assets	
By Jeffrey P. Fisher	11/04
Don't Get Ripped Off!	
By Michael Cooper	2/04
Do You Need a Producer?	
By Lory Kohn	9/04
Hit the Books	
By Jeffrey P. Fisher	1/04
Make Noise in a Library	
By Jeffrey P. Fisher	7/04
Pounding the Virtual Pavement	
By Ravi	12/04
Ten Things I Wish I'd Known Then	
By Jeffrey P. Fisher	4/04
Taking Care of Business	
By Michael Cooper	6/04

## Features

2004 Editors' Choice Awards	
By the EM Staff	1/04
All Things Great But Small (EM's 2004 holiday gift guide)	
By Gino Robair	12/04
Ambience Clinic (adding space to a mix)	
By Julian McBrowne	12/04
Bargain Hunter's Delight (nine soft-synths for less than \$100)	
By Brian Smithers	5/04
Beat Generation (software drum machines and drum modules)	
By Marty Cutler and Todd Souvignier	9/04
Capturing the Kit (recording acoustic drums)	
By Brian Knave	7/04
CD+G=\$ (producing and marketing karaoke CD+Gs)	
By Will Connelly	6/04
Divide and Conquer (stem mixing)	
By Julian McBrowne	9/04
Ears to You! (preserving hearing health)	
By Charles J. Limb, M.D.	5/04
In Search Of...The Ultimate Latin Pop and World Percussion Library	
By Rob Shrock	10/04
Keep It Simple (streamlining your workflow)	
By Nick Peck	7/04
Let's Split (split-band compression)	
By Michael Cooper	1/04
Making the Cut (audio-editing techniques)	
By Nick Peck	6/04
Master Class: Best of Reaktor (Native Instruments Reaktor)	
By Rick Scott	11/04
Master Class: The Joy of SX (Steinberg's Cubase SX digital audio sequencer)	
By Jim Aikin	8/04
Master Class: Mastering Waves (Waves Platinum bundle)	
By Bob Reardon	7/04
Mixing Strategies of the Pros (Roger Nichols, Tim Palmer, and Dave Pensado)	
By Maureen Droney	4/04
DAWs R Us (PCs customized for music production)	
By Brian Smithers	12/04
A New Approach to Personal-Studio Acoustics	
By Ethan Winer	4/04
Production Values: Frank Talk from Filipetti (Frank Filipetti)	
By Maureen Droney	3/04
Production Values: Playing It By Ear (Neal Pogue)	
By Maureen Droney	8/04
Production Values: Recording by Instinct (the Wellwater Conspiracy)	
By Mike Levine	2/04
Production Values: Scoring Fit for a King (Gary Chang)	
By Maureen Droney	10/04
Production Values: Sonic Surgeon (BT)	
By Mike Levine	5/04
Production Values: Trackin' It at the Barn (Little Feat)	
By Mike Levine	11/04





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# ARTICLE INDEX 2004

Recording Dialog for the Digital Arts <i>By Nick Peck</i> .....	3/04
Smokin' Condensers (seven midpriced small-diaphragm condenser microphones) <i>By Myles Boisen</i> .....	3/04
Sounds from Another Planet (the Linux OS and Stanford University's Planet CCRMA project) <i>By Allan Metts</i> .....	1/04
Sweet and Low (recording electric bass) <i>By Maureen Droney</i> .....	6/04
Tracking the Big Cats (optimizing Mac OS X for music production) <i>By Jim Bates</i> .....	9/04
Trading Spaces (round-up of 13 convolution-reverb plug-ins) <i>By Dennis Miller and Mike Levine</i> .....	10/04
Two Heads Are Better Than One (using multiple computers in a personal studio) <i>By Thad Brown</i> .....	8/04
Tracking the Elusive Vocal <i>By Sean Carberry</i> .....	4/04
Voices from the Machine (speech synthesis) <i>By Len Sasso</i> .....	2/04
World Wide Waveforms (audio on the Web) <i>By Thad Brown</i> .....	11/04

