REVIEWED: CELEMONY MELODYNE EDITOR | CAKEWALK SONAR V-STUDIO 100 | AND MORE

MARCH 2010

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ELECTRONIC MUSICIAN

10 NEW SOFT SYNTHS PUT TO THE TEST

ADVANCED TECHNIQUES FOR FL STUDIO

FOUR STEPS TO 5.1 SURROUND

MASSIVE ATTACK

THE STRIPPED-DOWN SOUND OF HELIGOLAND

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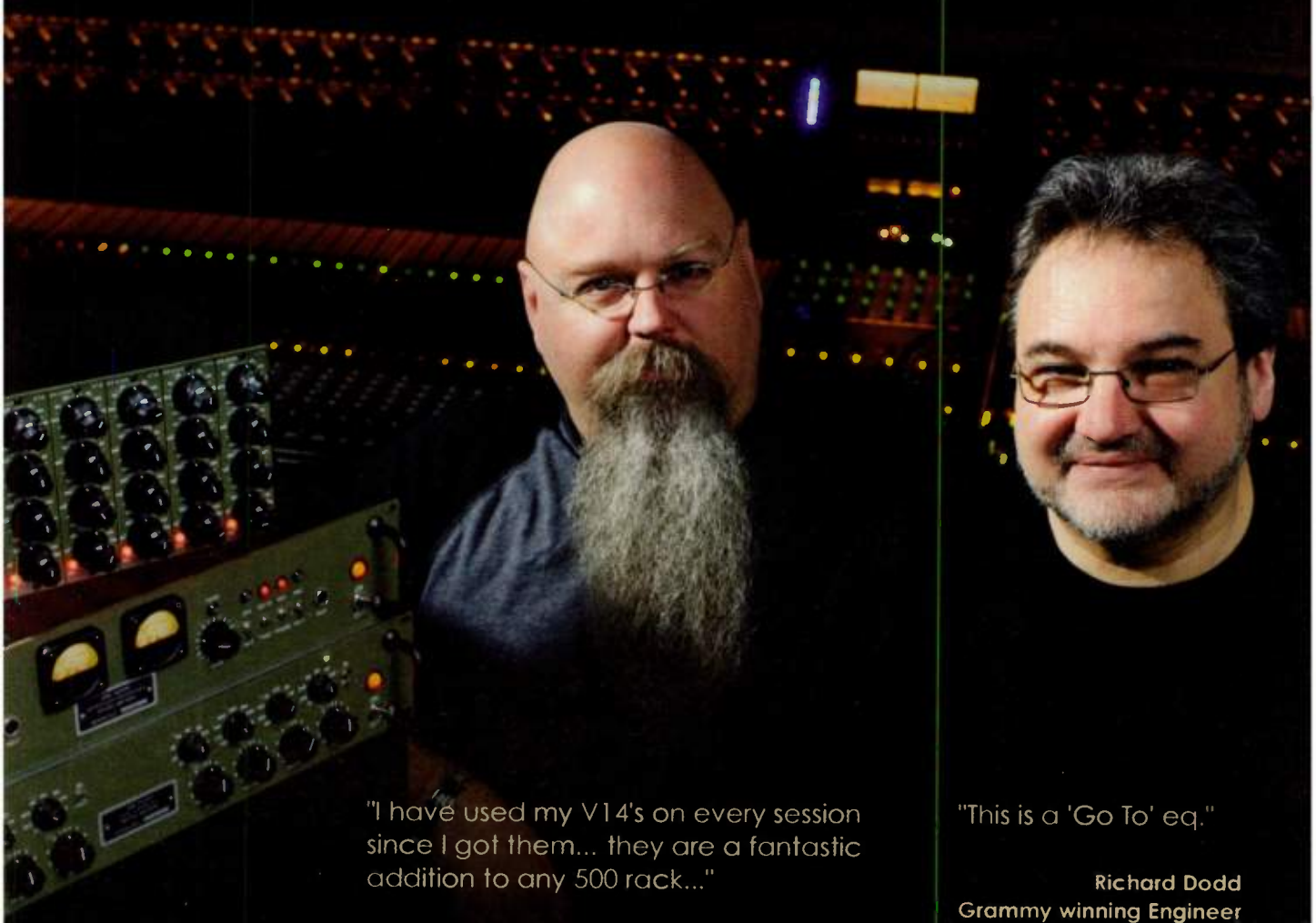

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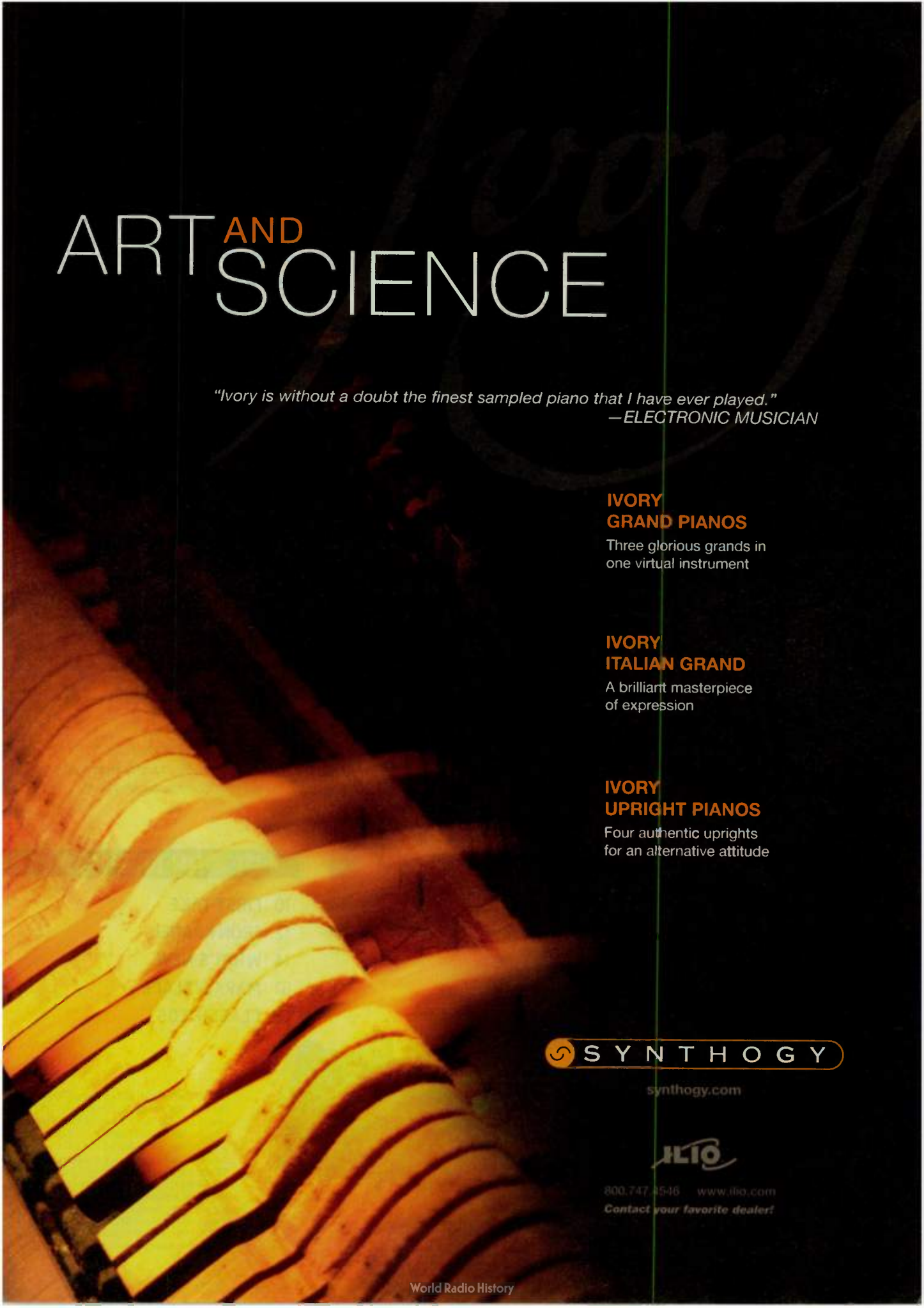

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MARCH 2010 VOL. 26, NO. 3

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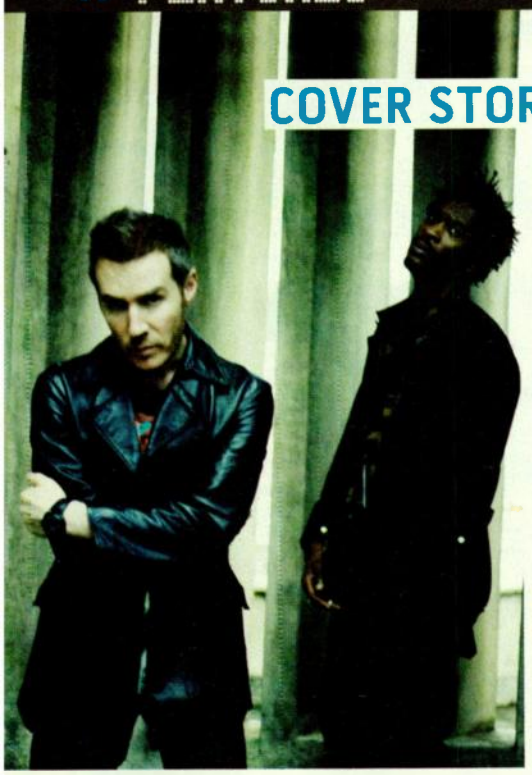

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Massive Attack's new album *Heligoland* features their signature downtempo beats and ominous melodic style, but in a sparser soundscape that contains more real drums and fewer effects. Vocalist/composer Robert "3D" Del Naja, producer/composer Neil Davidge, and engineer Euan Dickinson all spoke with *EM* about the production process.

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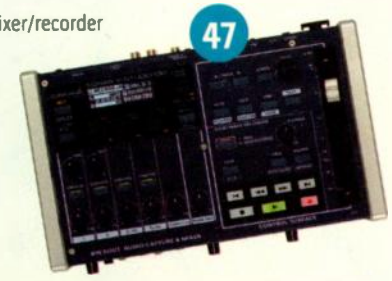

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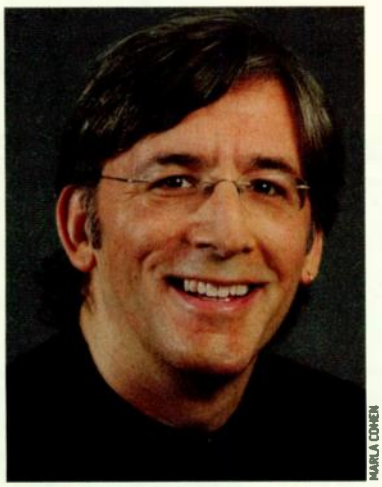
Getting In Tune

There's been a lot of negative buzz about Taylor Swift's off-key performance at the recent Grammy Awards. At the risk of piling on, I thought I'd also comment. It really was pretty shocking to hear someone who was being fêted as the next big thing stink up the joint so badly on the night of her own coronation. Even putting aside her pitch problems, her voice sounded so pedestrian compared to the other singers who performed during the show. It makes you wonder about the packaging of artists. It also shows how much can be done in the studio to improve an ordinary voice.

I have no problem with using pitch correction in the studio. However, the Grammy incident shows that while you can hide a not-so-great voice in the studio, it's not as easy live.

On the subject of pitch correction, this month's issue features Michael Cooper's review (see p. 44) of Celemony Melodyne editor, a product that takes pitch correction to another level. It's designed to correct pitch in polyphonic material. In theory, you could, say, take a recorded chord and change it from major to minor by grabbing the third and flatting it by a half step. You could radically edit a performance, changing the harmony as well as the melody, assuming you're starting with good source material.


MARLA COHEN

If you read Cooper's review, you'll find out that it sounds like, at least right now, that's not so easy to accomplish. Overall, Cooper says the product is powerful, but the polyphonic editing aspect still has a way to go. Read the review to find out the specifics of what he found.

Assuming polyphonic correction eventually does becomes ubiquitous and seamless—the way that monophonic correction is now—think of the changes (no pun intended) it might bring. From a producer's standpoint, it will allow for a lot more manipulation of arrangements. Imagine being able to alter a song's chord structure during mixdown. It would certainly open up a lot of possibilities. On the other hand, songwriters might not be too happy to find that producers have changed the harmonic structure of their songs during mixdown. ("Hey, what happened to that EM chord?") As digital technology continues to give us finer and finer manipulation of sound, there are going to be consequences, both foreseen and unforeseen, that we'll have to deal with.

If you want an interesting take on a major effect technology has had on music, read this month's "Industry Insider" column (see p. 42). In it, Panos Panay, the CEO of Sonicbids, postulates that the free accessibility of music online is causing the devaluation of music as a commodity. According to Panay, the business model of artists selling their music to the public will eventually become totally unworkable. He says that recorded music will return to its original role, as a promotional vehicle for artists' live performances.

I certainly hope that's not where it's heading, but there is no question that selling albums is much more challenging than it once was. (By the way, I am now back to calling them "albums" because with so much music sold via download, it's hard to accurately refer to recordings as "CDs" anymore.) In Nathaniel Kunkel's "InSession" column this month (see p. 66), he puts forth the theory that the way in which we consume music—such as on mobile devices while exercising—has led to a lack of reverence for it and has helped fuel its devaluation.

Nobody knows for sure how all these issues are going to shake out or what the music business will look like in 10 years. We do know one thing, though: We're going to keep making music, no matter what. Enjoy the issue.

Mike Levine
Editor

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Download of the Month

U-he ACE By Len Sasso

If you've ever considered trying your hand at modular synthesis, you couldn't pick a better place to start in the virtual world than ACE (Mac/Win, $85) from Urs Heckman (u-he.com). The price is right, the patching is relatively uncomplicated—owing to the familiar analog-modeled signal path—the manual is excellent, and you'll find more than 500 presets to get you started.

ONLINE BONUS MATERIAL

ACE stands for Any Cable Everywhere. There is no distinction between control- and audio-rate signals, so you can run a cable between any output (black-ringed jack) and any input (gray-ringed jack) and hear what happens. That does come at the expense of a high CPU load. Normaling (behind-the-panel wiring indicated by silver input-jack labels) gives you a fully functioning synth without ever running a cable. Despite being retro in concept, ACE is capable of a broad spectrum of sounds as you'll hear in **Web Clip 1**, as well as in the audio demos and the Lego-inspired video "He Loves My Pies" on the U-he website.

ACE starts with a standard complement of modules: two multiwaveform VCOs and a noise generator, a pair of multimode filters, a pair of amplifiers, and a dual-effects processor. For modulation, you get a couple of LFOs, a couple of ADSR envelopes, a ramp generator, and a multistep control sequencer called Mapper. In addition to the module outputs, a row of jacks across the bottom lets you patch in common MIDI messages. An auto-synching oscilloscope shows you the pre-effects output, and dialing that down to the waveform level is invaluable in seeing the results of your patching.

A great way to approach ACE, and one that is not readily available with hardware modular systems, is to load a preset in a category you want to explore and start ripping out patch chords to see how they affect the sound. If you're new to modular synthesis, that's a quicker way to develop a feel for ACE patching than starting with the default preset and adding cables. And you do want to read the manual.

OPTION-CLICK By David Battino

Mistake Sauce

Discovering gems amid imperfection

While reviewing the Korg microSampler (in the December '09 *EM*, available at emusician.com), I noticed that even if I sang off-key into its looper effect, the bad bits would coalesce into a pleasing chorus if I kept on singing. That reminded me of Brian Eno's very first Oblique Strategy, "Honor thy error as a hidden intention." Imperfection adds a special flavor to our quantized world of electronic music production.

Indeed, videogame composer George "The Fat Man" Sanger keeps old brass instruments lying around because "a little mediocre brass playing is a lot better than no brass at all in many cases. It just makes a world of difference to how your heart responds."

Or to paraphrase Claude Shannon, the father of information theory, "Forget perfection. Use error correction." Smack handfuls of keys or drum pads at once, and then delete the notes you don't like. —*David Battino, Batmosphere.com*

The Korg microSampler's seemingly undersized one-bar looper effect can convert sloppy singing into rich choruses.

This Month on Emusician.com

NAMM 2010

This year's NAMM show was bustling with lots of new audio goodies. Make sure you log on to emusician.com/ms/namm to check out product-demo videos, blogs, newsletters, and so much more!

COMPOSER PROFILE

Available only at emusician.com is our new monthly Composer Profile series, where we check in with a composer—for soundtracks, films, videogames, commercials, etc.—to find out what's in his/her gear arsenal and new projects. This month: popTuna.

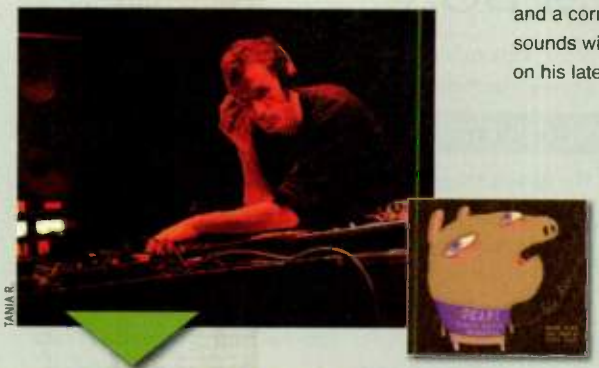
THIS MONTH'S SOUNDTRACK

By Mike Levine

In this section, we present a selection of recent releases that caught our ear. This time around, the albums cover stylistic territory that includes pop-rock, blues, downtempo, electronic, and quirky sample pastiches.

BETH THORNLEY: *WASH U CLEAN* **(STIFF HIPS MUSIC, 2010)**
Thornley's encore release features another tasty dose of her stellar rock-meets-singer/songwriter sound. Inventive production, once again, courtesy of Rob Cairns.

ELIJAH B. TORN: *BUNKER FALLOUT* **(THEYCONTROL.US, 2010)**
New York–based composer Torn mixes bleeps, blips, and a cornucopia of synth sounds with hypnotic beats on his latest release.



OKAPI & ALDO KAPI'S ORCHESTRA: *LOVE HIM* **(ILLEGAL ART, 2009)**
Italian turntablist Filippo Paolini brilliantly layers samples to construct quirky, eclectic, and very listenable sonic collages.

MORELAND AND ARBUCKLE: *FLOOD* **(TELARC INTERNATIONAL, 2010)**
A raw and energetic set of electric and acoustic blues-rock from guitarist Aaron Moreland and singer/harpist Dustin Arbuckle.

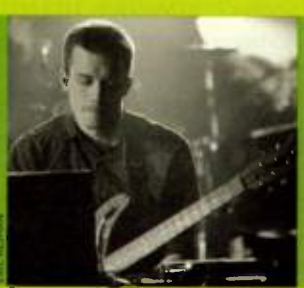
SLACKER: *START A NEW LIFE* **(GODLIKE & ELECTRIC RECORDS, 2010)**
Slacker (Shem McCauley), who made his name producing progressive house music, returns from two years of isolation with an impressive set of downtempo tunes.

ONLINE BONUS MATERIAL

Download full songs from Slacker and Elijah B. Torn, and listen to clips from all the other artists in the Online Bonus Material section at emusician.com.

EM CAST: HUNTER BROWN OF STS9

Guitarist/producer Hunter Brown of STS9 discusses production of the band's new release *Ad Explorata*.



VIDEO INTERVIEW: HOT CHIP

Al Doyle and Joe Goddard of the British electro-pop band Hot Chip talk about recording their new album *One Life Stand*.

By Len Sasso

MUSE RESEARCH AND PEAVEY ELECTRONICS MUSEBOX

Muse Research (museresearch.com) has teamed up with Peavey Electronics (peavey.com) to develop and market a new standalone host for virtual instrument and effects plug-ins.

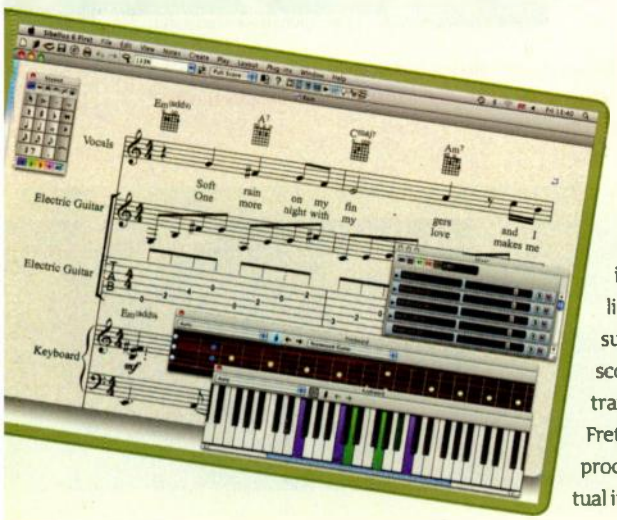
A HOST OF EFFECTS

The two-rackspace, half-rack-width MuseBox ($899), slated for early spring delivery, draws on Muse Research Receptor technology to deliver a stable and efficient environment for hosting 24-bit, 48kHz VST software plug-ins. The unit sports 1GB of RAM (expandable to 2GB), a 4GB solid-state hard drive (250GB optional hard drive), and a CF card slot to access new instruments and effects. For connectivity, you get guitar, mic, line-level, and MIDI inputs, along with four USB ports. You can access and edit presets on the MuseBox control panel; connect a mouse, monitor, and keyboard directly to the device; or use the included MuBo Remote software (Mac/Win) to control it from your computer via Ethernet.

YAMAHA CP1 STAGE PIANO

With the release of its flagship stage piano, the CP1 ($5,999 MSRP), Yamaha (yamahasynth.com) introduces its new hybrid sampling and physical-modeling technology, Spectral Component Modeling (SCM). The CP1 re-creates acoustic and electric piano sounds and combines them with an 88-key wooden keyboard. Once you've selected a piano preset, you're able to reassign its components and effects to build custom sounds and then adjust individual parameters such as hammer stiffness and striking position for further refinements. You can split the keyboard into four overlapping virtual zones for playing different CP1 sounds as well as external MIDI instruments. The unit is 54.5×6.8×16.5 inches and weighs 60 pounds.

GET PHYSICAL



AVID SIBELIUS FIRST

With the release of Sibelius First (Mac/Win, $129 MSRP), Avid's Sibelius division (sibelius.com) brings many of Sibelius 6's professional scoring tools to entry-level scoring. With it you can notate, scan, transcribe, arrange, play, and print your music, as well as publish it for sale on the Web at sibeliusmusic.com. Features such as Magnetic layout for automatically positioning score elements, Dynamic Parts for adapting all parts to scoring changes and for correctly transposing for each part's instrument, MIDI and onscreen note input in the Keyboard and Fretboard windows, and quick chord-symbol and lyrics entry help you through the scoring process. When you're finished, play your score on any ReWire client or any VST or AU virtual instrument plug-in, or render audio files for backing tracks, CD printing, or MP3 sharing.

