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Phone our UK hotline on: 0870 837 4722
Subscribe online at: www.myfavouritemagazines.co.uk

NEXT ISSUE ON SALE: June 3

Printed in the UK by Polestar, Colchester on behalf of Future.
Distributed in the UK by Seymour Distribution Ltd,
2 East Poultry Avenue, London, EC1A 9PT. Tel: 0207 429 4000

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Future plc is a public company
quoted on the London Stock
Exchange (symbol: FUTR).

www.futureplc.com

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welcome

As you can see by the icons and URLs added to the bottom of this page, *Computer Music* has finally arrived fully on both Facebook and Twitter. Sorry it's taken us so long.

Actually, we have been on Facebook for a while, but we recently switched from a Group to a vastly preferable Page, so if you haven't already, head on over and become a Fan. The Page is fair buzzing with **cm** readers having their say on matters computer musical, sharing links to interesting stuff, responding to our regular polls and generally, you know, social networking!

Our Twitter feed, meanwhile, keeps you up to date moment by precious moment with stories of note about the magazine itself and the wider world of music software.

More important than all of that, though, is the new *Computer Music* website, which should hopefully be up and running by the time you read this. Not only does it look much nicer than the old one, it's also a far more functional platform in terms of the content we can deliver through it. Browse your way to **www.computermusic.co.uk** and check it out.

ENJOY THE ISSUE...

Ronan Macdonald Editor



The cm Mission Our goal is to help you create great music with your PC or Mac. With that objective always in mind, we bring you step-by-step tutorials on all aspects of software-based music production, unbiased reviews of the latest products, technical Q&As, and a Dual Layer DVD-ROM packed with exclusive software and samples.

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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

cm/inbox



Let us know what's on your mind – email cminbox@futurenet.co.uk

Message of the month

First, I'd like to say thank you for the magazine. I've been reading since issue 1, which hit the stands just as my school suggested that I should be delivering a music tech course. You've saved my skin many, many times when I knew nothing about a topic, and have been a source of a million ideas for projects that have stopped things getting stale for me.

There's one thing I wish you'd change, though, and that's the scoring system in your reviews. The single figure just doesn't work for me, even when it's qualified by the For and Against comments; in fact,

especially because of the For and Against comments! Some of the criticisms that get included as Against points are, at best, irrelevant to me and, at worst, just silly. Criticising a product because it's Mac only, for instance, is plain silly. It's like

criticising a Rolls Royce for not also being a BMW. PC users want to know how good the product is on a PC, and Mac users just shouldn't be reading. On the other hand, I can see that many users would want to know that it's processor-hungry.

I read a review that raves about a product, but then it only scores 8. I look at the Against points, and the only criticism is that it's Mac only, so I don't know whether that's the reason you've deducted points. Is this product an easy 10 on the PC, that lost two points to appease Mac users, or is it just a straight 8? I have no way of knowing what things contributed to the score coming down.

Dave Mayson, Crewe

The writer of our Message of the month will receive a brand new Cakewalk A-500S controller keyboard, worth £155, courtesy of Cakewalk and Roland!

www.cakewalk.com



We actually stopped putting "Mac/PC only" as an Against some time ago, for exactly the reasons you've stated. Beyond that, Fors and Againsts are simply a summary of things to be aware of, and aren't used to 'calculate' the score. The score is awarded according to the criteria given on the reviews section intro page. So, in your example, it's a straight 8, the reasons for which will be apparent from the text of the review. In summary, For/Against and the score are *related* but certainly not co-dependent. *RM*

Praise you

I've been buying your magazine for a year now. For about six years, I had fiddled around with computer music, ever since finding a dance CD at Wherehouse Music, where I worked. It contained Acid Xpress and some free loops. Last year, I bought Acid Pro 7 and began making music for myself and friends. During my hunt for more information to improve my knowledge, I found *Computer Music*!

Because of your magazine, I've learned many more tricks to make what I want to hear and have had my eyes and creativity opened up to new methods of creation. So, this email is to say thank you for being a wealth of knowledge that always ends up bettering my knowledge and

abilities as a computer musician.

Tom Sheick, Decatur, USA

Our pleasure, and thank you for writing in. *RM*

Over and out?

I was pleased to see your *Ins & Outs* article, *Going Radio Gaga* – your expression of outrage at the proposed closure of the digital radio station BBC6 [cm151].

As a dedicated BBC6 listener, I too think it would be a bad thing if the station closed, although I'd have to disagree with your classification of the station as 'mainstream radio'.

While BBC6 does play more commercial music in the weekday morning slots, it also provides exposure for great new

**BBC
RADIO**



BBC Radio – 6 Music: a much-loved champion of leftfield music

bands, along with offering shows by presenters such as Don Letts, Jarvis Cocker and Guy Garvey, amongst others.

Due to such left-of-centre programming, I (and I'm sure many of the estimated 695,000 listeners) would argue that BBC6 is important in an internet-entangled music scene – where else would I hear a show like Stuart Maconie's *Freak Zone*,

which offers a truly unique opportunity to hear weird and wonderfully obscure music?

The hopeful news is that a strong reaction against the proposed closure could lead to a U-turn in the BBC's plans. **cm** readers, why not email your support to srconsultation@bbc.co.uk before 25th May?

Steven Separovich, London



Get ComputerMuzys running on your Intel mac with Shaun Savage's advice

Rally round, readers, and let's help save 6. It would indeed be a tragedy to see it axed. RM

Time and space

Thanks for reviewing Kinisis from Progress Audio. I noticed a few omissions in the review that I think your readers might like to know about. In addition to being able to load WAV files from the factory library into the four slots, you're also able to import your own samples. This significantly increases the versatility of Kinisis, particularly for sound design. Also, an email enquiry to the developer about the parameters of the timeline got this response:

"The minimum distance between breakpoints is one sample, if you zoom in enough. In most cases, that's too close, as changing a parameter that quick will probably produce a click. But that's the minimum. On the max side, the total duration for the Timeline is 12 hours. You can space out the breakpoints however you like within that range. You can create a total of 2,000,000,000 breakpoints in each row of the Timeline."

Thanks for publishing such a fine mag. I always learn from each issue. Keep up the good work!
Scott Simons, Salt Lake City, USA

You'd be well miffed if your DAW crashed on the 1,893,559,394th breakpoint, wouldn't you? Dang. RM

The fixer

You probably know this, but the PC versions of the **cm** Studio's ComputerMuzys and plug-ins can be run on Intel Mac if you install MacPorts/Porticus and wine. Launch X11 and in the xterm, navigate to the executable (after

placing it in a temp file and using the **ls** command to see where you are and the **cd** command to change directory). Let it unarchive (give the **wine CMStudio_PC.exe** command) into the **Temp** folder. You'll need to install something like the Secrets preferences pane to access hidden files and find the **.wine** folder in the home folder.

Drop the **CMStudio** folder into **Program Files**. Place some VSTis in the **Vstplugins** folder (fixing the permissions of the VST folders before transfer). Use **winefile** in the xterm window of X11 to launch wine's File Manager.

Navigate to the **.wine** folder and then to **drive_c/Program Files/CMStudio PC**. Double-click **ComputerMuzys.exe** in the Wine File application and go to **System»Preferences»Grafical Preferences**. Change **OS Window Size** to **Large**. Close the Preferences window, then go to **System»Quit (Quit without Save)**. Relaunch the program and it will reappear in a large window that can be moved around.

Add plug-ins in the usual way. Many will crash the system, so add one at a time. Use Activity Monitor to quit all Wine processes when it crashes, and close it down after each addition, otherwise you'll need to start again.

The screenshot shows **AM Analog Warfare 3** and **Fun Swing**. Wine and ComputerMuzys picked up the audio and MIDI directly from the system.

Shaun Savage, Norwich

Nice. And while this works as a solution to the fact that (I can quite safely say) there won't ever be an Intel version of ComputerMuzys, it also enables the installation and use of a (limited) range of other PC software under OS X, too. RM

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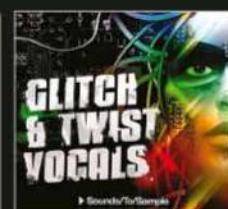
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cm/news

NEW RELEASES > COMMENT > INDUSTRY HAPPENINGS

Ohm Force Ohm Studio

The renowned French developers unveil their online collaborative music studio

> Ohm Force have unveiled what must surely be their most ambitious project to date: a DAW for online collaboration.

Billed as "a standalone real-time collaborative music-making application," Ohm Studio features a high-spec sequencer (though we're told it's not intended to replace the likes of Live, Cubase, Logic, etc), as well as facilities for finding and collaborating with musicians across the world, with up to 256 users able to work on a track simultaneously, with changes made visible to all as they happen.

We asked Ohm Force's Marketing Communications officer Cid Andrade just how real-time the software will be: "It's a standard app for Windows/OS X, so latency will be as small as for current sequencers," he begins. "If your friend adds a MIDI pattern, you'll see it appear in the arrangement immediately. If you change a track's volume or add an effect, your friends will also see it happen in real time. However, when you push play, it will not force the play button of others in the session. Similarly, if



An early screenshot of how the Ohm Studio will look, with the plug-ins and routing shown at the top left



Put your profile on the Community website and hook up with musos from around the world to work on your next project

you're recording a guitar riff, your friends will not be able to hear it in real time - but, as soon as you hit stop, the audio pattern will sync and they'll see it appear in the session. Ohm Studio is not for jamming. It's about music production: not only recording audio, but also working with MIDI, effects and virtual instruments, etc."

On that note, the native effects will cover distortion, delay, filtering, frequency shifting, vocoding, EQ, compression and more. Users will also get the Minimonsta:Melohman minimoog emulation and a ROMpler, and

the company hope to bundle some third-party plug-ins, too. Ohm Studio will also be able to load your VSTs (but not Audio Units) and Ohm Force say they intend to support ReWire in future versions.

Ohm Force's Ohm Studio, for PC and Mac, is slated for release some time this year. You'll have to pay a subscription fee to use the software, which Ohm Force assure us will be "quite affordable", although no specific rates have been given as yet.

www.ohmforce.com

Apple's iPad launches

It's here at last, with plenty to offer computer musicians



The iPad's extra screen space makes all the difference to music apps like Saitara's AC-7 (left) and Korg's iElectribe (below)



➤ April 3 saw the US launch of Apple's hotly-anticipated iPad tablet computer, and there's a wealth of superb music-making apps available for it already.

The iPad has a 9.7" multitouch, IPS (In-Plane Switching), LED-backlit screen and runs the iPhone OS (complete with its inability to multitask until Apple updates it to v4 later this year). The new unit sports the same physical buttons as the iPhone and iPod touch (power, volume and Home), as well as a dock connector, internal stereo

"A magical and revolutionary product at an unbelievable price"

Apple

speakers and a headphone jack.

On the app front, we were particularly excited by the release of Korg's iElectribe (£5.99), a multitouch iPad version of their analogue modelling beatbox. Other notable releases include Saitara's AC-7 Pro Control Surface (£5.99), White Noise Audio Software's bleep!Box (£5.99) and Yonac Software's miniSynth Pro (£5.99). Keep an eye out for our iPad feature next month for more on how it and its apps shape up.

Apple's iPad is out now in the US, with Wi-Fi models priced at \$499 (16GB), \$599 (32GB) and \$699 (64GB). The 3G units are due at the end of May, for an extra \$130. The UK and the rest of the world will have to wait for the projected "late May" release for both, with prices due to be announced on May 10.

www.apple.com

Mixdown



It's hard to believe, but our Deputy Editor is *never* up to date with the latest software...

➤ While the sonic gap between software and hardware is ever narrowing, there's one vital difference between the two that will never change: designers have to get hardware right first time, whereas software can be shored up after the fact with updates and bugfixes. OK, it's not as clear-cut as that, because digital hardware can contain updatable firmware. And of course, I didn't mean to imply that hardware designers don't get it wrong sometimes.

Updates can be both a blessing and a curse. It seems logical that you should keep up to date to ensure trouble-free operation, but in reality, it's often wise to check out web forums and see what other users have to say about a given update before diving in yourself. This holds especially true when it

"Software can be shored up after the fact with updates and bugfixes"

comes to parts of your setup like the OS, your DAW, and firmware for your hardware - even more so if they're already running smoothly. Unless you're suffering with issues that an update specifically claims to address, I say hold your fire. Because things can and do go wrong from time to time...

Intel made a huge slip-up last year with a firmware update for their X25 SSD drive. It's almost inconceivable that anything should go wrong, but following installation, some users' drives were wiped and essentially made useless. I have one of these drives myself, and whenever I'm tempted to install an update for my DAW, OS, plug-in, or whatever, I remind myself of the X25 debacle and what might've happened if I'd blindly jumped on that fateful, fatal update.

There are a few things you can do to ease the pain of updating. First of all, refrain from doing so when in the midst of an important project, especially if you have deadlines to meet. Second, get familiar with the System Restore function if you're on Windows and Time Machine if you're a Mac user - these have saved my bacon on more than one occasion. Lastly, get some drive imaging software - this can take a snapshot of your system hard drive and store it as a massive file on another drive. Make a drive image when your system is running nicely and no matter how bad things get, you should be able to restore your 'perfect' setup!

Producer Sessions Live

Top artists sign up for our London weekender

➤ Computer Music are teaming up with sister magazine Future Music and online cousin MusicRadar to take over the SAE Institute in London this September, for two days of artist masterclasses and seminars, gear demos and essential advice for upcoming producers.

The event will be spread across five floors and fill 20 rooms, with the lineup including

none other than the Freemasons, Dave Spoon, Tommy D, Danny Byrd, London Elektricity, High Contrast and more!

Producer Sessions Live takes place at the SAE Institute on September 25 and 26 2010. Sign up at the website below to be told the moment tickets go on sale.

www.producerssessionslive.com

PRODUCER SESSIONS LIVE



Steinberg's sampler range gets a welcome addition with HALion Sonic (right), and the mighty WaveLab reaches v7 (below)

Steinberg don their Lab coats

WaveLab 7, HALion Sonic and a Cubase point release

> After having relatively little to show off at NAMM, Steinberg bounced back at the recent Musikmesse in their native Germany with new versions of WaveLab and HALion, and a point update for Cubase.

WaveLab 7 is being ported to Mac for the very first time. Also new for the veteran audio editing and mastering suite is a range of Sonnox restoration plug-ins, which have been "specialised" (read "cut down") for WaveLab, as well as additional VST3 plug-ins taken from Steinberg's other products, such as Nuendo's Post Filter. A new CD and DVD-A burning engine rounds off the additions.

HALion Sonic is the first software to use the new HALion 4 engine (which Steinberg are currently hyping on their website with a dedicated development blog) and includes

over 1000 instruments across 12GB of content. Designed to cover four areas of modern production, the sampler will tackle acoustic instruments via high-performance disk streaming, beats with its sliced-loop mode and specialised drum module, and synthesised sound via its VA synth section.

Lastly, Cubase and Cubase Studio are being updated to v5.5, with better multicore performance and some other refinements.

Steinberg's WaveLab 7 (£510) will "ship in the second half of 2010", HALion Sonic (£212) will see the light of day in Q3 2010 and the free Cubase 5.5 and Cubase Studio 5.5 updates will be available in Q2 2010. All of the above is for both PC and Mac.

www.steinberg.net

cm Special

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Damaged

Chris Randall laments the ongoing demise of effective industrial communication

> I just left the National Association of Broadcasters convention in Las Vegas, and one thing was clear to me: the music industry is comparatively low-rent compared to people that sling video. I've been to a lot of conventions related to our industry, and this was, by a long shot, the largest I've seen. It makes Musikmesse look like a car boot sale. There are companies here that have spacecraft. In orbit. Around the Earth. The Sony booth alone was larger than the entirety of the AES convention.

