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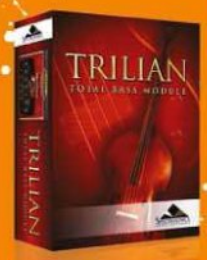

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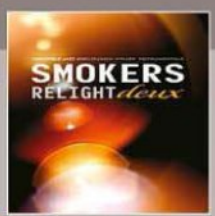

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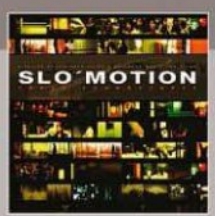

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welcome

Well, what a year 2009 turned out to be for computer musicians. Propellerhead released a whole new DAW (sorry – it's not a DAW, it's *not* a DAW...); software reverb algorithms made a seemingly generational leap; SoundCloud transformed the online sharing and broadcast of audio overnight; the iPhone exploded as a music-making platform; MIDI controllers reached new heights in terms of innovation and design; and the superb Windows 7 enabled us to finally put the disappointment of Vista behind us. Of course, there were also the expected updates to the established big names – Live, Logic Pro, Cubase, Sonar, FL Studio and Pro Tools all saw their version numbers rise and feature-sets expand.

Not only has it been a great year for new tech, it's also been another weird one for the record industry, which has still to work out how to deal with filesharing in a profitable way without alienating (or disconnecting) the very customers it's trying to win over. Strange and somewhat worrying days, to say the least.

Never mind all that, though, for ace new toys are where it's at, and as 09 becomes 10, the arrival of the long-awaited Melodyne DNA and Max For Live suggest that this year could be even more exciting for cutting-edge producers – we'll be reviewing both next month.

ENJOY THE ISSUE...

Ronan Macdonald **Editor**

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If you're a rookie, check out the **CM Beginners** folder on the DVD – a library of material put together to help you get your head around many basic computer music concepts

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Message of the month

I'm a long-time Cakewalk user currently running Sonar Studio 5. I'm interested in upgrading to Sonar Producer 8 but have been hesitant. I have a set of songs that I'm working on for a project – I have hundreds of hours invested in it and I don't want to lose time reconfiguring things with a new version. Is this concern warranted? I'd really like to get the track EQ that Producer offers, as well as its sidechaining abilities, as I've found it impossible (even with various tricks and third-party plug-ins) in Studio 5.

What would you recommend?

The other reason I've held off is that I'm very disappointed that Sonar doesn't run on Macs. I've been a PC user for 15 years, but I'm experimenting with Macs now for fun, and it's a shame that I have to start with a new platform. Granted, the Mac DAWs are great, but now it's a matter of selecting one. I'm not impressed with Cubase, and while Logic seems like the best choice, that's a huge hunk of change.

I'm trying to consider this as a chance to have a new beginning from a creative standpoint, but will Cakewalk ever bridge the gap? I'm sure there are more people like me. Ideally, long-time Sonar users should have a cross-platform solution. I really do like my Mac and the interface, but I hate having to learn a completely different DAW. Sure, lots of techniques translate, but why can't I capitalise on the extensive experience I have with Sonar while using a Mac?

Eventually, the market will decide I suppose.

Jeremy J dePrisco, Bloomsburg, USA

The writer of our *Message of the month* will receive a copy of Synthogy Ivory Upright Pianos for PC/Mac, worth £190, courtesy of Synthogy and Time+Space!
www.timespace.com

Well, I certainly wouldn't base any kind of decision on the potential arrival of a Mac version of Sonar – it could happen one day, but there are currently no plans that I'm aware of. My advice would be to bite the bullet and upgrade to Sonar 8.5 – if it won't load your songs properly, you can always downgrade back to 5 until the project's finished. Unless you're desperate to switch fully from PC to Mac, I wouldn't be in any hurry to ditch the DAW that you're so familiar with. Turn to p61 for our guide to Sonar 8.5's new features. *RM*

Let's get physical

Like many readers, I've recently switched to DAW-based music making. It was luxuriating in the demo version of Propellerhead Record, and in particular it's gargantuan mixer, that reminded me of the one thing I really miss about the 'old times': physical control.

Though the advantages of DAWs are numerous, the subjective experience of mixing using a mouse is fairly dismal. Try and get a semi-decent balance between 16+ tracks with a mouse and you're halfway to a chronic Repetitive Strain Injury before you even start to think about panning and sends.

A brief look around reveals that all-singing 24-channel analogue mixers can be ours for about £300. Intuitively, I assumed that a digital DAW controller would be, if anything, cheaper to construct – as, under the hood, each slider/button is hardly more than a glorified mouse. So why do DAW 'mixers' seem to start at around £1000 for the most basic spec?

I know that there are a handful of budget DAW mixers retailing for less than £150, but with a measly eight 'channels' and the look of something a four year-old might use to control their toy dumper trucks, I'm a bit underwhelmed.

Couldn't an enterprising company produce a decent sized DAW controller, with 24 sliders and assignable channel knobs for panning, sends, etc, and bring it in at the cost of an analogue audio equivalent. I for one would probably spill so many cups of coffee down the thing that I'd need to replace it every year.

Geoff Harvey, Altrincham

I know what you mean – it does seem a bit odd that there are no budget-priced 16-, 24- or 48-fader MIDI controllers modelled on the standard mixer layout. Perhaps we missed the meeting in which it was decided that banking through groups of eight faders was a 100% satisfactory alternative for cash-strapped producers. How about it manufacturers? A gap in the market? *RM*

For Foxx sake

Thank you for your issue on *Vintage Sounds* (**cm**145). I gained some useful hints and tips from it, and after watching *Synth Britannia* on BBC4 recently, I got an idea. I Believe it's 30 years since John Foxx released *Metamatic*, so how

cm145 has inspired at least two readers to go back to the old school

Getting inside a pro studio is a great way to learn new tricks and inspire fresh ideas, as our recent *Producer Masterclass* with John '00' Fleming demonstrated

about grabbing hold of him and doing an interview, finding out how he got those fantastic synth sounds using the Arp Odyssey, amongst others? And perhaps how to recreate his sounds using freeware VST instruments?

Craig Hurst, Nottingham

The good new days

Thanks very much for the fascinating *Vintage Sounds* feature. I grew up with the synthpop and dance of the 80s and 90s, so it made for very interesting reading and gave me a whole host of ideas to try.

It also hammered home just how lucky we are now in terms of technology. So many bands in the 80s said some of their songs could never be played live, because it was impossible with the technology of the time, and so many studio tricks had been involved in the original recordings. These days, I can imagine very few songs being impossible to recreate live with today's technology and some imagination. Likewise, it seems surprising to imagine that

> "John '00' Fleming left me all inspired and illuminated"

keyboardists in the 80s often had piles of synths (yes, you, Mr Tony Banks...), because it was the only way to recreate the songs. Imagine being the roadies! Now, the same could be done with a laptop and a single MIDI keyboard. To someone who has seen how synths and computers have developed over the last 30 years or so, it's nothing short of incredible.

Something I did wonder – do you have plans at all for interviews with any of the newer synthpop/rock bands? I'm thinking especially of VNV Nation and Iris, whose approaches to recording and songwriting, not to mention playing live, could be very interesting to read about.

Nicky Rowe, Halesowen

Yup, there's no surer way to give yourself that warm, 'aren't soft synths *amazing*?' feeling, than to stick on old prog rock or synthpop video. Sure, there's something incredibly evocative about those synth-loaded A-frames, but now we have all of that sonic power and so much more in even the cheapest of laptops – the advantages of software are simply undeniable.

I'll see what we can drum up on the interview front, and as for John Foxx, we're actually putting together a feature at the moment in which he'll hopefully be involved. Coming soon, as they say... *RM*

Appassionata

Just a quick note to say that the John '00' Fleming *Producer Masterclass* (issue 143 but only got through it now!) was absolutely fantastic. John is clearly passionate about what he does and his masterclass was extremely detailed and insightful. I thought John was an especially good teacher. He was exceptionally good at explaining things simply and clearly, and left me all inspired and illuminated. Thank you, John; thank you, **cm**.

Marc Roosli, Tramore, Ireland

Glad you found John's advice useful and entertaining. Fire up this month's Shut Up & Dance *PM* for further dance music production enlightenment. *RM*

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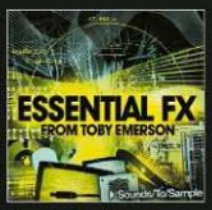

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All decked out

A slew of new state-of-the-art DJ controllers and interfaces is on the way

> Following October's BPM DJ trade show in Birmingham's NEC, we have plenty of new DJ gear to tell you about.

After teasing us recently with a video of Richie Hawtin using an unnamed device, Native Instruments have finally revealed what it is. Traktor Kontrol X1 is a USB controller for use with any music software (although it has bi-directional communication with the NI's Traktor software), featuring a set of back-lit buttons and push-button rotary encoders for controlling EQs, effects and more. Traktor Kontrol X1 ($229) is out in February 2010.

www.native-instruments.com

Vestax have released a Mac-only USB-controller-and-software (algoriddim's djay 3) combo for mixing with your iTunes collection. Spin features two touch-sensitive jogwheels, a crossfader, plus speed, EQ and transport controls. There's also a mic input (and bundled gooseneck mic), headphone socket and stereo phono outs. Spin ($250) is out now in US and Canadian Apple Stores – a European release has yet to be announced.

www.vestax.com

Hercules have released the DeeJay Trim 4&6 Scratch Starter Kit ($300) for PC and Mac, comprising the previously available DeeJay Trim 4&6 switchable 4-in/4-out or 2-in/6-out USB interface and a brand new pair of timecoded vinyl records and CDs, plus cabling for connecting up your decks or scratch-capable CD players. Also included is the VirtualDJ 6 LE TC software for transferring your crab scratches, flares and orbits into the digital domain.

www.hercules.com

Finally, Numark haveunveiled NSFX, an effects controller for use with their NS7 decks/mixer controller and Serato Itch software. It's out in Q4 of 2009, price tbc.

www.numark.com

Clockwise from top left: Hercules' DeeJay Trim 4&6, Native Instruments' Traktor Kontrol X1, Vestax's Spin and Numark's NSFX

Waves reach new Lo

> Premium plug-in developers Waves have released two new effects: LoAir and Waves Noise Suppressor (aka WNS).

LoAir is a processor for enhancing the subharmonic content present in a track or mix. Unlike some harmonic generators, though, LoAir can work its magic on polyphonic material. Particularly applicable to film work, the plug-in works in 5.1 surround, as well as mono and stereo.

Next up is WNS, which provides real-time multiband noise reduction and is again well suited to post production film work. The company suggest that WNS is particularly adept at cleaning up both indoor and on-location recordings involving dialogue.

Waves LoAir ($100) and WNS ($2800) are both out now for PC and Mac.

www.waves.com

Posh new plug-ins: Waves Noise Suppressor (above) and LoAir (right)

u-he's ACE in the hole

New synth from the makers of the legendary Zebra

The key to unlocking the power of u-he's new synth ACE will undoubtedly lie in its patching capabilities

> u-he have announced a new modular soft synth, ACE, which the company say is perfectly suited for beginners due to its easy-to-use interface and simple layout. Having had a go on the beta version, we can confidently say that synth veterans will find it just as appealing.

ACE, which stands for Any Cable Everywhere, has two oscillator modules (saw and PWM, with a sub oscillator for the first oscillator); two LFOs; two ADSR envelope generators; two filters (each with a choice of four low-pass modes, as well as high-pass, band-pass and notch); one Ramp Generator; one mixer; one Mapping Generator (for creating variable values for each note or key); one noise generator; one utility module (for adding glide, etc); and finally stereo chorus, bass/treble boost and ping pong delay global effects. Being modular, practically any module can be plumbed into any other, with 25 signal sources and over 30 signal destinations.

"Does the world really need another synth? We believe it does – but there's a lot more to ACE than meets the eye"

The only downside, we're told, is that ACE is very CPU-intensive, which is why u-he recommend that a modern, fast computer be used to host it.

u-he ACE should be available by the time you read this for both PC and Mac, priced at a very reasonable £63.

www.u-he.com

Wave Arts on the Tube

New high-end valve amp saturation plug-in

> Wave Arts, makers of many superb mixing, mastering and restoration plug-ins, have released a new valve amp emulator called Tube Saturator.

The unit is designed to simulate the nuances of an analogue circuit in real time. It's based on a Baxandall three-band EQ running into two 12AX7 triode preamps. There are three fixed-band EQ controls for bass, mid and treble, plus a drive knob for adjusting distortion levels. There's also the option to bypass the EQ stage, and a Fat switch for increasing the bias of the first preamp stage, giving even more grit.

As well as a convincing tube sound, you can look forward to a glowing valve and swingin' VU meter

Wave Arts' Tube Saturator for PC and Mac is out now, priced $150.

www.wavearts.com

Mixdown

Our Deputy Editor loves to slam the meters into the red – CPU meters, that is

> In addition to Moore's Law (which has so far held up admirably) there's another incontrovertible law of computing: whatever system you've got, it's never enough. This is how it's always been and likely will forever be, for those crafty programmers will always find ways to screw over your system,

"Those crafty programmers will always find ways to screw over your system"

sending CPU fans into overdrive, eating up tens of gigabytes of storage space and hogging your RAM for all its worth. In fact, you only need look a little to your left to see two examples of software titles that make no apologies for their CPU-guzzling ways...

So am I about to slam the softies for bringing my up-to-the-minute system to its knees within a few plug-ins? Far from it! I'm 100% for developers leveraging modern computing power to bring us the best possible audio quality. If it all gets too much, I can always reach for the 'freeze' button, or indeed, I could do a bit of resampling, à la this issue's cover feature.

Just a few years ago, convolution technology was barely usable in real time... But now we don't think twice about piling on the impulse responses. And when Acustica Audio's VVKT-based Nebula debuted three years ago, it was prohibitively CPU-hungry, yet it's now usable on the average computer.

I've touched upon all this before in *Mixdown*, but as we've been in a reflective mood of late here at **cm**, it's become clear to us that over the last couple of years or so, there has been a significant 'coming of age' for plug-ins, as far as sound quality goes. The bar has been noticeably raised by the likes of T-RackS 3, DCAM Synth Squad, AmpliTube Fender, ReValver Mk III and 2CAudio Aether – all potential CPU hogs, yet all indicative of just how far we've come and indeed, where we're headed. It's the same in the DSP platform world – I'm happy to give the lion's share of my UAD-2 card over to sublime efforts such as the Moog Multimode Filter, Harrison 32C EQ and Fatso Jr/Sr.

In light of this, we've decided it's the perfect time to recalibrate our reviews rating system, and to this end we've subtly raised our own scoring bars as of this issue, with the descriptions on the reviews intro page (p89) revised to clarify their meanings.

The Timeline in Progress Audio's Kinisis is the star of the show, providing evolving, complex synth modulations galore

The price of Progress

Kinisis replaces ADSRs with an innovative alternative

> **From Progress Audio, makers of additive synth Soup, and various other commercial and freeware plug-ins, comes Kinisis, a new soft synth that enables you to "'animate' controls over the course of a note, so that you can create sounds that move and change in incredible ways".**

Kinisis is a four-voice synth. Each voice is accessed via its own page and has four waveforms that can be blended, along with a noise oscillator; four-part unison controls; low-, band- and high-pass filtering modes; per-note modulation matrices and LFOs (ie, each *note* can be modulated independently); and global reverb, delay and distortion send effects. Additional waveforms can be imported in WAV format, plus there's an additive editor for changing individual harmonics, and a waveform editor for drawing in your own creations.

Most exciting of all is the Timeline, which, in place of traditional ADSR envelopes, enables you to draw in parameter changes throughout the duration of each note with incredible accuracy (up to two billion breakpoints can be added per section!). What's more, the time freeze feature can be used to adjust which part of the Timeline is played via a mouse or MIDI controller. There are more real-time controls in the form of six assignable X-Y pads with MIDI learn, too.

Progress Audio's Kinisis is out available now for PC and Mac, priced £80.

www.progressaudio.co.uk

cm Special

> **If your tracks just don't cut it when stacked up against your favourite commercial releases, you need our brand new cm *Special: Fix Your Mix*.**

100% dedicated to the art and science of mixing, it presents a host of techniques that'll have you turning out polished, professional tracks with your home setup. From dealing with dodgy source material, through to sweetening sounds, creating width, making your mixes loud and much more, we've got it covered.

Computer Music Special 39: Fix Your Mix is available now. See p126 for stockist info.

www.myfavouritemagazines.co.uk

Damaged

Chris Randall takes musical inspiration from one of last year's biggest movies

> I just watched the bonus features of my shiny Blu-Ray copy of the new *Star Trek* movie. While that, in and of itself, has very little to do with either music or computers, it sure did get me thinking. A month or so ago, there was a discussion on my blog about how Melodyne's new DNA feature may or may not be the Auto-Tune of the next decade, and how the holy trilogy of Beat Detective, Auto-Tune and L3 may or may not have collectively made it so that your teeth hurt every time you hear a pop song.

The new *Star Trek* movie was shot entirely on film, with anamorphic lenses. To create the omnipresent lens flares in the movie, the lighting guys would shine a flashlight at the lens of the camera while filming was taking place. In any scene that had action, the director (J.J. Abrams) would shake the camera mercilessly, via the expedient of grabbing hold of the film cartridge on top and jerking it back and forth. Both the lens flares and the camera shake are things that are easily created with plug-ins in any competent modern film editing software, but Abrams chose to do it the old-fashioned way. In the CG shots that required camera shake, they made a little motion capture device so that a human could input shaking, rather than using algorithms in the program.

"In any scene that had action, the director (J.J. Abrams) would shake the camera mercilessly"

Abrams also used techniques like model sets and matte painting, which resulted in much more realism than we've come to expect from the latest Michael Bay CGI explosion-fest. This is a lesson we would all do well to remember as musicians, I think. While perfect timing, perfect tuning and perfect compression (resulting in a perfect square wave of an album) are certainly possible in this day and age, I'd like to hear something that's a bit off now and again, if only to remind me that somewhere there was a human involved in the production.

Chris Randall is the co-owner of Audio Damage, Inc, and proprietor of the Analog Industries blog, on which he regularly pulls no punches.

www.audiodamage.com
www.analogindustries.com
Twitter@Chris_Randall

Absolutely FabFilter

New EQ unit from the Dutch plug-in masters

The interface of FabFilter's Pro-Q is crisp, clever and a joy to use

> FabFilter, makers of a range of highly recommended instrument and effects plug-ins, have released Pro-Q. The company say that this brand new EQ processor is suitable for a range of mixing or mastering tasks.

The new unit provides up to 24 bands of EQ, with adjustable frequency, gain and Q controls, plus a variety of filter shapes: bell, high/low shelf and high/low cut, each with 6, 12, 24 and 48dB/octave filter slopes. And if this level of frequency control isn't enough, each band of Pro-Q can do its thing individually on either the left, right or both channels. There's also a mid/side mode for EQing the centre and side content of your signal separately. What's more, depending on the particular application that you're using Pro-Q on, you have the option of running it in either linear phase or zero-latency modes.

To judge the effect of your adjustments, there's an included real-time frequency analyser that runs in both pre- and post-EQ modes. There are also three display ranges (6, 12 and 24dB) to cater for different tasks – for example, you can use the 6dB display range for mastering, where much smaller adjustments will be needed.

The rather beautiful Pro-Q interface is supremely easy to use, making excellent use of colour and keeping clarity at the top of the agenda at all times.

FabFilter's Pro-Q for PC and Mac is out now, priced £124.

www.fabfilter.com

"Pro-Q gets you the highest possible sound quality and a gorgeous interface with unrivalled ease of use"

FabFilter

SPL breathe new life

> Sound Performance Lab have announced a new plug-in, based on one of their own hardware units. Vitalizer Analog Code, modelled on the company's Vitalizer MK2-T, is a stereo enhancer that employs EQ/compression/expansion and psycho-acoustic technology to enhance your frequencies transparently (ie, without adding distortion, as traditional exciter effects tend to).

The unit is designed for shaping the sound of individual instruments, as well as mastering and post production tasks. It does all this by enhancing the low- and high-end frequencies, using analogue-style compression and stereo expansion to give your tracks added weight and sparkle.

Sound Performance Lab's Vitalizer plug-in for PC and Mac should be out by the time you read this (check the website for further information about its availability), priced £275.

www.soundperformancelab.com

Based on their hardware unit of the same name, SPL's Vitalizer plug-in should give your tracks extra sheen

Trackers & Demoscene

The tracker scene reminds us once again that the latest thing can often be overkill

> Forget the power demands of the modern DAW and its amazing plug-ins. Instead, try to think about substance, rather than how many instances of Omnisphere you can have running without your machine turning to soup...

The recent Efficient Music Compo challenged Renoise users to construct a song resource-efficient enough to run on a Linux-powered netbook. The results are truly eye-opening and ably prove that great music doesn't require the latest processor. Check it out at **tinyurl.com/ydao57w**.

"The results are truly eye-opening and ably prove that great music doesn't require the latest processor"

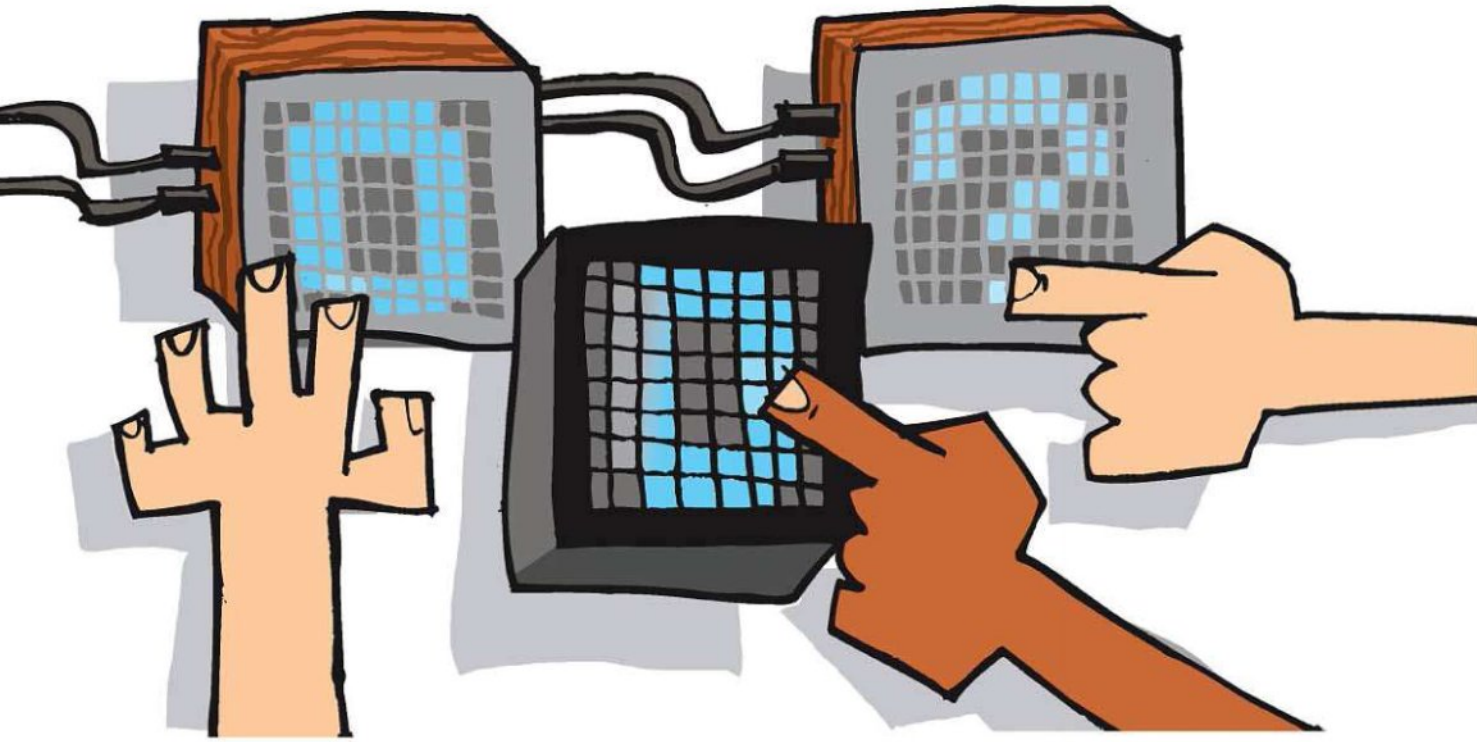
There's efficient music and then there's Farbrausch's V2 VST, the epitome of demo-sound streamlining. The newly released *BitJam Episode #90* is a collection of remixes born from demos using this fantastic virtual instrument. Head to **www.bitfellas.org/page.php?187** for an aural treat.

DEMO OF THE MONTH

***Bad News* by kooma**

Released at the recent Alternative Party in Helsinki, this 'demo' is a bit of an oddball. When you run it, *Bad News* connects to various live news feeds on the internet and presents you with two robot newsreaders who deliver the news in a depressing monotone, interspersed with such cheery utterances as, "Everyone is going to die!". It's a bit like watching the 10 o'clock news with Marvin the paranoid android. We don't quite know why we like it, but we do. Check it out for yourself on the **cm** DVD.

kooma's *Bad News* is... different



How has computer music changed in the noughties?

> The first decade of the new millennium will come to an end when Big Ben strikes us into January 1 2010. It's at moments like these that, in addition to drinking ourselves into oblivion and wondering where our lives have gone, we can also reflect more seriously. Here at cm, we've already been discussing how computer music has changed in the past ten years.

It's worth recalling that, as 1999 drew to a close, the fear for many was that computers would be taken down by The Millennium Bug, but in the end it was a non-event, with Mac- and PC-based music-making continuing just as before. However, only weeks into the year 2000, computer music would receive a massive shot in the arm, as Steinberg unveiled Model·E, the first commercial VST instrument. This was based on the Minimoog – the world's most famous synth – and its arrival set the tone for the next decade.

> "The concept of doing everything 'in the box' was very much a reality"

There can be no doubt that the rise of plug-in instruments and effects is the single most important development in recent computer music history. In 1999, they were a concept waiting to be exploited (the popular VST format only made its debut in 1999's Cubase VST 3.7), but today, they're ubiquitous. Hardware synths still exist, because some musicians still desire them – being contentious, we could argue that analogue synths don't *need* to be manufactured any more – while hardware samplers have been rendered largely obsolete by software.

Power to the people

The development of the virtual instrument was due not just to some clever coding on the part of talented programmers, but also the fact that computers had become powerful enough to support it. Indeed, in the first half of the decade, processors were speeding up at a frankly scary rate (upgrading seemed to be a bi-monthly chore), and as RAM prices dropped and hard drive capacities ballooned, it became clear that the concept of doing everything 'in the box' had become very much a reality.

Assessing the changes he's witnessed in the past ten years, professional engineer/producer Jon Musgrave observes: "The computer has gone from being an ancillary tool to being the central hub of pretty much everyone's production system – novices and pros alike.

"The tools available are now good enough to remove the need for much analogue gear, and where they're not quite as good, the flexibility, 'recallability' and operational speed often outweigh their shortcomings. For me, the fact that I can adjust everything while sitting right in front of my monitors is a major improvement over a large analogue desk. And I also think that, for many situations, a mouse and keyboard are far quicker than the analogue alternative or even a hardware controller.

"The only downside is that everyone knows this makes things quicker to achieve, and as a result, project deadlines are tighter than ever!"

Easy does it

Indeed, throughout the noughties, our computer-based music studios became much easier to use, with developers starting to realise that they had to devote as much attention to interface design as they did new features.

The release of Apple's GarageBand in 2004 was a crucial moment, as it was arguably the first DAW to offer universal accessibility (as long as you own a Mac!). It's a testament to the application's success that, more than five years after launch, it's still the benchmark by which all entry-level music software is measured.

In terms of innovation, one app stood out above all others. Peter Kirn, editor-in-chief of influential website Create Digital Music (**createdigitalmusic.com**), echoes the feelings of many. "To me," he says, "the iconic software of the decade was Ableton Live: in its name, its influence and its array of meta-compositional clips."

Live exemplifies the way in which computer music has changed in the last decade, with users no longer only concerned with straightforward 'production' tasks, and now more inclined to see their system as a creative tool in itself.

"The noughties have proven really to revolve

around how computer music can be live, changing, mutable and even ephemeral," believes Kirn. "Computers are being widely re-imagined as instruments. In the process, the definition of what an instrument is changes, too: whereas a violin can be virtuosic, a computer might be used for generative composition or as a means of remixing samples, for example."

The rise of the laptop has undoubtedly played a part in this conceptual shift: performers simply wouldn't have been able to embrace the computer so readily had notebook technology not kept pace with next-gen software thinking. And in many home studios, the laptop has replaced the desktop computer altogether.

The latter part of the noughties has also seen hardware controller manufacturers embracing new designs and, in the process, acknowledging that computer musicians aren't just looking for tools that enable them to emulate old working methods – they're demanding new ones.

"The iconic hardware of the noughties is the monome – the most minimal possible digital controller; a complete blank slate against which you can map whatever you like," opines Peter Kirn. "A monome is like an instrument designed around the pixel. It's a set of light-up squares, and on its own, it does nothing."

The monome wasn't the only forward-looking controller of the 2000s: JazzMutant pioneered the use of multi-touch with their endlessly flexible Lemur; and with their AudioCubes, Percussa proved that it really is hip to be square.

In short, computer musicians now reside in a world without limits – one where software and hardware don't dictate how you have to work, but serve as a starting point for you to compose, produce, arrange and perform in whatever ways you like. Looking forward, it seems inevitable that we'll see both new platforms (rumours of that Apple tablet computer refuse to go away) and changes in the way we use existing ones, while technology is ever destined to make our lives even easier.

The polyphonic spree

As if to prove that progress is unavoidable, Celemony have finally released Melodyne editor, which gives users the ability to edit individual notes within polyphonic audio files. While this might already seem like music software nirvana, producer/engineer Alan Branch sees it as just the tip of the iceberg.

"I think more tools like this will appear," he says, "more loop and rhythm tools, more presets and auto-gain plug-ins to help mixing. This might just empower more non-musical people to create music and make it easier to sample other people's music and claim it as your own, but as with all new technology, in the end, a good song is a good song and a great singer is a great singer. So, I think people might get tired of tricks such as over-the-top Auto-Tune, but hopefully they'll still make great original and fresh-sounding tracks, and ones that sound better than ever before."

As Branch points out, the danger is that the balance of power will shift away from musicians and further towards the computer, but as a wise man once said, you can't stop progress. The music industry as we know it may struggle to survive the next decade, but the tools we use to craft our tunes will continue to evolve. **cm**

Ins & outs

READ UP ON REASON
Computer Music's Reason: The Ultimate Guide is still in stores everywhere. This mighty tome offers 132 pages and a 4.3GB DVD for users of Propellerhead's stupendous software studio. Go get it!

CD EJECTED BY LINN
It's all over for Compact Disc, at least if you're a Linn hi-fi nut. The high-end manufacturers of audiophile gear have ceased production of CD players and will instead be concentrating on their hard drive-based DS range, which they reckon is the way forward

MAXING OUT ON DNA
Within the space of a week, we've received two of the most hotly anticipated releases of the year: Max For Live and the DNA-powered Celemony Melodyne editor. Words alone can't possibly convey the firey emotions that these two have stirred within the **cm** bosom

THX MIC
Blue's new Yeti mic might be very good, but we're baffled by its THX certification. Perhaps it's ideal for making bootleg recordings in your local THX-equipped movie theatre...

ROAD DOGG
We've always wanted to go cruisin' with Snoop Dogg, and now we can, as the izzle-addled MC has pimped himself out to create a VoiceSkin for the TomTom GPS system. Lost drivers can look forward to such gems as: "Turn around when possible and keep it 'G', ya D-I-G?"

UN-INTEL-LIGENT DRIVES
It's been a rocky road for users of Intel's X25-M solid state drive. The first firmware update solved performance issues, but the second, released in October, was swiftly pulled after it bricked several users' drives, rendering them totally useless

Busting jargon

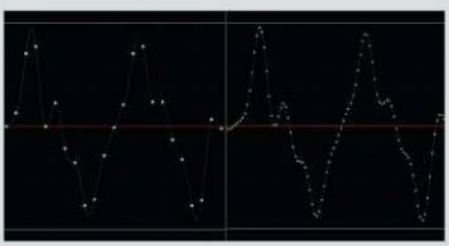
Computer music terminology explained. This month: **Oversampling**

Digital signals can appear 'stepped', but audio interfaces use a reconstruction filter to smooth the stepped digital signal, thus reproducing a continuous, analogue wave. Contrary to popular belief, the highest frequencies of a digital system do *not* yield square waves – they're always smoothed into sine waves. In simple terms, it's like drawing a smooth, continuous curve through the sample points, as you might have done on graph paper at school. Interestingly, the curve might 'overshoot' and extend higher/lower than the points. This is all necessary in order to recreate the wave that the digital signal tries to represent.

Oversampling is roughly related to this concept and it means that digital audio processes inside a plug-in use a higher sample rate than that of your DAW. If you work at a sample rate of 44.1kHz (44,100 samples per second), a plug-in using 2x oversampling would be processing 88,200 samples per second internally.

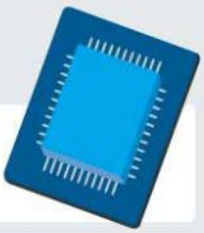
Oversampling works by interpolating the incoming waveform – that is, inserting extra samples between the existing ones at points that correspond to an 'ideal' curve drawn through them. To create the output, the processed audio is downsampled – eg, to 44.1kHz.

All of this gives better audio quality. By using oversampling, the Nyquist frequency is artificially raised, thus not only reducing the likelihood of aliasing, but, even if it did occur, it would likely be above the range of human hearing. A less obvious example might be a compressor: consider the waveforms below and that the left one peaks lower than the ideal curve. Since compressors react to level, the response to the left wave would be less accurate and 'analogue' than that of the right.



The right-hand section is 4x oversampled – note how its samples more closely match the pale 'ideal' analogue curve

System check



Weird and wonderful goings-on in the wider world of computing

CHROME RUN

Chrome wasn't built in a day, but it should be here soon enough

Web giants Google have debuted their Chrome operating system, videos of which can be seen at the URL below. Chrome OS has been designed with speed and security in mind, with extensive hardware compatibility not especially high on the list. In fact, Google say that in order to keep things nippy, Chrome will only support solid state storage (seven-second boot times are promised), and that it will only run web-based apps.

While this is disadvantageous in some respects, it does have its plus points. For example, if Chrome should detect that it has become infected with malware, the system will shut down, reboot and install a fresh version of the OS. All of the user's data is held online and thus remains uncorrupted. Google have also released Chromium OS, an open source version of the code behind the project. It's unlikely that we'll be running audio apps via the Chrome OS in the short term, but the future implications are intriguing.

chrome.blogspot.com

XEROX YOUR BODY

Toner-troughing boffins at copier company Xerox have invented an ink that can conduct electricity and be used to put electronic circuits on film, plastics and even textiles. Usually, electrical circuits are created using metals that melt at around 1000 degrees – much higher than the melting point of plastic. Xerox' army of (presumably cloned) eggheads solved this problem by creating a silver ink with a melting point of 140 degrees Celsius – that's about ten degrees lower than that of plastics.

The potential for the technology is enormous, enabling us to potentially wear, bend, and even print out electronic circuits as though they were paper documents. Xerox say that the printed plastic circuits could be used in low-cost radio frequency identification (RFID) tags, amongst other things, bringing the reality of a totalitarian digital dystopia closer than ever.

www.xerox.com

SIX-PACK POWER

Almost as if in sympathy with this month's *Mixdown* column, early benchmarks of Intel's upcoming Core i9 'Gulftown' processor have been released, suggesting that it's going to be up to 50% faster than its predecessor, the Core i7. This makes perfect sense because the i9 has six 2.8GHz cores compared to the i7's four. Such large gains can only be achieved with specially optimised tasks, so the real-world performance increase will depend on how well-optimised the software you use is for multiple cores.

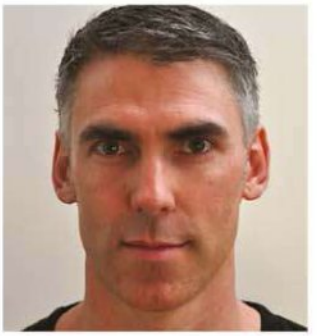
All this power comes at a price, though – the i9 uses 130W rather than the i7's 95W, and the chips will likely be rather pricey when they hit in early 2010.

www.intel.com

Cytomic

Andrew Simper

The founder of plug-in newcomers Cytomic talks shop with *Computer Music*



Eye on the Industry

cm What's your background in both music and programming?
AS "I've always loved music and started playing guitar in my gap year. During my time studying a joint degree in mathematics and computer science I was also in a couple of bands. In 1997 I released one of the first VST plug-ins, called VReOrder, and I also had a regular Wednesday night gig at a local university dive, so I couldn't really say which I got into first, I've loved music and technology ever since I can remember."

cm Was it difficult getting Cytomic – a brand new company – off the ground?
AS "Starting up Cytomic has been a slow but very rewarding process, because I was also finishing Synth Squad with FXpansion and working from home helping out with my newborn son – quite a few babies to bring into the world at once! Since the products are fairly serious in nature, I wanted the branding to be friendly and approachable. I wanted a retro style but with a modern edge, which is really the ethos behind not only Cytomic but its plug-ins as well. The name Cytomic is a combination of 'Cyto', meaning cell, and 'mic' for microphone. I liked the blend of the organic and technological worlds."

cm The Glue uses component modelling – what is that, exactly?
AS "The approach used in The Glue is very much a bottom-up one, where critical circuit components and their connections are modelled using the same methods used in circuit design. This means you can push the model as hard as you can the circuit and still get great analogue character. This approach differs from standard top-down methods, which typically attempt to match the end result of a circuit using DSP that bears little relation to the physics of any circuit. As you can probably guess, I think this bottom-up approach is definitely the way forward."

"You can push the model as hard as you can the circuit"

cm Why did you choose to model the SSL bus compressor?
AS "I modelled the SSL bus compressor for FXpansion quite a few years ago and had very positive feedback from alpha testers. For The Glue, I started from scratch with the model and made some custom additions to the circuit to make it more useful for me, personally, which hopefully everyone appreciates. I produce music on my laptop, and love the low latency and ever-expanding power of native processing, but I have a limited budget for music kit. I made sure The Glue has a great sound at a price I would be happy to pay. Judging by the feedback from customers, it's definitely filled a gap in the market for premium analogue modelled plug-ins that people can easily afford."

cm What's next? More emulations? And what do you want to see?
AS "There's still a lot to learn from the brilliant designs of the past, so I will continue to examine the masters to capture their distinctive character in a native plug-in format, adding as many modern twists as possible. A new plug-in will be out next year, but I'm keeping it secret for now! As for the world of computer music, I hope offline rendering for high quality results becomes the norm like it is in the 3D industry."

Strong as Sonnox

Sonnox's Restore plug-ins from left to right: Oxford DeBuzzer, Oxford DeClicker and Oxford DeNoiser

Sonnox have released a new bundle of processors called Restore, containing three plug-ins aimed primarily at fixing problematic audio recordings.

The first processor, Oxford DeClicker, has individual Threshold and Sensitivity controls across three panels: DePop, DeClick and DeCrackle. The Events Graph provides visual feedback on each of the three processes (a different coloured bubble is displayed to show the amplitude/duration of each pop, click and crackle). There's also the option to exclude specific events from processing.

"Restore represents a quantum leap beyond previous restoration plug-in technology" Sonnox

The Oxford DeBuzzer and Oxford DeNoiser use high-resolution FFT algorithms for removing excessive hum/buzz and noise respectively. To achieve the former, DeBuzzer employs comb filtering and parametric EQs to remove any troublesome frequencies.

Sonnox's Restore for PC and Mac is out now, priced £1375.

www.sonnoxplugins.com

Soundware news

The latest addition to Loopmasters' Artist Series is **Meat Katie – Tech Funk Producer** (£25), a collection of 800MB of hits, loops and riffs by dance DJ/producer Mark Pember (AKA Meat Katie). Also from Loopmasters comes **Fidget House Vol 2** (£20), containing 950 fidget house samples from producer Darren Payton. Push Button Bang have gone down the afrobeat route with **Tribal Tech** (£20), comprising 330 WAV/REX files of interlocking house percussion loops.

www.loopmasters.com

For the UVI Workstation, UltimateSoundBank have released **Grand Piano Collection** (£209), containing five different real-world Joannas over roughly 20GB of multisampled content.

www.timespace.com

Wolsfraektroes Music have unveiled their latest sample collection: **Tech House And Progressive House Sessions** (£17), which is packed with over 280 loops, ten construction kits and loads of MIDI files for house sub-genres. **Urban Synth** (£17 download) from FatLoud's Pro Series contains 105 synth loops and 13 one-shot chords/hits taken from Access, Novation and Korg hardware synths.

www.soundstosample.com

PowerFX have unleashed **Funktronica** (£29), a library containing nearly 1.4GB of acoustic and electronic loops for use in a variety of groove-based musical styles, as well as two analogue-style VST synth instruments called Array and Anatude.

www.powerfx.com

Drum software aficionados Toontrack have released **The Monster MIDI Pack 4 – Fills Odd Meters** (€15), which features over 450 MIDI files captured from studio performances by session sticksman Peter Fredlander.

www.toontrack.com

Lastly, for their String Studio VS-1 instrument, AAS have released **Entangled Species** ($39), containing 128 patches for creating "living sounds", all by film score guru David Kristian.

www.applied-acoustics.com

News in brief

ABLETON ARE 10 YEARS OLD!

Celebrating ten years since their launch, Ableton have released Live Intro, a cutdown version of Live 8 that replaces the previous LE product line. With Intro, you're limited to 64 audio tracks, plus 12 plug-ins and two sends per project, as well as some other restrictions. Live Intro costs €99 as a download, but LE users can upgrade for free.

www.ableton.com

BLUE CAPTURE THE YETI

Blue Microphones' latest is a THX-certified (we'll leave you to research the significance/relevance of that particular tag) USB mic has three condenser capsules and four pickup patterns. Yeti offers stereo, cardioid, omnidirectional and bi-directional patterns, and features a headphone amplifier for zero-latency monitoring, plus volume, 'phones gain, mute and pattern selection controls. It'll be available soon for £130, first via European Apple Stores and later from other dealers.

www.bluemic.com

ARTURIA UPDATE TWO

Arturia have released a new version of their Yamaha CS-80 emulation. CS-80V 2.0 (£175) features improvements to the filter and ring modulator, and lower CPU usage under OS X, and includes the new SoundMap preset navigation tool. The Moog Modular V (£175) has also been updated to v2.5, again with audio improvements and lower OS X CPU usage.

www.arturia.com

COMPETITION WINNERS

In cm145's compo, we had five FL Studio 9 Signature Bundles up for grabs. The lucky winners are: Rebecca Smith, Paul Findlay, Derek Goodrich and two other as yet unidentified SMS entrants. Well done!

Now turn to p87 to find out how you could win a massive stash of Native Instruments gear!

Plinkton from Naughty Panther is a generative app for creating ambient and/or rhythmic material

Instant Binary's Toro mini: Digital Synthesizer comes bundled with many alternative skins

App watch

New music-making apps for iPhone and iPod Touch

> Marek Bareza is the latest developer to have a stab at creating an all-in-one groove box for the iPhone and iPod Touch. Thump, which can also be downloaded free for PC and Mac (**www.mrkbrz.com/thump**), features a 16-step sequencer, with songs comprising up to eight four-bar patterns for each instrument; two analogue-style synthesisers, each with two oscillators, and volume and filter envelopes; nine drum kits, including Roland TR models and the famous Amen break (you can also upload your own samples via the free ThumpUploader software); and, finally, a mixer section, with volume and filter controls, plus delay, bitcrusher and distortion effects for each track.

You can get hold of Thump now from the App Store, priced £2.39.

work.mrkbrz.com

Naughty Panther (aka Chris Randall of Audio Damage fame), has released Plinkton, a generative app for iPhone and iPod Touch, which enables you to "create a rhythmic groove over a bed of smooth ambience", according to the man himself. There are three background soundsets and four sets of Plinkton sounds included, with control given over the volume, number, speed and direction of the generative nodes. Interestingly, the app can also be used to control other hardware/software via OSC.

Plinkton costs £0.59 and is available now in the App Store.

Marek Bereza's all-in-one groove box Thump has synths, drum machines and much more

www.analogindustries.com

Last up is Toro mini: Digital Synthesizer from Instant Binary. This app for iPhone and iPod Touch contains 67 instruments, which are played via a four-octave resizeable and scrollable keyboard with "sticky keys" – we assume this last to be a form of key latching for sustained notes. The patches can be adjusted via eight knobs that change depending on the instrument being used, offering control over such parameters as waveshape, envelopes, delay, etc.

Toro mini: Digital Synthesizer is in the App Store now, priced £1.19.

www.instantbeat.com

Game overture

The soundtrack to Ubisoft's *Assassin's Creed II* was created by the legendary Jesper Kyd

> One of this year's most anticipated sequels, Ubisoft's *Assassin's Creed II*, is upon us and game music fans are waiting to discover whether its new soundtrack will measure up to the pioneering musical landscape of the original. Well, we can safely report that it does.

The man behind both soundtracks is award-winning composer Jesper Kyd: a technically and musically brilliant artist who blends cutting-edge electronic production with a wide variety of instrumentation and intricate choral arrangements.

His affinity for emotive and melodic arrangements shines through on *Assassin's Creed II* tracks like *Ezio's Family*, while more bombastic, action-oriented music like *Florence Escape* abounds in fight sequences. This broad scope should suit such an epic game, which oscillates between stealth and full-on action, and clearly Kyd has worked hard to keep the music flowing and melodic, despite these demanding requirements.

> "This broad scope should suit such an epic game, which oscillates between stealth and full-on action"

Kyd has a whole new era to tackle this time around: the Renaissance. This brings along a new set of musical touchstones and a richer atmosphere. He commented recently: "We created a unique musical identity for *Assassin's Creed II* that reflects the character and story of Ezio, which also elevated the music, in terms of creativity and live production, to a whole new level."

Jesper's work remains some of the most accessible and expressive game music out there, and is well worth checking out. The soundtrack to *Assassin's Creed II* will be available as a digital download by the time you read this, with the game itself already out on PS3, Xbox 360 and PC.

Game overture is brought to you by music4games.net, the ultimate games soundtrack resource
www.music4games.net

Drive time

Efterklang

Mads Brauer (red shirt) from the Danish electronica group reveals the core of his software collection

ABLETON LIVE 8
"I have been using Live since it came out, mostly on stage, in order to trigger loops and other tracks. It also gives you a lot of freedom in a live situation, and you can interact with other musicians in many ways. The timestretching facilities are really great, too. Plus, it's brilliant for messing with your loops to create something completely new from old material."

PLOGUE BIDULE
"This is absolutely great for making FX chains. It is modular-based, which sounds like it could be complicated, but in reality, it's really simple to set up. The stochastic MIDI sequencing is nice for making random things and the distortions are lovely. It's great for creating abstract sounds and sequences."

NATIVE INSTRUMENTS REAKTOR 5
"This is a fun toy with millions of possibilities. You can literally spend days upon days building your own instruments. I love the granular sampling and delays. The user's library is absolutely chock full of great ensembles, which you can then tweak to suite your needs. I really like the ensembles created by Florian Erdle, for example – they are highly recommended."

PRO TOOLS|HD 8
"Pro Tools was my first DAW, so I feel really safe in it. We use it as a huge tape machine with Efterklang, so it's the heart of our studio. However, we also use it as a creative tool sometimes, for editing samples and other recordings. Our first album, *Tripper*, was all about cutting things up in Pro Tools."

"Pro Tools was my first DAW. We use it as a huge tape machine with Efterklang, so it's the heart of our studio"

COCKOS INCORPORATED REAPER 3
"The guys at the studio where we recorded our coming (and as yet unnamed) album recommended Reaper to me, and now it has become my favourite laptop DAW. It is very modern compared to Pro Tools, and way more flexible. I also like the company and the community, too, which are so different from Digidesign in a refreshing way. And it looks very cool!"

Efterklang's album, *Performing Parades*, is out now on The Leaf Label www.efterklang.net

COMPUTER MUSIC 10 years back

We peer back through the mists of time at *Computer Music*'s 17th issue

> Ten years ago, we ran a feature called *The ultimate guide to net stardom*, covering a variety of ways to promote, distribute and sell your music over the internet. In March 2000, the team said, "With an estimated ten million users in the UK alone, forward-thinking musicians can put their music in front of a global audience." This number has since skyrocketed, of course, and it's a topic that has become more and more relevant to modern musicians with each passing year – today, it's hard to imagine any band or artist making it without having some kind of online presence.

"It's hard to imagine any artist making it without having some kind of online presence"

Our interviewee that month was Gary McKill, the man responsible for assembling a collection of pumping dance tracks by the likes of the Chemical Brothers, Underworld, Sasha, Orbital and Propellerheads, as well as writing a few original numbers, all for Psygnosis' Wipeout 3 – remember that? What's more, Gary did this dream job with a humble E-MU E4K sampler running from an Apple Power Mac, plus a couple of synths and some outboard effects.

The lead review was Emagic's Logic ES1 synth, which received an impressive 9/10. In fact, it was only marked down due to the "high" system requirement of 128MB RAM – those were the days.

As early as March 2000, we knew that the internet would play a huge role for computer musicians

EQISM.220

This fantastic EQ plug-in from ISM delivers extremely precise frequency sculpting and is free in 2nd order filter mode

Developer **Intelligent Sounds and Music**
Format **PC VST**
Web **www.ismism.de**

From the creators of cult kick synth BazzISM comes this effect, which enables you to select filter orders from 2nd to 20th, unlike traditional EQs that only feature 2nd order filters.

It's useful to have the option of increased orders for applying even more precise frequency boosting and attenuation. However, if you stick to using the 2nd order filters, the software doesn't require registration, making it well worth picking up. We asked EQISM.220 creator Thomas Rehaag whether there's been a good response to the demo version.

"If I find the time, there will be an FFT-based hard-cutting EQ with EQISM.220's user interface"

"It's too early to tell, as it takes a few weeks for people to start to notice a new plug-in. The first responses are mostly bug reports. In this case, somebody told me that EQISM.220 didn't deliver any sound in Reaper. Thanks to him, there's version 1.01 now. Also, as usual, there were some instant requests for a Mac version."

Will there be a Mac version?
"Probably yes, but it depends on the success of EQISM.220 and MuSiCX on the Windows side. Even then, it will take months to complete."

Do you plan to release more freeware?
"If I find the time, there will be an FFT-based hard-cutting EQ with EQISM.220's user interface. I've experimented with this and it delivers funny sounds. I hope that analogue sound-loving studio people won't hate me for that!"

Finally, what other developers and software do you particularly like?
"I like simple and effective stuff like Dave Brown's tempo delay – give it a simple click sound and it will return complex rhythms. I also respect people like Celemony. Melodyne's ability to split up recordings into single instruments is really great. Everybody else said that it was impossible, but they didn't give up!"

Check out EQISM.220 for yourself in the **Software** folder on your **cm** DVD.