KEEPING SCORE

DIGITECH VOCALIST LIVE 3

One singer, one guitar (or keyboard), and a DigiTech (digitech.com) Vocalist Live 3 ($299.95), and your background vocals are covered. The unit automatically follows your guitar chord progression to produce up to three-part harmony. Gender and Humanize controls, along with built-in vocal effects processors (tube preamp, compression, EQ, noise gate, reverb, and delay), are crafted for warm, natural-sounding vocals, while real-time pitch correction helps keep you out of trouble. The unit also offers chorus and reverb for the guitar feed along with a built-in guitar tuner. Use the XLR outputs to send a guitar and vocals mix to the PA, or send only the vocals and use the Guitar Thru output to feed your guitar effects and amp.

THREE'S COMPANY

Sound Advice

Big Fish Audio Impressions: Jazz Construction Kits

In Impressions: Jazz Construction Kits ($99.95), Big Fish Audio delivers a palette of jazz loops in Acid WAV and Apple Loops AIFF formats. The loops are divided into 62 construction kits covering a variety of swing-feel song forms with major and minor chord progressions and tempos from 62bpm to 185bpm. Each kit contains a demo track, rhythm section parts (bass, drums, piano, and rhythm guitar) covering the full chord progression—typically 12 or 16 bars—and several short and full-length lead parts (solo guitar, clarinet, alto and tenor sax, flute, trombone, and scat vocals). Five or six construction kits are devoted to each song form, and those mix and match easily (see Web Clip 1). An additional 62 kits of multitrack drum parts enhance the collection's flexibility.

Loop Workshop Libraries

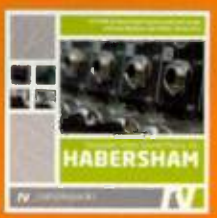
Loop Workshop is the latest endeavor of producer, composer, and former Discrete Drums developer Rick DiFonzo. The site offers small, focused collections of 50 to 150 loops in 16- or 24-bit, 44.1kHz or 48kHz Apple Loops (AIFF) format, with 24-bit Acidized WAV files slated for the future. These single-instrument downloadable packs range in price from $1 to $15. Drum loops dominate the current offerings, but guitar, bass, orchestral, and synth loops, as well as EXS24 sampled drum kits, are being added regularly. The emphasis here is on rock, pop, country, and reggae styles. Check out the free downloads Free Trial Pack, Orch Loopz, and Toy Tomz EXS Kit at the Loop Workshop website, loopworkshop.com (see Web Clip 2).

LoopWorkshop.com

PowerFX Soundation Studio

Whether your goal is to create signature ringtones, get your first piece up on MySpace, or sketch out a quick composition with some fresh sounds, PowerFX aims to make that easier with its new web-based sequencer, Soundation Studio (soundation.com). Free registration gets you access to the multitrack audio and MIDI sequencer, which sports 11 effects plug-ins, three synths, a drum machine, and more than 400 audio loops. The loops offer diverse styles and adapt instantly to the song tempo. You can load and save your projects and audio renderings on your hard drive as well as archive them in your personal Audio Locker (coming soon, price TBA). Additional audio material is available at $4.99 per package in the Soundation Sound Shop (see Web Clip 3).

Loopmasters Sound Theory 01: Habersham



Sound designer and DJ Damon Fondoni (aka Habersham and Komposit) culls 672MB of the best material from his house, techno, and jazz-influenced library of sounds for Sound Theory 01: Habersham (about $57, download) from Loopmasters (loopmasters.com). This collection of 24-bit, 44.1kHz WAV files contains drum, synth, and bass loops from 60bpm to 160bpm; sound effects and synth stabs; and pads and ambient sounds. An additional 80 drum hits are provided as WAV files as well as organized in Native Instruments Battery 3 and Apple Logic EXS24 kits. Although described as edgy, underground, and futuristic, these sounds meld easily with a variety of genres (see Web Clip 4).

IK MULTIMEDIA AMPLITUBE 3

IK Multimedia (ikmultimedia.com) AmpliTube 3 (Mac/Win, $299) boasts a completely remodeled sound set with 30 new models along with 70 remastered classic AmpliTube 2, AmpliTube Jimi Hendrix, and AmpliTube Metal models. IK's third-generation DSM (Dynamic Saturation Modeling) technology promises the touch and feel of playing through a real rig. Other innovations include double-miked cabinets with freely movable mics, impulse-based reverbs throughout, and a full stereo signal path. The complement of modules includes 51 stompboxes, 31 amps, 46 cabinets, 15 mics, and 17 rack effects. Drag-and-drop functions in the stomp and rack modules, MIDI learn, and an integrated 4-track recorder round out the feature set. AmpliTube 3 is provided in VST, RTAS, AU, and standalone formats.

SIM CITY

KORG KAOSSILATOR PRO

Korg (korg.com) delivers a lot more mayhem in a unit about twice the size of the original Kaossilator. Weighing a bit less than 3 pounds, the Kaossilator Pro ($460 MSRP) gives you 200 sound programs (including vocoding and PCM-sampled drums), an Electribe-inspired gate arpeggiator, four loop recorders that can continuously combine internal sounds and external audio, eight assignable buttons to recall your favorite sounds and settings, and scale selection for the unit's X/Y touchpad. You can store loop data, settings, and program memories on an SD card and manage those settings with the included cross-platform editor/librarian software. MIDI and USB connectivity let the Kaossilator Pro double as a MIDI controller.

CHAOS ENSUES

MOTU ETHNO INSTRUMENT 2

MOTU (motu.com) has upgraded its Ethno Instrument to version 2 (Mac/Win, $395 MSRP). Its expanded 21GB library features new world and ethnic sounds from around the globe. Notable additions include taiko drums; large African drums; Balkan, Arabic, and Persian voices; gongs, bells, and cymbalum; and 30 new instruments from India along with many urban Indian loops in the style of *Slumdog Millionaire*. Browsing is much improved with instruments categorized by country and instrument type, and you can instantly search for preset names containing any text string. You get dozens of microtunings to apply to any preset, and Scala-format microtuning files are supported. Enhanced effects processing includes a modeled analog EQ, convolution reverb, and eight new filter models. Ethno 2 is compatible with the original Ethno sound library, and an upgrade path is available. em

GLOBETROTTER

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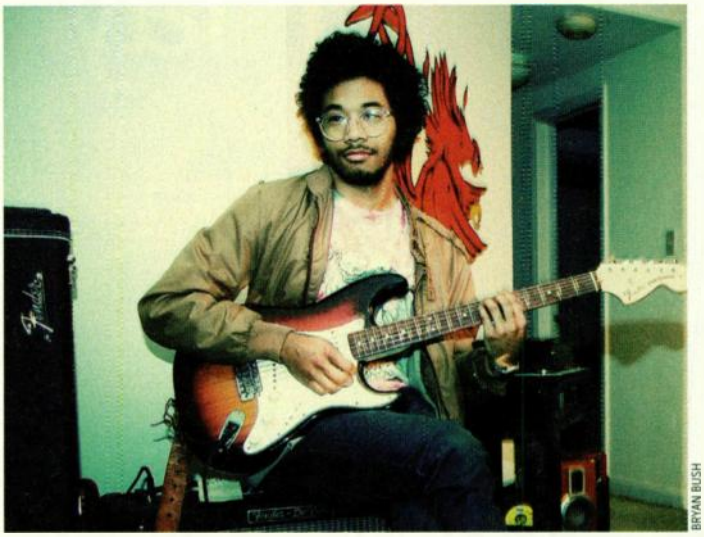

BRYAN BUSH

Easy Does It

Toro Y Moi's Chaz Bundick takes an uncomplicated approach to recording

"I'll admit I taught myself everything," says indie lo-fi artist Chaz Bundick, aka Toro Y Moi. "The way I figure out how to get a certain sound is to try things until I get what I want. I tried to make my early recordings sound like they weren't from a home studio, but I look back now and it's one thing I kind of regret; they sounded so forced and over-produced. I am so much more proud of the recordings I'm making now, because I finally know the limits of my studio and equipment."

By Kristi Kates

Bundick's setup is a true bedroom studio, where he lives in peaceful harmony with his bed and gear in the same pale-colored, tranquil room. "I live in a nice, quiet, 'grandparent' neighborhood," he says with a chuckle.

Relying on Propellerhead Reason 4 as his studio hub, Bundick's instrument roster was small but effective for his new full-length set, *Causers of This* (Car Park Records, 2010). He says the most important elements were a mysterious unidentified piano acquired at a thrift store ("Seriously—I can't find the name of it inside or out"), his Squire Mustang bass guitar, and a Fostex x-12 4-track cassette deck.

"Sometimes I use the 4-track to record and then bring the tracks into Reason to add more effects," he says.

ONLINE BONUS MATERIAL

Bundick often pursued those effects in unconventional ways, with a less-is-more attitude. "For the track 'You Hid,' I was going for a '90s R&B sound," he explains. "The vocal sound was very important; I wanted to have a very tight delay, yet have every vocal track heard without it being cluttered. I recorded 10 vocal tracks total, including four harmony tracks, and ended up using a tight room reverb on the vocals, but no actual delay—I found there was enough stutter just from the six main vocal tracks [see Web Clip 1]."

Bundick does all his own vocals, including harmonies, and you'll find no fancy vocal booths here. He's still in the bedroom, and usually singing through his favorite microphone, albeit with an added pop screen. "Choosing mics varies depending on the song," he says, "I use a Shure SM57 for demos, and if I'd like a really crisp vocal sound I like to use an AKG C-1000. But my favorite is the SM57—beautiful design inside and out. It allows close mic placing and picks up vocals better."

Compression was another instrument of sorts, with Bundick being inspired by his musical peers. "Compression was actually the main experiment for this album," he says. "I got the idea for a sound from producers like Thomas Bangalter [Daft Punk], J Dilla, and Madlib, and then I pretty much pushed it until I was satisfied. I tried to maintain the same compression on most of the vocals, using the standard Reason plug-ins for all the compressions and reverbs—no outside plug-ins or Auto-Tune. I mixed it myself and relied on mastering to make it the standard decibel level and open it up more. The way the sound waves phase creates such an amazing result."

Given the polished results, it's a little difficult to believe that this is Bundick's self-professed "first real album."

"Before, I would just take the latest 10 songs I recorded, put them on a CD, and give it a name," Bundick says, "but the main philosophy I tried to go by here, especially since there were such differences in genres between the songs, was to find the same tone/mood in my voice and atmosphere [see Web Clip 2].

"I think production works best when you are in a natural state—recordings aren't supposed to sound perfect." em

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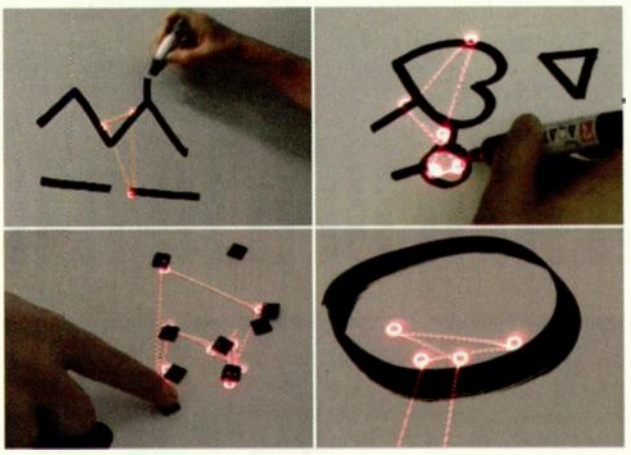

FIG. 1: The scoreLight system uses a sophisticated laser scanner to sense shapes and control a sound-generating computer, simulating the experience of synesthesia.

Synesthetic Synthesis

A new system lets you hear light and see sound | By Scott Wilkinson

I've always been fascinated by the concept of synesthesia, an anomaly of human perception whose name derives from the Greek for *joined sensation*. For those who experience it, stimulating one of the five senses—sight, sound, smell, taste, or touch—causes a distinct perception in one or more of the other senses. For example, a synesthete might hear the color red or taste the touch of leather on their skin.

Among the famous historical synesthetes was Russian composer Alexander Scriabin (1872-1915). In an effort to express his own synesthetic experiences, Scriabin often used "light organs" to control beams and clouds of colored light during performances; he even experimented with wafting scents through the audience to coincide with specific moments in the music. Unfortunately (or fortunately, depending on your point of view), he died before completing his magnum opus, *Mysterium*, a seven-day-long piece to be performed at the foot of the Himalayas in India, after which he believed the world would dissolve in bliss.

Scriabin would have been enthralled with research now being conducted at the University of Tokyo's Ishikawa Komuro Laboratory (www.k2.t.u-tokyo.ac.jp), where scientists are experimenting with a system called scoreLight that combines sight and sound to simulate synesthesia. Their purpose is not primarily musical, but rather, as they put it, "to research methods for capturing and manipulating information that is normally inaccessible to humans and machines. In doing so, [they] hope to create new ways of perceiving the world and interacting with technology."

The scoreLight system uses a sophisticated laser scanner with one or more laser diodes, a pair of steering mirrors, and a non-imaging photodetector. The laser diode scans an area in which users can draw shapes and place objects that reflect different amounts of light back to the photodetector (see **Fig. 1**). Data from the photodetector are used by one computer to steer the laser beam and by another computer running SuperCollider and Cycling '74 Max/MSP, two sound-synthesis software platforms, to generate sound.

Several modes of operation are currently under development. For example, the angle of lines can control pitch, generating a melody whose tempo is determined by the perimeter of a closed shape; rotating the image transposes the melody to a higher or lower pitch level. In another mode, pitch is modulated as a function of the curvature of the lines, and abrupt corners are used to trigger specific sounds such as percussion hits. Also, the laser beam can be made to bounce between two lines, creating a rhythmic pattern. The system can even scan three-dimensional objects and encode differences in texture.

One of the hallmarks of the scoreLight system is its feedback mechanism. The reflected light and generated sound can be used to control where the laser beam goes, which in turn controls the sound. Another important feature is its translation of light into sound, the exact opposite of how more common systems generate graphic images in response to sound. Of most interest to me is how scoreLight simulates synesthesia, allowing users to hear drawings and see sounds.

The artistic possibilities are endless. For example, the laser could scan a dancer's clothes, converting his or her movements into sounds that correspond to the dance. Certain patterns can be drawn on movable objects, which would then be placed to form a composition, much like the reacTable and d-touch systems profiled in "Tech Page" in the February 2007 and November 2009 issues, respectively (available at emusician.com). One particularly interesting application would be to use a powerful laser to scan buildings in a cityscape, allowing you to hear what the city looks like. All in all, this is an intriguing technology that I look forward to seeing/hearing in the future.

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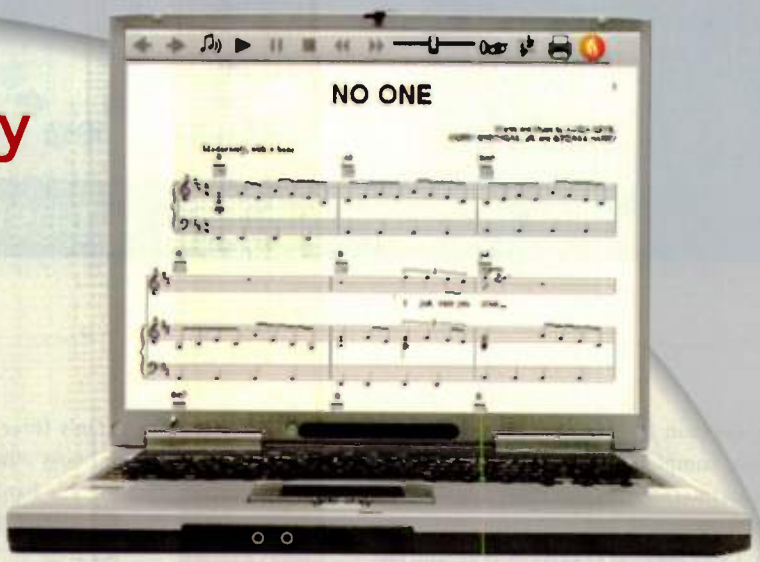

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By Geary Yelton

In less than 13 years, virtual synthesizers have completely changed the way musicians interact with electronic sound sources. *EM* reviewed just one software instrument (Seer Systems Reality) in 1997, and just one more (Propellerhead ReBirth RB-338) in 1998. By 2000, however, *EM*'s first soft-synth roundup covered 19 products and noted that more were available.

Now it's practically impossible to keep count. What a difference a decade makes! In 2010, increasingly powerful software continues to challenge synthesizer hardware. Now that almost every classic synth has been modeled, computer-packing musicians have an ample selection of virtual instruments. It's been a few years since *EM* published a soft-synth roundup, so it's finally time to investigate the latest crop.

For this article, I limited my selection to six synths and one four-synth bundle, each from a different manufacturer. All are cross-platform, and all run as plug-ins in popular DAWs without DSP host hardware. Only three emulate specific hardware synths; most others draw their inspiration from vintage hardware by modeling circuitry in a more general fashion.

FabFilter

Twin 2.2 ($174, download, AU/RTAS/VST; fabfilter.com)

Twin 2 is a virtual analog synth that supplies three audio oscillators with independent panning, four self-resonating multimode filters, and (dare I say it?) unlimited modulation capabilities. Likewise, undo and redo are unlimited, and the plug-in comes with more than 1,600 varied presets, most of them excellent (see Web Clip 1). Twin 2's icon-based GUI is a snap to maneuver (see Fig. 1). If you ever need help, holding your cursor over any parameter quickly summons a descriptive popup.

The two main filters borrow their 11 types from one of my favorite filtering plug-ins, FabFilter Volcano 2. Clicking on the filter icon reveals additional controls. You adjust filter cutoff and resonance peak by simply clicking and dragging on an image of the filter curve; that's more intuitive than adjusting knobs, which are also provided, because you more immediately grasp the one-to-one relationship between what you see and what you hear. Holding the Command key (Control key in Windows) as you drag changes the filter panning or response type (lowpass, highpass, or bandpass).

Likewise, clicking and dragging on an oscillator icon changes oscillator octave and detuning, and Command-clicking and dragging changes sync depth and waveshape (four basic waveforms, plus pink and white noise). Clicking on an oscillator icon reveals knobs for the same parameters, as well as pulse width. You also get right and left delay processors with similar click-and-drag functionality and an additional pair of multimode filters. Maximum delay time is a generous 5 seconds, long enough to build Frippertronics-type loops.

Twin 2's modulation capabilities are most impressive. A scrolling bar lets you slide the

GUI's contents to the left and right to see all the mod sections, which include X/Y controllers, 6-stage envelopes, MIDI routings, and more. Anytime you need an extra modulator, just add it.

FXpansion

DCAM Synth Squad 1.0.1.2 ($249, download or boxed, AU/RTAS/VST/standalone; fxpansion.com)

Synth Squad is a collection of three analog-modeling soft synths—Strobe, Amber, and Cypher—bundled with a fourth synth called Fusor that hosts any combination of the other three. Although Strobe is a traditional synth firmly rooted in familiar territory, Cypher and Amber offer some fresh approaches to computer-based synthesis. Even the most experienced synthesist could learn new techniques and create some original timbres in the process.

Synth Squad's synths have many commonalities, most obviously in their GUIs. All offer an arpeggiator and glide, and you can stack polyphonic voices to create fat unison sounds. Each has a browser for searching presets, filtering the results, and aurally previewing any sound before loading it. Though some of the mod routings are hardwired (virtually, of course), all these plug-ins share a modulation scheme called TransMod, which provides eight slots for routing one source to several destinations while allowing one source to scale the mod depth of several others. A Visualizer Scope near the GUI's center displays the waveform most appropriate for the onscreen control beneath your mouse cursor. For example, if your cursor is over the Oscillator section, you'll see the audio waveform, and if it's over the Filter section, you'll see the response curve.

STROBE. Strobe is simple and straightforward, designed for ease of use and quick access to subtractive-synthesis parameters. Even though it has just one main oscillator, you can stack multiple voices in unison and detune them, and tune the 4-waveform sub-oscillator as much as three octaves lower. Strobe's flexible filter offers 22 modes, including 1, 2, and 4-pole lowpass, highpass, bandpass, notch, and peak filter types and various combinations. Strobe also has one LFO, two ADSRs, and a ramp generator serving as mod sources, but it has no effects processing.

FIG. 2: FXpansion's DCAM Synth Squad bundles three diverse synths with a fourth that hosts all three. Cypher (pictured) specializes in analog modeling and audio-rate modulation synthesis.

AMBER. Emulating classic string machines is Amber's domain, and it takes a novel approach. Rather than simply playing samples of the ARP Omni, Elka Rhapsody, and the like, Amber models their paraphonic sound generation, which traditionally relied on 12 top-octave frequency dividers. Vox Continental and Farfisa combo organs used the same technique, but surprisingly, you won't find simulations of those in Amber's patch collection (see Web Clip 2). Consequently, some of the parameters are slightly out of the ordinary.

Amber has two sections, Synth and Ensemble, which are layered to produce a blend of their sounds. In addition to each section having its own 1-pole filter, Synth has a resonant multimode filter, and Ensemble has a tunable 4-band formant filter and a versatile chorus effect. Whereas Synth has an ADSR envelope, Ensemble has an attack-release envelope with a button that disables sustain, effectively turning release into an initial decay. A second ADSR, a ramp generator, and eight TransMod slots are available as modulation sources for both sections.

FIG. 1: Bundled with more than 1,600 presets, FabFilter Twin 2 sounds terrific and makes quick work of programming complex patches.

CYPHER. With more of just about everything, Cypher specializes in analog-style FM (unlike Yamaha's DX-style, multi-oscillator FM) and traditional subtractive synthesis (see Fig. 2). It also functions as an effects processor for external audio even though, like Strobe, it has no onboard effects of its own. Because it's meant to handle FM and other forms of audio-rate modulation, it furnishes a few parameters you wouldn't see on a typical analog synth, including controls for Scale, which tunes the oscillators and filters in harmonic ratios rather than semitones—especially useful for FM and wave-modulation programming.

Although Cypher's three identical oscillators are more complex than you'd normally find, they produce only the four standard analog waveforms, but you can continuously modulate their waveshapes using any TransMod source. You can adjust oscillator detuning by fractions of a beat and then use the beat frequency as a mod source—a technique I've never seen before. You can also trigger modulation with MIDI note-on or note-off messages.

Cypher's dual multimode filters have both shared and independent parameter controls and can be arranged in series or parallel. In addition, you get two LFOs, three ADSRs, a ramp generator, and—another innovative touch—sample-and-hold at audio frequencies. With so many programming resources, Cypher delivers a sonic playground like no

FIG. 3: Scanned Synth Pro 2, from Humanoid Sound Systems, combines physical modeling and wavetable synthesis using a technique developed in the late '90s.

other. Dozens of factory patches cover all the bases, with an emphasis on electronic sounds rather than traditional instrument simulations (see Web Clip 3).