## Quick Pick Reviews

Apogee Electronics Corp. Mini-MP 2-channel analog preamp.....	7/04
Applied Acoustics Systems Lounge Lizard EP-2 (Mac/Win) virtual electric piano.....	4/04
Audix D6 dynamic microphone.....	2/04
Auralex Acoustics Aural-Xpanders acoustical treatment.....	7/04
Bag End M-6 and Infra-12 Pro studio monitors and subwoofer.....	12/04
Best Service Galaxy Steinway 5.1 Piano (Mac/Win) virtual instrument.....	12/04
BIAS SoundSoap 1.1 (Mac/Win) sonic-restoration software.....	2/04
Big Fish Audio <i>LA Drum Sessions</i> (Acidized WAV) sample library.....	2/04
Bigga Giggas <i>John Rekevics Saxophone Library</i> (Giga, Kontakt) sample library.....	12/04
Brian Moore Guitars iGuitar 8.13 electric guitar with 13-pin pickup.....	3/04
Cakewalk Kinetic (Win) digital audio sequencer.....	12/04
Cycling '74 <i>Sustained Encounters</i> sample library.....	9/04
Discovery Firm <i>Alma Flamenco</i> (Audio, Acid, REX2) sample library.....	8/04
Discovery Firm <i>Bom dia Brazil</i> (Acidized WAV, REX2) sample library.....	4/04
EastWest PMI Grandioso Bösendorfer 290 sampled-piano plug-in.....	5/04
eLab <i>Smokers Delight</i> (audio/WAV/REX) sample library.....	3/04
Electro-Harmonix Bi-Filter analog mono filter.....	10/04
Eventide Reverb (Mac/Win) DSP software.....	12/04
Evolution U-Control UC-33e (Mac/Win) USB/MIDI control surface.....	2/04
FMR Audio RNP 8380 Really Nice Preamp mic preamp.....	1/04

FXpansion BFD 1.07 (Mac/Win) virtual instrument.....	5/04
i3 Software DSP-Quattro 1.5 (Mac) multitrack audio editor.....	6/04
iRiver H120 Multi-Codec Jukebox portable hard-disk recorder.....	11/04
Kenton Spin Doctor MIDI control surface.....	1/04
Korg ToneWorks Ampworks guitar-effects processor.....	5/04
MasterWriter MasterWriter (Mac/Win) songwriting software.....	4/04
Metasonix TM-3 Gas-Tube Dual VCO with Suboctave analog synth module.....	1/04
Native Instruments Absynth 2 (Mac/Win) software synthesizer.....	1/04
Native Instruments Elektrik Piano (Mac OS X/Win) virtual electric piano.....	12/04
Native Instruments Intakt 1.0.3 (Mac/Win) loop sampler.....	10/04
Neumann BCM104 condenser microphone.....	12/04
Primera Bravo Disc Publisher duplicator and printer.....	2/04
PrimeSounds <i>A Funky Future</i> (audio WAV/REX) sample library.....	3/04
PSAudiware Nitro 1.0 (Mac/Win) multi-effects software.....	10/04
reFX Vanguard 1.04 (Mac/Win) soft-synth plug-in.....	11/04
Roland GR-20 MIDI guitar synthesizer system.....	11/04
Roland Micro Cube guitar amplifier.....	8/04
Seven Woods Audio Ursa Major Space Station SST-206 digital effects processor.....	2/04
Sibelius Software Sibelius 3 (Mac/Win) notation software.....	6/04
Sonic Implants <i>Atsiä: West African Dancing Drums</i> (Giga, Kontakt, SoundFont) sample library.....	8/04
Sonic Implants <i>Symphonic Brass Collection</i> (Giga) sample library.....	11/04
Sonic Reality <i>Sonic Refills Vol. 12: Acoustic Folk</i> sample library.....	12/04
Sony Pictures Digital <i>Rhythm and Twang</i> (Acidized WAV) sample library.....	6/04
Sony Pictures Digital Media <i>Sweet and Low Bass</i> (Acidized WAV) sample library.....	9/04
SoundToys FilterFreak (Mac) filter effects plug-in.....	5/04
SoundToys PhaseMistress (Mac) phase-shifter plug-in.....	7/04
Summit Audio 2BA-221 preamp.....	2/04
Tascam <i>Westgate Studios Woodwind Collection, Expanded Edition</i> (Giga) sample library.....	10/04
Tech 21 SansAmp RBI bass processor and DI.....	9/04
Trident Loudspeaker Company LS-101 monitor.....	7/04
Trillium Lane Labs TL EveryPhase 1.1 (Mac/Win) phaser plug-in.....	6/04
ToadWorks Death Rattle guitar-amp emulator.....	3/04
U-he.com Zebra 1.5 (Mac) software synth.....	7/04
Ultimate Sound Bank Charlie virtual organ module.....	9/04
Zero-G Morphology (Mac/Win) virtual instrument.....	11/04