Ready and Cable

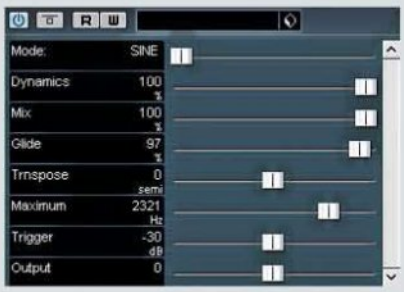
Those crazy Cableguys are back with another version of their funky filter effect. FilterShaper v2, in Mac and PC VST formats, enables you to create your own filter shapes and modulate them via the effect's LFOs. This commercial effect can be used for free with no saving restrictions, the only catches being that you can only have a single instance per song and you're restricted to using the supplied presets.
www.cableguys.de

Modulad's night out

The catchily-named KX77Free have released version 2.0 of Kx-Modulad, their free PC VST virtual analogue modular synthesiser. The instrument includes stereo SF2 playback and additive synthesis' ability to generate high quality waveforms. The 18dB low-pass filter from the developer's Kx-Synth-x16 is also included, and the plug-in now boasts full MIDI learn abilities.
kx77free.free.fr

Wobble's going on

Subsun have released Wobbles, a freeware vibrato effect for Mac that's available in both AU and VST formats for OS X 10.4 and higher. Created in SonicBirth, this effect has adjustable shape, depth and speed controls, which can be used to create a variety of traditional vibrato effects. Additionally, the inclusion of a wet/dry knob means that chorus and phaser-style effects can also be created easily.
subsun.ca



Freeware Classic

mda effects pack

Developer **Maxim Digital Audio**
Format **Mac AU/VST, PC VST**
Web **mda.smartelectronix.com**

The mda effects pack has been a freeware staple for almost as long as software plug-ins have existed. With 30 excellent processors included, it's one of the most complete effects suites around. We asked its creator, Paul Kellett, how he came up with the collection.

"It took a couple of years to make them all, and the first ones, like the ring modulator, were very simple, because in those days, if you had more than a few lines of audio processing code, it took a big chunk of your CPU to calculate it! Previously, I had been building analogue electronics: EQs, compressors, even a vocoder. I was transferring samples from an Akai sampler over to my PC to process them, so I already knew about signal processing when suddenly VST came along and I could put that processing into a plug-in for other people to use."

"A few lines of audio processing code took a big chunk of your CPU"

Does Paul plan to release any more freeware in the future?
"I'd like to, but I don't have the time at the moment. I now work for Digidesign, and I developed several of the new effects that come with Pro Tools 8, as well as being involved in all of their virtual instrument plug-ins released over the last few years. I made the mda plug-ins open source, so it's possible for others to help keep them working with future operating systems and plug-in formats."

Find the mda effects pack in the **Software** folder on the disc. **cm**

COMPUTER music

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Swissonic MDR-2

Mobile digital audio recorder

44.1kHz, WAV/MP3, stereo, built-in flash memory (up to 2h of MP3 recording), Slot for separate SD (16MB - 2GB) or SDHC (4GB) cards, built-in stereo condenser mic, 2 jack ins for external mics or guitar/line, headphone out, line out, mini speaker, USB 2.0 interface, frequency range: 20Hz to 20kHz, incl. external stereo mic and USB cable, dim. LWH: 15,5 x 8,5 x 3cm, weight: 200g.

€ 73.- £ 67.-

order code 203423

Swissonic MDR-4

Mobile digital audio recorder

24bit, sample rate: 44.1 /48kHz, record format: WAV (16/24bit) and MP3 (64/96/224/320kbps), 5 effects (delay, chorus, room, reverb, pitch shift), built-in speaker, 128 x 64 pixel LED display, 1/8" stereo line in, 1/8" external mic in, built-in stereo mic, 1/8" headphone out, Mini-B type USB connector, powered by PSU or 2 AA size batteries, incl. power supply unit, 1GB SD card and USB cable, dimensions WDH: 6,7 x 2,9 x 10,7cm.

€ 88.- £ 81.-

o. code 226599

Yamaha Pocketrak 2G

Compact digital recorder

Recording format: Linear PCM or MP3, playback format: MP3, WMA, WAVE or DRM10-WMA, 2GB memory, tilt-up microphone, level meters and ALC for optimum record levels, USB 2.0, incl. USB cable (for PC connection), AAA eneloop rechargeable battery (can also be powered with standard AAA alkaline batteries), stereo earphone (inner ear type), carrying leather case, DVD-ROM. Weight: only 49g.

€ 122.- £ 112.-

order code 204895

Tascam DR-07

Mobile digital audio recorder

Record and play MP3 (up to 320Kb/s) and WAV files (up to 24bit), 44.1/48kHz, built-in stereo mic, analog automatic level input control, analog limiter, stereo in for external mic, stereo line input, headphone and line-out (3.5mm TRS mini jack), USB 2.0, powered by AA size alkaline or NiMH batteries, incl. 2 GB SD card and windshield.

€ 159.- £ 145.-

order code 223287

Zoom H2 UK

Mobile MP3/WAV recorder

1-point stereo mic design, MS stereo technique, built-in USB interface with audio interface function, WAV 96/48/44.1kHz and MP3 up to 320kbps VBR, headphone out, time stamp function, uses SD-cards (up to 4GB), perfect for interviews, podcasts, meetings and live recordings. USB cable, stand, mic-stand adapter, windscreen, UK power supply and 512MB SD card included.

€ 171.- £ 156.-

o. code 213436

Zoom Q3

Handy video audio recorder

Stereo condenser mic, true X/Y configuration, 2.4" LC sisplay (320x240px), video resolution 640x480 at 30 frames per second, video format MPEG-4 SP, NTSC/PAL TV out, audio formats with video: 44.1/48kHz 16/24bit Linear PCM or MP3 up to 320kbps, without video u to 96kHz/24bit Linear PCM WAV, up to 1 hour video with 2 GB SD card, auto record level, includes TV cable, soft case, wind screen, 2GB SD card and 2 AA batteries.

€ 238.- £ 218.-

order code 234280

Tascam DP-02CF Set

Digital 8-channel multitrack recorder

8-track recording, uses CF card, LC display, 2 mic/line ins (1/4" TRS), 1 switchable to guitar in, 2 XLR mic ins with phantom, effect send and stereo return, stereo line out (RCA), SPDIF digital out (optical), headphone out, MIDI out for MIDI timecode or clock, USB2.0 port, int. multieffect processor and reverb processor. **Bundle including 2GB Thomann Compact Flash Card.**

€ 285.- £ 261.-

order code 203379

Edirol R-09 HR 4GB SD Card Bundle

24bit/96kHz MP3/WAV recorder

Up to 320 kbps MP3 playback and recording, recording on SD or SDHC card (up to 8 Gbyte), built-in stereo condenser mic, OLED display, USB 2.0, stereo mic in, stereo line in, stereo headphone out, incl. power supply, 512MB SD card, USB cable, Cakewalk Pyro AudioCreator LE, wireless remote controller and a small table mounting plate. **Bundle incl. 4GB SD card.**

€ 295.- £ 270.-

o. code 207377

Zoom H4 N UK

Digital recorder

Perfect for interviews, podcasts, meetings and live recordings, 24bit/96kHz, MP3 up to 320 kbps bitrate, two built-in stereo microphones switchable between 90° and 120°, needs 24V or 48V phantom power, USB port, incl. 1GB SD card, windscreen, UK power supply, mic clip adaptor, USB cable, bag and Cubase LE4.

€ 333.- £ 305.-

order code 228789

Olympus LS-11

Digital recorder

24bit/96kHz, 2 built-in mics, internal 8GB HDD, expandable up to 32GB with SDHC card, up to 23 hours record time, edit functions, PCM/WAV/WMA/MP3 record & playback, built-in stereo speaker, display with backlight, SD/SDHC slot, USB, headphone out, silver metal housing, weight: 165g (incl. batteries), connection for external power supply, incl. wireless remote and Steinberg Cubase 4 LE.

€ 366.- £ 335.-

order code 234496

Zoom R16

USB audiointerface and DAW controller

16-track playback and 8-track record, 24bit/48KHz PCM recording, internal stereo condenser mic, battery or USB, 8 mic ins (2 with 48V phantompower), 2 outs, 8 balanced XLR / 1/4" TRS connections, internal effects, Mackie Control emulation via USB, for Win XP/ Vista and Mac OS, incl. Steinberg Cubase LE4 and 1Gb SD Card (Support for SDHC-Cards up to 32GB).

€ 379.- £ 347.-

order code 232058

Tascam DR-100

Mobile recorder

44.1/48kHz, records and plays MP3 and WAV files, 4 integrated condenser mics with different patterns, 2 XLR mic inputs with 48V phantom power, automatic level input control with limiter, stereo line input, headphone output, USB 2.0, powered by 2 AA batteries or NiMH accu, incl. 2GB SD card, BP-L2 accu, bag and windshield.

€ 409.- £ 374.-

order code 223927

Tascam 2488 NEO

24-track harddisk recorder

24bit/44.1kHz, 8 mic/line inputs (4 XLR with phantom power), internal FX processor, 16x CD-RW drive (red book compliant, import/export WAV files and backup hard drive), new effects for mastering, 250 virtual tracks, high speed USB 2.0 connects to PC or Mac® for data backup and SMF/WAV file exchange, 80GB hard drive, weight: 8kg.

€ 759.- £ 694.-

order code 219928

Korg D3200 Bundle II

16-track digital multitrack recorder

32-track playback @ 48kHz/44.1kHz (16bit), 12/16 with 24bit, max. 272 tracks (incl. all virtual tracks), format 16/24 bits, MMC, MTC and MIDI CLOCK, internal CD recorder, USB 2.0 port, internal signal processing 64bit (max. 69bit), 8 mic preamps and 12 1/4" TRS plugs, 1 HI-Z input, SPDIF I/O (optical). **Bundle including the t.bone SC400 studio mic, the t.bone HD800 headphones and 6m mic cable.**

€ 990.- £ 906.-

o. code 209137

Alesis HD 24

Digital audio recorder

24 tracks, 24bit / 44.1 or 48kHz recording, 24 analog inputs & outputs, 3x ADAT optical I/O (24 channels), MIDI I/O, MTC out, 10 Base-T ethernet connector for computer back-ups in AIFF-format, wordclock, 19", **including 40GB hard drive.**

€ 1290.- £ 1180.-

order code 147007

Phonic AM 240 D

2-channel mixer

2 mono mic/line inputs with 3-band-EQ, 48V phantom power, 32/40bit internal effects processor with 48kHz sampling rate, 4 stereo inputs, 1 aux, 2-track I/O, balanced jack output, incl. external power supply.

€ 55.- £ 50.-

order code 220157

Mackie 802-VLZ3

8-channel mixer

XDR2 preamps, 2 mono mic/line ins, 2 stereo line ins, 1 mic/stereo line in, 1 stereo aux return, 1 aux send, 2 inserts, 3-band EQ, low cut filtre, PFL, 48V phantom power, internal powersupply, incl. software, dimensions HWD: 27,3 x 22,7 x 4,7cm, weight: 2,5kg.

€ 185.- £ 169.-

order code 209011

Soundcraft EFX 8

8-channel mixing desk

8 mono inputs, 2 stereo inputs, inserts on all channels, 1 FX send, 1 aux send (pre/post), solo/mute switch, integrated Lexicon FX with 32 presets, peak LEDs on all channels, integrated power supply, dimensions: 33 x 9,1 x 36,2cm, weight: 4,6kg, rackmount optional.

€ 269.- £ 246.-

order code 118879

Allen & Heath ZED-14

USB compact mixer

6 mic/line ins, 4 dual stereo ins, DuoPre preamp, 4 aux sends, USB interface, channel inserts, channel mutes, hi-pass filter, stereo return, 2-track return, headphone out, stereo record out, mono out, dimensions WHD: 38,4 x 4,1 x 46,5cm, weight: 6,5kg, incl. Cakewalk Sonar LE.

€ 355.- £ 325.-

order code 137330

Mackie 1402 VLZ3 Bundle

14-channel mixer

New XDR 2 preamps, 6 mono mic/line XLR/ jack combo inputs, 4 stereo line jack inputs, 2 stereo aux returns, 2 aux sends, 6 inserts, 3-band EQ, low cut filter 18dB, PFL, internal power supply, balanced outputs XLR/jack, weight: 4,5kg, **incl. Wizoo Publishing Sound Reinforcement and PA Guidebook.**

€ 359.- £ 328.-

o. code 219823

Presonus Studiolive 16.4.2

16-channel digital mixer

Built-in 32x18 FireWire audio interface, „Fat-Channel" processing with 4-band EQ, compressors, limiters and gates, 16 inputs, 6 auxiliary mixes, 4 subgroups, 16 Class A XMAX mic preamps, 44.1kHz and 48kHz sample frequency, 2 master DSP effects, talkback, dimensions WHD: 43,7 x 17,5 x 56,8cm.

€ 2059.- £ 1884.-

o. code 225534

Yamaha 01V96 VCM

Digital mixing console

24bit / 96kHz, 24 analog inputs, 12 Mic inputs, 40 channels expandable, included ADAT interface, 4 effect processors, parametric EQ, incl. Studio Manager Software.

€ 2390.- £ 2187.-

order code 161112

Mackie Digital X200 Refurbished

Digital open architecture mixing desk

72ch./96kHz (36ch./192kHz), 8 busses, 2 touchscreens, 25 motor faders, 4-band EQ, compressors and gates, VST plugin compatible, 2 PCI slots, flexible I/O config., 9 slots for optional I/O cards (not included in basic config.), Mackie Control Universal mode for DAW control. **(B-Stock with full guarantee)!**

€ 3777.- £ 3456.-

order code 182081

Tascam DM-4800 Bundle

Digital mixer

64 channels, 4-band parametric EQ, dynamics, 2 FX processors, built-in TC Reverb, talkback mic, 24 balanced mic/line ins, phantom, meterbridge and surround monitoring optional, CF card slot, USB interface for data transfer, incl. Mixer Companion software (WinXP and MacOS X). **Bundle incl. Tascam IF-FW/DM MkII FireWire Card.**

€ 5333.- £ 4880.-

order code 115670

Be-Station Bluetooth Bundle

Studio remote controlling system

Stand alone receiver unit for all Yamaha digital consoles. Bluetooth PDA unit with power supply (refurbished), SD card with Be Mix software, includes rack mount kit, PSU, 2x 3m MIDI cables, Blue Tooth Aerial, colour: black, Receiver weight: 750g, dimensions: 21,4 x 19,2 x 4,4cm.

€ 990.- £ 906.-

o. code 234660

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Korg microKORG
Analog modelling synthesizer
4 voices, 2 oscillators + noise generator, 8ch. vocoder, modulation (3 types), delay (3 types), EQ, arpeggiator (6 types), 37 dynamic mini-keys, audio in 1 + 2, stereo out, MIDI in/out/thru, also runs on battery power, incl. power supply and gooseneck microphone, dim.: 52,4 x 23,2 x 7cm, weight: 2,2kg.

€ 349.- £ 319.-
order code 157271

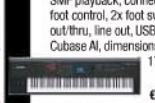
Alesis Micron
Analog modeling synthesizer
37 keys with velocity sensitivity, Ion analog modeling sound engine, 8 voices, each with 3 oscillators, 2 multimode filters, 3 envelope generators, 2 LFOs, 4 multitimbral parts, prog. step sequencer and arpeggiator, prog. rhythm sequencer for drum kits, dynamic realtime phrase sequencer, stereo buss effects, incl. reverb and 40-band vocoder, incl. power supply.

€ 399.- £ 365.-
order code 170127

Korg Microsampler
Sampling keyboard
37 keys, 36 samples per Bank, 9 total (8 user +1 ROM), 16 voices, 21 effect types(compressors, filtre, 4-band EQ, distortion, reverb, delay, L/C/R delay), input: ¼" jack (rear); XLR balanced (top); with mic/line switch, level knob, L/Mono, ¼" stereo jack, MIDI I/O, USB, dimensions: 51,5 x 23,8 x 6,5cm, weight: 1,88 kg, incl. microSAMPLER Editor Librarian Software (PC and MAC OSX)

€ 433.- £ 396.-
o. code 236238

Yamaha S70 XS
Synthesizer and master keyboard
76 keys, AWM2 tone generator, 128 voices polyphony, presets: 1024 voices + 64 drumkits, GM: 128 voices + 1 drumkit, user: 128 x 4 voices + 32 drumkits, control slider and knobs, SMF playback, connections: headphone, 2x foot control, 2x foot switch, mic input, MIDI in/out/thru, line out, USB, incl. power supply and Cubase AI, dimensions WDH: 135 x 38,5 x 17,3cm, weight: 20,4kg.



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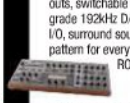
Access Virus TI2 Desktop
Desktop synthesizer
Dual DSP system, over 80 stereo voices, Virus Control VST and Audio Unit plug-in for Mac OSX and WinXP, 129 parallel effects, 6 balanced outs, switchable soft limiting algorithm, studio-grade 192kHz D/A converters, S/PDIF digital I/O, surround sound, programmable arpeggiator pattern for every patch, 512 RAM and 2048 ROM patches (rewritable).



€ 1625.- £ 1487.-
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M-Audio KeyStudio 25
USB MIDI controller keyboard
25 velocity sensitive full-sized keys, 8 MIDI assignable control knobs, 8 MIDI assignable control knob buttons, pitch and modulation controller, powered via USB or optional AC power supply, MIDI out, for WIN 2000/XP and Mac OS X.

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order code 238004

M-Audio Keystation 49E
USB-MIDI Keyboard
49 dynamic keys, volume controller, pitch bend and modulation wheels, USB or optional PSU (9V DC, 250-300mA, + inside) powered

€ 66.- £ 60.-
order code 167174

Keystation 61ES
61 dynamic keys
€ 144.- £ 132.-
order code 170806

Thomann SP-5500
Keyboard / Stage Piano
88 hammer action keys, 559 sounds, 203 styles, 3 user styles, 100 songs, 64-note polyphony, accompaniment controls, dual mode, split mode, metronome, DSP, transpose function, lesson function, pitch bend, stereo aux I/O, MIDI I/O, USB port, design: silver grey.

€ 369.- £ 338.-
order code 154087

Thomann SPWS-5500
Wooden stand for SP-5500
€ 45.- £ 41.-
order code 204071

Clavia Nord Electro III
Stage keyboard
based on authentic emulations of Hammond B3 and electric pianos, Nord sample library support, flash memory for 256MB samples and 126 programs, new effects and amp emulations, compressor and EQ.

61 waterfall keys € 1499.- £ 1372.-
order code 220551
73 waterfall keys € 1655.- £ 1514.-
order code 220582

Clavia Nord Stage 88 EX Case Bundle
Stage piano
88 weighted keys with aftertouch, 3 split zones, organ section with Hammond B3, Vox Continental and Farfisa organ, piano section with Grand Piano, Rhodes, Wurlitzer, Hohner Clavinet and many more, large effect section, 256 MB memory for piano samples. Bundle incl. Thon keyboard case.

€ 2799.- £ 2561.-
order code 237770

M-Audio UC33E
USB controller
9 prog. sliders, 24 rotary controllers and 14 buttons which can be memorized in 33 presets, connection over USB (USB bus-powered) or MIDI, blue, backlit 10-digit LC display, incl. presets for the most popular sequencers and plug-ins, special „Drawbar" mode for organ plug-ins, SysEx memory dump and librarian software.

€ 159.- £ 145.-
order code 166464

Novation Lauchpad
Ableton Live and MIDI controller
Bi-directional communication, 64-button Grid with color synced feedback over the status, scene control switchable to control volume, sends, muting and more, up to 6 units at the same time, USB bus-powered, large rubber grips to hold it steady, automap-enabled, incl. Dedicated Launchpad Ableton Live 8 version, weight: 0,76kg.

€ 169.- £ 155.-
order code 236641

Mackie Control C4 Pro
DAW controller
32 rotary V-pot encoders with integrated push-buttons, 4 LC displays provide immediate visual confirmation of plug-ins and parameter settings, control of up to 32 simultaneous parameters without switching banks, intuitive control of multiple plug-ins, can be used as a stand-alone controller or with Mackie Control Universal, Logic Control and extender modules.

€ 359.- £ 328.-
o. code 112003

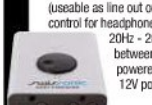
Akai APC 40
Ableton Live DAW controller
USB plug-and-play, 40 triggers, 16 rotary control knobs with LED, 8 channel fader, 1 bus fader and 1 cross fader, 2 footswitch connections for tap tempo, tempo nudge, record enable, solo/cue function, for PC/Mac, incl. Ableton Live Lite Akai APC40 Edition.

€ 449.- £ 411.-
order code 223229

Native Instruments Maschine
Groove production studio
Pad controller, 16 dynamic pads with aftertouch, 2 backlit displays, 11 rotary knobs, 41 buttons, USB-powered, MIDI I/O, pattern-based sequencer with 64 patterns per group, step sequence programming and realtime recording, drum grid and piano roll editors, sampler, >20 built-in effects, >5GB sounds, for PC/Mac.

€ 549.- £ 502.-
order code 223060

Swissonic Easy FireWire
24bit/96kHz FireWire audio interface
2 line ins 1/4" TRS balanced, 2 line outs mono 1/4" TRS balanced, 1 stereo out 1/4" TRS (useable as line out or headphone out), volume control for headphone out, frequency response: 20Hz - 20kHz, line I/Os switchable between +4dBu and -10dBv, bus-powered, connection for optional 12V power supply.



€ 27.- £ 25.-
order code 218447

Swissonic Easy USB
24bit/96kHz USB 2.0 audio interface
2 line ins 1/4" TRS balanced, 2 line outs mono 1/4" TRS balanced, 1 stereo out 1/4" TRS (useable as line out or headphone out), volume control for headphone out, frequency response: 20Hz - 20kHz, line I/Os switchable between +4dBu and -10dBv, bus-powered, connection for optional 12V power supply.

€ 27.- £ 25.-
order code 218444

ESI Maya 44 USB
USB audio interface
44,1/48kHz sample rate, 4 ins and 4 outs (RCA phono), 18bit A/D, 20bit D/A, -10dBV unbalanced I/O, optical S/PDIF out, headphone out with 60mW amplifier, ASIO 2.0 and CoreAudio support, MME/WDM support, compatible with Windows 2000/XP & Mac OS X.

€ 85.- £ 78.-
order code 111455

ESI DuaFire
24bit/96kHz FireWire audio interface
2 ins with level controls (1/4" jack), mic pre-amps with phantom power (XLR), 2 Hi-Z ins, 4 analogue outs, direct input monitoring with level control, headphone out, bus powered or by separate power supply, supports DirectWIRE 3.0, MME, ASIO 2.0, GSIF 2.0, DirectSound and Core Audio, incl. power supply and Steinberg Cubase LE 4.0.

€ 105.- £ 96.-
order code 206255

Alesis IO|2
USB audio interface
24-Bit, 48kHz, 2 XLR mic inputs with 48V phantom power, 2 balanced jack ins, balanced jack outs, inserts, headphone output with volume control, 4-segment signal/clip LED for each channel, low-latency ASIO 2.0 driver (zero-latency hardware monitoring), 24-Bit S/PDIF I/O, MIDI I/O, USB powered, incl. Steinberg Cubase LE.

€ 133.- £ 122.-
order code 177842

Presonus AudioBox USB
Compact 2x2 USB audio interface
24bit/48kHz, 2 mic/instrument inputs (48V phantom power), 2 balanced TRS outputs, MIDI I/O, clip LED (on each channel), headphone output, incl. USB cable and Steinberg Cubase LE 4.

€ 138.- £ 126.-
order code 217037

Lexicon Omega Studio
USB audio interface
8 ins (up to 4 simultaneously), 2 ins with dbx microphone preamps, 24bit A/D converter, 48V phantom power, SP/DIF, MIDI in/out, headphone out for zero-latency monitoring, incl. ProTracks Plus 32-track recording software and Lexicon Pantheon Reverb PlugIn.

€ 149.- £ 136.-
order code 166596

M-Audio Fast Track Pro
USB audio interface
4x4 24bit/44,1kHz, in stereo up to 24bit/96kHz, USB powered, 2 mic/instrument preamps with switchable phantom power, 2 inserts, 2 balanced line outs, 4 additional RCA outs, S/PDIF coaxial I/O, S/PDIF out even for AC-3/DTS surround sound, MIDI I/O, compatible with both Mac and PC.

€ 159.- £ 145.-
order code 184360

Cakewalk UA-25 EX CW
USB audio interface
2 channels, 24bit/96kHz AD/DA, mic/guitar/line ins, 48V phantom power, USB powered, integrated limiter and analogue compressor, ground lift, headphone out, MIDI I/O, direct monitoring, compatible with Windows (XP/Vista) and Mac OSX 10.3.9 and higher.

€ 185.- £ 169.-
order code 235896

Steinberg CI2
USB audio interface and DAW controller
USB studio with 24bit/48kHz, 2 mic/line XLR/TRS inputs with switchable 48V, input 1 with HI-Z switch for direct input of guitar and bass, 2 balanced line outs, 1 stereo headphone output, latency free hardware monitoring, incl. Cubase AI 5, compliant to Mac OS X, Win XP and Vista.

€ 185.- £ 169.-
order code 235705

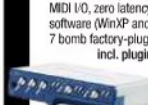
Apogee One
USB audio interface
24bit/48kHz, 1-canal A/D, convertisseur stéréo D/A, XLR Mic In avec alimentation phantom connectable, Hi-Z Instrument/Line In, sortie casque stéréo, micro condensateur integré, controlleur multifonctionel pur volume et amplification entrée, LEDs de control niveau I/O, pour Mac OSX 10.5.7 ou plus haut, dimensions: 11,7 x 5,7 x 2,7cm.

€ 205.- £ 188.-
order code 233106

Presonus Firepod
24-bit/96K FireWire recording studio
8 mic/line inputs, XLR/jack combo sockets, 48V phantom power, 2 instrument inputs, 8 analog jack outputs, S/PDIF I/O, MIDI I/O, headphone output, 2x FireWire, incl. Cubase LE.

€ 366.- £ 335.-
order code 169381

Didideisgn Mbox 2 Factory Bundle
USB/MIDI audio interface
2x mic in (XLR), 2x line I/O (jack), SPDIF I/O, MIDI I/O, zero latency monitoring, pro tools LE-software (WinXP and Mac OS X), 37 rigiRack- & 7 bomb factory-plugins, pro tools ignition pack, **incl. plugins** (moogerfooger analog delay, joemeek SC2 and VC5, digidesign maxim).

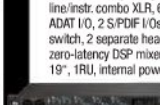


€ 389.- £ 356.-
order code 187325

Apogee Duet
FireWire audio interface
24bit/96kHz, 2 channels, Firewire 400 I/O, breakout cable with 2 XLR mic ins, 2 1/4" jack instrument ins, 2 1/4" jack monitor outs, multi-segment LED display input and output levels, multi-function controller knob, headphone out, Maestro software for advanced control and low latency mixing, compatible with any Core Audio compliant audio application, compatible with Mac OS X Core Audio.

€ 399.- £ 365.-
order code 122312

Focusrite Saffire PRO 40
24bit/96k FireWire audio interface
20 I/Os, 8 mic preamps, 8 analog I/Os (2 mic/line/instr. combo XLR, 6 mic/line combo XLR), ADAT I/O, 2 S/PDIF I/Os, 2 monitor outs, monitor switch, 2 separate headphone buses, MIDI I/O, zero-latency DSP mixer/router, incl. plugin suite, 19", 1RU, internal power supply, weight: 3kg.



€ 429.- £ 393.-
order code 219725

MOTU Ultralite MKIII Hybrid
FireWire and USB audio interface
24bit/192kHz, 2 mic/instrument inps, 6 bal. ins and 10 outs (1/4" TRS), 48V phantom power, S/PDIF I/O, headphone out, CueMix FX, internal DSP, LCD display, suitable for use as a standalone mixer, compatible with Windows and Mac, supports WDM, ASIO and Core Audio, incl. AudioDesk software for Mac.

€ 466.- £ 426.-
order code 239141

M-Audio ProFire 2626
24bit/192kHz FireWire audio interface
26 analog/digital I/O, ideal for project studios, 8 preamps with Octane™ technology, flexible on-board DSP mixer, user-assignable master volume knob, standalone operation, critically acclaimed jitter elimination, Pro Tools M-Powered compatible, 8 analog mic/line jack in with phantom, 2 instrument ins, 8 analog outs, 2 ADAT I/O's.

€ 449.- £ 411.-
order code 207107

RME Fireface UC
USB audio interface
36 channels, 24bit/192kHz AD/DA converter, 48V phantompower, 18 I/O's usable at the same time, instrument input, 8x analog I/O, ADAT I/O, SPDIF I/O, 2x MIDI I/O, WordClock, intelligent clock control, SyncCheck, SyncAlign, SteadyClock, DIGICheck and TotalMix, 9,5", 1U.

€ 799.- £ 731.-
order code 229395

SSL Duende PCIE Studio Pack
DSP audio system
Duende PCIe incl. X-Compressor, X-EQ, drum strip and vocal strip, up to 32 channels of console-grade, SSL EQ and dynamics processing, PCI-Express card, expandable with optional SSL plugins for the Duende platform. Supports VST, AudioUnit or RTAS (Digidesign Pro Tools 7 through the use of optional VST-RTAS wrapper) host application.

€ 925.- £ 846.-
order code 223055

Metric Halo Mobile I/O ULN2 Expanded 2d
24bit/96kHz FireWire audio interface
integrated DSP processor (2d chip), 2 analog mic/line/instrument ins, 2 bal. analog outs, 2 bal. aux send/return I/Os, 2 analog line outs, monitor out with volume control, headphone out, wordclock I/O, coax SPDIF I/O, AES/EBU I/O, ADAT, 9 front panel presets for stand-alone operation, for Mac OSX, weight: 1.8kg.

€ 1190.- £ 1089.-
order code 212195

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- free shipping to the UK and Ireland on orders above £159

the t.bone Micscreen Mini
Portable absorber and diffusor
With microphone clamp, reduces the transmission of unwanted room reflections, echos and ambient noises. recommended for vocals, instruments, live and studio applications, quick and easy mounting on nearly every standard microphone stand.
order code 223803 — €64.- £59.-

the t.bone Micscreen
Portable absorber/diffusor
Positioned behind any microphone, reduces the transmission of unwanted room reflections, echos and ambient noises, recommended for vocals, instruments, live and studio applications, quick and easy mounting on nearly every standard microphone stand.
order code 209023 — €91.- £83.-

Rode M3
Condenser microphone
Cardoid pattern, ideal for recording strings, choir and acoustic guitars, frequency range 40Hz to 20kHz, 130dB SPL, 21dBA noise background, impedance 200 Ohms, 48V phantom power or battery 9V, status LED, high pass filter, windshield and stand mount included, dimensions: 225mm lenght, 33mm diameter, weight: 360g.
order code 114494 — €95.- £87.-

Rode NT5
Condenser microphone stereo bundle
2 matched small diaphragm condenser microphones, 0.5" gold sputtered capsule, polar pattern: cardioid, frequency response: 20Hz to 20kHz, excellent for drum overhead, acoustic guitar and stereo live recordings, including plastic case, microphone holders and wind screens.
order code 154595 — €266.- £243.-

Neumann KM 184 Stereo-Set
Small diaphragm condenser mic bundle
2 condenser microphones KM 184 (with sequential serial numbers), polar pattern cardioid, frequency range 20Hz to 20kHz, incl. 2x WNS 100 windshield and 2x SG 21/17 stand adapter, incl. wooden box.
Finish: silver o. code 153692
Finish: black o. code 158648 — €1129.- £1033.-

sE Electronics SE 2000
Large diaphragm studio microphone
Cardioid pattern capacitor, gold sputtered 1" mylar diaphragm, frequency response: 20Hz - 20KHz, sensitivity: >16m V/Pa -36° ±2dB, impedance: <200Ω, output noise: <17dB typical (A weighted), THD: <0.5% at 125dB SPL, phantom power 48V ±4V, incl. wooden case and shockmount.
order code 223700 — €88.- £81.-

EV Blue Raven
Dynamic microphone
cardioid polar pattern, frequency response: 45Hz - 18kHz, 162dB SPL (max.), 400Ω impedance, fixed microphone holder with 3/8" connection, suitable for vocals and brass (studio or live).
order code 193184 — €91.- £83.-

the t.bone SC450 Set
Studio large diaphragm microphone
Cardioid, external low cut and -10dB pad switch, impedance: 200 Ohms, requires 48V phantom power, frequency range 30Hz to 20kHz, dim.: 50,5 x 190mm, incl. shockmount and PVC case. **Bundle incl. the t.bone MS180 pop shield.**
order code 203194 — €91.- £83.-
SC450 Stereo-Set, matched stereo pair in case, w/o pop shield.
order code 174363 — €166.- £152.-

EV Blue Cardinal
Condenser microphone
Cardioid pattern, frequency response 35Hz - 20kHz, 150dB SPL max., impedance 50Ω, fixed microphone holder with 3/8" connection, especially for vocals and brass in studio or live.
o. code 193188 — €138.- £126.-

the t.bone SC1100 Set
Studio large diaphragm microphone
polar patterns cardioid, figure-8 & omni, low cut switch and -10dB pad, frequency range: 20Hz to 20kHz, incl. aluminium case and shockmount. **Bundle including the t.bone MS180 pop shield.**
order code 203865 — €138.- £126.-

Rode NT1-A Complete Vocal Recording Solution
Large diaphragm microphone
Frequency response: 20Hz - 20kHz, impedance: 100Ω, dynamic range: 132dB, SPL max. 137dB, incl. deluxe shockmount SM6, 6m cable and tutorial DVD "Studio Secrets" from Peter Freedman.
order code 235937 — €166.- £152.-

the t.bone SCT800 Set
Studio tube microphone
12AT7 tube, frequency range 20Hz to 20kHz, impedance: 200Ω, incl. deluxe case, shockmount and external power supply. **Bundle incl. the t.bone MS180 pop shield.**
order code 203198 — €183.- £167.-
SCT800 Stereo-Set, matched stereo pair without pop shield.
order code 174362 — €369.- £338.-

the t.bone SC1200
Large diaphragm condenser microphone
35mm gold dual diaphragm capsule, selectable polar pattern: omnidirectional, cardioid or figure-8, -10dB or -15dB pad switch, hi-pass filter 75Hz or 150Hz switchable, frequency range: 20Hz - 20kHz, impedance: < 200Ω, equivalent noise level: 11dB (A-weighted), max SPL: 148dB for 0,5% THD (with pad on), with solid elastic suspension, synthetic leather bag for the mic and aluminum case for mic and all accessories.
o. code 225143 — €185.- £169.-

Rode NT2-A MS-180 Bundle
Large diaphragm microphone
Polar pattern switchable between omni, figure eight and cardioid, 1" diaphragm, frequency range 20Hz to 20kHz, max. SPL 147dB, delivered with shockmount SM2. **Bundle incl. the t.bone MS180 popkiller.**
order code 223002 — €259.- £237.-

sE Electronics Titan
Large diaphragm transformerless FET mic
Cardioid response pattern, 1" titanium diaphragm, 100Hz HP switch, -10dB pad, 20Hz - 20KHz frequency response, sensitivity: 40mV/Pa ±2dB (0dB=1V/Pa @ 1000Hz), impedance: 200Ω, equivalent noise level: 18dB (A weighted), max SPL for 0.5% THD @ 1000Hz: 128dB, requires 48V phantom power.
o. code 182411 — €275.- £252.-

AKG C214
1" large diaphragm microphone
Polar pattern cardioid, frequency range: 20Hz to 20kHz, switchable pad 20dB, requires phantom power 12 - 52V, XLR connector, dimensions: 16 x Ø 5.5cm, weight: 280g, incl. case, windshield and shockmount.
order code 211318 — €333.- £305.-

Shure SM 7 B
Studio microphone
Dynamic studio microphone with a cardioid polar pattern, frequency response: 50Hz-20kHz, bass roll-off switch, mid-boost switch, 150Ω, shielded against broadband interference, fixed stand adapter, XLR plug, includes windscreen.
order code 129929 — €369.- £338.-

Neumann TLM 102
Large diaphragm condenser microphone
Directional pattern cardioid, frequency response: 20Hz - 20kHz, impedance: 50Ω, A-weighted 12dB-A, equivalent noise level, A-weighted (rel. 94 dB SPL) 82dB, maximum SPL for THD 0.5%2) 144dB, incl. SG 2 Stand mount swivel, weight: 260g.
nickel o. code 237768
Black o. code 237769 — €544.- £498.-

AKG C414 B-XLS
Universal multi-pattern mic
5 polar patterns (incl. cardioid and hyper-cardioid), frequency response: 20Hz-20kHz, pad (6/12/18db), hi-pass filter (40/80/160Hz), incl. shock mount (H85) and windscreen.
o. code 105783 — €639.- £585.-

Neumann TLM 103 Studio Set
Studio microphone
Large diaphragm cardioid microphone, pressure gradient transducer with with one-diaphragm capsule, transformerless circuitry, extremely low noise: 7dBA, high-quality professional equipment for limited budgets, finish: silver, incl. shockmount, delivered in a box.
order code 174067 — €839.- £859.-

ART Tube MP
Tube microphone preamp
Hand selected 12AX7A tube, limiter, +48V phantom power, phase reverse, XLR and jack I/O, perfect for hard disc recording or as a tube DI.
order code 191529 — €36.- £33.-

StudioProjects VTB1
Tube preamp
Incorporating true class A/B switching, the VTB1 is a totally discrete circuit, the tube drive is a variable drive to a 12AX7, that allows the user to blend as little, or as much of the tube drive they want, 48V phantom power, balanced outputs on XLR and 1/4", TRS insert, phase reverse, high pass filter, 5-segment LED metering.
order code 183260 — €111.- £102.-

SM Pro Audio TB202
Dual microphone preamp
Hand-selected 12AX7 tube, Class A transformless high voltage signal path, switchable phantom power, switchable phase reversal, optical compressor, EQ circuitry, input gain control, -20dB pad, 110V - 220V external power supply, dimensions: 19"/1RU.
order code 174864 — €119.- £109.-

FMR Audio RNC 1773
Really nice compressor
Stereo compressor with two modes: normal for "effective" compression and super nice for transparent compression, controls: threshold, ratio, attack, release and gain, switches: bypass & super nice.
order code 179985 — €166.- £152.-
RNLA 7239 Really nice levelling amplifier
10Hz - 100kHz 0.5dB @ 0dBu, clip point: +22.5dBu @ 3% THD.
order code 190166 — €203.- £186.-

Focusrite Octopre LE
8-channel Class A microphone preamp
8 analog outs, 8 balanced 1/4" jack ins located on front panel for quick and easy access, first two channels can be used for DI free plug-in of guitars and basses, channels 1 and 2 also allow a microphone signal (input using the rear panel XLR connections), frequency response: 10Hz - 122kHz, 19"/1RU, weight: 4,2kg.
order code 178709 — €269.- £246.-

Presonus Digimax D8
8-channel microphone preamp
24bit/48 kHz digital output, 2 instrument inputs (1/4" TRS), 8 microphone inputs (XLR), 8 XMAX Class-A microphone preamps, pad switch (per channel), 48V phantom power, 8 analog direct outs, optical ADAT output, word clock input (BNC), 19", 1U.
order code 216155 — €309.- £283.-

Focusrite Octopre
8-channel Class A microphone preamp
Compressor and limiter, phantom power, analogue output (25-pin Sub-d), digital expansion with wordclock optional.
order code 154507 — €379.- £347.-

Mindprint Envoice MKII Digital Edition
Valve microphone preamp
Mic/Line preamp, semi-parametric bass & treble, fully parametric mid, EQ, 19"/1U, incl. DI-MOD USB digital interface with USB.
order code 182221 — €459.- £420.-

SPL GoldMike Studioset 3
2-channel tube preamp
Discrete Class A solid stage, 48V phantom power, phase reverse, pad function, flair presence enhancement, very clear and warm sound, 19" rack format with 2RU. Bundle incl. the t.bone SC450 studio mic, the t.bone MS200 pop shield and Pro Snake TPM6 cable.
order code 237993 — €466.- £426.-

Avalon U5 Mono
Instrument DI preamp
Pure Class A technique, low noise, +30dB variable gain, 6 tone presets (EQ), high-frequency filter, speaker level input, signal LED, balanced mic & line outputs, dimensions: 2U x half rack width.
order code 156661 — €489.- £447.-

Lexicon MX200
Stereo effekt processor
2 independent processors, 24bit converter, VST plug-in architecture with USB interface, MIDI interface, tap-delay bottom, legendary Lexicon algorythm like: halls, chambers, plates, delays, chorus, flanger, tremolo, rotary, etc., dbx dynamic algorythm, 2 simultaneous useable effects, analog and digital ins and outs, internal power supply, 19"/1U.
order code 180403 — €185.- £169.-

Alesis DEQ 230
30-band equalizer
2 channels, 24bit (28bit internal), 13-segment display per EQ band, 30 presets, 30 user programs, balanced jack I/O, frequency range 22Hz - 22kHz ±0.5dB, signal-to-noise ratio: >100dB (A-weighted), max. input and output levels: +6dBV, dimensions HWD 4,5 x 48,3 x 12,7cm, 19", 1RU, weight: 1,4kg.
order code 185780 — €105.- £96.-

Sonic Core A16 Ultra
AD/DA converter
16 analogue balanced I/O's (1/4" TRS), 2x ADAT, 2x Z-Link. BNC Word Clock I/O, memory function, dimensions: 19" x 1U.
order code 150111 — €689.- £630.-

tc electronic M3000
Dual engine multi FX prozessor
Two simultaneous reverbs or effects, award winning intuitive user-interface, 600 factory presets and multiple I/O formats, AES/EBU (24bit), S/PDIF (24bit), sampling rates 44,1 kHz, 48 kHz, 19" / 1RU.
order code 131732 — €898.- £822.-

tc electronic Finalizer 96k
Studio mastering processor
Gain maximizer, 96KHz 24bit AD/DA, multi-band compressor/expander, 3-band spectral stereo image and un-correlated dithering, format conversion AES/EBU, S/PDIF and Tos-link, enter and exit at any sample rate e.g. 32, 44.1, 48, 88.2 and 96kHz and make even asynchronous conversion possible, manual or auto fade tool.
order code 133460 — €1158.- £1060.-

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AKG K-121 Studio
Stereo headphones
Semi-open dynamic headphones, 55 Ohms rated impedance, 200mW maximum input power, frequency range 18Hz to 22,5kHz, 101dB/V sensitivity, self-adjusting headband and auto-shut-off feature, single side jack, incl. 3m cable with 3.5mm stereo mini-jack plug, 1/8" to 1/4" screw-on adapter, weight: 220g (without cable).
o. code 219545 € 82.- £ 75.-

Beyerdynamic DT-770 Pro
Dynamic studio headphone
Closed diffuse-field system, bass reflex technology for improved bass response, impedance 250Ω, pressure level 96dB/SPL, frequency response 5Hz to 30kHz, circumaural, weight 270g incl. cable, 3m single-sided cable.
order code 106864 € 144.- £ 132.-
DT990 Pro, open, 250Ω, 96dB/mW, cable with 1/4" stereo jack.
order code 106865 € 144.- £ 132.-

AKG K271 MKII
Closed dynamic studio headphones
Circumaural design, 55Ω, max. input power 200mW, 16Hz - 28kHz,sensitivity 104dB/V, self-adjusting headband and auto-shut-off feature, cable lenght 3m, incl. 5m coiled cable and 1 pair velvet pads, weight: 240g, incl. gold plated 1/8" to 1/4" screw-on adapter.
order code 206951 € 145.- £ 133.-
5m extension cable
Stereo jack 6,3mm.
order code 153216 € 10.10 £ 9.20

Sennheiser HD-25 LE
Dynamic professional headphones
Closed back, sound pressure level: 120dB, impedance: 70Ω, frequency response: 16Hz - 22kHz, incl. 150cm cable and nylonbag, weight: 140g.
order code 219041 € 148.- £ 135.-

AKG K 701
High-end reference headphones
Revolutionary flat wire voice coil technology, dynamic, open back, impedance 62Ω, efficiency 105dB, frequency range 10Hz - 39.8kHz, max. input power 200mW, hard gold plated 1/4" jack plug, 3m cable, weight: 235g (not including cable).
order code 185476 € 205.- £ 188.-

M-Audio StudioPro 3
Active 3" desktop monitor system
2-way desktop reference monitor, 3.25" low frequency driver, 1" high frequency driver, 10W/Kanal, frequency response: 100Hz - 20kHz, magnetic shielding, bass boost switch, incl. stands, dimensions HWD: 20 x 14 x 15cm, weight: 4kg. pair price!
order code 186629 € 62.- £ 57.-

Mackie MR5
Active nearfield monitor
5.25" woofer (100W), 1" tweeter (50W), frequency response: 60Hz - 20kHz, max. SPL per pair: 113 dB SPL @ 1m, XLR, jack (6,3mm) unbalanced and RCA, magnetically shielded, dimensions HWD: 29,2 x 19,7 x 26,6cm, weight: 6,5kg. Unit price!
order code 207239 € 135.- £ 124.-

KRK RP5 Rokit G2
Active studio monitor
75W, 5" + 1" speaker, frequency response: 53Hz - 20kHz, magnetically shielded, dimensions HWD: 27,6 x 18,5 x 25cm, weight: 8kg. Unit price!
order code 213024 € 138.- £ 126.-
KRK RP6 Rokit G2
6" / 1", 1400W.
order code 213034 € 185.- £ 169.-

Yamaha HS50M
Active 2-way studio monitor
70W Bi-Amping bass reflex system, 5" woofer, 3/4" tweeter, frequency range 55Hz to 20kHz, inputs XLR and TRS, adjustable input level mid EQ, room control, high trim, switchable low cut, fully magnetically shielded. Unit price!
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ESI nEar08 Classic
Active 8" studio bi-amp monitors
2-way bookshelf monitors, magnetic shielded, LF amplifier power: 70W, HF amplifier power: 70W, frequency response: 40Hz - 24kHz, 1 balanced input XLR, 1 balanced/unbalanced input TRS, dimensions HWD: 35,8 x 25,5 x 32,2cm, weight: 10kg/unit. Pair price!
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Active 2-way nearfield monitors
100W, 6" low frequency woofers, 1" silk dome tweeter, magnetically shielded, frequency response: 56Hz - 20kHz, integrated power switch and clip display on the top, dimensions WHD: 21,6 x 38 x 26cm, weight: 9,6kg per speaker. Pair price!
order code 182507 € 219.- £ 200.-

Yamaha HS80M
Active 2-way monitor
120W bi-amping bass-reflex system, 8" woofer, 1" tweeter, frequency range 42Hz to 20kHz, XLR and jack input, mid EQ, room control, high trim, low cut switchable, magnetically shielded. Unit price!
order code 186463 € 233.- £ 213.-

Adam A5 Pro
Active nearfield monitor
5.5" woofer, 2x 25W, magnetically shielded, frequency response 55Hz to 35kHz, inputs balanced XLR and unbalanced RCA, dimensions: 28,5 x 17,2 x 20cm, weight: 5kg. Price per unit!
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M-Audio EX66
Active studio reference monitor
Bi-amplified with 200W PWM power per channel, high-impedance analog inputs (XLR and 1/4" TRS balanced), S/PDIF and AES/EBU digital input up to 24bit/192kHz for total digital studio connectivity. Unit price!
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Genelec 8020BPM
Active 2-way studio monitor
Power switch, frequency response 66Hz - 20kHz (±2.5dB), 105dB SPL peak @ 1m, 95dB SPL @ 1m, 105mm (4") high efficiency bass driver, 19mm (3/4") metal dome tweeter with Directivity Control Waveguide, 3kHz crossover, magnetically shielded, aluminium cabinet, power per channel: 20W (bass), 20W (treble), dim.: 22,6 x 15,1 x 14,2mm, weight: 3.7kg, wall bracket included. Unit price!
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Adam A7
Active nearfield studio monitor
6,5" Rohacell / kevlar sandwich woofer, A.R.T. tweeter, frequency range 46Hz to 35kHz, 100W (sin), 150W (rms), XLR and RCA input, dimensions: 18 x 33 x 28cm, weight: 8kg. Unit price.
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48Hz - 20kHz free field frequency response (±2dB), 115dB SPL peak per pair with music material @ 1m, 165mm high efficiency bass driver, 19mm metal dome tweeter with DCW (Directivity Control Waveguide), 3kHz crossover, magnetically shielded aluminium construction, amp power per channel: 90W bass + 90W treble, dimensions: 35 x 23,7 x 22,3cm, weight: 8.6kg. Price per unit!
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Adam S2.5 A
Active studio nearfield monitor
2-way active bass reflex speaker, 2x 150W RMS output power, woofer 228 mm (9") HexaCone®, A.R.T. (Accelerated Ribbon Technology) tweeter, frequency response: 34Hz to 35kHz, dimensions WHD: 28 x 45 x 30cm, weight: 15kg. Unit price!
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Active studio monitor bundle
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4 inputs, 2 mic inputs, 2 phono/line switchable, 3-band EQ, crossfader curve, VCF filtre (20Hz - 20kHz), FX send/return, mic input (XLR) with 2-band EQ, XLR master output, monitor output.
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Swissonic CDMP 1
Compact CD/MP3-Player
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MP3 single CD player
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Hot cue, hot loop, quick start, reverse, real time seamless loop, loop adjust, reloop, internal memory, MMC slot, touch sensitive jog dial, stereo RCA out, digital out, supports CD, CD-R, CD-RW and MP3 CD (MPEG-1 32Kbps - 320 Kbps / MPEG-2 16 Kbps - 160 Kbps), frequency response: 4Hz - 20kHz, weight: 4,2kg.
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Digital piano
88 hammer action keys, 210 sounds, 120 styles, 60 songs, 64-note polyphony, accompaniment control: start/stop, sync start, sync stop, intro/ending, fill-in A, fill-in B, dual mode, split mode, metronome, DSP, transpose function, lesson function, pitch bend, 3 pedals, headphone out, stereo aux out, stereo aux in, MIDI I/O, USB port, 2x 25W speaker system, weight: 47kg.
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Casio CDP-100 Set
Digital piano package
88 scalic hammer action keys, 32-note polyphony, 5 sounds, layer function, transpose function, reverb, chorus, 5 demo songs, MIDI I/O, headphone jack, pedal jack, 2x 8W speaker system, dimensions: 132,2 x 27,8 x 13,3cm, weight: 11.2kg, **incl. pedal, power supply, stand, Millenium keyboard seat and the t.bone HD800 stereo headphone.**
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Yamaha YDP-140 Set
Arius digital piano bundle
New GHS keyboard, 88 weighted keys, 64-note polyphony, 6 sounds, 1-track recorder, 50 preset songs, reverb, transpose funktion, dual voice, metronome, keyboard cover, MIDI I/O, 2 headphone outputs, closed back, 2x 6W speaker. **Bundle incl. the t.bone HD800 stereo headphone and Thomann piano bench.**
alder/walnut
o. code 211976 € 769.- £ 704.-
cherry
o. code 211975

Roland RP-101 Set
Digital piano
PHA-II keyboard, 88 touch-responsive keys with hammer-action, 17 sounds, 64 polyphonic voices, transpose, reverb, 1-track recorder, metronome, 65 internal songs, V-Link, line I/O, MIDI I/O, 2x 25W, weight: 46kg, finish: dark rosewood. **Bundle including the t.bone HD800 stereo headphones and Thomann piano bench.**
order code 116658 € 979.- £ 896.-

Yamaha CLP-320 Set
Clavinova digital piano bundle
88-key graded hammer action, 10 sounds, 128-voice polyphony, internal flash ROM memory, 1-track sequencer, metronome, 50 preset songs, 2x 20W speakers, 2 headphone outs, MIDI in/out, key cover, **incl. the t.bone HD800 headphones and piano bench.**
Rosewood
order code 211297
Cherry
order code 211983
Mahogany € 1125.- £ 1029.-
order code 212058

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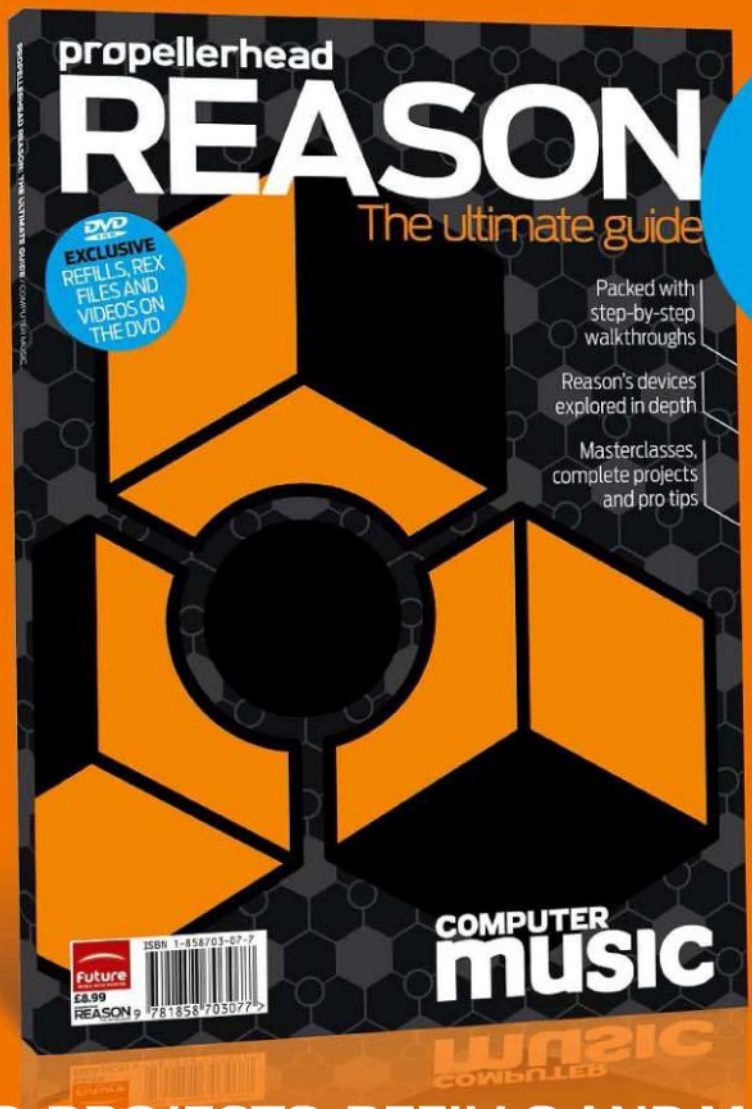

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RESAMPLING!