FUSOR. With three slots for inserting Strobe, Amber, or Cypher, Fusor lets you layer and split any combination. Its effects suite, step sequencer, and extra mod sources add considerably to Synth Squad's power (see Web Clip 4). Additional mod sources include four LFOs and four envelope followers. Eight macro controls let you modulate practically any parameter in real time using MIDI controllers.

Each slot accommodates three insert effects, and you can apply three effects from the same list to the master bus. There are 27 effects choices including 4-band EQ, 4-band distortion and comb filtering, an SSL-style bus compressor, a granular freeze effect, and a selection of reverbs on loan from Overloud Breverb.

FIG. 4: Image Line Sawer accurately models the Formanta Polivoks, the most popular synthesizer you may have never heard of.

Any of Synth Squad's synths are well worth having. Amber and Cypher open the door to synthesis techniques that stray from the mainstream. Fusor lets you combine all of them in a single powerful plug-in with more modulation routings than you'll know what to do with.

Humanoid Sound Systems

Scanned Synth Pro 2.0.11 (donationware, download, AU/VST/standalone in Windows only; humanoidsounds.co.uk)

In the late '90s, a pioneering team of scientists at Interval Research came up with a new sound-generating technique that combines wavetable synthesis and physical modeling. Scanned synthesis lets you continuously alter spectra by changing a modeled object's physical characteristics in real time.

Scanned Synth Pro costs whatever you want to pay for it, and it sounds amazing; that's a rare combination. Its patch collection supplies 111 presets that run the gamut from simple, Bassic bass and Chainsaw lead, to complex, Cheap Alien FX and Stoned Out Cyborgs. The programming depth is impressive, and lots of patches respond to aftertouch and other real-time gestures. Many factory sounds are variations on analog classics but with more animation than usual (see Web Clip 5). You get 144 additional slots for storing your own patches, though you'll likely be dealing with a few parameters you've never seen before.

User parameters are split into four pages—Synthesis, Modulation, Effects, and Master—that you access with tabs (see Fig. 3). The five main parameters on the Synthesis page are Mass, Hammer, Update Rate, Centre Force Scale, and a Connection Matrix. All of these parameters manipulate a virtual string whose nodes are connected by springs being struck by a hammer shaped by waveforms. Right-clicking on any parameter summons a brief explanation, but the quickest way to create your own sounds is to click on the Randomizer switch.

The Modulation page puts you in more familiar territory with two LFOs, two ADSRs, and an envelope follower that accepts audio signals. The Effects page—in addition to reverb, echo, flanger, and chorus—furnishes a master filter and a polyphonic filter for altering voice timbres individually. On the Master page, in addition to controls you might expect, you'll find the Panic Group's Psycho and Danger switches. Psycho adds random nastiness, and Danger delivers even more serious distortion.

Image Line

Sawer 1.1.2 ($99, download, AU/VST/FL Studio/standalone; image-line.com)

FIG. 5: With four envelope generators and three oscillators offering 128 waveforms, Rob Papen Predator packs an arsenal of sound-design features.

Sawer emulates a Soviet-made synthesizer, the 2-voice analog Formanta Polivoks. In the '80s, the Polivoks was so popular in the Eastern Bloc that it's estimated about 100,000 were built.

For the most part, the monotimbral Sawer adheres to standard subtractive architecture with two oscillators, one multimode filter, one LFO, two ADSRs, and glide (see Fig. 4). The effects section furnishes chorus, phaser, a panning delay, and a springy reverb that actually degrades the sound. Sawer also has an arpeggiator with up, down, and random modes.

The main oscillator produces only sawtooth waves. Most oscillator controls affect only the Sub-Saw oscillator, which generates either sawtooth or square waves. You can lock the main oscillator to an unseen sync oscilla-

FIG. 6: Waldorf Largo is a 4-part multitimbral synth plug-in that emulates Waldorf's better-known hardware instruments, the Q and the Blofeld.

tor and then shift the sync oscillator's pitch a maximum of 24 semitones higher or lower, but only in fifths and octaves. Engaging the unison function layers as many as eight voices, subject to Sawer's 24-voice polyphonic limit.

The filter offers highpass, bandpass, and 2- and 4-pole lowpass responses. It has an especially meaty sound at high-resonance settings. The filter's envelope generator is reassignable to modulate the sync oscillator's frequency, the main oscillator's frequency, or the Sub-Saw's phase. Like the Polivoks, Sawer depends heavily on oscillator-sync modulation for its characteristic sound (see Web Clip 6).

The LFO has a dedicated 2-stage envelope generator and offers four invertible waveshapes. You can route its signal to any one of seven destinations, including oscillator sync. The MIDI Modulation Matrix conveniently displays the routing of any real-time controllers and allows you to specify your own mod routings.

Sawer's presets are divided into nine banks of 36 each, but only one bank is included. You can download the entire collection from Image Line for $9.

Rob Papen

Predator 1.5.5 ($179 , download, AU/RTAS/VST; robpapen.com)

From Dutch synthesist Rob Papen, Predator is a 16-voice subtractive synthesizer with three oscillators, two filters, four 5-stage envelope generators, eight modulation routings, and a generous assortment of effects (see Fig. 5). The oscillators let you choose from 128 waveforms—modeled analog and computer-generated spectra—and handle FM and ring modulation. Engaging the Spread parameter allows each oscillator to generate the sound of additional detuned oscillators. Each has its own LFO (hardwired to modulate pulse width) and a square-wave suboscillator.

In addition to lowpass, highpass, bandpass, and notch responses at various slopes, Predator's stereo filter has comb and Vox settings; the latter produces vowel-like formants. A second stereo filter has eight lowpass and highpass settings and a split mode that shares duties with the main filter. The main filter has its own LFO and 5-stage envelope, and another 5-stage envelope controls amplitude. You can route two assignable envelopes and two assignable LFOs to any of 66 destinations and control their depth with whatever source you choose.

One of Predator's standout features is preset morphing, which allows you to select two presets from the same bank and then generate a new preset combining their characteristics. Another is the Variation knob, which generates four alternatives to the currently selected patch. You can use Predator's comprehensive 16-step arpeggiator as a step sequencer or modulation source. The 24 effects types include waveshaping, amp simulation, and wah-wah delay.

With names such as Predator Dance, Trance and PsyTrance, and HipHop DirtySouth, most of the included banks are obviously designed for electronic dance music (see Web Clip 7). However, you also get three Classic Synth banks, two Ambient banks, and four All Basses banks (among others), and optional banks are available from Rob Papen and third parties.

Waldorf

Largo 1.5 ($249, download or boxed, AU/VST; waldorf-music.com)

Waldorf's penchant for naming synthesizers after James Bond characters is evident in Largo, a multitimbral plug-in that emulates the company's Q and Blofeld hardware synths. Four independent parts can be layered or addressed via separate MIDI channels, and you can send them to separate outputs for a surround mix. Although the feature set is comprehensive, Largo's layout is clear and logical with lots of thoughtful touches (see Fig. 6).

Largo's three oscillators, which model classic analog waveforms, can be turned on and off as needed. Two of them also generate 68 wavetables and are paired with square-wave suboscillators for added fat. Controls for FM, ring mod, and wave modulation are on hand, and the noise generator's bipolar Colour knob controls continuously variable noise filtering. To thicken the sound, you can trigger as many as eight voices per note.

Two identical filters offer lowpass, bandpass, highpass, and notch responses at either 12dB or 24dB per octave, with two comb filter settings to boot. Pan the filters independently and route them in series or parallel. A choice of eight Drive Curves lets you dial in just the right saturation character. Freely assign the four envelopes using Largo's 16-slot modulation matrix; they offer ADSR, one-shot, or loop-optional 6-stage modes. Each of three LFOs displays an image of its selected waveform, complete with delay at the front end and fade at the back.

Largo's flexible 16-step arpeggiator has slots for 16 patterns (one user-defined), and you can apply two effects to each layer or part. Effects include flanger, reverb, and four other types, and you also get 4-band parametric EQ. Largo's Browse page lists more than 700 fat, useful, and occasionally stunning timbres to suit almost any occasion (see Web Clip 8).

FIG. 7: Forty years after EMS launched the VCS 3, XILS-lab improved upon it with XILS 3, a faithful emulation that adds a step sequencer, two extra envelope generators, sample and hold, and more.

A PERFECT 10

XILS-lab

XILS 3 1.1.1 ($199, download, AU/RTAS/VST; xils-lab.com)

One of the earliest popular synthesizers was the VCS 3, a compact analog monosynth from London-based EMS (Electronic Music Studios). Its odd form factor, pin-matrix patching system, and characteristic sound endeared it to many musicians, in no small part thanks to its appearance on records by The Who, Pink Floyd, and Brian Eno.

XILS 3 is an 18-voice polyphonic plug-in that faithfully re-creates the VCS 3 and extends its functionality. The GUI's right side looks almost exactly like the VCS 3 laid flat, with rows of knobs, the distinctive patch matrix, a joystick, and a VU meter that indicates input level (see Fig. 7). Clicking on intersections within the matrix connects any of 16 audio or control sources to any of 16 destinations. Nothing is hardwired, so matrix connections are necessary to produce any sounds.

Like the original, XILS 3 has two oscillators that generate square and triangle waves and another that generates sine and sawtooth waves. Its noise generator offers continuously variable color, and the resonant lowpass filter has a switch for 2, 3, or 4-pole response. Additionally, XILS 3 has an out-of-the-ordinary trapezoid envelope shaper, ring modulation, and a simulated spring reverb you can place anywhere in the signal path.

On the GUI's left side, the bottom half contains an onscreen keyboard and controls for a 128-step sequencer. What appears in the top half depends on which of seven tabs you select. For example, selecting the Matrix tab displays three extra matrices for additional connections. Clicking on Input reveals the Transient, Gate, Envelope Follower, and Pitch Tracker controls for processing external inputs. You also get two effects: chorus and a panning delay.

Many of XILS 3's large collection of patches explore experimental realms, and many have a decidedly retro vibe. XILS 3 sounds more realistically analog than most soft synths I've heard (see Web Clip 9). Thanks to its nonstandard features, it's a wonderful medium for discovering new territory with traditional analog synthesis. em

Technological advances continue to fuel EM *senior editor Geary Yelton's lifelong fascination with synthesizers and electronic music.*

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TRIPPING INTO 'Heligoland'

Inside the production of Massive Attack's latest album

By Sam Pryor

For Massive Attack, the process of producing an album is often an evolutionary one, with the final result deviating significantly from what was originally envisioned. A case in point is the band's last release, *100th Window* (Virgin, 2003). Massive Attack's primary composers—vocalist Robert Del Naja (aka "3D") and producer Neil Davidge (who has been part of the band since *Mezzanine* [Virgin, 1998])—began the writing process for that one by spinning hard drives and letting tape roll while their core musicians improvised for what turned out to be 80 hours' worth of loose ideas and song threads. Not satisfied with the results, the group eventually scrapped the entire project and started fresh.

Similarly, on their current effort, *Heligoland* (Virgin, 2010; see Fig. 1), Massive Attack (now joined again by former member, vocalist Grant "Daddy G" Marshall) recorded with dozens of singers in their Bristol, U.K., studio, as well as studios in London and New York, before ultimately trashing many of the tracks and completely rewriting others.

Beginning with their landmark 1991 debut, *Blue Lines* (Virgin), which originated the style branded as *trip-hop*, Massive Attack has created a brooding, intensely beautiful, deep-soul-meets-dark-technology sound that is as thrilling as it is foreboding. Massive Attack standards such as "Unfinished Sympathy," "Teardrop," and "Futureproof" rely on the group's experimental and highly influential application of sample editing and layering, as well as their use of orchestral dynamics, advanced DJ techniques, inventive dance rhythms, and multiple vocalists.

Of late, Del Naja and Davidge have been prolific soundtrack composers. The recent films *Unleashed*, *Gomorra*, and *In Prison My Whole Life*, and the upcoming *Trouble the Water* and *44 Inch Chest* feature the pair's dark musical vision. Working in their studio, The Industrial Unit (based around a Solid State Logic G+ console and Digidesign Pro Tools)—or as Del Naja refers to it, "the last place on Earth we ever wanted to set up shop"—Massive Attack followed a new trajectory for *Heligoland*. Eschewing the heavy processing and textural effects of *100th Window*, the group stripped the music to its barest elements, largely preferring natural drums to treated machine rhythms, and an intimate sonic ID to EQ-warped, reverb-soaked arrangements.

Massive Attack continued their practice of working with numerous vocalists on *Heligoland*, including longtime favorite Horace Andy, as well as Hope Sandoval, Blur's Damon Albarn, TV on the Radio's Tunde Adebimpe, Martina Topley-Bird, and Elbow's Guy Garvey. The most acoustic and natural-sounding album the band has done to date, *Heligoland* retains the feeling of dread and dislocation that marks Massive Attack's best work.

The opener, "Pray for Rain," begins with doleful organ tones, followed by plaintive floor-tom rolls and funereal piano chords that are eventually consumed by a swelling vocal choir worthy of Brian Wilson, circa *Surf's Up*. "Flat of the Blade" contains odd vocal humming and squirming sounds. "Girl I Love You" works a mad punk bass riff and ominous string and brass samples into a post-apocalyptic travelogue. Closer "Atlas Air" sounds like a tiki bar soundtrack created by space invaders, complete with Farfisa organ, gloomy strings, and a trashy disco beat.

Massive Attack's trademark urban-dread atmospherics, their torrid-soundtrack-to-a-bleak-future vision, is more apropos than ever before. Refining their style to its core elements, stripping away nonessential effects to reveal their dark heart, Massive Attack forget their past, reinvent their present, and continue to set the standard.

I explored the recording and production of *Heligoland* in separate interviews with Del Naja and Davidge. I also spoke with engineer Euan Dickinson (see sidebar "Massive Tracking" on p. 32).

>> Massive Attack's Robert "3D" Del Naja (left) and Grant "Daddy G" Marshall

PHOTO: WARREN DU PREEZ & NICK THORNTON JONES

DEL NAJA

The *100th Window* sessions started with instrumental tracking and ended with a sample-layering approach. What was the process for *Heligoland*?

We created samples and constructed things in a very electronic way, building the arrangements very gradually instead of using loops and samples as the basis of the writing process. I wanted the sound to be very direct, very acoustic, and very electronic, but everything to be very exposed. *100th Window* was the album where machines took over. It was an exercise in altering things so much that a 20-piece string section sounded like a keyboard. I became disillusioned with that process. *Heligoland* was about only using Pro Tools as an editing or recording tool, using plug-ins and EQ and compression, but stripping away reverbs and dynamic effects. So when you're listening to the drums or the bass, you're hearing actual drums and bass.

Is the opening track, "Pray for Rain," largely a live performance?

Live and edited. "Saturday Come Slow" has the most ultra-acoustic drum sound on the record. Because we were working with many different people during a relatively short period of time, to get an approach that joined everything together was important. So I was continually anti-reverb, for example. Anti-anything that didn't belong in the melodic structure of the song.

How did the songs on *Heligoland* originate?

Traditionally, our tracks start with a drum beat and bass. We'd do giant sessions with hours' worth of material and then go through it all to find parts to loop. On this record, we were keen not to do that; we wanted to capture it all immediately. We'd record drums, bass, and keys; loop it; and it became the part as opposed to having 50 different possibilities.

How did you create the many drum textures on the record? From "Pray for Rain" to "Atlas Air," the drum-set production is diverse.

A lot of it was captured in the recording process in the different studios. How we miked the kit in Bristol was very different to how we did it in New York at Stickydisc with Tim Goldsworthy. There are subtle differences. But compared to *100th Window*, we tried to keep it as straight as possible. In some tracks, what you are hearing is completely raw and acoustic. Then the contrast with an electronic track becomes really noticeable. "Rush Minute" has a very electronic drum-machine sound, but it was played live on pads, then edited. We also recorded acoustic drums for that track. One side of the track is electronic, the other is acoustic. I wanted your brain to recognize and understand the sounds on the record, whether electronic or analog. If there is a change from a digital sample to real brass, like in "Girl I Love You," your brain will be confused at first, then you'll get it.

FIG. 1: On *Heligoland*, Massive Attack offers up a sparser and more natural-sounding version of their characteristic sound.

How do you typically record your vocals?

I go in the live room with my own Pro Tools rig and record myself. You can get a less self-conscious vocal that way. I record and listen back and when I know it's good, I mark down the playlist number for Neil to select. I'd rather do six takes and let him punch between the best parts. I might be there all night, but as things go along I will change the meter, the words, the flow. When I find the version I like, I will refine the words and do a couple more takes to really capture it.

What's your microphone and mic pre of choice?

The Blue Bottle mic suits me—even with a pop shield so I can stay close to it, stay right in its face and it doesn't distort. As long as I am recording with the Avalon [VT] 737 [SP] compressor, which gives me the right level, then I get a nice intimate sound. But everything always sounds so different in headphones than in speakers in the control room. It can be a semitone out for the whole track. I've had to learn to listen back switching between headphones and speakers.

Was there a favorite synth for *Heligoland*?

The ARP Solina String Ensemble. You can manipulate the sound like a synth as well as play it like a really beautiful organ. I spent ages with that and a Roland VP-330 Vocoder Plus and the Yamaha CS70, trying to get these cool Vangelis-type sounds. But nothing came close to the Solina; it's like sunlight coming through a window. If you remove the tremolos, you can also get some sharp analog-nasty sounds, as well.

In "Saturday Come Slow," there is a massive distorted keyboard sound in one channel.

That might be Adrian Utley from Portishead playing his guitar with tools [such as] a file and a screwdriver to get different sounds. We were building up layers of guitar and going through his pedals (Hot Cake Distortion, American Real McCoy wah, Line 6 Echo Park, Boss RE-20 Space Echo), as well.

Massive Attack music is more relevant to the state of the world than ever before. There is extreme beauty in Massive Attack, but also darkness.

We've always managed to comment on what's around us. The nature of where we're coming from, our multicultural makeup, our environment growing up in Britain, it's defined the way we work and how we think. Our music is part of our education and upbringing.

DAVIDGE

Was *Heligoland* designed as more of an acoustic record?

We didn't want to process everything like we had before. I wanted certain things quite beautifully raw and simple. So some of the instrumentation we kept minimalist: acoustic and organic.

Did the acoustic drum track in "Pray for Rain" involve heavy editing in Pro Tools?

It's not heavily edited but it is looped in places. Damon Reece played the drums with mallets, then it was tightened up in Pro Tools. The drums carry the bulk of "Pray for Rain," but most of that is just heavy compression from the Bomb Factory BF76 plug-in with a bit of EQ to stop certain frequencies from ringing through. The BF76 gave the drums this very gritty but still soft sound.

How did you come upon that vocal chorus part in that song, which totally alters the track?

For some reason, there I broke into a piano melody part. We did a rough edit and flew to New York to work with Dave Sitek and Tunde Adebimpe of TV on the Radio in Williamsburg. Tunde came in, and we fired up "Pray for Rain," and straight away he got it. He's singing all those harmonies, all 14 tracks. I rode each track pretty closely for volume and dynamics. I edited them a little and didn't use much compression. Whenever I added reverb Robert would want it off, every time.

When you did use reverb, what did you use?

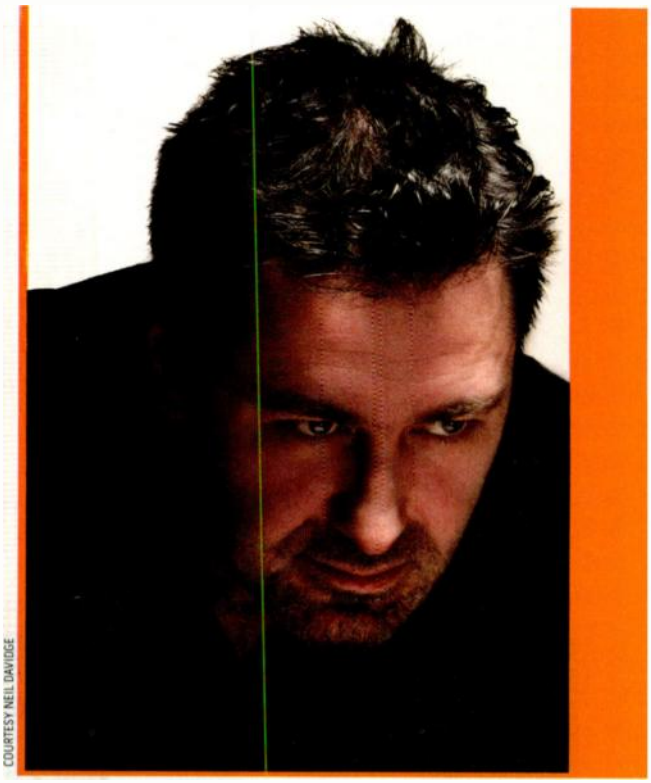
For this album, we used mainly plug-in reverbs such as the Waves RVerb.

Do you and Robert discuss music in visual metaphors?

Yes, we're both visual artists as well as musicians. We might describe where the musicians are in the studio. That might affect the mix. We talk in terms of textures. "This should sound dark or rough as sandpaper," for example. If we can only achieve the sound in our head, we're quite disappointed. We want to break through to another dimension where we're channeling an experience we're part of but not always in control of.

You've created some amazing vocal productions with Massive Attack, such as Elizabeth Fraser's "Teardrop" performance on *Mezzanine*. How do you typically work with the vocalists?

I like them to sit down. When a singer stands, they feel like they have to project like an old stage singer. I like vocals to be intimate. I like singers to sing with their heads pointing down, almost singing to their feet so that you really get a sense of being inside that person's head rather than watching them onstage. I try to make vocalists feel very comfortable when they're singing. If a singer is contriving their performance, I will actually talk right up to the point where they are to begin singing and get them to respond to me so they don't have a chance to get in character before they sing. They're distracted. So when they come in it's very natural. Or I might have them record before the track is totally finished, to capture the vocal as soon as an idea is formed. I often get the musicians to play to the track before they've even heard it.



COURTESY NEIL DAVIDGE

Neil Davidge is both the producer and a composer for Massive Attack.

You want telepathy.

Magic happens. Or not. You have to try to capture that spontaneous moment, you have to play from your unconscious. If you've lost that moment, it's gone forever. I will often screw around with someone's sound—add reverb, delay, compression. The first time they hear themselves back is in record mode while they're playing the track. You can get something really fresh like that.

Generally, are you relying more on plug-ins or hardware for processing?