## Reviews

Ableton Live 3.0 (Mac/Win) loop sequencer.....	4/04
Ableton Live 4.0 (Mac/Win) digital audio sequencer.....	12/04

AKG C 414 B-XLS and C 414 B-XL II condenser microphones.....	8/04
Alesis Ion virtual-analog synthesizer.....	2/04
Alesis ProActive 5.1 surround speaker system.....	5/04
Algorithmic Arts ArtWonk 1.2 (Win) algorithmic-composition software.....	9/04
Antares Audio Technologies Auto-Tune 4 (Mac/Win) pitch-correction plug-in.....	12/04
Antares Audio Technologies Filter 1.0 (Mac/Win) filter plug-in.....	7/04
Apogee Mini-Me and Mini-DAC mic preamp/ADC and DAC.....	3/04
Apple Computer GarageBand 1.1 (Mac) digital audio sequencer.....	7/04
Apple Computer Soundtrack 1.1 (Mac OS X) loop editor.....	2/04
Arturia CS-80V (Mac/Win) software synthesizer.....	7/04
Arturia Minimog V (Mac/Win) software synthesizer.....	8/04
Arturia Moog Modular V 1.1 (Mac/Win) software synthesizer.....	1/04
Audio-Technica AT3060 tube microphone.....	2/04
Audix USA Micros M1245 and M1290 cardioid condenser microphones.....	7/04
BIAS Peak 4.1 (Mac) stereo audio-editing software.....	7/04
Boss BR-1600CD portable digital studio.....	9/04
Cakewalk Guitar Tracks Pro 3 (Win) digital audio sequencer.....	11/04
Cakewalk Sonar 3.1 Producer Edition (Win) digital audio sequencer.....	5/04
Camel Audio Cameleon 1.3 (Mac/Win) additive-synthesizer plug-in.....	11/04
Clavia Nord Modular G2 (Mac/Win) DSP-based modular synthesizer.....	11/04
CreamWare Noah DSP engine/synthesizer.....	2/04
Cycling '74 Mode (Mac) plug-in bundle.....	12/04
db audioware quantum-fx 1.06 (Win) modular effects software.....	9/04
Digidesign Pro Tools 6.1 (Mac/Win) digital audio workstation.....	1/04
East West/Quantum Leap <i>Symphonic Orchestra Platinum Edition</i> sample library.....	12/04
Edirol UA-1000 (Win) USB 2.0 audio interface.....	6/04
Elektron Monomachine synthesizer workstation.....	9/04
Emagic Logic Pro 6 (Mac) digital audio sequencer.....	6/04
Event Electronics Studio Precision 8 Active active close-field monitor.....	5/04
Eventide Clockworks Legacy Bundle 1.12 (TDM) vintage effects plug-ins.....	6/04
Focusrite ISA 428 Pre Pack mic preamp.....	3/04
Focusrite TwinTrak Pro stereo voice processor.....	8/04
Garrigan Personal Orchestra (Mac/Win) sample library.....	11/04
GForce ImpOScar 1.0.1 (Mac/Win) software synthesizer.....	11/04
IK Multimedia SampleTank 2 (Mac/Win) sample-player plug-in.....	4/04
Jasmine Music Technology Onyx Arranger 2.1 (Win) algorithmic-composition software.....	10/04