In any case, as I was wandering about the convention floor, I was struck by several things. Chief among these was the fact that media professionals of any sort, when interfacing with other media professionals, adopt this dog-like ass-sniffing at the beginning of every conversation, in order to learn how 'pro' the other person is. As musicians, we do that as well, and every conversation becomes a competition of

"I couldn't tell what it was the company did, except that it involved either audio or video"

sorts, to see who knows more minutia about a given piece of gear or software.

The other thing I noticed was the fact that, if you see enough empty superlatives, you're almost able to discern what it is the company does. One booth I saw from a very large European consumer electronics company had a huge sign that said "Revolutionary Streamlining For Enterprise Media Workflow." Those words couldn't mean less, either individually or taken in concert, but you can kind of discern what they're talking about, at least in context.

It seems that the art of communication with any sort of finesse is being lost, as the signal-to-noise ratio tilts heavily towards noise. I saw some booths at this convention where I couldn't tell what it was the company did, except that it probably involved either audio or video, and would theoretically streamline my workflow. They were very nice booths, though.

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



iConic designs

Three funky fresh MIDI controllers

Three colourful controllers from iCon: iDJ (top), iCreativ (middle) and iStage (bottom)



> We hadn't heard much about iCon before the recent Musikmesse show, but we were certainly taken with their new range of MIDI controllers, comprising three tiny USB units for PC and Mac, all of which fit neatly in front of a 13" laptop.

First up, let's look at the iDJ, which features two touch-sensitive scratch wheels, a crossfader, faders for volume and tempo adjustments, two three-band EQ strips (Low, Mid and Hi, though these are reassignable), plus balance and gain controls. The diminutive unit also packs in 24 assignable backlit buttons for controlling effects or switching modes, for example.

Next up, there's the iStage, a brightly coloured unit for triggering drum hits, samples or clips. This has three banks of 16 velocity-sensitive, backlit pads, plus a row of buttons for, say, switching modes or launching scenes in Ableton Live. There's also an assignable rotary encoder and fader.

Finally, we have the iCreativ, which features a touchscreen that can operate in a variety of modes: Piano, Drum, Fader and

Creativ. Again, this one also features a wealth of buttons and knobs for assigning as you see fit.

iCon's iDJ, iStage and iCreativ are all due out in June, priced around the €100 mark.

www.icon-global.com

"Touch sensor scratch wheel platters give high resolution to experience an analogue feel when scratching and mixing"

iCon

New Lexicon 'verbs

> If you were interested in Lexicon's PCM Native Reverb Plug-in Bundle but got turned off by the £1000+ price tag, then check out the new LXP Bundle.

This second batch of official Lexicon 'verbs in plug-in format comprises four units: LXP Plate, LXP Room, LXP Hall and LXP Chamber, and we're sure you can guess what each one does. There are over 200 studio presets to help you get up and running, too.

All four feature a real-time display of the frequency stages to give you a visual representation of each model, and can be run in mono, stereo or mono-to-stereo



The four brand new plug-ins contained in Lexicon's LXP Bundle: (from left to right) LXP Plate, LXP Room, LXP Hall, LXP Chamber

modes. There's full parameter control and automation, too, and input/output metering.

Lexicon's LXP Bundle will be available for PC and Mac in May 2010, priced £559.

www.lexiconpro.com

Trackers & Demoscene



From Russia with love and the winners of the Scene.org Awards announced

> Sunvox 1.5.1, the Russian-developed multiplatform, modular tracker, is now available for download. As well as many additions and optimisations, this update also brings an iPad version (£2.99), the larger screen size of which will suit the app even better than the iPhone version. Sunvox is free for Windows, Mac OS X, Linux, Palm OS and Windows Mobile (www.warmplace.ru/soft/sunvox).

Sticking with the Russian theme, the latest ChipYxa (#7) chip music competition is over. psk stole the 10K

"Scene.org Awards - the most important annual recognition of music, demos and art"

category, while Manwe came top of the 100K with his very vocal *Chip Tunes Suxx*. Grab the tune pack at www.chiptown.ru.

Finally, the Scene.org Awards - the most important annual recognition of excellence in music, demos and art - has taken place. The prize-giving ceremony was held over the Easter weekend simultaneously at Norway's The Gathering and Germany's Breakpoint parties. Andromeda Software Development won best demo with the futuristic *Rupture*, and Henrik Jose took best soundtrack for Fairlight's beautiful masterpiece *Blunderbuss*. Check out the other categories at awards.scene.org.

DEMO OF THE MONTH

Wir sind Einstein by United Force & Digital Dynamite

With some of the best demos we've seen to date coming out of The Gathering and Breakpoint, this month has been utterly overwhelming. *Wir sind Einstein* is a dance video bursting with energy that makes its mark by being loud and colourful, and not taking itself too seriously. Head to the cm DVD for links.



Raise your hands for the colourful *Wir sind Einstein*



How do I choose a DAW?

> Barely a day goes by without someone asking for our advice on choosing a DAW – that is, a central music-making program. While DAWs definitely have differing strengths, all of the major players are thoroughly up to the task of producing any style of music to a professional level, the exceptions being those without proper audio recording abilities, which are hence suited to more electronic styles.

Most DAWs come as a 'package' consisting of the core application (the DAW itself) and a bundle of (usually exclusive) plug-in instruments and effects to use with it. While the included plug-ins can be a major deciding factor, the app itself should take precedence in your decision-making. You can always buy plug-ins to round out your setup, but you can't buy missing

"The app itself should take precedence in your decision-making"

features for the DAW itself. Also consider that if your aim is recording/mixing audio, effects will be of much more importance than instruments.

Before plunging into any potential purchase, check out web forums to see what existing users are saying about the software. Take note of common issues and confirmed reports of

serious bugs (ie, showstopping crashes, not minor graphical glitches), but don't put too much stock in one or two people complaining loudly. Most DAWs have demos that you should try to ensure that they play nice on your system.

Also take into account the prospects for hardware integration. An increasing number of companies offer dedicated hardware for their DAWs, such as control surfaces and audio interfaces. Digidesign (now Avid) pioneered this approach with Pro Tools, but you'll also find hardware designed for Cubase, Sonar and Live.

Before talking about specific DAWs, we'd like to dispel the myth that some DAWs have a better 'audio engine' than others, and sound deeper, wider, smoother, etc, even when just playing back a few audio files. It's not true: all of today's DAWs sound the same for basic playback/recording. Things that can make a difference are the effects you use, and subtle things like the DAW's automation resolution, pan law, etc.

Revolving DAWs

So what are your choices? Those looking for an easy option have a few available to them. For Mac users, it's a no-brainer: go for Apple's own GarageBand (cm137, 9/10), which comes free with every Mac. If it's not already installed, dig out your copy of iLife (£71) and load it up. It has straightforward audio and MIDI capabilities, and effects, instruments and sample loops. PC users should try Acoustica's Mixcraft 5 (cm151, 9/10,

£69), which is much like GarageBand – in fact, it's slightly more capable.

Those seeking a 'traditional' do-it-all DAW that's strong for both MIDI and audio are spoilt for choice. Steinberg's Cubase (cm137, 9/10, £510) is ever popular – it's cross-platform (ie, for PC and Mac), with a clear GUI and great MIDI features. It even has a vocal pitch/time editing tool, VariAudio, that could save you the cost of a copy of Melodyne or Auto-Tune. In general, Cubase's plug-ins aren't as highly regarded as those of, say, Logic or Sonar. The 'window madness' of the GUI can also be distracting (an extra monitor can alleviate this), and you need a USB dongle to run it – not ideal if on the move.

Tooling up

You've surely heard of Pro Tools (cm136, 9/10) – it became an industry standard due to its recording and mixing features, but today it's more in line with other DAWs, with good MIDI handling, quality plug-ins, etc. It runs on PC and Mac, but you need a compatible audio interface to use it (you can buy it as a bundle with such an interface). It's a wise choice for those working with audio, recording bands, etc, especially if you plan to take your projects into a studio to mix, as it's quite likely they'll have Pro Tools too. Note that Pro Tools LE/M-Powered don't have automatic latency compensation, and they use their own plug-in format, RTAS, too, so check that your favourites come in RTAS versions. There are VST/AU-to-RTAS 'wrappers', but they're not guaranteed to work with everything.

New to the cross-platform DAW scene is PreSonus' Studio One (cm146, 8/10, £349). It doesn't have the numerous instruments and deep features that some DAWs boast but it should be on your 'to try' list.

The cross-platform Reaper (cm144, 9/10, \$60) has rocketed in popularity. It's keenly priced but matches up to the big boys in terms of features.

Like Cubase, Apple's Mac-only Logic Pro (**cm**143, 10/10) is popular with producers of all styles of music. It's part of the Logic Studio (£408) bundle, which represents incredible value for money. For Mac users, Logic would be our first recommendation, as there's little not to like about it. An OS X alternative would be Digital Performer - in our review (**cm**148, 8/10, £449), we reckoned it combined "the MIDI expertise of apps like Logic Pro with magnificent audio handling on a par with Pro Tools", although we thought the GUI could be easier to navigate.

Fighting the PC corner, we find Cakewalk Sonar (**cm**146, 10/10, £435). It's GUI isn't as graceful as Logic, Cubase et al, but it's every bit as powerful, with a silly amount of plug-ins and features. Also on the PC-only side you have Magix Samplitude (**cm**149, 7/10, £725), which is harder to learn and has a few quirks. It boasts superb effects, though, and a few killer features like Revolver Tracks and object-based editing, for applying effects to individual audio clips.

Breaking with tradition

That's about it for 'traditional' DAWs, although Ableton Live (**cm**139, 9/10, £400) isn't entirely dissimilar to them, and it can be used for conventional audio/MIDI recording and editing. It's not the best at this, though - what makes it shine is its flexibility and unique interface. If you want to mash up loops on the fly, improvise with chains of effects, bounce riffs around spontaneously, and control practically anything you can see on the screen, then Live is for you. Naturally, it's perfect for live performance.

Image-Line's PC-only FL Studio (**cm**145, 8/10, \$299) - formerly called FruityLoops - is often cited as a beginner's app, but this is misleading. You can get very deep with it, but its approach to track-building is quite different to other apps, and this seems to 'click' with newcomers to computer music. It has an extensive range of instruments and effects that are particularly suited to electronic music styles. However, its audio recording side is less well developed (but far from incapable - see p72), and it lacks plug-in latency compensation and track freezing.

Propellerhead Software's Reason (**cm**118, 9/10, £329) is perhaps the most unique DAW in that it's self-contained - it can't load third-party VST/AU plug-ins. The advantage is a unified interface and increased stability. It's aimed at electronic music production, but if recording is more your thing, Propellerhead have another app, Record (**cm**118, 9/10, £229), that can optionally integrate seamlessly with Reason to provide a complete audio/MIDI experience. Record boasts splendid real-time timestretching, an SSL-modelled mixer and Line 6 guitar effects. You can also use Reason with a DAW like Cubase via ReWire (many producers also ReWire Live).

Many DAWs are available in more affordable cutdown versions too, with an upgrade path to the full thing. There are typically restrictions on things like the number of tracks and effects with these, but the limitations are usually quite fair. The only one we'd warn about is Ableton Live Intro, which allows 12 Ableton effects and six VST/AU effects per project - fine for a basic live performance or DJ session but restrictive for production work.

For more info, see the reviews in previous issues of **cm** or at www.musicradar.com/cm

Ins & outs

OUR NEW FACEBOOK PAGE!

cm has a new Facebook page at www.facebook.com/computer.music.mag

Become a fan, and make sure you subscribe to our Twitter feed too: twitter.com/computermusicuk

facebook

AMPLE PROCESSING POWER

Here's to Orange Amplifiers for being the first company to stuff a PC and a guitar amp into one box: meet the OPC. Let's hope they put some vibration damping and magnetic shielding in there too...



HIGH FIVE FOR i5

Apple have launched their new MacBook Pro range, which sees Core i5 and i7 chips debuting in the 15- and 17-inch models. The new models are said to have a battery life between 8 and 10 hours, and their increased power should appeal to computer musicians.

WAGE SLAVE TO THE BEAT

According to maverick statisticians at informationisbeautiful.com, an artist would have to generate more than 4,500,000 Spotify plays per month to earn the US minimum wage. Depressing reading for musicians, if the figures are indeed anywhere close to reality.

MALCOLM EX

All-round pop mouthpiece Malcolm McLaren passed away recently, and while he's most famous for managing the Sex Pistols, we'll remember him for helping bring hip-hop to a mainstream UK audience with his *Duck Rock* album.



iPADDING IT OUT

Apple have delayed the launch of the iPad outside the US, citing unexpected demand in their home country. With US users reporting Wi-Fi issues, being an early adopter clearly ain't easy.



Busting jargon



Computer music terminology explained. This month: **Delay effects**

At its most basic, delay is exactly what it sounds like: something that delays a signal for a specific amount of time, so that the output emerges later than the input. What we've described here is actually a delay line, and these are the building blocks of delay effects.

It's rare that you'd simply want to delay an audio signal - in most cases, it would either make it sound out of time, or off the beat. But by mixing the original (dry) signal with the delayed (wet) signal, we can get a simple 'echo' effect, made more realistic if the wet part is quieter than the original. The wet output is usually fed back into the effect's input, creating repeating echoes that gradually get quieter - a 'feedback' knob is typically provided for this, and the higher you set it, the longer the echoes will ring out for.

The effect can be made more

interesting via the addition of a filter inside the feedback loop. If you put a low-pass filter in the loop, each echo would be duller than the previous, because the treble frequencies would be attenuated each time.

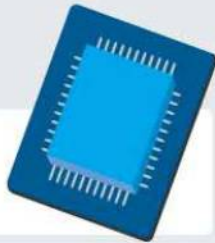
A variation is the ping-pong delay, where the echoes alternate between the left and right sides of the stereo field. This usually uses two delay lines, panned left and right and with different delay times. Taking this idea further is multi-tap delay, where multiple delay lines are used, typically enabling the user to set parameters such as timing, panning and filtering for each line.

By modulating the parameters of a delay, such as the pitch of the playback, more unusual sounds can be created, and delay lines are a fundamental element of other effects such as chorus, flanger and algorithmic reverb.



Kjaerhus' Classic Delay offers Tape, Analog and Digital processing modes - it's a freeware gem!

System check



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

MOUSE PROUD

The humble mouse might not be the most exciting piece of kit in your studio, but this month we've seen a couple that could prove enticing to the computer musician. First up we have the JSCO Noiseless Mouse: ideal for environments where you want to be as quiet as, er, a mouse. We can imagine this device catching on with recording perfectionists. You still feel the 'click' feedback when pressing the left or right button, but it's practically silent, also making it useful for late-night music-making sessions where you don't want to disturb anyone.

This noiseless mouse should click with over-sensitive computer musicians



The other radical rodent we've seen is the Mad Catz Cyborg Rat 7, which features four selectable resolutions up to 5600DPI, and can be loaded with weights to change the feel. It comes with three palm rests and three pinkie grips, for those who just can't get comfortable, but most intriguingly, it has what its creators describe as a Precision Aim button that gives the user finer control when its held down. While this is primarily designed for getting the perfect head-shot in BFBC2, we can imagine it being handy for fine-tuning automation curves and editing MIDI.

en.jctrading.co.kr
www.cyborggaming.com

POWER PLAY

Boffins at MIT have come a step closer to the reality of powering devices wirelessly. In their 2007 experiments, the eggheads used Tesla-style coils placed six feet apart to wirelessly power a 60W lightbulb, even with people sitting in the path. Quite incredible, but not much use practically. However, earlier this year, the scientists managed to use transmitters a mere foot across to achieve similar results, moving towards a size that could be built into a home computer and eventually portable devices. According to the paper published in Applied Physics Letters, the system actually becomes more efficient when more devices are charged, and one day the system could work "power a dozen devices" in a room. bit.ly/dxm32L

PEAK PERFORMANCE

USB 3.0 might have only just arrived but Intel are already touting their new Light Peak standard as its successor. The fibre-optic technology will apparently be compatible with USB 3.0 ports and protocols, but is capable of transferring data at an astonishing 10GBps and can run multiple protocols at the same time over a single line. This means that data intended for separate cables could be run through a single Light Peak cable.