This album was entirely mixed in the box. With the ease of working in the computer, it's questionable whether you need outboard gear. At the end of the day, it's about ideas, and if the interface of a computer enables you to achieve everything you hear in your head, I don't see why that is a problem.

What are your favorite plug-ins?

I use Tascam GigaSampler as my sample source. For the most part we didn't use soft synths; I used Access Virus Indigo on a couple tracks. Most of it was sounds generated from GigaSampler and maybe processed. 3D [Del Naja] used a Solina String Ensemble, Korg PolySix, ARP 2600, and Yamaha CS70, but not a lot.

There's always an underlying darkness no matter what we do.

Massive Tracking

Neil Davidge and Robert Del Naja are the conceptual masterminds behind Massive Attack, but engineer Euan Dickinson handled the nitty-gritty details of the recording process for *Heligoland*.

"Working with Neil can be a challenge," Dickinson says. "We have to be set up and ready to roll all the time. We have a few different setups, but between the Avalon 737 and the Blue mics, we know what works. We often leave EQ and compression fairly flat on the Avalon 737 and deal with it afterward. We used a Neumann KMS-105 handheld for vocals on one track. Sometimes the Blue Bottle is too high-fidelity. That's when we go for the Neumann on a stand; it's softer. But we used the Blue Bottle for the bulk of the vocals."

Miked drum kits figured largely in *Heligoland*'s rich percussion textures. Drums were recorded in Bristol and London as well as in New York with DFA producer Tim Goldsworthy.

"Massive Attack's last engineer recorded some of the drums with his own mics, including an AKG D12 on the kick, an Electro-Voice RE-20 on the snare, AKG 414s as overheads, AKG C 451 Bs on hi-hats, and a pair of Coles 4038s as room mics," Dickinson says. "Generally we place room mics related to what else is happening in the live room. If it was just a drum session we'd place the Coles near the ceiling depending on how roomy we wanted the sound to be. Sometimes we would keep it minimal: a Blue Kiwi behind the floor tom, a Neumann U87 just off the front of the kick, an RE20 on the snare. Mic pres were the Neve 33135, the Avalon 737, a Focusrite ISA 215, and ISA 428. And Neil has a nice rack of old Calrec pres and EQs. We'd try to get a live feel with the bass and keys as well.

COURTESY EUAN DICKINSON

Engineer Euan Dickinson was a key member of the production team for *Heligoland*.

Massive Attack used Pro Tools with an SSL G+ console and a variety of vintage and modern mics with contemporary software and older hardware for production effects. Stompboxes were often used for sound warping.

"Some of the stranger pedals were Adrian Utley's [of Portishead]," Dickinson says. "He brought his DigiTech Space Station, which is all over 'Saturday Come Slow.' Neil has a collection of Lovetone pedals: the Ring Stinger, the Meatball, they're not made anymore. We put the ARP Solina String Ensemble and Yamaha CS70 through different pedals on 'Atlas Air.' We used a lot of plug-ins too; like [Line 6] Amp Farm and Echo Farm. For some of the tracks we were triggering sounds from Native Instruments synths."

"Keyboards went straight through the SSL line amps to give them a little boost. For bass we used an EV RE20 and an Earthworks mic, which looks like a little probe. That combination gave us real definition. We'd take splits of the bass going direct with the amp sound."

Can you explain those analog phone tones, then what sounds like an old typewriter clattering on "Flat of the Blade"?

That's Damon Albarn from Blur playing a Roland SH-101. What you call typewriter sounds were taken from an art installation called *Volume* from the Victoria and Albert Museum. I'd made a 46-track drum session using iZotope iDrum software put through tons of delays. I pulled that out and Robert literally sang over the drum track.

What created the distorted drum rhythm in "Babel"?

That's the iDrum plug-in again. I only use its simplest function to create one-bar loops. And we used a lot of compression. I had two channels of compression, one extremely compressed. Then I EQed the compressed channel to bring out certain textures and did various volume rides between the two to get the texture dynamics.

What creates the sliding, swerving drum effects later in "Babel"?

I did volume rides on the compressed drums and towards the end of the track I really pushed them up. It's mostly about the programming and the EQ of the compression. Those swerving sounds are just volume changes in the track and really extreme compression. All the tone was rolled out, most of the percussive element was completely flattened by the compression in Pro Tools and the Bomb Factory BF76.

No matter the technical changes or vocalists used, Massive Attack has a signature sound, one of foreboding and darkness.

We have tried to make a happy track! There are certain tracks which we thought were uplifting and positive. But there's always an underlying darkness no matter what we do. It's always sad or dark or slightly menacing. It's an instinct I guess; the process that we go through, looking for sounds that collide, textures that collide.

Sam Pryor is a music journalist based in New York City.

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FL STUDIO 9 UNLEASHED

Power user tips and tricks for this flexible DAW

By Jim Aikin

Sometimes you have a clear musical idea and you just want your DAW software to sit there quietly and function as a glorified tape recorder. Other times, you may crave software that will jump-start your creativity by offering options that you wouldn't have thought of.

Image Line FL Studio (Win) is adept in both roles. Tucked away in its menus are some of the deepest and most imaginative tools found in any DAW. In this article, I'll show you a few ways to improve your workflow while using FL Studio both as a traditional recorder and as an expressive musical instrument (see Fig. 1).

Managing the Playlist

When you stop playback in Song Mode, FL Studio will return to bar 1, beat 1, or to the beginning of the currently selected time region. As you're developing a song, you'll seldom want to start playback at bar 1, so keeping a region selected is a useful idea. You select a region to work on by double-clicking and dragging in the Playlist's time ruler.

But what happens when you need to change the region's start point? You can define an entirely new region, but if you've zoomed in to make detailed edits, this can be awkward. Instead, Shift-click within an existing region in the time ruler and drag left or right to move the region. To move the start or end of the region, thereby changing its length, choose the Select tool (the dotted outline) and then right-click in the time ruler. This command seems to be undocumented, and it's useful.

ONLINE BONUS MATERIAL

Another quick way to move the start time is with the numeric keypad / and * keys. If you've defined some markers in the Playlist, Alt-* and Alt-/ will step the transport instantly from one marker to the next, letting you start playback wherever you need to.

Often while developing a project, I need to mute and unmute various musical parts. FL Studio offers four ways to do this: in the step sequencer, in the mixer, in the track column at the left side of the Playlist, or by muting individual clips within the Playlist. Instead of switching to the Mute tool to mute clips, mute and unmute them by Alt-clicking. This command doesn't work when the Select tool is active, which is potentially confusing. And it works (at least in Windows XP) only with the right Alt key, not with the left one.

Using Multichannel Plug-In Synths

If you load a multichannel VST instrument, such as Spectrasonics Omnisphere, into FL Studio, you'll find that the MIDI input from your keyboard to the VSTi's Generator always reaches the synth on channel 1. You can use the Color Group selector in the piano-roll window to assign existing notes to other channels or to enter new notes with the Pencil tool, but if you want to play those other channels from your keyboard while recording (or live), you'll need to do it a different way.

First, click on the Wrapping Settings button (it looks like a portion of a gear) at the top left corner of the Fruity Wrapper for the VSTi. In the Settings panel, choose a MIDI input port. Next, go to the main Channels menu and add a MIDI Out Generator. In the Plug-In editing area in the

FIG. 1: The main window in Image Line FL Studio often gets crowded with devices and editing windows. Seen here are (clockwise from upper left) the step sequencer, the mixer, the Playlist, the Limiter, a Reeverb 2 effect and the Wasp XT synth.

Generator box, enter a matching port number and then select a MIDI channel. When you click on the MIDI Out object in the Step Sequencer window to make it active for MIDI input, your keyboard will play whatever sound has been assigned to that channel in the plug-in synth, and a recorded track will play back with the right sound.

Assuming your multichannel synth has multiple outputs, you can map each output to its own FL Studio mixer channel in the Processing panel of the Wrapping Settings window. This gives you complete control over level automation using the standard FL Studio automation controls, which is handy because the volume and pan knobs on MIDI Out Generators do nothing.

Handling Automation

FL Studio gives you several ways to work with the automation of parameters. As a result, there's room for confusion. So get in the habit of being systematic about your choices.

You can record automation data in real time. First, right-click the main Record button to make sure Automation is checked. Then click the Record button, click the Play button, and use the mouse to wiggle knobs and faders as needed. When you do this, you'll be recording into the current pattern. This is true even if you're in Song mode. So if the wrong pattern is selected in the step sequencer, or if you start recording at a different point in the song from where that pattern starts, the data will be recorded into the wrong spot in the song.

The Main Automation pattern is designed to record data for the entire length of the song. If you're planning to record a nonrepeating bit of automation, such as a fade-out of several tracks at the end of the song, select the Main Automation pattern before you start recording. If you're recording an automation move that you want to repeat each time a pattern plays, recording it into the same pattern with the Generator's notes would be a better idea. Likewise, if you think you may want to move the automation data around in the song after recording it, putting it in Main Automation will make your life difficult. Instead, you may want to record it to an empty pattern.

What you don't want to do is automate the same parameter in two places. If Main Automation is trying to move a knob at the same time that another pattern is trying to move the same knob, the results are unpredictable.

For level automation, you have at least two choices: You can automate faders in the mixer or automate the Generators' volume knobs in the Step Sequencer window. If you're running each Generator into its own mixer channel, there isn't much functional difference between the two, unless you're using an amplitude-dependent effect such as the Fruity Blood Overdrive. In the latter case, you'll find that the mixer's fader is post-effect, whereas the Generator's volume knob is pre-effect, which will make a big difference in the amount of overdrive applied to the tone. If you're not using an amplitude-dependent effect, choose one of the level controls for automation and stick with it rather than mixing them up.

If several Generators are routed to the same mixer channel, your choices will usually be more obvious. When adding new Generators, however,

Get Creative With Sampler and Slicex

If you're looking for a few startling digital effects to spice up a beat or a mix, load a Sampler Generator and take a look at the controls in the SMP tab of the Channel Settings box. (Note: FL Studio's Sampler is not a multisampler; it's a basic sample playback device that loads and plays one stereo or mono sample.)

Go to Options > General Settings and activate the checkbox for Show Legacy Precomputed Effects. This will add a section to the SMP tab. The edits I've found most useful for mangling sounds are in the Time Stretching and Legacy Effects areas. Start with FL Studio's default clap or snare sound as a way to learn what's possible. The knobs in the SMP tab can't be automated because they recompute the waveform itself.

Turning up the Time knob even slightly will stretch the snare or clap sound beyond recognition. The Transient, Tonal, and Speech modes in the dropdown menu use different algorithms for time-stretching, so try them all out to find an algorithm that does something provocative with your source sample. In the Precomputed Effects section, the Pogo knob adds a pitch envelope. In the Legacy Effects section, the S.Del knob makes a mono sample sound bigger by delaying one side of the stereo signal slightly. The Sine FX knobs are a ring modulator, which is useful for making clangorous sounds.

After coming up with an interesting tone, you may want to rein it in slightly using the filter or envelopes in the INS tab. Check out **Web Clip A** for a mechano-style beat that I created using only FL Studio's built-in samples and these tools.

Slicex Tricks

The Slicex plug-in gives you a broad palette with which to change both the sound and the groove of sampled beats (see Fig. A). There are two basic ways to do each of these things. But first, a word about loading loops.

When a sampled loop is considerably slower than the project's tempo, I've found that FL Studio sometimes analyzes the loop incorrectly—as being three bars long rather than two, for instance. Fortunately, this is easy to fix. Above the left end of the Slicex waveform display, you'll see what appears at first glance to be just an informational readout of the sample rate, bit depth, stereo or mono format, and analyzed tempo. Right-clicking on this data opens up the Sample Properties box. Type in a new value for the number of beats in the Length field, click Accept, then click on the Dump Score to Piano Roll button, and you're ready to go.

To change the sound of individual slices, start by assigning their filter, amplitude, or speed (pitch) characteristics to any of the eight built-in Articulators. The Articulator section is potentially confusing. It's important to understand that an Articulator is not a single signal path. If it were a signal path, any slice that was being processed by the filter of Articulator 2 would also be processed by the amplitude and speed controls of Articulator 2. But you don't have to use the Articulators that way. An easier way to think about Slicex programming is to understand that each slice has its own filter, envelopes, LFOs, and so on, which function much like key zones in a multisampler. With the Articulators, you can set up eight different macro-level control templates in each area (filter, amplitude, speed, and start time). So a given slice can use the filter settings from Articulator 3 along with the amplitude settings from Articulator 4, for example.

If the articulators don't give you the sonic options you need, the next step is to assign slices to various mixer channels using the Out field in the upper-left

FIG. A: Slicex carves up sampled beats and lets you process each slice as needed. After adding or deleting slice markers, remember to click the Dump Score to Piano Roll button. You can control each of the six parameters listed above the envelope edit window (pan, volume, and so on) using any of the six functions in the second row (envelope, LFO, and so on).

corner of the Articulator panel. Once you've done this, you can process each slice individually with reverb, delay, distortion, or whatever you like.

When a Slicex beat has been exported to the piano roll, you can use all of the piano roll's editing tools on it, up to and including randomizing the play order of the slices. The piano roll's Chop command is a quick way to produce fast rolls—just drag a note to lengthen it so that it's several beats long, and then use Chop. Also, try using the Claw Machine on the chopped notes to produce accelerating rhythms.

Alternatively, use the slices as raw material for new beats that you program in FL Studio's pattern grid. Right-click on a slice in the waveform display to select it, and then use the Drag/Copy Sample/Selection tool at the right end of Slicex's toolbar to drag it into the empty area at the bottom of the step sequencer. It's now assigned to a row of buttons.

If you want to play the slice at various pitches, you need to nudge FL Studio to change the data type of the audio. If you open up the Graph Editor for your new Sampler row and use the slider to select the Pitch graph, you'll find that this graph does nothing, though the other graphs work as expected. Likewise, playing the Generator from a MIDI keyboard will produce the same pitch on every key. So take a quick trip over to the Channel Settings box for that Sampler, choose the SMP tab, and rotate the Time knob in the Time Stretching area. This will lower the pitch. Next, rotate the knob back to its starting point. Now the Sampler will let you change the tuning of the slice, either in the Graph Editor or from your MIDI keyboard.

you should get in the habit of assigning each one to a new mixer channel in the Generator's Channel Settings box. Then give the mixer channel a corresponding name or icon.

When you right-click on a knob or slider, you'll see the command Create Automation Clip in the popup menu. This is another way to add automation—and again, it's a good idea not to try to automate a single parameter both with an automation clip and with real-time-recorded data.

Automation clips are created in the Playlist window. A new clip will run for the entire length of the song unless you've selected a time region in the Playlist, in which case the new clip will be the length of the region. The automation in these clips is edited using FL Studio's standard multisegment breakpoint envelopes.

Editing an envelope is often easier than editing data that you've recorded with the mouse because you only need to drag a few breakpoints or segment curvature handles. If the automation data is in the form of events, edit it by right-clicking the automated knob or slider and choosing Edit Events or Edit Events In Piano Roll. The event edit window contains a couple of neat tools, such as the LFO (see Fig. 2). This is not a real-time LFO. Instead, it's a way of generating curves.

But wait, there's more! With FL Studio's Link to Controller box, you can do complex mixing moves from any hardware MIDI slider. The next section will get you started with this feature.

Link to Controller

After right-clicking on almost any knob or slider in FL Studio, you can choose Link To Controller... from the popup menu. This opens up the Remote Control Settings box, letting you associate the parameter with a MIDI input (see Fig. 3). Linking to controllers is a quick way to do multichannel mixing if you have a panel of hardware faders, but it opens up many other possibilities.

When this box is open, assign any MIDI control-change number on any channel using the number boxes. Or, if the Auto-Detect checkbox is lit, just wiggle the hardware controller to assign it. If the Remove Conflicts checkbox is also lit, FL Studio will check to see if you've already assigned that control change message to a different knob; if so, it will remove the previous assignment.

For musical expression, you might want to turn off Remove Conflicts and assign a single controller (such as a mod wheel) to several knobs at once. If you do this, you'll almost certainly want to use the Mapping Formula field so as to give each knob its own customized response to the controller.

Here's an example: I loaded a Wasp XT synth and chose its Phased Saw preset. Not a bad preset, but it has no mod-wheel response. So I linked the Filter Cutoff, Filter Resonance, and FM knobs to my mod wheel. For the cutoff, I used the formula 0.75-(Input * 0.3). For resonance, I used 0.3+(Input * 0.2), and for FM, I used Input * 0.5. To hear the result, check out **Web Clip 1**.

If you're not familiar with computer programming, you may need to know that the asterisk (*) is the symbol for multiplication. The word *Input* refers to the incoming MIDI modulation signal. The key to understanding the formulas is that FL Studio remaps MIDI control change data (which in its raw state runs from 0 to 127) to the range between 0 and 1. Likewise, the output of a formula will be between 0 and 1, where 0 is the lowest possible position of a knob and 1 the highest. To tell FL Studio to compute your formula, hit Return. When you've done this, the tiny graphical square will show the results of your formula.

A typical formula starts with an offset value, which is the position the knob will have when the controller input is at 0. In the formula shown above for the filter cutoff, the offset is 0.75. This is the setting of the knob when the mod wheel is all the way down. When the Input value rises to 1 (as the mod wheel is pushed forward), the formula will subtract 0.3 from the offset, so the knob will drop to 0.45. Because each knob has its own formula, the wheel can add resonance while also lowering the cutoff.

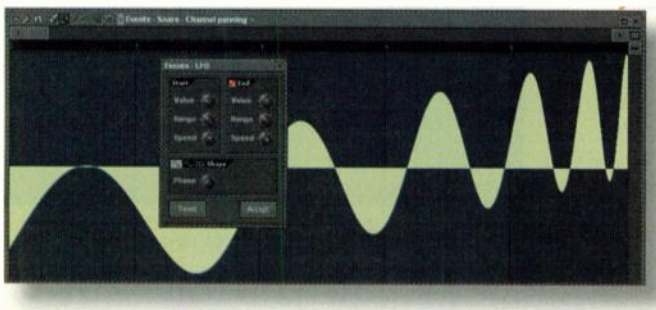


FIG. 2: FL Studio's Event Edit window has a non-real-time LFO, which you can use to produce controller sweeps. The LFO's start and end values can be different.

FIG. 3: In the Remote Control Settings box for a knob or fader, you can select a MIDI Control change input, write a formula to map the input values (range 0-1) to output (also 0-1), and more. A given knob or fader can respond to several different MIDI messages—just select New Link in the dropdown menu at the top.

FL Studio doesn't record your mod-wheel moves as mod-wheel data. Instead, it records the automation of each knob individually. If you later want to edit just one of the control contours, this feature is great—but if you want to edit them all because you didn't record the mod-wheel move quite the way you intended to, you'll either need to erase the data and re-record it or edit the three (or more) curves individually.

Be Fruitful

In this article we've touched on less than 1 percent of the useful features of FL Studio 9. To learn more about the Slicex and Sampler Generators, see the sidebar "Get Creative With Sampler and Slicex" on p. 36.

There's a lot to learn in this program, and some of the features are tucked away in unlikely places or work in unexpected ways. But if you spend some time poking around in the menus, reading the manual, and asking questions on Image Line's user forum, I'm confident you'll find the musical results inspiring.

Jim Aikin has just ordered a new PC. His friends said, "Buy a Mac," but FL Studio doesn't run on a Mac, which made the choice a little easier.

Quad Squad

Converting 4-track recordings with the Vortex Zoom Encoder | By David Battino

For years, I'd wanted to record and distribute surround-sound music, but I always figured I'd need a mountain of gear. Then the Zoom H2 arrived. This handheld recorder costs approximately $150, yet it sports four mics to capture sound in 360 degrees, saving it to Front and Rear stereo WAV files. But how can you share those surround recordings with other listeners?

I cooked up an elaborate recipe, splitting the two stereo WAVs into four mono files—for Left, Right, Left Surround, and Right Surround—and creating silent Center and Low-Frequency Effects (LFE or ".1") files of the same length. I then interleaved the resulting files into a special 6-channel WAV, processed that through a shareware Dolby Digital encoder, and Option-dragged the result onto Roxio Toast to burn surround-sound DVDs. You'll find details in my tutorial at is.gd/3hir9.

The folks at Immersive Media Research (im-research.com) read my tutorial, realized their flagship Vortex Surround Encoder program did many of those steps already, and asked if I'd like to help build a streamlined version for H2 owners. The resulting program, Vortex Zoom Encoder (Mac/Win, $29.95; see Fig. 1), imports two stereo WAVs or AIFFs and exports one of three standard surround formats: DTS 5.1 (Digital Theater Systems); a binaural headphone mix; or a 6-channel, interleaved WAV or AIFF. And it does this all with just one click (see **Web Clips 1a** through **3d**).

When the Zoom H4n came out, we discovered that Vortex Zoom Encoder (VZE) also worked with its 4-channel recordings. In fact, you can load any two stereo WAVs or AIFFs into VZE, as long as they're 16-bit, 44.1kHz. (A future version should support more resolutions.) Here's how to create your own surround-sound productions (see **Step-by-Step Instructions** below).

Choose Your Perspective

VZE has two drop zones for stereo files: Front and Rear. The program will route the Front file to the Left and Right channels in the output file and the Rear file to the Left and Right Surround channels. To preserve imaging, VZE doesn't synthesize anything for the center channel; home theater systems will allocate low frequencies to the LFE as needed on playback.

If you're using H2 files, you'll typically load the front WAV (SR***F.wav) into VZE's Front zone and the rear WAV (SR***R.wav) into the

STEP-BY-STEP INSTRUCTIONS

STEP 1: Record in 4-channel mode on the Zoom H2 or H4n, producing two stereo WAVs, or choose two WAVs of your own.

STEP 2: Convert the WAVs to 16-bit, 44.1kHz resolution if necessary and then drag them onto Vortex Zoom Encoder.

Rear zone, but it depends which perspective you want to emphasize. The H2's rear mics are angled farther apart so they produce a more ambient sound. If you have four speakers and a multichannel audio interface, you can preview both options in VZE before encoding.

With the H4n, many recordists use the built-in mics to capture concert-hall ambience while recording the stereo board mix to the H4n's line inputs. In that case, you'd assign the line-input WAV (4CH***1.wav) to VZE's Front zone and the mic WAV (4CH***M.wav) to the Rear. Another approach is to close-mike a source with the H4n's built-in mics and connect external mics for ambience. In that situation, you'd assign the internal mics' WAV (4CH***M.wav) to the Front zone.

For quadraphonic records, tracks exported from a DAW, and other sources, listen and swap until you like the effect.

Digital Theater Systems

VZE's officially licensed DTS encoder creates 2-channel, 44.1kHz WAV files that sound like static when played directly but expand into 4-channel surround when played through the DTS decoder in a home theater system. Click the DTS button to begin encoding.