Creating your own sampled instruments needn't be a tedious chore – just follow our guide and you'll be creating massive sounds in minutes

You're probably familiar with sampling, and as you might surmise, resampling is a close relation. In truth, these terms are used in a variety of ways that borders on the ambiguous, but most would agree that regular sampling means converting an analogue signal into a digital one – ie, making a digital recording of an analogue source. The source could be pretty much anything that's hooked up to your audio interface via an analogue connection: a guitar, microphone, hardware synth, and so on. We also use the term sampling to mean grabbing snatches of other people's music to use in our own.

> "Resampling is of an artistic nature and basically involves sampling what's coming out of your DAW"

When we talk about resampling, we're talking about sampling a *digital* signal, the result being a new digital signal – ie, a sample. The term is often used to refer to sample rate conversion, since this is essentially (re)sampling the original digital audio at a different sample rate. However, the kind of resampling we're talking about is of an artistic nature and basically involves sampling what's coming out of your DAW.

Specifically, we'll show you how to use resampling to create custom sampled instrument patches using the tools already at your disposal: your DAW along with virtual instruments and effects. You'll be needing a sampler instrument too, but thankfully, most DAWs come with one (Cubase doesn't, but you can use the excellent, free shortcircuit instead).

So why are we telling you to sample your virtual instruments when you could simply run them in real time? We'll get into the pros and cons over the page, but one of the biggest advantages is that you can pile on tons of plug-ins to create huge, super-slick sounds, then turn them into sampled patches that will barely bother your CPU – perfect for getting serious sounds out of an underpowered laptop or netbook, or for use in low-latency live situations. On the sonic side of things, it's possible to go far beyond merely replicating a sound in sampled form, to create something entirely new.

For the most part, we'll be talking about using in-the-box resampling in conjunction with soft synths, since this is the easiest way to learn the techniques involved, and a method that anyone can have a go at. Once you've got the basics down, though, it's easy to adapt them to sampling real instruments, as we'll demonstrate. Without further ado, then, let's get resampling!

The good and the bad

There are distinct benefits to resampling. As mentioned earlier, one of the best things about resampled patches is that they can be very low in CPU usage. This makes them ideal for low-latency live work, underpowered computers and big productions where you want serious sounds but don't have the CPU cycles needed to run tons of soft synths in real time.

When it comes to designing the sounds that you're going to resample, you can pile on as many plug-ins as you like, including those that might be too CPU-intensive for everyday use. Furthermore, resampling monophonic synth patches enables you to play them polyphonically, and you can even layer up many sounds and save the whole lot as a single patch.

If it's consistency you want, then resampling is a good way to achieve it, as it can be used to counteract the note-to-note variations heard with some synths. Conversely, you could use resampling to create a patch where each note of the octave produces a different sound, which is impossible in most synths. You can even use resampling to capture sounds from the demo versions of synths that you don't actually own! And if you get into sampling hardware, you you can create as many virtual 'clones' of your real-world instruments as you like.

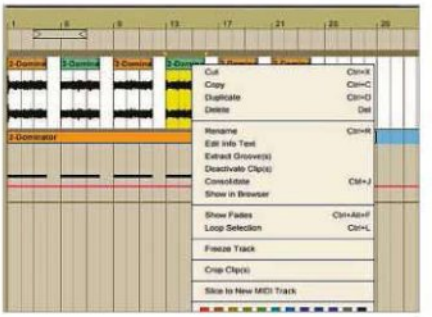
Resampling has its downsides too, though. You lose the natural flexibility of the source synth when you sample it, not to mention that the resulting consistency can give rise to the 'machine gun effect', where playing the same note in succession sounds unnatural because of the repetitious attack. And, of course, sampled patches can use a lot of memory, especially if they use many layers.

Samplists generally aim to exterminate the machine gun effect using tricks like the round robin technique

> Step by step Basic one-note resampling

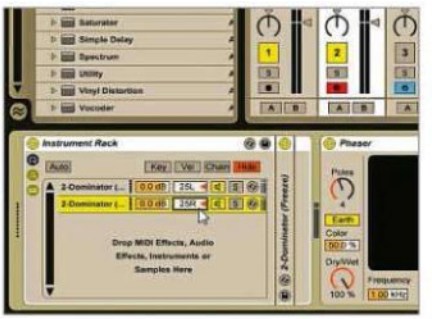
1 > The simplest kind of resampling is sampling one note played on a virtual instrument. Let's try it in Ableton Live using the CM Studio's Dominator synth – load the **BAS-Darkness-LDC** patch. It's a big sound, but CPU-heavy and monophonic due to using the 12-voice unison mode. The LFO is free running, too, so each note's attack sounds different. All of which makes it ideal for resampling!

2 > In the arrangement view, insert a long MIDI clip and draw in a series of C2 notes: make each three bars long, with a gap of one bar between them. Now select **Edit»Freeze Track** to convert the track to audio behind the scenes. To be able to manipulate it as you would with regular audio, copy the clip to an audio track (**Ctrl**+drag). You can now mute the frozen track with the synth on it.



3 > Now we can sort through the notes and pick the ones with the attack that we most like the sound of. Use the Split command (**Ctrl+E**) to slice the audio into individual notes (enable **1 Bar** snapping), then delete the silent gaps and highlight the best ones in a different colour. Once you've whittled it down, right-click each of the remaining candidates and select **Crop** to convert them into discrete audio clips.

4 > Add a new MIDI Track (**Ctrl+Shift+T**), then select it, click the Track View Selector (lower-right tab) and drag one of your resampled audio clips into the lower area – Live will create an instance of Simpler, and you can play your resampled sound up and down the keyboard. Try dragging the other clips into Simpler to see how they sound, too. You needn't stop there, though...



5 > Here, we've used an Instrument Rack with two Simplers panned left and right, each playing a different resampled note. This gives an ultra-wide double-tracking effect. We've also piled on some effects to make the sound even gnarlier. Of course, there's nothing to stop you resampling *this* too – just follow steps 2 to 4 again! See p29 to learn how to loop your sound, making it sustain indefinitely.

POWER TIP

>Dance dance revolution

The simple one-note resampling we've shown here is often used in dance music genres, but it's not all about dirty DnB bass noises; for example, you could make your own house stab samples by resampling synth chords (ie, instead of single notes). And while effects like reverb and delay should be left off when you're aiming for realism and flexibility in serious multisampled patches, the one-note approach is more freeform, so feel free to try it. As Manuel Schleis suggests on p31, you can always render the dry and wet versions separately and layer them together.

> Step by step

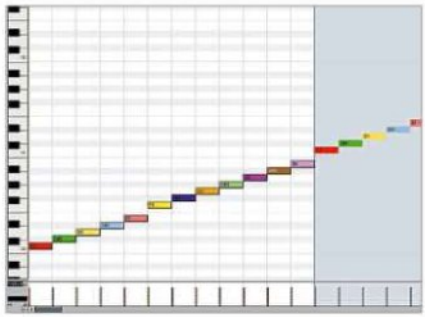
Chromatically resampling a Dominator strings patch

POWER TIP

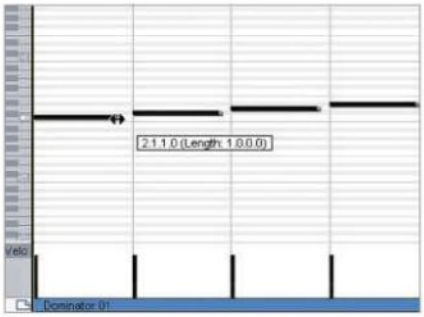
>Multisampling

Using one sample for the entire key range isn't ideal because the sound becomes unnatural as you move away from the original note, aka the root note. As well as the timbre changing, time-dependent aspects such as LFOs or envelopes will be affected. For a more accurate representation, we can use multiple samples (called multisampling). First we'll try using a sample for every single note, which has a neat, exploitable side effect: the sampler doesn't have to transpose the samples, so you can turn off interpolation in the sampler (if it has such an option), saving on CPU usage. Don't do this if using any sort of pitch modulation, though!

1 > Start a fresh project and load up a virtual instrument – we're using the CM Studio's Dominator synth in Cubase 5, but these techniques can be easily adapted to work with most DAWs. We're using a Dominator patch that emulates orchestral strings (**LED-StringSection**). It sounds cool, but it's CPU-intensive and monophonic due to the use of Dominator's 12-voice unison mode.



2 > Create a MIDI clip for the track, and program a chromatic scale covering as many octaves as needed (ie, the instrument's useful range), with only one note per bar. Once you've done a bar's worth, you can simply copy, paste and transpose to create the rest. Our scale goes from C0 to B6.



3 > Select all the notes and shorten them, thus allowing the synth's release phase to play out, giving some silence between bars and ensuring a clean, consistent start to each note. We use Cubase's inline editing system to adjust all the notes at once (another method would be to glue the clips into one big one and edit that). Now lower the tempo to, say, 40bpm to give much longer notes.

4 > We're almost ready to start resampling, but first we pull down the channel fader so that the output isn't exceeding 0dBFS. We select all the MIDI clips (**Ctrl+A**) then use Cubase's **Transport»Locators To Selection** function (**P**) to make the locators encompass the MIDI. We're now ready to render out the chosen patch playing a chromatic scale.

5 > Select **File»Export»Audio Mixdown** (**Ctrl+E**) and set a sensible filename – we name it after the patch used, and use the project's **Audio** folder as the path. Set **File Format** to **Wave** file, **Sample Rate** to **44.1kHz** (or whatever you usually work at) and **Bit Depth** to **32 Bit (float)**, which is the bit depth used internally by Cubase and many other DAWs, thus giving us the best fidelity possible.

6 > Set the **Pool** and **Audio Track** options then hit **Export** and wait for the audio to be rendered. When the **Import Options** dialog box pops up, deselect any active checkboxes. For your troubles, you should be rewarded with a fresh audio track containing an ascending series of long synth notes.

7 > vember audio's free shortcircuit sampler is great for Cubase because it supports that DAW's drag-and-drop system. To prepare the audio for use in shortcircuit, set the **Snap Type** to **Grid** and the **Grid Type** to **Bar**. With that done, select the **scissors** tool (**3**), then **Alt+click** at the start of the second bar – Cubase will automatically slice the entire audio clip into bar-long segments.

8 > Now create an instance of shortcircuit. Use the controls in the upper right to locate the starting note of the scale (C0) in the keyzone mapper, then select all the sliced audio and drag it to the area *above* the C0 note (ie, not onto the keyboard itself). That's it! You can now play the patch polyphonically and save it for later use. You may want to edit the patch's release time to sound more natural.

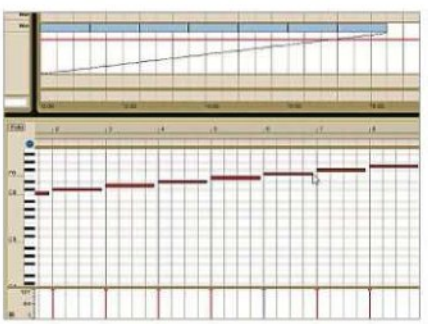
> Step by step Chromatic mapping with Kontakt 4

1 > To create a resampled patch in Native Instruments Kontakt, you first need to render an ascending chromatic scale as per steps 1 to 6 of the last walkthrough – you don't need to use Cubase, though. Once you've created the file, use Kontakt's Browser to locate it on your hard drive and double-click it to import it into a new Kontakt instrument.

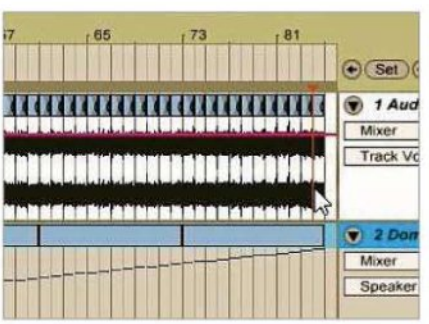
2 > The sample contains our chromatic scale, so we'll need to slice it up into its constituent notes and map them across the keyboard. Go into **Edit Mode** (click the spanner icon), then click the Wave Editor tab. Activate **Grid** (power icon), then set the **BPM** to **40** (ie, the tempo used in your DAW to create the scale) and **Width** to **1/1** to automatically set slice marks at the start of each note.

3 > Click **Sync/Slice**, turn off **Auto Find Empty Keys**, and set the **Base Key** to **C0** (or whatever note your scale started on). See where it says **Drag MIDI To Host**? Drag that box into your DAW to map the slices (it'll create a MIDI clip, but you can ignore it or delete it). Now click **Mapping Editor**, then **List View**, and select the big zone at the top – this is the unsliced sample, so just delete it. Job done!

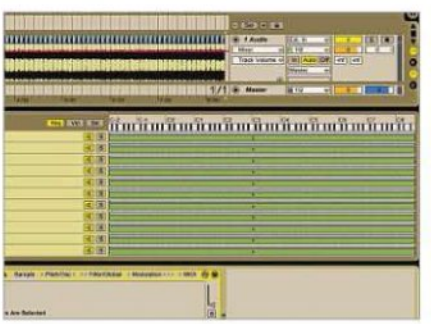
> Step by step Chromatic resampling in Ableton Live



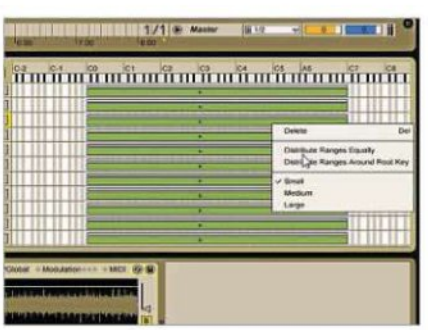
1 > Now let's resample our Dominator strings patch in Ableton Live – load Dominator onto a MIDI track and load the **LED-StringSection.fxp** patch. Program a chromatic scale from C0 to B6, like the one shown in the Cubase tutorial on p27 – make each note a bit shorter than a bar and set the tempo to a sedate 40bpm.



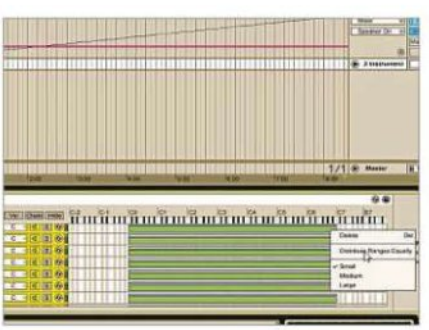
2 > Rendering is a cinch – just use the freeze/copy trick outlined on p26. Slicing is more laborious in Live, however. Set **Fixed Grid** to **1 Bar** (in the right-click menu), then put the cursor on the first bar of the audio. Press **Ctrl+E** to split the clip, then click on the next bar or press the right arrow – repeat till you're done.



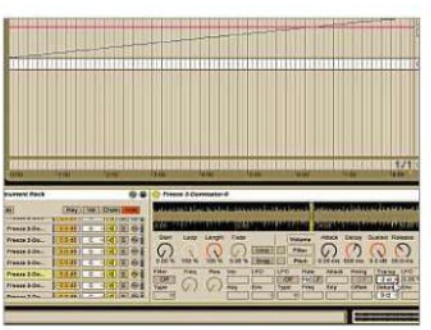
3 > Ableton's Sampler makes mapping pretty easy. Create a new MIDI Track (**Ctrl+Shift+T**) and drop a Sampler onto it, then select all the audio clips and drag them onto it. Click the **Zone** button to see how the samples are mapped – currently, they'll all play back at once no matter which keys are played, which is no good.



4 > All the zones should be selected, but if not, click an entry in the list to the left and press **Ctrl+A**. Drag the left and right edges of any zone to resize the lot – set the range to that of your chromatic scale – eg, C0-B6. Right-click in the Zone panel and select **Distribute Ranges Equally** to have Live map the samples correctly.



5 > If you don't own Sampler, you can use Instrument Racks and Simpler. Make a new MIDI Track with an empty Instrument Rack from the browser. Select all the audio clips then drag them into the rack and click the **Show/Hide Chain List** icon, then **Key**. Look familiar? Follow the instructions in the previous step to map the samples!



6 > Simpler assumes a root key of C3 for all zones, turning our chromatic scale into a whole tone one – ouch! To correct the tuning issue, locate the Simpler that responds to C♯3 and set its **Transpose** to **-1st**; set the D3 one to **-2st**; and so on. Likewise, use ascending values as you go below C3.

Refined resampling

The techniques outlined on the previous pages are particularly attractive for their ability to turn synth patches into multisamples in a matter of minutes, or even seconds. This means that you don't have to take "time off" from your regular music-making activities to make patches, as the resampling can easily become part of your regular production workflow.

While such methods are perfectly valid, there are areas in which the resulting patches are lacking. For starters, although the note samples we've used are quite long, if you hold down a note for a while, it still cuts off because the samples aren't looped. If you're serious about resampling, and are working on building up a library of your own patches for future use, you ought to take the time to properly loop the samples – see our walkthrough below for a guide. This also means you might be able to use shorter samples, which saves on memory.

On the flip side, if you're in producer mode and keen to keep your session moving along, consider that, if you make the samples long enough, you might not have to loop them at all. Also remember that you could loop only the notes that are actually being used in your tune.

Chromatic overkill

Another issue is that we've resampled a separate note for every key of the keyboard (ie, the patch was sampled chromatically), which gives good results sonically but can use a lot of memory, especially when you get into more advanced techniques that use multiple layers of samples, velocity layers, and so on. To conserve memory, you can use fewer samples per octave – eg, four, as shown in the images on this page. You'd then have to map the samples so that each zone spans three notes: 12 divided by four is three, ie, a minor third. You may also need to set the root note for each zone in the sampler, which tells it the sample's 'natural' pitch.

Here's our four-samples-per-octave patch mapped in Kontakt

This scale uses four notes per octave, each separated by a minor third

To map a four-samples-per-octave scheme in Ableton Sampler, set the root key for each zone (for our example, that'd be C0, D♯0, F♯0, A0, C1, D♯1, etc) then use the **Distribute Ranges Around Root Key** option in the Zone panel's right-click menu. Likewise in Kontakt, use the Mapping Editor to set the root keys of each zone, then select the lot, right-click the mapping area and go for the **Auto map functions»Auto-spread key ranges via root keys** option. The notes will be mapped, centred around the root keys, to minimise transposition away from the samples' natural pitches.

In shortcircuit, you basically have to do it by hand. However, don't overlook the **Learn** buttons in the zone-editing screen (double-click a zone to get to this), as these in conjunction with your MIDI controller can make mapping a lot quicker.

Four-samples-per-octave versions of the Dominator strings patch for Live, Kontakt and shortcircuit are on your **cm** DVD.

Zoning out

One more thing: our approach so far has been to use the sampler's 'zone' functions to select notes from one big file. The other way to do it is to create individual audio files for each note, and load them all into the sampler. The former method is quick to use and easy to keep organised; the latter is better for optimising memory usage, as you can crop samples or even delete them entirely.

In most samplers, when using the 'one big file' method, you can delete a zone, but because all the samples reference the same huge file, no memory is saved. Note that, in Ableton Live, once you've sliced your audio, you can select all the clips then use the **Crop** command to create a new audio file for each one. There's a Crop option in Ableton Sampler too.

> Step by step: Achieving smooth loops

1 > For our string sound, the loop start point is placed after the initial attack/decay stage, at a point where the sound has 'settled down'. If your sampler has a 'snap to zero crossing' function, enable it - the loop points will be shifted to places where the samples cross the horizontal 'zero' line, which prevents digital clicks.

2 > Even with loop points snapped to zero crossings, you might hear a 'blip' at the loop point, caused by a rapid change in tonality. First adjust the loop points by hand, to place them at points that are tonally similar. Some samplers and audio editors can assist you here, such as Kontakt with its **Find Loop End** feature.

3 > Crossfading can create a more seamless loop by gently fading out the end of the loop as the start is brought back in. However, as Vengeance-Sound's Manuel Schleis explains on p31, this can make some sounds worse – eg, very simple waveforms can suffer from phasing issues, so watch out!

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Vengeance-Sound's Manuel Schleis on multisampling

> Manuel Schleis is the golden-eared wizard behind the massively popular Vengeance-Sound sample discs (and now plug-ins), not to mention a producer in his own right and the principal sound designer for reFX's fantastic Nexus virtual instrument. Nexus makes excellent use of layered multisampled synths and instruments, so if you want to hear how it's done – or, indeed, if you're after a source of super-slick sounds – then we highly recommend it. Who better to ask for advice on building pro patches, then, than the man himself?

For you as a producer, what are the advantages of multisampled patches?
"The endless possibilities! You are not bound by any synthesiser limitations. Need more oscillators? Need nature sounds like piano or guitars layered? Reverse playing? Samples can provide you with everything conceivable. A good multisampled patch has perfect loop points, no clipping, and no noticeable differences for each note. This is especially difficult when recording from acoustic sources."

Presumably you use the Nexus developer version as your sampler. What's it like?
"It's very, very complex. It has many more synthesiser features than most people think and goes far beyond simple sample playback and envelopes. For example, in Nexus we are working with random sample offsets, round robin and slight random note pitches to simulate the analogue behavior perfectly."

When designing a synth sound to turn into samples, what are your considerations?
"You should avoid including time-related modulations like LFOs and delays, of course (except if they're essential for the sound). For the greatest flexibility with your sampled preset, you should open all filters, even all volumes and turn off LFOs. But if something sounds unique and can't be recreated with your sampler's filter or LFO, you should sample it."

Do you record synths totally direct? Do you also resample soft synths?
"Since Nexus has so many options to alter the sampled sounds, I mostly record them dry. All EQing and processing is done afterwards. Like I mentioned above, you should never record common reverb or delay unless it's something very special. Even then, I would recommend recording it 'twice': 100% dry and another multisample 100% wet. Then you can mix them later like a send bus. I sample soft synths from time to time, but not for the basic VA sounds – I prefer my JP, Nordlead or Andromeda for that."

What is your workflow/process for turning a synth patch into a sampled one?
"I am one of the old-school guys who does everything by hand. I know there are several 'sample robots' out there, but I do not trust them at all. I record one note after the other, carefully cut the sample at the beginning and remove the DC offset/low rumble that occurs on higher notes. Lastly, I go through every file and loop it. After sampling about 20,000 WAV files in the last three years, I became very quick and experienced with this process. But it may take a lot of time in the beginning, so don't give up!

"For looping, I use Wavelab, which has some great crossfade loop functions. But be careful: you should not use crossfade looping on simple sounds like a basic square wave. The more complex your sound is, the better crossfade looping works; for all simple sounds, you have to use traditional looping."

Is it necessary to use one sample per note?
"Experience has shown that three or four samples per octave is fine for 90% of sounds. A real piano should have every note sampled; a simple synth is fine with three per octave."

Do you create sounds just for layering?
"Of course! More than half of my Nexus multisamples are meant to be just a 'part' of a bigger preset. They're often dominating a specific frequency area, and are cut where another layer should have its dominance. Some other samples are 'fillers': they have just a big stereo field or are just hissing in the highs. They can support other samples without destroying or overlaying their main characteristics."

Do you consider the frequency distribution of the sounds while making patches?
"Yes, but not before sampling. I prefer EQ'ing and making fine adjustments in the sampler or with external EQ plug-ins – a good frequency analyser is a great help. Since I'm a producer too, I know how the frequency curves of a lead or bass sound should look for them to work in the typical dance mix. I set the EQ so the customer can use the patch without much tweaking."
www.vengeance-sound.com
www.refx.com

NATIVE INSTRUMENTS
THE FUTURE OF SOUND

> Step by step Designing a fat layered pad

1 > With the wise words of Manuel Schleis still fresh in our ears, let's take a look at how we can use resampling to create lush, pro-sounding patches that won't make your CPU sweat. We start off with a patch in FXpansion's Strobe synth, from their DCAM Synth Squad suite. This sound uses 16-voice unison and the five-voice Stack feature to give a massive sound at the expense of CPU cycles.

2 > We use modulation to increase the unison and stack detune amounts during the attack phase. We've applied the **Unison2** mod source to the panning – note that we've multiplied the effect by ten using the 'via' option, to push the voices hard left and right. The filter is disabled, but we run the synth through UA's Moog Multimode Filter to warm it up (but not to obviously filter it).

3 > We're going to build up a few sounds in the same project, so that we can play them and hear how they might work when layered together. We load another Strobe, using a single-oscillator patch with a mixture of sine, triangle and sawtooth waves. We've applied the synth's filter and, again, driven it through the DSP-munching Moog Multimode Filter. This synth will supply a solid foundation to the sound.

4 > It's time to branch out from subtractive synthesis, so we use Cubase's 'spectrum filter'-based Spector synth's **Bell Like** patch. We disable the delay effect, then tune the LFOs to give an agreeable timing. The LFOs are integral to this sound, and there's no way we can recreate their effect in a sampler, so this is an example of where LFOs should be left enabled.

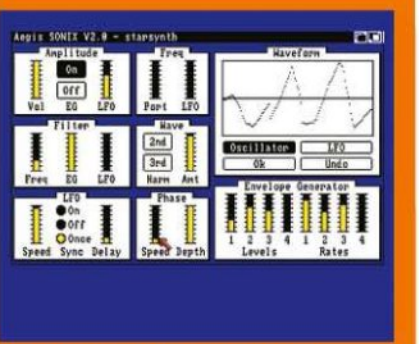
5 > We're almost ready to render, but there's something we can do first for even better results... For both Strobes, we go into the Preferences panel and crank up the oversampling (see p13's *Busting Jargon* if you're not sure what this means). This can be prohibitive for real-time use, but since we're resampling, it doesn't matter. If your synths have high-quality modes, do enable them when resampling.

6 > We now have three different sounds to render out – for simplicity's sake, we use the chromatic scale method again. Because each sound is on its own track, you can either solo each in turn and use the regular export function, or use your DAW's batch export function to do the lot in one go. You can do multiple renders of some sounds (eg, with and without filters), so that you can pick and choose later on.

Thinking outside the box

The in-the-box resampling techniques covered so far are easily adapted to capturing the sounds of hardware synths using plain old sampling. If your hardware device supports MIDI, then you're laughing, as all you have to do is pump out your chromatic scales to the hardware and record the results to an audio track. Because MIDI and old hardware can suffer from slight timing issues, you might want to zoom in to the audio and check that it's all lined up nicely on the beat once recorded. Failing that, you could shift the start points in the sampler to compensate.

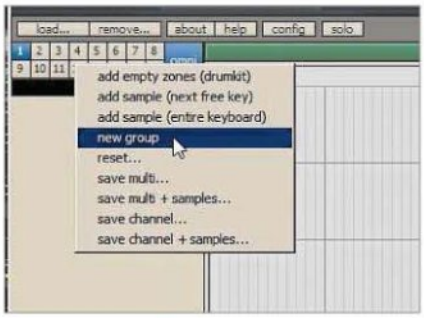
If you want to create a sampled patch from an instrument that doesn't support MIDI, you could either play the notes manually (see p34 for more on recording real instruments), or, if the device has its own sequencer, program a scale using that. We captured a patch from our elderly Commodore Amiga 500 running the equally ancient Aegis Sonix software. This program features an early soft synth that has a grungy, dirty sound all of its own. To capture the sound of one of its patches (starsynth), we programmed a chromatic scale in Sonix's notation sequencer, set the tempo as low as it'd go, then recorded it direct into an audio interface. To slice the audio, we matched the BPM in our DAW to that of the recording – this was done by zooming in to the start of notes and tweaking the BPM until the bar lines most closely matched the onset of each note. If you've got Cubase, you can use the Time Warp tool to adjust the tempo grid to match the audio. The resulting patch is on the DVD, in shortcircuit, Kontakt and Live formats.



Aegis Sonix for the Amiga generates gnarly synthesised sounds that are worlds apart from those of modern soft synths

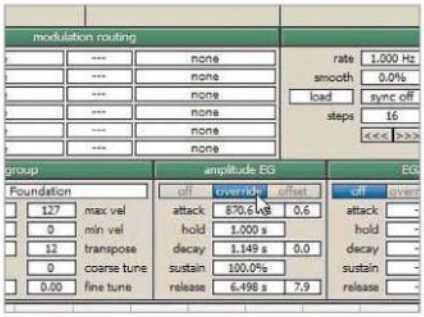
> Step by step

Layering sounds in shortcircuit



1 > We can layer the sounds created in the previous walkthrough in a single shortcircuit patch, applying effects and modulation to create one massive sound. It makes sense to put each sound in its own group, which is a container for a set of sample zones. To create one, right-click in the area to the left and select **new group** from the drop-down menu – rename it 'DCAM Unison Spreader'.

2 > We'll put each sound in its own group – to rename the group, click its green header then click the name field in the group panel. Import the audio from the DVD (in the **Lush Pad/Lush Pad samples** folder) to separate tracks, then slice the first track in your DAW (use a 30bpm tempo) and drag it into shortcircuit using the method explained in earlier tutorials – this will add it to the selected group.



3 > To import the remaining group layers, click the **(multi)** header at the top of the list, then create new groups and add the zones to them as described. You can then click the green headers to get at parameters for each group – for example, you can transpose individual layers and apply global amplitude envelopes. However, there's another method that offers greater flexibility...

4 > Some of the most useful parameters and mod sources (eg, velocity, random and keytrack) are only available at the zone level. You don't have to edit them one by one, though: select all the zones in a group by clicking the first then **Shift**+clicking the last and you can edit the lot together. Adding effects to zones (rather than groups) applies them to each active note played (but uses more CPU).

5 > Applying modulation and effects imparts movement to the otherwise static samples. We use shortcircuit's filters on the 'unison spreader' layer to add a gradually opening **LP4M** filter (low-pass four-pole Moog-style), and what's more, velocity is used to further influence the basic cutoff and resonance as well as the envelope's strength. Thus, when playing lightly, the sound is gentle and subdued.

6 > For the 'bowed glass' sound from Spector, the mod source labeled **alternate** is routed to the pan position – this causes the panning to alternate between left and right with each key played. shortcircuit's mörder OD distortion gives the sound some extra zing. When we're done, the patch is saved in a single shortcircuit multi for easy recall (note that you can save groups too).

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The real thing

In-the-box resampling is a great way to build up your sampling skills in preparation for sampling real instruments, so to round off our walkthroughs, we're going to show you how easy it can be to create multisampled patches of real instruments. We've opted to capture the distinctive tones of a toy instrument, the wonderfully zingy Zippy Zither. This cheap and cheerful little device has 12 pluckable strings, tuned in a fixed D♯ minor scale. Once sampled, though, it'll be playable in any key, as the samples can be mapped to the entire keyboard.

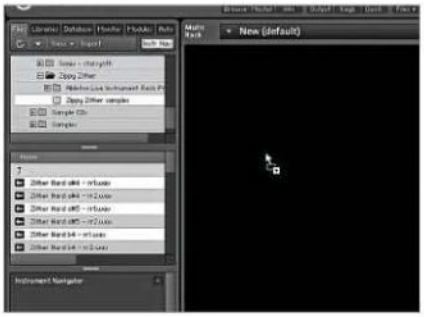
Because this instrument responds so well to touch, hard and soft versions of each note are recorded, with velocity layering used to play back the appropriate sound depending on how hard you play. Not only that, but the machine gun effect can be counteracted by using a round robin scheme: this is where you make multiple recordings of every note (and at each velocity), and the software cycles through those slightly different recordings each time the note is played. We'll be keeping it simple with just two velocity layers and two round robin layers.

As for the recording process, we use a Røde NT2-A condenser mic aimed closely at the Zippy Zither – by monitoring with headphones and using a clean digital delay set to around a second, we can play a few notes on the zither, then hear the repeat a short while later without the acoustic sound obscuring it. This makes it easier to determine the sweet spot for the mic. The hard and soft notes are recorded in separate passes, aiming to capture enough 'takes' of each note to provide at least three good ones to pick from, to be pared down to a final two.

With the takes captured, we use an audio audio editor to filter out all frequencies below 300Hz as this appears to be the lowest frequency the Zippy Zither can muster, everything below it being noise and rumble. We then delete all the bodged takes and unwanted notes, leaving just the best two examples of each. These are then selected and exported to individual files using a sensible filename format – eg, **Zither Hard d#5 - rr1.wav**. After that, we go through each sample and carefully trim the start and end – it helps to zoom the vertical axis when doing this, and turn up the volume so that you can hear the note fading into the noise floor. Remember, though, if you chop too much off the sample itself, you can't get it back, but you can always trim sounds in the sampler by moving the start and end markers.

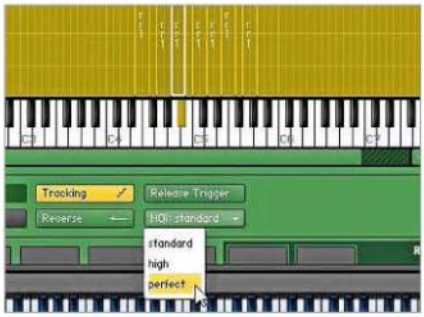
For the final touch, we set the release time of all layers as long as possible, so that they ring out indefinitely when played.

> Step by step Mapping the Zippy Zither in Kontakt



1 > The raw samples for our Zippy Zither patch are on the disc, if you'd like to follow along. To get started in Kontakt, locate the folder full of samples and first select all the samples labelled **Hard** and **rr1** (hold **Ctrl** to select individual sounds), then drag them into the main instrument area. Next, click **Edit Mode** (spanner icon) and open the **Mapping Editor**.

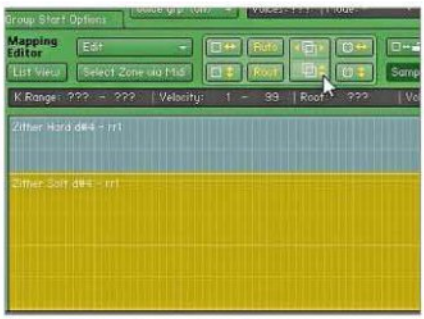
2 > Because we took care to name our sample files appropriately, we can use Kontakt's Auto map feature to map them for us. Select all the zones, then right-click them and select **Auto Map - Setup**. Where you see the note name, make sure the field below it says **Make Root Key** – all the rest can be set to **Ignore Me**. Now click **Apply**, then **Close**.



3 > Now click the **Root** button – the instrument will be mapped according to its root keys across across the entire keyboard. If you play it too low, though, it can sound a little nasty and digital; to alleviate this, scroll down to the source section of the Group Editor and set **HQI** to **High**, or better yet, **Perfect**.

4 > Now for some rockin' round robin action. Rename the group in the Group Editor to **Hard rr1**, then click the **Create Empty Group** button in the top right – name the new group **Hard rr2**, highlight it and import all the samples labelled **Hard** and **rr2** into it. Map the samples as with the rr1 group, but enable **Selected Groups only**, otherwise the automatic mapping won't work properly.

5 > Click the **Group Start Options** tab, then set the **Group Starts** field to **Cycle round robin**. Set the **Position in round robin chain** for the first group to **1** and the second group to **2**. If you play the same note repeatedly, you should now hear it switching between two subtly different sounds.



6 > Velocity layering is also easy to do. In the rr1 group, select all the zones and change the lower limit of the **Velocity** field to **100**. Import the **Soft/rr1** samples into the group and click **Resolve Overlapping Velocity Ranges** (right of the **Root** button). You'll need to auto map the key ranges, and you can adjust the volumes of the zones for consistency. Do all of this for the rr2 group too and you're done!

Resampling tips

THE 'OTHER' KIND OF RESAMPLING

As well as making instrument patches, there's another approach to resampling that's often used in dance music: instead of resampling notes, you just render out sections of your song, or elements of it (eg, a drum beat), then load them back in and use them as you please. It's also common in dance music to load samples directly onto audio tracks, rather than using a sampler. Try it with reverbed stabs and you can have some fun chopping them into tiny, stuttered pieces, reversing them, and so on.

BE MORE DIRECT

If you design patches in Kontakt, bear in mind the Direct From Disk option. Instead of loading samples into RAM, this loads just the first portion of each, and streams the rest from the hard drive when needed, greatly reducing the amount of RAM used.

MENU OF MADNESS

If you're resampling a particularly crazy synth patch, try recording a few minutes of wild tweaking, then chopping out all the coolest noises and assigning them to the bottom octave of the keyboard, to make a 'menu' of crazy noises. Thus you have instant access to the kind of unique sounds that would be impossible to create 'after the effect' using your sampler's capabilities.

SING IT LOUD

If you're a vocalist, why not multisample your own voice to make a chorus of, well, you? If you're not so sure of your singing skills, you could always Auto-Tune the recorded notes before loading them into your sampler.

TECHNOBABBLE

If vocals really aren't your forte, you could use a vocoder to make a robot choir. Record yourself making a protracted vocal sound (eg, 'Yeaaaah!') then copy that sound onto every bar of an audio track. Set up a synth for multisampling using the methods described earlier in the feature, then route the voice track and the synth into a vocoder as modulator and carrier respectively. Now render the output of the vocoder and map the resulting singing robot noises!

Fancy commanding an army of singing robots? Then set up your DAW as above and get resampling that vocoder!

We've made a custom front end for our Zippy Zither patch in Live – check it out on the disc, and open it to see how it works

AUTOMATICALLY YOURS

Speaking of robots, how about getting one to do all that tedious sampling/mapping business for you? There are various programs that can be hooked up to a MIDI instrument – be it real or virtual – to automatically trigger the notes, record them, chop them, and turn them into sampled patches. Sample Robot (www.samplerobot.com) is one such app, and it can also work with real instruments by automatically sussing out their pitch.

LIVING THE HIGHLIFE

If that's still too much hassle for you (you lazy sod), discoDSP's HighLife and Image-Line's DirectWave are both worth a look. Both of these samplers were programmed by the late coding wizard Arguru and enable you to load a VSTi directly in the interface, then click a button and have the synth patch turned into a multisampled one!

LET'S FACE IT

To make your patches more user-friendly, slap a front-end on them. Kontakt enables you to define your own Performance Views, complete with pretty graphics and controls bound to parameters of your choosing. And in Ableton Live, you can use the Instrument Racks' Macro Controls system for the same purpose. cm

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Native Instruments Guitar Rig 4 (PC/Mac)
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ISM EQISM.220 (PC)
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NUGEN AUDIO STEREOIZER CM (PC/MAC)

This month's fabulous freebie is a special edition of NuGen Audio's amazing stereo spreader - see the tutorial over the page for your complete guide to installing, authorising and using this awesome plug-in.

System requirements

PC 1.4GHz CPU, 512MB RAM, Windows XP or later, VST host.
Mac Intel Core Duo 1.66GHz CPU, 512MB RAM, OS X 10.4 or later, AU/VST host.
Web www.nugenaudio.com

This superb stereo adjustment and enhancement plug-in could well become one of your go-to mixing tools

Togu Audio Line's reputation for excellent freeware continues with TAL-Vocoder

TOGU AUDIO LINE TAL-VOCODER (PC/MAC)

Created with help from electro legends Dynamix II, this powerful vocoder plug-in from freeware kings Togu Audio Line can be used with either its internal synth or an external carrier input.

System requirements

PC VST host
Mac AU/VST host
Web kunz.corrupt.ch

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PC VST host
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Web mda.smartelectronix.com

Demo software

NI ABSYNTH 5 (PC/MAC)

The epic super synth is back in a new incarnation, with new filters, effects and Mutator features. The trial version is save-disabled and will only work for 30 minutes at a time.

System requirements

PC 1.4GHz CPU, 1GB RAM, Windows XP, VST/RTAS host or standalone.

Mac Intel Core Duo 1.66GHz CPU, 1GB RAM, OS X 10.5, AU/RTAS/VST host or standalone

Web www.native-instruments.com

Get deeply involved in the sound design world with the demo of Native Instruments' amazing Absynth 5

NI GUITAR RIG 4 (PC/MAC)

There are more axe tones than you can shake a Flying V at in the new version of NI's guitar effects suite. The demo only works for 30-minutes at a time and is save-disabled.

System requirements

PC 1.4GHz CPU, 1GB RAM, Windows XP SP 2 or later, RTAS/VST host or standalone.

Mac Intel Core Duo 1.66GHz CPU, 1GB RAM, OS X 10.5 or later, AU/RTAS/VST host or standalone

Web www.native-instruments.com

NOTORIOUS NOTES SONGFACTORY (PC)

Simply supply the chords and set the tempo, and SongFactory will timestretch and pitchshift the included samples to fit! This demo will function for 14 days before expiring.

System requirements

PC 1.5GHz CPU, 1GB RAM, Windows XP

Web www.notoriousnotes.com

ISM EQISM.220 (PC)

This parametric equaliser demo will work without limitation in 2nd order mode – anything higher and it will add noise to its output.

System requirements

PC VST host

Web www.ismism.de

PROGRESS AUDIO KINISIS (PC/MAC)

Sculpt new sounds with this innovative Timeline-based synth. The demo won't load patches and is limited to 30-minute sessions.

System requirements

PC Windows XP, VST host

Mac OS X 10.4, AU/VST host

Web www.progressaudio.co.uk

Guitar Rig 4 adds even more amps and effects to an already full-on piece of kit. You can try out all the new features in the demo version

FLUX SYRAH (PC/MAC)

Give your mixes more punch with this transient processor. The trial version requires Pace drivers and is save-disabled.

System requirements

PC Windows XP or later, RTAS /VST host

Mac OS X 10.4 or later, AU/RTAS/VST host

Web www.fluxhome.com

WAVE ARTS TUBE SATURATOR (PC/MAC)

An ultra-accurate tube amp simulator. Don't get too attached, though, as the demo will expire 30 days after installation.

System requirements

PC Windows 2000, VST/RTAS/DirectX host

Mac OS X 10.4, AU/RTAS/VST host

Web wavearts.com

CABLEGUYS FILTERSHAPER 2 (PC/MAC)

Shape your sounds with this flexible filter effect, complete with in-built LFOs. This version is free if you stick to a single instance and the supplied presets, otherwise it becomes save-disabled.

System requirements

PC VST host

Mac VST host

Web www.cableguys.de

USING THE DVD INTERFACE

1 Put the DVD-ROM in your DVD drive, let it spin up, and wait for the interface to appear. If it doesn't autorun, browse to it in Explorer/Finder and double-click **Computer Music for OS X** or **PC**, as appropriate. Read the disclaimer and click **Accept** when you're done.
2 The main interface will open. Mouse over the links for each section to get a brief description of their contents, and click on your button of choice – in our case, **Software**..
3 An Explorer/Finder window will open, showing you the contents of that folder. Any executable files can be run directly from the DVD by double-clicking them. Demos are generally presented as installer applications, but check any Readme text files for additional installation information.

PROGRAMS & PLUG-INS

Most of the programs on the DVD-ROM are presented as installers – simply double-click the installer icon and the application does the rest. However, plug-ins are often presented as .dll (PC), .vst or .component (Mac) files. To 'plug' the plug-in into your VST/AU host, just copy the plug-in file into your VST or AU plug-ins folder, as appropriate.

SAMPLES

Every month we give you a wealth of royalty-free samples! You can use them in your music in any way you see fit, without having to pay a penny, even if you end up commercially releasing your work. The only thing you *can't* do is redistribute them as samples – eg, by making a sample CD with them. To install our samples, simply copy them to your hard drive.

>Exclusive full software! PC MAC

NuGen Audio Stereoizer CM

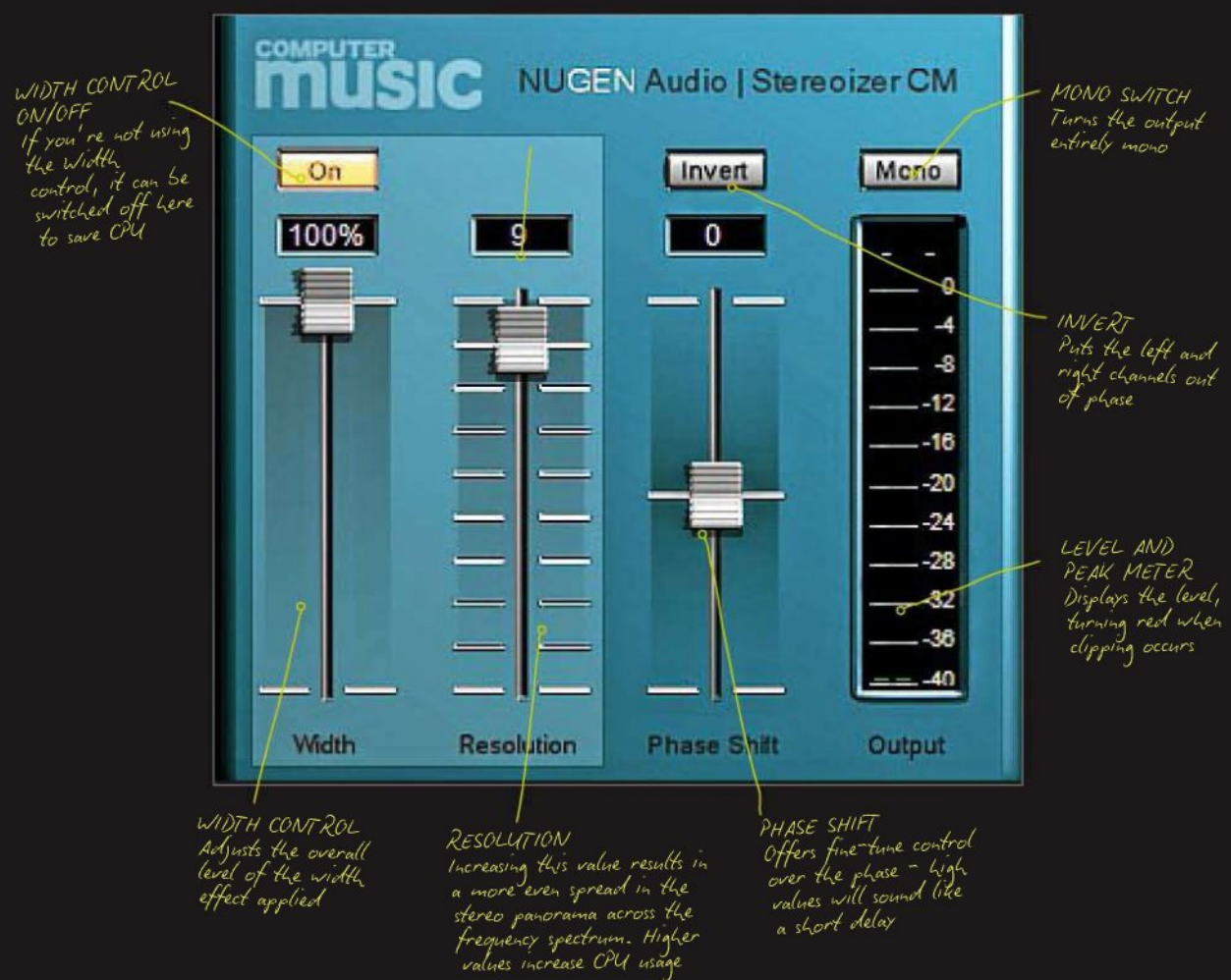
cm DVD
ON THE DVD
FULL SOFTWARE
Stereoizer CM is in the **Full Software** folder

This easy-to-use mixing tool is great for adding width to your tracks and checking your stereo mixes in mono. Here's how it works...

> Stereo sound may have been with us for decades, but advances in music technology are constantly giving us new ways to explore, manipulate and generally get the most out of it.

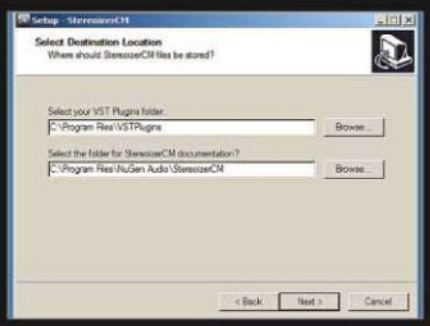
This month's exclusive *Computer Music* software is an incredibly useful mixing tool that will give you greater control over your stereo mixes than ever before. NuGen Audio's Stereoizer CM is a special edition of the developer's Stereoizer effect, which uses clever processing to make stereo images wider and turn mono audio tracks into stereo. Unlike most similar effects, though, it gives you a high level of control over the distribution of the audio input across the stereo panorama with separate width, resolution and phase shift controls, plus the ability to mono-ise the mix at the click of a button – a handy tool in its own right that's very useful for checking the effect that stereo processing is having on your mono mix.