"In some sense, we'd like to build the last cable you'll ever need," said Intel Senior Fellow Kevin Kahn, rather ominously. The technology will be made available later this year, and devices from partners featuring Light Peak should start appearing next year.

www.intel.com

Ohm Force > Cid Andrade

The Marketing & Communications Manager of this fabulous French firm speaks to **cm**



cm How was the company formed?

CA "Ohm Force was founded in 2000 by a bunch of friends at the end of their college years. There was Laurent de Soras, who was already on the audio development and/or tracker scene (he created Graoumf Tracker), while the rest of the crew was made of amateur music producers and/or audio geeks, each one with plenty of ideas for new effects and instruments.

"At this time, there was Impulse Tracker, which featured some experiments with network collaboration - we were really excited about this new direction. One night, after dozens of beers, we'd all been seduced by the challenge of pushing these collaborative efforts to the next level - the DAW world - while delivering alongside it the plug-ins we'd been dreaming of. As you've seen,

the plug-ins came quickly, but the DAW took much longer - the idea was somewhat ahead of its time. Meanwhile, the initial 'Ohmen' were able to bring a few other talented friends to the team, so we're now a ten-person company, based in Paris."

cm So how long have you been working on Ohm Studio?

CA "It wouldn't be a lie if we say that it's been ten years. After the release of Ohmicide:Melohman in 2007, we felt that it was the right time to focus 100% on Ohm Studio. We realised that we'd soon (finally!) reach the minimum technical requirements (fast internet connections, powerful processors and better operating systems) to make our crazy ideas about real-time music production come true."

"We felt that it was the right time to focus 100% on Ohm Studio"

cm What were some of the biggest developmental challenges?

CA "Not necessarily in this order: discovering what people would expect from a collaborative environment; figuring out what a collaborative workflow should be in order to be pleasant, productive and efficient; devising a GUI that's able to support working collectively; determining how to make all features technically possible regarding the audio core; and devising the project/data syncing methods."

cm Can you make a complete song in Ohm Studio, all online?

CA "Yes, from the first MIDI note to the final mixdown. Regarding the 'online' aspect of the thing, let's shed some additional light on the subject: despite the real-time MIDI/audio collaborative editing features, the server-based projects, the Cohmunity, and so on, the Ohm Studio DAW itself is not a 'web app'; it's not a web-browser sequencer made in Flash or Java; it's a rock-solid standalone program for Windows and OS X, to be downloaded and installed like any other software."

cm Will Ohm Force return to the plug-in scene again?

CA "We're embracing a big new challenge with Ohm Studio, but we're not leaving the plug-in scene at all. Together with the DAW, we'll be providing some brand new Ohm Force plug-ins, such as a vocoder and a compressor, and there'll be more to come. What we could say is that, from now on, our steps in the plug-in world will be following the collaborative path."

Line 6 Pod Farm 2

> Line 6 have released version 2 of their axe-tastic Pod Farm software. Available as the cutdown Pod Farm 2 and full Platinum version, the new plug-ins boast several improvements to Pod Farm's overall flexibility, routing and MIDI control.

The most important new feature is the nifty A/B/Y box, for setting up two separate amp/cab/effects chains (with up to 20 models in each), then either switching between them or blending the two. This can be switched via MIDI, as Line 6 have added MIDI support for all Pod Farm controls.

Do note, though, that there's no extra gear included - in the Platinum version, you get exactly what the original flagship model

"Pod Farm 2 builds upon the foundations set by its predecessors to deliver extensive model counts and a simple yet powerful workflow"

Line 6



Here you can see Pod Farm 2's brand new A/B/Y stomptbox for switching between two separate effects chains or blending them together

offered: 78 amps and 24 cabs, 28 bass amps and 22 bass cabs, 97 effects and six mic preamps, which should be enough for anyone. The standard Pod Farm 2 delivers 18 amps and 24 cabs, five bass amps and bass cabs, 29 effects and six mic preamps.

Line 6's Pod Farm 2 (\$99) and Pod Farm 2 Platinum (\$299) are out now for PC and Mac. Users of the previous version of Pod Farm can upgrade for \$49.

www.line6.com

Soundware news

> For grime, RnB, hip-hop and world producers comes

Nu-Eastern Grooves (£28), featuring 27 construction kits. Cluster Sound have unveiled **Minimal GBox** (£15), a sample-based drum instrument, containing 30 clips, 30 MIDI files and over 300 drums samples in house and techno styles for use with Ableton Live.

www.loopmasters.com

Organic Loops have unleashed **Disco Strings** (£20),

comprising nearly 200 string loops in the 106-130bpm tempo range, recorded by top arranger and producer Pete Whitfield.

www.timespace.com

The latest addition to FXpansion's BFD2



acoustic drum software is the **Stanton Moore Signature Series** (\$75) from Bosphorous Cymbals, which includes recordings of the company's entire line of handmade cymbals.

www.bosphoruscymbals.com

For owners of SampleTank 2.5, IK Multimedia have launched the **Xpansion Tank 2** (£47 each) series, comprising 30 titles (15 multisampled and 15 loop-based libraries, all around 500MB to 1GB in size) designed specifically for everything from pop to hip-hop, rock, jazz, country, electronica, film work and more.

www.ikmultimedia.com

Toontrack have released the **Songwriters Drumpack** (£15), featuring complete song structure-based MIDI files (over 450 individual files are included in total) for creating the underlying foundations of your tunes in a variety of genres.

www.toontrack.com

PowerFX have launched the **Fairlight CMI Legacy** (\$69) ReFill collection for Reason, containing over 2000 sounds (including all 33 of the Fairlight's 8" factory discs) from the legendary computer music system that first appeared at the end of the 1970s.

www.powerfx.com

News in brief

VIRSYN MATRIX 2

Dubbed the "Voice Coder", VirSyn's vocoding effect has reached version 2. New to Matrix 2 is voiced/unvoiced detection and pitch extraction algorithms for high levels of intelligibility. Also added are two high-end filters, two filterbanks for stereo operation, and an internal noise generator. VirSyn's Matrix 2 is out now for PC and Mac, priced €199. www.virsyn.de



EXPERT SLEEPERS IN THE LOOP

Unhappy with the brevity of your current delay plug-ins? Expert Sleepers' Augustus Loop 2 has a maximum delay time of one hour! The new unit features tape-style echo parameters, such as speed (changing the pitch) and reverse, plus analogue-style signal degradation. Also included is multimode filtering, saturation, four individual delay taps, host syncing, and filter and pitch LFOs. Expert Sleepers Augustus Loop 2 is available now for PC and Mac, priced \$58.

www.expert-sleepers.co.uk



FRESH FIELDS

Berlin-based company Tracks & Fields have launched a website for online musical collaboration, networking with other musos and marketing your tunes. The site includes an integrated sequencer for working on tracks with musicians all over the world, the facility to exchange large audio files via the company's servers, and a public database for storing sampled sounds. Sign up now for free. www.tracksandfields.com

CM150 COMPETITION WINNERS

In CM150, we had three lots of 112dB Redline software to give away. If your name is on the following list, then it's time to get excited because you've won an utterly brilliant Redline Bundle! Put your hands together for... Frank Everett, Martin Homola and Tony Long! Didn't they do well?

Now turn to p70 to find out how you could win a stonking Complete Master Edition bundle from NuGen Audio!



Hitting different areas of the screen on Bram Bos' NanoGuru generates a multitude of tabla sounds



Hard 'n Software Consulting's HaKeypad employs the harmonic table to make chords intuitive



Game overture

The latest goings-on in the world of videogame music production

> We are pleased to learn that top composer Tom Salta has been commissioned for soundtrack duties on Ubisoft's *Prince of Persia: The Forgotten Sands*, which is due out on May 18.

All the stops have been pulled out to create a compelling, contemporary music score, and a really impressive lineup of contributing musicians has been assembled. Ace percussionist Bashiri Johnson heads up the rhythm section, while world music singer Azam Ali and international recording artist Judith Bérard will be providing the requisite atmospheric vocals.

There'll also be a dazzling array of live instrumentation on show, with doubek, kora, khangira, bowhammer cymbalom, lakota slide, walimba, ney, duduk and custom made instruments all featuring. Try saying that list three times as fast as you can!

"Composers like Tom Salta are really pushing the boundaries of game soundtracks right now"

With previous episodes handled by game music greats such as Inon Zur, Mr Salta has a high standard to meet. However, we're sure he's more than up to the task: his experience with combining modern production and ethnic instrumentation on projects like the recent *Red Steel 2* will come in handy. We look forward to hearing the results - it's sure to be a dynamic and intriguing score.

Composers like Tom Salta are really pushing the boundaries of game soundtracks right now, as they exhibit skills across a wide range of styles. And it's great to see more epic, high-quality music on the Wii - other publishers should take note!

For more information on *Prince of Persia: The Forgotten Sands* and its soundtrack, head over to www.princeofpersiagame.com



Prince of Persia: The Forgotten Sands' soundtrack promises to cut down the competition with all-star performers and the composing talents of Tom Salta

App watch

New music-making apps for iPhone, iPod touch and iPad

> Ochen K have released Monle, a "mobile non-linear editor" for iPhone and iPod touch. The app features four tracks for recording mono or stereo audio at 8-44.1kHz and 16-bit quality via the internal mic (or third-party mic), or you can import WAV files via FTP or WiFi. Basic audio file manipulation comes in the form of cuts, fades and rearranging, plus you can zoom in/out and bounce tracks down. Exporting is done again via FTP or WiFi, and you can even zip files up for bulk transfers. Audio can be moved between sessions via the AudioCopy/AudioPaste feature.

Ochen K's Monle is available from the App Store now, priced £5.99.

www.monleapp.com

If you're forever tapping out beats with your hands, look at Bram Bos' NanoGuru. This tabla app features two drumming surfaces for the dayan (the small, high-pitched drum) and bayan (the big, low-end one), with different parts of the screen triggering various sounds, like hitting different areas of the drum head. In addition to the classic tabla, there are also phased tabla, glitch, 808 and overdriven techno sounds included, too. The GUI can be flipped for left-handed players, and there's adjustable delay for each drum and a humanise function for varying the samples that are triggered.



We never thought we'd see a four-track editor on the iPhone, but Ochen K's Monle does just that

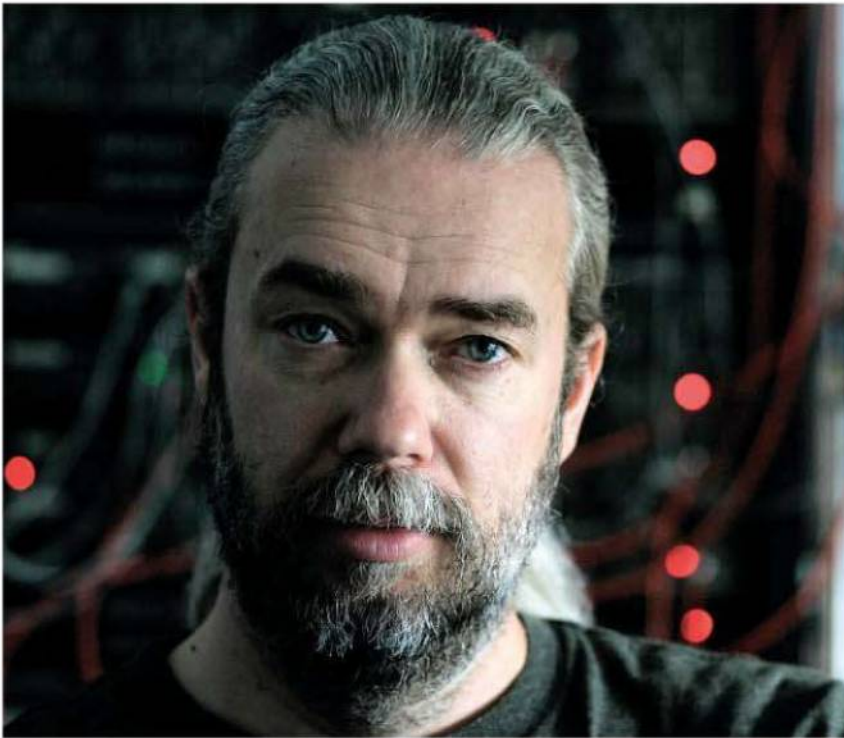
Bram Bos' NanoGuru is out now for iPhone and iPod touch, priced £0.59.

www.brambos.com

From Hard 'n Software Consulting comes HaKeypad, a harmonic keypad for iPhone, iPod touch and iPad. Using the harmonic table format rather than a traditional keyboard, you simply hit any three adjacent keys to create the full gamut of major and minor chords. Patterns can then be transferred to any musical key without any knowledge of scales. Currently the app only plays back the internal piano sounds, but the company tell us that they "may implement MIDI control in the future".

Hard 'n Software Consulting's HaKeypad is available in the App Store, priced £1.19.

www.hnsc.de



Drive time

Ian Boddy

The analogue doyen and maker of the Waveforms sample libraries lets us in on his favourite software

U&I SOFTWARE METASYNTH

"This is unlike any other bit of software I've ever used. I grabbed v1 when I first saw it at a NAMM show years ago, as you can literally paint a picture and turn it into sound. But it goes way beyond that in providing a set of sound design tools that can generate some breathtaking, original sonic textures. It's not easy to use and very deep at times, plus it's non-real time, but it's worth the effort."

NATIVE INSTRUMENTS REAKTOR

"NI do great software, but Reaktor stands out. In essence, it's a modular synthesiser for building anything from the simplest one-VCO synth to the most mind-boggling, weird sound engines. If you want, you can get your hands dirty and build up your own instruments, or use their own fantastic ensembles or the huge library of user creations freely available on their site."

CAMEL AUDIO ALCHEMY

"A rare thing these days, Alchemy is a truly innovative, original product. During the 90s, when I worked for Akai, I used to dream of being able to do real-time timestretching. Well, Alchemy does this, along with additive, spectral and granular synthesis. And all this combined with an excellent analogue synth engine - it's one of my favourite synths."

LINPLUG ALPHA

"The Alpha is an incredibly easy to use yet really nice-sounding analogue synth. Sometimes it's refreshing to use something that's just so quick and intuitive as the Alpha when you just need to knock up a simple

"Everything from the familiar to the crazy and downright weird"

patch, all without getting bogged down in multiple menus and options. It doesn't try to sound like any particular vintage model of synth either, which I always find off-putting, but has a good, generic analogue sound, where everything does what you expect it to do."

SONIC CHARGE MICROTONIC

"I love this little drum and percussion synth. It's so easy to use with its pattern-based approach to rhythm programming. But for me, the killer part is its sound engine, which, while looking initially very simple, is able to conjure up all sorts of drum and percussion sounds - everything from the familiar to the crazy and downright weird. It's great fun!"