Next, load the DTS files into your favorite CD-authoring program and burn a CD, being sure not to alter levels, which may corrupt the data. This DTS Music Disc should play in most DVD players; the Sony PlayStation 3 plays DTS CDs, as well. Connect the player's S/PDIF or HDMI output to a surround receiver's digital input and you'll be in surround city. If your computer audio interface has a bit-perfect S/PDIF output, you can also play the DTS file from iTunes into a home theater system without first burning a disc. Check out the VZE help file and my blog at is.gd/3hZet for details.

MP3 Surround

To make MP3 Surround files, start by clicking the 6 CH button. VZE will produce a 6-channel interleaved file you can load into Fraunhofer MP3 Surround encoder (all4mp3.com; free). MP3 Surround files are about 10-percent larger than normal MP3s yet are completely backward-compatible: They play like normal MP3s on normal players, but expand into six channels (or binaural surround) on new players. Fraunhofer offers a free player, as well.

Drag the 6-channel WAV (Win) or AIFF (Mac) onto Fraunhofer MP3 Surround encoder and select an output folder. After a few moments, an MP3 Surround file will pop out. You can play it in the Fraunhofer MP3 Surround player, Winamp, a PS3, or other compatible players in 5.1 or binaural mode. VZE's own binaural encoder creates a 2-channel WAV or AIFF that doesn't require special decoding to hear.

VZE runs in full-feature mode for 30 days before requesting payment, so testing the surround waters is easier than ever.

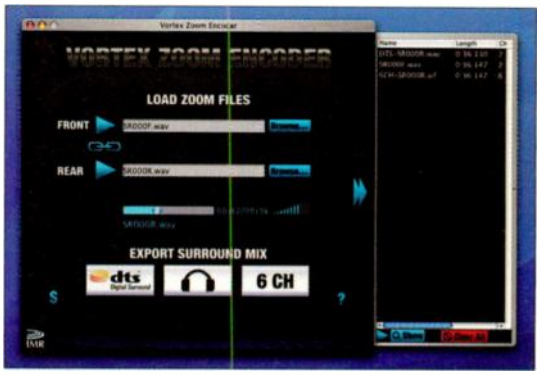


FIG. 1: Vortex Zoom Encoder (Mac/Win) converts a pair of stereo WAVs into standard surround files you can burn to disc or share online.

David Battino (batmosphere.com) designed the user interface for Vortex Zoom Encoder. He also consults on iPhone music apps.

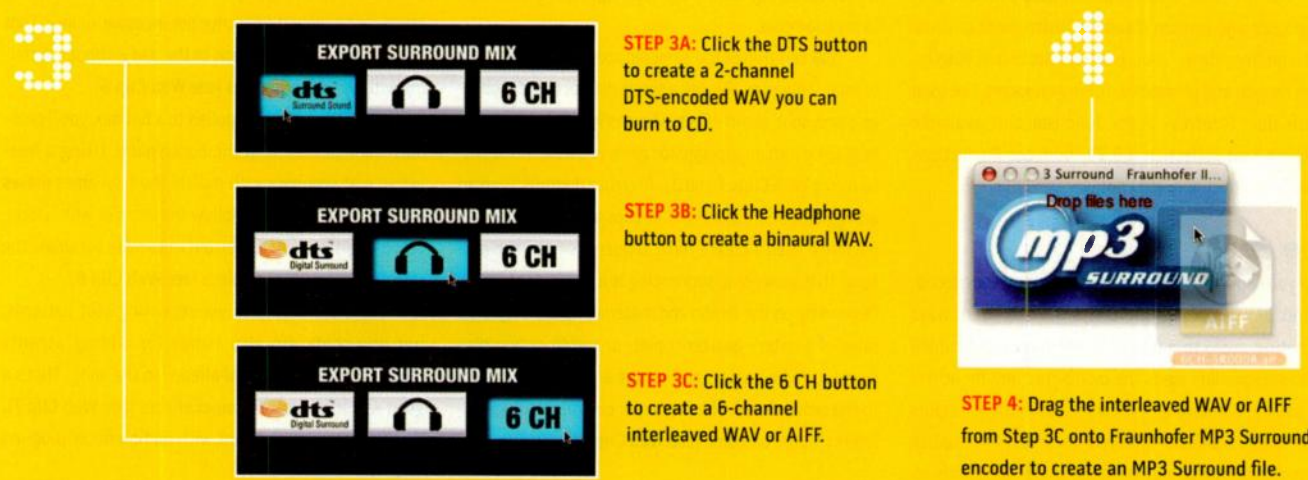


FIG. 1: Antares Articulator is ideal for vocoding diverse material with scat vocal snippets. Use the formant controls in the middle to tweak the vocal analysis.

Vocoding With Nonsense Syllables

Use scat vocals for talk-box-style effects | By Len Sasso

One- and two-syllable snips from scat vocals make good fodder for the modulator input of a vocoder. These nonsense syllables produce talk-box-like effects, and sequencing or arpeggiating them gives you rhythmic control. For the source audio, you can use material as diverse as the total mix, various submixes, and individual rhythmic and ambient stems—almost anything works as long as you tailor the modulator sequence to the material.

ONLINE BONUS MATERIAL

The first step is to extract an assortment of scat vocal clips and fashion a sampler instrument or drum machine from them. Choose a cross-section of lengths, pitch ranges, and phonemes. For my examples, I've used vocals from Montreal singer Julie Hamelin, available in Julie's Scat Collection ($9.99) from Les Productions Zvon (lesproductionszvon.com).

The Setup

How you configure your system depends on your vocoder and DAW. In particular, DAWs have different ways of routing audio to a plug-in's sidechain input, which for some vocoders feeds the modulator, and for others the source. If possible, you'll want both vocoder inputs to be routed pre-fader. That lets the level of the source audio in the mix be independent of the vocoder feed. It also lets you audition the scat clips (the modulator signal) while setting up but leave them out of the final mix, where they'll almost never fit.

The most important feature of the vocoder, aside from having an audio input for the carrier (not just an internal synthesizer), is high resolution: Use the maximum number of bands and use FFT mode, if available. The BV512 vocoder in Propellerhead Reason, Ableton Live's Vocoder plug-in, and Antares Articulator in the Avox Evo bundle all fit the bill. Articulator is the most talk-box-like, dispensing with band controls and incorporating Antares throat-modeling technology (see Fig. 1). I've used that in my examples.

You can trigger the sampled scat clips in real time or from sequences. Playing a single note or chord produces a one-shot sound effect, whereas looping a sequence or playing into an arpeggiator gives you a rhythmic pattern (see Web Clips 1 and 2). To create rhythms, I use an arpeggiator and make the scat clips audible to audition patterns, then I create MIDI sequences from the patterns that work—step sequencing is a viable alternative. Depending on the tempo and material, I use arpeggiator rates of quarter-, quarter-triplet- or eighth-notes; play from two to four notes; and set the arpeggiator's pattern to the order played. The play order can make a huge difference in the outcome (see Web Clip 3).

In Practice

One of my favorite uses for scat vocoding is to thin busy drum and percussion mixes. That's especially useful when you're working with limited resources from a construction kit or remix. The scat sounds determine which percussion frequencies are emphasized and which are suppressed, and the placement and spacing of the trigger notes influence how busy the track is (see Web Clip 4).

For sustained sounds, such as pads and ambient washes, put a stereo delay after the vocoder with different and longish delay times for the right and left channels. Use a single-syllable scat sound with a strong attack and trigger it only once per measure, or less. That can add some subtle motion to the pad without interfering with the rhythm tracks (see Web Clip 5).

When the effect is applied to a full mix, you'll probably want to keep it in the background. Using a less-active scat sequence with mostly short syllables makes a big difference. I like to follow the vocoder with a long-tailed reverb set to 100-percent wet and to automate the reverb level as suits the piece (see Web Clip 6).

All these examples use repeating scat patterns, but one-shots are also handy for adding accents derived from the material already in the song. That's a good way to repurpose sound effects (see Web Clip 7). In either case, experiment with audio effects plug-ins after the vocoder. EM

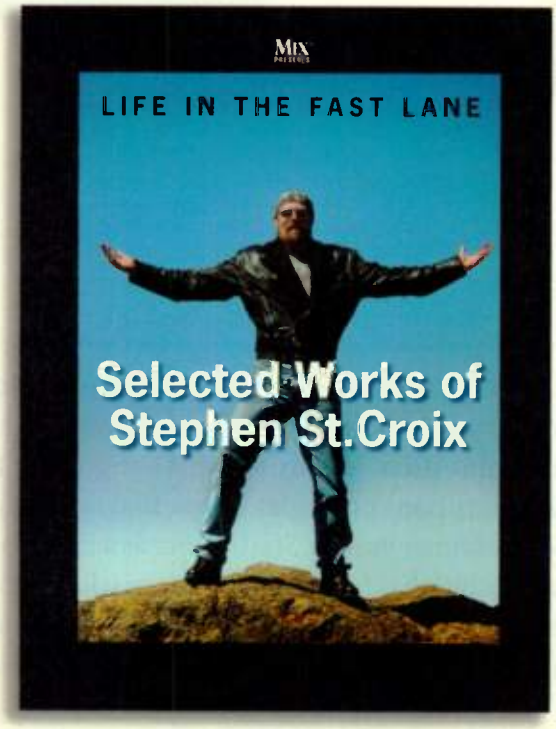
Len Sasso is an associate editor of EM. *For an earful, visit his website, swiftkick.com.*

NEW FROM MIXBOOKS

Life in the Fast Lane

Selected Works of Stephen St.Croix

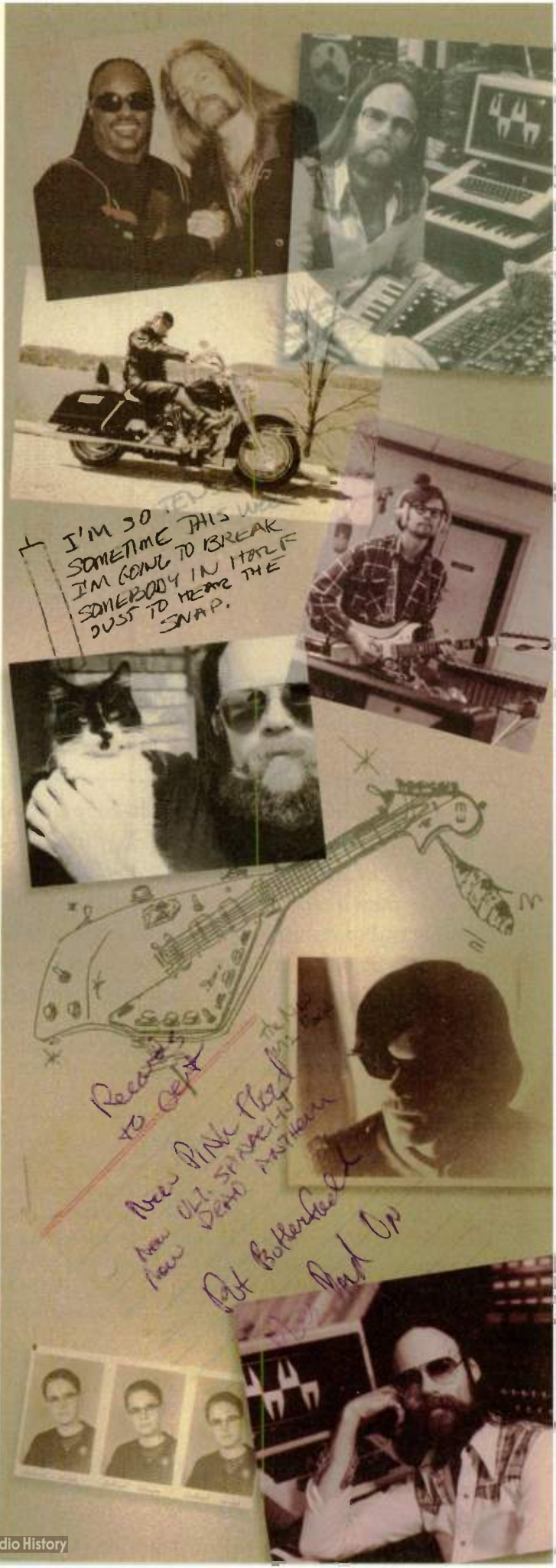
Stephen St.Croix inspired, provoked and educated *Mix* magazine's readers for 18 years in his one-of-a-kind column, "The Fast Lane." As an inventor, musician and engineer, St.Croix offered his audience a wealth of

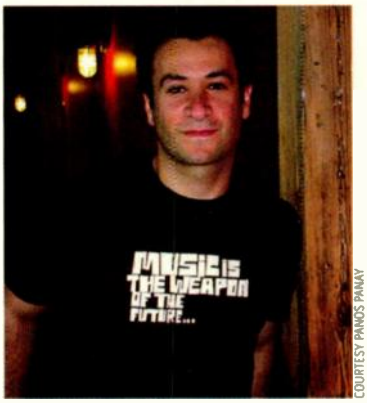


knowledge and vision, as well as a Harley-riding rock-star attitude. Now, two years after his death, the editors of *Mix* have selected the best of St.Croix's columns, presented with never-before-seen photos, notes and drawings from his personal files. This book takes "The Fast Lane" beyond the pages of *Mix* and lends new insight into the life and mind of Stephen St.Croix.

To order your copy, go to www.mixbooks.com

MIXBOOKS





COURTESY PANOS PANAY

Sonicbids founder Panos Panay predicts that—other than for licensing—recorded music's main value in the future will be as a promotional vehicle for artists.

Q&A: Panos Panay

Will recorded music have value in the future?

With music being so easy to copy and share, a big question on many musicians' minds today is: Will I be able to make money from my recorded music in the future? Panos Panay, the founder of Sonicbids.com, has a unique perspective on this issue. He has seen his site grow in the last few years from a service that primarily focused on helping musicians book gigs to one that now helps land licensing and sponsorship opportunities from well-known consumer brands. Starting out as a musician, then becoming a global talent agent, and then a web entrepreneur, Panay has found opportunities where most have seen only lost sales, and he has discovered companies hungry for the right music to license so they can promote their brands. His advice points to new ways that musicians can support themselves with their music.

By Jason Feehan and Randy Chertkow

Is there a future in selling recorded music to the public?
Probably not. Recorded music has become commoditized. As a commodity, the monetary value of music will gradually drift to zero. Now, don't get me wrong; music is priceless and it absolutely has value. It's only music that can create such an emotional connection with a listener. But recorded music in the format that it has existed in the past five years will probably not be a viable means of income generation for the average artist. Look at any product out there: If it is offered for free, eventually the value drops to zero.

If that's the case, what's the role of recorded music?
First, the most primitive role is a way of archiving and preserving something that evokes an emotion for both the artist and listener. And that's never going to go away. A second role is what Edison intended recorded music to be: a great promotional vehicle, a way of generating awareness. To me, it's all heading back to where it started. In the 1930s, people like Louis Armstrong or Frank Sinatra viewed recordings as a way for them to promote the other ways they made money—live shows, TV appearances. I think the future of music is in many ways the past of music.

Where, then, will artists make their money?
Certainly by playing live. That's never going to go away because there's no substitute for a live performance by an artist. But another way is to license music. Today, 25 percent of Sonicbids is licensing opportunities. There's value in licensing because nothing can rival music in its ability to create an emotion. That makes licensing a viable income stream that really can't be commoditized. So I see these primary streams of income: performing live, licensing your music, and leveraging the brand you are building to sell other things—your own merchandise or a consumer brand hiring you to reach an audience on its behalf.

You mentioned licensing and consumer brands. What are these companies looking for?
Every company out there now is interested in music because they're realizing that ultimately nothing else out there enables them to evoke a particular emotion and connect in a meaningful way with a consumer.

So Starbucks uses music to sell coffee, Apple to sell iPods, Diesel to sell jeans, and so forth. They need music and so look to licensing.

Second, they're looking for permission marketing. They're looking for a bridge to the audience that existing bands already have. Bands need to understand that ultimately their greatest strength is connecting with an audience. They know how to do it better than anybody out there. That's the power of music, right? Nothing captures you more than an amazing live performance or speaks to you like a song. Nothing. Consumer brands are dying for permission to act as that bond that these artists have with their audiences—even if it's a limited number. Instead of sponsoring Madonna's tour for an arm and a leg, they're looking at the aggregation of all these independent artists as reaching a comparable number of people, but cheaper on an individual basis and collectively in a richer way because they have very different and personal bonds with their audience than what Madonna has with hers.

How big is this trend?

The scope is really unbelievable. We have companies of all nationalities and sizes approach us to get music: hospital chains, clothing companies, shoe companies, grill makers, car companies, and more. In fact, there's been so much over the last year and a half, we set up a division that we call the Brand and Marketing team to help match them with the right artists out there.

Do you have an example of how companies work with musicians?

Sure. The Gap worked with musicians when they celebrated their 40th anniversary this past August. With our help, they got independent artists to play simultaneously in 800 Gap stores across North America. It's a great example of a brand leveraging existing community to generate buzz and excitement. Every band out there probably created a Facebook event, saying, "Hey guys, I'm playing at the Gap!" I think brands are realizing that in many ways, the marketing of the future is not going to be just about hitting customers over the head with mass media advertising. As less people congregate around major TV events and fewer people read print publications and newspapers, a lot of the money is shifting to creative ways of reaching audiences. Musicians can tap into this. But let me make this clear: I'm not saying you become a pitch person for a commercial brand. There needs to be a line drawn between your values as an artist and what these brands stand for. But we're seeing more and more brands tapping into this artist base as a means of reaching and connecting to people.

Do you see companies perhaps taking on the role of the record label?

Yes. Considering what the record label did—production, distribution, promotion, and management—it's all been substituted by things that are happening online. You can make your music on your laptop for next to nothing, you can distribute it on TuneCore, you can promote your music using Facebook and Twitter, and then get gigs on Sonicbids. If there's one thing that the Internet hasn't successfully done—even though some sites are trying to achieve this—it's fund you as an artist. That's what labels did traditionally. In many ways, consumer brands are not unlike wealthy art patrons in the Middle Ages: If we didn't have a wealthy class of people back then who appreciated art, there wouldn't be any art for us to look at today. To me, today's wealthy art patrons are likely the consumer brands. I think ultimately that's how I see musicians being able to create sustainable careers. The artists that will benefit from this I call the "artistic middle class."

Who would be part of that?

It's a class of artists who are jumping on these changes and realizing they're empowered and they need to be entrepreneurial. They're not sitting around waiting for things to happen to them. They realize their most powerful asset is connecting with an audience, and that in today's world it is not about broadcasting to the masses through a monologue, it's all about collaborating with their audience through dialog.

How do you advise that musicians grow their fanbases?

First, focus on building an audience. Toss away the old paradigm of the broadcast era that to make a sustainable career you had to reach millions of people. Today you have the ability to connect with folks in a very different, incremental, and personal way.

Second, it's important you become a great marketer. Today you're competing for attention and an audience. If you're looking at music as more than a hobby, you need to make as big of an investment in understanding how to create and connect with an audience as you did when you learned to play scales. You must cultivate an audience of superfans and use those connections to help build your career.

Third, to build an audience, you need to respect them, collaborate with them, and talk with them in ways that artists in the '80s and '90s didn't. The most successful artists out there are collaborating with their audience as a means of enriching those bonds. It then snowballs. There are artists out there Twittering, Facebooking, MySpacing, and Sonicbidding. They are doing everything they can to seep into the public consciousness.

The future is going to be about these artists who know how to leverage these little mini-brands they are creating and the audiences they are cultivating to later collaborate with consumer brands as a means of creating their own music career. em

To build an audience, you need to respect them.

Randy Chertkow and Jason Feehan are authors of The Indie Band Survival Guide: The Complete Manual for the Do-It-Yourself Musician *and* The D.I.Y. Music Manual, *and founders of the open and free musician resource IndieGuide.com.*

Celemony

Melodyne editor (Mac/Win)

Polyphonic pitch correction has arrived

By Michael Cooper

>> PRODUCT SUMMARY

audio-editing software
$349

PROS: Superb melodic and percussive editing capabilities. Greatly expanded feature set. Reasonable price.

CONS: Polyphonic editing is labor-intensive. Polyphonic pitch correction is not completely effective.

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

celemony.com

ONLINE BONUS MATERIAL

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

One of the most highly anticipated product releases of the year, Celemony Melodyne editor adds to previous versions of Melodyne the ability to alter the pitches of individual notes in polyphonic audio. In doing so, the software promises to be able to tune chords and counterpoint arrangements that were previously recorded with out-of-tune instruments. Legacy functions—pitch, time, formant, and amplitude manipulations of melodic (monophonic) and percussive (nonpitched) audio—have also been greatly enhanced by an expanded feature set in the new release.

The cross-platform Melodyne editor comes in both plug-in (AU, RTAS, VST, and VST3) and standalone versions. I tested Version 1.0.11 of both the standalone and AU versions (the latter in MOTU Digital Performer 6.02) on an 8-core 2.8GHz Mac Pro running Mac OS X 10.5.4. My review focuses mainly on what's new in the plug-in version of Melodyne editor.

Gene Therapy

Celemony dubs its polyphonic pitch-processing technology DNA, or Direct Note Access. To use DNA, you first transfer audio into Melodyne editor exactly as you have with previous versions. Melodyne editor then displays all notes it was able to identify on the familiar pitch and time grids. Transcribing polyphonic audio is an extremely complex task, and Melodyne editor will virtually never get it exactly right without considerable help on your part. A new Note Assignment mode lets you edit Melodyne's display to more accurately depict what notes were actually played.

In Note Assignment mode, fundamental pitches are shown as solid blobs (Active Blobs, in Melodyne parlance), whereas harmonics and atonal components (for example, frequencies generated by the scrape of a violin's bow) are shown as hollow blobs (called Potential Blobs; see Fig. 1). You'll notice some fundamental pitches are incorrectly shown as harmonics, and vice versa. Some of the notes that were played might not be displayed at all. Melodyne editor's Note Assignment tool lets you correct these transcription inaccuracies.