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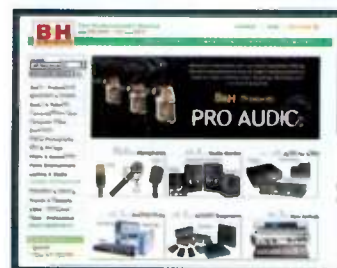
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## ARTICLE INDEX 2004

JLCooper CS-32 MiniDesk (Mac/Win)	
control surface.....	7/04
Korg Legacy Collection 1.0 (Mac/Win) soft synth	
and effects suite .....	10/04
KRK ST8 passive close-field monitor .....	5/04
Kurzweil Rumour and Mangler rackmount	
effects processors.....	10/04
LinPlug RM IV 4.05 (Mac/Win) drum-machine	
plug-in .....	8/04
Magix Samplitude Professional 7.11 (Win)	
multitrack audio editor .....	1/04
M-Audio Luna and Solaris large-diaphragm	
condenser mics.....	4/04
M-Audio Octane 8-channel mic preamp	
and A/D converter.....	12/04
M-Audio Tampa mic preamp/compressor .....	5/04
MakeMusic Finale 2004 (Mac/Win)	
notation software.....	8/04
Moog Music PianoBar piano-to-MIDI converter...6/04	
MOTU Digital Performer 4.11 (Mac OS X)	
digital audio sequencer.....	3/04
MOTU MachFive 1.07 (Mac)	
software sampler .....	2/04
PreSonus Eureka channel strip .....	6/04
Rane C4 Quad Compressor quad	
compressor/limiter/de-esser .....	12/04
Rane G4 Quad Gate quad gate/ducker/	
expander .....	7/04
Røde NT2000 condenser microphone .....	6/04
Roger Linn Design AdrenaLinn II effects	
processor.....	3/04
Roland V-Synth keyboard synthesizer/sampler .....	1/04
SmartSound Sonicfire Pro 3.1.1 (Mac/Win)	
sound-track-creation software .....	9/04
Sony Pictures Digital Sound Forge 7.0a (Win)	
audio editor .....	4/04
SoundHack Spectral Shapers 1.0 (Mac/Win)	
effects plug-in bundle .....	10/04
Steinberg Cubase SX 2.0.1 (Mac OS X/Win)	
digital audio sequencer.....	5/04
Steinberg D'cota 1.0 (Mac/Win) VST	
synthesizer .....	2/04
Steinberg Hypersonic 1.0 (Mac/Win) synth	
plug-in.....	9/04
Steinberg WaveLab 5 (Win) multitrack	
audio editor .....	12/04
Steinberg XpHz 1.1 (Mac/Win) software	
synthesizer .....	3/04
Studio Projects LSD2 stereo large-diaphragm	
condenser microphone .....	5/04
Symbolic Sound Kyma X (Mac/Win)	
sound-design workstation .....	10/04
Tapco S-5 active close-field monitor .....	5/04
Tascam 2488 Digital Portastudio portable	
digital studio .....	11/04
VirSyn Cube 1.01 (Mac/Win) software	
synthesizer .....	2/04
VirSyn Software Synthesizer Cantor 1.02	
(Mac/Win) software synthesizer .....	12/04
Vox Amplification ToneLab guitar-amplifier	
modeling processor.....	4/04
Yamaha 01X digital mixer/control surface .....	11/04
Yamaha SPX2000 multi-effects processor .....	4/04
Zero-G Vocaloid 1.02 Leon and Lola (Win)	
voice-modeling synthesizer .....	8/04