COMPUTER music 10 years back

Peering back through the murky mists of time at the July 2000 edition of **cm**

> In our 22nd issue, we featured a variety of tutorials on synthesis, including an introduction to Native Instruments' fabulously powerful but daunting Reaktor (at v1 back then). For those just starting out with synthesis, there was the simpler LinPlug GakStoar Alpha, a two-oscillator synth, which we gave away on that month's coverdisc. Further synthesis techniques were featured in *The cm guide to XG*, which outlined the history and uses of Yamaha's advanced MIDI standard (an extension of General MIDI, essentially), before going on to show readers how to create zany 303 and synthesised guitar sounds.

"Funny how some old technologies don't inspire any nostalgia whatsoever, isn't it?"

Our interviewees that month were Sam Dodson from Loop Guru and Rat Scabies of punk legends The Damned, who had joined forces as experimental electronica duo Slipper, signed to Richard James' (aka Aphex Twin) Rephlex Records.

Elsewhere in the mag we proudly presented Part 2 of *Nathan McCree's Mixing Masterclass*. McCree wrote the soundtracks to the original *Tomb Raider* game and movie, and so was eminently qualified for the job. We also rounded up a hideous selection of CRT monitors in the reviews section. Funny how some old technologies just don't inspire any sense of nostalgia whatsoever, isn't it? **cm**



cm22 featured Steinberg Cubasis AV on the CD, boasting "an incredible EIGHT tracks of audio"

Ian Boddy's Beatalogue sample collection is available now
www.ianboddy.com

KeroVee

Want to get the pitch-corrected sounds of Antares Auto-Tune without the outlay? g200kg might well have the answer



Developer **g200kg**
Format **PC VST**
Web **www.g200kg.com**

Jay-Z might be a multi-millionaire hip-hop legend, but his predictions about trends in music production aren't exactly cast-iron guarantees. His track *Death of Auto-Tune* was spectacularly off the mark, with the sound remaining popular in hip-hop and R&B. Now those after the robotic sounds of extreme pitch-correction can get their hands on a free plug-in specifically designed for that purpose.

"Death of Auto-Tune was off the mark, with the sound remaining popular in hip-hop and R&B"

KeroVee from Japan's g200kg has a GUI that looks much like a stripped down version of Antares' legendary plug-in, including a Scale control for choosing which notes the effect will tune its input to. The effect also allows the user to set which note the pitch should be corrected

to via MIDI, and features two lines with separate fine-tune, transposition, pan and level controls.

We asked the plug-in's creator, g200kg, why he developed a pitch-correction plug-in...

"Building plug-ins is fun, and spectral analysis and the voice are especially interesting fields."

KeroVee's main freeware rival has to be GVST's GSnap. What do you make of this plug-in and other effects for voice?

"I think GSnap is well done, especially the low CPU consumption. I also think the Vocaloid singing synthesiser plug-ins are extremely interesting."

Any plans to update KeroVee, or create other freeware effects?

"I have a plan for that plug-in. I don't have concrete plans for more free plug-ins, but I'll probably continue building free software."

Finally, what does KeroVee actually mean?

"'Kero' is the word for 'frog' in Japanese, and is also another name for the Auto-Tune effect. Let's KeroKero!"

Four-midable

16tone have released a free standalone four-voice synth for Intel Mac. Vogue Quattro has three oscillators with a choice of wave shapes, ring modulator, low-pass filter with saturation control, LFO that can be assigned to various modulation destinations simultaneously, and microtuning capabilities with a library of more than 3000 tuning files.
launch.groups.yahoo.com/group/16tone/

Shift happens

Adonis creator b.serrano has released v2.0 of Redshift, a free PC VST effects processor that works as a pitchshifter, lo-fi delay, phaser and chorus amongst other capabilities. The effect includes the pitchshifter (of course), two LFOs, a step modulator, modulation matrix with separate destinations for both the left and right channels, plus an overall wet/dry control, all making it extremely adaptable.
bserrano.free.fr

Wave hello

Waveshaper from Fleischprodukt (meaning 'meat product' in English) is a simple Mac AU effect with a selection of waveshaping functions, including hyperbolic and arc tangents, hard clipping, saturation, foldback distortion and sine. The amount of distortion is controlled by a gain stage prior to the shaping function, and the output of the effect is controlled by a post-waveshaper gain stage.
pdp7.org



Freeware Classic MSSED

Developer **Voxengo**
Format **PC VST, Mac AU and VST**
Web **www.voxengo.com**

MSSED (Mid/Side Encoder/Decoder) is a useful mixing tool from Voxengo. Mid/Side is a stereo recording technique where one channel contains the information at the centre of the mix, and another contains the difference between the left and right channels. MSSED can be used to convert signals between M/S-encoded and regular

"Unwanted stereo elements or reverb can easily be centralised"

stereo material, so it's very handy for material recorded with the mid/side technique, or when you want to split a stereo signal into its mid/side components for separate processing.

We asked Voxengo's Aleksey Vaneev why most DAWs don't include this kind of processing as standard.

"I'm not sure! It isn't a complex process - maybe a lack of knowledge about studio recording needs?"

The plug-in is also useful because it has an 'Inline' mode for independently controlling the levels of the middle and sides of the mix. This can be extremely helpful when creating a stereo mix. For example, if a sound is spread quite wide across the stereo panorama and doesn't rely too much on the information at the middle of the mix, its mid level can be brought down, creating space in the mix for other parts. Likewise, sounds with unwanted stereo elements or reverb can easily be centralised by turning the sides down.

"When using MSSED for mid/side decoding, it's important to know in which channels the mid and the side information is contained," suggests Aleksey. "MSSED expects the mid to be at the left and the side to be at the right channel. If this is not the case the **Ch Swap** switch should be engaged."

Voxengo's MSSED is an essential download for any producer who's serious about getting the best stereo mixes possible. **cm**

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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.



order code 203423
€ 75.- € 66.-

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.



o. code 226599
€ 89.- € 79.-

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.



order code 223287
€ 149.- € 132.-

Zoom H2 Bundle

Mobile mp3/WAV recorder

1-point stereo mic design, MS stereo technique, record 360° sound as 2ch or 4ch data, built-in USB interface with audio interface function, WAV 96/48/44.1kHz and MP3 up to 320kbps VBR, headphone out, uses SD cards (up to 4GB), perfect for interviews, podcasts, meetings and live recordings. Includes USB cable, stand, mic-stand adapter, power supply and 512MB SD card. Bundle includes the Lbone HD660 headphones.



order code 137629
€ 169.- € 149.-

Zoom Q3

Handy video audio recorder

Stereo condenser mic, true X/Y configuration, 2.4" LC display (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.



order code 234280
€ 209.- € 185.-

Tascam DR-1

Mobile SD card stereo recorder

Built-in stereo condenser mic, variable angle mic mechanism with A/B configuration, 48 or 44.1kHz / 24-bit recording resolution, MP3/WAV recording and playback, low cut, analog auto gain control, analog limiter, tuner, vocal cancel features, overdrive feature, stereo in for ext. mics, mono in for ext. mics, stereo line in, headphone out, rechargeable Lithium-Ion battery, USB 2.0, incl. 1GB SD card.



order code 204744
€ 225.- € 199.-

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, (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.



order code 203379
€ 266.- € 235.-

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.



o. code 207377
€ 279.- € 246.-

Tascam DP-008

Portable 8-track recorder

2-track simultaneous recording, 2 XLR mic ins with phantom power, 2 1/4" line ins, RCA line outs, stereo reverb on send/return path, level, pan and 2-band EQ controls per channel, 44.1kHz/16bit recording resolution, records to SD or SDHC card media, up to 32GB supported, USB 2.0, 2GB SD card, built-in stereo condenser mic, LC display, powered by 4 AA batteries (included) or PS-P520 power supply (optional).



order code 237802
€ 255.- € 252.-

Sony PCM-M10 Set

Portable 24bit/96kHz audio recorder

Built-in stereo mic, internal 4GB flash memory + MicroSD/MemoryStick Micro slot, limiter and low-cut filter, 5sec. pre-record buffer, recording level control, USB 2.0, includes power supply, SoundForge Audio Studio LE, cable remote and cable, finish: grey. Bundle includes accu charger BCG-34H S, MDR-V150 stereo headphones and 4 accus NH-AA B4F.



order code 239061
€ 325.- € 287.-

Zoom H4 N Bundle

Digital recorder

Perfect for interviews, podcasts, meetings and live recordings. 24bit/96kHz, mp3 up to 320kbps bitrate, two built-in stereo microphones switchable between 90° and 120°, requires 24V or 48V phantom power, USB port. Includes windshield, USB cable, bag and Cubase LE4. Bundle includes 2GB SD card and the Lbone HD660 stereo headphones.



order code 227414
€ 333.- € 294.-

Olympus LS-11

Digital recorder

24bit/96kHz, 2 built-in mics, internal 8GB HDD, expandable to 32GB with SDHC card, up to 23 hours record time, edit functions, PCM/WAV/ WMA/mp3 record & playback, built-in stereo speaker, backlit display, SD/SDHC slot, USB, headphone out, silver metal housing. Weight: 165g (including batteries), connection for external power supply, includes wireless remote and Steinberg Cubase 4 LE.



order code 234496
€ 339.- € 299.-

Zoom R16 Bundle

USB audio interface and DAW controller

16-track playback and 8-tracks recording, 24bit/48kHz PCM recording, internal stereo condenser mic, 8 mic ins, 2 outs, 8 balanced XLR / 1/4" TRS connections, internal effects, Mackie Control emulation via USB, works as USB storage, support for Win XP/Vista and MAC OS, incl. Steinberg Cubase LE4 and 1GB SD card. Bundle incl. the Lbone MLS66 stereo headphones and 4GB SD card.



o. code 245233
€ 368.- € 325.-

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.



order code 223927
€ 409.- € 361.-

Tascam 2488

NEO Bundle

24-track harddisk recorder
24bit/44.1kHz, 8 mic/line inputs (4 XLR with phantom power), internal FX processor, 16x CD-RW 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, bundle incl. the Lbone HD-9900D headphone and 5 Sony CDQ89N CD-Rs.



o. code 223374
€ 759.- € 670.-

Phonic AM440D

Mixer

4 mono mic/line channels with 3-band EQ and 48V phantom power, 4 stereo channels, 1 aux, internal effects processor with 100 presets, 2 track I/O, headphone out, balanced master out, incl. external power supply.



o. code 196368
€ 79.- € 70.-

Phonic AM442D
4 stereo, 2 aux.
order code 196389
€ 149.- € 132.-

Alesis Multimix 4 USB

4-channel mixer with digital output

16bit, 44.1kHz signal on USB, 4 line level ins, 2 XLR ins with gains and switchable 48V phantom power, high impedance guitar input, 2 channel EQ on mic ins, multicolor LED metering, main and headphone outs with independent level controls, incl. power supply, dimensions WHD: 15.2 x 19.6 x 5cm, weight: 0.6kg.



order code 235244
€ 88.- € 78.-

Phonic AM844D

Rack mixer

10 mono mic/line channels, 2 stereo channels, 16 24bit/48kHz digital effects with tap tempo delay function, 3-band EQ with parametric mids, 4 sub groups, headphone output, 48V phantom power, 4 stereo returns, direct out on each channel, 4 aux, 2 track I/O, balanced output, incl. rack kit.



order code 196393
€ 233.- € 206.-

Yamaha MG 166cx

16 channel mixer

8x mono mic/line ins (XLR/jack), 2x mic/line ins (XLR/stereo jack), 2x stereo line ins (jack), 3x aux sends, 8x inserts, 3-band EQ with parametric mids, internal compressors per mic channel, SPX FX processor with 16 programs, 18dB high pass filter, high-end mic preamps, 48V phantom power. Dimensions: 47.8 x 10.2 x 48.9cm. Weight: 5.5kg.



order code 115511
€ 359.- € 317.-

Mackie 1402 VLZ3

14-channel mixer

New XDR 2 preamps, 6x mono mic/line inputs (XLR/jack), 4x stereo line inputs (jack), 2x stereo aux returns, 2x aux sends, 6x inserts, 3-band EQ, 18dB lo-cut filter, PFL, 48V phantom power, internal power supply, balanced master outputs (XLR/jack), Dimensions: 8.1 x 35.6 x 32.9cm (HxWxD). Weight: 4.5kg.



order code 112366
€ 379.- € 335.-

Alesis MultiMix 16

FireWire

16ch. mixer with FireWire interface
8 mic/line ins, 4 balanced stereo line ins, 3-band EQ per channel, 2 aux send/returns, 100 28bit FX programs, headphone out, FireWire interface: 18 ins, 2 outs, 24bit/48kHz, ASIO/WDM drivers for Win XP SP2, Core Audio drivers for Mac OS X, incl. Cubase LE.



€ 398.- € 351.-

order code 186079

Mackie 1642 VLZ3

Compact 16-channel mixer

8x mono mic/line channels, 2x mic/line stereo channels, 2x stereo channels, 4x subgroups, 4x aux (2x pre/post switchable), XDR2 mic preamps, 60mm faders, 3-band parametric EQ (mono channels), 4-band EQ (stereo channels), 48V phantom power. Dimensions: 42.5 x 13.1 x 42.1cm (WxDxH). Weight: 8.3kg.



order code 112362
€ 529.- € 467.-

Mackie 1604 VLZ3

16-channel mixing desk

16x mono mic/line XLR/jack ins, 4x stereo aux returns, 6x aux sends, 16x channel inserts, 6x direct outs, 3-band EQ with parametric mids, 18dB low cut filter, PFL, XDR mic preamps, 48V phantom power, internal power supply, 4 subgroups, master insert, balanced jack outputs, includes rack kit. Dimensions: 44.5 x 12.9 x 44cm (HxWxD).



order code 112364
€ 771.- € 686.-

Allen & Heath

WZ 16:2 DX

16-channel mixer
16x mono ins with insert/direct out, pad, 100Hz HP and 4-Band-EQ with parametric mids, switchable 48V phantom power, 6x aux, 2x stereo aux returns, PFL, mute, phones, master insert and outs, mono out, A/B out, 2x Digitech FX processors, MIDI input, internal power supply.



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suitable flightcase
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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.



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£40.-

Akai LPK 25

USB MIDI controller keyboard

25 mini keys, arpeggiator, sustain button, octave up and down, tap tempo controls, 4 programmable memory banks, includes software editor for Mac and PC, plug-&-play USB connection on Mac and PC, requires no driver installation, dimensions HWD: 2,79 x 34,04 x 9,65cm, weight: 635g.



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€46.-
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M-Audio Keystation 88ES

88 velocity sensitive semi-weighted keys, inputs for sustain and expression pedals, USB port or optional 9V DC power supply, for Mac and PC.



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Stage piano

Graded Hammer action with 88 keys, 2x 6W speakers, 64-note polyphony, 10 different sounds, stereo samples, reverb, dual perform. mode, 10 demos and 50 demo songs, metronome, 2 headphone outs, incl. music stand, sustain pedal FC-5 and power supply.



Finish: silver
order code 202243

Finish: black
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€525.-
£464.-

Korg SP-250

Stage piano

60 notes polyphony, amplifier 2x 11W, 30 sounds, reverb and chorus effects, layer function with individual volume control, 2 headphone outs, damper, MIDI in/out, keyboard stand, music stand, sustain pedal and power supply included, dimensions WDH: 129,5 x 38 x 14cm, weight: 19kg.



order code 189377

suitable flightcase
order code 116660

€649.-
£573.-
€185.-
£163.-

Kurzweil SP2 XS

88-note digital stage piano

Weighted action keys, 64 voices, split and layering function, 4 keyboard zones, 64 Kurzweil presets (pianos, e-pianos, mallets, strings and voices), 60 rhythm patterns, metronome, 16 user set-ups, 60 freely assignable knobs, pitch and modulation wheels, effects, USB port, LED display, connection for expression pedal and footswitch, MIDI in/out/thru, internal stereo speaker, weight: 22kg.



order code 210648

€659.-
£582.-

Yamaha P155

Stage Piano

88 graded hammer action keys, pure CFIH piano voice, 17 voices, polyphony 128 voices, dual and split mode, metronome, 2 headphone outs, 2x 12W, includes note stand, FC-4 pedal and PA301 power supply, weight: 18,6kg.