A few bars of polyphonic material can be displayed as scores of fundamental notes, harmonics, and atonal artifacts in Melodyne editor's display. To simplify and hasten your Note Assignment mode edits, the program offers sev-

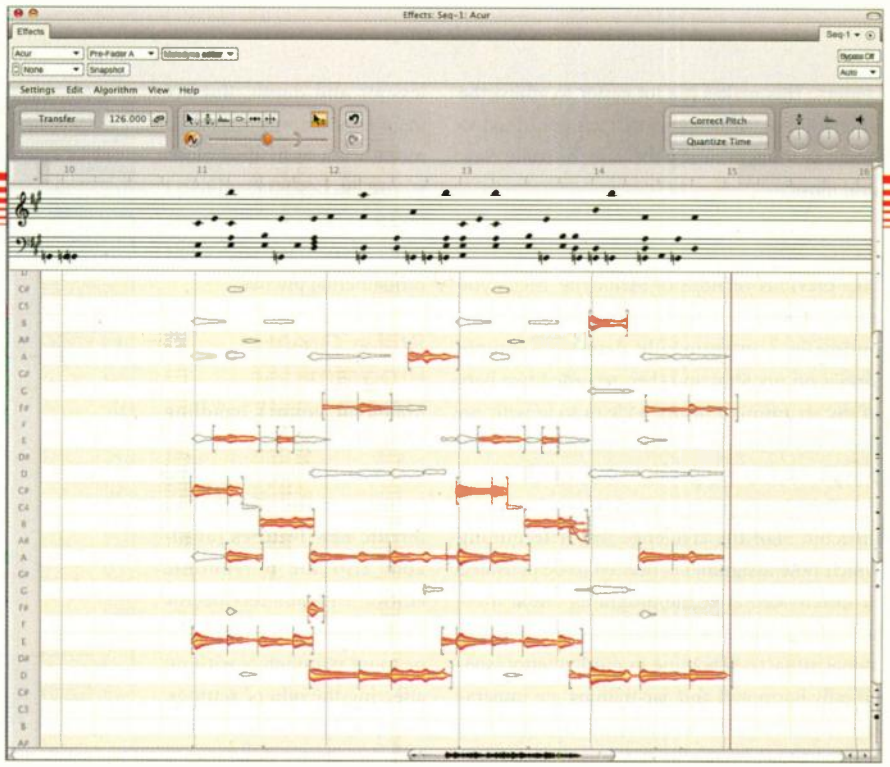


FIG. 1: Celemony Melodyne editor's Note Assignment mode and notation view. Here, the plug-in's initial transcription of polyphonic audio shows too few notes as being active (fundamental pitches).

eral helpful functions. Directly below the tools palette are two controls (depicted by orange and crescent-shaped icons) situated along a slider. Moving these changes the number of notes that will be displayed and how many will be shown as active blobs, respectively (see Fig. 2). By dragging the pair of Venetian Blinds vertically along the pitch grid, you can delimit the range of pitches across which Melodyne editor will make any blobs active (see Fig. 3).

Failure to accurately edit Melodyne editor's note assignments can result in unintentional editing of the pitch of a harmonic instead of a fundamental. Melodyne editor offers an onboard tone generator (the Monitoring Synthesizer) to let you hear each active blob as a synthesized tone instead of as the recorded sound during playback. That can sometimes make it easier to analyze whether you've made the proper note assignments. Enabling Melodyne editor's Notation view (a legacy feature) helps schooled musicians analyze the program's transcription at a glance, including whether blobs were relegated to the correct octave range. That's especially important because there's no pitch reference such as A440 marked in the pitch ruler to help you determine which octave contains the blobs for fundamentals.

Once you're certain that Melodyne editor's transcription of polyphonic material is correct, leave Note Assignment mode by selecting any tool in the program's palette. Now you can correct the pitch, pitch modulation, pitch drift, formant, and so on for any note in the editing area just as you would with monophonic material.

Here again, Melodyne editor offers some terrific new features for facilitating your work. It lets you monitor the sound of individual or multiple selected blobs while your DAW's transport is stopped, effectively soloing them. Or create a loop in Melodyne editor's bar ruler to cycle-play selected blobs within a portion of the timeline. You can even scrub playback of selected blobs while your DAW's transport is stopped.

DAW Shucks

Blob monitoring, cycling, and scrubbing may not work in Digital Performer (DP) because of the way that DAW optimizes CPU resources. DP theoretically mutes the output of all plug-ins when its transport is stopped. But strangely enough, I was able to use all of Melodyne editor's blob monitoring, cycling, and scrubbing functions in DP 6.02. Your mileage may vary. In any case, you can always use the standalone version of Melodyne editor to access these functions.

You transfer audio into the standalone Melodyne editor by dragging and dropping its file into the display. (You can also record audio directly into the standalone version.) You can specify that bar 1 of the standalone program's timeline begins at the start of the file, including any silence that precedes the first musical note played. That way, you can edit the material to your heart's content and rest assured that it will sync perfectly to other tracks once you import it back into your DAW.

Whether you use the plug-in or the standalone version of Melodyne editor, editing the pitches of polyphonic material is inherently more daunting than doing the same for melodic content. Melodyne editor provides a bevy of new selection tools that aid immensely. Clicking on a note in the pitch ruler selects all notes at that pitch, allowing you to tune them all at once by the same amount (this is the virtual equivalent of turning a tuning peg on a guitar, for example). Shift-click in the pitch ruler to add blobs at additional pitches to your selection. Or click and drag in the pitch ruler to select all blobs across a contiguous pitch range. A new Snake Selection function lets you paint over blobs at different pitches with your mouse to select them. Melodyne editor offers many more new selection commands.

If an instrument was tuned sharp or flat overall compared to A440 standard tuning, Melodyne editor will suggest one or more new reference pitches in its Reference Pitch window. You can also type in your own reference pitch. Once you make your choice, Melodyne editor's entire pitch ruler and grid will shift to reflect the new pitch

centers. This makes it a lot easier to adjust the intonation of instruments that are not tuned to A440, as is intentionally the case for some classical music.

Acid Test

Like previous versions of Melodyne, Melodyne editor needs clean, undistorted audio to work optimally. I intentionally detuned a couple strings on my Strat and then recorded two bars of my strumming, using a clean tone with no distortion or effects. I then attempted to tune the polyphonic recording with Melodyne editor.

Polyphonic pitch correction was, in a word, difficult. Half the challenge was determining which note assignments needed to be activated or deactivated after the program's initial transcription of fundamental pitches, overtones, and atonal artifacts. Schooling in music theory (specifically harmony) and ear-training are imperative if you hope to tune musical arrangements with which you're not familiar.

Once I was certain my note assignments were correct, I attempted to tune my guitar track. I had limited success. Even after working for a couple of hours with Melodyne editor on my two-bar wonder, I couldn't get it to sound perfectly in tune. My results were considerably improved, but still unsatisfactory to my ear (see Web Clips 1 and 2). The pitch-edited track sounded slightly phasey and exhibited less air and depth. But my main concern was that while monitoring individual blobs whose pitches I had edited, I noticed their overtones were often discordant with their fundamental pitches.

Still a Great Program

Melodyne editor's handling of melodic and percussive material is vastly improved because of the addition of terrific new features (available also for polyphonic editing). Parameter-specific undos allow you to null one or more parameters without affecting the others' settings. For example, when I went too far pitch-correcting a vocal into lifeless submission, the Reset Specific Edits > Pitch command restored the original pitches without undoing any of my edits of pitch modulation, drift, and transitions on the same blobs. What a lifesaver! In addition to pitch reset, similar null commands are available for pitch modulation; pitch drift; formants; amplitude; and transitions for pitch, formants, and amplitude.

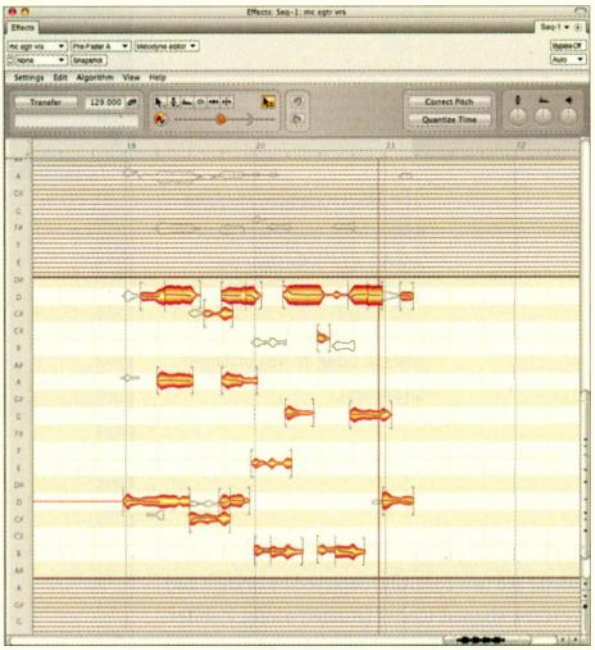


FIG. 3: Dragging the Venetian Blinds delimits the pitch range in which notes can be activated, facilitating note assignments.

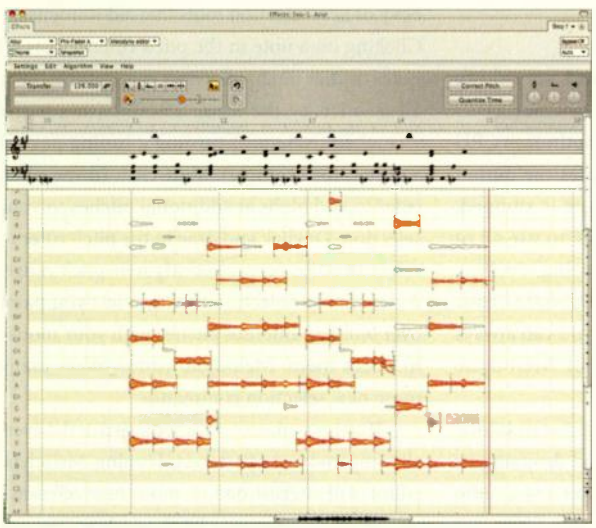


FIG. 2: Dragging the orange icon (below the tool palette) slightly to the right makes more notes active in Melodyne editor's editing area. The notation view also reflects the changes.

The horizontal and vertical sliders for the editing area are now segmented to create three separate scrolling and zooming handles for each slider. These handles made it much less likely I would accidentally scroll when I wanted to zoom, and vice versa. Another slider lets you make blobs bigger without zooming the pitch and time grids. I found this immensely helpful when editing a quiet vocal track. The Show Blob Info option displays a miniature pitch ruler next to blobs you hover over with your mouse.

Where lead vocals were copied from the first chorus and pasted into other choruses of a song, I could also copy and paste to the same sections the blobs I edited for the vocals' first chorus. Gone are the days of laboriously repeating the same edits elsewhere in a song for exactly the same parts.

I gave Melodyne editor a 3 rating for Ease of Use and Audio Quality because its polyphonic pitch processing is inherently difficult to use and sounds flawed, yet its melodic and percussive editing capabilities are better than ever and arguably unrivalled. The raft of new editing features—including parameter-specific undos, numerous selection commands, and copy-and-paste capabilities—make upgrading to Melodyne editor from previous versions a no-brainer.

Hopefully Celemony can more artfully execute polyphonic pitch correction in a future version. Regardless, Melodyne editor is still a must-have program for everything else it does so incredibly well. EM

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

FIG. 1: The VS-100's relatively small topside area belies its ample capabilities. You can access many assignable features through a single-page menu and cursor system.

Cakewalk

SONAR V-Studio 100

A versatile, portable, hands-on interface for DAWs

>>PRODUCT SUMMARY

DAW interface/mixer/recorder
$599

PROS: Portable. Versatile. Good converters and preamps. Generous plug-in bundle.

CONS: Incomplete and scattered documentation. DAW mode and Wave-Record mode are mutually exclusive. No MIDI controller capabilities with hardware synths.

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

cakewalk.com

By Marty Cutler

In an audio world where I/O controllers are abundant, Cakewalk's SONAR V-Studio 100 (VS-100) occupies a unique position. When connected to a Mac or a PC via USB 2, it serves as a versatile combination of mixer, control surface, and audio-and-MIDI interface for the DAW of your choice. Away from the computer, you can use the VS-100 as a freestanding mixer, complete with built-in compression, EQ, and reverb. Add an SD card, and you have a perfectly capable stereo recorder to tote to gigs, or you can deploy the unit as an accompanist by arranging sequential playback of audio tracks. When you're en route to the next gig and the muse strikes, you can even pull off sound-on-sound recording.

With so many features, the VS-100 manages to wear all these hats with sensible compromises. Although the system is portable, it doesn't draw its power from the USB bus, which is understandable considering its power requirements.

A Turnkey System

I put the VS-100 to the test on a 2.93GHz Apple MacBook Pro with Mac OS 10.6.2. The unit performs different control functions depending on your DAW software, so I tried Ableton Live 8.02, MOTU Digital Performer 6.03, Apple Logic Pro 9.0.3, and Propellerhead Record 1. Late in my review, Cakewalk updated the firmware to Version 1.3, a major boost to the VS-100's functionality; the update is easy to install, and you can download it from the company's website.

Cakewalk bundled a bunch of useful plug-ins with the VS-100. For Windows, users get a copy of SONAR VS, a scaled-down version of SONAR. Both platforms get complete installs of Cakewalk Studio Instruments, comprising bass,

drums, electric piano, and strings on separate plug-ins. Each furnishes a varied, if not comprehensive, collection of sounds with a reasonable degree of tweaking options and MIDI-file loops you can drag and drop to your tracks. You also get LE versions of Cakewalk's flagship soft synths, Dimension and Rapture. Audio plug-ins include Boost 11, VX-64 Vocal Strip, Channel Tools, a limiter, and a limited edition of Native Instruments Guitar Rig.

By All Appearances

The VS-100 is solidly constructed with enough heft to ensure its stability on a stage or desktop. All input and output jacks are on the front and rear panels, leaving the top panel for the control surface, mixer knobs, and display (see Fig. 1).

Inputs 1 and 2 are on the front, each with an input-level knob, a balanced 1/4-inch jack, and an XLR jack (see Fig. 2). Input 1 switches from line to high impedance. A small slot holds SDHC cards (not included), and a 1/4-inch headphone jack and its volume knob complete the front panel.

On the rear, balanced 1/4-inch jacks for inputs 3 and 4 sit alongside RCA jacks for inputs 5 and 6 and a coaxial S/PDIF jack for inputs 7 and 8 (see Fig. 3). A footswitch jack lets you start and stop the standalone recorder hands-free, and a switch enables 48V phantom power for the front panel XLRs. In addition to sending and receiving MIDI via the USB connector, the VS-100 provides MIDI In and Out jacks and a connection for the lump-in-the-line power supply.

Controlling Interest

Topside, light-silver stenciling cordons off functional areas such as the mixer and transport/controller sections. Rotary encoders, buttons, and a small graphic display allow for a variety of software interaction. For easy system setup, hold down the display button to open the single scrolling menu. Use the fourth encoder to scroll through available parameters, press it down to access that parameter's value, and then turn the encoder to adjust it. When contrasted with devices whose hardware interface resembles an aerial view of Metropolis, the VS-100's simplicity can be refreshing. Still, I sometimes wished for a software programming utility so I could see more parameters on a single screen.

As a standalone recorder and mixer, the VS-100 is an exemplar of simplicity.

At the encoder section's top left, the ACT button engages Cakewalk's proprietary Active Controller Technology in SONAR, which contextually assigns the five rotary encoders to preset parameters, be they channel-strip controls or synthesizer plug-in edits. In Logic Pro, the unit emulates Logic Control, which proved a tad stubborn to engage, necessitating a tap on the Marker button to avoid false starts and to get the transport's Play and Record buttons to function properly. For other DAW software, Mackie Control emulation is the ticket.

In the lower-left corner, the Input section is relatively straightforward. All the mixer's input controls are disabled when the VS-100 is in Full Assign mode, which gives mixer tasks to your DAW. Channels 1 and 2 have their own pan controls, buttons to enable compression and EQ, and input-gain knobs. Inputs 3 and 4 and inputs 5 and 6 are paired; they offer compression, EQ, and gain controls only. You also get gain knobs for S/PDIF and Main-Mix inputs. The compressor, EQ, and reverb are programmable; they sound decent, if not spectacular, and they are perfectly adequate for recording onstage performances. The ability to apply EQ to the signal before or after USB input is a nice touch. The VS-100's untreated sound is bright and sweet, rivaling the quality of most interfaces I've heard that cost less than $1,000.

Skimming the Surface

The Control Surface area houses transport and track-parameter controls, an output-level knob, and a fifth rotary encoder. On the far right is the motorized, touch-sensitive 100mm fader. The fader is quiet and responsive, with ballistics similar to those of my PreSonus FaderPort.

Track buttons let you zip between tracks you wish to arm and control. The Mute, Solo, and Arm buttons lie just below, and you can defeat soloing or muting for all tracks with the Shift button. If you have markers set up, the Loop button will let you cycle between two points—a handy feature if you create MIDI drum loops bar by bar.

Many functions in the Control Surface area vary depending on the DAW software you choose. Pressing the ACT button in Logic Pro enables Logic Control protocols, and pressing the View button restores the first Screenset. In Logic Pro and Cubase, the EQ button opens the selected track's default EQ for editing. The ACT button must be engaged to jump to markers; it remains lit regardless of its status. This was confusing when I tried to use the transport's fast-

FIG. 2: Inputs 1 and 2 offer XLR or balanced 1/4-inch jacks. A front panel switch lets you change the first channel to high impedance.

FIG. 3: A footswitch, additional inputs, MIDI I/O, USB, and a phantom-power switch adorn the rear panel. In addition to stereo Mair-Mix outputs, you get individual outputs for channels 3 through 6.

forward and rewind buttons to jump to markers when ACT wasn't engaged.

In Logic Pro, assigning the MIDI Learn function to software instruments seemed hit-or-miss. Making simple MIDI Learn assignments to Native Instruments B4 II and Spectrasonics Omnisphere yielded jerky and unreliable results, and sometimes generated ugly clusters of stuck MIDI notes, but assignments worked smoothly in Digital Performer and Record.

Setup information is often vague and focuses on SONAR, with some basic setup help in the PDF addendum and Cakewalk's website. The manual focuses on DAW implementation, but it doesn't mention that you can use MIDI Learn with the control surface to modulate standalone software instruments, too. This was initially problematic to set up until I discovered that the ACT button could enable or disable some undocumented controller functions. A rewritten, comprehensive manual with all the help compiled under a single roof would make matters a lot clearer.

Standing Alone

As a standalone recorder and mixer, the VS-100 is an exemplar of simplicity. The unit's Wave-Record mode lets you deploy all eight inputs (six analog and stereo S/PDIF). You can even play a stereo backing track while recording a stereo WAV file. You can then offload the files to your computer if you want to mix them or add more tracks; that's good to know in case inspiration strikes when you're away from your DAW.

Performers will appreciate the ability to play backing tracks either sequentially or one at a time. The footpedal input lets you advance through your tracks and trigger playback. With only 16 channels, MIDI input is basic, and the unit sends no MIDI clock, which would be handy if your synthesizer uses tempo-synched effects or envelopes.

An Inconvenient Boot

The unit supports sample rates of 44.1kHz, 48kHz, and 96kHz, with bit depths of 16, 24, and 32 (if your DAW supports it). Changing the sample rate requires restarting the unit, which can be inconvenient and once again underscores the usefulness of handling such tasks with a software control panel.

With the USB cable disconnected, the VS-100 automatically starts up in Wave-Record mode. Wave-Record and DAW modes are mutually exclusive, creating a few minor but annoying inconveniences. To transfer audio files between the computer and the VS-100, you must access the menu, scroll down to the Storage parameter, turn Storage on, and then reboot the VS-100. The display reads "Now Connecting" throughout the process, giving the impression that it is hanging although the unit has already appeared on the desktop as a drive. There is no audio functionality in this mode, and more significantly, no menu access. Formatting an SDHC card must also be done beforehand and when the unit's USB connection is offline, which means disconnecting the USB cable.

Once you get over the formatting hurdle, however, recording is easy, and the VS-100 becomes a convenient sketch pad. With the aid of the built-in programmable metronome, I was able to record and then import tracks that would sit comfortably alongside MIDI and audio tracks I had previously recorded in my DAW.

For those who need more simultaneous controls or more inputs, the VS-100 may not be suitable. As a tool for a solo artist or small acoustic ensemble that doesn't need a ton of inputs, the VS-100 presents a versatile package. For Windows users, the synergy between SONAR and the VS-100's ACT implementation makes for a tantalizing combination. Cakewalk has added several firmware upgrades since I received the unit, so further improvements are not out of order; the most recent focused on functionality with Mac software. A rewritten manual would dramatically improve the unit's value.

As a bluegrass musician playing in small clubs with a small band, I think a standalone VS-100 is a great alternative to schlepping my MacBook Pro and an external hard drive. With an 8GB SDHC card, I can leave the recorder running without concern for eating up space. I have plenty of inputs to record and provide a stereo mix for a five-piece band, especially with the minimal mic setups so popular in bluegrass bands of late.

Musical Multitasker

The SONAR V-Studio 100 is not the least-expensive unit on the block, and the few inconveniences I've mentioned represent compromises inherent in a unit that covers so many bases. When the dust clears, it handles its multiple tasks quite well. Considering its capabilities as an audio interface, mixer, control surface, and standalone recorder, and its modest but useful complement of built-in effects, DAW software, and cross-platform plug-ins, the V-Studio 100 offers good value. em

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Marty Cutler and Kenny Kosek are two-thirds of the electronic/bluegrass/comedy duo Chef of the Pasture. The final third is Cutler's MacBook Pro, Cora Apple.

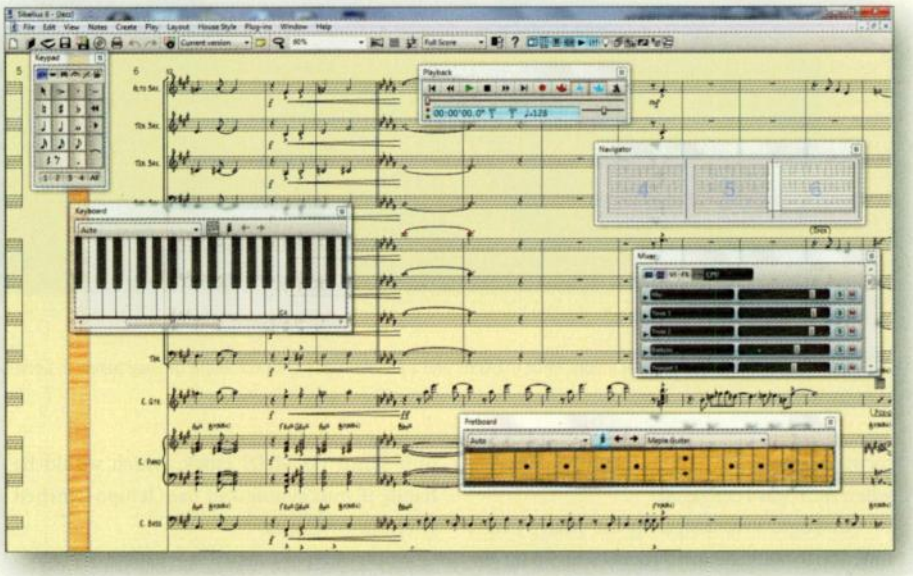

FIG. 1: Sibelius 6 offers a slew of significant new features, making the decision to upgrade an easy one. As in previous versions, it gives you a lot of flexibility in arranging its many supplementary windows.