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# ADVERTISEMENT INDEX

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8th Street Music	www.8thstreet.com	105	Neutrik	www.neutrik.com	43
ADK Microphones	www.adkmic.com	128	Perfect Pitch	www.perfectpitch.com	110-111
Alesis	www.alesis.com	71	PG Music	www.pgmusic.com	123
Apogee	www.apogeedigital.com	47	Phonic	www.phonic.com	10
Arturia	www.arturia.com	29	Recording Workshop	www.recordingworkshop.com	114
Audio-Technica	www.audio-technica.com	53	Roger Linn Design	www.rogerlinndesign.com	33
Auralex	www.auralex.com	103	Roland	www.rolandus.com	4-5
B&H Photo-Video (Resource)	www.bhphotovideo.com	137	Rolls Corp.	www.rolls.com	100
B&H Photo-Video (Synergy)	www.bhphotovideo.com	93	SAE Institute	www.sae.edu	127
Bag End	www.bagend.com	115	Sibelius Software	www.sibelius.com	66
Berklee Music	www.berklee.com	10	Sonic Implants	www.sonicimplants.com	119
BIAS	www.bias-inc.com	102	Submersible Music	www.drumcore.com	138
Big Fish Audio	www.bigfishaudio.com	125	Sweetwater Sound	www.sweetwater.com	25
Broadjam	www.broadjam.com	97	Sweetwater Sound (Digidesign)	www.sweetwater.com	34-35
Cakewalk (Project 5)	www.cakewalk.com	91	Sweetwater Sound (Mackie)	www.sweetwater.com	117
Cakewalk (Sonar 4)	www.cakewalk.com	17	Sweetwater Sound (MOTU Studio)	www.sweetwater.com	52-153
Cycling '74	www.cycling74.com	88	Sweetwater Sound (MOTU Studio)	www.sweetwater.com	150-151
Disc Makers	www.discmakers.com	104	Sweetwater Sound (PreSonus)	www.sweetwater.com	78-79
Discovery Firm, Inc.	www.discoverysound.com	59	Tascam	www.tascam.com	23
DVForge, Inc.	www.jamplug.com	67	Taxi (B.Z. Lewis)	www.taxi.com	55
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eBlitz Audio Labs	www.eblitzaudiolabs.com	51	TC Electronic	www.tcelectronic.com	15
Echo Digital Audio	www.echoaudio.com	155	TerraTec North America	www.terrateg.com	109
Edirol	www.edirol.com	58	Toft Audio Designs	www.toftaudiodesigns.com	132
E-mu Systems	www.emu.com	45	Waves (Convolution Revolution)	www.waves.com	107
Europadisk	www.europadisk.com	138	Waves (IR-1 v.2 and Acoustics.net)	www.waves.com	105
Event Electronics	www.event1.com	63	Waves (IR-360)	www.waves.com	101
Focusrite	www.focusrite.com	13	Waves (IR-360, IR-1 v.2 and IR-L)	www.waves.com	103
Frontier Design Group	www.frontierdesign.com	73	Way Out Ware	www.wayoutware.com	56
Full Compass Systems	www.fullcompass.com	131	West LA Music	www.westlammusic.com	101
Full Sail	www.fullsail.com	94	Yamaha (Motif ES)	www.yamaha.com	81
Garritan Orchestral Strings	www.garritan.com	61	Yamaha (Pro Audio)	www.yamaha.com	19
Graph Tech Guitar Labs	www.graphtech.com	114			
IK Multimedia	www.samplerank.com	121			
Ilio (AAS)	www.ilio.com	57			
Ilio (Stylus RMX)	www.ilio.com	9			
Image-Line Software (FL Studio 5)	www.image-line.com	83			
International Music Software Trade Association	www.imsta.org	129			
Jasmine Music Technology	www.jasmineMusic.net	77			
Kay Sound (Hercules)	www.Kaysound.com	11			
Kay Sound (SM Pro Audio)	www.Kaysound.com	113			
Korg (D16XD)	www.korg.com	65			
Korg (Triton Extreme)	www.korg.com	2-3			
Lexicon	www.lexicon.com	31			
Mackie	www.mackie.com	27			
MakeMusic! Inc.	www.makemusic.com	21			
Mark of the Unicorn	www.motu.com	157			
M-Audio (03)	www.m-audio.com	49			
M-Audio (Propellerhead Software)	www.propellerheads.se/getthatsound	75			
McDowell Signal Processing, LLC	www.mcdsp.com	33			
Moog Music	www.moogmusic.com	87			
Musician's Friend	www.musiciansfriend.com	99			
Musicians Institute	www.mi.edu	130			
Native Instruments	www.ni-guitar-rig.com	95			