In this tutorial, we'll show you how to install and authorise the software, explore each and every one of the controls, and demonstrate exactly how you can use it to enhance your tracks. We'll also give you some tips from the developers on getting the most from Stereoizer CM, and find out a bit about the inner workings of the software. Enjoy!

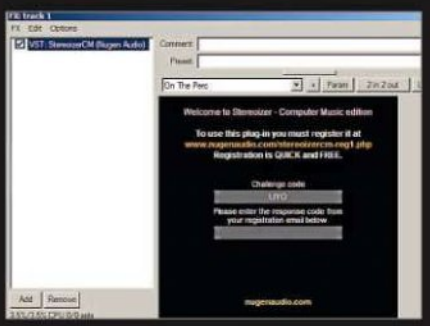


> Step by step

Installation and basic operation



1 > Head to the **Software/PC Software/Full Software/NuGen Audio Stereoizer CM** or **Software/Mac Software/Full Software/NuGen Audio Stereoizer CM** folder on the **cm** DVD, run the installer and follow the instructions. PC users should install the plug-in to their shared VST folder – check out the **Beginners Start Here** PDF in **CM Studio/CM Studio Tutorials** for more info.



2 > Load your plug-in host. We're using Reaper, which you'll find in **Software/PC Software/Library** or **Software/Mac Software/Library** on your **cm** DVD. Create a new audio track and add Stereoizer CM as an insert effect. The first time you run the software, you'll be asked to register it. Copy the **Challenge** field, then click the link to open the registration page.

3 > On the registration page, enter your challenge code, name and email address, then click the **Submit** button. You should receive the response code in your email inbox right away. Copy the code and paste it into the **Response code** field on the plug-in's interface. Press **Return** and your new processor will be activated.

4 > Copy the folder **Tutorial Files/Stereoizer CM** folder from the DVD onto your hard drive, then drag **Stereo Beat.wav** onto the audio track you created. Simply having the effect on the channel enhances the stereo width of the sound. Deactivate the stereo enhancement by clicking the **On** button above the **Width** fader. This gives us the unprocessed sound.

5 > With the **On** button active, turn the **Width** fader all the way down. Listen to the sound as it is, then turn the **Width** all the way up. Listen to the very edges of the stereo mix – the sound should now be really quite wide.

6 > To get an even more exaggerated effect, turn up the **Phase Shift** fader. This won't push the edges of the mix out further, but it will spread the centre of the mix out more. This is useful if you have a track with a lot of information in the centre that you don't want to lose, but that you equally don't want to be clogging up the middle of your mix.

7 > The **Invert** switch above the **Phase Shift** fader inverts the phase of one side of the incoming signal. This can be used to easily add a lot of width, but it can also cause phase cancellation, depending on the input signal, so watch out for that. You may want to check the output in mono, which can be done by clicking the **Mono** button above the output.

8 > The peak hold level meter will show you if digital clipping occurs. Even if the audio input doesn't exceed 0dB, applying processing in Stereoizer CM may cause it to digitally clip, causing the peak level to turn red. If this happens, you'll need to turn down the level of the audio input to avoid distorting the sound.

9 > Stereoizer CM enables you to fine-tune its faders by holding down the **Shift** key when you move them, giving a much more accurate level of control. If you want to enter a specific value, double-click the fields above the fader and type it in. To reset a fader to its default value, hold **Ctrl/Cmnd** and click it.

> Step by step Using Stereoizer CM in the mix

1 > Let's take a look at how you might use Stereoizer CM in a mix. Start a new project in your DAW, create a stereo audio track and drag **Mono Pad** onto it. We're going to use Stereoizer CM to make the sound stereo, which is why we suggest creating the stereo track yourself manually – some DAWs will automatically create a mono audio track when a mono audio file is imported.

2 > Add Stereoizer CM as an insert effect. The **Width** control is set to **100%** by default, so the mono pad will be transformed into stunning stereo. The **Resolution** control affects the fidelity of the stereo-enhancing effect – turn it up to maximum for the slickest possible sound.

3 > To get an even bigger-sounding stereo spread, turn the **Phase Shift** control fully up and activate the **Invert** button. To compare our lush new stereo panorama with the mono original, use your DAW's plug-in bypass button to listen to the unprocessed sound.

POWER TIP

>Monomania

If you want to maintain full mono compatibility on tracks with Stereoizer CM inserted, restrict yourself to using the Width and Resolution controls. When you activate the Mono button, you'll notice that all the information is retained. If you use the phase controls, the mono signal will be compromised – depending on the settings used, you'll notice lost information or delay-style effects when the signal is summed to mono. If you're not worried about maintaining mono compatibility then feel free to use the phase effects with wild abandon.

4 > If you try sweeping the **Resolution** or **Phase Shift** controls, you'll notice that you get so-called 'zipper' artifacts. However, the **Width** control can be swept smoothly. What's more, you can automate this parameter to increase or decrease the stereo width of a sound dynamically in your mix, which is incredibly useful for getting a bigger sound in some sections and a smaller one in others.

5 > Another useful application for Stereoizer CM is to put it on a send effect that you don't feel has a wide enough stereo spread, delays and reverbs being the obvious examples. Indeed, you can use it in conjunction with the mono-only MegaDelayMass CM plug-in in the **CM Studio** to create a cheeky faux-stereo delay effect.

Stere-ere-o

Stereoizer CM is a bit more sophisticated than most similar stereo effects, which usually utilise the Haas effect or stereo EQing to create their sense of space. We asked NuGen's Jon Schorah how their effect works.

"We detect the position of sounds between left and right in two ways. Firstly, we use the Inter-aural Intensity Difference (IID), or in plain English, how loud something is. The difference in level between each ear gives us clues for localising the position. The second method is the Inter-aural Time Difference (ITD), or more simply, the delay between a sound arriving at the nearest ear, then the other. Stereoizer uses both. By varying the density and intensity of the IID in different frequency ranges, and by shifting the ITD in the original signal, a stereo space is enhanced or introduced.

Do you have any tips or techniques for Stereoizer CM users?

"Pop it on a track and have a run through the presets. Stereoizer is great for filling out pad sounds and adding a bit of sparkle to percussion loops. It's also really good at making space for vocals in a mix, especially when a mid-heavy sound, such as an electric piano or guitar, is sitting in important central frequencies. With Stereoizer, you can avoid using heavy EQ, which can spoil the sound – instead, you just 'move' it out of the way.

"I think stereo mixing is often undervalued. Many artists seem to stick with the pan controls on the DAW and seldom look much further. There is a whole world of stereo complexity that can be introduced using tools like Stereoizer and stereo EQs, especially those that enable Mid-Side control. Paying attention to the bottom-end can also add a bit of punch that's easily lost if the bass in not handled properly. Stereo tools can really enhance the feeling of space in a mix, while allowing the solid central components (bass, vocals, kick, etc) to sit with even more clarity and definition."

What extra features does the full-on Stereo Pack version provide?

"The full version also provides what we have called 'Linear Width', which takes a stereo signal (either original or generated), and enables the width to be expanded further (or reduced if required). If the image is a little too static, there's a dynamics control, which introduces movement into the stereo image. You can check out Stereoizer at NuGen Audio's website: www.nugenaudio.com.cm

>Royalty-free, pro-quality sounds!

2041 samples PC MAC

cm DVD
ON THE DVD
SAMPLES
All of these sounds are in the **Samples** folder, just as you'd expect!

This exclusive collection of pro-quality vocal samples features everything from soulful ad-libs to old radio snippets and FX

2041 24-bit cm Vocal samples

From full-on diva vocals to vintage sound-bytes and atmospheric effects, these samples have a little something for everybody. We've enlisted the talents of dance music diva DMO, perfectionist producer Hattrixx, experimental noise wizard rachMiel and singer-songwriter Louise Coady to provide a rich and varied larynx-based library of sounds.

DMO

Delightful dance doyen Donna-Marie has given us a plethora of floor-filler vocals, Auto-Tuned effects and esoteric vocoded snippets from her more introspective side.

172 pop and dance vocals
77 Auto-Tuned vocals
50 delayed vocals
31 harmonic vocals with reverb
75 vocoder vocals

www.myspace.com/dmomusicproductions

Hattrixx

Secreted in his north London lab, Hattrixx has created a wide variety of highly processed vocals sounds with which to spice up your tracks.

307 distorted lo-fi vocals
120 chordal vocals
205 vocal snippets
100 vocal snippet grooves
103 vocal FX

www.hattrixx.co.uk

rachMiel

Our resident sound-mangler's samples left us speechless, so we'll let the man himself explain: "Sources run the gamut from old radio shows to TV ads, industrial films, animal sounds, shrieks of childbirth, a solo soprano, language-music trio and screaming mimi's."

100 F'loom vocals
100 sound-byte vocals
100 processed vocals
100 old radio vocals

www.rachmiel.org

Louise Coady

Bristol-based singer Louise has used the short bursts of quiet time between the wailing sirens of the vibrant Stokes Croft area to create a selection of funky ad-libs, warm chords, ambient effects and handy spoken word snippets.

257 ad-libs
73 vocal chords
30 vocal FX
40 spoken word vocals

www.myspace.com/cloudbreakhigh

Treat your latest production to the silky vocals of Louise Coady

Sample and video playback

cm videos are presented in MOV format, which means that you need QuickTime, QuickTime Alternative or VLC installed on your system to play them. Macs feature QuickTime as standard, and PC owners who don't have QuickTime installed can use VLC instead. VLC is an open-source media player that can handle pretty much any format you can throw at it – you'll find it in the VLC Media Player folder on the cm DVD. VLC is also recommended to Windows users who find that 24-bit samples won't play back in their Windows Media Player. For the latest version, go to: www.videolan.org

Producer Masterclass Video

Artist **Shut Up & Dance**

Shut Up & Dance have been plying their trade for 20 years, so it's fair to say they know a thing or two about rocking the funky beats. In this exclusive video, the duo take us through a work in progress, complete with brutal breaks, monstrous basslines and soulful samples, all in Logic Pro.

Web **www.shutupanddance.co.uk**

HAVING PROBLEMS?

In the unlikely event that you have trouble with your disc, send an email to **support@futurenet.co.uk** and they'll help you out. Please do not phone us, as we don't give technical support over the telephone!

If you experience a problem with your software, you should first refer to the software manual. This is often delivered with the software itself or is sometimes placed on your hard drive when you run the Installer. If you find that you don't understand some of the features of the software, remember to read the manual first. Should you be unfortunate enough to run into any technical difficulties with the software, it is often best to get in touch with the developer of that software – they are probably better-equipped to offer you the support you need than we are.

BROKEN DISCS: If your disc is corrupt, cracked or otherwise inoperable, we'll send you a spanking new replacement within 28 days. Send the DVD to: Disc Department, Reader Support, Future Publishing, CMU147/January/10, Bath BA1 2BW. And don't forget to include your full name and address!

cm STUDIO

Our exclusive suite of applications, instruments and effects is on the DVD every month – it's quite literally all the software you need to make great music now!

APPLICATIONS

XT Software energyXT2.5 Core CM (PC/Mac/Linux)
VST host and sequencer with modular routing

Outsim SynthMaker CM (PC)
Create your own VST synths and effects

INSTRUMENTS

Sugar Bytes Artillery2 cm Edition (PC)
Multi-FX with internal sequencer

Ummet Ozcan Genesis CM (PC)
Another amazing virtual analogue synth

Muon CMplay (PC/Mac)
Powerful ROMpler instrument

Dominator (PC)
Virtual analogue synth with a classic feature set

u-he ZebraCM (PC/Mac)
Amazing virtual analogue synth

LinPlug AlphaCM (PC/Mac)
Subtractive synth with ring and amp modulation

Homegrown Sounds Astralis CM (PC)
Modulation-heavy 'soundscape' synth

Homegrown Sounds Astralis Orgone CM (PC)
Flexible sample-based synth

XT Software EnergyCM (PC/Mac)
Analogue-style sequencer

XT Software Energy Pro (PC)
Step sequencing analogue-style synth

Fabfilter One 2.01 (PC)
Beautiful-sounding single-oscillator synth

Kotkas Paax 3 CM (PC)
Feature-packed soft sampler

Odo Synths Unknown 64 CM (PC)
C64 SID chip-emulating VSTi

Krakli CMorg (PC)
Vintage organ instrument

AlgoMusic ElectraBass Rack CM (PC)
Easy to use bass synth that's packed with presets

Humanoid Sound Systems Scanned Synth CM (PC)
Create abstract noises and haunting instruments

Muon CM-101 (PC)
Analogue-style VST synth

Muon SR-202 (PC)
16-pad VST drum machine

START HERE

Get the cm Studio installed with our easy-to-follow PDF guides! They're on the DVD, in **The CM Studio/CM Studio Tutorials** folder.

Muon CM-303 (PC)
Emulation of the classic Roland TB-303 synth

Muon DS-404 (PC)
Powerful 16-part multi-timbral VST sampler

LinPlug CM-505 (PC/Mac)
Analogue drum synthesis made easy

EFFECTS

Image-Line CM Vocoder (PC)
Special cm version of FL Studio's FL Vocoder

Aixcoustic Creations Electri-Q CM (PC)
Sweet-sounding and flexible equalisation

Martin Eastwood CompressiveCM (PC/Mac)
Compressor/limiter with sidechain input

Audio Damage Pulse Modulator (PC/Mac)
Wild, stompbox-esque modulation effect

Betabugz Vascillator (PC)
Semi-modular feedback delay multi-effect

Image-Line CM WaveShaper (PC)
Flexible wave distortion effect

PSP Springverb (PC)
Authentic VST spring reverb effect

SimulAnalog Guitar Suite CM (PC)
Plug-ins modelled on classic guitar effects and amps

Ohm Force Ohmygod! (PC/Mac)
Crazy resonant/comb VST filter

Camel Audio CMFuzz (PC)
Quick and dirty distortion

Intelligent Devices MegaDelayMassCM (PC/Mac)
Sound design-orientated delay module

Put Homegrown Sounds' Astralis CM to work on your moody soundscapes

cm Studio session
Punchy bass sounds

PC MAC

cm DVD
ON THE DVD
FULL SOFTWARE
u-he's ZebraCM synth, which we're using here, is in the **CM Studio** folder

We show you how to create dynamic bass sounds for a variety of dance styles, using nothing but the awesome ZebraCM plug-in and a little know-how

> If you make dance or up-tempo electronic music, creating that perfect bass sound can be very tricky indeed. Getting the balance between a punchy, cutting mid-range and a deep, warm and full bottom-end can be a real challenge. However, the **cm** Studio has the answer in the shape of ZebraCM, which, when combined with a few simple sound design tricks, can deliver huge, driving, cutting-edge dance basslines.

While a pure sine sub-bass can be useful for filling out your low end, it's not the punchiest of sounds, and if you don't have high quality monitoring in your studio, you may not even hear it at all! Using more complex oscillator shapes, such as a square wave, can give you a beefier sound but can also take up too much mid-range, and simply applying a static low-pass filter to a square wave can result in a dull, lifeless bass sound.

The key to getting dynamic bass tones, then, is modulation. While modulating the pitch of a bass sound is a good way to give it a little more in the way of percussive attack, there are some subtler ways to get a punchy sound...

In this tutorial, we're going to use a combination of filter cutoff frequency and hard sync oscillator pitch modulation to create a bass sound that stays at a fixed pitched but still has enough punch to give your speakers a good battering.

> Step by step
Creating punchy bass sounds with ZebraCM

1 > Launch your DAW. We're using energyXT2.5 Core **cm** Edition here, which you can find in the **CM Studio** folder. You'll also need ZebraCM installed – if you're not sure how to do this, check out the **Beginners Start Here** PDF in the the **CM Studio/Tutorials** folder. Create an instrument track and load up ZebraCM.

2 > Draw in a D2 note on the instrument track. The default ZebraCM patch is a bit flabby, but we can tweak it to our heart's content. The secret to this sound is ZebraCM's dedicated hard sync oscillators. Activate both oscillators' hard sync options by clicking the **Sync** buttons in each section.

3 > We're going to use the second envelope to modulate the hard synced oscillators' values. To do this, right-click **Env1** on the knob underneath the first oscillator's sync level knob and change the source to **Env2**. Repeat this for the second oscillator and set both modulation levels to **24**.

4 > **Env2** also modulates the filter cutoff frequency. Currently it's modulating a little too much, so reduce the Env2 modulation level in the filter section to **40**. For the biggest sound possible, set both oscillators' voices to **Quad** mode, and detune them to **-36** and **+36** respectively. Set both oscillators' reset buttons to **On**.

5 > Square waves are better for producing banging basses than sawtooths, so set both oscillators' **Wave** values to **2.00**, which adjusts them to a pure square wave. We want the sound to be as loud as possible, too. The first oscillator affects both oscillators' volume levels, so turn its **Sustain** level up to maximum.

6 > Turn the second envelope's **Decay** down to get the sort of feel you're after – we found that **24** gave us a punchy sound. You can get even more impact by turning the filter's **Res**onance and **Drive** up – a setting of **12** for each is good. Finally, tune one of the oscillators down a semitone to get a deeper sound. **cm**

Reader music

Four brave readers hold their latest tracks up to the scrutiny of our expert producers and engineers

cm DVD
ON THE DVD
READER MUSIC
Do you agree with our comments? Go to the **Reader Music** folder and have a listen to all four tracks yourself

Send us your music

For the chance to be featured in *Reader Music*, simply send us your track via the SoundCloud DropBox on our website (see the walkthrough below for instructions), along with a description of your act, an image (sleeve art, photo or logo that you own the copyright to), and your equipment list. Be absolutely certain that no copyright samples have been used! The best tracks we receive each month will be reviewed here and featured on the **cm** DVD, so send yours our way today!

Rules:
1. Send no more than two tracks
2. Submit your track(s) via the SoundCloud DropBox on our website
3. The audio and MIDI files used must all be original and/or royalty- and copyright-free

XAVIER J
Dancing All Night

Artist Xavier J
Contact www.myspace.com/xavierj

> This is another pioneering moment for *Computer Music*: our first review of a track from SoundCloud! We should have started digital submissions a long time ago judging by the response we're getting, and the overall quality is stunning.

Dancing All Night does pretty much what it says on the tin. It's a four-to-the-floor disco beat, with infectious vocoded vox in the warped tradition of French house. The chorus, although perhaps lyrically challenged, is a very strong hook, and it's ingenious in the way Xavier structures the harmony and answers the synth riff.

There's some uncomfortable modulation of the top-end instrumentation by the mix compressor pumping to the kick drum that could be avoided by using multiband compression. You can hear what it's doing when the kick drum drops out and the synth riff becomes more even.

The bass sound is weighty, but it feels like it needs to be more solid or consistent – the filtering causes it to weigh anchor and the track drifts away because of the 'shushy' backbeat. Despite these faults, though, this tune still works well as a whole.

What the artist says:

"French house-inspired dance-pop track with heavily distorted layered sounds. My influences are French bands like Daft Punk and Justice, electro house and 80s hi-NRG such as Dead or Alive and Divine. I wanted to make a fun electro-pop track to balance out my darker music."

Equipment used **Ableton Live 8, Focusrite Liquid Mix, Access Virus TI, D16 Group Drumazon and Decimort, Togu Audio Line TAL-Elekt7o, Antares Auto-Tune**

TRUANT
Hybrid Love

Artist Matt Corker
Contact www.myspace.com/truancytunes

> There's something very frustrating about this track, probably due to the inherent limitations of working with a finite vocal sample and the fact that there's a germ of a great tune here, but without a real vocalist, it won't ever be realised. The intro is by far the best section – it's full of tension and promise. Getting into the meat of it, there's a repetitive phrase that gives neither a definite verse or pay-off chorus, but meanders between the two.

This problem could be resolved by initially losing the top synth line, because it interferes, and at some point clashes, with the vocal, then bringing it back at a lower level for the chorus. Here, too, Matt could treat the hook line differently, so it sticks out between the counter melody line, perhaps even underpinning it with a vocoded vocal or something similar.

The dynamics of the track work – the drop in the middle makes for a good arrangement. The beat is strong, and the eighth-note delay on the bassline enhances a simple phrase – but nothing is going to bring fulfilment like a real vocalist.

What the artist says:

"This track was created using Vocal Forge, a house drum loop, Battery for claps and snares and Albino for the bassline, which I split into two tracks and made one a sub bass echo. Lastly, I added synths to match the vocals and for the middle part. All with FX and EQs."

Equipment used **P4 PC 2GHz, Steinberg Cubase SX, NI Battery, Disco DSP Discovery Pro, Rob Papen Albino, Zero-G Vocal Forge, PSP VintageWarmer, Antares AVOX and Auto-Tune, Kjaerhus Audio Classic Chorus and Compressor, Cockos ReaEQ, M-Audio MIDI controller**

SOUNDCLOUD

SoundCloud makes sending and receiving music easy. Anybody can sign up for a free account and start sharing tracks straight away, although you don't even have to do that to submit your track to *Reader Music*...

1 > Go to **www.computermusic.co.uk** and look on the right-hand side of the page for our SoundCloud DropBox widget. Click **Send me your track**, then **Choose a file** and select your track.

2 > Enter *all* of the following in the **Track description** box: track name, artist name, your name, email address, website (or MySpace), equipment list and a brief description of how your track was made.

What's wrong with my mix?

Versatile engineer and producer Mark Frith casts his considered professional opinion on this month's featured reader track

Producer/engineer **Mark Frith**

A multi-instrumentalist and extremely talented producer/engineer, Mark is just the man you need at the controls of your session. The sheer range of artists he's worked, from Futureheads and Electric Soft Parade to Clare Teal, is testament enough to his skills behind the desk.

THE ELECTROBANK PROJECT
Saigon

Artist Glenn Hanstock
Contact www.myspace.com/theelectrobankproject

> This is a major first for *Computer Music* in that it's an audio-visual submission – you can watch the pairing on the DVD. The impact of the work as a whole is undeniably heavy, and to just talk about the music in isolation is missing the point. What is interesting to note is the necessary simplicity of both the music and the imagery, so that in combination, you aren't swamped. It's a fine marriage, as neither stand up entirely by themselves.

The music is based around a repetitive theme, with the dynamic developed by means of multiple layering. Frequency and space are used to build and drop the size of this theme to great effect. There are some good harsh tones that pan from side to side, and the beat builds up behind these. The drum sounds could be punchier – they're a bit flabby, but are anonymous enough. Occasional vocal phrases punctuate the piece later on, and there's some sonic spice throughout from interesting sounds coming and going.

What the artist says:

"*Saigon* is my first experiment in synchronising sound and image. Electronic music has always been moving towards a totally immersive sensory experience, rather than just an auditory one. Started in Reason 4, where the melody was written, it was ReWired into Logic to record vocals, use ES2, Addictive Drums and PSP plug-ins."

Equipment used **Apple MacBook Pro 2.5GHz, Apple Logic Pro 7, Propellerhead Reason 4, XLN Audio Addictive Drums, PSP plug-ins, Steinberg WaveLab, Waves Platinum bundle, M-Audio Mbox mini, Shure SM58, KRK Rokit 5 monitors, M-Audio Axiom 49 MIDI controller**

3 > Click **Upload new artwork** and choose an image. Confirm that you agree to SoundCloud's **Terms of Use** towards the bottom of the screen, hit **Send Track** and you're done!

TECNOCTITLAN
Keep Calm And Carry On

Artist Emma Smith
Contact www.myspace.com/tecnoctitlan

> This is one of the most radio-friendly tracks I've heard from **cm**'s readership. A strong song stylised into contemporary, glam-rock, electro production territory, with a great vocal and a deadly hook. The current listening public requires no more.

The formulaic arrangement is tried and tested: intro, verse/bridge/chorus twice, with a double chorus before the middle eight, then a drop and build to the end. The only departure being the lack of a full chorus at the end, which is surprising.

There are a couple of problem sections. The bridge and, in particular, the segue from the verse feel awkward. The stop before the first bridge lends too much weight to it, and in combination with the voicing and sound of the top chords, it builds too soon. Here, the end of the bridge provides a good entrance to the chorus, but the beginning doesn't.

The other problem section is the build after the middle eight, where the focus is lost. It might be the balance, where the male backing vox should be louder, and although the intensity drop is good, something needs to lead the ear through it. Likewise, the female backing vocals in the outro need to be louder because they're not just supporting the lead vocal line.

The instrumentation is pretty faultless. The glam-rock beat with electro sounds and distorted guitar are a winner, and the synths provide great support. I'd like to hear peripheral sounds on the second or third listen, especially in the chorus: odd noises and effects, low-level percussion, etc.

The second verse triplet additions are most welcome, as is the piano colour in the middle eight, which could be a touch louder in the mix. The triplet feel could even work as a percussive motor in the chorus, too, rather than keeping the same dotted pattern throughout.

Overall, this electro-glam track is very well conceived and put together. I can hear it on the radio already.

What the artist says:

"We were inspired by the WWII posters and wanted to write a song that tells the story of a young man lost in a haze of war videogames that influenced him into joining the army and losing his life in combat. The track was recorded at Ariel's home studio."

Equipment used **Apple Mac dual 2.5 GHz G5, Edirol FA101 and Focusrite Saffire interfaces, Apple Logic Pro 8, FXpansion BFD, Spectrasonics Stylus RMX and Trilogy, Big Fish Audio Drums Overkill, Synthogy Ivory Pianos, D16 Group Devastator, Ohm Force Ohmicide, Neumann U87 mic, Focusrite Penta compressor, Gibson Firebird guitar, Waves, Sonalksis, Native Instruments and PSP plug-in bundles**

Shut Up & Dance

cm Producer Masterclass

The production duo who shot to infamy with the 1992 single *Raving I'm Raving* are still making music some 20 years after forming – we find out how they manage to keep things fresh

cm DVD

ON THE DVD

Watch Shut Up and Dance in action in our exclusive video tutorial!

Starting a revolution

> Smiley and PJ, who count Shut Up and Dance as just one of their aliases, are the unsung heroes of the UK's dance music scene. True pioneers of the UK breakbeat sound, SUAD also helped lay the foundations of jungle, hardcore and DnB by fusing sped-up hip-hop breakbeats with sounds from reggae, house and techno.

"Back in the day, we were into the whole hip-hop culture thing," explains PJ. "We were both body poppers and breakdancers, and we used to go to all the gigs."

"All we did when we started making music was to take the beat from our hip-hop collection, then speed it up. We were the first to do it like that, speeding it up to a more danceable tempo like 125 or 130. We just wanted to make music you could dance to, hence the name Shut Up and Dance. We had a soundsystem called Heatwave, with me, Smiley, his twin brother DJ Daddy (a reggae MC) and our DJ, Hype. He wasn't called that back then, though! Hype was on the decks, cutting up all kinds of stuff and we were rapping over the top. Because we've both got love for all types of music, it naturally just started coming out in what we were doing. So the bassline would usually have the reggae influence and the beats the hip-hop influence. When we started producing, we used to spend a day just on the beat, which is the backbone. For a lot of people, a beat is just a beat, and they'll throw everything on top, but we'd spend time trying to get this beat right. And if that beat's right, you've got something there before you've even gone any further."

Smiley chimes in: "When we started making music in the late 80s, the beat was just the beat – it wasn't king. But we felt you had to spend a lot of time on the beat, and a new sound was born."

Shut Up and Dance are fully softwared up, but they do still prefer to get their hands on a real desk when it comes to mixing

> "*£10 To Get In* set the template for hardcore rave and jungle, with sped-up hip-hop breaks"

Setting the scene

He isn't exaggerating: SUAD's 1989 12" *£10 To Get In* set the template for hardcore rave and jungle, with a combination of sped-up hip-hop breaks, the housey 303 bassline and kick loop from Ten City's *That's the Way Love Is*, a vocal hook from Suzanne Vega's *Tom's Diner*, and some ragga vocals. It sounds primitive by today's standards, and to be fair, it was: "We had a Digitech sampler that only sampled for 7.4 seconds and everything was recorded to a Tascam four-track," remembers Smiley. "If you listen to *£10 To Get In*, you can hear where the beats are being triggered each time, because it wasn't MIDI!" adds PJ.

An Atari ST with C-Lab and Akai S series samplers brought SUAD into the sequencer age, but even as late as 1995, the pair were working their mixdowns 'live' on the desk, riding the mutes and faders rather than handling things purely in the sequencer. Eventually, though, the lure of the virtual studio would become too strong.

"In 2001, we got more into the computer. We would still revert to samples, as we didn't think most virtual instruments gave us good sounds – we still had to hunt through our record collection to get that nice stab or that nice sound. There's a guy called Alex whose engineering name is Lex Luthor, and he taught us everything we know in terms of technology, really. Now we use Omnisphere, Trilogy, Massive, Korg Legacy and loads of other plug-ins."

Shut up and Dance let us into their North London studio to witness the development of a new track. Check out the following walkthroughs and accompanying video on the **cm** DVD to see how they make their trademark breakbeat-infused sounds in software. And if you like what you hear, be sure to check out their recently released best of album, *How the East Was Won*, which features some choice highlights from the duo's illustrious 20-year career.

Web **www.shutupanddance.co.uk**

> Step by step

Behind the scenes of Shut Up and Dance's latest work in progress

1 > The first element of the track, is, unsurprisingly, a breakbeat taken from SUAD's enormous collection. This is dropped onto an audio track in Logic, sliced and edited. It's then put through a limiter to tame any extreme peaks and make the break as loud as possible.

2 > "When you're running a breakbeat, you want to make it a bit phatter in this day and age, so you'll want to run a kick with it," Smiley advises. A thumping kick is added on another audio track and positioned to play at the same times as the kick in the break. A snare is also dropped onto the audio track below on every other beat, creating a two-step pattern that compliments the break nicely.

3 > "We try not compress our kicks or snares, cos we find when you compress the kick or the snare, it takes something away from it," says Smiley. However, the snare, kick and break are all EQed to help them punch through the mix as a whole.

> Step by step

Behind the scenes of Shut Up and Dance's latest work in progress (continued)

4 > Spectrasonics' Omnisphere is used to create the track's big, ravey riff sound. A tweaked version of the instrument's **Badboy Glideshop** patch is run through Logic's Distortion II effect to dirty it up a bit. EQ is used to bring out the sound's high-end. "It doesn't have to have too much bottom-end, because the bass is going to do that for us," explains Smiley.

5 > This track features a vocal, which has cymbal crashes added over the top to make it sound more like a sample. This is then loaded into Kontakt, where keyzones are used to trigger the sample from different points. Before the drop, one section of the vocal is looped and automated to bring up its volume.

6 > To beef up the vocals, Logic's Compressor effect is applied, and to make it more intelligible, Logic's Speech Enhancer plug-in is used. "This brings out the vocals even more without making them sound more metallic or digital," Smiley explains.

7 > At the drop, another breakbeat is added on top of the intro break. This is compressed to make it louder. The kick drum pattern changes at this stage, too, so that it plays on the first and third beats, creating a four-by-four feel, rather than the two-step intro.

8 > The bass sound is made using a sample from an older SUAD track. This is loaded into two EXS24s, with Logic's EQ used to high-pass one and low-pass the other. This makes it easier to balance the level of low and high frequencies present within the bassline.

9 > As the track progresses, further variation is created by using another Omnisphere with the **Badboy Glideshop** patch loaded. This one is even more distorted than the first, and plays a slightly different riff. Additionally, the hi-pass ESX24 bass track is silenced, so that only the low-end of the bass is heard.

10 > Another Omnisphere patch, Angry Whiplash is used to create wailing electric guitar-style squeals, and another Spectrasonics synth, Trilogy, is used to provide the sub sound, which really beefs up the kick drum fill that occurs at the end of each section of the track.

11 > Getting a sound that's rough and ready is SUAD's main aim, but they do make a few concessions to get a polished-sounding mix. "Depending on the sound, we like to use stereo spreaders, which gives a bit of width to the song. We don't like to get too carried away with that, though, because then it starts sounding like a fucking pop song!"

12 > This is as far as SUAD have got with their latest track. Here we can see the arrangement as it stands, which so far consists of an intro, the drop and the section where the top-end of the bass is removed. "We're not really sure what way we're gonna go," admits Smiley. " There's a lot there. So much you can do with that..."

Sampling I'm Sampling

Sampling from their record collection may have got SUAD in trouble, but it also got their name well and truly out there

Sampling has always been an important part of SUAD's sound, but in 1992, their unauthorised use of someone else's song narrowly stopped *Raving I'm Raving* from topping the charts when an injunction from WEA forced them to desist from manufacturing any more copies.

On paper, a dance track based around the piano and vocals of Marc Cohen's *Walking in Memphis*, re-sung with new, ecstasy-centric lyrics might have seemed like a cynical attempt to cash in on the exploding popularity of the rave scene. In reality, it was actually one of the more sophisticated underground tracks to cross over to the mainstream. The infamous vocal part is relatively soulful and introspective, certainly compared to the other dance acts of the time; and the majority of the track is actually driven by rolling breaks and dark techno stabs – hardly typical mainstream fare. In many ways it's an era-defining record, both musically and in terms of the legal fall-out caused by its copyright-infringing back story. Why do SUAD think it become so popular in the first place?

"I think the gods were on our side with that one!" exclaims Smiley. "It just ran away with itself. We didn't spend any money on promotion or making sure certain DJs had it. We had someone doing a promo mailout to some DJs as usual, but nothing to the big boys or Radio 1. As they say, you just throw shit at the wall and see what sticks. It's true – that's what the music business is if you break it down. The bigger it got, the more controversy it caused. It wasn't a sample, although we're not justifying what we did. We tried to clear it, as you obviously can't just take someone's melody and think that it's going to be all right. We even credited Cohen on the label before it was ready to go out, then we got the fax saying WEA were going to take out an injunction. They didn't want to play ball with us. There was a lot of to-ing and fro-ing, we had already pressed up a few hundred thousand, so we said let us sell them and you can give the money to charity. In a sense, with all the hoo-ha around *Raving I'm Raving*, that's what we're sort of remembered for, so it's worked for us. It was lots of a stress and we didn't make a load of money, but we got our name stuck out there for life. If we hadn't had that, we could have been here today, gone tomorrow."

The real thing

Although they've sampled plenty of other artists, SUAD have also signed and worked with their fair share of vocalists, including Nicolette, Pete Bouncer and the Ragga Twins. "We've always believed that too many people in the music industry won't work with singers, especially in the dance world. It's not that they can't, they just don't!" Smiley chastises. "They don't, because it's a pain in the arse!" adds PJ. "Singers are hard work, but they bless the track!"

Another important element to the SUAD sound is breakbeats, but these are less prominent than they used to be in dance music. "It used to be that the breakbeats were up front and the kick and snare were in the back seat... now the breakbeat has been pushed so far back, it's in the boot! We try and bring the breakbeat to the front a bit more, otherwise the music is less interesting and more samey," says Smiley.

"And clean, everyone wants to sound clean," PJ notes. "That's like a surreal world to us! You've got to the have the 'boom bap', as we call it." **cm**

Selected Kit List

HARDWARE
Apple Mac G5
MOTU 828mkII audio interface
Mackie 32.8 mixer
Fatar Studio 610 master keyboard
Tannoy System 10 monitors

SOFTWARE
Apple Logic Pro 7
Cakewalk Rapture
Korg Legacy
Native Instruments Absynth 4
Native Instruments Kontakt 3
Native Instruments Massive
Native Instruments Reaktor 5
reFX Nexus
reFX Slayer
reFX Vanguard
Spectrasonics Omnisphere
Spectrasonics Trilogy
u-he Filterscape

Spectrasonic's Omnisphere is central to the SUAD sound

Selected discography

SINGLES
Shut up and Dance, *£10 To Get In* – Shut Up and Dance Records, 1989
Shut up and Dance, *Lamborghini* – Shut Up and Dance Records, 1989
Shut up and Dance, *Autobiography Of A Crackhead/The Green Man* – Shut Up And Dance Records, 1991
Shut up and Dance, *Raving I'm Raving* – Shut Up and Dance Records, 1992
Shut up and Dance, *Save It Till The Morning After* – Pulse-8 Records, 1995
Blackman, *Bastards* – Red Light, 1995
Shut up and Dance, *Hold Me Down* – Shut Up And Dance Records, 1998
Hackney Soldiers, *Creeping* – New Deal Recordings, 2001
Hackney Soldiers, *Manzdem* – New Deal Recordings, 2003
Shut up and Dance, *Outta National/Da Night Bus Remix* – Shut Up And Dance Records, 2007
Shut up and Dance, *Cream* – Shut Up And Dance Records, 2009

ALBUMS
Dance Before The Police Come! – Shut Up And Dance Records, 1991
Death Is Not The End – Shut Up And Dance Records, 1992
Black Men United – Pulse-8 Records, 1995
Reclaim The Streets – Shut Up And Dance Records, 2003
The Great British Public – Shut Up And Dance Records, 2007
How the East Was Won – Shut Up And Dance Records, 2009

REMIXES
Rebel MC, *Comin' On Strong* – Desire Records, 1990
150 Volts, *Hi, I'm Chucki (Wanna Play?)* – Ruff Quality Recordings, 1992
Cher, *Walking In Memphis* – WEA, 1995
Headrillaz, *How It Is* – V2 Records, 1998
Red Snapper, *Image Of You* – Warp Records, 1998
Coldcut, *Every Home A Prison* – Ninja Tune, 1998

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From the makers of COMPUTER MUSIC

HARDWARE VS SOFTWARE

We aim to settle this age-old argument, comparing classic hardware units that are available cheaply on the second-hand market with software equivalents

cm DVD

ON THE DVD

Hear the results of our hardware and software head-to-heads and check the **Readme** for details of our testing

In studios and magazine offices around the world, debate has raged for years over whether software will ever completely replace traditional music hardware. Today, there are applications and plug-ins available that can do anything hardware can do. Whether it's a clone of a legendary compressor, a jack-of-all-trades multi-effects unit or a button-by-button recreation of a classic analogue synth, software now really does have it all covered. Can it really compete in terms of sound and usability, though? Time, we reckon, to put the two head to head and end the argument once and for all.

The categories we've chosen to look at are reverb, compression, sampling, analogue synthesis and digital synthesis. In each category, we've chosen one piece each of representative hardware and software, looked at the pros and cons of each approach, then picked a winner.

Clash of the titans

The main question we hope to answer is whether the sound of plug-ins matches that of their hardware equivalents. We've provided audio examples on the DVD, so you can hear our hard and soft treatments of the same source material using similar settings, and decide for yourself which is the best. However, our testing is about more than just the sound: we're also looking at ease of use, price and versatility.

To keep things as fair as possible, obviously we won't be comparing dirt cheap plug-ins with expensive boutique hardware, focusing instead on the kind of choices 'real people' have to make when buying new software. We'll be pitting the realistic alternatives that you might find yourself having to choose between. In most cases that means we're looking at the second-hand hardware market – you simply can't buy a new analogue synth, for example, that's anywhere near the same price as its comparative software version. Therefore, where appropriate, we'll be looking at the kind of hardware that you might be able to find on eBay for a similar price to the software equivalent.

Hardware versus software, then: it's time to finally pick a winner.

Analogue synths

The contenders

Analogue-style synth sounds are a vital weapon in any modern producer's armoury, and a particular challenge for digital emulation, so we're expecting this test to be close. On the hardware side is the Novation BassStation Rack, a monophonic dual-oscillator analogue synth that owes a significant debt to the Roland TB-303 and can be picked up for about £150.

Stepping up to the plate for software is AudioRealism BassLine 2. Taking more than a little inspiration from Roland, ABL2 is one of the most realistic 303 emulators and is priced €95.

Pros and cons

The BassStation Rack is surprisingly cheap on the second-hand market, but it's also a versatile analogue-style synth that makes light work of everything from acid basslines to Moog-style leads. The unit features digitally-controlled analogue oscillators, but the rest of the signal path is entirely analogue, delivering authentic analogue filtering and envelope generation. The BassStation's manual includes a section on achieving a realistic 303-style bassline, which we followed as part of our testing process.

ABL2 has a reputation as one of the best 303 emulator plug-ins on the market, and it's easy to hear why. For authentic analogue sounds, it's impossible to tell the difference between the software and hardware, although ABL2's single oscillator means that it's not quite as versatile as the dual-oscillator BassStation.

ABL2's step sequencer scores an instant victory over the BassStation, which has no sequencing capabilities. The step sequencer works almost identically to that of the 303, with glide, accent and shuffle controls. The fact that there are dozens of techno, acid and electro patterns built in as presets means that you should be able to get going instantly. Just as on the original 303, programming sequences from scratch isn't a completely intuitive process, but with a bit of practice it's possible to come up with authentic acid-style patterns.

In use, the physical knobs and switches of the BassStation make performing with it great fun. The only problem is that the knobs aren't automated, so when you load a preset they don't automatically jump to the correct positions. The patch itself is recalled perfectly, but the knobs don't indicate their settings until you adjust them. It might only be a small complaint, but it really makes you appreciate the instant recall of software.

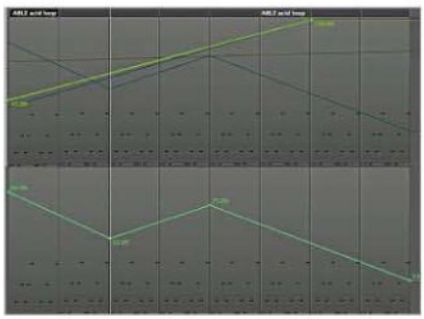
And the winner is...

By definition, it's impossible for a plug-in to create a truly 'analogue' sound, but nevertheless, ABL2 comes very close to nailing it. The BassStation offers a bit more versatility, but ABL2 easily holds its own when it comes to 303 emulation – both recreate the sounds of classic analogue synths surprisingly well.

The one area where the BassStation trumps ABL2 is in the hands-on appeal of its controls. Turning a virtual knob with the mouse just doesn't have the same feel, but it's nothing a MIDI control surface couldn't solve.

Whichever route you take with this one, though, you can't go too far wrong. It's not a clear cut victory, but ABL2's step sequencer and the ability to run multiple instances will give it the edge over the BassStation for the majority of producers.

> Step by step: Make an acid bassline with BassLine 2



1 > The classic acid house bassline sound comes from the Roland TB-303, which can be emulated easily using a plug-in such as BassLine 2. Start by setting up a loop based on eighth- or 16th-notes. ABL2 includes a step sequencer, but you can get the same result using the piano roll.

2 > As well as the repetition, a big part of the acid sound comes from slow, gradual evolution of the sound by adjusting the filter **Cutoff** and **Reson**ance as you play. The Resonance control boosts the frequencies around the filter cutoff point, creating that famous squelch.

3 > Use your DAW's automation to create slow, subtle shifts in the sound of your bassline. You can draw automation curves in by hand, but the best, most 'human' results come from using an external controller to tweak settings on the fly, recording the automation data as you go.

Digital synths

The contenders

Digital synthesis arrived on the scene in the 80s and soon became established as a characteristic sound of electronic music. FM (frequency modulation) synths were the first mainstream digital instruments, and the Yamaha DX series was the undisputed market leader.

FM8, Native Instruments' emulation of the DX7, adds plenty of features to the original architecture, taking FM synthesis to the next level. At €179, FM8 costs about the same as a second-hand DX7, which we're testing here.

Pros and cons

The first thing you notice when comparing FM8 and the DX7 is how radically NI have updated the interface. FM synths have always been notoriously difficult to program, and the DX7 was certainly no exception. You'd need to study the manual long and hard to get the hang of its algorithms, carriers and modulators, but the real stumbling block is that single data entry slider and its accompanying tiny LCD screen. The DX could never be accused of being user friendly...

FM8, on the other hand, offers all the same programming options, but with a much more intuitive, graphical approach. Functions that are fiddly and time-consuming to implement on the DX immediately become straightforward via FM8's clear interface. And to make things even easier, it comes loaded with just under 1000 presets and can import patches from Yamaha's DX and TX series synths. Given that some of the DX series patches are classics in their own right, this is a serious bonus.

We fired up the **Solid Bass** preset on the DX7, the sound of Orbital's *Chime* and countless other techno classics. We then loaded the same patch into FM8 to give us a direct comparison between the hardware and software versions. Take a listen to the examples on the DVD to compare the sequences. Overall, we think there's very little to separate the two and FM8 matches the original DX7 in terms of sound quality. There's a bit of grit in the DX7 example that isn't there with the software version, but otherwise the sounds are incredibly similar. The grit is probably down to aliasing from the archaic digital-to-analogue conversion circuitry in the synth and could easily be replicated using plug-ins. Downsampling to 12- or 10-bit resolution with a bitcrusher plug-in and applying very mild overdrive should achieve a similar result if you're looking to add a little bit of 80s dirt to your digital synth sounds.

And the winner is...

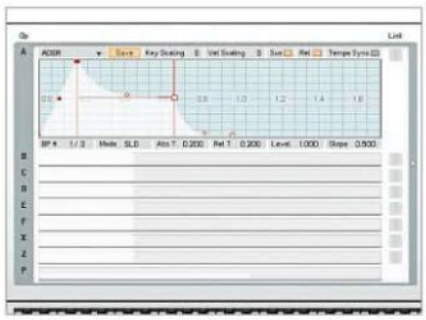
FM8 matches or beats the DX7 in pretty much every respect. The DX7 simply can't compete with FM8's ease of use, and when it sounds so similar, there's really no reason to recommend the original hardware over the software version, unless you're a synth collector. The synthesis model and editing functions are fundamentally the same, but working on a computer display is much easier than an LCD screen. When creating original sounds, the additional features of FM8 offer a real advantage over the DX7, such as adjustable waveforms for the operators, which brings the FM synthesis bang up to date.

Computers are obviously great at digital synthesis, so you'd expect them to be competitive in terms of sound quality – and even against a bona fide classic like the DX7, the software approach easily wins overall.

> Step by step FM synth programming basics with FM8

1 > FM synthesis involves using one waveform to modulate the frequency of another. Instead of oscillators, we're dealing with 'operators', and we need at least two to create an interesting sound. We pick the **3C 3M #7** algorithm, which uses three carriers and three modulators.

2 > The carriers (operators B, D and F) are modulated by operators A, C and E respectively, then mixed at the output. Adjusting the ratio of the operators changes the sound dramatically. We also change operator C to a square wave to alter the harmonic content of our sound.



3 > On the envelope page, we link the envelopes of all six operators and adjusted the ADSR envelope to give a softer, more rounded sound. By adjusting the envelopes of modulators independently you can also make the timbre change over the course of a note.

Samplers

The contenders

As recently as the mid 90s, hardware was your only real option if you wanted to use samples in your music. Computer processing power and RAM capacity weren't up to the job back then, but those days are long gone and now the rack-mounted sampler market is all but dead.

For this match-up, we've chosen the Akai S2000, launched in 1995. You shouldn't have much difficulty picking one up for less than £50. This will be put up against Apple's EXS24 plug-in, the powerful sampler launched in 2000 that's included with Apple's Logic DAW as standard.

Pros and cons

Younger readers probably won't be familiar with the ridiculously time-consuming process of using a hardware sampler, but five minutes with the Akai brings it all flooding back. The S series was the leading hardware sampler for much of the 80s and 90s, but the user interface is a frustrating throwback to the early digital era. Recording samples and trimming them to find loop points using a tiny LCD screen is so fiddly that it's hardly surprising the S series spawned countless companies offering ready-made sample discs in Akai format.

Akai's standard 2MB RAM gives a maximum sample time of just 11.14 seconds at the highest quality available (44.1kHz/16-bit stereo), meaning that juggling the number of samples you were using was a constant battle in the hardware sampling days. As for more advanced features, like independent pitchshifting and timestretching, forget it. The Akai does include basic low-pass filters but you'd have to buy the optional EB16 effects board for extra processors.

EXS24, on the other hand, is so simple to use and loaded with features that it makes the S series look prehistoric. There isn't enough space here to list everything it can do, but the fact that it gives virtually unlimited sampling time at 24-bit is one of the killer blows. Considering the 64-voice polyphony per instance, advanced synthesis features and graphical editing interface, the Akai doesn't stand a chance.

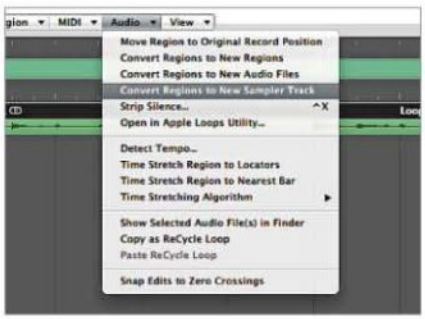
EXS24 is also perfectly integrated with Logic, cutting down on manual sample editing and instrument set up. Timestretching, pitchshifting, looping, velocity layering and mapping instruments... any essential sampling function you can think of is catered for.

Even sample discs have improved to match the playback method. Back in the S series era, sample CDs were relatively simple compared to their modern multi-format equivalents. These days, it's a simple case of dragging and dropping in loops or loading up EXS instrument patches. The S2000 also needs an external SCSI CD-ROM drive to be fitted before it can even read sample CDs. Without one, you'll just have to make do with the internal 3.5" floppy disk drive!

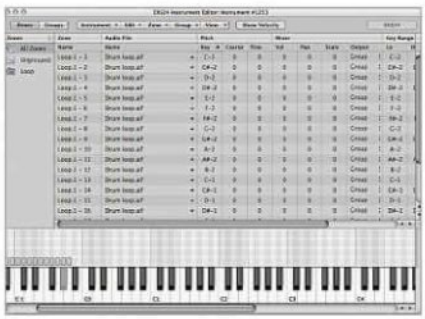
And the winner is...

This face-off gives us the clearest winner in all of our categories. EXS24 and similar sampler plug-ins are so far ahead of anything the hardware world can offer that it would be crazy to even consider going back - unless you're truly desperate for that low bit-rate sound (and even that can be emulated using plug-ins). Performance-orientated sampling workstations like Akai's MPC series still have their place in the world of modern music technology, but the S series is a very different proposition indeed.

> Step by step: Chopping up loops in EXS24 in Logic Pro 9



1 > On of the trickiest sampler techniques has been made much simpler with the latest version of Logic Pro and its trusty ESX24 sampler. Here, we start with a two-bar drum loop, which we select before choosing **Convert Region to New Sampler Track** from the **Audio** menu...



2 > Choose **Create Zones from Transient Markers**, whereupon Logic will automatically detect the transients, chop the audio region up and create a new track with the samples already loaded as an EXS24 instrument. The accompanying MIDI part will play the loop back perfectly.

3 > Once you have your loop loaded up as a series of sliced samples, you can edit the MIDI part. You can also use EXS24's other features, such as filters and envelope generators on your samples. On the DVD, you'll find an example of what happens when we apply glide to our loop.

Reverb

The contenders

In the analogue age, reverb effects required a basic spring unit, a huge plate or even an echo chamber. The affordable digital hardware reverbs of the 80s and 90s changed everything, and the Alesis Midiverb 4 is a great example of a typical ambience processor from that period.

Here we put it up against IK Multimedia's CSR Classik Studio Reverb, a suite of four plug-ins that together offer plate, hall, room and inverse reverb effects. All in all, it's a complete reverb package, and at €169, it's a close match to the Midiverb, which sells for around £130.

Pros and cons

Digital reverb hardware brought high quality echoes and delays to the masses, and the rapid development of technology meant that this equipment was readily available at bargain prices by the 90s. The Midiverb demonstrates the high quality of hardware reverb that's available at a budget price point.