Avid
Sibelius 6 (Mac/Win)
A top music-notation program gets even better

By Peter Hamlin

PRODUCT SUMMARY

notation software
$499 Professional Edition ($169 upgrade)
$249 Academic Edition ($129 upgrade)

PROS: Magnetic Layout speeds up score creation. Versions feature helps with tracking revisions. Chord Symbol feature streamlines chord entry. Expanded sound library. ReWire support.

CONS: PDF manual not integrated into the program.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
DOCUMENTATION	1	2	3	4	5
VALUE	1	2	3	4	5

sibelius.com

ONLINE BONUS MATERIAL

Since its introduction in 1993, Sibelius has been an important player in the field of notation software, and it is widely acclaimed for its power, elegance, and ease of use. Sibelius 5 received a strongly favorable review from Nick Peck in the February 2008 issue of *EM* (available at emusician.com). He concluded, "If there is room for much improvement in Sibelius 5, I'm not sure where it would be."

In version 6 (see Fig. 1), this excellent program has, indeed, added some new features that more than justify the upgrade price for current customers, and which make the program even more enticing to new users. (See the Online Bonus Material "Sibelius vs. Finale" for a comparative analysis of the two archrival notation programs.)

Like a Magnet

Previous versions of Sibelius arranged some objects on the score automatically to avoid collisions. This automatic formatting keeps the user from having to worry about routine adjustments. For example, if you added a slur or accidental, other objects would automatically shift around to avoid bumping into each other.

Magnetic Layout in Sibelius 6 greatly expands this excellent idea to include all objects on the staff. It does this by creating an order of precedence for different musical symbols. For instance, lyrics need to be close to the notes to be readable, and dynamic markings can be farther away. Tempo markings don't need to be placed as closely as, say, chord symbols. So as you work, you will see that objects rearrange themselves automatically as needed, and you don't have to trouble with minor adjustments of placement (see Fig. 2). Of course, if you have very strong opinions about object placement, you can turn Magnetic Layout off, customize it in great detail, or just manually move objects where you want them.

Magnetic Layout won't resolve conflicts between adjacent systems, but those are easily addressed with the Optimize Staff Spacing command in the Layout menu. (I imagine it would be jarring and put quite a bit of stress on your computer if adjacent systems, and all the music they contained, were constantly shifting around on the page as items were added.)

It's Alive

Another new feature in Sibelius 6 is called Live Tempo. It allows you to conduct your score by marking beats, therefore allowing subtle adjustments in tempo for added realism. You can use the computer keyboard, a MIDI keyboard, or a MIDI footpedal to send your beat-tapping messages to the computer. A calibration process takes into account any latency (audio delay) in your particular audio setup. What's more, your performance gets recorded for subsequent playback, or to be stored as a sound file.

Sibelius already has excellent facilities for humanizing a performance, particularly the Espressivo and Rubato settings that, respectively, produce variations in dynamics and tempo in the score, and make playback seem a lot less rigid. (You can adjust them or eliminate them, if you wish.) In my opinion, the effectiveness of score playback is enhanced as much by these details of tempo and dynamics as it is from the sound samples themselves.

Keeping Tabs

Music-notation software users often want to keep track of the different versions of their project as they work. Is that sketch you're writing now going to be useful tomorrow? Better save it just in case. In the past you could do this manually, of course, by simply creating new file names for your score, but Sibelius 6 introduces a more integrated way to manage different versions all within the same file.

As you work on a project, you can create a new version of it by selecting File > Save Version. Each version is given a default name that includes the date and time, or you can create any name you wish to help you keep track of them. You can also add Post-it-style comments in each version. All of the versions are encapsulated in the same file, so you don't have additional files to worry about.

This new feature will be useful to composers and arrangers working alone, but it also could be quite valuable for those collaborating on, say, a song, a musical, or a film score. I can also imagine composition teachers employing it to keep track of student progress on assignments as well as many other varied uses. This is a feature that never really appeared on my wish list before, but now that Sibelius has introduced it, it suddenly seems essential!

A Familiar Chord

Chords designated as text, guitar-chord diagrams, or both together have all been consolidated into a single Chord Symbol feature in Sibelius 6. These symbols are entered either by typing text into the computer keyboard or by playing chords on a MIDI controller. If the staff represents a guitar, then guitar-fingering chord diagrams are automatically included. Otherwise, just the chord symbol is displayed. As is true with virtually every feature of Sibelius, you get a default setting for this that will work fine in most instances, but there are also countless ways to customize appearance to whatever extent you require.

The new Guitar Fretboard window is a great way for guitarists to enter notated music and/or chord diagrams, and it is also handy for editing the fingering of each chord diagram, if you want something other than standard fingering (see **Fig. 3**). I found it easy to type in chords—the text you need is usually obvious (i.e., C maj7 or Ebmin7b5).

ReWire Your Score

Another key addition to Sibelius 6 is ReWire support. Now you can run Sibelius in sync with your DAW, opening up a lot more possibilities for recording and mixing. Most notably, you can record audio tracks in your DAW to accompany your MIDI-based arrangement from Sibelius. For example, you could have a violinist double one or more of the string section parts that you arranged in Sibelius without first having to mix them and import them into the DAW.

The ReWire function also allows you to essentially add a notation module to recording programs that have no such features of their own. Even with DAWs that do have notation,

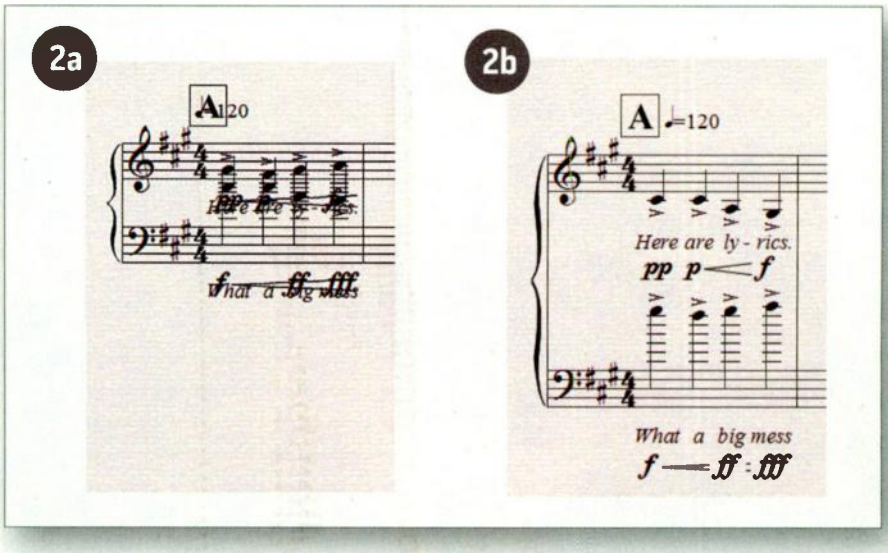

FIG. 2: Without Magnetic Layout, object collisions can get messy (a). Magnetic Layout, with the help of the Optimize Staff Spacing command, automatically sorts them out (b).

Another key addition to Sibelius 6 is ReWire support.

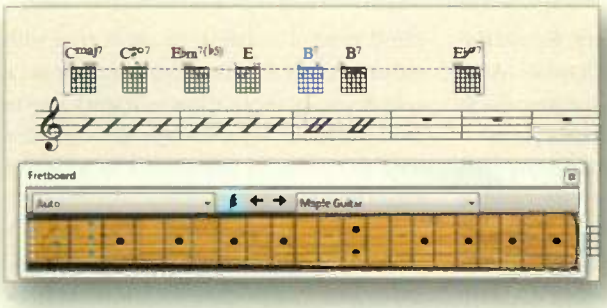

FIG. 3: The new Guitar Fretboard window is handy for entering notes or editing fingering diagrams. Here, the first B7 chord has been selected for editing.

Sibelius will offer a much deeper feature set in that area.

All That and More

Although there are a few minor changes in the workspace and menus, I'm guessing regular Sibelius users won't notice much difference, or will find a particular change self-evident (such as adding Version elements to the toolbar to work with that new feature). Some keyboard shortcuts have been changed or added, which, again, many users of the program may not even notice.

There are also quite a few additions to the sound-playback library, providing an ever-increasing sonic palette for your compositions (see Web Clip 1). All these changes are well-documented, and when upgrading, it's probably worth a look at Help > Documentation > What's New in Sibelius 6.

What's Not to Like?

Is there anything left for Sibelius to improve? The documentation, though good, could be even better. Why? Because the manual—though thorough, clear, and even good-humored—is a standalone PDF file, and as such, it is not ideally suited for searching or navigating.

There is no contextual help option where you can, for example, immediately proceed from a selected object to the relevant help documentation. Not having an integrated help system seems out of character for an application that otherwise has such a seamless workflow.

Up and Upgrade

Sibelius offers an elegant, flexible, and easy-to-use interface, default settings that usually give you exactly what you want, and a great deal of flexibility to customize if desired. Sibelius 5 users who might have wondered how this excellent program could get even better do, indeed, have good reason to upgrade. EM

Sibelius 6 recently won a 2010 EM *Editors' Choice award. For details, visit emusician.com/ms/editors_choice.*

Peter Hamlin is a composer who teaches at Middlebury College. He is a member of the live electronic improv band Data Stream, whose latest CD is called Flow.

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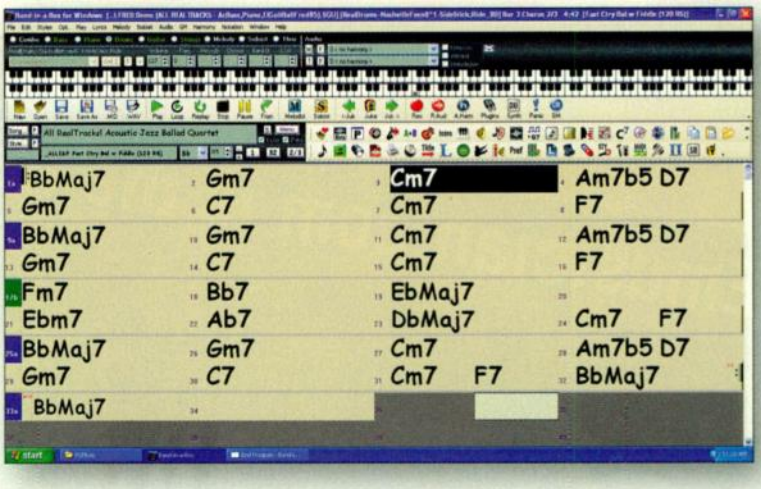

FIG. 1: PG Music Band-in-a-Box lets you create complete musical arrangements by simply selecting a Style and typing in chord changes, but that's only the beginning. Recent versions incorporate prerecorded audio clips called RealTracks and RealDrums.

PG Music

Band-in-a-Box 2009.5 (Mac/Win)

Audio adds realism to the virtual backup band

By Emile Menasché

PRODUCT SUMMARY

auto-accompaniment software
$129 Pro (Mac/Win)
$269 MegaPak (Mac/Win)
$449 UltraPak (Mac)
$469 UltraPlusPak (Win)
$569 UltraPlusPak (Mac)
$569 EverythingPak (Win)

PROS: Quickly generates fully arranged backing tracks in various styles. Enhanced audio features. Chord analysis generates charts from audio files. Excellent resources for education and practice.

CONS: RealTracks can be slow to load. Somewhat old-fashioned GUI.

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

pgmusic.com

ONLINE BONUS MATERIAL

When Band-in-a-Box was first released in 1990 (for the Atari ST platform), the idea of using a computer to generate nearly instant MIDI accompaniment was a major breakthrough. Over the decades, the program—which is now Windows- and Mac OS X-compatible—has added the ability to record audio and, more recently, use prerecorded audio drum loops (RealDrums) and other instrumental parts (RealTracks). It also offers more sophisticated algorithms, analysis tools, and notation to help it instantly build songs and arrangements based on user input. PG Music reports that version 2009.5 has more than 40 new features or improvements over its predecessors.

I received Band-in-a-Box (BIAB) 2009.5 UltraPlusPak, which ships on a pocket-sized 160GB external USB 2.0 hard disk. The installer let me choose between leaving the program and content on the external drive, installing everything on my computer's internal drive (requiring 60GB), or installing only BIAB on my computer (requiring about 3GB) and accessing the audio content on the external drive. The program worked quite well directly from the external drive, and I liked being able to spare my Mac's system drive of yet another multigigabyte installation.

Box Basics

Before I dig into the highlights of BIAB 2009.5's new additions, a quick overview is in order. BIAB is a unique tool for composers, arrangers, and students, thanks to its ability to generate complete arrangements in many different styles simply by typing chord names into a grid.

Working with BIAB is different from using a loop library as a compositional aid or to create backing tracks in a DAW. Instead of asking you to find and assemble individual parts, BIAB generates a full multitrack arrangement with drums, bass, chording instruments, etc., using General MIDI instruments, audio files, or both.

The program's coolest feature by far is the way these parts automatically adjust to fit the chord changes you enter. To change from a C major to a C minor 7th, for example, all you have to do is type Cm7 at the appropriate location in the song. Hot keys streamline the chord-entry process. BIAB can also generate a harmony based on a melody you record into the program via MIDI.

You can leave your virtual ensemble to handle just the backing tracks while singing and playing your own melodies, or you can ask the program to generate a melody or solo for you, based on the melody and chord changes you've entered. For any part BIAB generates, you have the option of using the preset instrument sounds for a given style, or replacing them with MIDI or audio instruments of your choosing. A huge collection of demo songs covers each style, and these can help you start your own work.

If you do decide to create your own parts, a relatively basic audio recorder lets you capture and edit your performance. You can also use a MIDI controller to record into the program's 2-track sequencer, which offers grid and notation editing.

User Interface

Most of BIAB's action is consolidated on the main screen (see Fig. 1). It looks rather old-school-PC, but the absence of modern GUI slickness doesn't detract from the efficiency of its combination of buttons, pulldown menus, and dialog boxes, which give you access to all of the program's important features.

In the main screen, you set song tempo, key, and time signature; load styles and call up sounds for various instruments within a style; make quick changes to audio mixes; operate the transport; and perform file operations. The main screen also lets you use myriad tools (including the audio and MIDI recorders) and access various dialogs that help you generate melody, harmony, and solo parts.

The screen is dominated by the Chordsheet Area, a grid containing numbered cells that correspond to a song's measures. You can type as many as four chords per cell and enter other vital information such as key changes, repeats, and part changes. What's nice about the chord sheet is that it gives you a song overview that's like a musical chart. It's very efficient.

What comes of your various entries into the chord sheet is largely determined by the accompaniment Style you select. Styles cover a wide range of Western musical genres, such as rock, jazz, classical, folk, blues, and so on (see Fig. 2). Most Styles furnish a full band—bass, drums, at least one chording instrument (keyboard, guitar, or vibes), and instruments that are idiomatically appropriate. Each Style influences the rhythms and chord voicings BIAB uses, but you can adjust these attributes. (The Jazz Up option, for example, adds complexity to chords; another option lets you have chords anticipate the downbeat.)

In addition to relying on the programmed styles, you can customize styles and create your own styles in numerous ways and save them for later recall. This can be handy if you want a song to alternate in feel from, say, a blues rumba to a swing piece.

Starting a song is an exercise in instant gratification. Once you've chosen a Style from the pulldown menu, which offers descriptions of each one, you begin creating your piece by typing a chord name into a cell. (You could also start by adding the chords, and then audition your piece in different Styles.) BIAB will play a part based on the chord you typed until it sees another chord or the song ends. (The default way of working is to use chord names, but BIAB can also work with the Nashville numbering system.) You can also subdivide your song into parts and even assign Substyles to each part—a quick way to change, say, a drum part from the hi-hat to the ride at the chorus (see Web Clip 1).

Keeping it Real

For most of its existence, BIAB has relied on MIDI to generate its parts. Although onboard sounds can be effective in many situations—especially when you're using BIAB as a backing tool while woodshedding or trying out melodic ideas—sounds generated by a computer can come across as cheesy. You can, of course, assign the MIDI tracks to external synthesizers or to VST and DXi soft synths.

RealTracks and RealDrums offer an appealing alternative to MIDI-generated parts while retaining much of their flexibility (see Fig. 3). BIAB's growing collection of professionally recorded audio parts adds realism to the sound and feel of many of the Styles. It's important to note that the audio parts are not individual samples triggered by a sequencer, but one- to eight-bar audio recordings of performances by studio musicians, who bring more subtlety to the phrasing and groove than the MIDI-generated parts they replace. Unlike typical loop libraries, these recordings can follow the chord structures intelligently just like the MIDI parts. You can even use them to generate solos.

BIAB 2009.5 supplies 101 new RealTracks (in addition to the 80 or so in previous versions and updates). They cover such styles as blues, jazz, country, bluegrass, rock, and pop. The quality of the sound and performances is good, though I liked some better than others. I was especially impressed with the country and

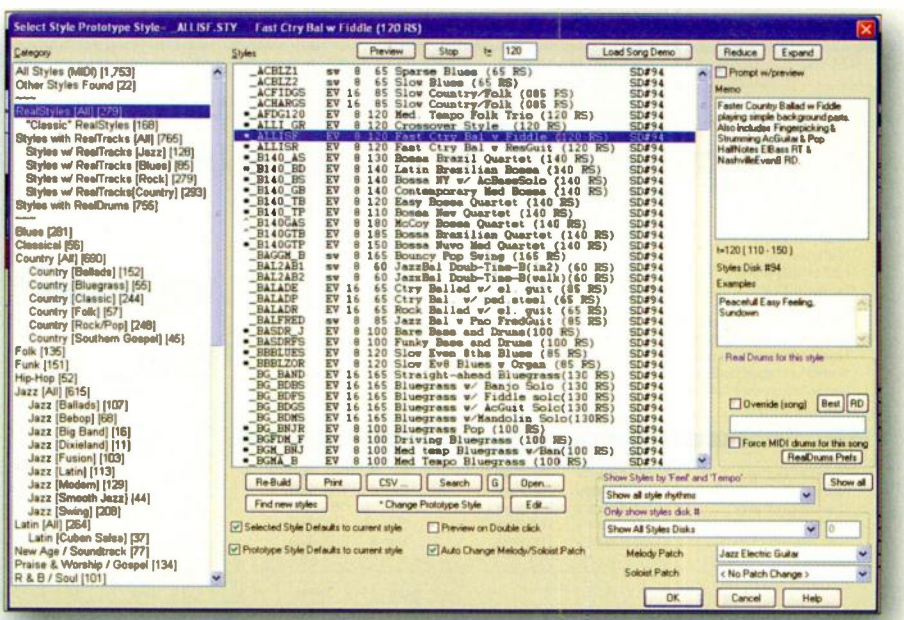

FIG. 2: Clicking the Style button brings up a dialog box listing all the available Styles. If you like, you can restrict browsing to only those Styles using RealTracks.

bluegrass material, which was performed with a nice flowing groove (see Web Clip 2). The jazz material was pretty good, too, if a little relaxed. The rock tracks were fine.

Each set of audio tracks has a base tempo. Though the tracks can stretch to follow whatever tempo you specify, you get the best results when the song and the original recording are close to the same tempo.

In many RealTracks, the new RealCharts feature displays the notes being played in traditional music notation; the guitar tracks also show tablature. You can export this material as a MIDI file or save it in BIAB's song format.

I did have a couple issues with the audio tracks. They take some time to render—and not just the first time you add them to a song. After I stopped a song with several RealTracks and made no changes of any kind, the tracks still took as long as 20 seconds to load before playback.

You can reduce this load time by using the new Freeze Song feature, which converts the whole song to audio data and automatically mutes the individual tracks. You can also render both the complete song and individual tracks as WAV files, allowing you to export your work into a DAW or burn it onto a CD from within BIAB.

Overall, BIAB's expanded audio capabilities are a big addition and make the program much more fun as a writing or practicing tool. Add tools such as the included harmony plug-in (by TC-Helicon; see Web Clip 3) and the ability to record your own parts, and you have a nice program for generating and developing ideas.

Band-in-a-Box is a unique tool for composers, arrangers, and students.

The Audio Chord Wizard is one of BIAB's most impressive features. It can take just about any audio file and analyze its chords—even when the music is a complex combination of single notes and chords. BIAB then lets you send the chords, as well as the audio, to a song file.

Many of the other new features are improvements related to the performance of the audio tracks, loading and customizing styles, setting preferences, and creating notation. It's nice to see that while trotting out attention-getters such as RealTracks, the BIAB team also keeps enhancing its established features.

Out of the Box

BIAB gives you numerous ways to share your work or expand on it with other production tools. It can export WAV, MP3, WMA, KAR (karaoke), and MIDI files of your arrangements, allowing you to open your song in a DAW and enhance it further. It can generate scores, lyric sheets, and so on. BIAB can also load existing MIDI and audio files, which is really cool if you like to sing melodic ideas to capture them, because it can build arrangements around your vocal recording.

Although BIAB has many applications—I could write a review twice this size on its abilities as an educational tool—and could no doubt be used as a composing and production tool, my guess is that most *EM* readers already use a more traditional DAW. BIAB's most valuable use may be as a sounding board and a forum for woodshedding. If you want to work out melodic ideas, try a piece with different chord inversions and voicings, test a song in different keys or tempos, or simply get a feel for how a song written in one style might work in another, BIAB is an incredible resource.

Just as this review went to press, PG Music released Band-in-a-Box 2010 for Windows (a Mac update is forthcoming). Among its enhancements, according to the manufacturer, are considerably faster playback for tracks containing RealTracks and the ability to drag and drop tracks between BIAB and DAWs. Freeze Song now allows you to freeze individual tracks rather than making it necessary to covert entire songs. In addition, the UltraPlusPak and EverythingPak versions now include nearly 400 RealTracks.

Band-in-a-Box is a deep program that fosters the continuing education many of us engage in throughout our musical lives. From ear training and chord analysis to harmony and simple play-along fun, it offers many ways to expand your musical knowledge. EM

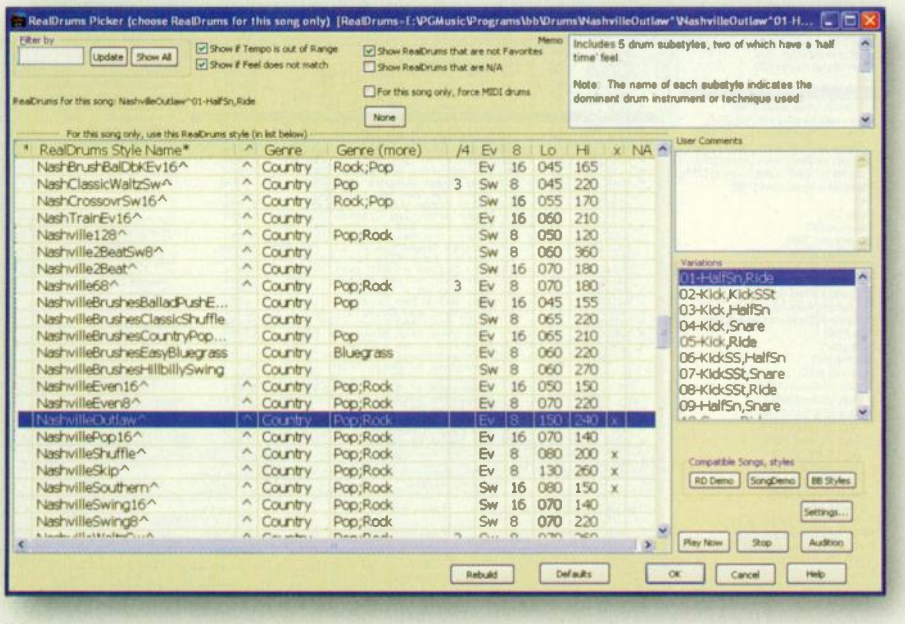

FIG. 3: The RealDrum picker lets you select drum loops based on a number of stylistic, sound, and performance criteria.