## ELECTRONIC MUSICIAN MARKETPLACE ADS

AEA	www.wesdooley.com	44
Benchmark Media Systems	www.BenchmarkMedia.com	142
Cascade Microphones	www.cascademicrophones.com	144
Central Computers Systems	www.centralcomputer.com	144
Crystal Clear Sound	www.crystalclearcds.com	143
Digitraxx	www.digitraxx.com	143
ELS Productions	www.elsproductions.com	141
Europadisk, LLC	www.europadisk.com	142
Groove House Records	www.groovehouse.com	143
Labworks	www.labworks.com	141
LimeLight Disc & Design	www.limelightdisc.com	142
Lonely Records	www.lonelyrecords.com	145
Media Services	www.mediaomaha.com	144
Omnirax	www.omnirax.com	143
Phonic	www.phonic.com	141
Play-It Productions	www.play-itproductions.net	145
Rainbo Records	www.rainborecords.com	145
Secrets of the Pros	www.secretsofthepros.com	141
Shreve Audio	www.shreveaudio.com	145

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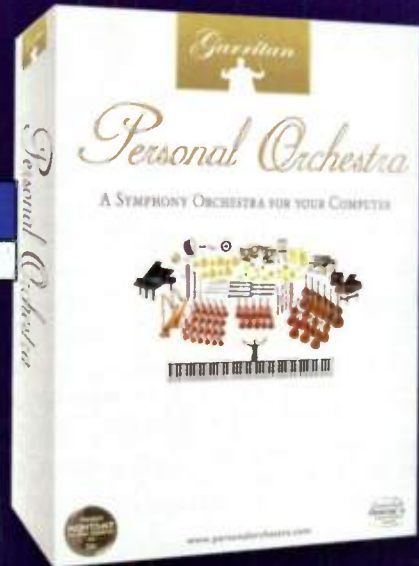


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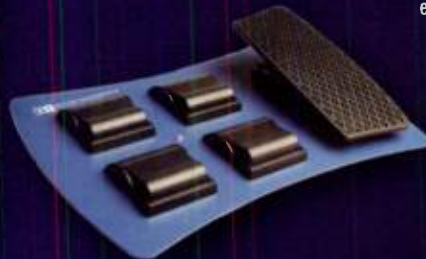


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Do everything like you want me to,  
There's one thing that I will say to you,  
I'm not like everybody else,  
I'm not like everybody else.*

The Kinks, "I'm Not Like Everybody Else"

**W**hy do people march to different drummers, even when being assaulted by a hail of laughter and derision? Sometimes people are absolutely certain that they are right and are butt-stubborn enough not to care what others think. Some people really haven't a choice: it's just who they are, and they can't be any other way. In any case, survival when you are not like those around you takes strength of character.

It is often more financially rewarding to be in the mainstream, but in music and sound, those who diverge from the norm usually leave the most significant legacies. In music, think of Igor Stravinsky, Miles Davis, and Jimi Hendrix; in art, Van Gogh and Alexander Calder. How about electronic music and digital audio instrument pioneers like Max Mathews, Manfred Schroeder, Bob Moog, Don Buchla, and John Chowning; or loud-speaker iconoclasts like Paul Klipsch, Amar Bose, and John Meyer? All of these people followed their muse to new places.