CSR's interface mimics the style of mid-90s hardware reverb units, so on the surface, it's quite similar to the Midiverb – but listening to them back to back, the plug-in immediately stands out thanks to its superior sound quality. On the whole, CSR's reverb patches are cleaner, less muddy and more realistic than Midiverb's.

Flicking through the presets on both units, it's clear that CSR can do everything the Midiverb does, but with better sound quality and more realistic reverb. The longer the reverb time, the more this becomes apparent. Where the Midiverb becomes rough and dirty as the reverb tail decays, CSR stays truer to the original source and sounds more realistic as a result. Unless you're deliberately looking for a dark, artificial reverb sound (which you might well be!), CSR is noticeably better.

Part of the problem here is that any outboard digital signal processor needs to convert an analogue signal to a digital one before it processes it, then back to analogue. At this price, you simply can't expect the conversion circuitry to be top notch, so there's bound to be an element of noise and inaccuracy introduced. Add in the fact that the Midiverb only has unbalanced inputs and you've potentially added a layer of unwanted noise and colouration before you've even picked a reverb setting.

CSR's presets are good enough to get you started, but when you're ready to take it to the next level, there are a multitude of editing options, accessed through the Advanced menus, which enable you to adjust every last parameter of the effect. The Midiverb offers a smaller number of editable parameters, and the tiny interface means that everything requires much more faffing about. For ease of use and versatility, CSR beats it hands down.

And the winner is...

Hardware reverb certainly isn't obsolete just yet – go into any pro studio and you'll still find high-end hardware reverbs by the likes of Lexicon, TC or Bricasti – but our test suggests that the hardware available at this level really doesn't offer any advantage over plug-ins, either in terms of sound quality, versatility or adjustability. We wouldn't go so far as to say that plug-ins have completely replaced good quality reverb hardware, but until you reach a megabucks price point for such units, we'd certainly argue that software has the edge.

> Step by step

Making reverb sit properly in a track

1 > Blending reverb into the mix, so that it doesn't swamp everything or sound completely unnatural, is a bit more tricky than it is on a soloed track. Therefore, the first thing to do is step well away from the solo button and dial in your reverb sound while listening to the whole mix.

2 > You can dramatically alter a reverb using EQ. Our example shows the Aux 1 bus set up as a reverb send, with a Channel EQ plug-in before and after our CSR unit to tweak the sound. High- and low-pass filters tend to be useful here.

3 > To get a tempo-synced rhythmical ambience effect, add a delay to a short reverb. Here we used Logic's Stereo Delay plug-in to add an eighth-note repeat to the reverb bus. Try different delay times to help the reverb groove nicely with the rest of the track and you're done.

Compressors

The contenders

Top quality hardware compressors don't come cheap, but there are still some bargains to be had. We've picked the Alesis 3630 to go up against our plug-in. At an RRP of just £100, the trusty old 3630 is a stereo compressor most famous for being the sound of French house music. Daft Punk made their first album with a 3630 and Alan Braxe loves his, but can it compete with software? We're putting the Alesis up against Sonalksis' SV-315 mk2 plug-in. At £149, it might have what it takes to beat the hardware.

Pros and cons

The 3630 might be cheap but it's an all-analogue dual channel compressor with built-in gates, hard/soft knee settings, RMS/peak compression and an external sidechain function for those pumping basslines. That's an impressive feature set for hardware at this bargain price, but the extras of the SV-315 takes things to the next level: auto makeup gain, sidechain filtering, auto release, independent limiter and an adjustable 'crush' (saturation) setting make the plug-in far more versatile than the hardware.

To test them, we plumbed some drum tracks through each unit. In terms of sound quality, there was only ever going to be one winner here. Where the plug-in is clean and clear, the 3630 is rough and noisy. It's this characteristic sound that makes the 3630 popular with so many French sidechain fanatics, but if you want neutral, transparent control of dynamics, Alesis' modern classic isn't the answer.

Check out our audio examples to hear a comparison of the 3630 and SV-315, both using the same settings: ratio 6:1, attack 20ms, release 50ms, soft knee engaged and a threshold giving about 6dB of compression on the peaks. The results show how an apparently simple tool like a compressor can have a dramatic effects.

One of the big problems with the hardware approach is that if you just have one stereo compressor, you can only compress two channels at a time. With plug-ins, of course, the only limit is the processing power of your computer. When using compression, it might not be appropriate to commit to a sound until late in the mix, so the ability to run multiple instances of a plug-in and adjust settings as you work is particularly appealing in this case. Add this to the fact that the software offers a broader range of sounds and settings than the hardware and the choice becomes clear.

And the winner is...

Although the 3630 is still frequently seen in live rigs and has acquired cult status among house producers for the pumping sidechained bass sounds it produces so well, it has its own sound, which won't suit every application. If you're after a clean, transparent compressor, the 3630 isn't going to compare to the versatility of the SV-315.

Though the 3630 still has its place, the way it colours the sound in addition to controlling the dynamics means that it's limited to a few, very specific uses in the studio. Budget hardware compressors generally tend to suffer from the same problem – each imparts its own distinctive sound on the source material. Good software compressors like the SV-315, on the other hand, enable you to dial in a wider variety of sounds. Hardware compressors at this price level simply can't compete in terms of versatility, making software the much better choice.

> Step by step Drum bus compression

1 > To get the most out of a compressor, you need to really listen to what's going on and adjust it accordingly. For our drum mix bus, we start with a **Ratio** of **4:1**. We can switch to a higher Ratio if we want a more pronounced effect, but be careful not to smash all the life out of the sound.

2 > Start with an **Attack** of **30ms** and a very fast **Release** or **Auto**-release, as we have. Pull the **Threshold** down until the gain reduction meter shows the peak attenuation of 4dB, then adjust the **Attack** and **Release** to retain the transients and avoid unwanted pumping.

3 > You can also process drums with parallel compression. To do this, send the drum bus to a second compressor at extreme settings and mix some of it back in with the original. Bring the parallel compression volume up until it can just be heard, adding thickness to your drums.

Guitar effects

The contenders...

Since the 1960s, guitar players have been able to choose from a variety of pedals to create everything from classic overdriven tones to complex delays, choruses and modulation. The hardware approach involves buying a selection of stompboxes and hoping that they suit your sound. At anything from £20-100 each (or more for boutique models), this can soon get pricey.

For the software alternative, we'll take a look Logic Pro 9's Pedalboard plug-in – a suite of 30 virtual guitar and bass stompboxes that can be combined in any order to create a custom 'board, which could be a real money saver.

Pros and cons

We tested Pedalboard against a range of stompboxes. Between them, pedals like the Boss DS-1 distortion, DOD FX84 Milk Box, Carlsbro Minifex Flanger and Bespeco Weeper cover everything from classics to cheap and cheerful budget models. We took the signal straight out of the pedals and into our audio interface, while the plug-in was tested with the guitar going into the input and straight to Pedalboard. Check out the clips on the DVD to hear the differences.

The software compression and distortion effects in particular compare very favourably to the stompboxes. Pedalboard's Squash compressor is simple but effective, although the FX84's adjustable attack setting is more versatile than Squash's simple slow/fast switch. The Rawk Distortion provides a similar tone to the DS-1 with authentic dirt and grit.

Pedalboard's Robo Flanger is noticeably quieter than the Carlsbro stompbox, but the wah plug-ins sound great and offer a variety of different retro, modern and optical modes that easily beat the harsh and noisy sound of the budget Weeper. It goes without saying that an expression pedal is essential for the wah – playing it with a mouse simply misses the point.

Bypassing Pedalboard effects is practically instant, with no cutout while switching or added colouration, whereas the lack of true bypass on pedals like the DS-1 means that they colour the tone of the guitar, even in bypass mode.

Perhaps the biggest benefit of the plug-in approach, though, is that you don't need to commit to your effects at such an early stage – everything can be adjusted without changing the dry recording. Purists would argue that nothing quite matches the sound of a guitar cab recorded through a good quality mic and preamp, but there's no doubt that the software approach is cheaper, easier and possibly more effective for the majority of project studios.

And the winner is...

With so many types of guitar pedal on the market, it's perhaps unsurprising that software and hardware each have their own strengths and weaknesses. Generally, the plug-ins produce authentic versions of some of the classic guitar tones and enable you to try out a huge variety of effects without having to buy more pedals every time you want to create a new sound.

If you like to really work the pedalboard live, then a hardware controller is essential to get the most out of plug-ins, and wah-type effects demand a good foot controller or they're not much use at all. But for the majority of distortion and modulation effects, the clean signal processing and versatility of plug-ins make them a very viable alternative to stompboxes.

> Step by step Creative Pedalboard layouts

1 > Logic's Pedalboard plug-in enables you to lay out a virtual board of pedals that can be chained and adjusted just like real stompboxes. Using a controller like Apogee's GiO enables you to take control of each individual pedal, as well as jumping between presets and channels.

2 > Orthodox pedal layouts tend to follow a common pattern, with the wah or compressor first, followed by distortion, modulation and finally some echo units. Adjusting the order can really affect the tone, so try putting a delay first, or a fuzzbox before your wah and so on.

3 > Don't forget that guitar effects aren't just for guitars. Here we're using the Pedalboard plug-in with Logic's EVP-88 electric piano on a Rhodes-style patch. In fact, wah, chorus, delay and even distortion pedals can be highly effective on a wide variety of instruments. cm

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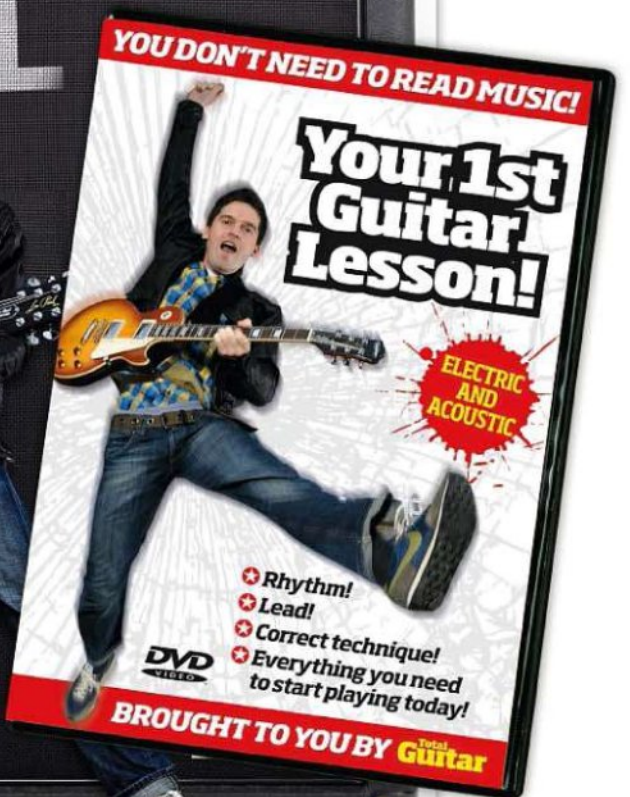


ON SALE NOW

The cm guide to SONAR 8.5

Cakewalk's pay-for point release contains more new features than some full releases! Here we walk you through some of the headliners...

cm DVD

ON THE DVD

Hear some of v8.5's new features in action in the **Tutorial Files** folder

> Cakewalk's latest effort is just a point release, isn't it? Surely there can't be enough new stuff onboard to warrant a full cm guide to its new features? Well, that was our first assumption upon hearing of its imminent release, but how wrong we were! It seems that Cakewalk have changed the way that they number their updates and this, the pay-for upgrade to Sonar 8, is simply bursting at the seams with new goodies – more so than the last full version, in fact.

No mere whitewash or minor feature tweak, Sonar 8.5 is packed with advanced additions and complete reworkings of familiar functions. Take Session Drummer 3, for example, which has received a total makeover and is, in effect, an entirely new instrument worthy of the description 'percussion workstation'. It contains authentic-sounding drum kits, with a whopping 2.5GB of sample and loop content in tow. That alone ought to be enough to coerce the upgrade fee from the tightest of clutches, but it is only the barest tip of the iceberg. There are also some high-end channel strip multi-effects dedicated to both vocals and percussion, and each one is a powerhouse of processing, with all of the trimmings imaginable.

The new Matrix View will appeal to remixers and improvisational musicians alike, especially those Sonar owners that have looked enviously at Ableton Live's Session View. What's more, it's as complex and powerful as it is fun and intuitive. Peeling back the top layer reveals a wealth of sonic possibilities and we're going to show you some of the best of 'em.

Then there's AudioSnap 2.0. The first version may well have left you scratching your head, but we'll have you zinging around this all-new and improved incarnation like a seasoned pro.

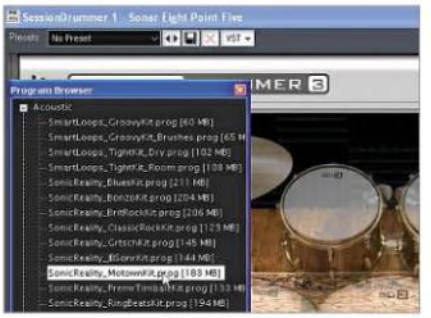
And that's just the beginning. We'll also clue you in on the brand new Step Sequencer, Cakewalk's wicked arpeggiator and plenty more besides. Sonar Studio users will find that Roland's awesome V-Vocal has been added to their arsenal, so we'll take a brief look at that, too.

Over the next five pages, then, we'll cover all the new features, and provide a ton of useful tips and tricks that ought to spark your imagination. Fire it up and let's get started...

> Step by step Session Drummer 3

1 > Cakewalk have given their rhythm machine, Session Drummer, yet another makeover. Let's take a look at some of the cool things we can do with it. We need to open it up in our Synth Rack, which brings us to yet another Sonar improvement: the Synth Rack can now be accessed via the tabs at the bottom of the GUI. Click on it.

2 > Now choose **Session Drummer 3** from your VST plug-ins menu. You might well have version 2 in there as well, which is fine, as they can exist alongside each other quite happily. Click the **Properties** button to open the interface.



3 > Cakewalk have included over 2GB of content with this latest version of Sonar Producer Edition. Much of that content consists of multisampled drum kits and MIDI patterns for Session Drummer 3, provided by some of the biggest names in the soundware industry. Click on the **Program** slot to call up the browser. Look in the **Acoustic** directory for the **SonicReality_MotownKit.prog**.

4 > Once it's loaded, test out the drum assignments on your MIDI controller. Now, most of us aren't drummers, so we depend on quality MIDI patterns. Thankfully, Session Drummer has 'em by the cartload. Each of the buttons, labelled A through to H, features a different pattern. You can play (and loop) them with Session Drummer's transport controls. Give each one a listen.

5 > We could, of course, be happy to play along with these kits and patterns as they are, but Session Drummer is infinitely malleable. We'll show you what we mean. Select the first pattern (**A**). Note that it's now indicated as the MIDI pattern in the lower left section of SD3. See the little icon to the right? Click it and drag it onto your SD3 track. You can do this with a few patterns to create a little arrangement.

6 > We've created an arrangement that spans 13 bars using three patterns, and edited it a bit. It sounds good, but we want to make it our own. Let's shake it up a little by loading another kit. This time, we'll try a 'tight' **TR-909** kit in the **Rhythm Machines** category. Load that up and play back the arrangement - don't use SD3's transport, as this will trigger patterns associated with the loaded kit.

7 > That certainly gives our arrangement a new feel. It's now a nice hybrid of human performance with electronic sounds. However, we don't have to just swap out entire kits. Click on the snare in the animated kit to select it. Next, click the **Drum** slot in the lower-left of the GUI to load a single drum sound. We like the first one in the **Sonic Reality** folder, called **JBSonr kit**.

8 > Have a listen to your arrangement with the new snare loaded. We can tweak it even further. Note the **Mixer** button at the top-right of the Session Drummer window. Click on that. As you can see, you can change the level, width and tuning of each drum sound. Adjust the **Tune** knobs of each tom a bit.

9 > You can also load in sounds from the Mixer window. Click the cymbal image and you'll see that you can call up the browser from there (or any of the other images). Try loading in a new cymbal. When you have something that sounds good, you can save it, bounce it to a track or export it as an audio clip.

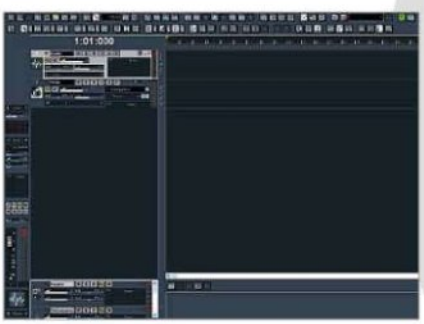
> Step by step Percussion Strip

1 > We created a nice rhythm track in the previous walkthrough. In Sonar 8.5, Cakewalk have provided a killer channel strip plug-in that will give our drum tracks an extra edge. Look to the FX bin for your drum track. Right-click in it and choose the **PX64_PercussionStrip** from your **VST Plug-ins** folder. Once it's loaded, activate the compressor section.

2 > Now, let's add a bit of compression. With the track playing, decrease the compressor's **Thresh**old knob to around 11 o'clock – the display to the right will provide feedback. Now, increase the **Ratio** knob until the display reads **3.9:1**.

3 > The PX64 has distortion covered with a tube saturation emulator strapped right across the input. Activate it and give the slider a nudge to add some grit to the signal. Finally, switch on the EQ section and boost the low frequencies, low-mids and highs. We like how it sounds now, so we'll leave it up to you to choose if you want to mess with the Delay and transient Shaper sections.

> Step by step Step Sequencer



1 > You'd think that Session Drummer 3 would be enough, but believe it or not, Sonar 8.5 has even more stuff aimed at desktop drummers, including the latest version of the Step Sequencer, which has some new features aimed squarely at making drum tracks. Let's start a new project and check them out.

2 > Use the **Synth Rack** to bring up Cakewalk's TTS-1. Click the **Properties** button to open the editor. Change channel 1's assignment by clicking the word **Piano** next to its mixer fader and selecting the **Standard Set** drum kit from the **Preset** programs. Have a quick play with the sounds to get a feel for them.

3 > Select your new instrument track and click the **Step Sequencer** icon to bring it up. Entering notes is as simple as clicking the steps in the grid, and anything you do will automatically be reflected in the selected track. Add some F♯3 notes, as shown, creating a closed hi-hat pattern.

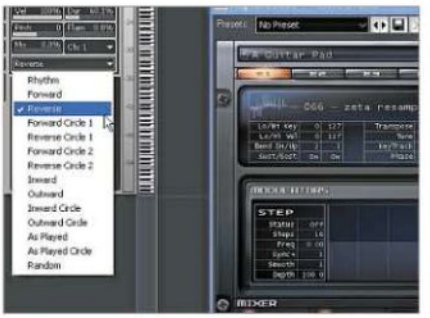
4 > Hit **Play** on the Step Sequencer's transport and the newly programmed pattern will be looped. To liven it up, click the button just to the left of where it says F♯3. A new and feature-packed set of controls should pop up, just waiting to be tweaked!

5 > There's now a series of vertical bars associated with the velocity level of each step. Fine-tune the velocities of your hi-hat steps, as shown. You can add a bit of swing, adjust the flam and a lot more from this new section. We've given the **Swing** knob the tiniest of nudges.

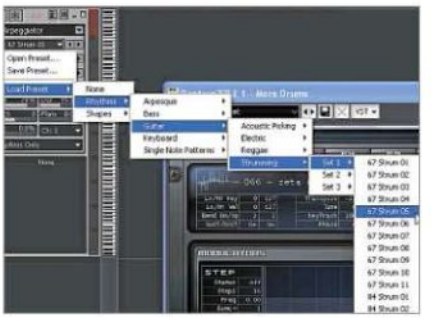
6 > As a final aside, let's activate the **Step Record** function and add some notes with our keyboard controller. The Step Sequencer will enter the notes into their proper lanes on the grid. You can also import MIDI files directly into the grid for complex and realistic patterns.

> Step by step Arpeggiator

1 > Last time we looked at Sonar, we criticised the fact that Instrument tracks don't have access to Cakewalk's MIDI FX, including the arpeggiator. That situation has been addressed in small part with 8.5's dedicated MIDI arpeggiator. However, this goes beyond the usual arp. Fire up a ROMpler such as Rapture LE and choose an acoustic guitar patch.



2 > Expand your newly created track and activate the Arpeggiator. You'll be met with lots of controls ready for tweaking. Hold down a chord while you try making small changes, such as adjusting the **Dur**ation, **Vel**ocity and, most importantly, the **Arp Shape**, to hear their effect.



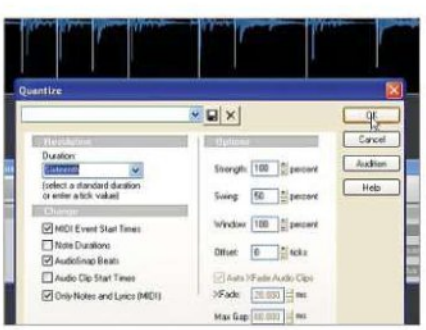
3 > There are presets to suit just about any need and they go far beyond basic cycling of chords. Open the **Preset** menu and find the **Rhythms** category. From there, locate the **Guitar Strumming** pattern **67 Strum 05**, which is a sort of 'auto strum' preset. Try recording a MIDI track in this manner. We've coupled it with the beat made on the previous page.

> Step by step AudioSnap 2.0

1 > AudioSnap has caused some confusion among users, but the new version is much clearer. The idea is still the same: the timing of audio tracks can be edited much like MIDI. Start a new project and set the tempo to **141bpm**, then locate and import the audio clip **LooseDrums.wav** from the **cm** DVD.

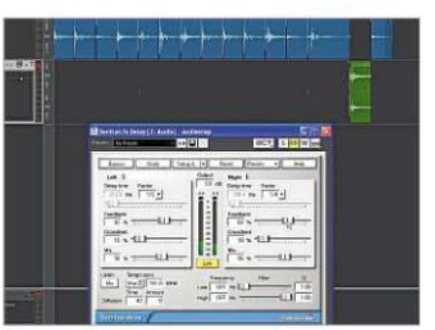
2 > If it were a MIDI clip, tightening up the timing would be as simple as hitting the quantise command. It's nearly as easy with audio in Sonar 8.5 and, in fact, we can do a lot more than just tidy up the timing with AudioSnap. Select the audio clip and right-click it. Choose **AudioSnap Palette** from the **AudioSnap** menu.

3 > Click the **Enable** button, followed by the **Show/Hide Transients** button, so that we can see our markers. AudioSnap tries to judge where the markers ought to be and does a pretty good job. We need a few more, so let's decrease the **Threshold** slider. We've turned it way down to **5%**. Now it seems to have gotten them all.



4 > Now that we have our markers in place, quantising the performance is actually quite easy. You can do all of the usual quantise tricks, but let's keep it simple here. Click the **Quantize** button and quantise to a value of **Sixteenth** notes. If all went well, our clip should now lock right in with the project's beats.

5 > Now let's go a little deeper. One of the cleverest things AudioSnap can do is chop the beat instantly using the markers you just inserted. It's as simple as selecting the clip you want to split and clicking **AudioSnap Beats into Clips**. When you're finished, you should have a load of individual clips, as shown here.



6 > Have a go at switching and copying the individual slices to see what combinations you can come up with. You can also pull slices to another track for individual processing or mixing. We've pulled out a single snare hit and juiced it up with lots of echo from the Sonitus Delay plug-in.

> Step by step Vocal magic

1 > Let's create a vocal clip to use with one of the new effects. Grab a mic and record a simple phrase. If you don't have a mic handy, you can use one of the many vocal samples included on this month's **cm** DVD. Don't worry about pitch – we're going to have some fun with that. Once you've got it recorded, right-click it and select **Create V-Vocal Clip**.

2 > V-Vocal will be familiar to long-time Sonar Producer Edition users, but it's brand new to owners of Sonar Studio 8.5. We've covered it before, so we're not going to go into great detail, but suffice to say that you can use it to change a monotone vocal clip into something more tuneful simply by dragging and dropping.

3 > Once you've let V-Vocal do its magic, bounce the results to a new clip. Now let's have a look at Sonar's new VX64 Vocal Strip. Like the percussion version we looked at earlier, this is a multieffects processor dedicated to a specific purpose. Here we use it to add a bit of saturation, doubling and equalisation, bringing our vocal clip to life.

> Step by step Matrix View

1 > The new Matrix View may just be our favourite of the new tools in Sonar 8.5. It's not too unlike Ableton Live's Session View, but compact and integrated into Sonar's familiar interface. Open the **Arps.BUN** project. This has a MIDI file we've already completed, plus the associated TTS-1, all into one file.

2 > Our file consists of a drum track made using the Step Sequencer. It will be good for a start. Click on the button that opens the **Matrix View**. It's nothing to look at on first glance, but this unassuming little screen is nothing short of an inspirational marvel.

3 > Click the MIDI clip and drag it into the top-left light grey rectangle in the Matrix interface. It will automatically create an associated track assigned to the TTS-1 drum patch. Click the circle with the arrow in it in the new cell and your loop should begin playing in time with the project tempo.

4 > Click the red button to stop your cell cycling. Access the **Media Browser** via the tab at the bottom of the window. Find the **SmartLoops** folder, drag in the **Busy Groove Fill 06** and **Buildup Fill 01**, then put them on the first horizontal row to ensure that they play through the TTS-1 drums module.

5 > Next, find the audio file **StrumClip** on the DVD. Drag it into the cell directly beneath your first drum cell. This was saved as a Groove Clip, so it will lock up to the current tempo. Note that you can change the Trigger Resolution using the menu at the top. **Measure** is a good setting for our purposes.

6 > Drag **CMArp** from the DVD into your project, right-click it, convert it into a Groove Clip, then drag that into a Matrix row. Do the same with the Vocal clip and whatever else you might like to use for a quick real-time remix. You can, of course, record any performance you come up with that you feel is worthwhile.

Sonar 8.5 tips and tricks

GETTING VOCAL

Sonar inspires a lot of very cunning ways in which to manipulate your vocal tracks. While you might immediately think of using V-Vocal to adjust the timing of a vocal, don't overlook the possibility of also using AudioSnap 2 to correct wayward timing. Better still, use it creatively, chopping and rearranging your vocal tracks into something entirely new.

CARESS WHEN YOU COMPRESS

The new VX64 Vocal Strip is very slick indeed. However, it can be tempting to overuse the thing, squashing the life out of your vocal tracks. When you need to apply a double-dose of compression, try this old producer's trick instead: apply two instances of the effect, each set to more moderate compression ratios and thresholds. In fact, why not go one further? Try using the VX64 in line with another compressor, such as the one from Sonitus.

IT'S ONLY A MATTER OF TIME

We showed you how the Matrix View can be used to mix and match various Groove Clips, but don't feel as if you must always lock every clip to the beat. There is some appeal in letting a few of your tracks flow free from the tyranny of beat division. Try loading in some seemingly random, ambient noodlings and triggering them alongside your percolating sequences and thumping drum loops. You'll be surprised at how often they seem to fit together!

Tweak your top end with Sonar 8.5's classy high-frequency processor, HF Exciter

GETTING VOCAL AGAIN

Vocals are, of course, the focal point in any song that features them. Sonar 8.5 comes with a wealth of effects that might not at first seem like obvious choices for a vocal track. For example, try strapping the HF Exciter across your vox to make them jump right out of the speakers, or give them an industrial edge with the Alias Factor Bit Decimator.

SESSION, ER, GUITARIST?

Why not? Have you taken a look at all of the different sorts of files that can be imported into Session Drummer 3? Everything from FLAC to WAV and SFZ can be used, and a lot more besides. So here's a crazy idea: why not subvert the format by loading in things that wouldn't necessarily be used for drums? Snippets of guitar, bass, voice or found sounds might be quite interesting when used in conjunction with Session Drummer's many excellent drum patterns.

It's an old technique, but it still works a treat: try doubling up the compression on your vocal tracks

FREAKING THE FREQUENCIES

We're trumpeting the HF Exciter again, because you simply must try the thing on your drum tracks. Sample designers have been adding some grit and presence to their drum loops with aural exciters and sonic maximisers for absolutely years. You can take a tip from them and spice up even the coldest drum recordings with the HF Exciter in much the same way.

THE BEAT GOES ON (AND IN)...

Session Drummer comes with loads of excellent, pro-quality drum patterns, but that doesn't mean that you can't just as easily whip up your own if you have a mind to do so. The drummers among you might use a set of V-Drums or even something like the pads on Trigger Finger to knock out some custom patterns. Come to that, we think Session Drummer would make an ideal companion to a MIDI drum kit. What's more, anything you create can be saved and reused.

...AND ON

Those of you who don't play the drums can use the AudioSnap function to steal the feel of drum tracks, then convert them into MIDI files that can be used with Session Drummer or even the Step Sequencer. There's a handy button in the Audio Snap palette for this very purpose. Give it a shot - but be sure to clear those copyrights for commercial uses.

WHAT IS THE MATRIX?

The Matrix View makes it easy to jam out quick remixes with little more than a few mouse clicks. However, more fun awaits. Hook it up to your favourite MIDI controller and turn your remix into a full-on performance. There's a handy one-step capture function that instantly sends your jamming over to the Track View for further editing.

THE ROUTE LESS TRAVELLED

Each of the Matrix View's rows get plumbed directly to a track, but you can also pile up multiple rows and send them to a single track for combined editing and treatment. This is terrific for either over-the-top processing or stacked percussion grooves, for example.

SEQUENCE OF EVENTS

Though the design of Step Sequencer 2.0 seems to be aimed squarely at producing drum tracks, there's nothing to say that you can't use it on something rather more tuneful. You could, for example, create some interesting bass patterns and melodic events with it, or even load a bunch of disparate waves into your sampler of choice for a spot of pseudo wave-sequencing.

LIVING IN HARMONY

Here's one for Sonar Studio owners: try using V-Vocal to create complex multi-part harmonies using a single vocal track. Just copy the track a couple of times, give it the V-Vocal treatment, then nudge the notes of one copy up, say, four semitones, and the notes of the another up to create a seventh (or down to a fifth, for that matter). Or create complex, ever-changing harmonic relationships between the copies. Push the timing around a little, too, for more realistic vocal comps. And don't forget to use the VX64's slapback delay! cm

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Rhythm nation

How to create great-sounding drum tracks from nothing but samples in the amazing modular tracker Psycle

cm DVD
ON THE DVD
Find all of the samples and Psycle project files in the **Tutorial Files** folder

> We've previously looked at connecting native generators and effects together to create a melody line, so this time, we're going to use samples to create a drum track from single drum hits in Psycle (get it for free at sourceforge.net/projects/psycle)

Using samples in Psycle is rather different to using native or VST synths. Most notably, an extra column of information is used to denote the sample number – for example, D-4 05 01, where D-4 is the note and octave, 05 is the Sample number and 01 is the Machine number.

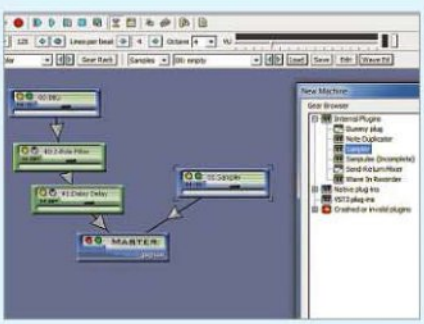
We'll be using two different Sampler Machines to trigger the same bank of samples here – one connected to a delay, and the other dry. There are a few ways to program this information into the Pattern view.

Also, be aware that each Machine, whether in the Pattern or Machine view, has a number next to it. To program Machine 01, make sure it's selected whilst entering in your notes.

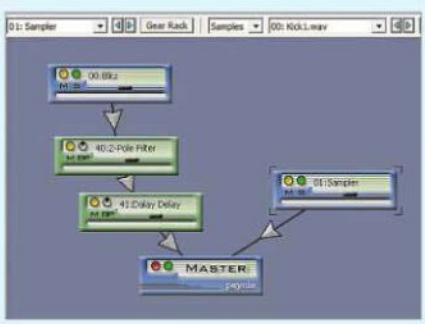
If you've entered your notes but wish to change the Machine generating the sound, use the arrow keys to move through the Machine numbers and type in a new one. Otherwise, highlight the notes and, with the new Machine selected in the list at the top, right-click and choose **Change Generator**. This is a good way of experimenting with changing multiple notes, with the option to undo at any time.

Before we begin, if you're upgrading your version of Psycle to the latest 1.8.6.1 and are having trouble with missing machines, simply click the **New Machine** button, then choose **Regenerate Plugin Cache**. This will replace any orphaned entries with the correct info.

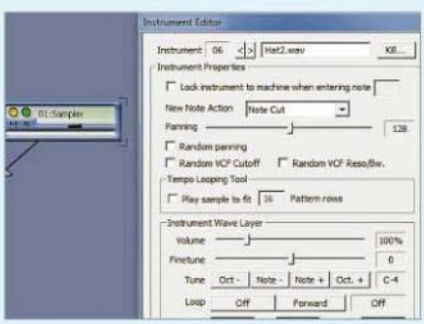
>Step by step Creating rhythm tracks using samples in Psycle



1 > Before we can audition any samples, we must create a Sampler machine. Switch to the Machine view (**F2**), double-click in the blank area and choose **Sampler** from the **Internal Plugins** list. Hold **Shift** and drag a line from the Sampler to the Master machine to connect the two together. (Continue or load **CM_trackers_tutorial_20a**).

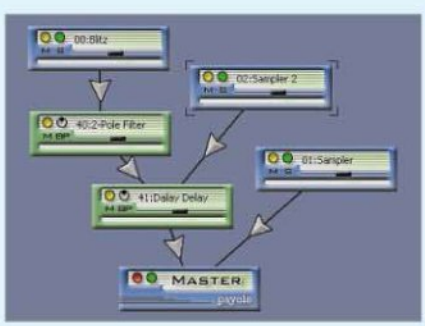


2 > Select the Sampler machine, whereupon a box will appear around it with a field reading **Samples**. Hit **Load**, bring in **Kick1.wav** from the **Tutorial Files** folder on your **cm** DVD and audition it using your MIDI or QWERTY keyboard. Now click the right arrow to move over to the next empty Sample slot. (Continue or load **CM_trackers_tutorial_20b**).

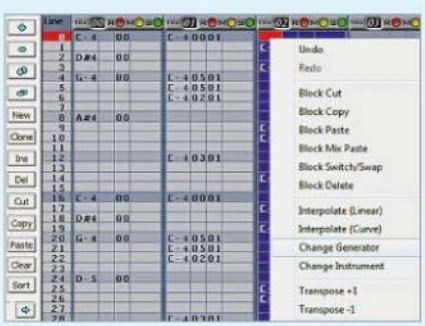


3 > Continue loading in the remaining samples (using slots 00-06). Now audition each hit by simply flicking back and forth, using the left and right arrows and playing the notes. You can also adjust sample attributes, such as panning, by clicking the **Edit** box. (Continue or load **CM_trackers_tutorial_20c**).

4 > Switch back to the Pattern view (**F3**), hit **Space** to enter Edit Mode and program in your drum sequence. You may wish to use more than one track for your drums, particularly to avoid cutting off longer samples like **Kick1**. Here, we also use the generic tracker **C**** command for extra volume control. (Continue or load **CM_trackers_tutorial_20d**).



5 > A simple way to add complexity to our drum hits is to send them through a delay. However, we want to avoid echoing kicks and snares, so create a new Sampler machine in the Machine view for the other sounds and connect it to the Dalay Delay we already have in our song. (Continue or load **CM_trackers_tutorial_20e**).



6 > Hit **F3** to bring up the Pattern view again, where we need to change the Machine number for each of the notes that we want to delay using the methods described above (eg, from 01 to 02). For extra interest, click on the **Edit** box next to the sample list and choose **Random Panning** for all of the samples except the Kick and Snare. **cm**

easy guide to...

Perfect intervals

We explore the most frequently used intervals in music, and offer up some handy techniques for doubling your parts

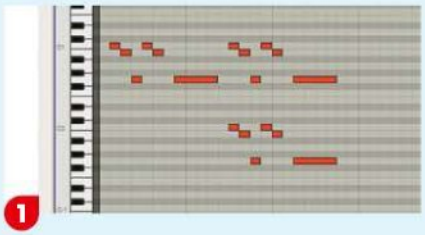
> Last time, we looked at the harmonic series and noted the order in which the basic building blocks of scales and chords (called intervals) appeared. We then went on to give consideration to the fact that they might be a useful guide in creating a scale of consonance and dissonance.

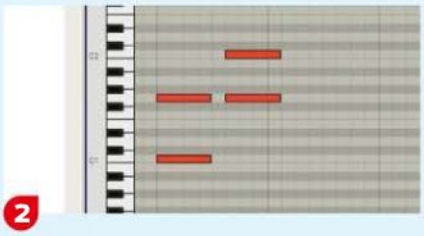
This time around, we're going to take a look at some very specific examples, covering octaves, fifths and their inversions, fourths, which are all considered to be the most consonant intervals, and are even called "perfect" intervals in traditional nomenclature.

Octaves

The octave, where the upper note is simply twice the frequency of the lower note, is so pure that it hardly counts as a harmonic interval. It occurs spontaneously in singing when men's voices can be heard an octave lower than women's and children's voices. It's also used extensively in doubling instrumental lines to thicken them or bring them out of the mix – instead of instinctively reaching for the volume slider, you can try adding an octave above or below your lead in order to increase its prominence – see **Fig 1**.

Basslines are usually better doubled below rather than above – in a classical orchestra the double basses frequently play the same line as the cellos, but down the octave, for example. However, be aware that this technique is not necessarily the best thing to do in modern production – if your bassline is already very low, then added sub-bass may just produce rumble and muddy your mix (see boxout for more on understanding bass range).





1: It's very easy to double a line an octave above or below
2: A fifth (C to G, seven semitones) becomes a fourth (G to C, five semitones) when inverted – ie, the lower note is put up an octave

Fifths and fourths

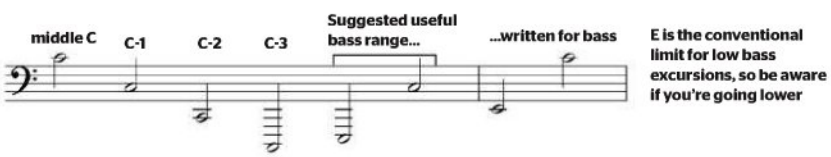
Continuing up the harmonic series, the next interval we hear is the perfect fifth, and its inversion, the perfect fourth – see **Fig 2**. The nearest thing to doubling a melody at the octave is to add a part a fifth above or a fourth below. These two intervals are harmonically very similar, but it's worth noting that basslines will tend to work better with the fifths above, rather than fourths below. This is a lot richer than octave doubling, so use it with caution, as you can sometimes create an over-thick texture.

> "A fifth can be more effective than a single note or octave, and many synth patches have a fifth built into every note"

In passages that require a drone, often the interval of a fifth can be more effective than a single note or octave and many synth patches have a fifth built into every note – just look for the tell-tale sign of one of the oscillators being tuned seven semitones (perhaps plus an octave, which makes 19 semitones) above the others. Organ sounds often work on this principle, as the classic drawbar organs add sine waves according to the lower reaches of the harmonic series to create their familiar tones.

If you have enough keyboard skills, practise playing passages doubled in fourths or fifths to generate new ideas. This may suggest primitive or ancient-sounding music as fourth and fifths were commonly used in medieval times, eg, in plainchant, before the sweeter-sounding thirds and sixths were 'discovered' – we'll be investigating those next time. **cm**

What pitch are you playing?



With a conventional musical instrument (a piano, say) you can be sure exactly what note and octave you're playing. Any note on a MIDI keyboard or written into a sequencer can play any pitch, so you may not be inputting quite what you think you are.

Some more exotic synth patches occasionally play distinct pitches at variance with the notes fingered on the keyboard, but perhaps the most scope for confusion comes with knowing the octave of bass patches. If a bass is too high, it will not sound convincing as a bassline – on the other hand, an octave too low and it will rumble or even not sound like a pitch at all. You can adjust this by ear, of course, and all electronic instruments will have an octave control, but if you want to be clear in what octave your patch is playing, then sing.

First find middle C: with a real piano or a realistic virtual one, this will be near the middle of the keyboard. Males singing this note will probably find that it's towards the top of their range (unless you're Stevie Wonder, in which case, it's probably around the middle!) and non-singers might even find that it's a bit of a reach. Middle C comes towards the lower end of female voices – you may be able to sing several notes below it but a whole octave below will be a groan if present at all.

Having located middle C, map out which real-world octave your patch plays – most basslines will mainly inhabit the region more than an octave below middle C. A four-string bass guitar descends to the E just short of three octaves below middle C, giving a good bread-and-butter range of nearly two octaves for most basslines. Exceed this range by all means, but be aware that you're taking your bassline into slightly non-standard territory.

Incidentally, notation for common low-end instruments, such as double bass and bass guitar, is always written an octave too high to save excessive ledger lines, so if you play from a bass part on a keyboard, you may need to transpose down an octave.

Sounds of nature

cm DVD
ON THE DVD
Hear the track elements and full mix of rachMiel's nature-inspired music

Audio anarchist rachMiel looks to the natural world for inspiration and shows you how to inject some of its ebb and flow into your music

rachMiel

rachMiel has spent the better part of a decade studying composition in America and Germany. A recovering atonalist, his musical influences range from Frank Zappa, Karlheinz Stockhausen and North Indian classical drumming to 60s pop, horror movie soundtracks, avant electronica and, above all, silence.

> Humans often look to nature for guidance and inspiration. This makes good sense. We are embedded in nature – as much as we might feel at odds with it, we are in fact an integral part of the natural world. Nature is an excellent teacher, a consummate builder with great patience, all with meticulous attention to detail and inexhaustible imagination.

Nature has a huge amount to offer human creators of all kinds: artists, architects, designers, planners and engineers. We composers are especially fortunate in that music, the most abstract of all the art forms, is wonderfully suited to lessons gleaned from natural processes. Take, for example, the cycle of the seasons. Every year, we go through spring, summer, autumn and winter, whereupon the cycle begins anew. Each season has its own objective and subjective attributes.

On a subjective level, spring suggests rebirth, awakening, renewal, growth, fertility, vitality and hopefulness. Objectively, it's a three-month stretch between the vernal equinox and summer solstice that's characterised by plant growth and onset of warmer weather caused by the angle of sunlight. Note that an entity's subjective and objective attributes are not necessarily in sync with one another. Emotions and scientific observations can be different.

> "We composers are especially fortunate in that music is wonderfully suited to lessons gleaned from natural processes"

Nature's influence

Nature, from both subjective and objective perspectives, is teeming with time-based processes that we composers can employ as models for our music. Staying with the notion of seasons, there is the diurnal cycle: the 24-hour day, one full rotation about earth's axis, the rising and setting of the sun, day and night, dawn, twilight, dusk. Then there is the 28-day lunar cycle, with its phasing and associated rising and falling of tides.

There is a panoply of larger-scale cycles, too, including the rotation of our solar system around the Milky Way, the Milky Way around other galaxies and the expansion of the universe. And of smaller cycles: the inhaling and exhaling of a breath, diastole and systole of a heartbeat, charge and release of a neuron firing.

Life cycles

Perhaps the most inspiring of all natural processes is that of life itself, as embodied in the life cycle. Living things are born, before living (for a variable period of time) and dying again. Along the way, many things can happen to embellish this basic structure: growth, evolution, reproduction, illness, creation, destruction, wisdom, delusion, love, hate, seminal events and emotional phases, all the vicissitudes of a lived life. A lot can happen between cradle and grave – translating these happenings into sound can make for very compelling music.

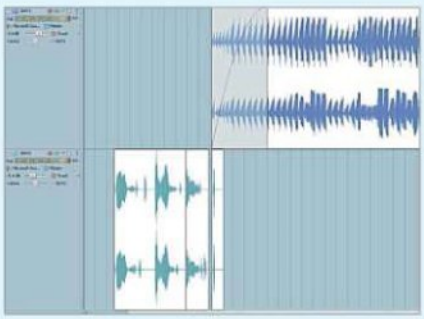
The benefit of looking towards nature for compositional guidance is twofold. First, by studying nature, you are not only learning from the ultimate master, you are also embracing the very ground of your – and indeed all of – existence. And secondly, with a bit of digging, you will find in the natural world an unending supply of unique and fascinating processes, cycles, forms and structures to derive inspiration from. Looking to nature can help you to make good music... and to live a good life.

Don't forget the other parameters!

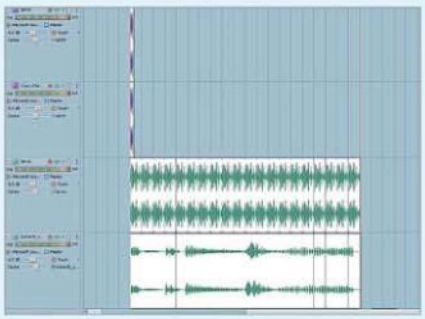
My focus in this article is on the parameter of duration: using natural processes to build time-based structures, from the macro level (form as applied to sections or entire pieces) to the micro (rhythms, grooves, beats). But let's not forget about the other four classical parameters: pitch, timbre, dynamics and space. Pitch-wise, you can find inspiration in nature to build modes, scales and tuning systems. Our very own major/minor scales are based (more or less) on the overtone series that occurs in nature. This is but one of an infinite number of natural models that could have been used. Find others!

Timbre-wise, how about analysing compelling natural sounds – the cry of a loon, the sigh of pitched wind through trees, or a grooved, looping melody of birdsong – and applying your findings to synthetic or sampled sounds? For dynamics, record a forest at night, a city at midday or a lively conversation among friends, then extract its amplitude envelope and lay it over a passage of your own music. In terms of space, which includes both location and echo/reverberation, seek inspiration from the Doppler effect, the 360-degree surround sound found in real-world environments and natural echo/reverb like in the Grand Canyon, or manmade such as in St. Peter's Basilica.

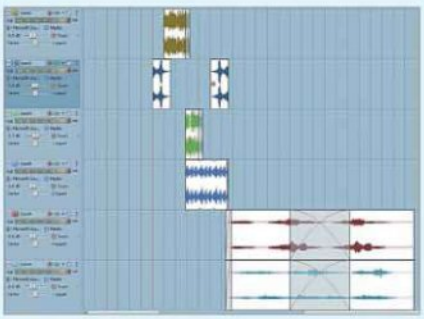
>Step by step Sounds of nature



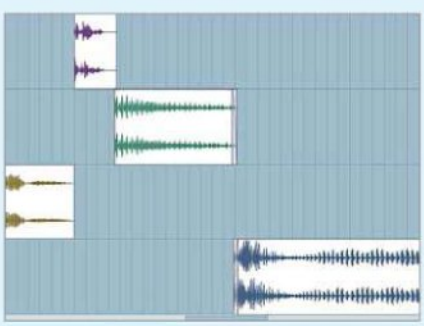
1 > To demonstrate how natural processes can inspire musical forms, I've created a short piece based on the life cycle of a butterfly. I've divided this cycle into six distinct sections: birth, caterpillar, cocoon, butterfly, sex and death. As source material, I've used some vocal samples that I've contributed to this issue of the magazine (see p41). Here's how the first one turned out: **Birth.wav**.



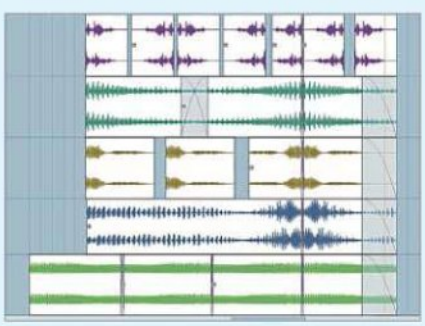
2 > I rarely follow any 'program' when composing – my music tends to be very abstract, representing only itself and music at large. So, composing passages to embody specific natural processes (birth, larval growth, cocoon, etc) was great fun! Here's my take on the caterpillar evolving from birth to cocoon: **Caterpillar.wav**. Note the foreshadowing of butterfly that appears in the background.



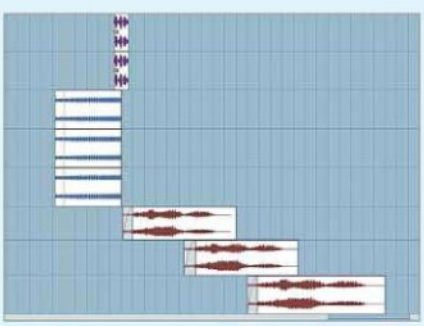
3 > Next is the cocoon (or pupal) stage. In my decidedly non-scientific interpretation, the cocooning begins with a crisis (glitched-out vocal samples from F'loom), then moves suddenly to a state of near stasis (long, slow, ambient sweeps made by sending soprano Bess through Reaktor effects): **Cocoon.wav**. Note once more the butterfly emerging at the end.



4 > Time for the butterfly to have its day in the sun. Going through a set of Reaktorised F'loom samples, some slow-motion passages of Bess singing a Renaissance melody caught my ear. The looping phase-changing grains remind me of the flapping of butterfly wings: **Butterfly.wav**. Remember that these are the same sounds heard in the background of the caterpillar section.



5 > The butterfly's life is short. Its basic mission is to mate, reproduce by laying eggs (thus furthering the cycle) and die. I envision the butterfly's mating phase as a kind of low-key group-sex orgy, so in order to realise this in musical terms, I overlap all the individual components of the butterfly section, some forwards, some backwards: **Sex.wav**.



6 > I'm tempted to create a melodramatic death for our butterfly, but fortunately, I resist (mostly). The butterfly's final moments begin with an understated death-rattle chord, which is interrupted by a shriek (played in reverse), and brought home with three variants of Bess singing the ending phrase from the aforementioned song: **Death.wav**. Here's the entire piece: **Life_cycle.wav**.

Experimentalists' corner: Extreme nature music

Experimentalists will no doubt want to explore the extremes that nature has to offer and find ways of turning these into wildly compelling music. Take, for example, the parameter of duration. Try modelling your piece on the life cycle of a mountain range, or the earth, or the sun, or the Milky Way, or the universe itself. Or move in the other direction, towards the microcosmic: the life cycle of a mayfly, a flash of lightning, a bacterium, an infinitesimally short-lived quark generated within a particle collider.

Or consider extremes of intensity. Study the way hurricanes emerge, evolve and dissipate (or tornadoes, cyclones, storms, earthquakes, volcanic eruptions, etc). Create a piece that depicts, in musical terms, the process by which a lump of coal is transformed into a diamond. What about delving into realms of scientific speculation and mystery? How might you represent dark matter in sound? A black hole? The Big Bang? The slow expansion of the universe to absolute-zero stasis? Entropy? Time travel? Or, closer to home, instead of modelling a piece after an 'ordinary' human life, go for the extraordinary: a schizophrenic, a catatonic, a Tourette's Syndrome sufferer, a warmongering dictator or a Buddhist monk.cm

Scraping by

Our resident sound design guru shows you how to create interesting textures using simple bowed metal samples

cm DVD
ON THE DVD
Grab Scot's raw audio files to use in the following walkthrough

> Some of my favourite sound design gigs involve creating presets for samplers or sampling synthesisers. With a deep enough synth engine, there's a lot that can be achieved with even the simplest of sources – although, of course, it helps to start with something that's interesting in and of itself.