New York-based guitarist, composer, and producer Emile Menasché is the author of The Desktop Studio *(Hal Leonard, 2009). His latest album,* Overtones, *is available on iTunes.*

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FOCAL PROFESSIONAL

CMS 65

By Rob Shrock

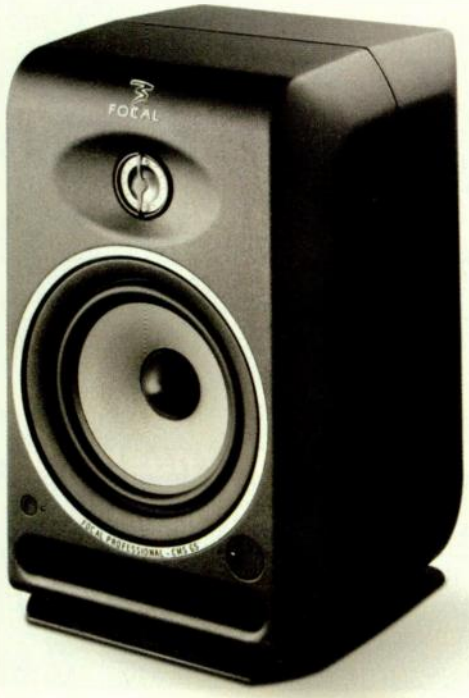
Focal Professional is known for its unique driver designs used by several pro audio speaker manufacturers, as well as its own audiophile mixing and mastering monitors, whose inverted-tweeter design is highly regarded. The new CMS 65 ($850 each) shares many of the same design innovations and pristine audio standards as the SM6 and SM11 lines in a package affordable to project studios and professionals alike. A smaller and slightly less-powered version is available in the CMS 50, and the new CMS SUB subwoofer rounds out the CMS line.

INSIDE THE BOX

The CMS 65 has an innovative 6.5-inch woofer with a thin layer of glass micro-balls over a cellulose paper cone (called *polyglass* technology). This combines the self-damping properties of paper with the rigidity of glass, resulting in improved transient response and lower distortion, according to the manufacturer. Focal also says that the proprietary inverted-dome tweeter improves imaging and phase accuracy, a claim that holds up well in the field. The two Class-A/B amps power 100W to the 4Ω woofer and 60W to the 4Ω tweeter.

Although properly tuned with its neutral settings, the CMS 65 allows you to address any room problems with four rear panel filter trim pots. Highpass filtering is 12dB/octave, selectable at 45Hz, 60Hz, or 90Hz. LF and HF shelving are fixed at 450Hz (with settings of +2dB, flat, -2dB, -4dB, and -6dB) and 4.5kHz (+2dB, flat, -2dB, and -4dB). A notch filter set at 160Hz (-2dB, -4dB, and -6dB, with a ¾-octave Q) is supposed to minimize desktop or console reflections.

Input connections are balanced XLR or unbalanced RCA only, with no provisions for ¼-inch inputs, one of the only slight drawbacks of the CMS line. Front panel mute buttons and a 66dB rotary attenuator are handy additions. Each speaker comes with a rubber mat and rubber wedges to both decouple each cabinet from furniture and adjust the listening angle, if desired.



With a 6.5-inch polyglass woofer and an inverted-dome tweeter, the Focal CMS 65 is well-suited for near-field mixing in project studios.

OUTSIDE THE BOX

It is important to follow the setup instructions and not judge the speakers until you do, as the difference between before and after setup and break-in is remarkable. The imaging and clarity improves immediately by removing the metal grille and inserting the phase-plug over the tweeter, as recommended. After a night of iTunes running on shuffle at a moderate volume level, the top end smoothed out noticeably and the whole system sounded tonally balanced, without the subtle harshness in the upper midrange I heard when I first set them up.

However, my first mixes on a collection of guitar, piano, and voice demos came out a little darker than normal when I played them back on other systems, leading me to think the CMS 65s were translating too brightly in my studio. In general, I am sensitive to high-end frequencies, so I trimmed the HF shelving to -2dB and continued mixing. Later in the day, I checked these newer mixes on my other systems (including my car), and the mixes were now speaking with a little too much top end. I reset the HF filters back to flat, and the resulting mixes were finally tonally balanced.

I think the monitors simply needed more time to break in properly. (Focal recommends 20 hours.) Proper imaging and phase can also be perceived as brightness, and it probably took me a full day to adjust to how well the CMS 65 handles transients, imaging, and phase accuracy.

Although the low end does not sound overly huge, I have consistently been able to get the bottom end right on full-range mixes without a subwoofer. I would love to hear the complete system, but I have no qualms at all mixing without a sub.

The sweet spot for me is the midrange, where I believe all great mixes live and die. In my experience, the CMS 65's lifelike detail and clarity is unsurpassed for speakers in this price range, and mixes seem to expand beyond the edges of the speakers. You will have no problems hearing flaws in your own mixes—and in many of your favorite recordings—that you never noticed before.

In addition to all that the CMS 65s do well, they don't fatigue the ears during long stretches of time. These are great monitors worthy of your consideration with little to criticize, and they are well-suited for serious professionals at all levels.

Overall rating (1 through 5): 4

focalprofessional.com

METRIC HALO

2d and MIO Console 5 (Mac)

By Eli Crews

The 2d card is an upgrade kit for Metric Halo's Mobile I/O audio interfaces, the 2882 and ULN-2. It furnishes two channels of optical S/PDIF I/O, equips the ULN-2 with eight channels of ADAT Lightpipe, and replaces the 2882's previous ADAT implementation. The card is already installed in any new 2882 Expanded, ULN-2 Expanded, or top-of-the-line ULN-8. Bundled with the 2d is version 5 of the MIO Console software (Mac only), with so many new features that I'll just focus on the most significant.

EM HOT PICK

THE CARD YOU'RE DEALT

If you already own a legacy Mobile I/O, it can be retrofitted with the 2d hardware at Metric Halo's factory ($489 for the 2882 and $639 for the ULN-2). If you're a savvy user, though, you can install the card yourself with instructions from an online video ($400 for the 2882, $550 for the ULN-2).

Equipped with a 2d card, the 2882 has a more robust ADAT implementation than before. (To read about my problems with the 2882's earlier ADAT implementation, see my February 2003 review, available at emusician.com.) The card's physical enhancements are more obvious on the ULN-2 because that box previously lacked any optical I/O. The new card improves interdevice clocking on the 2882 and ULN-2 alike. The biggest advantage of the hardware upgrade, however, is a DSP chip with more than five times the processing power of the original Mobile I/O.

CHANNEL SURFING

You can download MIO Console 5 for all models of the Mobile I/O, but the 2d card requires it. The most substantial update in MIO Console 5 is its new mixer interface. For tracking, the software delivers no-latency monitoring and makes it easier to set up DAW feeds. During mixing, it takes advantage of the Mobile I/O's plug-ins and pristine 80-bit summing engine.

The new Mixer window replaces three separate panes on MIO Console's previous GUI: Mixer, Routing, and +DSP. Metric Halo's legacy boxes offered lots of routing capabilities, but the new interface makes it infinitely easier to send signals wherever and however you want. A mixer strip can handle signals from any of the interface's physical inputs or any of 18 DAW channels, which are routed from any audio application that supports Apple's Core Audio (including iTunes, web browsers, and any DAW besides Pro Tools). You can assign each strip to any bus you create in the mixer. Each bus can feed any number of analog or digital outputs, or it can route signals back to the DAW via 18 FireWire channels.

Each mixer strip has two pre-fader inserts—either pre- or post-effects—for routing a signal to a physical output for headphone feeds, for example, or to a FireWire channel for recording wet and dry signals. Watch the informative videos on Metric Halo's website, and you'll be making complicated routing setups with just a few mouse clicks and keystrokes.

MIO Console 5 supplies key commands for quite a few actions, many of them user-configurable. You can also customize your mixer layout by changing the order of channel strips, as well as coloring and resizing each strip to taste. Thanks to support for the Mackie Control and EuCon protocols, you can control the mixer with control-surface hardware.

ALL PLUGGED IN

The 2d upgrade comes with some amazing plug-ins. Based on Metric Halo's ChannelStrip, MIOStrip gives you extensive control over gating, compression, and EQ, and they sound terrific. HaloVerb has incredibly realistic ambience, placing you in a sonic space without sounding like you're adding effects. Character—which has its own place atop each channel, aux, and master bus strip—is analog modeling at its finest, with 22 transformer- or tube-distortion profiles ranging from subtle coloration to thick saturation. I found Character extremely useful on individual channels while mixing and on the whole mix while mastering.

2D OR NOT 2D

The 2d upgrade is an incredible deal for any Mobile I/O owner. The stability, functionality, and flexibility you'll gain is well worth the cost. The fact that you can upgrade 7-year-old hardware says something about Metric Halo's commitment to its customers. The plug-ins on the standard upgrade will be enough for most users, but for advanced users, a +DSP license ($699) opens up loads of other plug-ins, including more delays, reverbs, and amp simulators. If this is your first time checking out Metric Halo gear, you won't find a better time to get acquainted with a hardware/software package that sounds truly astounding and just keeps improving with age.

The 2d card upgrades Metric Halo's Mobile I/O audio interfaces and comes with MIO Console, an application for customizing your own mixers onscreen.

Overall rating (1 through 5): 5

mhlabs.com

VIR2 INSTRUMENTS

World Impact: Global Percussion

By Marty Cutler

Just when you think your sampled drum-and-percussion library is complete, along comes some new sound set to prove otherwise. Vir2 Instruments World Impact: Global Percussion ($399.95) hosts one of the most comprehensive, globe-spanning collections of ethnic percussion that I've come across.

ONLINE BONUS MATERIAL

The 12GB, two-DVD library is hosted by Native Instruments' free Kontakt Player 3 or Kontakt 3.5. Both provide AU, VST, and RTAS plug-in versions, as well as a standalone instrument. I recently updated to Kontakt 4.0.2 and auditioned the instrument on a dual 2.8GHz quad-core Intel Xeon Mac Pro with 6GB of RAM running Mac OS 10.5.8.

MY OLD FLAM

You load instruments from menus organized by region or by type of instrument. For example, while you're looking for shakers, you can easily include related instruments. When you're working with clients who want to audition every variation of a single percussive element, you'll find this feature a real time saver. Alternatively, if you would like to choose instruments of Asia, for instance, load a bank that gathers instruments by region. Banks load quickly and let you reorder their array of instruments in any way you'd like.

World Impact includes a few sampled articulations, and the Kontakt engine provides scripting for most of the performance-oriented articulations using one-shot samples arranged in kits. That's handy, as it lets you mix and match your own playing with chokes, flams, rolls, and loops without having to call up a secondary patch. You also get a series of graph-style controls called Triggers (25 of which are user-programmable), and you select the basic timing of the performance from a dropdown menu. That supports rhythmic divisions between quarter and 64th notes and includes triplets. You can constrain any notes you input to the rhythmic values selected, making it easy to create some pattern variations without losing the beat (see **Web Clip 1**). Oddly, no controls for swing are provided.

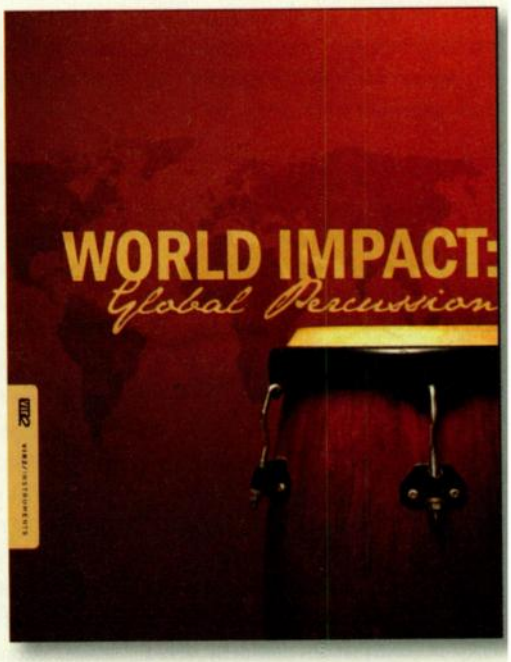
You get a graph for selecting velocity (which also enables triggering of a note), a Smoother, and a pitch-axis graph. Pull a bar up or down and that Trigger will be harder or softer if you've edited velocity, or it will be above or below the hit's original pitch if you've selected the Pitch trigger. The Smoother modifies the sample start letting sounds flow into each other without repetitive attacks. This worked nicely with the berimbau patch and gave the effect of a mixture of bowed and percussive notes playing in rhythmic patterns (see **Web Clip 2**). Only one Trigger pattern can play at a time whether you play a single note or a chord, and all notes fall in line with the prevailing pattern.

You can create microtonal pitch variations. Humanize controls regulate further deviations from the graph settings, including timing. Roll Triggers were less effective, sounding fine on some instruments and machine-like on others. An arpeggiator or step sequencer would be useful, but the main thrust of the Triggers is the creation of rhythmic performances a single element at a time with a trigger key. Each instrument has a healthy variety of hits, so you can always create realistic and effective rolls by simply playing them.

ITS OWN REWARD

World Impact's sounds are expressive and full of detail, covering Africa, Asia, Europe, the Middle East, and North and South Americas. You'll find separate sections devoted to taiko, an FX folder (including a terrific menu of vocal percussion), and processed, repurposed samples in the Bonus Sound Design folder. Tablas, steel drums, a huge variety of shakers, bata, and congas rub elbows with frame drums, balafon, donkey jaw, Wuhan cymbals, ceramic and mallet bells, and lots more. Sounds are further enhanced with EQ (high, low, and a sweepable mid frequency) and a natural and sweet-sounding library of impulse responses for Kontakt's convolution reverb. The taiko drums are sumptuous and deep, with an additional set of controls to balance close, stage, and room-mic samples.

Despite the Trigger feature's lack of swing and monophonic behavior, World Impact is a highly successful sound library. It digs deeply into esoteric percussion and regional variants. I wish there were some included documentation about the playing techniques, either in drum notation or with a few sample MIDI files to illustrate them. Vir2 World Impact should easily cover most, if not all of your ethnic percussion needs. em



>> Vir2 World Impact: Global Percussion is a huge collection of percussion instruments from around the globe.

Overall rating (1 through 5): 4

vir2.com

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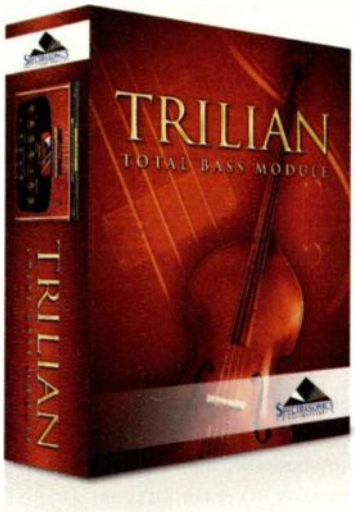
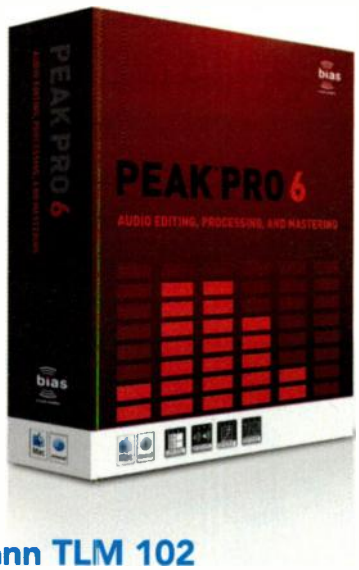


Spectrasonics Trilian

Total Bass Module — acoustic, electric, synth

With a new level of expressive, real-time performance for acoustic and electric basses — plus cutting-edge synth basses, Trilian is the most versatile bass virtual instrument available today. Trilian's elegant interface and powerful STEAM technology provide deep sound shaping control over its 34GB core library. Plus, Trilian's sounds can be used in Omnisphere for further sound design and keyboard/bass splits. Trilian is the bottom line for bass!



BIAS Peak Pro 6

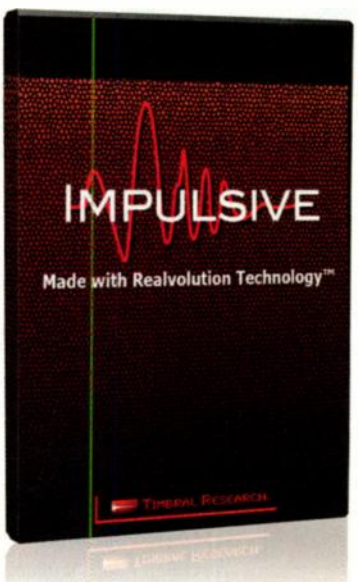
Evolution of an award-winning standard

Whether you're a musician, sound designer, audio editor, multimedia producer, or mastering engineer, Peak Pro 6 offers more creative potential than ever before. Used side-by-side or launched directly from within DP7, Peak Pro 6 streamlines your workflow with industry-renowned sonic quality and precision. For additional mastering, restoration, and DDP 2.0 delivery power, step up to Peak Pro XT 6.

Neumann TLM 102

Sweet little microphone — huge Neumann sound

Don't let its small size fool you — only 4.5" tall — the new TLM 102 large-diaphragm microphone makes a perfect addition to any studio, from project to professional. Featuring transformerless circuitry, a foam-lined grille to reduce 'p' and 's' sounds and an SPL rating of up to 144 dB, the TLM 102 brings the legendary Neumann sound home at a price everyone can afford.



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Avatar This

By Nathaniel Kunkel

Wow, could the music business be any more challenging right now? Everyone I talk to, and I mean everyone, has a new horror story. What's going on? People have not stopped listening to music. Sony still has a building at 550 Madison. The sky is still up. Right?

Well, I have a hypothesis. And you don't have to look much farther than the movie business to find it. Movie-makers increase resolution and improve viewer experience regularly. Whether it's IMAX, 3D, or both, it's constantly more and better. And guess what? They are making money hand over fist.

The music business is all about how many corners can be cut. Compress it more, don't master it, use the fake drums—just get it done. All good ideas to save money, but often bad ideas from a quality standpoint.

So without oversimplifying this, the people who focus on resolution in entertainment are making record profits, and the people who aren't are going out of business. Coincidence?

And vinyl is now right in the middle of Best Buy. It could be because is it large and has large artwork. It could be because it is cooler to hold onto and feels like a more tangible purchase. Maybe it makes music playback feel more special because, unlike an MP3, it will wear out and sound worse every time you play it. You better dig it when it's playing because it will never be better than it is right now. Or maybe it is because it has more resolution than most of what people can get their hands on.

You know one thing you can't do with vinyl? Take it with you. You need to sit down and decide to enjoy it. You don't skip songs; that damages your new record. You listen to a side front to back. The art of sequencing matters. There is a direct correlation between how long the side is and how good it sounds. Vinyl is reverence. Reverence for the music as well as your time. When you decide to put on a record and listen to it, you have made a commitment. You have just given up the only thing you can't get back: your time. Music is no longer your audio wallpaper. It is the focus of your moment. Maybe people hear more out of vinyl because it's the only time they are really listening that closely.

I don't know about you, but making a decision to sit in a room and enjoy a piece of art for 40 minutes sounds a lot more like going to a movie than jogging with an iPod does. Perhaps the best thing you could do if you were a successful artist would be to release your album only in a high-resolution format, digital or analog. People will buy and listen to it anyway; you're already a star. All that you would be ensuring is that they will sit down and actually focus on what you have produced. They have to—they need to stop their day to set it up.

And for those of you who think that the people out there buying music don't have the time, patience, or reverence for the art to make that kind of effort, I have a whole bunch of 3D-glasses-wearing, vinyl-record-playing, resolution-loving people I would like to introduce you to. They spend money on live concerts, they go see movies, and they have demanded the return of vinyl!

The people have spoken. If we treat our art with the reverence it deserves, the public will respect it and do the same because they expect from us exactly what we expect from them. Can you really blame them? em

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

"TAXI Got My Music in a Big Budget Movie, Imagine What They Can Do For You"

Gary Sredzienski – TAXI Member – www.garysred.com

My name is Gary Sredzienski, and I live in Kittery Point, Maine – about as far away from Hollywood as you can get in the continental United States. And, as you can see in the photo above, I play the accordion.

That's how I earn my living – playing the most misunderstood instrument in the world.

I play it at weddings, retirement homes, Bar Mitzvahs, and in my surf-rock band, 'The Serfs'.

Could this be you?

It was *extremely* unlikely that my music would ever be heard by anybody in Hollywood, let alone, get used in a major motion picture. But that's exactly what happened, and it's all because I joined TAXI.

A friend of mine at a local studio told me about TAXI. Soon after I joined, I saw an opportunity for accordion music.

I sent in my music, but didn't really expect that anything would happen. And for quite a while, nothing did.

Then I got a call from a music editor in Hollywood who got my music from TAXI. He told me he liked what he heard, and asked me to send him everything else I had ever recorded.

Billy Bob Thornton & me!

He called back again, and told me to expect a call from a music supervisor in Hollywood. A few days later, someone from Paramount Pictures called to ask if they could use two of my songs in the remake of 'Bad News Bears' with Billy Bob Thornton.

I tried to be cool about it, but I could barely contain myself. We agreed on a deal, and a few months later, I found myself in a theater watching my name scroll by at the top of the music credits.

I can't really find the words to tell you what an amazing feeling that was. I'll remember it for the rest of my life.

What's your story?

Are you one of those people who have been reading these ads and hearing great things about TAXI for years, but never got around to joining? Do you think your music isn't mainstream enough?

You might be surprised by the opportunities TAXI will bring to you no matter where you live or what you play. If your music is really top notch, and somebody needs what you've got, then TAXI can change your life.

Make the call. If they can help me get a deal, just think about what they can do for you!

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