Black & ebony
order code 232558

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€1148.-
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Korg SV1 73

Stage vintage piano

Real weighted hammer action 3 keys, 8 velocity touch curves, EDS and RX technology, polyphony 80 notes, 36 sounds, 8 tuning curves, 12AX7 tube, 36 demo songs, headphone out, MIDI I/O, USB, incl. music stand and sustain pedal, weight: 17,5kg.



73 keys.
order code 236242

88 keys.
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Yamaha S90 XS

Synthesizer and master keyboard

88 weighted keys with hammer action, AWM2 tone generator with expanded articulation, 128-voice polyphony, effects, control slider and knobs, LC display with 160 x 64 pixels, 456MB Wave ROM, SMF playback, 192MB internal memory, headphones out, microphone input, MIDI in/out/thru, line out, assignable out, USB, includes power supply and Cubase AI, weight: 22,5kg.



order code 234909

€2280.-
£2022.-

Doepfer Dark Energy

Expander

Monophonic analog synthesizer with USB and MIDI interface, rugged black metal case with wooden side plates, vintage look knobs, USB connection, MIDI input, 4 CV outs, 1 gate output, includes external power supply, dimensions WDH: 18,5 x 14,5 x 6,5cm, weight: 1,2kg.



order code 234455

€375.-
£331.-

Novation Launchpad

Ableton Live/MIDI controller

Bi-directional communication, 64-button grid with colour-coded status feedback, scene control switchable to control volume, sends, muting and more, up to 6 units may be operated simultaneously, USB bus-powered, large rubber grips, automap-enabled, includes Ableton Live 8 Launchpad version. Weight: 0,76kg



order code 236641

€166.-
£147.-

Focusrite Liquid-Mix 16

FireWire plugin processor and remote

24bit/192kHz Shark DSP processing with dynamic convolution technology, over 40 compressor & 20 EQ models, 7-band EQ (freely configurable as vintage EQs), 16 channels each with compressor and EQ @ 44.1/48kHz, 8 @ 96kHz, or 4 @ 192kHz, optional available DSP extension-board for 24 plugins @ 44.1/48kHz, bus or PSU powered, for Mac or PC.



order code 210257

€169.-
£149.-

Native Instruments Traktor Kontrol X1

USB bus-powered DJ controller

Instant recognition by Traktor, software controlled backlit buttons, fits perfectly alongside a standard club mixer, super-intuitive loop and cue control section, 8 knobs and 8 buttons, push encoders, expandable (connect two X1s to control four decks), incl. Traktor LE, Kore2 Player (incl. selection library) and MIDI templates for controlling other DJ and performance software.



o. code 240169

€185.-
£163.-

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.



order code 223229

€398.-
£351.-

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.



order code 223060

€559.-
£494.-

ESI DualFire

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.



order code 206255

€95.-
£84.-

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.



order code 177842

€109.-
£96.-

Tascam US-122MK2

24bit USB 2.0 audio MIDI interface

Supports 2 ins and outs, 2 XLR mic ins with 48V phantom power, enhanced highgrade mic preamps, 2 analog line ins (1 switchable for Hi-Z guitar, bass in), MIDI I/O, 24bit/96kHz, latency-free monitoring with switchable mono function, USB 2.0, USB bus powered, aluminium sidepanels, incl. Cubase LE4.



order code 235648

€133.-
£117.-

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.



order code 184360

€139.-
£123.-

Tascam US-144MK2

24bit USB Audio/MIDI interface

2 mic ins XLR, 48V phantom power, 2 analog line ins (1 switchable for Hi-Z guitar/bass input), MIDI I/O, S/PDIF digital I/O, 24bit 96kHz, latency-free monitoring with switchable mono-function, USB 2.0, USB bus powered, includes Cubase LE4.



order code 235644

€159.-
£140.-

EMU 0404 USB

24bit audio interface

2 microphone inputs/Hi-Z or line, digital I/O (optical and coaxial), MIDI I/O, headphone output, line output, compatible with Windows XP (SP 2 or higher or XP x64) and Mac OS X.



order code 197706

€179.-
£158.-

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 OS X 10.3.9 and higher.



order code 235896

€185.-
£163.-

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.



order code 235705

€188.-
£166.-

Digidesign Mbox 2 Mini

USB audio interface

1x mic in with phantom power, 2x analog line/instrument in, 2x analog out, latency-free monitoring, headphone out, Pro Tools LE software, 37x DigiRack and 7x Bomb Factory plug-ins, Pro Tools Ignition Pack.



order code 108023

€199.-
£176.-

Tascam US-1641

USB 2.0 audio interface

24bit/96kHz, 8x mic/line ins with phantom power and front level meters, 2x balanced line/instrument ins (front), 4x balanced line ins (rear), 4x line outs, monitor out, S/PDIF I/O (switchable to AES/EBU), MIDI I/O. Compatible with Win XP, Vista 32 and Mac OS X (10.4 or higher), includes Steinberg Cubase LE 4. Dimensions: 19"/1U



order code 138750

€285.-
£252.-

Focusrite Saffire Pro 24 DSP

FireWire audio interface

Virtual reference monitoring technology, real-time FX (EQ, compressor, comfort reverb), 24bit/96kHz, total I/O count of 16 ins (including internal loopback) and 8 outs, 2x mic preamps, 4x analog ins, ADAT optical I/O, 1x coax S/PDIF I/O, 2x headphone outs, MIDI I/O, 48V phantom power, LED meter, includes plug-in suite and power supply.



order code 233752

€399.-
£299.-

Digidesign Mbox 2 Bundle

USB MIDI/audio interface

2x analog ins with phantom power (XLR/jack), 2x analog outs (jack), S/PDIF I/O, MIDI I/O, latency-free monitoring, USB powered, includes Pro Tools LE software (Win XP and Mac OS X), 37x DigiRack- & 7 Bomb Factory plug-ins, Pro Tools Ignition Pack. Bundle includes the tBone SC450 studio mic and 6m XLR mic cable.



order code 114106

€389.-
£343.-

Apogee Duet Bundle

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. Bundle incl. original Apogee carry case and 2GB USB stick.



o. code 209773

€419.-
£370.-

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.



order code 219725

€422.-
£373.-

MOTU Ultralite MKIII Hybrid

FireWire and USB audio interface

24bit/192kHz, 2 mic/instrument ins, 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.



order code 239141

€469.-
£414.-

RME Fireface 400

FireWire audio interface

24bit/192 kHz high performance FireWire audio interface, analog technology of ADI-8 converter, mic pre-amp technology of Quad and OctaMic (2 mic pre-amps), TotalMix technology of Hammerfall DSP series, very reliable drivers.



order code 193883

€785.-
£702.-

RME Fireface UC

USB audio interface

36 channels, 24bit/192kHz AD/DA converter, 48V phantom power, 18x simultaneous I/O, instrument input, 8x analog I/O, ADAT I/O, S/PDIF I/O, 2x MIDI I/O, WordClock, intelligent clock control, SyncCheck, SyncAlign, SteadyClock, DiGiCheck and TotalMix. Dimensions: 9,5"/1U



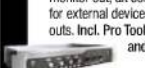
order code 229395

€822.-
£726.-

Digidesign Digi 003 Rack Factory

24bit/96kHz FireWire interface

8x analog I/O, 4x prof. mic preamps, 48V phantom power, 8-channel ADAT optical I/O or 2-ch. S/PDIF optical I/O, 1x MIDI in, 2x MIDI out, BNC WordClock I/O, dedicated studio monitor out, all control room out, alt source in for external device monitoring, dual headphone outs. Incl. Pro Tools LE, Factory plug-in bundle and Pro Tools Ignition Pack 2.



order code 111200

€877.-
£774.-

Dig

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

the t.bone Micscreen Mini

Portable absorber and diffuser

With microphone clamp, reduces the transmission of unwanted room reflections, echoes and ambient noises. Recommended for vocals, instruments, live and studio applications, quick and easy mounting on nearly every standard microphone stand.



order code 223803

€ 66.-
£ 58.-

the t.bone Micscreen

Portable absorber/diffuser

Positioned behind any microphone, reduces the transmission of unwanted room reflections, echoes and ambient noises. Recommended for vocals, instruments, live and studio applications, quick and easy mounting on nearly every standard microphone stand.



order code 209023

€ 93.-
£ 82.-

Sennheiser MD421U-2

Dynamic microphone

Cardioid polar pattern, 5 step bass filter, includes clamp.



order code 128331

€ 285.-
£ 252.-

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

€ 285.-
£ 252.-

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 150848

€ 1077.-
£ 951.-

the t.bone SC440 USB

USB condenser studio microphone

USB connection for direct access to Mac and PC (doesn't work with Windows Vista!), cardioid polar pattern, frequency range 20Hz to 18kHz, incl. plastic case



order code 197603

€ 55.-
£ 49.-

sE Electronics SE 2000

Large diaphragm studio microphone

Cardioid pattern capacitor, gold sputtered 1" mylar diaphragm, frequency response: 20Hz - 20kHz, sensitivity: >16mV/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.-
£ 78.-

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

€ 83.-
£ 82.-

SC450 Stereo-Set, matched stereo pair in case, w/o pop shield. € 169.-
£ 149.-

StudioProjects B1

Large diaphragm condenser microphone

1" Capsule, transformerless circuit, needs +48V phantom power, polar pattern: cardioid, frequency response 20Hz - 20kHz, Sensitivity: -34dB (0dB= 1V/Pa), output impedance: <200 Ohms, maximum SPL: 132dB, noise: 12dB-A (IEC651), incl. foam wind screen, zippered bag and shockmount.



order code 180703

€ 111.-
£ 98.-

AKG Perception 220

Large diaphragm condenser mic

1" diaphragm, metal housing, cardioid polar pattern, frequency range: 20Hz - 20kHz, switchable 300Hz lo-cut filter, switchable -20dB pad, 135/155dB max SPL, incl. elastic holder and carrying case, dimensions: 53 x 165mm (diameter x length), weight: 525g.



order code 206310

€ 138.-
£ 122.-

Rode NT1-A Complete Vocal Recording Solution

Large diaphragm microphone

20Hz-20kHz, 100Ω impedance, 132dB dynamic range, 137dB max SPL. Includes SM6 deluxe shockmount, 6m cable and Peter Freeman 'Studio Secrets' tutorial DVD.



order code 235937

€ 159.-
£ 140.-

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

€ 160.-
£ 141.-

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

€ 188.-
£ 166.-

SCT800 Stereo-Set, matched stereo pair without pop shield. € 377.-
£ 333.-

the t.bone SCT2000 Set

Studio tube microphone

Truly warm sound, frequency range 20Hz to 20kHz, omni, cardioid and figure-8 plus 6 intermediate stages, up to 130dB SPL, incl. case, shockmount and power supply. Bundle incl. the t.bone MS180 pop shield.



order code 203196

€ 279.-
£ 246.-

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

€ 285.-
£ 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 5,5cm, weight: 280g, incl. case, windshield and shockmount.



order code 211318

€ 333.-
£ 294.-

Shure SM 7 B

Studio microphone

Dynamic studio microphone with cardioid polar pattern, 50Hz-20kHz, bass rolloff switch, mid-boost switch, 150Ω, shielded against broadband interference, fixed stand adapter, XLR connector, includes windscreen.



order code 129929

€ 398.-
£ 351.-

EV RE20

Dynamic large diaphragm microphone

RE series, cardioid, switchable HP filter, variable D design, 150Ω, 45Hz-18kHz, includes clip and box, ideal for vocals, brass and bass drum. Length: 217mm. Diameter: 54mm. Weight: 737g



order code 128926

€ 459.-
£ 405.-

Neumann TLM 103 Studio Set

Studio microphone

Large diaphragm cardioid microphone, pressure gradient transducer 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

€ 888.-
£ 784.-

Neumann U87 Ai Set

The studio microphone classic

Variable large diaphragm microphone, pressure-gradient transducer with double membrane capsule, 3 directional characteristics (omni, cardioid and figure-8), switchable 10 dB pre-attenuation, frequency range: 20Hz - 20kHz, impedance 200 Ohm, finish: nickel. Bundle including shockmount EA 87.



order code 169705

€ 2333.-
£ 2060.-

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

€ 37.-
£ 33.-

dbx 266 XL

Stereo compressor/limiter/gate

Patented OverEasy technology (attack & release times), XLR I/O, -10/+40dB switch, stereo link, dbx sound.

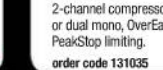


order code 131808

€ 139.-
£ 123.-

dbx 166 XL

2-channel compressor/limiter/gate, stereo or dual mono, OverEasy or hard knee mode, PeakStop limiting.



order code 131035

€ 219.-
£ 193.-

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

€ 169.-
£ 149.-

RNLA 7239 Really nice levelling amplifier 10Hz - 100kHz 0.5dB @ 0dBu, clip point: +22.5dBu @ 3% THD.

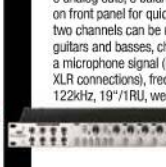
order code 190166

€ 205.-
£ 181.-

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 178708

€ 255.-
£ 225.-

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

€ 298.-
£ 263.-

Focusrite OctoPre MkII

8-channel mic preamp with A/D

Integrated 8-channel 24bit/96kHz digital output, -10dB pads, 5-LED input metering and direct output on each channel, internal clocking and external via BNC, 8 inputs (2 mic/line/instrument combo XLR, 6 mic/line combo XLR), 8 outputs jack, 2 ADAT outputs (dual LightPipe), sync-to-wordclock input, JitterPLL, jitter-elimination, 19", 1U, weight: 3,6 kg.



order code 236376

€ 377.-
£ 333.-

SPL GoldMike 9844

2-channel valve preamp

Discrete Class A solid state, 48V phantom power, phase reverse, pad function, flair presence enhancement, very clear and warm sound. Dimensions: 19"/2U



order code 123370

€ 425.-
£ 375.-

Mindprint Envoy 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

€ 469.-
£ 414.-

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

€ 509.-
£ 449.-

TL Audio Ebony A4

Discrete class A 16:2 summing mixer

Dual triode ECC83 tube stage in master section, variable drive control, ability to switch tube in and out of circuit path, 16 balanced ins (TRS/D-Sub), 16 individual pan controls, switchable ins (+/-40), balanced inserts on master bus, balanced outs, analogue VU metering with peak LEDs, sleek design and smooth precise sound, dimensions: 19"/2U



order code 220634

€ 839.-
£ 741.-

Peavey Q1311

31-band equalizer

Constant Q factor, 1/3 octave, switchable 6dB or 12dB, 40Hz low cut feature, frequency range: 20Hz to 20kHz, XLR and 1/4" TRS inputs and outputs, output LED display, dimensions HWD: 4,4 x 48,3 x 18,7cm (19"/1U), weight: 3kg.



order code 238485

€ 45.-
£ 40.-

the t.racks EQ-233 IE

2x 30-band equalizer

20Hz - 20kHz, status LEDs, volume control per channel, low cut filter on each channel, balanced 1/4" Jack and XLR I/O, ±12dB, 19"/2U.