Today, sample-based synthesisers are seen as little more than playback devices, but it wasn't always that way. When sampling first became an economically viable technology, samples were viewed as a rich timbral resource to be shaped and manipulated, like any other waveform. The idea wasn't new – progressive musicians of the 60s and 70s were quick to doctor the sounds of their Mellotrons and pump their traditional instruments through the filter sections of their analogue synthesisers.

Yet such aural acrobatics really came of age with the birth of digital samplers and PCM-based synthesisers (see *Busting jargon*). The first of these stored only single-cycle waveforms, but as the price of memory tumbled, the length and complexity of onboard waves increased. Pianos, guitars, drums and orchestral sounds became sampling fodder. More interesting (to me) were the possibilities of using non-musical sounds or the misuse of traditional instruments. Bowed metal, running engines, street ambience – anything that makes noise can be wrangled into new and exciting soundscapes.

Here, I'm going to show you one of my favourite techniques for creating interesting waveforms. It's cheap, effective and can yield countless patches. All you need is a microphone, a bit of metal and a violin bow...

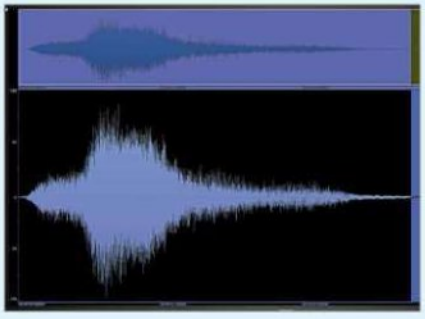
>Step by step Using bowed metal for sound design

1 > Violin bows are used to excite strings into vibration. However, you can also use them to draw sound from a variety of less obvious sources. Some of my favourite sounds start with recordings of bows scraping across metal. Cymbals, bells, bowls, sheet metal, beams – all work well. Here, I'm using a small Tibetan gong.

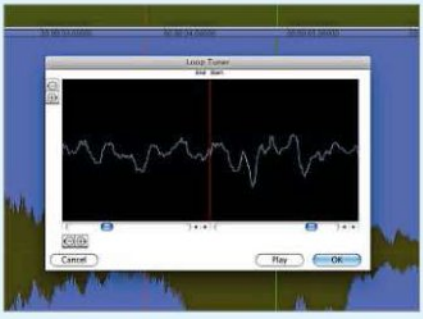
2 > I record my bowed gong into Cubase. I've recorded a number of scrapes and bows – some short, some long. Be careful, though. As you can see, it's all too easy to push the signal beyond the threshold of the mic or preamp. That's OK, though. We only need a couple of these attempts.

3 > It takes a lot of gain to get our signal to anywhere near a usable volume level. With that gain comes noise, both from the equipment and the surroundings. Some noise is OK – we're not making a clinical sample of an acoustic instrument, but rather an interesting and unusual texture. Still, you might need to use a noise reduction plug-in to clean it up a little.

4 > Right, I've got my sound all tidied up. Now to export it, so that I can reopen it in a dedicated sample editor. I'm going to use Bias Peak, but you can use Wavelab, Sound Forge or whatever you have to hand. Once opened, I give the file a listen and decide what bits I want to use. I then select each one in turn and copy them to a new document.



5 > Some of the files are relatively short, but one is a long, continuous section. I'll start with a short one. Listen to your sound with a critical ear and decide where it should start and end. Cut out any extraneous stuff and apply brief fade-ins and fade-outs if necessary. I've made three short samples, all of which can be found on the cm DVD.



6 > While my shorter sounds will serve nicely as transients, the longer one might be useful for some sustained special effects. With that in mind, I copy it to its own file, trim it, apply fades and set up a couple of loop points. Don't worry if the loop isn't perfectly smooth – just avoid any abrupt changes in volume or clicks. You can crossfade it, too, if needed.

BUSTING JARGON

PCM-BASED SYNTHESIS

PCM is the acronym for Pulse Code Modulation, which in itself is merely a fancy name for the way digital audio is stored and played back. It first came into use with the advent of early, affordable digital recorders, and was later adopted by synth manufacturers to describe the method of synthesis wherein samples replaced the raw waveforms of analogue models.

RECOMMENDED LISTENING

ROXY MUSIC, *FOR YOUR PLEASURE*

Adventurous musicians have been pumping sounds through their synths' filter sections for decades. One of the most famous (and best) examples of the technique can be found on the early Roxy Music albums. In fact, synthesist Brian Eno would route signals from Andy Mackay's oboe, Phil Manzanera's guitar or even the band's entire mix through his trusty VCS3.

PRO TIPS

RESYNTHESIS

In theory, additive synthesisers should be able to create any sound imaginable. However, the reality is that additive synthesis can be a headache at the best of times. Yet, many additive units can resynthesise recorded sounds, effectively turning any sample into a complex additive patch for further manipulation.

ENVELOPE GENERATION

Try 'stealing the shape' of one sample and wrapping it around another. One method is to use an envelope follower, or even a vocoder, to impart a vocal or rhythmic quality to, say, a metallic sample.

START ME UP

Much of a sound's character is determined by its attack. Drums, plucked strings and percussive sounds have short, sharp attacks – while violins, voices and brass all have slow, gradual attack times. Try fading in a piano note during the long decay, or chop in a cello sound during the sustain portion, before using an envelope generator to fashion a sharp attack.

Scot Solida

Scot bought his first synth over a quarter of a century ago. A synthesist, sound designer and audio engineer of international repute, he's provided factory presets for many of the music software industry's most acclaimed synths, samplers and drum machines, not to mention the cm Studio. On rare occasions, he manages to find time to make records for Beta-lactam Ring Records under the name Christus and the Cosmonaughts.

7 > Now you should have a folder full of neatly trimmed, edited and (where appropriate) looped samples. Let's fire up a sampler. I'm going to use the synth/sampler built into energyXT2. You can use any program you like, assuming it enables you to layer sounds. Fire up your sampler of choice in your host.

8 > If you are using energyXT2's synth, you'll have the default bass patch loaded up. We want to start from scratch, though, so click over to the **Zone** page, then select and delete the current Synth zone. Find the **LoopedMetal.wav** sample on the **cm** DVD (or one that you've created) and drag it into a zone.

9 > It might surprise you to learn that there is a discernible pitch to this sound. It's a couple of semitones shy of concert pitch, I reckon. Adjust the root pitch (**Org.key** in XT2) parameter to take this into account. In fact, raise the root a full ten steps, which will make it about an octave lower when played (minus the two semitones, of course).

10 > Our sound should be incredibly atmospheric now. Still, it could be better. Click over to the synth's **Edit** page, give the Amp envelope's **A**ttack a nudge and crank the **R**elease up past half way. Reduce the **Filter Cutoff** to **53**, then boost the Filter Envelope's **A**ttack, **D**ecay and **R**elease stages even more, before finally bringing the **S**ustain down.

11 > We can sweeten our sound further by applying some effects. Click over to the **Master** page and engage both the **Delay** and **Reverb** effects. Now, click over to the **FX** page. Though I usually advise against it, I think this time calls for some heavy-handed application of both the delay and reverb effects. Crank 'em up good and loud, too.

12 > The effects bring out some of the resonance of the original sample. Let's stack another sample on top. **BowedMetal3.wav** has a nice attack. Adjust the pitch and tweak the effects and envelope to taste. Be sure to experiment by layering on some other sounds for added interest, too. **cm**

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DJ MAG: 4.5 / 5 ★★★★½

BEAT: 6 / 6 ★★★★★★

FUTURE MUSIC: 9 / 10 ★★★★★ ★★★★½

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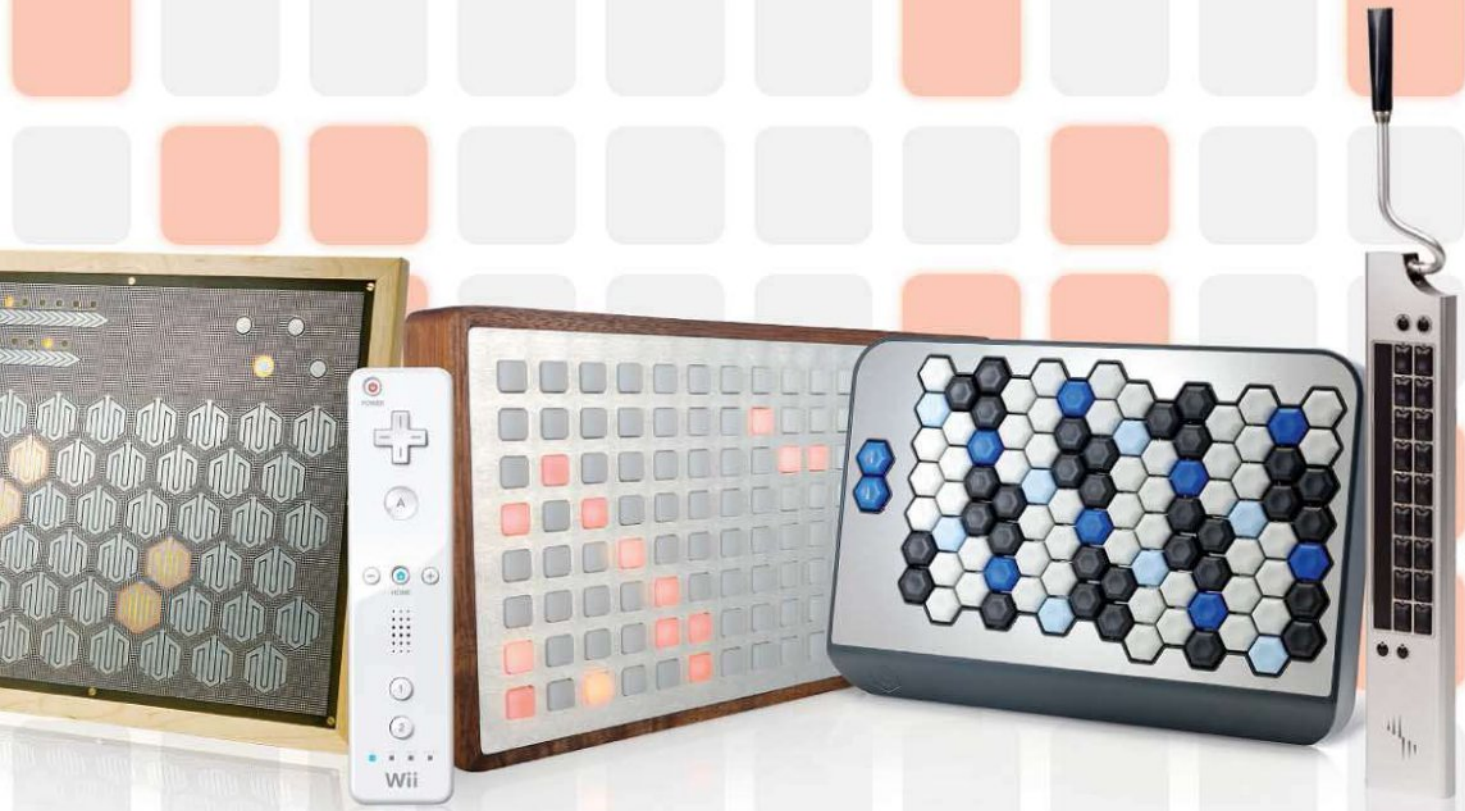

Control freaks

Transform your MIDI performances with the new breed of esoteric controllers. We talk to the people making it happen and uncover the coolest devices currently on the market...

In many ways, the humble piano-style MIDI keyboard is suffering the same fate as the QWERTY keyboard. Both are throwbacks to a mechanical era, where layouts were dictated by physical limitations in the original hardware and in its manufacturing. Modern technology might make both of these points redundant, but as yet, a time traveller from 1880 could still use both, and likely be more proficient than most of us.

In the 21st century, we can build devices out of almost anything. We understand more about ergonomics than the Victorians did, and we don't have the same social pressures to conform towards anymore. This leaves us with a rather tasty primordial soup overflowing with design potential.

Yet the QWERTY keyboard is stubbornly holding on to its Remington roots, and the musical input devices that the majority of us use every day have changed very little since the dawn of MIDI in 1982. We're often left unchallenged by the same plethora of drum pads, wind controllers and fader boxes that have accompanied the digital revolution since its inception. But things *are* changing.

MIDI matters

A new breed of controllers are adapting the very ways in which we make music. They eschew formulaic ivory meanderings by replacing the black and white keys with alternative surfaces that often won't do anything without a computer. But it's precisely because we spend so much time in front of the computer that these interfaces are thriving – we want to pull ourselves away from the screen and engage with the process in a more creative way.

> "They eschew formulaic ivory meanderings by replacing the black and white keys"

As Jeff Snyder, creator of the marvellous Manta controller, puts it: "I've never been satisfied with the limitations of the MIDI note-on-with-velocity paradigm – it just doesn't allow for much expression beyond notes and rhythms. I was experimenting with alternative tunings, too, and didn't like being restricted to the conventional Western keyboard layout."

This is what led him to the embedded hexagonal sensors used by the Manta, and its a design that was heavily influenced by early synthesisers. "I first got the idea for the Manta when I was spending a lot of time with a 1960s-era Buchla 100 system housed at the Columbia University Computer Music Center," he reveals, "and I found the touch-keyboard on that synthesiser to be very expressive and inspiring. However, I wanted to take advantage of the kinds of things a laptop can do, and I needed something very portable, so I could carry it in a laptop case on the subway to a gig."

Soft choices

Software developers have done a great job of opening up their applications to MIDI controllers in recent years. Getting Cubase to talk to your controller used to be a fight only Cubase could win, for example, but the industry have quickly realised that hands-on control is the way music

is going, and have therefore adapted their products accordingly.

Ableton Live, in particular, takes control very seriously, turning the whole interface into a mappable template with a single click of a button on the main screen. But it's the growing popularity of applications like Cycling '74 Max/MSP, SuperCollider and Pure Data that are principally driving the adoption of the more esoteric controllers. These applications enable you to build your own instruments and control mechanisms, unhindered by the assumptions of DAW developers or the restrictions of traditional controllers.

We ask Bert Schiettecatte, creator of the Percussa AudioCubes, whether he thinks traditional controllers are failing. "I don't think controllers are necessarily failing, but I think that for every task and software there's the 'right' solution. If you're a recording engineer and just want to mix some audio tracks, use a fader box or a DAW control surface. If you're an artist, however, and you differentiate yourself and your work by what you create, you're looking for more than just a passive fader box and some software. You're looking for a tool that amplifies your artistic ideas and lets you express them in a unique and powerful way."

As a result, there's significant demand for more expressive instruments, and a thriving cottage industry serving the needs of musicians unhappily treading the old black and white route to music creation. Unlike the QWERTY and Pianoforte, these devices aren't restricted by mechanical limitations, and low cost printed circuit boards means that almost anyone can set up a controller shop – meaning, also, that almost anything can become a controller.

Original Control

C-Thru Music, the company behind the Axis range of controllers, take a distinctly musical approach. "When Robert Moog came up with his synthesiser, it was initially seen less as a musical instrument and more as a sound and timbre generator," the company's Jacqueline Kandalaft tells us. "It wasn't until Herb Deutsch wanted to do a series of musical concerts that he included a keyboard. They settled on a piano keyboard, since it was already widely used and that meant musicians who had to learn the new sound-producing aspects didn't need to learn a new method of playing as well."

> "You're looking for a tool that amplifies your artistic ideas and lets you express them in a unique way"

The Axis, in particular, is therefore designed to be immediately playable, requiring neither background software or musical knowledge.

We ask Kandalaft what challenges C-Thru Music faced in coming up with their own particular design. "The main challenges were getting the right compromise in various details. Two main considerations were the size of the keys, and the amount of key travel. Size has to be a compromise related to the average hand size, and also affects the reach or range that can be played with one hand. The travel was important, too. Too deep and it becomes impossible to gliss (run a finger across a series of notes); too shallow, and you lose the feel and it becomes difficult to detect velocity."

For other companies, inspiration comes from wanting to be both ergonomic and ethically responsible, as Jeff Snyder tells us. "I wanted the Manta to be as compact as possible, while still feeling like it's the right size for human hands. I changed around the sensor pattern a lot in the prototypes to get an even response to finger contact, and put a lot of work into making it resistant to noise and interference. There are several things I could have done that would have made the production techniques more conventional, but I was interested in exploring what this particular sensing technology suggested, rather than imposing more traditional manufacturing constraints upon it."

Social networking

The same is also true of Brian Crabtree and Kelli Cain's monome development, as well as Jay Smith's Livid Instruments. These are people building controllers in their houses and inspiring a dedicated online community. It's word of mouth and social networking that spreads the news and pushes development forward. The monome series, in particular, has a massive community responsible for nearly all their patches, support and software updates. The schematics for the device are available to anyone with an interest, and there are plenty of people building their own, with all the help and support coming from the official forums.

The result of all this work, for us as consumers, is that alternative controllers are becoming more mainstream and less alternative. Manufacturers like Novation are making increasingly esoteric devices, bringing down prices and making controllers easier to get hold of. New software, such as Max for Live, is bringing extreme configuration and graphical programming to a whole new audience, which means that the wonderful world of music controllers has never looked so strong or offered so much creative potential.

monome $500-$1400

There are three monomes, each named after the number of backlit buttons on its surface: 'sixty four' houses an 8x8 grid of translucent buttons, 'one twenty eight' boosts this to 8x16, while 'two fifty six' has 16x16. New editions of both the 'sixty four' and 'one twenty eight' are bus powered via USB and built into a strong steel enclosure encased in black silicone. Older versions feature a walnut enclosure and a PSU input next to the USB port.

None of these devices do anything on their own. They're dumb, bar the pseudo-random pattern that illuminates the buttons when its got power. A small client app translates commands sent to and from your monome into either MIDI or OSC.

It's easy enough to trigger notes from the buttons, but that's missing the point. The monome's real strength lies in the LED feedback. When programmed through an app like Max/MSP, feedback can be used to to show anything from the cursor in a step sequencer to the frequency content of an audio file.

The most popular Max monome patch is MLR, in which each row contains a single loop, and each button within that loop triggers playback from the corresponding point in the sample. It creates a very distinctive sound and has even spawned its own glitch subgenre, populated by artists like Daedalus.

Web monome.org

Snyderphonics Manta $675

As a bus-powered device full of lights/triggers, Snyderphonics' Manta has a lot in common with the monome – the button matrix of the latter has been replaced by a hexagonal arrangement of 48 sensors, and added to with two areas that act as controllers and sliders. Each element contains an embedded LED, programmable either through a custom-built Max patch or OSC. Its community is far smaller than monome's, meaning there aren't that many pre-patched solutions to play with, but there's still a significant level of interest in this device, and plenty of people are making their own – it's essentially for performers who aren't scared of programming.

The most obvious use for the hexagonal layout is to mimic the Harmonic Table used by C-Thru's Axis controllers, triggering notes layered across the sensors in such a way that they reveal all kinds of harmonic relationships. If you've only played a keyboard, this is a minor revolution. Each sensor can send independent pressure sensitivity, too, which you can translate into polyphonic aftertouch, or any other controller that takes your fancy – ie, move your finger around each note to change it's timbre.

Web www.snyderphonics.com

C-Thru Music Axis $495

Even if we don't like to admit it, many enjoy using the QWERTY keyboard for musical input. The layout of the keys, with some positioned at 45 degrees to others, adds a new dimension to playing and helps you avoid the same repetitive routines that are typical with a piano-style keyboard. C-Thru Music's Axis takes this approach to its logical conclusion, standardising the layout, adding velocity info to your key presses and using six-sided keys designed for performance rather than letter writing. The most interesting thing about these controllers, though, is the notes they trigger.

Axis uses a Harmonic Table – from any one key, the one to the top left is a minor third, to the top right is a major third, and directly above is a fifth. Taking any line through these keys provides a scale, and holding any three down gives you an instant chord.

The smaller Axis 49 model plays 49 notes from its 98 keys (some notes need to be repeated) and uses a USB class-compliant connection, requiring no additional software. The larger 64-note model boasts 192 keys and has its own MIDI port for computer-free operation. There are also pitchbend and mod wheels, as well as a preset system catering for a range of setups.

Web www.c-thru-music.com

JazzMutant Lemur €1999

Using an embedded computer attached to a 12", 800x600 multitouch LCD screen, the functionality of JazzMutant's Lemur is utterly determined by your instructions. Using the supplied editor on your computer, you create screen sets out of a palette of virtual sliders, knobs, lines and ping pong balls, each of which can send many different kinds of MIDI and OSC data. These layouts are saved on the Lemur, and there are dozens of pre-built examples for many of the more popular synths and software. Once your Lemur is loaded, you can direct the data to your applications and hardware through the eight virtual MIDI ports that are delivered via its built-in ethernet connection.

Lemur's distinctive nightclub-fluorescent palette works beautifully in the dark, and the design and layout of the various widgets tempt your fingers to pull and push them around. You can simultaneously move as many as your fingers allow, and some controls offer a degree of momentum, sending data as they bounce off a 'wall', or slow down to a halt. You can quickly page through various layouts using the hardware buttons surrounding the screen. It's the perfect performance device, and an interface you can turn into whatever you need it to be. The only downside is its cost.

Web www.jazzmutant.com

Percussa AudioCubes

€197 each (€657 for four)

Percussa's AudioCubes are the most unlikely looking input devices we've come across, but they have a secret weapon in the fact that they talk to each other. To get started, you connect each AudioCube to your PC via the embedded USB ports, and use the supporting software to define a control scheme, then disconnect all but one cube and the rest will interact wirelessly through it.

Data is derived from location, orientation and the distance between each cube. How this is used is dependent on your software – both OSC and MIDI messages can be generated.

There are several apps that can be used to make sense of the data. MIDIBridge, for example, enables you to set up each cube face to generate Note On or CC data, which triggers when cubes get close. Percussa's Modulor, a compositional AU/VST plug-in, enables you to record MIDI loops from any input device and process this data using live MIDI effects. Each cube can hold a single loop, and their proximity dictates whether the loop is active or not, before finally sending the data to a pre-defined software or hardware synth.

Web www.percussa.com

Nintendo Wiimote £30

If there's one thing that all the other devices we've looked at have in common, it's their high price tags. This is thanks to niche demand and the exacting standard of their builders, leaving many both unwilling and unable to take advantage of mass production techniques. But there are cheaper alternatives, and the most dynamic is the humble Wiimote. Since the console was released, the Bluetooth protocol used by Nintendo's controller to communicate with the base unit has been reverse engineered, and the various accelerometer parameters that make Wii games so immersive are now available for you to twist and morph into your own music.

You'll need a PC or Mac with Bluetooth, using either a dongle or the built-in radio, and a piece of software to translate the Wiimote instructions into something more musical. On the Mac, we highly recommend OSCulator ($39), an app designed to make Wiimote configuration as easy as turning your machine on and holding down a couple of buttons. Once up and running, it'll turn any of the commands issued by the Wiimote into OSC or MIDI commands. These parameters include raw acceleration in the X, Y and Z axes, pitch and yaw, an imaginary X and Y location to which your Wiimote is pointing, and the raw input from the onboard infrared camera, giving you a massive range of control possibilities.

Windows users should look at the free GlovePIE, which offers similar features but is a little harder to use.

Web www.osculator.com; bit.ly/8Kht

Eigenharp Pico £349

It might be too early to say, particularly given the hyperbole surrounding the release of this beautiful instrument, but the EigenHarp might just change people's attitude towards controllers. The Pico is the smaller and more affordable version of a concept that was perfected in its larger brother, the Eigenharp Alpha. Both use multi-dimensional keys positioned along the neck of a wind controller that can sense both shifts in your finger's pressure and direction, as well as provide feedback through an embedded LED.

The Alpha features 120 of these buttons, while the Pico manages only 18. But its strength lies in the resolution of data provided by those buttons. Key samples are made 2000 times a second at 11-bit resolution, which means this device should capture every nuance of your performance, much like the orchestral instruments that the Pico and Alpha have been designed to imitate.

Unlike a 'real' instrument, though, both Eigenharps do nothing without a computer. And, at the time of writing, that computer has to be a Mac. You then create sounds using a mixture of the physical modelling synths, created to take advantage of this amount of control, the loops and samples bundled as part of the package and your own array of hardware or software instruments. How sounds are triggered and what effects your control dynamics have on the sound are up to you.

Web www.eigenlabs.com

Some more amazing controllers. From top to bottom: Livid Instruments' Block, Opal's Chameleon and Starr Labs' Mini-ZXS MIDI Guitar

The best of the rest

There are many other controller devices out there beyond this little lot. If you're looking for a monome with a little less minimalism, for example, take a look at the Block (www.lividinstruments.com). It's a device with the same grid of buttons as the monome 'sixty four', but also eight rotary controllers, two sliders and a smaller grid of buttons. It's a great solution if you you want to combine some monome action within your DJ set.

Then there's Starr Labs' range of controllers (www.starrlabs.com), including several 'keytar' style instruments, as well as performance enhancement for both keyboards and standard guitars.

Opal Controllers are customised alternatives to C-Thru's Axis controllers (www.theshapeofmusic.com), and Novation's recently released Launchpad (www.novationmusic.com) is an affordable and powerful controller for Ableton Live, imitating many features of a monome with enhancements such as multi-coloured feedback and a variety of control buttons.

Finally, if you fancy a challenge, you could try building your own device using an open platform such as Arduino (www.arduino.cc) and a few piezo transducers that are available from any electronics retailer. cm

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Musical Inspiration

DJ PIERRE

Having almost single-handedly kick-started acid house with nothing more than a TB-303, we find the legendary producer toting an equally simple software setup more than 20 years on

You could, if you so wished, hold DJ Pierre responsible for pretty much everything that's happened in dance music over the last two decades. From early acid house, through the whole Ibiza scene, to the UK rave madness of the early 90s, the blistering techno and trance of the late 90s and 00s, and even today's big electro sounds. It's all his fault. All of it.

Well, OK, that's a slight exaggeration, but what he, Phuture bandmate Spanky (aka Earl Smith Jnr) and producer Marshall Jefferson came up with when they recorded a poor old Roland TB-303 Bass Line being abused back in 1986 really did change music forever...

The 303, for those of you too young to remember, was a hardware 'bassline' synth. You'll have seen its software equivalent in Propellerhead ReBirth, AudioRealism BassLine and D16 Group Phoscyon, and pretty much any virtual analogue synth can produce an approximation of its sound. But back in 1982, when it was released, people weren't doing anything even vaguely exciting with it. Roland put filter frequency and resonance controls on it but didn't really expect anyone to use them – which they didn't. For years people used the humble silver box as a simple, polite bassline accompaniment generator. Eventually Roland stopped making it, but over in Chicago a young man by the name of Nathaniel Pierre Jones was looking to make basslines with something new. The 303 was the obvious choice, and back then it was as cheap as chips...

The lowdown

"We were all about basslines," recalls Jones, AKA DJ Pierre. "I said to Spanky, the other guy in Phuture, 'We need to get a 303, man – that thing makes hot basslines', and he said, 'I'll see if I can find one'. He went looking around second-hand stores, and two weeks later called me and said, 'Hey man, I've got the 303, but I don't know how to work it – it's making all these crazy sounds!'

"I rode my bike over there and we just started twisting knobs and playing. We got caught up in all of these new sounds and forgot all about trying to produce a bassline – it sounded good to us – and that's really how it happened."

The 'it' that Pierre is talking about was the start of acid house. The pair of them messed around with the filter cutoff frequency and envelope generators on the 303, pushing them to their extremes in search of an extraordinary bassline. Realising that the squelching basses and screaming leads they created were much more interesting than the machine's 'conventional' output, they mixed the sounds into the house music that was emerging in Chicago at the time. The end product was the *Acid Trax* EP, which exploded all over the world.

The speed at which dance music evolved from that sound was only matched by the pace at which synth manufacturers tried to replicate the 303. It was an amazing time, where technology followed a sound rather than giving birth to one. But what's really amazing is that no one had really pushed the 303 – or any synth like it, come to that – until Pierre and Spanky did.

"It's still staggering to me... incredible," says DJ Pierre. "The only thing I can think is that God had a plan for me. You think about acid house and it sounded so different compared to what was going on at the time, so who would have tried it? On the 303, it was just noise, really, and not a lot to do with making music. No one before then thought, 'This sounds good – I'm going to do a track with this'. So, us being the ones that did it, I can't get my head around it, and I don't have an explanation as to why I thought it sounded like music, so I think God had a hand in it, saying, 'Right, this is your ticket, do you like this?', and I'm like, 'Yes, I like this!'"

Pierre went on to record under many different names throughout the rest of the 80s and 90s, releasing dozens of tracks on Trax Records. Various versions of the classic *Acid Trax* came out during the 90s, and Pierre soon became established as a DJ – in fact, he still plays out around the world pretty much every weekend. However, despite having released countless singles and started a music revolution, 23 years down the line, DJ Pierre has never released an album. That situation's soon to change, though, and his music setup has already seen change – the 303 is long gone...

"To be honest, I didn't stop using hardware completely until three and a half years ago," Pierre reveals when asked about his current software only setup. "I used a computer to record audio, but used keyboards and drum machines for everything else. I knew people could do it all on a computer around 1998, but I was like, 'I ain't messing with that!'

"Now I have Reason and I also use Record. To me, Reason is the best software solution for anyone coming from hardware. It's the easiest and most comfortable way to work on a computer. It makes you feel like you have all your equipment in hardware. Other pieces of

303 vs 303

Since we're tackling the software vs hardware debate this month (see p51), we couldn't not take the opportunity to get DJ Pierre's take on the subject. What does he make of the various software TB-303 clones that are available?

"I don't think anything is as good as the 303," he affirms. "Even if you tweak it to be exactly the same, the software still doesn't have that analogue sound. There are some that sound so good that you think they mimic the 303 perfectly, until you put them side by side. I did a track with Green Velvet using ReBirth. I then went to his house and used a real 303 and there was a big difference. All of a sudden ReBirth sounded so digital and thin and the real 303 sounded so thick, so grimy. You forget about how good that real 303 sound is because you've been hearing nothing but fake 303s for all of these years. You might be like, 'That really sounds good', but then someone comes along with a real 303 and you think, 'Wow, that *really* sounds good!'"

"I knew people could do it all on a computer around 1998, but I was like, 'I ain't messing with that!'"

DJ Pierre's gear

Apple Mac
PC
Event Monitors
Propellerhead Reason
Propellerhead Record
Sony Creative Software Sound Forge

DJ Pierre recoils in terror at the sheer amount of music available these days

software don't exactly make you feel that way, just because of the way you're meant to use them. They force you to know that you're using a computer, whereas Reason makes you use it like you have hardware.

"I guess it's each to their own," he continues, "but I think that Reason makes you more of a musician or a producer. You can do it in Logic, but with Reason you have more of a soul and you're really making it with your ear. Sometimes, with other software, it takes the heart and soul out of the music, and with all software, it's a different way of thinking. When you use keyboards and drum machines, you're not producing with your eye, you're using your heart, soul and ears. You know it by hearing it, but with the computer, you can recognise it by seeing it – you're using your brain."

Pierre is using said software for his first ever album project, which sounds very ambitious.

"I want it to be something that people will say, 'Wow, this sums up DJ Pierre's 20-plus years in the music business'."

The tracks are coming together and he expects it to be ready for March. So, how does DJ Pierre begin a track?

"I try to come up with an idea first," he says. "I have to visualise it in my mind first, with a few sounds, and see if anything pops out at me. Maybe I'll start with a beat and try a bassline. Usually I have something rolling around in my head. With me DJing, I hear so much music that I always have something in my mind. If not, I just wait for that idea to come – maybe have a nap and watch TV while I wait!"

When inspiration hits, it's straight to Reason...

"I like the SubTractor and Thor. I usually mess around with those two first, because I like to start with the bassline. They have good synth patches, but I start with the bass and the beats, and for those I use ReDrum. Sometimes I might get sounds from CDs, but mostly I use Reason.

> "Before, you had to be a real serious person investing all your money into music, so you only had the most serious people doing it"

"I usually leave the track and come back the next day," he continues. "It's funny: I still leave the sounds up. Even though I know I can recall it all instantly, I still leave it on like the old-school way! I'll even leave the computer on, then come back and play it the next day. Usually, if it sounds good the next day, then it's pretty much finished and I'll just tweak stuff. Often I come back and wonder what I was thinking about, though!"

Cutting the crap

Reason is clearly the favoured software in the DJ Pierre setup, but what else is in his studio?

"I have a Mac and a PC, but I still work mostly on the PC," he replies. "I'm waiting for the Mac to make me really want to use it. I work on a desktop and use a laptop PC for my DJ stuff. I also have Sound Forge, and that's about it."

Not the most extensive equipment list, then. But let's not forget that this is the man who invented a genre with a single piece of gear that was designed to accompany guitarists...

"I've always believed in not having a whole bunch of crap," he says. "Even when I used

DJing the new way?

It took a while for DJ Pierre to become convinced enough by music software to start using it over his traditional hardware setup, and it seems the DJ side of him is still sceptical as to its merits in the performance arena.

"I'm still doing a lot of DJing," he says. "I just had a mini-residency at Space and I've been DJing every weekend around Europe. I'm just starting to be tempted by Native Instruments' Traktor Scratch, but my mind still thinks 'analogue,' so I have to touch and feel what I'm doing, like loading CDs. I need to be able to see things like the CD case – that's my thought process while DJing."

"I don't know the names of the songs I'm playing, so I'm worried about using a laptop, as I'm going to have to learn the names of the music! It's going to be a different thought process, so I'm holding off a little bit. I think they're going to have to make the software friendlier for DJs like me. They're going to have to make it more like I do it now.

"I didn't make the jump to using computers for music until Reason came out. I knew about Logic and Pro Tools and all that, but I didn't move until a certain program came out, and it's going to be the same with DJing."

hardware, I wasn't one of those guys that always had to have the latest and greatest equipment. To me, less is more – more makes me indecisive. I get the sounds I like, and once I have something I use it until it doesn't work any more. If I find I'm not feeling good about my creative process, or I'm stagnating, then I move onto something else, but only then. I don't buy stuff just because it's new. I go into people's studios and they have lots of software, tons of racks, and they're still not making great music, so they're just wasting money."

The future is busy for DJ Pierre. As well as the new album, there's a track with Justice, a remix for Simian Mobile Disco and a Loopmasters sample CD. "I did a lot of the sounds and loops myself, but also worked with Spanky from Phuture, Lady Foursquare and a guy named Angel. There's some great stuff on there."

With over two decades in the industry, DJ Pierre has some good advice for aspiring producers. "When I first started, I was pretty green," he says, "pretty wet behind the ears. But knowing what I know now... boy! It's definitely not easy. You can make music easier than ever before, but it's a double-edged sword, as the competition is way too stiff. Everybody is making music, everybody is a DJ and everybody has a record label, which means you have a lot of garbage out there to sift through. It's too easy and you can't separate the men from the boys.

"Before, you had to be a real serious person investing all your money into it, so you only had the most serious people doing it. You didn't get people just messing around like you do now, just because they had a computer or a phone – you can even get a drum machine on your iPhone!

"Music is so accessible that it's watered down. As a DJ, you have too many choices, too much digital downloading, too many websites. It was nice back then, when you could go to a record shop and the record could be sold out. It meant that you could be the only DJ to have a record, so no one else could play it – but now it's everywhere and it's ridiculous. It's that whole choice thing – there is too much of it. So you have to have something worth investing in: a look, an image, a sound. You have to be different but still good. Yeah, different and good." **cm**

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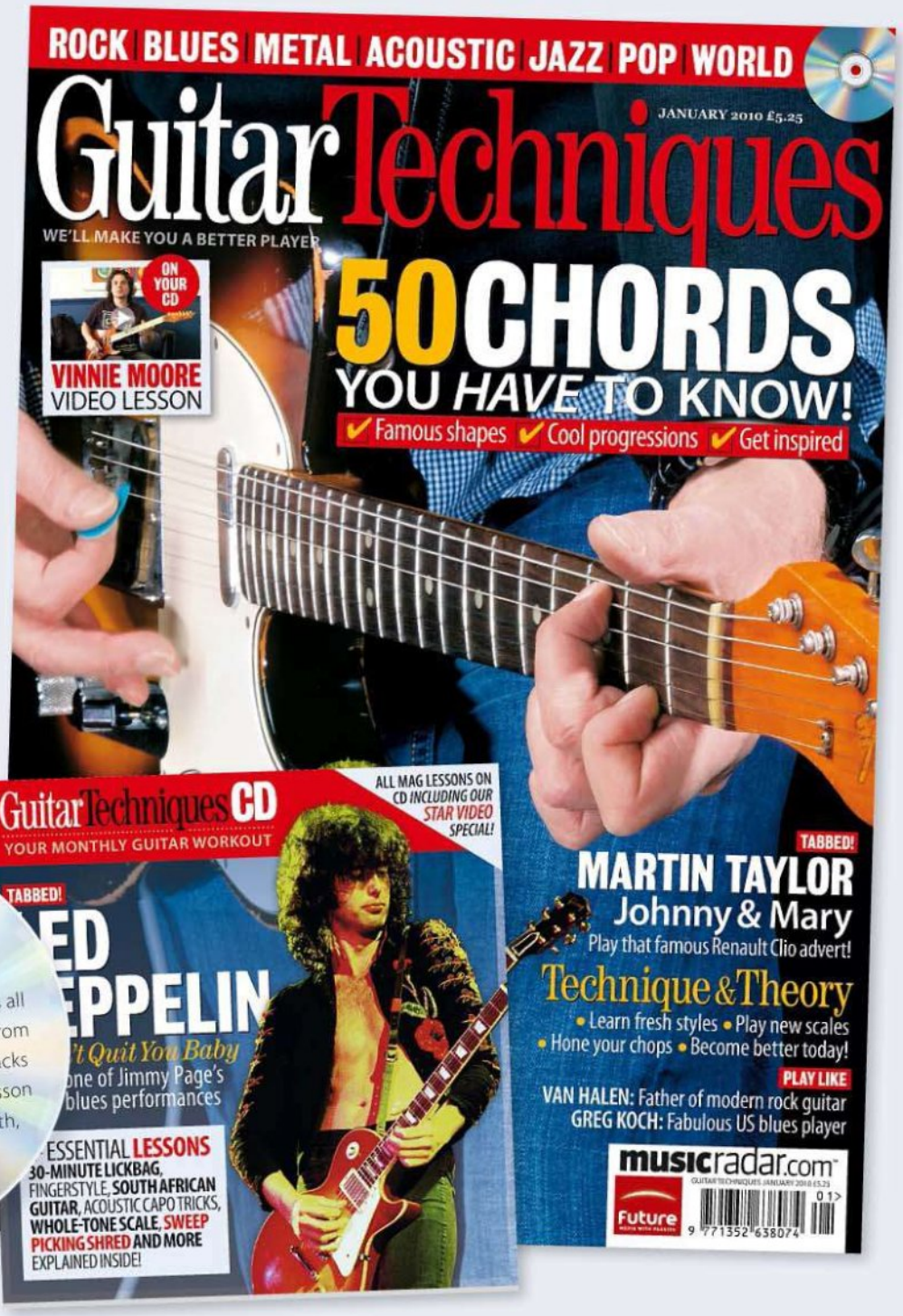

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New for Komplete 6 are wonder-sampler Kontakt 4 (10/10, **cm**146), mind-bending super synth Absynth 5 (8/10, **cm**145) and Guitar Rig Pro 4, which you can read all about on p90. Then there's the Battery 3 drum sampler, amazin' Massive wavetable synth, classic FM8 for FM lovers and mighty, modular Reaktor 5 – all of which earned 9/10 review scores.

Kore 2 is a hardware/software workstation that integrates all of the above instruments, as well as any AU/VSTs that you might own. Find sounds, morph presets, stack synths, route parallel effects and more! And as for those four libraries, they're The Finger, Sonic Fiction, Balinese Gamelan and Scarbee Pre-Bass.

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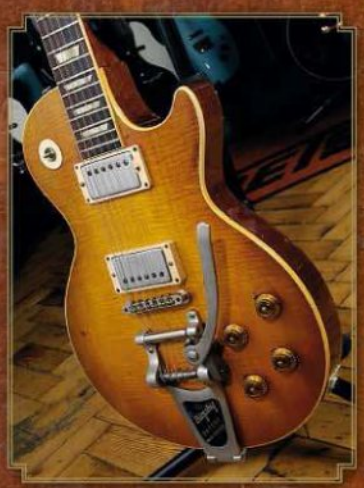

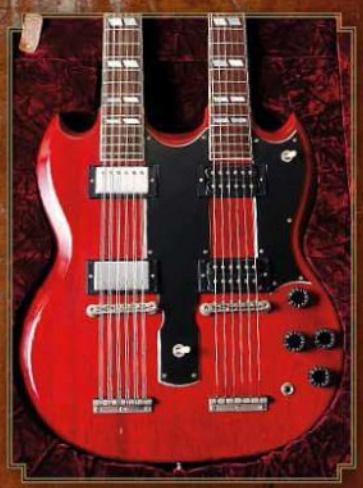

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90_ NATIVE INSTRUMENTS GUITAR RIG 4 PRO

Can this expanded Rig stack up against the competition?

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The virtual instrument kings return with a brand new 'total bass module'

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Native Instruments PC MAC
Guitar Rig 4 Pro $199

cm DVD ON THE DVD
Read the manual, listen to our audio files and rock out with the demo

There are more features than ever in version 4 of this amp and effects suite, but its the prospect of improved tone that's most tantalising

System requirements

PC Pentium/Athlon XP 1.4GHz, 1GB RAM, Windows XP SP2/Vista (32-/64-bit)

Mac Intel Core Duo 1.66GHz, 1GB RAM, OS X 10.5

> Guitar amp modelling has come a long way since Native Instruments released Guitar Rig 3 in 2007. IK Multimedia in particular have impressed, with their AmpliTube Fender setting new benchmarks in authenticity, proving just how far software can go towards recreating the indescribable vibrancy and responsiveness of a genuine valve amplifier.

This level of authenticity, sadly, is something that's always been slightly lacking in Native Instruments' offering. Guitar Rig's trump card, though, has always been its flexibility, with the previous versions offering a far broader range of tonal options than its contemporaries. True to expectations, v4 is packed with new features – but have NI made a concerted effort to improve its tone?

Variations on a theme

There are a number of bundles available, the top-of-the-range one being Guitar Rig Kontrol (£351), which includes the Guitar Rig 4 Pro software along with the Rig Kontrol hardware (a foot controller and audio interface all in one). While we also tested GR4 Pro with a Rig Kontrol unit, the hardware hasn't changed since we reviewed GR3 (where we praised the unit, our only gripes being the lack of a physical volume control and an XLR mic input), thus our review here is essentially of the software-only edition, as reflected in the price quoted.

Guitar Rig 4 Pro's headline act is its trio of new amp models: Hot Plex, Cool Plex and Jump. The Hot and Cool Plex are two variations on the classic Marshall Plexi-type sound (still on offer as the Plex model). Hot Plex is a slightly higher gain amp, which also seems richer in harmonics compared to the original Plex. Setting the volume controls low offers just-breaking-up tones that sound far hotter and more 'loaded' than the standard Plex, whereas cranking the gain yields that extreme, vintage tube sag-style drive favoured by players like Jack White.

Cool Plex, goes the other way, offering crystal clean sounds, but with more saturation. The tones you can wring out of the model really do sparkle compared to those of its antecedent, but still retain the classic Plexi sound, being thick and full rather than harsh or twangy.

Finally, we come to Jump – our favourite of

"Jump is the first of GR's models that can really deliver chest-thumping punch and body"

the new models. Jump is a lower gain version of the Lead 800 (the Lead 800, of course, being modelled on Marshall's rock mainstay JCM800), which really comes into its own for clean tones. In fact, Jump is the first of GR's models that can really deliver the kind of chest-thumping punch and body of a clean valve amp – a quality sadly lacking in the Twang Reverb model (based on Fender's Twin Reverb combo that, in the flesh, is one of the hardest-hitting amps you'll ever hear).

A timely update

In terms of new effects, we have four new modules. Grain Delay is a granular processor that offers transpose and reverse options for your repeats – a fantastic idea, but in practice, we found that the more overtly grainy sounds just sounded too cold and digital alongside an electric guitar. Furthermore, while the more psychedelic, octave-shift reversed delay-type sounds are fun, they still pale in comparison to those of, say, Waves GTR3's LayD pitched delay effect, which are far richer and more expansive.

The second new effect is Iceverb – essentially a resonant reverb that creates reflections within a filtered frequency range. It's a really unique sound – glassy and brilliant with the Colour set high, booming and vocal when it's low.

Octaverb, on the other hand, is a more standard reverb that features algorithms for eight different room types. The sound is richer and more complex than that of the studio reverb plug-in, and it works wonders on drums, too.

There's also Twin Delay, a simple two-channel affair, with basic mix, feedback and rate controls.

Rounding off the effects improvements is the new Master FX feature that enables you to add a global effects chain – ideal for bolting a master reverb or EQ onto your live virtual rig.

Close but no cigar

Along with the new Control Room module (reviewed in the boxout), these seven modules form the bulk of the improvements in GR4 Pro. But there are various little tweaks, too – among them, we have true stereo processing, a simple click-and-drag method of assigning footpedal controls (NI's Kontrol interface is unchanged in this update) and modulation sources, plus a reworked preset browser similar to NI's Kore Sound Browser. Speaking of presets, there are a generous 250 on offer here, all of a far higher calibre than those of the previous version.

Guitar Rig 4 Pro packs in more effects than previous versions, with a convenient drag-and-drop interface

The amp and cab models have apparently been reworked, too, and their tone has indeed genuinely improved across the board. However, several amps still sound too woolly and it's only really the three new amps that could even begin to rival the sound of a real amplifier.

It's this issue of tone that's likely to be the sticking point for many guitarists and producers. NI have had nearly two years to work on Guitar Rig 4 Pro, and while it has certainly come a long way in terms of sound, stellar offerings from the competition, such as IK Multimedia's AmpliTube Fender and Waves' GTR3, have come even further. For flexibility, though, Guitar Rig is still king, and version 4 is undoubtedly the easiest to use and the most powerful iteration yet. **cm**

Contact info@native-instruments.de
Web www.native-instruments.com
Info Guitar Rig Kontrol, £351;
Guitar Rig Session, £129;
Guitar Rig Mobile, £87

Control Room is very useful when it comes to getting your guitar to sit comfortably in the mix

Control Room

Possibly the most interesting new feature of Guitar Rig 4 Pro is the Control Room module. Control Room is an all-in-one cabinet miking solution featuring five virtual cabinets, each miked up using up to eight classic microphone models spanning ribbon, dynamic and condenser types. You can control the volume and panning of each microphone separately, sculpting the sound you want by mixing the multiple mic 'channels' together.

All of the mics are, of course, perfectly in phase, and you can even solo or mute each one individually. You'll probably be surprised by how drastically you can change the tone of any one cab here, and it's actually really easy to hone your sound. For example, we found it useful to select each mic channel in turn, solo it, take note of its aural characteristics, then set its place in the 'mix' accordingly.

Control Room is particularly handy when it comes to mixing and recording, as its flexibility means you can easily get your guitar to 'sit' exactly where you want it. Control Room also features a master Air parameter (for adding room sound), just like Guitar Rig's other cab sims. It's a welcome addition, although we'd like to see a separate Air control for each mic channel to give an even greater degree of tweakability.

Alternatively

IK Multimedia AmpliTube Fender
cm140 >> 9/10 >> £170
A Fender-only amp sim, but the best-sounding one on the market

Waves GTR3 Software Edition
N/A >> N/A >> £275
A classy-sounding amp modeller from the quality plug-in producers

Verdict

For
- Versatile Control Room module
- Punchy Jump amp model
- Simpler controller assignment method
- Handy Master FX section
- Great presets

Against
- There are better options available, as far as tone goes
- Underwhelming update after two years

Guitar Rig's ease of use and versatility are most appealing, but while it sounds good, connoisseurs of tone may find it lacking

8/10

Spectrasonics Trilian £209 PC MAC

At last, the long-awaited successor to the Trilogy "total bass module" is here. Read on for the lowdown on this bottom-heavy instrument

System requirements

PC 2GHz CPU, 2GB RAM, Windows XP SP2/Vista/7 (32-bit or 64-bit), VST/RTAS host

Mac 2GHz CPU (Intel or PPC), 2GB RAM, OS X 10.4.9, 35GB drive space, AU/RTAS/VST host

> Released in 2003, Trilogy was a respected bass instrument offering a good selection of synth, electric and acoustic basses, with its sibling Atmosphere being similarly famed for lush synth pads and the like. Things move on, however, as demonstrated by Atmosphere's 2008 sequel Omnisphere - as well as a huge library of brand new sound content, this debuted the company's own sample/synthesis backbone, dubbed the Steam Engine. Now we have the second Steam-powered instrument, Trilian, arriving to supersede Trilogy.

The library is 34GB in size, the meat of which comprises the new instruments: acoustic bass with four separate mic/pickup channels, six electric basses (including Music Man five-string, Fender Precision, Fender Jazz and Chapman Stick) and numerous synth sources, including the Yamaha CS-80, Moog Taurus, Dave Smith Tetra and ARP 2600. You also get everything from Trilogy (remastered) and, as a bonus, an enhanced version of the Bass Legends library.

Trilian's new library is not only very detailed but sports features such as automatic legato, round robin variations, multisampled dynamic slides, phase-locked amp/DI mixing and two modes, Live and Stack, for coping with multiple articulations (see boxout). Clearly, realistic bass is fundamental to Trilian's remit.

Rockin' round robin

The Steam Engine offers a multitimbral structure with eight dual-layer parts, 33 effects and the ability to integrate streaming sample playback with synthesis techniques - Trilian sports FM capabilities, but it lacks the full-on DSP synth oscillators, waveshaping and granular synthesis of Omnisphere. However, the 19 stereo filter types with twin filters per layer, multipoint looping envelopes and six LFOs (with nine waveform options) mean that Trilian is still very much a synthesis heavyweight. And totally new for Trilian are the 4-pole Juicy and Power filters with oscillating resonance. Add in the synth modulation options (26 mod sources and 47 targets), the Flex-Mod system for on-the-fly setup and the option to modulate over 200 effect parameters, and you begin to appreciate just how mighty the Steam Engine is.

All this power may sound daunting, but

"The Studio (Music Man) Bass, with its clean, punchy sound, is our favourite"

Trilian is actually very simple to use. Patches are built from one or two layers, each consisting of a 'soundsource' (essentially a multisampled polyphonic oscillator). Layers include the typical synth-esque trimmings (modulation, LFOs, envelopes and filters), as well as insert effects and arpeggiator options. Up to eight patches can be layered in a multi, with individual level, panning, MIDI channel and auxiliary effects.

For navigation, each layer has four tabbed screens (Main, Edit, FX and Arp), plus some deeper, complex pages accessed with the Zoom icon, such as the modulation matrix. The multi view also has four screens (Mixer, FX, Live and Stack) but is a simpler affair. However, there's nothing to stop you sticking to the Main screen with its patch-specific 'custom controls'.

Maximum velocity

Trilian's acoustic and electric basses are extremely detailed. For example, Trilogy's Double Bass instrument has four velocity layers and is 288MB, but in contrast, Trilian's Full Range Acoustic 1 has 12 velocity layers, 16 round robin alternatives per note and is 2.3GB. As expected, there are plenty more articulations – we counted 11 basic ones for the Clean Bass (Fender Jazz) – and you also get release noises and automatic legato. Of the stringed patches, the five-string Studio (Music Man) Bass, with its clean, punchy sound, is our favourite.