Where do these divergent ideas come from? Often it is inspiration born of viewing the world differently than others; other times, innovative ideas arise in the course of a conscious quest. And then there's always what the Beatles called "happy accidents," otherwise known as "serendipity," such as the fabled apple bonking Sir Isaac Newton's pate. Who among us has not inadvertently made a "mistake" that turned out to have wonderful consequences?

The amount of tolerance in one's environment can play an important part in shaping how the distinctive individual conducts his or her work. Many times in history, innovators have worked in isolation because their culture did not understand, condone, or in some cases even tol-

erate their ideas. Isolation may also be needed to reduce distraction and promote focus. Edison was said to work for as many as 36 hours at a stretch, occasionally climbing onto a table to nap for a few minutes. The road of being different can be a solitary one. That fact is made even more difficult by the recurring presence of failure, an inevitable consequence of trying things not already known to succeed.

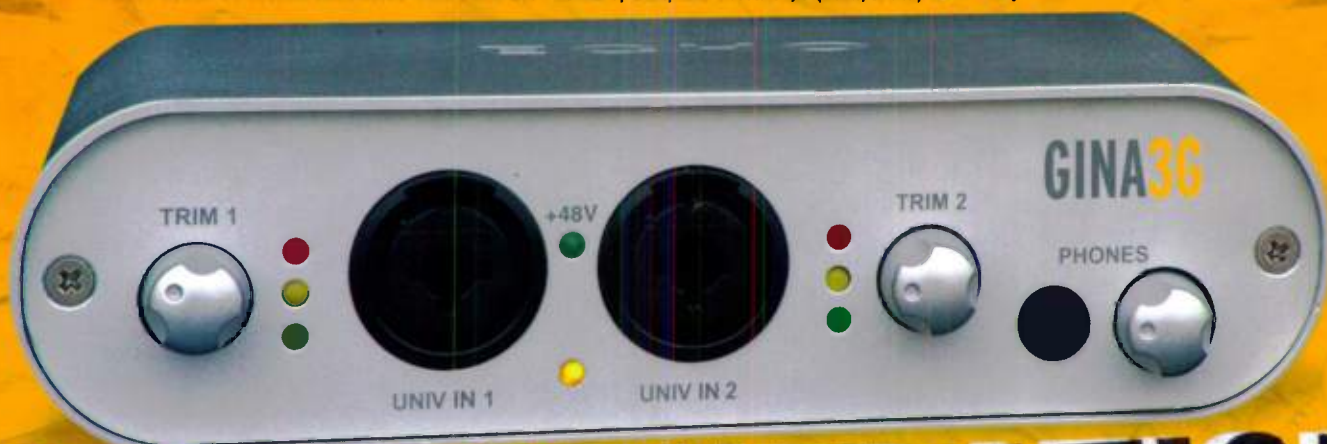
In contrast, there have been times and places in which one was allowed, and even encouraged, to experiment and think of things in new ways. San Francisco's history is filled with examples of someone having an odd or fantastic idea. The reaction of the populace may have been to make jokes, but no moves were made to prevent the projects. Construction of the Golden Gate bridge was considered an impossibility, but it was built through the vision and persistence of its engineer, Joseph Strauss.

A person doesn't have to be completely original in order to be creative; some people express their creativity by refining the ideas of others. The divergent path is not an easy one, nor is it always rewarding. One can rarely expect understanding when heading into unknown territory. In fact, tolerance is the probably the best that one can hope for. The way of the pioneer can turn out to be a tragically wrong one. But time shows that the people who blaze paths that lead us forward are often those who follow their muse without regard to the common wisdom or accepted norms.

The love of money may be the root of all evil, but fear of those who are not like us has much to do with the world's troubles, too. When you encounter someone different from yourself, make the effort not to jump to judgment, and instead, try to gain some grasp of who they really are and what they believe. If you find yourself on the receiving end of that fear, setting aside those dire circumstances that represent true danger, don't be afraid to reexamine your principles and ideas. Sometimes you may change your views but you may conclude that you must find the inner strength to damn the torpedoes and move full-speed ahead. ☸



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