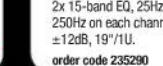


order code 235291

€ 75.-
£ 66.-

the t.racks EQ-1215E

2x 15-band EQ, 25Hz - 16kHz, low cut 10 - 250Hz on each channel, range: ±6dB and ±12dB, 19"/1U.



order code 235290

€ 55.-
£ 49.-

Lexicon MX200

Stereo effect processor

2 independent processors, 24bit converter, VST plug-in architecture with USB interface, MIDI interface, tap-delay bottom, legendary Lexicon algorithm like: halls, chambers, plates, delays, chorus, flanger, tremolo, rotary, etc., dbx dynamic algorithm, 2 simultaneous useable effects, analog and digital ins and outs, internal power supply, 19"/1U.



order code 180403

€ 188.-
£ 166.-

Behringer ADA8000

8-channel AD/DA converter

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Fax: +49 9546 9223-24

The Thomann services

- 30-day money back guarantee
- free shipping to the UK and Ireland on orders above £159

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.-
£72.-

Sony MDR-7506

Professional headphones

Closed back, 63 Watts, 106dB, 1/4" and 1/8" jack connectors, compact, designed for professional DJ and studio use.



order code 135709
€115.-
£102.-

AKG K271 MKII

Closed dynamic studio headphones

Circumaural design, 550, max. input power 200mW, 16Hz - 28kHz, sensitivity 104dB/V, self-adjusting headband and auto-shut-off feature, cable length 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
5m extension cable
Stereo jack 6.3mm.
order code 153216
€145.-
£128.-
€1030
£9.09

Sennheiser HD25 C II

Professional DJ headphones

Dynamic, 700 impedance, 120dB SPL, 16Hz-22kHz (-3dB), closed system. Includes coiled cable with stereo mini-jack, 1/4" TRS adapter, additional velour ear pads, soft bag and Traktor 3 LE software. Weight: 140g



order code 117063
€169.-
£149.-

AKG K 701

High-end reference headphones

Revolutionary flat wire voice coil technology, dynamic, open back, impedance 620, 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
€199.-
£176.-

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
€68.-
£60.-

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
€139.-
£123.-

KRKR 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: 6.3kg. Unit price!



order code 213024
KRKR RP6 Rokit G2
6" / 1", 1400W.
order code 213034
€139.-
£123.-
€188.-
£166.-

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!



order code 186461
€144.-
£127.-

ESI nEar05

Active 5" studio monitors

Magnetically shielded, 33Hz - 22kHz, bi-amped, bass: 42W, treble: 33W, balanced XLR input, 6.3mm jack input, dimensions: 25 x 16.6 x 20cm. Pair price!



order code 160180
€169.-
£149.-

KRKR RP8 Rokit G2

Active studio monitor

140W, 8" woofer, 1" neodymium tweeter, frequency response: 45Hz - 20kHz, magnetically shielded, dimensions HWD: 38.1 x 26.5 x 33cm, weight: 15kg. Price per unit!



order code 213090
€235.-
£208.-

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!



order code 207900
€259.-
£229.-

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!



order code 190176
€275.-
£243.-

Genelec 8020BPM

Active 2-way studio monitor

Power switch, 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, includes wall bracket. Power per channel: 20W (bass), 20W (treble). Dimensions: 22.6 x 15.1 x 14.2mm. Weight: 3.7kg. Unit price!



o. code 235038
€279.-
£246.-

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.



order code 193266
€379.-
£335.-

Yamaha HS80M stand bundle

Active 2-way studio monitor package

120W bi-amped bass reflex speaker, 8" woofer, 1" tweeter, 42Hz-20kHz, XLR & jack input, mid EQ, room control, high trim, switchable low cut, magnetically shielded. Bundle includes 2x HS80M and 1 pair of Millennium BS-500 nearfield stands.



o. code 227555
€458.-
£404.-

Genelec 8040APM

Active 2-way studio monitor

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!



order code 171716
€744.-
£657.-

Focal Solo6 Be

Active 2-way studio monitor

frequency response: 40Hz - 40kHz (±2dB), max. SPL: 113dB (peak @ 1mtr), Bi-amping: LF stage 150W (RMS), HF stage 100W (RMS), LF Focal 6W4370 6.5" speaker, HF Focal T8E Pro Inverted Beryllium dome tweeter, magnetically shielded, dimensions: 29 x 24 x 33cm, weight: 11kg. Unit price!



order code 195940
€811.-
£716.-

JBL LSR 4328PAK

Active studio monitor bundle

Includes LSR 4328P and LSR 4300 ACC, 8" woofer 150W, 1" tweeter 70W, with room mode correction technology, analyses room frequencies and trims the speakers, frequency response: 50Hz - 20kHz, max SPL: 112dB, ins XLR and balanced plug, AES/EBU (XLR) and S/PDIF (COAX), USB data connection, HiQnet network, incl. accessory kit (microphone, remote control, software and USB cable).



order code 195301
€1259.-
£1112.-

Event Opal

Active nearfield monitor

Frequency response: 35Hz - 22kHz, crossover frequency: 1600Hz, acoustic output - SPL @ 1m: peak (80Hz - 20kHz) 114dB, signal input: combo XLR, 1/4" TRS (bal/unbal), low frequency transducer neodymium 7.1" 270W, high frequency transducer Neodymium 1" 100W, dimensions WHD: 29.5 x 45 x 27.3cm, weight: 21.2kg. Unit price!



order code 234475
€1322.-
£1167.-

Behringer DJX 750

5-channel DJ mixer

24bit digital effects, BPM counter with time and sync display, Ultralight faders, XPO stereo surround effects, 3-band kill EQ, 3-way kill switch, monitor function with master/cue balance control and split option, auto talkover.



order code 223751
€169.-
£149.-

Allen & Heath XONE:22

2-channel DJ mixer

4 inputs, 2 mic inputs, 2 phono/line switchable, 3-band EQ, crossfader curve, VCF filter (20Hz - 20kHz), FX send/return, mic input (XLR) with 2-band EQ, XLR master output, monitor output.



order code 223386
€279.-
£246.-

Pioneer DJM 400

Professional DJ mixer

2 channels, mic/aux switch (to select 2 mic inputs or 1 stereo line input), fader start, crossfader curve adjustment, talkover (-20dB), peak level meter.



order code 191081
€477.-
£421.-

Allen & Heath XONE:42

4-channel DJ mixer

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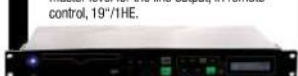


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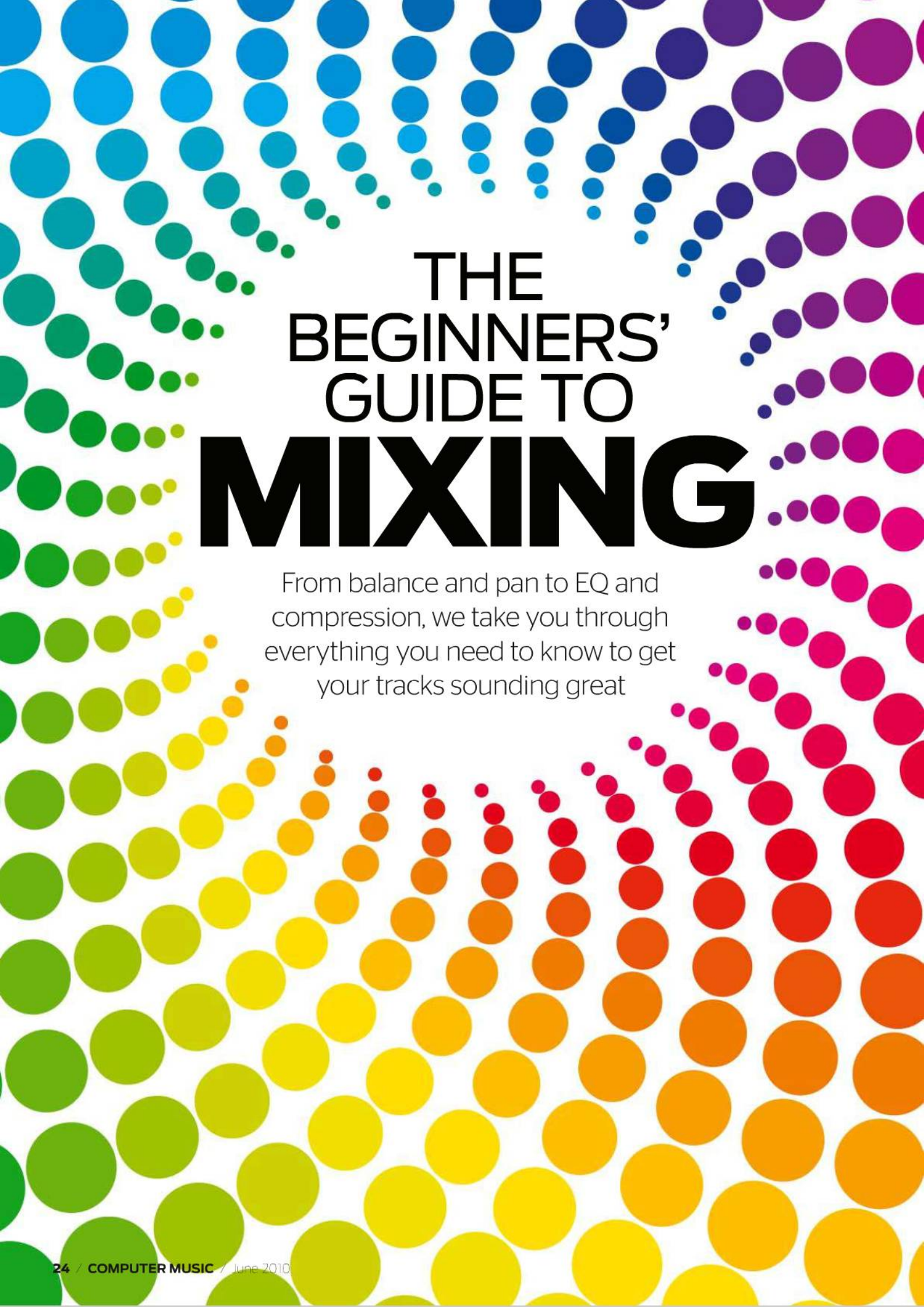
Vestax VCI-300

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THE BEGINNERS' GUIDE TO **MIXING**

From balance and pan to EQ and compression, we take you through everything you need to know to get your tracks sounding great

> **Mixing is possibly the most important part of the music production process and certainly the most skilled - but don't let that intimidate you! It's the stage at which you bring all your individually recorded parts and samples together into one coherent sound picture that resonates with the listener. Comparable in many ways to the art of sculpture, the mixing process involves shaping the sound by setting levels and the positions of parts within the stereo field (pan), and using equalisation (EQ) and compression. Many other tools may also come into play in the shape of effects plug-ins.**

EQ works on the frequencies of a sound to shape the tonal balance of treble, mid-range and bass using a much more precise version of the tone controls on a domestic hi-fi. Compressors control the volume of a part, automatically scaling the dynamic range (the range of volume, from quietest to loudest) throughout the length of the song. At its most basic, this helps to keep a part at a consistent volume level in the mix, but compression can also be used creatively, to give energy to individual parts and the track as a whole, manipulating its envelope shape to create that 'in ya face' pumping, breathing, punching sound. It's fair to say that dance, pop and rock music wouldn't exist as we know it without the compressor.

Another dimension

Another not-so-essential but still important mixing tool is reverb. This ubiquitous effect places the sound sent through it in a virtual space, creating a sense of three-dimensional depth. With the current trend for very dry mixes, reverb has taken a bit of a back seat recently and is often not used at all - but it won't be gone for long.

A reverb space can be an imitation of anything from the inside of a teapot to a cavernous cathedral, and by using reverb selectively and subtly, with some sounds kept dry and up-front and others set further back in varying amounts of ambience, you can create a rich, 'natural' soundstage.

Ultimately, though, mixing is all about the set of balances and how they change through the track - dynamic development, in other words - and as you'll read later on, it's not about getting the perfect balance, it's about getting the *right* balance, the *exciting* balance. It's also important to remember that, in a mix, you don't necessarily have to use everything you've recorded - what you leave out can be just as effective as what you put in. And lastly, before we get started, you're not heading for some kind of definitive 'finish line': a mix is never finished, it's abandoned, and quite often, the sooner you abandon it and call it finished, the better.

Incidentally, although we're primarily using Propellerhead Record throughout this guide for illustrative purposes, all the principles discussed are universal and apply equally to any software mixer in any DAW. Now, let's get mixing...



There are plenty of audio examples to accompany the walkthroughs in the **Tutorial Files** folder on the disc, and if any of the words or terms in this feature leave you scratching your head, check out our **A-Z of Computer Music** in the **Beginners** folder



Getting ready to mix

Once upon a time, when music was recorded to tape, you would usually start a mix from scratch: a flat mixing desk (level faders all at zero and no EQ active) with no effects inserted into any channels or being applied from auxiliary sends, and no rough monitor balance. Now, with the 'total recall' of software DAW mixers doing away with the need to painstakingly set everything up specifically for one project at a time, we tend to add compression, EQ and effects as the track develops, essentially mixing as we go, making it seem like a backward step to strip out all the effects and start again. That might indeed be so, but a half measure of bypassing all the effects and muting everything back to the 'first' part (be it drums, vocal or whatever else takes your fancy – a suitable starting point, essentially) is certainly a good and refreshing practice and needn't destroy all the work you've done, since you can just save a separate version of your project file to return to if necessary. Also, it's worth rendering a version of the final monitor mix as a stereo audio file, so you can quickly refer to it as you build the mix back up.

Sound structure

A few small measures can help you psychologically prepare to get into mix mode, some of which you might have done already during the recording process. One is to break your song down into sections using markers, assuming your DAW offers such functionality. Being able to visually distinguish between verses, bridges, choruses, etc, helps you get a sense of the structure of the song and how the energy and dynamics of the mix need to develop. Looking at the structure of the track in list form might also suggest ideas for introducing drops or edits.

Mixing can be an epic, confusing process at the best of times, so it's worth



Zeroing the mixer is a good idea, even in these software-dominated days of mixing as you go

doing everything you can to make it as easy and painless as possible. A relatively complex mix might comprise over a hundred tracks, and you can be constantly scrolling up and down the mixer and/or arrange page to find the track you're after. It pays to organise your tracks into a logical order, using colour coding if possible, so that you can confidently get straight at it. Put all the vocals together, all the drums and percussion, all the synths, etc, and by adopting an order that runs through all your mixes, if you ever have to revisit one, you should be able to quickly find what you're after. That organisation naturally extends to naming all the tracks as well – but you've done that already, surely...
Some DAWs (Pro Tools, most famously)

enable you to customise mixer and arrange page layouts, so you can create different windows for different instrument groups (drums, vocals, etc), which can again speed up access time and make you feel more in touch with the mix.

Bussing about

Sub-grouping the audio outputs of instrument groups also makes mixing easier. For example, routing all your drum tracks to a single stereo bus channel before they reach the main output means that you can not only quickly adjust the overall level of the drums as one entity (which, generally speaking, they should be) but also process the whole group with insert effects.

If you have time, it's well worth going through the audio tracks in your project and checking all crossfades for clicks and glitches, especially on vocals. And while you're on the vocal, check for clipped breaths and other sounds that will become exaggerated by the compression and EQ you'll soon be applying. Cutting out noises from amps or headphone spill beforehand is also a good idea.

Audio junkie

Some people like to render plug-in (and, indeed, external hardware) synth and sampler parts as audio tracks prior to mixing. This is good practise, because MIDI can be erratic in terms of timing and note lengths, with notes hanging or not firing, synth patches changing unintentionally, etc. It also means you have a reliable audio archive of the part should the software you used to make it ever become redundant.