Multi patches and the Live mode bring the above elements together, with the Switch option in Live mode enabling temporary keyswitching. The other keyswitching modes didn't work properly for us, though, sometimes resulting in unwanted articulations playing. Also annoying is that patches start loading as soon as you select them in the browser – not great if you're surfing and just want to read the descriptions. Both Lite mode and Preview load can help here, luckily.

Synthetic material

As for the synthetic sounds, it's important that new users download the latest patch library, which includes over 500 new synth patches. Enhanced versions of the original Trilogy patches should also be out by the time you read this, although your old Trilogy presets are not compatible with Trilian. On a related note, you can also use Trilian's sounds within Omnisphere (but not the other way around).

The synth sounds are arranged in three categories: Mono, Bass and Arp + Rhythm. Sonically, there's much variety to be had, with plenty of noises and sweeps, as well as basses and rhythmic, arp-dependent patches that are often reminiscent of the original synths that were sampled. Most synth patches make great use of Trilian's effects, frequently with parameters linked to carefully configured custom controls. It's obvious that Trilian's ambitions go beyond simple bass sounds, and with over 350 synth sound sources, modifying or programming from scratch is always an option.

Trilian is an enormously powerful and deep instrument that can keep you busy for hours. Every patch, be it synth- or string-based, sounds brilliant in isolation, making it great for upfront 'lead' bass sounds; and the performance features and effects enable you to create unique and impressive tones with ease. **cm**

The Main panel offers custom macro controls for each preset – note this patch's wah and echo sections

Using the Stack page, you can layer up parts and map them according to note and velocity

Blow your Stack

Trilian's Live and Stack modes enable you to use the instrument in a more specific multitimbral way. Stack can quickly map all of your eight parts either by velocity or key range, or switch between parts using MIDI CC (only one option can be used at a time). It overrides any MIDI allocations in the Mixer, so that all layers respond to one selected channel. In use, it's great for spreading multiple articulations across the keyboard, building velocity-sensitive combination patches or morphing between parts.

Live is more akin to typical keyswitching territory. Again, up to eight patches can be used, and with full control over key, MIDI CC and even mouse-click assignments, it's very flexible. There are three switching methods – Switch, Latch and Touch, which you'll find more on in the main text – that influence the nature of the switching, and with an easy MIDI learn option, as well as various ways to view assignments, it's difficult to go too far wrong. One of the best features is that existing articulations don't cut off when you switch to another. If you use basslines with multiple articulations such as slides, mutes and so on, Live mode makes it very simple, and there are plenty of library patches that are already set up to work this way.

Alternatively

Scarbee MM Bass
N/A >> N/A >> €79
Thomas Skarbye electric bass library in Kontakt format

Rob Papen SubBoomBass
cm140 >> 8/10 >> £89
If synth bass is your poison, check this out from patch king Rob Papen

Verdict

For Serious processing options
Extensive bass instrument library
Easy interface considering complexity
Great synth sound sources
Custom controls

Against Unintuitive browser
Trilogy patches not out at time of review

Trilian's not without a few quirks, but it's a fine successor to Trilogy and one of the best sources for bass sounds of all kinds

8/10

Contact Time+Space, 01837 55200
Web www.spectrasonics.net

Garritan PC MAC

Personal Orchestra 4 £109

cm DVD
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Hear us conducting the GPO in our audio demos and read the manual

Fancy getting your hands on your very own orchestra? Version 4 of Garritan's compact library could be for you...

It's been over five years since we reviewed the first edition of the Garritan Personal Orchestra. In the intervening years, the rather clunky shift to Kontakt Player 2 (and Universal Binary support) caused much frustration for users – and for Garritan, too, no doubt. That's all changed now, though, as v4 features Garritan's own sample playback engine, Aria.

The library has been expanded to include extra brass from Project SAM, extended ranges on some sounds, and new choir and ensemble patches. You'll also find a new auto legato mode joining the performance features (see boxout).

GPO4 includes about 2GB of samples and patches, with over 150 presets organised in orchestral fashion (woodwind, choir, brass, strings, string sections, percussion, keyboards and harps). It includes both solo and ensemble patches and, for the strings, additional full orchestral sections. All standard orchestral instruments are included (see the manual on the disc for full description), with some nice extras, including concert grand piano and pipe organ.

The Aria interface comes in both standalone and plug-in formats, and is a 16-instrument multitimbral design with MIDI channel select, audio output assign, micro-tuning, pan, fader, mute, solo, 3-band EQ and one reverb send per instrument (there's one global effect, the Ambience reverb). The standalone version also features a MIDI player with audio export.

Tuning up

GPO4 is all arranged over four pages (Mixer, Controls, Effects and Settings), with the instruments and keyboard visible at all times. Overall, it's easy to use, with its text readouts and colour-coding for keyswitching. For us, the only things missing are audio and MIDI meters (we understand a future update will add these). MIDI controller options vary across patches and the CCs used are consistent albeit fixed, so you'll have to map your controller to suit.

Although GPO4 is sonically similar to its predecessor, the new reverb is pretty flexible (with 12 algorithm presets and eight adjustable parameters), plus with per-instrument EQ, you can achieve much more within the interface. The new stereo stage effect also enables you to add depth without losing panning information.

But to really get inside this instrument, you have to use the performance controls – the sustain, velocity and mod wheel have an enormous impact on the results, and if you're a reasonable player, you can compose or program quickly whilst achieving the required realism.

On the face of it, GPO4 hasn't changed that much from its predecessor. But it now has the bespoke interface it's always deserved and is more affordable than ever. In terms of detail and playing styles, it certainly doesn't compete with high-end libraries, but it's not trying to. Instead, it offers a quick interface with great playability that's easy to transport, and in that respect it remains the best package of its kind. **cm**

Contact Time+Space, 01837 55200
Web www.timespace.com
Info Download, $149; Upgrade, $49

Take control

GPO4 has various instrument-dependent performance features. For legato instruments (strings, brass and woodwind), the mod wheel controls volume and timbre, velocity affects attack, and the sustain pedal enables legato mode for smooth transitions. The legato sounds have adjustable portamento time and controls for automatic pitch and timbre variation. Some patches also offer vibrato speed and intensity controls, with an Aggressive parameter for some brass and strings.

Non-legato instruments have fewer controls and percussion instruments, and keyboards tend to follow more typical MIDI assignments, with velocity controlling level and sustain controlling, well, sustain.

Of the keyswitching instruments, the strings impressed us most due to their many articulations. We were also taken with the clever trills implementation that uses note-off data to trigger the shift.

System requirements

PC Pentium P4 2.8GHz, 2GB RAM, Windows XP SP2/Vista (32/64)/7

Mac G5 CPU (Intel recommended), 2GB RAM, OS X 10.4

Alternatively

Best Service Complete Classical Collection 2nd Edition
cm130 >> 9/10 >> £249
Orchestral instruments, choir, piano and more in this 13GB library

EWQL Symphonic Orchestra Silver Edition Complete
N/A >> N/A >> $195
A pared-down 11GB version of their Platinum mega-library

Verdict

For
- Bespoke new Aria interface
- Reasonable drive space requirements
- Good performance features
- Broad sound set
- Easy 'auto legato' option

Against
- Some playing styles omitted
- Lack of metering at present

Considering the low, low price, GPO4 more than delivers with its solid-sounding, highly playable orchestral instruments

9/10

Sonnox Essential

Essential Mix Tools

Mix with the same high-end plug-ins used on countless hit records all over the world - the Sonnox Essential Collection has all the essential ingredients to polish your mix.

Includes:
Oxford EQ - industry standard EQ plug-in
Oxford Dynamics - taken from the OXF-R3 digital console
Oxford Reverb - highly flexible stereo modeling reverb
Oxford SuprEsser - full-range dynamic EQ and De-Esser

The Sonnox Essential Collection - mix essentials for the quality conscious.

Mick Guzauski, Mix Engineer
(Madonna, Mariah Carey, Prince)

"The Oxford Reverb is high fidelity, has a really smooth tail and sounds very natural to me."

Tony Mangurian, producer / engineer / musician
(U2, Bob Dylan, Lucious Jackson)

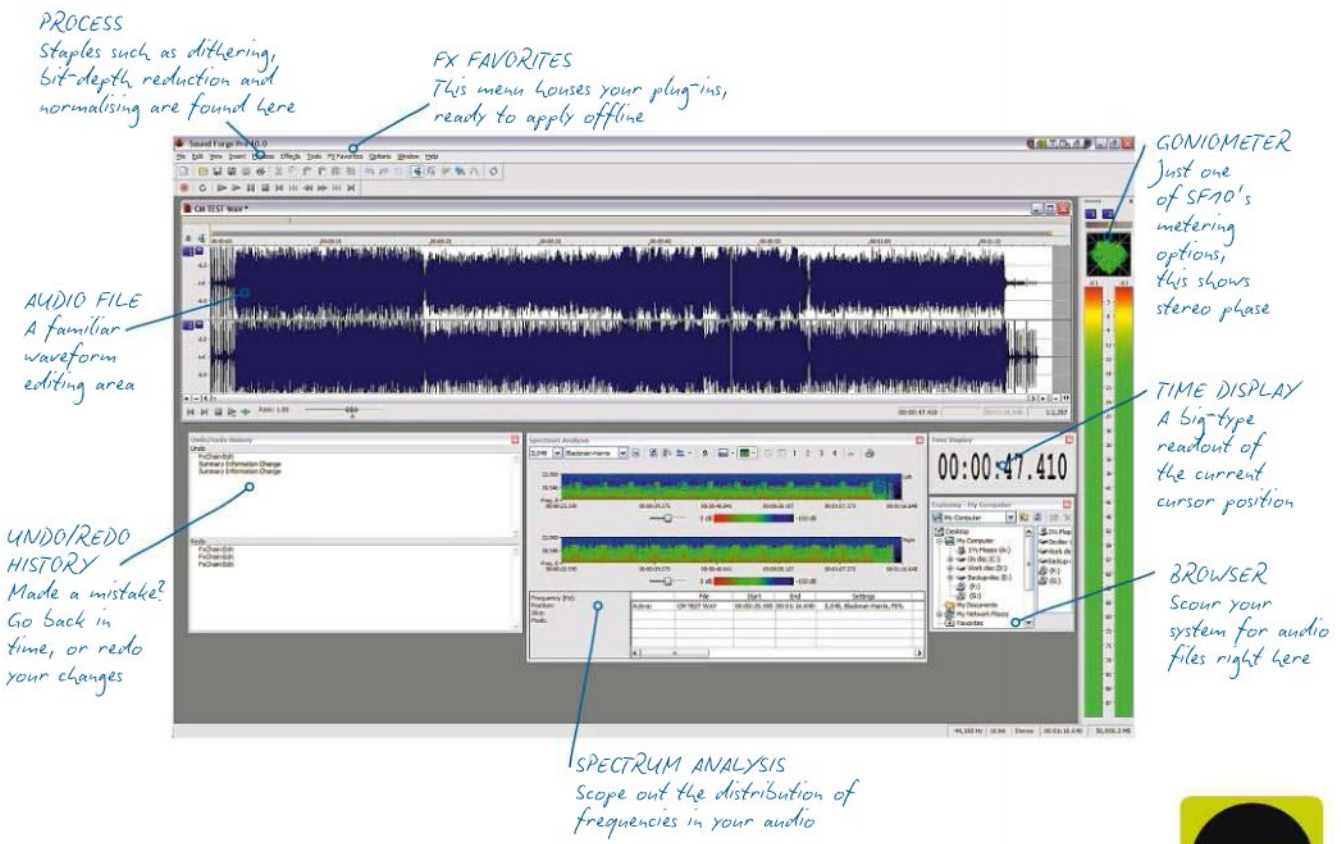
"These are simply great plug-ins"

Pete Moshay, Engineer / Mixer / Producer
(Hall & Oates, Amei, Ian Hunter)

"It's incredible how you can really focus in with the SuprEsser. I can get the vocals way out in the mix without poking somebody in the eye with sibilance!"

www.sonnoxplugins.com

Oxford Plugins



Sony Creative Software Sound Forge Pro 10 £380

PC

cm DVD
ON THE DVD
Hear Sound Forge's processing in action and read the manual

You can master and edit audio inside most of today's DAWs, so is there still a case for using a dedicated audio editor like Sound Forge?

System requirements

PC 1GHz CPU, 512MB RAM, Windows XP/Vista SP2

> Many **cm** readers will no doubt be familiar with Sound Forge, at least in name. From more humble beginnings back when it was a Sonic Foundry product to the brand new Sound Forge Pro 10 from Sony Creative Software, this audio editor has long been a staple of many studios and editing suites thanks to its straightforward layout and solid functionality. The last time we took a long, hard look at it was with version 7 (8/10, **cm**70), so we were keen to see how the app would stack up five years on.

Forging ahead

In case you're unfamiliar, Sound Forge is a standalone app that enables you to perform all the usual audio editing operations (cut, paste, trim, normalise, etc), add effects/fades, resample, record and even restore audio files, all through an intuitive interface. SF10 supports pretty much any audio file format, working at up to 64-bit/192kHz resolution, and it can host both DirectX and VST plug-ins, all while offering full Windows 7 compatibility – it's certainly what you'd call comprehensive.

Firing up SF10, it looks and feels almost identical to the preceding version, which is actually reassuring. The menus and windows work in the same way, making experienced users feel instantly at home – if it ain't broke, don't fix it! Going a bit deeper, it's evident that some niggles have been addressed: working with multiple files in v9 led to a baffling mess due to the use of Windows' clunky multiple document interface, but they now appear neatly tabbed along the base of the work area.

Sticking with the visuals, there are plenty of View menu options for customising the main work area to your heart's content, and everything seems to dock together more neatly than before. Something we wish Sony had addressed this time, however, is that navigating the FX Favourites can be slow – if, like us, you have a multitude of plug-ins installed, the menu takes a very, very long time to scroll all the way to the bottom, which can be a pain.

Previous versions of Sound Forge included the Sony Time Stretch effect, which gave mixed results, often suffering from nasty flanging side effects. SF10 boasts the addition of zplane's tried-and-tested élastique Pro timestretching

"The new event-based editing system makes working with multiple audio events child's play"

and pitchshifting plug-in. It does exactly what you'd hope, changing the pitch and/or time of your musical source with minimal artifacts. And if you just want to convert from one sample rate to another, the new iZotope 64-bit SRC function will do this for you with no discernible artifacts.

Keep the noise down

SF10 contains over 40 effects and still comes with the Noise Reduction 2 package, which is a helpful set of tools for restoring poor-quality recordings. New effects include a Resonant Filter plug-in (which is exactly what you'd expect) and the iZotope Mastering Effects Bundle 2, more on which you can read in the boxout, right. As in previous versions, there are plenty of automation and batch processing functions for alleviating the tedium of carrying out repetitive tasks.

Although SF10 is ideal for editing standard stereo format audio files, it also supports multichannel editing/recording and also boasts Dolby AC3/surround sound support, not to mention all-new direct editing of individual samples in GigaStudio/Sampler and SF2 instrument formats. Also on the editing front, the new event-based editing system makes working with multiple audio events in a single window child's play, and becomes indispensable when fading together files or arranging audio into tracks for CD.

Feeling the burn

Not content with making audio editing look easy, burning audio CDs is also a doddle, with a new disc-at-once (DAO) burning option and CD-Text functionality included. It's a little basic but handy for chucking files onto CD without the hassle of firing up a separate burning app. Another improvement is the replacement of the simplistic file properties editor with the more comprehensive Metadata editor, enabling you to tag each file with relevant information – vital when mastering for CD and using CD-Text.

For those who need greater CD-burning functionality, Sony's CD Architect 5.2 is also included, giving you access to Red Book specification audio CD burning and being spot-on for producing pre-masters for replication. It's dead easy, with drag-and-drop ordering of files, and it enables you to be as specific as you like regarding the layout and configuration of your disc.

SF10 also has a genuinely useful Help menu and interactive tutorials, with the boxed version including a voucher for video training tutorials, all of which are great for audio editing novices. If you're in need of an audio editing suite, or you're dissatisfied with mastering/editing inside your sequencer, we heartily recommend SF10. However, existing users who own the already well apportioned version 9 will need to consider whether the revisions to SF10 make this upgrade worthwhile. **cm**

Contact Sony Creative, 0800 028 1475
Web www.sonycreativesoftware.com
Info Download version, £356
CD Architect 5.2, £90
Sound Forge Audio Studio 9, £45

The included iZotope mastering effects are rather similar to those in Ozone 4

Masters of the universe

SF10's plug-in chainer enables you to connect up to 32 plug-ins in any order you like and process your audio files with that chain. This is pretty essential for mastering, and our time-honed preset chains created in v9 worked just fine in SF10, as you'd expect.

Now included with Sound Forge is the Mastering Effects Bundle 2, provided by audio wizards iZotope, makers of the excellent Ozone 4 (cm138, 10/10). In fact, the contained effects read almost identically to the module list from Ozone: Mastering EQ, Mastering Reverb, Multiband Compressor, Mastering Exciter, Mastering Imager and Mastering Limiter. It's no surprise, then, that the processors offer great quality and are thoroughly suitable for the majority of mastering situations. Though featuring slightly different GUIs and fewer features than the Ozone 4 modules (the absent MBIT+ dithering is actually included in the main Sound Forge Process menu), they're certainly from the same stock and yield extremely similar results when loaded into an Ozone-esque plug-in chain. If you don't already have Ozone 4, the Mastering Effects Bundle 2 could be a compelling reason to snap up SF10 – the only downer is that you can't use the plug-ins outside Sound Forge.

Alternatively

Adobe Audition 3
cm126 >> 8/10 >> £320
Audio editor with novel graphical analysis and editing functions

Steinberg Wavelab 6
cm100 >> 7/10 >> £499
Sound Forge's main rival, this PC audio editor has functions galore

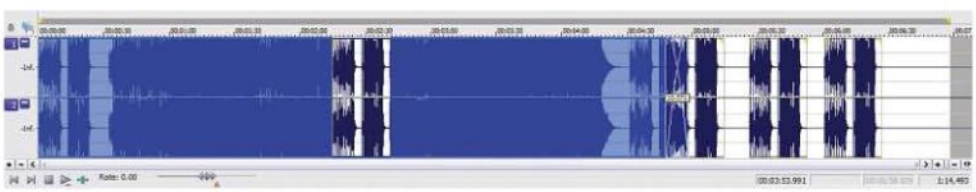
Verdict

For Familiar interface
Easy to use
Extensive tutorials and good help
Includes iZotope mastering plug-ins
CD Architect 5.2 bundled in

Against Not vastly different to SF9

As with many of today's updates, this is more of a refinement than an overhaul, but Sound Forge remains a strong option

8/10



The event-based editing system is new for Sound Forge Pro 10 and works a little like a single audio track in your DAW

VSL PC MAC Vienna Suite £375

Best known for their orchestral instruments, VSL make the move into effects. Is this debut bundle worthy of a standing ovation?

COMPUTER MUSIC PERFORMANCE Award

cm DVD
ON THE DVD
You'll find our audio demos and the Vienna Suite quick-guide on the disc

System requirements

PC Intel P4 or AMD 64 CPU, Windows XP/Vista/7 (32- and 64-bit), VST host

Mac G5 CPU (note that reverb requires Intel CPU), OS X 10.4, VST/AU/RTAS host

> The Vienna Suite is something of a departure from VSL's usual multisampled orchestral instruments, being a bundle of mixing effects. It debuted earlier this year but has already been expanded with an additional convolution reverb, taking the plug-in count up to nine. The full list reads thus: Equalizer, Master Equalizer, Limiter, Compressor, Multiband Limiter, Powerpan, Exciter, Analyzer and Convolution Reverb. On the **cm** DVD, you'll find a PDF explaining the specifics of each, and the VSL website also has some great demo videos.

Vienna Suite operates at up to 96kHz and uses internal 64-bit processing, in VST format for PC, and VST, AU and RTAS formats for Mac. Vienna Suite also works in VSL's own multi-instrument host, Ensemble Pro. The only curveball is that the Convolution Reverb requires an Intel Mac.

Nine-pack

The Master Equalizer is essentially a fancier version of the standard Equalizer, but with a choice of three peaking types, high- and low-shelf filters and 4x oversampling. Both EQs include an onboard analyser, zoomable dB display and graphic editing, and modifiers keys let you lock gain and/or Q for easy adjustment.

The Compressor and Limiter feature real-time colour-coded waveform displays showing pre- and post-processing, and on the latter, you can also display gain reduction as a line graph. On the Compressor, you'll also find Opto and Fat (tape-style) compression modes, and a sidechain filter with three fixed options. The Multiband Limiter also boasts an Opto mode, individual band soloing and neat global controls for Threshold, Gain, Attack and Release.

Powerpan is a 'stereo' pan pot - that is, it doesn't only change the level of the left and right channels (ie, balance) but pans them, too. You can thus adjust perceived stereo position whilst retaining the existing stereo information. Again, this plug-in includes its own real-time signal graphic and is rounded off with input and output L/R balance faders for overall control.

For dedicated visualisation, there's the Analyzer - amongst its many features, we found its ability to display the dominant note with accompanying MIDI note number very useful.

"This bundle offers a serious upgrade for the outlay, and overall we're very impressed"

The Convolution Reverb boasts a number of cool features, including options to reverse and stretch the impulse response (x0.25 to x4). There's also a de-correlation control for adding width to narrow impulses. The most powerful feature is that you can draw envelopes for volume, pan, de-correlation, high-pass and low-pass to fully tailor the impulse over time - see the boxout for more on this.

Patchwork

The first thing you'll noticed when using Vienna Suite is that the preset library is heavily weighted towards orchestral instruments. This is particularly apparent with the EQ, which even includes specific presets for VSL's Appassionata Strings library. However, there are some more general presets and, in the case of the Equalizer, a bunch of 'resonance' presets that load up with suggested frequency, gain and Q settings.

Sonically, both the Equalizer and Compressor are very impressive, and the simple interface (reminiscent of Logic and Waves plug-ins) is clean and non-distracting. The compressor has good scaling on the attack and release times, and it's possible to achieve aggressive results, particularly in Fat mode. The Equalizer's maximum Q setting isn't that sharp, although there's plenty there to carve out frequencies, and it's a little surprising that the standard EQ doesn't have any shelving options. In fact, the Master Equalizer is the one that really delivers, although it doesn't have as many presets.

The Multiband Limiter delivers the same fast attack and release capabilities as the Compressor. However, for typical mastering or mix bus applications, we found gentler settings more helpful, with the Opto release setting particularly useful for mix 'glue'. The single-band Limiter is good, if not outstanding, and when deliberately pushed hard it can be made to produce some flavoursome distortion.

Of the EQ-type processors, the Exciter is the most surprising. When set to odd harmonics, it adds a sweet top-end sheen without sounding harsh. But shift the colour back to zero (even harmonics only) and the frequency cutoff to it's lowest (400Hz) and you get a great thickening effect for snare drums and bass. The Powerpan is nothing special, but it does provides an easy option for repositioning of stereo signals.

As well as sounding superb, the Suite's Compressor offers easily digestible visual feedback

As explained in the boxout, the Convolution Reverb has some useful features, and we had great fun adding dynamics to the impulses using pan and filter envelopes. The inclusion of VSL's five Vienna Konzerthaus impulses is highly attractive to those after big, expansive sounds. There are only 26 impulses in total, but at least you can import impulses in FLAC and WAV, as well as VSL'S VCI, formats.

Suite dreams?

There's no doubt that anyone who uses VSL's instruments will love the bespoke nature of Vienna Suite's presets, but what you've actually got here is a wonderful set of plug-ins, irrespective of VSL's orchestral slant. They're easily on a par with similar designs from the likes of Waves and Sonnox, and all at a more affordable price point. At £375, they're still not exactly cheap, but if your DAW-bundled plug-ins aren't delivering any more, this bundle offers a serious upgrade for the outlay, and overall we're very impressed. **cm**

Contact Time+Space, 01837 55200
Web www.vsl.co.at

Here we're applying a number of wild envelopes to an otherwise conventional IR

Reverb envelopes

Although Vienna Suite's Convolution Reverb doesn't include an enormous library of impulse responses, it does offer some excellent tools for manipulating them, not least of which are the envelopes. The five parameters you can modify using these are volume, low- and high-pass filter, de-correlation (essentially stereo width) and pan, each of which can follow multi-node curves for the duration of the impulse.

With an impulse or preset loaded, head for the six buttons just below the display (you can ignore the sixth as it's for static EQ settings). Clicking on a parameter highlights its curve. These all start out as straight lines, but adding extra breakpoints enables you to create complex curves. You'll notice as you do this that the impulse waveform updates to reflect the changes, and if you don't like the results, you can easily reset one or all of the parameters.

From an editing perspective, you can use this feature to modify volume levels or apply a gradual low-pass filter. But getting a bit more creative with the pan, or changing the stereo de-correlation can produce more movement in the effect. Finally, as well as reversing the impulse response, you can also reverse the currently selected envelope using the Reverse button just below the display.

Alternatively

Sonnox Elite Collection
N/A >> N/A >> £744
Seven-plug-in bundle with excellent EQ, dynamics and reverb

Waves Silver Bundle
N/A >> N/A >> $900
16 tried and tested essentials from Waves' massive line of plug-ins

Verdict

For
- Sonically excellent
- Most plug-ins have signal displays
- Flexible reverb envelopes
- Master EQ is powerful
- Great Exciter

Against
- Too few impulse responses
- Presets lean to orchestral instruments

This fine collection of processors proves that VSL can deliver the goods in the studio as well as the orchestra pit

9/10

Solid State Logic X-Verb £253 PC MAC

cm DVD
ON THE DVD
Hear our X-Verb audio demos and drool over the in-depth manual

The console kings offer up their first ever Duende reverb plug-in, but is it a case of classy rooms or rusty plates?

> Algorithmic reverbs have made a big comeback over the last year or so, and now SSL are stepping up to the plate to give it their hall with X-Verb, the latest plug-in for their Duende hardware range. SSL worked with the Relab Development ApS team (who also worked on the CSR reverb by IK Multimedia) to produce this plug-in, and they suggest that it replicates the sound of legendary hardware reverbs of yesteryear, while adding a creative touch.

COMPUTER MUSIC EDITOR'S CHOICE Award

COMPUTER MUSIC PERFORMANCE Award

A room with a view

Like all Duende plug-ins, the GUI is neat and decidedly 'pro' in appearance. A slew of features appear when exploring the main window, and tweak-heads will certainly have plenty to keep them busy. Reverb adjustment is split into two sections: REV (Reverb Tail) and ER (Early Reflections). Both are *very* customisable. REV has 25 controls, divided into six sections: Reverb, Body, Modulate, Filters and the graphical Freq/Time area. The ER portion enables you to adjust up to six separate early reflections, position them in the stereo field, modulate them with a chorus effect and much more besides.

Mercifully, SSL have attached a Quick Controls strip to the top of the GUI, offering PreDelay, Size, Rev Time, ER Time, Density, Colour and Distance controls. These are macro knobs that govern other parameters behind the scenes, enabling you whip up settings without getting bogged down in the details.

Worthy of a special mention is the excellent A/B morphing function, which enables you to load two presets simultaneously and blend between them – perfect if you're torn between two patches! You can even automate the morphing, and the detailed manual (which is on the **cm** DVD) explains which parameters can be safely manipulated without causing artefacts.

At its core, X-Verb features four algorithms – Super Natural and Ultra Plate, each available in normal and HiD (high-density) versions. The sound is uncannily similar to that which you'd associate with pricey Lexicon reverbs – think lush, glistening, expansive spaces delivered in spacious stereo, capable of adding a sheen of professionalism and class to any track. Although superb reverb plug-ins have been released on an almost monthly basis over the last year, this one is seriously impressive and definitely a stand-out. Factor in X-Verb's modulation options and delay-type effects (via the ER section) and it becomes clear that it's more than just a reverb, with some great special effects waiting to be unleashed.

There are a few niggles: a quick way of returning each setting to default would be helpful, and the input gain meter is pre-fader, which is annoying when setting levels. Having the excellent preset library and active preset displayed in the GUI would also make things that bit more user-friendly. Minor issues aside, though, if you're a Duende user, this is an essential purchase, and if you're not, it makes SSL's DSP system seem even more attractive. **cm**

Contact Solid State Logic, +44 (0)1865 842300
Web www.solidstatelogic.com

Part of the process

Duende is a hardware-based DSP platform with three available models: the external Classic and Mini units that connect via FireWire, and the internal PCIe card. Each runs SSL plug-ins exclusively, which until the advent of X-Verb have primarily been mixing processors, ie, SSL channel strips, EQs, compressors and so on.

X-Verb requires the Duende v3 software to run, which fundamentally changes the way the Duende works due to SSL's hybrid core processing, which shares the processing load between the Duende card/box and the host machine's CPU. This gives lower latencies and has a neat benefit for Duende Mini users, increasing their basic number of Duende processing slots to 32 (X-Verb uses four). You can also buy an upgrade to unlock up to 64 or 128 slots. The major downside is that older computers may not run V3, and it only works on Intel Macs, so do check before updating!

System requirements

PC Intel Core 2 Duo 2GHz, 2GB RAM, Windows XP (SP2)/Vista (SP1), SSL Duende V3, VST/RTAS host

Mac Intel 1.8GHz CPU, 2GB RAM, OS X 10.5, SSL Duende V3, AU/RTAS/VST host

Alternatively

112dB Redline Reverb
cm144 >> 10/10 >> €149
A gorgeous-sounding algorithmic reverb with easy controls

Magix Variverb
cm116 >> 9/10 >> €145
Another algorithmic reverb that's similar in format to X-Verb

Verdict

For Quick Controls for everyday use
A tweaker's dream under the hood
Lush, professional sound
Special effects possibilities
Morphing capability

Against Minor interface annoyances

SSL prove that they're not only about EQ and dynamics, with X-Verb joining the upper ranks of the reverberation elite

9/10

cm DVD
ON THE DVD
Hear some Grand sounds and read the manual on the disc

Steinberg
The Grand 3 £301 PC MAC

A complete overhaul and a new sample set, but with so many sampled pianos out there, is this one still truly grand?

> Recent virtual piano instruments, such as VSL's Vienna Imperial, demonstrate just how far things have come in the four years since The Grand 2 appeared. Sample sets with tens of gigabytes of data per piano, multiple velocity layers and mic positions galore are now standard fare, and The Grand 3 follows suit, with its losslessly compressed library taking up 32GB of drive space (the data would be 80GB uncompressed). There are three grands (Steinway Model D, Bösendorfer 290 and Yamaha C7), an upright (Nordiska Pianofabriken) and one electric piano (the famous Yamaha CP80). Each acoustic piano includes two mic perspectives – close and player – with 20 velocity layers per note.

The Grand 3 comes in both standalone (including MIDI record/playback and a metronome) and plug-in formats (AU and VST, but not RTAS or DXi). It supports ReWire, too. On to the interface, then, which includes Player and Editor views – in the latter, parameters are arranged across five tabbed windows (Model, Equalizer, Ambience, Control and Options).

Within the Model view are options to tweak the sample sets used. These are most extensive for the three grands and include sustain resonance, string release, key sound, hammer release and damper pedal – see the manual on the disc for the full list. For the CP80, these options are replaced by two effects: tremolo and modulation (chorus, flanger or phaser). Further options include a fine convolution reverb based on Cubase's REVerence and a multitude of tuning and MIDI control options, including everything from velocity curves and polyphony behaviour to scale types and stretched tuning.

In use, The Grand 3 is a massive step up that puts it on a par with the competition, with the slick interface's five-tab system keeping things uncluttered. As with most large ROMplers, load times can be slow, and we found this most annoying when switching additional sounds

such as resonances in and out. It's also fair to say that with only two mic perspectives, it falls short of some of its contemporaries in this respect; however, where it does win is on flexibility. Whether it's adjusting MIDI response, tweaking options such as repedalling, positioning the piano in either stereo or quad ambiences, or modifying the various RAM-saving options (see boxout), the Grand 3 clearly has much to offer.

Total pony

In addition to the three grands, you get an upright, adding extra flavour, and the CP80. This last option combined with its own effects is one of the nicest versions of this classic we've heard. Admittedly, it's a bit of a one-trick pony, but in the right context, it's a brilliant and distinctive sound. The Grand 3 is clearly ploughing its own furrow, with more variety than some piano ROMplers but a less over-the-top sample set. Sonically, the grands don't quite match the best we've heard, but they aren't far off, and the CP80 really stands out. Overall, a big thumbs up. **cm**

Contact Steinberg, + 49 4042236115
Web www.steinberg.net

RAM it down

The Grand 3 includes a number of features to conserve RAM, with the performance meters in the top-right corner indicating memory use, as well as CPU, disk and voice statistics. Eco mode reduces the loaded velocity layers to seven; for the Steinway D Player model, this reduces the RAM hit from 635MB to 306MB. Additionally, there are four settings to adjust the balance between disk streaming and RAM. Finally, removal of the aforementioned model settings, such as sustain resonance, also saves on RAM. In Eco mode, with none of these loaded and the maximum RAM/disk ratio, we got RAM usage down to just 75MB for the Steinway D.

The other useful feature is RAMSave: click once and The Grand 3 'tags' the notes/velocities that are played – click again and it unloads the samples that aren't used. This is a feature we've seen on other sample-based instruments, and it can be extremely useful when your computer is maxed out.

System requirements

PC 2GHz dual-core CPU, 2GB RAM, Windows XP (SP2)/Vista, 32GB HD space

Mac 2GHz G5 dual or Intel Core Duo, 2GB RAM, OS X 10.5, 32GB HD space

Alternatively

VSL Vienna Imperial
cm144 >> 9/10 >> £575
Arguably the most accurate sampled piano on the market

Garritan Steinway Concert Grand: Professional Version
N/A >> N/A >> £329
Official Steinway sampled grand – there's a basic version for $99, too

Verdict

For
Good choice of pianos
Excellent reverb
Lovely CP80 and effects
Comparatively small disk footprint

Against
No RTAS or DXi version
Loading can be slow
No ambient/room sample set

The Grand 3 offers a winning balance of quality sound and flexibility, with the CP80 being the star of the show

8/10

COMPUTER MUSIC INNOVATION Award

Plogue Art et Technologie chipsounds $95 PC MAC

cm DVD
ON THE DVD
Hear our chipsounds audio demo and read the manual

Relive the sounds of vintage videogames with this obsessive emulation of decades-old sound chips

System requirements

PC P4 2GHz CPU, 1GB RAM, Windows XP/Vista/7 (32- or 64-bit),

Mac G5 or Intel CPU, 1GB RAM, OS X 10.4

> There are two reasons why the sounds of outdated computers and games consoles refuse to fade into obscurity: not only do they instil great nostalgia for the days of our misspent youth, but they have a uniquely edgy and sometimes unpredictable character that smooth-running soft synths and cutting-edge beatboxes have a hard time competing with. To get your fix of such sounds from the source would mean locating a working example of a 20-30 year-old piece of hardware and obtaining (and learning to use) some music software, or programming your own. And as for integrating the bleepin' thing with an existing setup, that's another world of pain. But with a modern Mac or PC and plogue's chipsounds, you can have essentially the same results after suffering a mere 30-second installation routine.

Chips off the old block

chipsounds is a soft synth that offers a faithful recreation of nine classic chip configurations found in home computers and consoles of the 70s/80s. The documentation carefully avoids mentioning actual brands, but you can expect to find emulations of the chips from old favourites like the Nintendo Entertainment System, Atari ST, ZX Spectrum 128, Nintendo Game Boy, Commodore 64 and VIC-20, Atari 400/800 and 2600. There are some less well-known efforts, too, such as the SN76489 found in the ColecoVision console and BBC Micro; the P8244/P8245 of the Magnavox Odyssey²; and the UVI 2637 that lurked inside the Arcadia 2001. And there's one final chip that comes from neither console nor computer but from Casio's VL-1 mini keyboard. Check out the manual on the disc to read about each chip and its features in depth.

An enormous – some would say obsessive – effort has clearly gone into deciphering how these chips create their signature sounds. We're used to seeing this kind of attention to detail in emulations of classic synths and studio gear, but here the same ethos has been applied to mass-produced home entertainment devices.

The five-page user interface, while not ideal, is at least straightforward. The Controls page is the most important, offering an arpeggiator and wave sequencer (see boxout for more on this), with preset-saving for both sections.

"We found its reproduction to be remarkably accurate, buzzing away nicely"

Each chip has custom controls and a selection of timbres (eg, waveforms, noise types and chip 'tricks'), selected using keyswitches or a menu. Many chips come in several varieties, eg, PAL and NTSC types, offering European and US chip clock timings respectively, and thus slightly different tunings. The sound engine uses a careful combination of synthesis and samples – around 95% is the former, say Plogue. As for control, many generic parameters (eg, in the Modulation page) are exposed via MIDI CC, and, where appropriate, chip-specific parameters such as SID PWM are bound to CCs, too.

Hot chips

Which are the tastiest chips? Top of most people's wanted list is surely the SID chip of Commodore 64 fame. We found its reproduction to be remarkably accurate, buzzing away nicely from the saw waveform or tightly vibrating our speakers with its triangle output. The waveform list includes mixed combinations alongside versions that include ring modulation. There's no dynamic ring modulation or oscillator sync, but these are promised as the SID emulation moves closer to synthesis (it's currently the most sample-based of the emulations). Controls available are filter type, cutoff and resonance, as well as PWM with LFO modulation.

Our second favourite has to be the DMG-CPU, as used by Nintendo's Game Boy. This chip creates a smoother sound using either a pulse waveform with adjustable width, or a custom waveform you can draw in yourself.

If you're after a more industrial sound, then the crude, crunching tones of the POKEY integrated circuit, as used by early Atari machines, will find a place in your heart. Plenty of raw harmonics can be found in the earlier waveforms, while the wayward tuning of the '1x1' register configuration is present and correct.

Also neat are the crunchy, characterful drum kits, which use samples replayed via the emulated chips – eg, using C64 'digi' routines.

AY up!

As well as the aforementioned SID, the other chip that we found to be 'not all there' is the AY-3-8910/YM2149F emulation. Unlike the real thing, you can't blend the noise channel with the pulse wave, which rules out certain possibilities of the original chip, eg, snare drum noises. There are 'envelope waves' and an Atari ST-style 'sync buzzer' sound, but the grungy basses and squawking acid tones produced by using the envelope and pulse wave together are absent. Plogue say that such tricks should be possible in a future version of chipsounds, once they've sussed out a way of making them accessible. This is understandable – if chipsounds offered the kind of low-level control that's available by programming the chips directly, it would likely make the instrument impractical, especially considering its multichip nature.

Chip pedantry aside, the real issue is sound, and we found each emulation to be very true to its original. Drifting through the far-too-few presets conjures up all kinds of memories, but more importantly, these sounds are usable and immediate. Start playing a keyboard, and you'll discover a tactile dimension to these sounds that's not readily realised with a hex editor running on a 320x200-resolution screen. **cm**

Stack up to eight chips for layered or multitimbral play, send each to a global reverb, pan them and more

The wavesequencer is a powerful tool but a rather fiddly beast to program

Catching the wave

chipsounds' arpeggiator offers ten playback patterns with host sync. As well as looping, it can play in one-shot mode, with or without sustain of the last note. Also cool is Proportional Division, which ensures that each arp cycle lasts the same amount of time, whether you play two notes or ten.

However, it's the wave sequencer that's vital for those crazy, rapid note flutters and crescendos that chip musicians wield so well. As the manual rightly states, it looks much like the 'instrument' or 'sample' pages found in trackers on 8-bit machines – basically, a mini-tracker that's triggered on each note. Rows are played from top to bottom, with the duration of each specified in the T column, and a row can play a note, switch waveforms, adjust the pitch or modulate any parameter. But this is where the GUI really grinds, as not only is the visible range of the table tiny, but it's entirely mouse-driven – click the MIDI CC column, for instance, and a huge dropdown menu appears, ranging from 0 to 127. Tracker-style keyboard control would be preferable, or at least the option to increment/decrement with left/right

Alternatively

reFX QuadraSID
cm99 >> 10/10 >> €60
A SID chip soft synth

HardSID 4U Studio Edition
N/A >> N/A >> €399
An external device that houses real SID chips, accessible via a VSTi

Verdict

For Many chips to choose from
Fantastic quality and attention to detail
Great real-time performance modes
Good value

Against Far too few presets
Some GUI elements are poorly executed
SID and AY emulations not 100%

chipsounds' superb emulation of nine vintage sound chips makes it a unique soft synth and a must for 8-bit-lovers

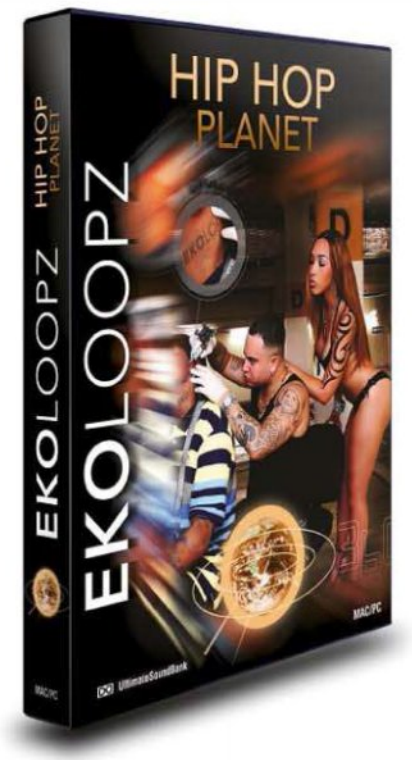
8/10

Contact info@plogue.com
Web www.plogue.com

cm mini reviews

A rapid-fire round-up of sample libraries, ROMplers and more

UltimateSoundBank
Ekoloopz: Hip Hop Planet £115



Format PC/Mac, UVI Soundcard
Contact Time+Space, 01837 55200
Web www.timespace.com

USB's Ekoloopz series kicks off with this collection of 87 construction kits created by French producer Eric K-Roz, famous for his work with top-selling Francophone rapper MC Solaar. The 3.9GB Hip Hop Planet sound library comes in UVI Soundcard format and is iLok-protected. You can use it with the included UVI Workstation player (a perfectly acceptable free sample player with up to 16 stereo outs and a variety of effects), or with MOTU MachFive 2 and BPM. There are ready-mapped patterns and kits for the latter.

The samples are slick and instantly usable, comprising a variety of sliced loops, drum kits, individual hits and playable instruments. Like the fantastic factory content for MOTU BPM, all the sounds were recorded at 24-bit/96kHz resolution and mastered by Chris Gehringer at New York's world-famous Sterling Sound mastering house, so the sound quality is superb. The only criticism is that the samples are a little clichéd and uninspiring at times. Even so, this package is worth investigating by those seeking quality hip-hop sounds.

8/10

Intelligent Gadgets £1.79
MIDI Recorder

Format iPhone/iPod Touch app
Contact intelligentgadgets@comcast.net
Web intelligentgadgets.us

MIDI Recorder takes audio input from either the built-in mic of your iPhone or an external mic on the iPod Touch and attempts to turn it into MIDI note data. It works with monophonic input only and is capable of detecting up to 20 notes a second. From the moment you launch the application, a colourful matrix of dots in the centre of the screen updates in real time to display exactly what notes would be generated. Tap the matrix and this changes to a spectrogram. A sole slider is used to restrict the converter to any three octaves between C2 and C7. Hit the Record button and the notes are placed in a buffer – these can then be previewed using an in-built synth, emailed or shared across the local network.

While being attractive on paper, in practice, MIDI Recorder falls short. The detection algorithm simply isn't accurate enough to be useful – most captures resulted in a mess of notes, and it also crashed on us a couple of times. MIDI Recorder can be used creatively, but only if you're in a quiet room and you're very good at whistling.

6/10

Sonivox
Aggro Electro Boom £99

Format PC/Mac, VST/AU/RTAS/MAS/standalone
Contact Time+Space, 01837 55200
Web www.timespace.com

The latest in Sonivox's line of ROMplers, this one offers over 4GB of basses, leads, pads, construction kits and drum hits. It's aimed at hip-hop producers but is versatile enough to serve a range of genres. Samples are played using Sonivox's own Playa virtual instrument, which offers a simple, user-friendly interface that spreads sounds across the keyboard, as well as a 4x4 grid of assignable, programmable pads.

Aggro Electro Boom's hundreds of presets make it easy to get started, and the sounds are generally very useable. Effects are limited to chorus and delay, with EQ and envelope settings for further tweaking. It doesn't offer the range of editing features found in other samplers, though, and it can only operate in stereo, meaning you have to load multiple instances to mix/process sounds individually. More worryingly, the Audio Units version we tested was noticeably buggy.

The quality of the samples and the relatively low price would make Aggro Electro Boom worth checking out, but the weaknesses of the software detracts from the overall product.

6/10

Agile Partners
Star6 £3.99

Format iPhone/iPod Touch app
Contact info@agilepartners.com
Web www.agilepartners.com

Star6 is a real-time effects processing tool for loops. You can upload your own to the device (with a 2MB limit on each sample) or use one of the bundled collections. The effects and loops are triggered by holding down the triangles in the top half of the screen – you then tilt the iPhone/Touch back and forth to manipulate whichever effect you're holding down. This gives a surprisingly fine degree of control.

The sound the effects make is dependent on the Sync/Grain button at the lower left. This either locks sample playback to a tempo defined by their length, or enables each effect to run free. The best example of the difference between the two is found in the Gate effect. If Sync is enabled, it pulses the audio on or off at an interval related to the tempo of the loop. The following note values are selectable: whole beat, half beat, quarter beat, and setting under which the gate on time is gradually reduced until it's off completely. With Grain enabled, the gate is disconnected from the tempo of the loop, and the interval becomes random and glitchy.

The other effects include Pitch and Speed shifters, along with Jitter and Random effects that play slices in a variable order or at random pitches. Finally, the Size effect offers a somewhat unpredictable parameter that alters the length of each slice. A further three effects – delay, filter and distortion – can be added to the audio stream, but these aren't controllable via the accelerometer.

The GUI could do with a bit of a reshuffle and some might feel that the application is a little overpriced for what it offers. We'd also like the ability to sequence loops, so that one can start after another finishes. But if you choose your loops carefully, Star6 is a fun distraction.

7/10

Expert Sleepers
Silent Way £32

Format PC/Mac, VST/AU
Contact os@expertsleepers.co.uk
Web www.expert-sleepers.co.uk

Analogue synths aren't exactly a doddle to integrate with our software DAWs, particularly the control voltage-driven (CV) models that lack MIDI. Happily, Expert Sleepers have come up with a solution, though, in the shape of Silent Way, a cross-platform plug-in suite that essentially turns your audio interface into a MIDI-to-CV converter.

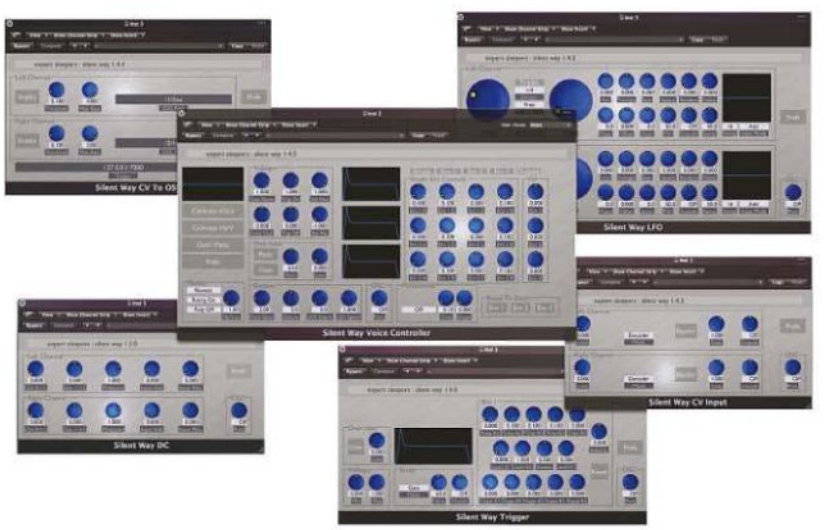
Currently (v1.4.4), the collection consists of six plug-ins. Voice Controller is probably the one you'll use the most, being the main 'instrument' plug-in that you'd use to play tunes on the synth. It generates gate and CV signals and, by monitoring the synth's audio output, can 'tune' it by compensating the levels of the signals sent. It works beautifully. We tried it with a Minimoog, Synthesizers.com modular, Odyssey, Roland SH-101 and even the notoriously cantankerous EMS VCS3. Silent Way was able to get each one to play nicely for at least three octaves.

The other plug-ins do as their names suggest. LFO generates oscillating CV signals while DC sends out fixed-level CVs and is meant to be controlled via your DAW's automation system. Trigger, meanwhile, generates gate or envelope signals. Cooler still, the CV Input plug-in can accept *incoming* CVs and convert them into something your DAW can record, edit and send back out to your synths. And used in conjunction with the CV To OSC plug-in, you can control any OSC-enabled devices via remote CV.

There is, alas, a caveat, although it's one that's beyond Expert Sleepers' control: Silent Way only works with audio interfaces *without* high-pass filtering on the outputs. This currently includes a number of MOTU interfaces and the Alesis iO|26.

For us, Silent Way is a no-brainer. It's considerably cheaper than the competition and Expert Sleepers are constantly updating it. It's a truly brilliant solution to an age-old problem and one that might make you reevaluate the practicalities of owning a vintage synth.

10/10



Soundware round-up

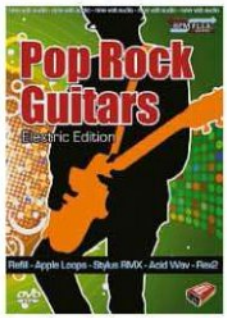
Zero-G
Dark Skies £90

Contact Time+Space, 01837 55200
Web www.timespace.com
Format Apple Loops, Acid WAV, EXS24, Kontakt 2/3, Reason NN-XT

This pack comprises 4.3GB of 24-bit/44.1kHz samples divided into ambiences, construction kits and single hits. Sonically, it's pure soundscape territory, with ambiences often hitting the 20-second mark. But with 15 ambience styles, 52 construction kits and 20 single-hit kits, you can also make use of effects and upfront impact textures. Although loops are included, we found Dark Skies worked best using the well-organised 1000-or-so sampler patches. We were also impressed by the carefully aplied loop points in the drones and pads. All in all, an excellent pack for soundtrack producers.

9/10

Nine Volt Audio
Pop Rock Guitars £70



Contact Time+Space, 01837 55200
Web www.timespace.com
Format Acid WAV, Stylus RMX, Apple Loops, REX2, Reason ReFill

Another fine loop-based sample pack from Nine Volt Audio, with 16 songs' worth of loops ranging in tempo from 89-143bpm. The style here is mainstream US guitar pop, and the axes used are a Strat and two Les Pauls, delivering clean, overdriven and distorted sounds respectively. Loops range from one to four bars, and there are also slides and single chords (major and minor). Where this package wins, though, is in its cataloguing and consistency. Each song includes the three guitar options for intro, verse, chorus, middle eight and ending, all playing complementary parts, making song construction simple.