Finally, get your head into the right space by assembling a few aspirational commercial tracks for A/Bing with your mix. Don't be disheartened by the initial gulf in quality between yours and the pro mixes – with practice, it will gradually narrow.

What makes a good mix?

The question of what makes a good mix is hard to answer in under a million words, but there are a certainly few salient points to bear in mind.

A good mix feels like an excitable dog on a lead – it wants to leap out of the speakers at you. For that there has to be a certain level of 'punch', and that comes from the skilful use of compressors on both individual parts and the mix as a whole. There also has to be an excitability, and that comes from precision equalising, particularly of the treble frequencies, creating clarity and brightness. There also has to be something for the ear to focus on: one dominant part at all times to lead you through the song. That might be a lead vocal interspersed with a riff or tune of some description, but never should two unconnected parts compete for listener attention. That's prevented by using clever balancing and riding the volumes of the

separate parts.

There should also be something to keep you interested from beginning to end, and that's also where dynamics come in – a charming combination of varying levels through different sections of the song: quiet and loud, light and shade, intensity and release.

A good mix also has a warmth, weight and power to it that comes from the distinct working of the bass frequencies with EQ and compression.

And last but by no means least, a good mix has a middle frequency balance that makes musical sense of the arrangement. To illustrate this, turn the music on at any point in your track and you should be able to understand what's going on immediately.

So, that's a good checklist to run through as you approach the end of your mix – just ask yourself: does my mix fulfil all these criteria?

Mixing it up

Most tracks in your mix will need some degree of EQ to make them fit with everything else. Many will also need compression to push the energy and 'size' of the mix. These processors are added as inserts into the mixer channels. The order of the two can vary, but as a general rule, EQ should come after compression, because the latter can affect the tone. If the part needs extreme EQing, however, such as rolling off the low end, the other way round may well prove the better option.

As you go through each track, listen to it in solo and apply EQ to bring out its best qualities. Then drop it into the track and listen to what you need to do to make it stand out in the mix and avoid interference with other parts. For example, an organ sound might be rich, warm and full on its own, but in the track, its low end could interfere with the bassline itself, turning

the bass end to mud. In that case, a reduction of the low frequency band of the organ from 150Hz down (known as a shelf roll-off) should do the trick, separating the bassline from the organ; and a slight boost of the mid-range, between 800Hz and 1kHz, might help articulation.

Physical presence

Always be careful not to overdo the 'attractive' frequencies – the upper mids and highs. If you EQ everything in isolation to have more bite in the presence (upper-mid) range (around 2kHz), they'll all be competing for the same space when you drop them into the mix, getting in each other's way and focusing all the sound into a narrow frequency range, which makes the mix sound small and thin. Our hearing perceives music as louder the more frequency ranges are occupied: a simple example is a jet plane and a

pure tone. If both are played back at the same measured decibel level the jet will sound much louder as it's a broadband noise ranging across all audible frequencies, whereas the pure tone is a single-frequency sine wave occupying just one band. By EQing parts into different tonal areas, not only will you increase the size of the mix, you'll also increase the clarity and separation.

If a track is coming and going in a mix, or notes are tailing off, leaving a hole, or if it feels limp and weak then compression is the answer. A good compression setting start point is a 4:1 Ratio (literally the ratio of input level:output level) with a medium Attack time and fast-to-medium Release. From there, lower the Threshold to set the point at which the compressor kicks it into action and experiment to get the result you're after. More on compression later...

> Step by step EQ and compression basics



- 1** > A very useful tool for rolling off troublesome low frequencies is the high-pass filter. Guitars and keyboards often generate sub-harmonics, and vocals can be boomy, interfering with the bassline and creating a cloudy bottom end. Here (and on the DVD), a steep filter on the acoustic guitar gets rid of all frequencies below 130Hz to give the bass clarity.



- 2** > Scooping out mid-range frequencies can open a sound up, make it softer and less woody, and help to unclutter layered instruments. Here, a bongo part is opened up with a mid-range cut at around 600Hz. Precision boosting of mids can help the articulation of a musical part in the mix.



- 3** > From 1.5-6kHz, the upper-mid range (aka the 'presence range') deals with clarity, edge and intelligibility. Use this to make a part cut through the mix, but be careful not to overdo it. Here the vocal is boosted around 2kHz to help it dominate.



- 4** > The bandwidth is the size of the area around the centre EQ frequency that's affected by your adjustments. A reliable old hip-hop production trick is to use big boosts of very narrow bandwidths on very specific frequencies. This helps the bass and kick drum in our track – a couple of narrow boosts shape the kick well.



- 5** > Attack determines how quickly the compressor kicks in. Set the **Ratio** to 4:1 (generally a good starting point) and lower the **Threshold** until you have 3-6dB of gain reduction. Adjust the **Attack** time as you listen to the percussive start of the sound. You're looking for bite, clarity and a natural-sounding envelope. The guitar in our example on the DVD is clean when set right and squashed with a fast attack.



- 6** > The compressor's **Release** time is another key setting, controlling the sense of energy in a sound, as well as the smoothness of the compression. A fast Release energises a sound, but also brings up noises and makes compression obvious, which can be a good thing, as with the sidestick in the audio file on the DVD. This Bomb Factory plug-in offers fast Release times.



Lend us your ears

You've recorded the song of your life: the arrangement's perfect, the instrumentation is sublime and the performances are out of this world. Now all you have to do is balance and blend the parts into a mix that concisely expresses the emotion and energy of the song, and that stands up beside the countless other excellent mixes out there. Mixing is all about your ears. You might know what an EQ or reverb is or how a compressor works, but if you don't serve your ears with quality monitoring, it really is all for naught.

To use your ears effectively, you have to have a pair of decent monitor speakers in a room that you're very used to. By that, we mean a room in which you listen to other music and like what you hear and therefore know how a mix of your own music should sound in that environment. If other music sounds boomy or overly bright in your monitoring system, it's fair to say that your mixes will come out sounding the opposite of that, as you'll automatically compensate for such problems when mixing.

None of this necessarily means that you have to buy an expensive pair of monitors - most hits of the last 25 years have been partly done on Yamaha NS-10s, which were relatively cheap. You will probably, however, need to use dedicated monitors of some kind, rather than hi-fi speakers, the difference being that the former are designed to give you an even representation of the overall balance of frequencies, while the latter are designed to flatter the sound by taking out the mid-range frequencies and enhancing the bass and treble. The midrange is key to getting a good balance, because the fundamental frequencies of most instruments are in this range, so it helps to be able to hear them clearly and evenly.

Being able to hear clearly doesn't mean that you have to spend thousands of pounds on acoustic treatment either, although some can help. Most music is heard in living room environments and sounds fine, so it should be possible to furnish your room and position your monitors and listening point in a way that makes sense of what you're hearing.

> Step by step Using reverb and delay



1 > Rather than use reverb on every channel as an insert effect, which could bring our computer to its knees, we use a shared channel (aka, auxiliary) into which we can send a bit of signal from any other channels we like via their **Send** controls. Here we send a bit of vocal via Send 1 to a reverb on FX channel 1. You can use other channels' **Send 1** knobs to apply the same reverb to part of their signal.



2 > We want a general purpose reverb for our vocal and instrument channels, and in this case, nothing works better than a plate setting. The plate reverb type tends to add subtle space and size to a sound, particularly vocals. An alternative to this, however, could be a hall or chamber setting. Try them all out and get to know the character of each one.



3 > The most important parameter of a reverb patch is the reverb time (often referred to as RT). This dictates the size of the space and generally sits somewhere between 1 and 2 seconds. Big spaces - churches and cathedrals - will have RTs up to 5 seconds and beyond, while rooms might have RTs below 1 second. This vocal reverb has an RT of just over 1 second.



4 > Long reverbs on drums are OK for slow tracks, but things can easily get too washy. Room reverbs tend to work better as a general rule, and the key parameter after the reverb time is the high-frequency damping. Stone rooms are brighter than wood rooms, which are brighter than furnished rooms, for example. Here, a drum room reverb plug-in is set up on auxiliary send 2.



5 > As you'd expect, any instrument generally sounds good put into its natural environment. Chances are you won't have a hall to record in, so an artificial model of one is a good second best. Here, the acoustic guitar is placed in a hall reverb on send 3, which enriches the harmonics considerably.



6 > With a long delay on FX Channel 4, we can send a bit of vocal into it for a classic echo effect. Try a quarter-note delay synchronised to the tempo of your song. We've inserted a reverb after the delay with a tweaked wet/dry mix on the former, so that the delay goes to outer space. We've also added an envelope-controlled filter after that for even more atmosphere. There's no limit!

> Step by step

Adding interest with plug-ins



1 > When mixing, you're always looking to add character to your track. Filters are great for this, and an oft-used trick is to filter the drums into a narrow band in the intro before opening them up as you go into the main song. The example on the DVD uses a vintage-style filter, and an automated Bypass button switches the tone back to normal for the verse.



2 > You should be striving to add size to the mix, and one way to do that is to broaden the stereo width. Here, the acoustic guitar sounds big and wide, which was done by putting it through a stereofier: Air Width in Pro Tools. However, a stereo pitchshifter set 5 cents up on one channel, panned left, and 5 cents down on the other, panned right, is good for widening if you don't have a stereoiser.



3 > Synth sounds are often too clean and tidy out of the box and benefit greatly from a bit of roughening and distressing with distortion. Any number of plug-ins are available for this and you'll develop favourites through experimentation. Here, Audio Damage Kombinat is dirtying up our very clean flute sound, not to the point of nastiness, but just enough to give it some edge.



4 > Always look to up the energy of the mix if things start sounding pedestrian. A synth pad of held chords that seemed like a good idea during recording/writing might need pepping up. Making it pulse in time with the track on eighth- or 16th-notes, either on its own or mixed in with the original synth, will add drive to the part. Here and on the DVD, our Wurlitzer is getting the pulsing treatment.



5 > You're also looking to add specific moments of interest to your mix. Any good dance track will employ a sliced beat or two and Audio Damage's Replicant is a randomisable slicer that's perfect for livening up a tired drum fill in a mix. It's so random, in fact, that it's best to record it and edit the audio afterwards. Here, it's livening up our intro drums.

POWER TIP

>Automating parameters

Very obvious effects get boring after a very short time but can bring welcome momentary change to a mix - for example, a long delay on a specific word or a big reverb on the last drum beat. Using the power of effects automation, your mix need never have a dull moment. Riding up the delay send on the vocal channel for one word or increasing the feedback level can all be recorded into your DAW's automation system. Similarly, filters on drum loops can be programmed to open up for instant fills.

Getting to know you

The world of effects plug-ins is massive, and with so many at your fingertips, the danger is that you won't get to grips with the fundamentals of any one in particular. While presets are great to get you started, time spent getting to know the ins and outs of an effect can enable you to be more precise with your intentions and more original with your results. Here are a few starting points to consider.

Time delay effects

This covers a wide range of processors beyond the plain old echo, including chorus, flanging, phasing, doubling and slapback delay. The first three use short, varying delay times to create a sweeping sound with enriched harmonics, which can be useful in a mix to thicken sounds. Chorus is especially rich, but can tend to make things overly soft if used too liberally. Short delays can be useful to widen a mono sound into stereo. Doubling involves a slightly longer delay time and is often used on vocals to thicken them up. Slap-back is longer still, and is another great vocal effect to consider instead of reverb. It was used a lot in 50s rock 'n' roll and by John Lennon. It's usually best to run all time delay effects on auxiliary sends, because they require a mix of the dry and effected signal.

Filters

You'll no doubt be familiar with filters from having played around with soft synths, and they're basically extreme EQs. As insert effects, they can radically change the tone of something if it's getting in the way or just doesn't sound exciting. You can add some interesting movement to a mix by modulating the filter cutoff frequency, either cyclically with an LFO, perhaps in time with the session tempo, or according to level with an envelope filter.

Distortion

One of the most useful processors when it comes to bringing energy to a flat or overly clean sound. Usually used as insert effects, distortion plug-ins come in all shapes and sizes: amp simulators, stompboxes, bit crushers and more. If a mix is sounding too light and polite, a few judiciously applied distortion plug-ins can bring the edge and darkness you're looking for.



The song remains the same

Vocals are the most important feature of any song-based mix. They have to sit on top of the mix at all times, at a level loud enough that they can carry the tune but not so loud that the backing track sounds small. It's worth making a comparison with reference tracks to get a good working level. You'll notice that in a professional mix, the backing vocals allow the lead vocal to be more prominent without appearing isolated, and effects are used to glue the vocal to the track. The tone should be bright but not harsh, and the vocal should be clear, with a full body. A touch of delay or reverb will make it sound bigger and sit it in the track.

These days, people aren't as tolerant of wayward tuning, so a pitch correction plug-in is useful to have to hand in case any off-pitching rears its head.

Any backing vocals are there to support the lead and accentuate the importance of specific sections. They don't need to be as bright as the lead vocal, but they do need to be fully legible. You can probably take some of the mid-range out, especially if your backing vocals are multitracked, to avoid them getting too thick. Listen for out-of-sync 'esses' or extraneous noises in the backing vocals and cut them in line with the lead vocal to make them less distracting.



Vocals are the most important part of a track, so they need to be very prominent in the mix

> Step by step **Sitting the vocal**



- 1 > A high-pass filter is often useful as the first insert effect on a vocal channel. Set to 80Hz, it rolls off general rumble from the room without affecting the warmth of the vocal. Vocal 'pops' can be blitzed by automating the cutoff frequency up to 250Hz wherever they occur, but listen carefully to make sure it doesn't sound too thin.



- 2 > No vocal should be mixed without compression, and saturation can be a real boon. A compressor with medium **Attack** and **Release** (auto release can be smoother if your plug-in offers it) and **4:1 Ratio** holds the level, and something like PSP's amazing VintageWarmer plug-in can drive the signal to saturation, upping the energy and intensity while holding it at the top of the mix.

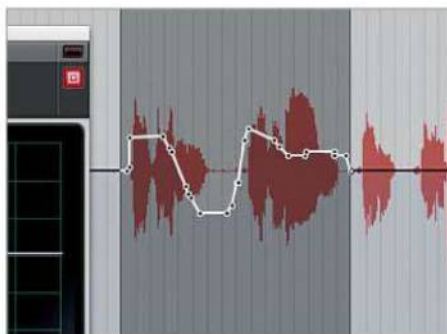


- 3 > EQ is essential. Boost around 2kHz for intelligibility and to cut through the mix, but don't overdo it. A boost from 8kHz upwards will add air and sparkle to a dull voice, and if the voice sounds thin, add a touch at around 500-800Hz. If it sounds overly hard, lose some around 1kHz. If the 'esses' are sounding overly sibilant, insert a de-esser after the EQ, but be careful not to give the singer a lisp!

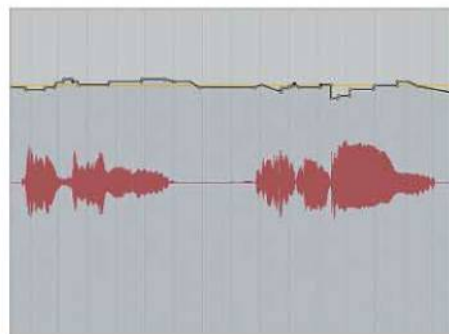
POWER TIP

> Mic check

Before doing any processing or balancing, check the vocal thoroughly in solo for vocal edits and noises. It might seem like a waste of time, but this can actually save time in the long run. Unnatural sounds and spurious noises will be exaggerated by the compression and balance of the voice, so check that all edits are crossfaded. Listen for a natural, smooth delivery, as if it was one complete take, including natural breaths and pauses. Clipped breaths can be particularly problematic if left unrepaired.