9/10

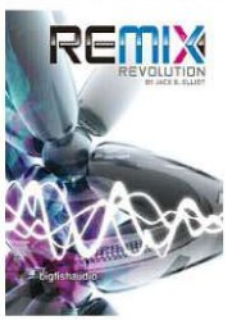
Sonic Couture DOWNLOAD
Glass / Works £99

Contact customerservices@soniccouture.com
Web www.soniccouture.com
Format Kontakt 2/3/4, Kontakt Player

Glass / Works offers three sampled glass-based instruments: the Cristal Bachet, the Glass Armonica and the Cloud Chamber Bowls. The first two were provided by respected glass proponent Thomas Bloch, and both work through vibration contact between glass and a wetted finger. The third was built by Sonic Couture and is played with soft and hard beaters. The Cristal offers the most variety, with its organ-like sound spread across 11 patches, including short percussive effects. And it's more percussion from the bell-like Chamber Bowls. But the haunting, flute-like Armonica is our favourite, offering a full key range of 'finger round goblet' glass-ness. A DVD is available, too.

8/10

Big Fish Audio
Remix Revolution $100



Contact Time+Space, 01837 55200
Web www.timespace.com
Format Apple Loops, Acid WAV, WAV, REX, Stylus RMX

Remix Revolution is the work of US remixer Jack D Elliot and is aimed at anyone producing mainstream dance music or remixes. Arranged as 38 tempo and key-tagged full construction kits and supplemented by 247 general drum sounds (around 1.25GB in total), the emphasis is very much on loop-based song construction. At tempos ranging from 123-145bpm, the styles are varied but don't drift toward the minimalist. Sonically, the set captures current trends well, with the kit demos giving good overviews. But without any sampler patches included, you'll have to create your own for the drum kits.

7/10

Prime Loops DOWNLOAD
Synth Addict £17

Contact info@primeloops.com
Web www.primeloops.com
Format Apple Loops, Live Pack, REX2, Reason ReFill, MPC, Acid WAV, FL Studio, Stylus RMX, WAV

151 synth loops aimed squarely at dance music producers. They vary between one and eight bars in length, with the filename clearly indicating tempo and key. Sounds range from basses to leads and many are processed either with EQ or dynamics, adding rhythmic interest to the originally played part. Most of them sit between 120 and 130bpm, reflecting the house and electro styles that are best catered for here. What's more, the loops work best as 'feature sounds' rather than being tucked away in the mix. Despite its limited remit, this focused bundle offers great, inspirational sounds for the genres covered.

8/10

Galbanum DOWNLOAD
Abstraction 04 $40

Contact info@galbanum.com
Web www.galbanum.com
Format Apple Loops, Acid WAV, REX2

Like its predecessor, Abstraction 04: Found Sound Urban Intelligence combines analogue kick and snare loops with domestically-sourced 'found sound' percussion loops, except this time the tempo is 106bpm. At 1.2GB, its 1040 two-bar loops are dominated by 400 percussion and 320 of the fully-mixed variety (ie, kick, snare and percussion), and stylistically, things are very glitchy. The high level of sonic consistency enables the layering of multiple loops to produce rhythmically interesting results. However, there's little variety in the analogue kicks and snares. Adding the 1024 source single hits to your purchase (which are the same as for Abstraction 03) for an additional $15 would be a wise move.

8/10

Wave Alchemy DOWNLOAD

Drum Machines 01 £22

Contact via website
Web www.wavealchemy.co.uk
Format WAV

This library contains three packs, namely AirBase Drums, Deep Drums and Electric Drums. Featuring samples from analogue drum machines, the 1400 sounds are astoundingly crisp and clear. Sourced from a Vermona DRM MK11 and three Jomox units (AIRBase99, MBase 11 and XBase999), and captured using high-end gear from the likes of SSL and API, the results are a testament to Wave Alchemy's meticulous approach. The incredibly clear, expansive sub bass of the kicks is of particular note. This isn't the most original sample library, but as a set of analogue drum sounds of the highest conceivable quality, it's hard to fault.

9/10

Loopmasters DOWNLOAD

Mistabishi - Drum & Bass Vol 4 £25

Contact info@loopmasters.com
Web www.loopmasters.com
Format Apple Loops, Live Pack, Reason ReFill, REX, Stylus RMX, WAV

Controversial Hospital Records maverick Mistabishi delivers all the breaks, beats and basslines you'd expect from a DnB sample pack, but this library has more of an individual touch than most. Whether this is a good or bad thing depends on your take on Mistabishi's sound, as many of these samples are pretty characteristic. While this is by no means a one-stop shop for DnB sounds, it's got plenty for the dance producer looking for something a little bit different.

8/10

Goldbaby DOWNLOAD

Custom DMX $24

Contact info@goldbaby.co.nz
Web www.goldbaby.co.nz
Format Battery, Reason ReFill, Guru, WAV

Back in the early 80s, Oberheim's DMX was the drum machine of choice for every act from New Order to Run DMC, and its punchy, vibrant sound features on thousands of records. Goldbaby's Custom DMX sample pack features 1182 single-hit drum sounds, including the originals of the machine itself, plus those of several other classic units (eg, LinnDrum, Drumulator). The latter were created by painstakingly sampling their sounds, burning them to an EPROM chip using Oberheim's Prommer unit and playing them back through the DMX, thus imparting a beautifully gritty tone. Throw in the supplied DMX swing templates and you have a sample pack with real charm – and the groovy Reason ReFill Combinator patches are a particular highlight.

9/10

A New Spin on Control

MC Transport

The new MC Transport delivers one handed navigation and editing of your projects like no other controller. From the sumptuous, tactile feedback of its weighted jog wheel and spring-loaded shuttle ring to the ergonomic transport controls and numeric keypad, MC Transport puts it all right at your fingertips. You can even use the soft keys to assign various functions to the wheel on the fly, instantly giving you ultra-precise control over everything from navigation and editing to writing automation and tweaking plug-ins. Give MC Transport a spin and experience a new level of control.

Artist Series
media controllers

Euphonix
euphonix.com

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cm/recommends

The best new gear from the last three issues...

112dB €149 PC MAC
Redline Equalizer

Rating 10/10
Reviewed cm145
Contact info@112db.com
Web www.112db.com

What is it? Probably the most feature-packed EQ plug-in we've ever come across, Redline Equalizer offers selectable bell curves (including, digital, tube and console-modeled ones), a spectrum analyser, harmonic distortion, dynamic EQ, automatic gain compensation and adjustable phase, ranging from linear phase to analogue-style phase... and beyond!
Verdict "Redline Equalizer is a well thought out EQ with a unique and comprehensive feature set, and a great sound"

Cakewalk PC
Sonar 8.5 £435

Rating 10/10
Reviewed cm146
Contact Edirol Europe, +44 (0) 20 8747 5949
Web www.cakewalk.com

What is it? Rather than the expected Sonar 9, this year we've got a point upgrade that you have to pay for. But what an upgrade it is! AudioSnap and the Step Sequencer have been pumped up to v2, there's a brand new Matrix View for firing off audio and MIDI clips, new plug-ins in the form of the PX-64 Percussion Strip and VX-64 Vocal Strip, and loads more.
Verdict "Don't be fooled by the name: Sonar 8.5 is essentially a full new version in disguise and a must-have upgrade"

Novation PC MAC
LaunchPad £150

Rating 10/10
Reviewed cm145
Contact Novation, 01494 462246
Web www.novationmusic.com

What is it? On the surface, it's a dedicated controller for Ableton Live, offering an enhanced take on the clip-launching section of the Akai APC40. But as well as this most obvious functionality, it can also control Live's mixer, not to mention interact with pretty much *anything* using Novation's crafty Automap software. It's also affordable, portable and solidly built. Nice!
Verdict "An excellent effort from Novation here, and one that will surely make Live complete for a good many users"

What we've been using this month

Ronan Macdonald
Editor

Cycling '74/Ableton's Max For Live arrived too late to make into this issue's reviews section, but I don't think I'm dropping much of a spoiler when I say that it's an absolute stunner.

Lee du-Caine
Deputy Editor

I've been 'arping on about Plogue's chipsounds since it was naught but a blip on my release radar. And now that I've got my hands on it, I'm pleased to report that it's bleeping ace!

Tim Cant
Multimedia Editor

If you need a free filter effect, then I reckon TAL-Filter is the one to go for. It's perfect for making spacey sound effects, thanks to the built-in LFO and envelope. Don't hate, self-resonate!

Craig Hitchings
Production Assistant

Having gone completely plastic with my live guitar setup, NI's Guitar Rig 4 Pro has enabled me to cart about an arsenal of high-end, vintage gear without an army of sweaty roadies.

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- Mastering for beginners
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- NI Kontakt 4, PreSonus Studio One, Cakewalk Sonar 8.5, iZotope Alloy and more reviewed

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- Into the groove (swing and shuffle explored)
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- **cm** Focus: Dubstep
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>Your questions answered

Q&A

Do you feel that you're missing a vital link in your production chain, but don't know what to buy? Got problems with your current setup? Or is your favourite artist's sound proving to be elusive? Send your questions to cmhelp@futurenet.co.uk

Axe to grind

Question **I am a composer of television soundtracks whose main instrument is the guitar. I am currently using Cubase and various VSTs (including Atmosphere, Albino, Nexus and Absynth 4). At present, I am using a MIDI keyboard to trigger sounds, but as my piano skills are somewhat limited, I would welcome some advice on my best options regarding guitar/MIDI converters. I have been considering the Yamaha EZ-AG, but am uncertain about its suitability for the job.**

Jim Walker

Answer The EZ-AG and EZ-EG are 'secret weapons' for many MIDI musicians. Their SYSEX abilities and easy playability make them novel MIDI controllers. You can add a bit of strumming to a MIDI sequence or control orchestral and synth sounds via a guitar-style fretboard. Similar to these devices but more upmarket are the Ztar controllers from Starr Labs. Such controllers are not, however, guitars in the traditional sense and might take a bit of getting used to for the seasoned plank-spanker.

If you'd prefer to play a conventional guitar, there are two possible routes you might take. The first (and cheapest) is to use pitch-to-MIDI conversion software such as Nuton's Musiciendoz or knzaudio's Midifier to convert incoming audio to MIDI. There are limitations to these systems, however. For one thing, they only work properly with monophonic signals – chords are a no-go. Additionally, they introduce some processing latency in addition to that already imposed by your audio interface, drivers, etc. Drawbacks like these limit how useful they can be in providing you the comfortable and familiar playing experience that you need. Alternatively, you could record a guitar part then convert it to MIDI after the fact – some DAWs have built-in pitch-to-MIDI functionality that can accomplish this, such as Cubase's VariAudio and Sonar's V-Vocal. These are still monophonic, however, and the only practical solution we know of that can convert polyphonic audio (ie, chords) into MIDI is Celemony's new Melodyne Editor, which we're reviewing in our next issue.

If these don't cut it, your other option is a hardware guitar-to-MIDI tool, such as the GR-20 from Roland. These units require that a special pickup be added to your guitar (don't panic – you don't have to drill any holes in your beloved axe), but once you've got it up and running, it can convert your playing to

You can play your synths with your guitar using a hardware pitch-to-MIDI guitar rig like this one from Roland, but it's gonna cost you...

...or you can use a guitar-style MIDI controller like this one from Yamaha

PSP's VintageWarmer is a fantastic plug-in for adding analogue-style warmth to your mix, but it's not a do-it-all compressor

MIDI, and what's more, it's polyphonic, too (although there is still a little latency). The GR-20 doesn't come cheap, at half a grand, but it might provide a more satisfying performance. If you're interested in this approach, consider the Axon Technologies range, too – these are purported to offer the lowest-latency conversion available, as long as you play with a pick. If those are too much, however, consider the Sonuus G2M, a diminutive, affordable box that tracks your guitar and spits out (monophonic) MIDI.

The DJ/producer

Question **I am a house music DJ. I play house, tech house, electro house, techno, minimal, etc. I have being doing some production, trying to produce tracks that I would like to play, and although I am not there yet, I am getting close. With the exception of PSP VintageWarmer, I'm using the effects that come with Ableton Live. I would like to know if there are any plug-ins, such as compressors, reverb or any others, that would make getting a professional sound much easier. I would prefer to have a limited number of plug-ins that I can really get to know well.**

Anthony Young

Answer **Before getting** into the plug-ins, we **should remind you that exp**erience is the **biggest factor in achieving a p**rofessional sound **– there is no 'magic bullet' that'll** give your **productions a radio- or club-ready** edge.

You're on the right track with VintageWarmer. **Assuming that your tracks are t**op-notch and **you're happy with your mix**, a dynamics plug-in **like VW can add just the r**ight amount of **sweetening. While thi**s is a fine plug-in, it's not really intended as a general purpose compressor, but PSP have plenty of other processors that are. If you're looking for a quality dynamics plug-in with character, their oldTimer (10/10, **cm**144) is a superb choice. Alternatively, go for the MixPack2 (10/10, **cm**127) and you can get your hands on the excellent MixPressor2, which is not only easy to use (the default preset works well on many sources – just turn the **Compress** knob to taste) and highly versatile, but it sounds great, too. The MixPack2 also contains another four fantastic effects, such as the very tasty MixSaturator2, which is just the thing for adding tape or valve warmth to your mixes.

As for reverbs, the one in Ableton Live isn't bad, but there have been some truly fantastic ones released over the last year or so. If you're looking for something straightforward, check out Audio Damage Eos or 112dB Redline Reverb. If it's in-depth tweaking you crave, however, 2CAudio Aether is hard to beat. All of these reverbs sound absolutely superb, too, by the way.

As for EQ, Live's EQ Eight is a great fully parametric equaliser, and you can enable its high-quality mode by right-clicking its header and selecting the option. If you'd like to try something a little different, we highly recommend PSP's sQuad EQs, which put four console-style EQs at your fingertips. You may find that their simpler interfaces and restricted range of choices help you to make mixing decisions, and these superb EQs each have their own very distinctive sound.

Spectrum analysers can be invaluable when mixing, as you can use them to spot problem frequencies that are otherwise hard to pinpoint. Ableton Live has one built in – Spectrum – and there are more sophisticated options, such as Voxengo's free SPAN and the **cm** Studio's very

"Assuming that your tracks are top-notch and that you are happy with your mix, a dynamics plug like VintageWarmer can add just the right amount of sweetening"

> Step by step

Spectrum analysis

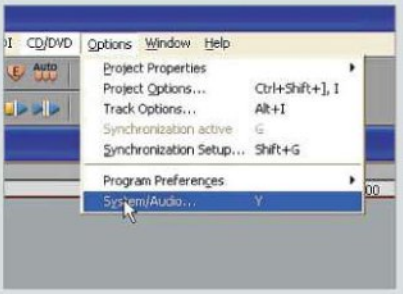
1 > A spectrum analyser can be an invaluable ally in your pursuit of a professional sound. You can use it to analyse the frequencies in a track that you admire and compare the results to an analysis of your own material. Best of all, there's one in the **CM Studio** folder on your **cm** DVD – it's called FreqAnalyst CM. Open up a new project in your DAW.

2 > We'll assume that you've completed a mix and that you find it somewhat lacking in professional sheen. The first thing you need to do is to import your mix onto an audio track. Now, import a professional mix that you like from a commercial CD – choose something that's close to the sound you're after. Open the spectrum analyser on that track.

3 > Next, add a spectrum analyser to your own song's track. Take a look at the differences in the displayed frequency content – see if you can tweak the EQ to compensate for any deficient frequency areas, and attenuate the bits that are too heavy on your track compared to the pro mix. This technique can be applied to individual sounds, too (eg, bass or drums), not just full mixes.

> Step by step

Input monitoring in Samplitude 10 SE



1 > Monitoring audio inputs while listening to your recorded tracks is a simple matter. We're assuming that you have an audio interface with ASIO drivers – we're using the M-Audio Fast Track Pro. If your card doesn't have ASIO drivers (maybe you're using a built-in audio interface), you can use ASIO4All. First, open Samplitude and go into **Options»System/Audio**.

2 > Make sure your ASIO drivers are selected, along with your preferred audio interface. You can find the Monitoring Setup at the bottom of the window. There are a lot of options here, and you might need to do some fine-tuning of the buffer settings, which is carried out in your ASIO control panel. For now, you can check the box labelled **Mix Input and Playback**.

3 > Click **OK** and return to the project page. With the ASIO driver up and running, you can click the small speaker icon, as shown – this will activate the audio thru signal, regardless of whether the track is armed for recording or not. Make sure your inputs are assigned properly and you should be able to hear yourself play.

With electronic drum kits you can play along to your favourite tunes and check your timing by recording the MIDI

own FreqAnalyst CM from Blue Cat Audio. See our *Spectrum analysis* walkthrough on p115 for a quick how-to on using spectrum analysis to spot problem frequencies and improve your mixes.

Can anybody hear me?

Question **I've just bought an E-Machines E525 laptop and loaded the *Computer Music* Samplitude 10 software that you gave away a while ago, but I can't hear myself when I play, making recording absolutely impossible. I'm not very clever with computers and really need help. Is it my soundcard or what?**

Simon

Answer It's difficult to say wether the problem lies with your soundcard, as you don't say exactly what soundcard you're using, which will have a bearing on our answer. Is it the onboard audio device, A PCI card or an external interface? Either way, it sounds to us like you have an issue with your internal software monitoring, rather than anything happening outside the computer. Fortunately, it's pretty easy to set up in Samplitude, as you can see from our walkthrough to the left.

Drum tool

Question **I have a set of Roland V-Drums which I struggle to get decent music to play along with. Is there any computer music software I can buy that would extract the drums from any music track whether in WAV or iPod format? I would then be able to play along to the track without hearing both sets of drums.**

Gavin Anderson

Answer Currently there's no software that can 'erase' the drums from a recording. However, depending on the recordings you're using, you might be able to use stereo phase cancellation to at least make the kick drum and snare a lot quieter. The resulting audio will be in mono, but it's still worth a try. This is done by inverting the polarity (AKA phase inversion) of just one of the stereo channels, then adding them together – all sounds that are common to both channels (ie, the stuff you hear in the centre, like vocals, bass, kick and snare) will

"Lossless compression formats like MP3 and AAC use stereo trickery to achieve their low file sizes"

disappear, although if they have any stereo aspect at all (eg, reverb, room sound), you'll still hear that. Another thing to watch out for is that lossless compression formats like MP3 and AAC use stereo trickery to achieve their low file sizes, and applying stereo phase inversion can expose a lot of the underlying artifacts.

Alternatively, you can draw upon readily available MIDI files of the songs you'd like to play. These contain complete arrangements on multiple tracks, can be loaded into most DAWs and played back with virtual instruments. It's an easy matter to mute the drums (usually played back on MIDI channel 10). They won't sound like your favourite recordings, but MIDI files have the advantage of malleable tempo, so you can slow the playback down while learning a song.

Padding things out

Question **I've been a fan of Steve Roach for years, and have tried to get close to the wonderful, rich, smooth soundscapes he creates, but I still can't even get close – everything sounds far too 'synthy', whereas his sounds are very much more organic. Do you have any tips that would help me? I'm guessing he uses more digital synthesis for these types of pads (I know he uses the Korg Wavestation, for example).**

Mike Rolls

Answer Steve Roach's music is full of rich, deep textures that evolve slowly over time. Very, very slowly, in fact, and that's one of his most significant sonic signatures. He uses a lot of analogue synths and ROMplers, along with loads of ethnic percussion and, of course, his didgeridoo. He also piles on lots of thick, gooey reverb. We can show you a few tricks to help you get close – see *Organic ambient pads* – but keep in mind that Mr Roach has been perfecting his studio techniques for decades, so it'll take a bit of practice to recreate his extremely lush sound.

Back right up

Question **I really should do a backup of my computer. I have two 500GB hard drives, one being the system/program drive and the other a data drive. I'll eventually install a third as a backup drive. For now, though, I'll be backing up to either CD/DVD or a WD Elements USB hard drive. My main question is this: is Nero Backitup software reliable enough for both system and file backups, or should I invest in True Image or Ghost?**

A more technical question, though, is about the hard drives. The two existing ones are connected by SATA straight onto the motherboard. I also have a SATA DVD drive and an exterior eSATA port connected direct to the motherboard. That takes up all four SATA connectors on the motherboard.

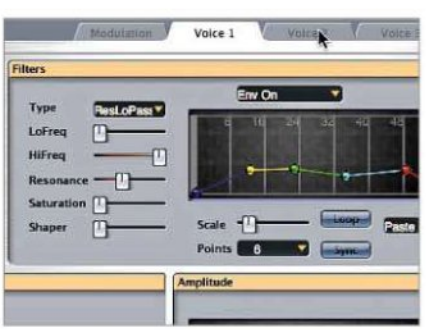
For a backup drive, I was thinking that I would install a PCI-SATA card. Using this system, do you know if I could set up a third

> Step by step Organic ambient pads

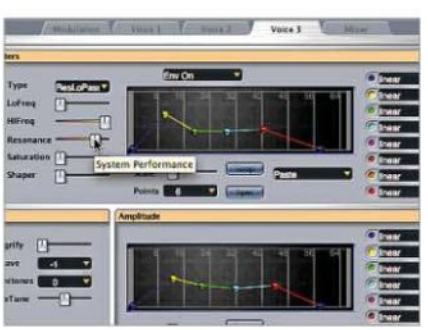
1 > Steve Roach uses piles of analogue and digital synths, along with lots of processing, to make the sort of pads heard on albums such as *Mystic Chords* and *Sacred Spaces*. Fortunately for us, freeware like Green Oak's Crystal has most of what we need to get the job done. Fire it up and load an empty patch.

2 > We need to underpin those deep sounds, so begin by clicking the **Voice 1** tab and selecting the **Vox** Soundfont from the included **Sampled** waveforms. Currently, this is the only voice we'll hear. Click the **Poly** button above the Oscillator section and choose **Poly24**, so that we can play chords with our sound.

3 > We can use Crystal's flexible envelopes to create long, complex changes in amplitude and frequency. In the Amplitude section, change the number of **Points** to **6**, and use the **Scale** slider to zoom way, way out. Create an envelope like the one we have here, with a long attack and release, and some gradual changes in between.



4 > Now, let's cheat a little by using the envelope's **Copy** command to duplicate the envelope we just made. Activate Voice 1's filter envelope and paste our envelope into it. Tweak it a bit so that it's slightly different and boost the filter's **Resonance** a little. Now activate Voice 2 and tab over to the **Voice 2** editor.



5 > Choose the **Swirl** waveform, then paste your envelope into both the filter and amp envelopes for Voice 2 and tweak them differently to those of Voice 1. We've given Voice 2's **Resonance** a boost. Tab to **Voice 3** and switch it on. Choose the **WarmSaw** wave and set the **Octave** to **-1**. Paste in your envelopes for the filter and amp. Crank the **Resonance** up a lot.

6 > Finally, click the **Mixer** tab to get stuck in to Crystal's effects. All three voices are fired through delay – the **Delay Time**, **Feedback** and **xFeedback** sliders are pushed up for some long echoes. The synth patch is only part of the equation, though – don't forget to slather on a massive amount of reverb!

drive to mirror the others? I would mainly like to be able to boot the computer from the backup drive if the system drive was to go down, for example. I would want everything from the data drive on the backup drive as well.

Is all this easy enough to do? Can I do it with the backup drive on a PCI card while the others are directly on the motherboard? Is Nero Backitup up to the job?

Danny B

Answer The first thing to bear in mind is that while 1TB might seem like just the thing for mirroring your two 500GB hard drives, it might not, in fact, be able to hold them both as you first thought. As you might be aware, the total amount of space that you can actually use on a hard drive is usually less than the capacity its rated at, due to things like file allocation tables and the discrepancies in the way different manufacturers calculate the total size. Therefore, we'd first advise to go even bigger than 1TB on the 'target' drive to leave some extra room, or to use two separate drives.

As for booting up from the backup drive, you'll need to make an image of your drive in order for it to be bootable – simply copying over the files won't work. We've booted from drives that have been imaged using both True Image and Ghost and they've worked just as advertised – as you'd expect.

Adding a PCIe or PCI SATA card to your system will indeed enable you to add a drive, although you might not be able to boot from it – this depends on the BIOS and/or card. You will need to check with both the manufacturer of your motherboard and the card to see if this feature is supported. However, booting from an external USB drive ought to work, but again, you'd best check in your BIOS.

An easy option might be to use the external SATA port (eSATA) and buy two external drives with eSATA ports. From there, you could image each drive individually to the external drive. If you have a crash that kills your system, it's more likely that you'll only lose one drive, and you'd be able to access either one from the single eSATA port. It's also very likely that your BIOS will enable you to boot off your internal SATA controller, since an eSATA port is just an internal SATA port with an external connector. It might be best to hook up the external drive during backups only, however, to reduce the risk of viruses infecting your system.

We've not tried Nero's Backitup, but the company does claim that you can create a recovery image that can be used to restore your system in case of a disaster. It will work with a variety of external drives (there's a list of compatible devices on their site). There's a demo version, too, so you've got nothing to lose if you want to give it a go.

Question How do I make a classic, softly-pulsating techno synth in Reason like the one used in Daniel Stefanik's *Reactivity 3*? *Jim Williams*

1 > There isn't too much going on in the track in question. The prominent synthy sound that percolates and pulses along with the beat is rather indistinct and sounds to us like a treated sample. However, it has some characteristics that we can recreate using Reason's Subtractor synthesiser and a couple of its ancillary effects. Start by creating a new project.

2 > Add a Subtractor. We could probably find similar sounds by trawling through the presets, but that wouldn't teach us a thing, so let's build our patch from the ground up. The default oscillator waveforms are OK, but we need something with a bit more bite. We also need to use both oscillators, so activate **Osc 2**. Select **Waveform 19** for Osc 1 and **20** for Osc 2.

3 > Let's start shaping the sound with the filters. Set Filter 1's **Freq**uency to around **40** and the **Res**onance to **26**. Change the **Type** to **LP 24**. Now, activate **Filter 2** and set its **Freq**uency to **85** or so and the **Res**onance to **35**. It's quite muffled at this point, but a bit of modulation from the filter's envelope will help that.

4 > Push the Filter Envelope's **D**ecay, **S**ustain and **R**elease sliders up to just above **70**. Now look to the Velocity section – it's already assigned to the Filter Envelope. Let's use it to modulate the **F**ilter **Dec**ay, too, but with a negative value. Try **-26**.

5 > Our Amp envelope needs some work. Set the **D**ecay to about **58**, its **S**ustain to **46** and the **R**elease to around **55**. Play some rhythmic chords at varying velocities to hear our sound so far. All of this envelope trickery gives our patch a dynamic, plucky character that will work well against a drum loop.

6 > Let's push for some more resonance. Drop in an ECF-42 filter, set it to **LP 24** mode, adjust the **Freq**uency and **Res**onance to about halfway, and drop the **Vel**ocity a little lower. Finally, **Create** an RV-7 reverb, select the **LargeRoom** algorithm and turn that **Dry/Wet** mix way, way down. And there you have it!

Question How do I make a Jordan Rudess, Liquid Tension Experiment-style synth lead using freeware?

Cory Brown

1 > Whipping up a proggy lead such as those used by Jordan Rudess in his Liquid Tension Experiment side-project is pretty simple, and can be done using nothing more than a bit of freeware. We're going to use LinPlug's AlphaCM, which you can find in the **CM Studio** folder on your coverdisc. Fire it up and call up the **Z-Init** patch – it's at the end of the preset list.

2 > We'll get things rolling by changing Waveform A in Osc 1 – stick the waveform called **Square1** into the **A** slot. Now, change the range of that waveform to **16"** and crank the **Bal**ance knob all the way to the **A** side, so that this is the only waveform you hear when you play.

3 > Next, move to Osc 2. A sawtooth is required here, but let's change the stock one for something more characterful, like **VintSaw1**. This time, we'll leave the range at **8"**. However, we'll still need to crank the **Bal**ance all the way over to the **A** side for Osc 2.

4 > The sound is still too clinical, so increase the **Detune** knob to 9 o'clock. Next, change the **Voices** parameter to **Mono**, for that classic monosynth lead sound. Moving on to the filter section, change its mode to **24**, and set both the **Reso**nance and **Cutoff** to around the 10 o'clock mark.

5 > it's time to get the Filter Envelope in on the action. Increase the **Dec**ay value to a little past 9 o'clock and set the **Sust**ain to 2 o'clock. Turn the **Rel**ease knob up past the halfway point and crank the **Depth** up nearly all the way.

POWER TIP

Prog power

Prog rock is flamboyant and over-the-top. Performance is everything in this genre, and these guys are flash players with lightning fast licks. Even the most basic synth patch can come screaming to life in the hands of a virtuoso like Rudess, assuming that the patch he's playing is capable of the sort of performance nuances he requires of it. Such a patch, therefore, ideally needs to respond to multiple MIDI controllers. Velocity and mod wheel action can breathe some life into the patch, and don't be afraid to go nuts on that pitchbend wheel.

6 > It simply wouldn't be a prog lead if it didn't have some glide, so activate the **Glide** function and set the **Time** to around the 10 o'clock position – play in a legato style to bring this into play. Finally, turn the Chorus' **Wet** knob up halfway and shove the **Rate** up to 2 o'clock.

7 > Performance controls are vital to someone with Rudess' skills, so we'll set the patch up to respond to the mod wheel. In the Matrix, pick **Modulation Wheel** in the left-hand column, **Matrix Depth 2** as the destination in the right-hand column and turn the amount (centre value) up to **0.4999**.

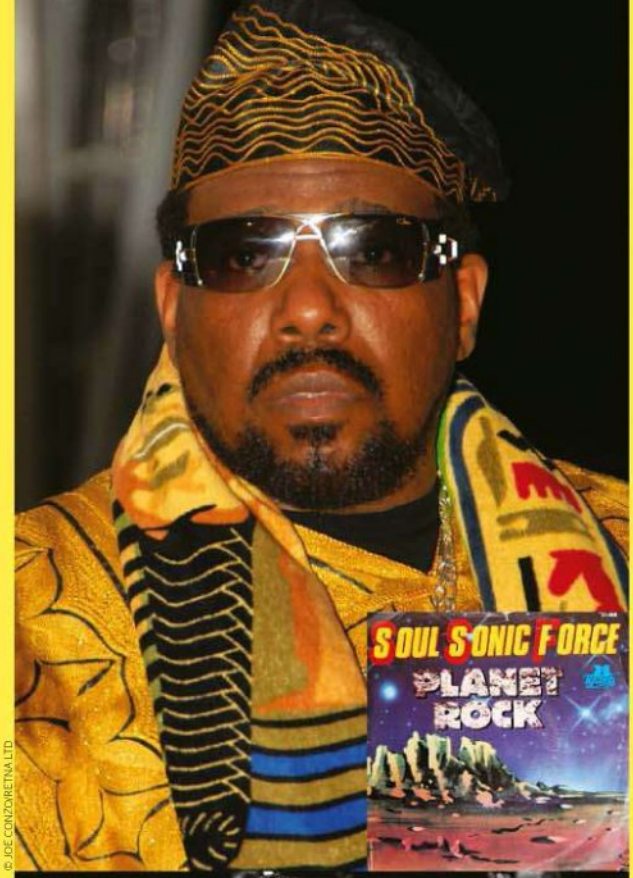
8 > In the next row, choose **LFO 1** as the source and the **Filter Cutoff** as the destination. Leave the amount at **0.000**. This will cause the mod wheel to bring in the LFO, which in turn modulates the cutoff. Now, set the LFO to taste, add a distortion plug-in as an insert effect and get ready to rock! **cm**

cm DVD
ON THE DVD

All the files you need to follow the walkthroughs are in **Tutorial Files**

ELECTRO

Huge 808 kicks, funky synth leads and vocoded lyrics are the staples of this most influential genre. Here's how it's done...



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These days the word 'electro' has become shorthand for electro house. However, in the early 80s, it had a quite different meaning. Back then, electro was used to describe a new breed of record that was born from the use of the new, relatively cheap array of electronic music making equipment – in particular, the Roland TR-808 drum machine.

Electro's arrival arguably predated house and techno, and was less rhythmically rigid than those 4/4-oriented styles. While the sound of electro was influenced by European synth pioneers, such as Kraftwerk and Jean Michel Jarre, it also took much of its inspiration from funk, resulting in a futuristic, groovy style of music that was quite distinct from the nascent hip-hop and new-wave sounds of the late 70s and early 80s. Artists such as Afrika Bambaataa (*Planet Rock*), Egyptian Lover (*Egypt Egypt*), Cybotron (*Clear*) and Dynamix II (*Just Give the DJ a Break*) would help define the sound and style of the 80s, with their bass-heavy electronic beats and funky synth work.

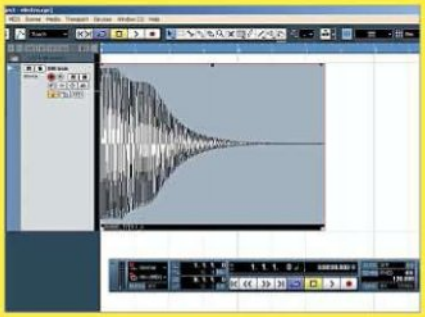
Electro would go on to provide inspiration for many dance music subgenres, including such regional US delights as Miami bass, Florida breaks, Baltimore club, Chicago booty house and Detroit ghetto tech. The 808 kick would crop up again during the mid-90s jungle/DnB scene, and the vocal effects and synth leads would influence the likes of Daft Punk.

Creating an electro track in the early 80s would have involved such tedious trials as syncing synths with CV signals and recording to tape. Thankfully, these days, getting the electro sound is much less hassle. In this tutorial, we'll show you how you can create your own vintage-flavoured electro sounds with little more than a few choice samples, virtual synths and plug-ins. We'll create a banging, bass-heavy beat from scratch, lace it with synth sounds and effects, and, of course, add a vocoded vocal for that nostalgic 80s touch.

> "Electro would go on to provide inspiration for many dance music subgenres"

On the disc, you'll find a complete Cubase 5 project file along with stems, samples, MIDI files and patches, so you can get rocking right away.

> Step by step Kicking things off



1 > For that authentic electro sound, there's nothing quite like that of a Roland TR-808. Here, we're using sounds from Goldbaby's excellent Tape 808 sample pack. Copy the **Tutorial Files/ Focus** folder from the DVD to your hard drive, and create a new project in your DAW. Let's start with the kick drum – drag **808BD_T7D11_X.wav** onto an audio track and set the tempo to **130bpm**.

2 > Set up your DAW's loop points to encompass the first bar of the project, and put the kick drum on the first beat. Create copies of the kick and place them on 2.3, 3.3 and 4.2. We're going to extend this basic one-bar rhythm into a four-bar sequence.

3 > Make a couple more copies of the kick drum sample. Use your DAW's pitch processing to pitch one up five semitones (to A#), and the other up seven semitones (to C). We've turned off Cubase's Time Correction function, so the sound is resampled rather than pitch-shifted. Pitch-shifting, which relies on granular processing, will have an undesirable effect on the sound and should be avoided.

4 > Copy the first bar of the beat, and replace the last two beats with the C on 3.3 and the A♯ on 4. We now have a rhythmic loop that also includes a melodic hook element. Everything in the track is based around this element. Create a copy of the two-bar sequence we have so far.

5 > Scroll to the end of the fourth bar. To create a variation, this time we have the C play on 3.3 and 3.4, and the A♯ on 4 and 4.3. To make the pattern easier to see, we've coloured the kicks in alternating shades of green, with the C notes purple and the A♯ notes orange.

6 > Because the 808 kick sample has been compressed hard in the original recording to make it as sustained as it is, its attack has lost a bit of impact. To remedy this, add another, more realistic kick drum sound on each 808 hit. Here we're using the A♯0 kick from HALion One's **All Kick Drums** patch. This helps maintain a consistent attack when the 808 kick plays at different pitches.

Beatbox master

Hugo Tichborne, better known as Goldbaby, is the sample library producer responsible for creating the excellent drum machine recordings used in this tutorial. These are all taken from his library Tape 808, which features samples created by recording the classic Roland TR-808 onto analogue tape. We caught up with Hugo to ask him why recording vintage machines to tape is so important?

"I wouldn't say it's that important, just well worth the effort. I have always loved what tape does to drums, especially when you hit the tape hard and run the tape slow! With so many people making music 'in the box', it makes sense to give samples some real analogue treatment."

What about advice for those recording straight from vintage drum machines?

"Sometimes you can overload a drum machine's 'main' left and right output... as I discovered on the DMX. This can give a drum sound a nice bit of grit. Snares love it! If you are sampling from a drum machine with multiple outputs, try each drum sound through its individual out and also the drum machine's main out. You'll sometimes notice that they sound quite different."

Do you have any tips for those who use your sample packs?

"Experiment... Make kits out of unrelated drum machine sounds. Layering can give you more flexibility when creating drum sounds – for example, try using a TR-808 BD to give you the beef and layer the TR-505 BD to give you definition; or use tom sounds to make kicks and vice versa.

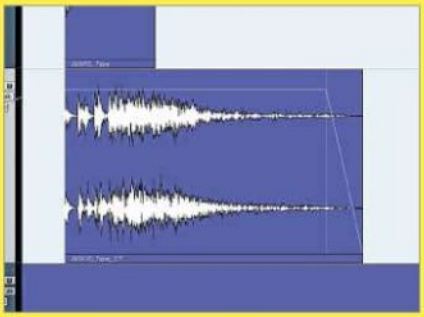
"Samples can sound static if they're triggered on their own. Try using an LFO to modulate the pitch and filter very subtly and slowly. Dial it up until you can just hear it working, then pull it back a bit. This can give you a touch of 'analogue' movement in your drum sound.

"Finally, when it comes to sequencing, velocity is a groove's best friend. Step write kicks and snares, but play the hi-hats and percussion in real time."

Assuming you're into electro, what electro records do you particularly like the drum sound on?

"I love electro – especially the old stuff! May favourites in terms of drum sound would have to be Herbie Hancock's *Rockit*, Hashim's *Al-Naafiysh (The Soul)* and Tyrone Brunson's *The Smurf*."

> Step by step Electro snares and claps

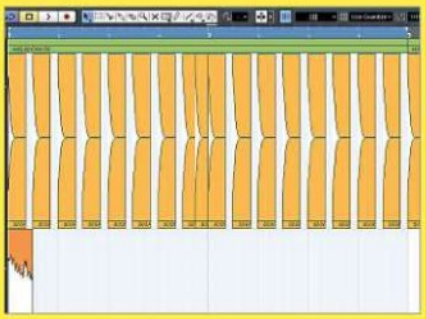


1 > To create our snare/clap sound on the second and fourth beat of each bar, we use three separate elements. The main part is the **808CP_Tape_ST** sample, which you'll find in the **Focus** folder on the **cm** DVD. To tighten this up, shorten the sample and add a fade at the end to stop the sound from ending too abruptly.

2 > The clap has a nice stereo image, but it's a little too wide. To remedy this, use a stereo width effect, such as Cubase's Stereoizer or Stereoizer CM (on the DVD) to bring its stereo extremes in towards the centre of the mix. The sample also lacks mid and low punch, but we can easily remedy this by layering it with other sounds.

3 > Add the **808RS_Tape** sample, which can also be found in the **Focus** folder, onto the second and fourth beats of each bar. Here, we've also added the snare on F3 from HALion One's **Snare Shop** patch. Balancing the levels of these sounds is a compromise between high-end smack and ambience, and low-end and mid-range punch.

4 > The shaker part was created with Sylenth1's **DR Shaker** patch. This simple patch uses a noise oscillator that's band-pass filtered. The filter cutoff is modulated via an envelope to give the sound movement, and the pan position is modulated via an LFO. The velocity of each note affects the volume and cutoff, so you can create a realistic-sounding part by varying the velocity level used.



5 > The hi-hat part is also made up of 808 samples. You'll find **808HH_Tape** (closed) and **808OHH3_Tape** (open) samples in the **Focus** folder – drag them onto separate tracks in the project. The hi-hat pattern loops over two bars. Place the closed hats on every eighth-note, with an extra one on 4.4 of the first bar, as shown.

6 > Place the open hi-hat on 1.3 of the second bar, and delete the closed hi-hat that falls there. Copy the hi-hat pattern onto the following bars, so you have a complete four-bar sequence. For the final touch, we add a crash cymbal from HALion One's **T8 Analog Kit** patch.

Behind the music with Dynamix II

Dynamix II have been making slammin' electro tracks for over 20 years, and with a huge catalogue that includes the massive *Just Give The DJ A Break*, they know plenty about bumping basslines and beats. We caught up with DJ Scratch D (AKA Dave Noller) for a quick interview...

How did Dynamix II become involved with the Togu Audio Line TAL-Vocoder project?

"I wound up meeting Patrick Kunz from Togu Audio Line by fate. I had contacted him to report a bug in the way his TAL Bassline (a VSTi emulation of the Roland SH-101) was handling portamento. This reporting back to Patrick lead on to a few tweaks to the filter section of the TAL Bassline. I have a real SH-101 that I have used for years, so I was able to do all the testing and reports via email and attached audio examples.

"The TAL Bassline could potentially replace one of my pieces of hardware gear for shows, so I thought to myself, if I could convince him to make a vocoder to replace my SVC-350, this would be fantastic. I told him of my live rig, explained my credentials and offered to make some patches for it and put together the English operating manual. After a few more emails, we came up with the end result: a clone of my live rig's vocoder section. The SH-101 and SVC-350 could finally rest after all those years of abuse on the road. They now sit where they belong, in the Dynamix II Studio. Patrick had made my vocoder rig into a VSTi/effect that had incorporated the TAL Bassline as its instrument in carrier source. But he didn't stop there – he also made it able to accept routing of other synths as carriers, too. This took the TAL Vocoder to another level, because it wouldn't be locked into a specific sound. The plug-in is amazing and the programmer is an insane genius! Also, did I mention that it's *free*?"

Do you have any tips for compressing, EQing and working with 808 kicks and subs?

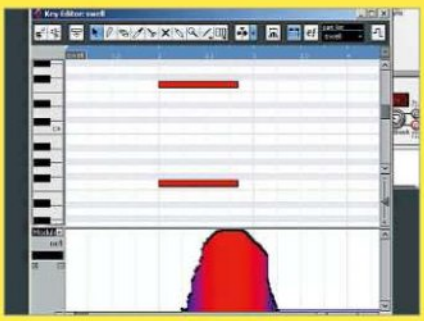
"We start by EQing out the unnecessary bottom-end that steals valuable headroom. The de facto Miami bass TR-808 kick has a sweet spot at 60 Hz, so we begin to roll off below 50 Hz. Lately we've been using an SPL Transient Designer to bring out punchy attacks on our drums and it works great for the 808 kick as well. We always add subtle amounts of distortion/saturation, so that our sub's tone can be heard on smaller speakers, as well as massive club systems.

"The other 808 sounds are all sweetened by varying degrees of EQ/saturation and

> Step by step Sweep

1 > The vibrato synth chord is a staple of 80s electronic music, and you can program your own version with pretty much any virtual analogue synth. Here we've gone for Rob Papen's Albino 3. Load up the synth and select the **Diverse Sounds»z_init** preset patch. For this sound we want oscillators 1 and 2 active and set to **Analog** mode.

2 > Set both oscillators' **Waveform** knobs to 12 o'clock and turn their **Sub Osc**illators fully up. Set both oscillators' **Spread** controls to 12 o'clock, and turn oscillator 1's **Vol**ume all the way up while setting osc 2's to about 1 o'clock. Detune oscillator 2 by **7 Semi**tones to create a fifth.



3 > By default, the first line of Albino 3's mod matrix routes LFO1 to Main Pitch, with the Modulation Wheel assigned to Matrix Depth 1. As the modulation amount of the top row is set to 0, we'll only hear the effect of the LFO-to-pitch modulation when the mod wheel is fully up. Copy the MIDI, complete with modulation wheel automation, that we've used here.

4 > Set the modulation amount of the bottom row in the mod matrix to **0.99**. This increases the effect that the modulation wheel has on the pitch. Adjust the **Freq**uency control of LFO1 to under **7** to give us that classic vibrato effect.

5 > These kinds of sounds work well with a bit of filter movement. We can use Albino 3's filter envelope to create a sweep for us. Copy the settings we've used on Filter 1 here, and set the F1 envelope's **Attack** and **Release** times to about **0.4** and **0.9** respectively. While you're at it, turn up the amplitude **Attack** time to **0.45**.

6 > The sound wouldn't be complete without some effects, so activate the first three effect slots and set them to **Chorus**, **Stereo Delay** and **Reverb**. Use a synced delay with the left and right taps set to **1/4** and **1/2T**, and copy the **Feedback** and filter settings used here. For added movement, add an auto-panner like the one on the woodblock sound.

layered to taste. We'll often add drum sounds to thicken up their overall punch with various use of HP and LP filters, until the magic happens and it all sits in the mix.

"Hint: have a track up on your DAW with a mastered song off a current CD to do an A/B comparison. This is the most valuable lesson I can give – you can constantly filter and tweak sounds all day long into varying versions of the original sound, which could all sound great, but until you compare your music against a mastered song, how will you truly know if your song has enough punch, warm low-end, or if it's getting too bright?"

To read the full interview, including Dave's vocoder tips and thoughts on music software, visit www.computermusic.co.uk/page/computermusic?entry=dynamix_ii_interview
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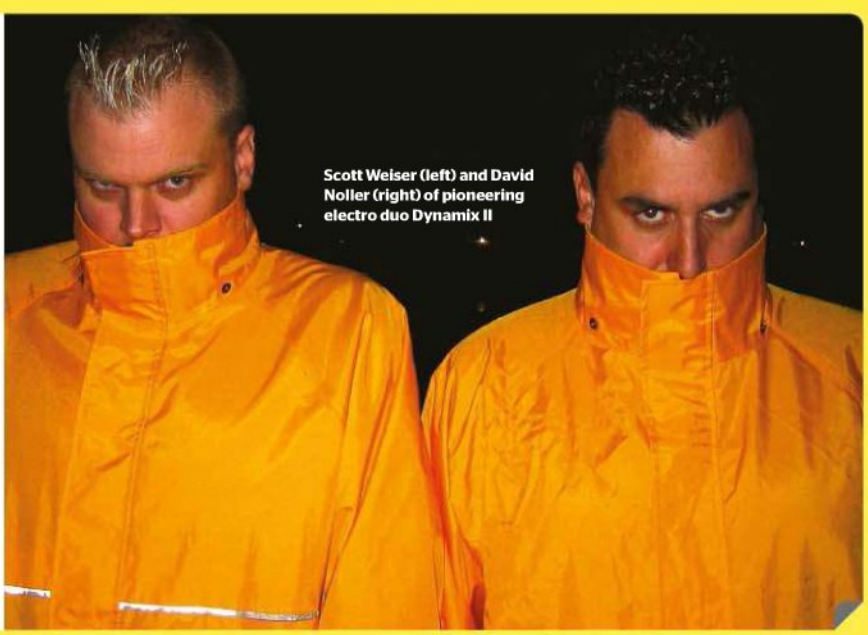
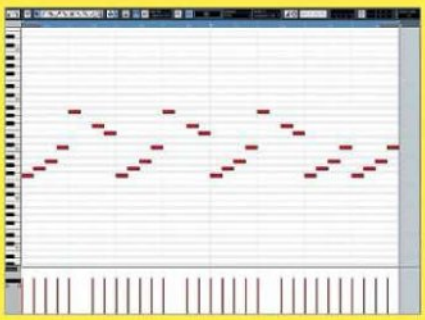


Scott Weiser (left) and David Noller (right) of pioneering electro duo Dynamix II

> Step by step
Synth sounds and vocoded vocals

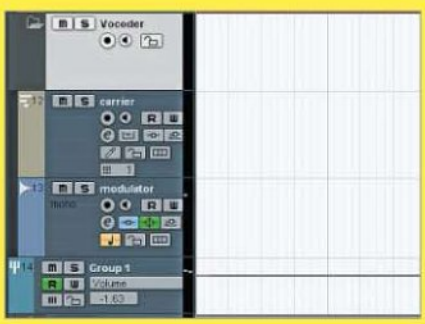
1 > Despite the track's speedy tempo, the drums don't quite give it the drive we want. We can use percussive synth sounds to provide a bit of musicality and energy. Load up Sylenth1 (get the demo at **www.lennardigital.com**), and select the **DR Woodblock** patch. This simple patch uses a detuned unison square wave with a short amplitude envelope, and is the perfect old-skool addition to our track.



2 > Copy the arpeggiator-style pattern we've used here. The missing note every sixth eighth-note gives this part a skippier, less relentless feel that works well with the beat. At the end of each two-bar section, there's a variation, where the first four eighth-notes are repeated.

3 > By default, the synth sound sits in the dead centre of the mix. It takes up space that's needed for our percussion samples, so apply an auto-panner effect to move the sound around the stereo field continuously. You can get away with making this sound seriously wide, just as we have here.

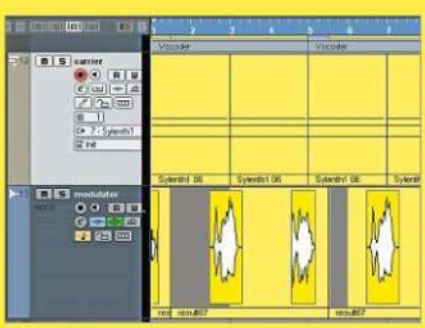
4 > To make a classic laser zap effect, use a synth with a self-resonating filter – we're using TAL U-No-62. Turn all the oscillators off, the filter **Freq**uency cutoff down and the filter **Res**onance fully up, as shown. Turn the **Env**elope cutoff modulation level up to max, and set the **D**ecay to the same level as we have here to get that super sci-fi sound that plays the same rhythm as the kick drum.



5 > Vocoded vocals are a classic electro sound, and creating them in software is relatively easy. It does, however, require three different tracks – a carrier track (a synth sound of some kind), a modulator track (the vocal), and a bus where the carrier and modulator are fed into the vocoder's inputs. So to start, create a MIDI track, an audio track and a bus track in your DAW.

6 > It's likely that you'll want your vocals to be as intelligible as possible – it's all too easy to mangle them into meaningless mush with a vocoder, so care is required. As such, we need our synth sound to fill out the frequency spectrum, so that it can respond to as much of the vocal as possible. Route the MIDI track to Sylenth1 (or any similar synth) and select the **Init** patch to start.

7 > Set the first oscillator to a sawtooth shape with **8 Voices** and increase the **Detune** amount to around **4**. This will give us a nice, thick sound. We can get an even clearer vocal sound by using a noise oscillator, too, so activate the second oscillator and set it to the noise shape.



8 > Sequence the vocoder part to play a fifth in the key of the track, and an octave below the root note to make the sound even thicker. Add the vocal to the audio track, and connect everything up: route Sylenth1 and the audio track to the vocoder bus, with the vocal panned hard left and the synth panned hard right. Add CM Vocoder (in the **CM Studio** folder on the DVD) to the bus track.

9 > Set the **Filter** mode to **3**, and **Bands** to **64**. For a more lo-fi sound, try reducing the number of Bands and experimenting with the bandwidth (**BW**) control. CM Vocoder is PC-only, but Mac users can try TAL-Vocoder instead, which is on the **cm** DVD. Note that Mac users will need to reverse the left/right panning from the previous step and activate the external input mode on TAL-Vocoder. **cm**

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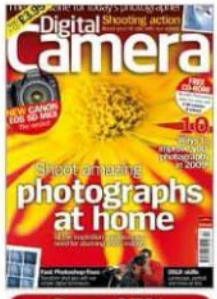

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