- 4 > There may be occasions when you need to automate the EQ for the tone to remain consistent throughout the song. If the singer moves in to the mic for a quiet verse, the tone will become bassier, so roll off low frequencies from 150Hz for those sections. Similarly, in very loud sections the vocal might sound too hard, so a 1kHz dip can help. Here the low frequencies are being ridden in the bridge.



- 5 > The vocal level in the mix is critical, and even half-decibel changes make all the difference. Work through the song, recording fader level automation. Real-time fader rides (ie, raising and lowering) with a mouse or MIDI controller can be tweaked with on-screen changes for fine adjustment. Ride the lead vocal, then balance the backing vocals with it. This is one of the last things to check.

Drum compression

The drum kit is truly transformed with judicious compression. You always want it to be punchy and powerful. Individual drums like compression but it's easy to get it wrong. There's a balance to be had between the attack of the hit at the front of the sound and the weight of the drum behind it. The key is in getting the compressor attack time sufficiently slow that enough of the transient hit gets through for impact, setting the threshold level so that it punches but isn't strangled, and getting the release time fast enough that the decay pumps back at you with power. It's a fact of psychoacoustics that we hear shorter sounds as quieter than

longer sounds of the same decibel level, so effectively, the longer the drum decay, the louder it will seem.

With miked drums, compression can cause problems, because the spill from other drums and cymbals (especially the hi-hat) is increased, creating nasty, confusing tones. At the same time, though, this can be a good thing with overhead mics and room mics, as the compressor tends to 'glue' the kit together - the kick drum pumps the cymbals, for example. This isn't an issue with samples and drum machines, which is one reason why it's hard to unify the sounds of a sampler.

As demonstrated below, sub-grouping drums and routing



The drum kit is one instrument that really benefits from judicious compression

them to a flat *and* compressed bus (parallel compression) gives you the best of both worlds, combining punchy compression with the

dynamics of the uncompressed sound. A good technique is to bring the compressed group up gradually as the mix develops.

> Step by step Mixing drums



- 1 > The kick drum has to be punchy, weighty and tight. Some compression with medium **Attack** and fast **Release** settings gives it punch. To give the kick more front or click to cut through the mix, we boost at 2kHz. We also boost at 70Hz for weight and 120Hz for power. Notching out 250Hz helps with the clarity.



- 2 > Hopefully your snare was recorded using two mics - top and bottom. Top is for the power of the drum, bottom is for snare buzz. Snare compression is similar to that of the kick, although the bottom channel can have a fast **Attack**. Balance the two, EQ in some presence around 2-3kHz and maybe open the top end with a shelving boost at 6kHz. A boost around 200Hz helps with fullness and weight.



- 3 > Because toms are hit so infrequently and can ring on in the background, edit around them. Compress them like the snare drum with fast release, EQ up the sound of the skins between 2 and 6kHz, and boost between 80 and 140Hz for weight. Notching out around 400Hz can open toms up and make them less woody.



- 4 > The level of the hi-hats is crucial, because it helps motor the rhythm track. Depending on the material, it can be good to add some spitting aggression to hi-hats using fast compression. EQ is often used to roll off low-frequency spill from the kick and other drums, and to add some edge around 6kHz. On ballads and 'nicer' tracks, you can also bring out the more extreme top end over 12kHz.



- 5 > When mixing a drum kit, treat it as a whole single instrument, with the room mics and overhead mics as the most important elements, and the close spot mics as in-fills. With each of these we're trying to get the whole kit sounding good in a space. Extreme compression on the 'room' can energise the whole track.



- 6 > If your DAW enables it (most do), parallel group compression of the whole kit can be very useful for keeping the punch of the drums together in the mix. Here we're using a send rather than sub-groups, which isn't ideal because of the stereo image, but it works.

> Step by step Mixing bass



1 > It's really important to keep an even and constant weight to your bassline. Use compression or even full-on limiting to maintain a ceiling level. A medium **Attack** will keep some transient impact in the playing, and a medium/fast **Release** will maintain a natural feel.

2 > It's hard to find space in a busy mix for clarity at the low end. An amp sim drive with a touch of distortion will impart some bite. Of course you can go over the top with distortion if you like, too. The bass in our example was recorded with drive but we're adding more with an amp sim.

3 > We're boosting everything below 120Hz with a shelf EQ for more weight. To make it less cloudy, we notch out a narrow area around 200Hz. For definition, we boost around 1kHz. It might seem odd, but a filter roll-off below 50Hz can tighten the sound and raise the perceived volume.

> Step by step Mixing guitar

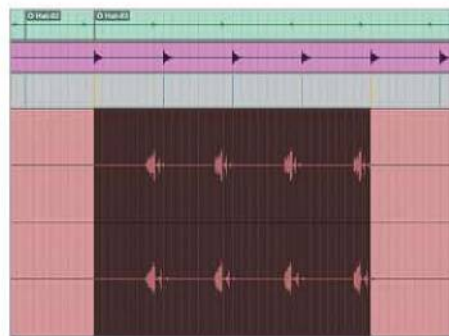


1 > With electric guitar, always record the DI signal along with any amp mics, so that you can re-amp afterwards. This session was just recorded with the DI signal straight into our DAW, so it needs to be treated through an amp sim, as shown. We're using a classic Marshall emulation.

2 > The old amp spring reverbs were good for character. Here we've mixed a bit of spring reverb in with a touch of slapback echo, set to around 120ms delay time and a single repeat. The echo works better when the playing is more sparse - when things get busy, it can get confusing.

3 > It is possible to get the right tone just using an amp, but usually EQ is necessary to fit it into the mix. In this case, we've added some bite in the presence range (around 2kHz) for cut and edge, and cut a touch of lower mid-range to open the sound up.

> Step by step Mixing keyboards and synths



1 > Pad sounds are generally legato synth parts that fill the mix out, usually in the lower mid-range. They don't get in the way or draw attention, but can be more prominent if it suits the track. Here and on the DVD, a Wuritzer part does the job of a pad, warming and broadening the sound.

2 > A lead line should take over from the vocal at the forefront of the mix as the focal point. Getting the level right is key, and the automation should be ridden in the same way as with the vocal, to keep it in the right place. In our example, we ride the piano solo out of the mix.

3 > Incidental and subliminal noises are used to add interest and mystery. Generally they'll be at quite a low level, but occasionally it's good to have an odd noise jump out of the mix to surprise the listener. In our example, the reverse effects do that job.

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Getting the balance right

Once all your sounds have been processed individually, they need to sit together. You might have balanced them to some extent as you worked the solo parts, but you may not have been really listening to the big picture as you did it, so it could well be skewed. It's worth muting everything and throwing up a fresh balance quite quickly so that you don't over-focus - thinking too hard about the mix can turn it into more of a cerebral project than an aural one, which absolutely isn't the way it should be.

Any mix balance starts by establishing the foundation, usually the rhythm track - drums and bass. Get a good groove and the mix will look after itself to a certain extent. One by one, introduce the harmonic elements, the bits that articulate the musicality and mostly occupy the mid-range. At a reasonable monitoring level, set them against the groove, consider where they should sit in the stereo picture and pan accordingly. Remember, you can automate the panning if an instrument needs to take centre stage for a section, and things can move around, too. Every now and then, drop the vocal in to make sure there's still space for it.

"Imagine that your mix is leading the listener, someone who doesn't know either you or the song"

Check that the frequency balance is good - not too dull or too thin - by referring to other tracks. A common fault is for the mix to be too dull, so you might have to push the levels of the brighter instruments: hi-hats, acoustic guitars, etc. You may need to tweak individual EQs along the way, too.

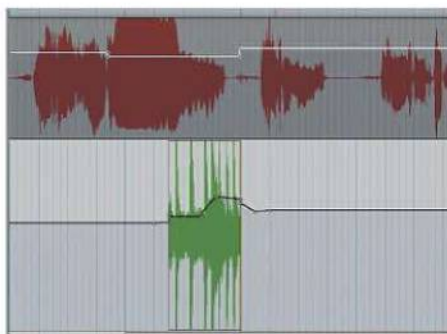
Imagine that your mix is leading the listener, someone who doesn't know either you or the song. It needs to be exciting and unpredictable, but not jarring, and you need to provide a focus throughout, be it a vocal or lead instrument. To achieve this, use mix automation to ride the relative levels. Try riding levels around section changes for dynamic excitement, too, and make sure the change builds or falls in the right way.

> Step by step **Balancing and automation**



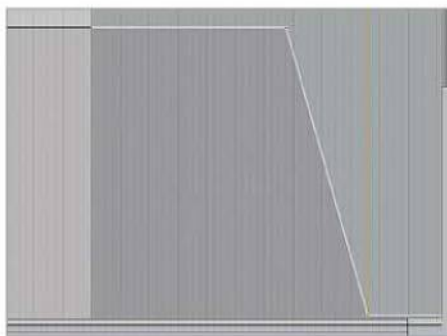
1 > Mute everything, then, part by part, starting with the rhythm track, build a mix with no dynamic automation. This static setup should give a good representation of the song with an even tonal balance. Check it against reference tracks to make sure it's bright and full enough, and do any tonal tweaks to individual EQs as you hear fit.

2 > Exploit the stereo soundstage as much as possible to create width. Bass instruments and main drums tend to stay in the middle of the mix, but there are no set rules and odd panning can work as a pleasant surprise sometimes. Automated panning is an option, too, for swirling instruments or bringing featured moments into the centre.



3 > When musical changes are approaching (the transition from verse to chorus, for example), consider how you can telegraph them and/or build them up to create a dynamic moment and, after the change, ensure the mix lives up to that build. Bridge sections before a chorus should do as the name suggests, serving as a musical link between it and the verse.

4 > One of the last things to do before committing to a mix is listen through to the vocal level and any other principal parts. Listen at a normal level and refer to other tracks to make sure the vocal is dominant enough and not too imposing. If necessary, apply manual automation changes.



5 > Another final job is to check the beginning and end of the mix. Listen to the front for noises and leave a bit of silence before the start for later mastering work. Check the end of the mix for any fade or 'hangover' noises you don't want. You can always leave the fade-out until later if you're not certain.

6 > Most DAWs have a 'bounce to disk' option. Set the start and end point, and bounce away. Check that the mix level doesn't go into the red at any point. If it does, you'll have to work to bring everything down proportionally - save a new version of the project before you do that, though. Do a final check of any mix compressors or EQs and you're done. See you in the charts!

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Mixing tips and pitfalls to avoid

REST YOUR EARS

After only a few hours of concentrated listening, your perception shifts and wrong decisions get made. The beauty of instant recall with software mixers is that you can work for short periods of time on a mix and come back to it fresh, even if you work on other tracks in between. The best work on a mix is usually done in the first hour.

DON'T KEEP RAISING LEVELS

It's all too easy to get into a vicious circle of turning one thing up after another as parts compete to be heard. Instead, try turning things down and use EQ and panning to create separation and space.

OVER-EQING

Similarly, there can be a tendency to keep boosting the presence range (around 2kHz) on the EQ of everything because that also increases the subjective loudness. This just leads to a harsh, thin mix, though. You're looking for parts to be spread evenly across the audible frequency range. That way, elements don't compete and the overall sound gets cumulatively bigger.

A/B YOUR MIX

Have Winamp, iTunes, Spotify or your other media player of choice running in the background with a playlist of reference tracks open - ie, tracks that you ultimately want your mix to sound like. Constantly referring to them can make certain you're keeping to the path. If you think your mix is better than the reference, though, you're almost certainly wrong: you've probably not matched the volumes, or worse, your monitoring is set up poorly.

LISTEN AWAY FROM YOUR ROOM

It's always good to try and get a broad perspective on the mix, so regularly make a copy and listen in another room and/or your car. Listening with other people also helps you to hear it differently.

YOU CAN'T MIX ON HEADPHONES

It's nigh on impossible to mix entirely on headphones and get good results: it's just not a natural way to hear music. They're good for checking the finer details of a mix, in



Keep your media player like Spotify open so that you can refer your mix to commercial tracks in your genre



If your EQ curves look like this, you're very likely overdoing it! Boosting the 2kHz presence range might increase perceived volume but it will grate over time, so go easy with those knobs

particular panning and reverb, and for hearing clicks and noises, but they're tiring after a short time and damage to your hearing is always a danger.

LIMITING

Some people mix through a stereo compressor from the off. It can make balancing easier by controlling the relative levels but we'd recommend getting a good natural balance and leaving the compression or limiting to the mastering process, when you can really focus on getting your mix loud. That said, it can be useful to have an inserted mix limiter available for quick comparison with your reference tracks, which will, of course, have been professionally mastered.

SAVE AS YOU GO

Red herrings are common when you're mixing and you'll sometimes come to the realisation that it sounded better a few hours/days/weeks/months ago. You should regularly and sequentially save new versions of your project as you mix. If you bounce a rough mix to check outside your studio, always give it a name and save a session file with exactly the same name so that you can go back to it easily.

THE BASS ISSUE

The hardest thing to get right in a mix is the bottom end, which is key to a good overall sound. It's also very hard to hear on a small monitoring system, but you can usually trust car stereos and hi-fis to tell you if there's too much or too little bass.

PHASE CANCELLATION

Be aware that what might sound really wide and 'outside' the speakers in stereo could disappear altogether when collapsed to

mono because of phase cancellation. Although mono isn't used much these days, it's a good idea to maintain compatibility anyway, so that your mix is always true, no matter what it's played back on.

RADIO WAVES

Ask yourself: 'Could I hear this track played on the radio?'. This is a good way of detaching yourself from the mix and hearing it objectively. It's got to excite other people who aren't connected to it in any way, and it has to have more fizz and excitement than you might think.

DON'T OVER-MIX

Mixing isn't about getting the perfect balance. Spend too much time on a mix and you risk killing it by smoothing off all the edges. As you near the end of mix, see how dangerous you can be with the levels of featured parts.

MONITOR VOLUME

All but the worst mix will sound good and balanced at high volumes because your ears compress it into shape, so don't kid yourself by monitoring loud all the time. Louder listening may be appropriate when toning individual sounds, but monitor at a reasonable level when balancing: it's truer and less tiring. If you feel an urge to turn it up all the time, the balance or brightness level could be wrong.

ON THE LEVEL

If you find yourself pulling your master fader back a lot, you could be overloading the mix bus. Start your mix with the channel faders at around -12dB to give you headroom as the mix builds, and be prepared to scale them all back as a group if they creep up too far. **cm**



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Clear your diaries for October 8-10, readers, because there's only one place you're going to want to be: the London Music Show 2010, at ExCeL London!

Formerly known as the London International Music Show, LMS is now run by Future Publishing, makers of *Computer Music*, amongst many other leading magazines for musicians. As well as a list of music industry exhibitors longer than your arm, the show will play host to the fully interactive Sound and Recording Technology Zone, in association with *Computer Music*

and *Future Music*.

To say that we've got some spectacular features in the pipeline for this would be quite the understatement. From artist masterclasses and tutorials on all aspects of high-tech music making, to industry seminars and demos, we're planning a collection of events that are going to be utterly unmissable for anyone producing music on their PC or Mac. Think of it as **cm** brought to life right before your eyes.

Needless to say, the **cm** team will also be on hand, as will a veritable galaxy of star producers

and musicians - it'll be a pleasure just to hang out there, never mind the knowledge you'll be picking up!

Although tickets aren't on sale yet, we can tell you that the opening times are 10am-6pm on Friday and Saturday, and 10am-5pm on Sunday. We'll be bringing you further details in the magazine next month, but do keep an eye on our Facebook (www.facebook.com/computer.music.mag) and Twitter (twitter.com/computermusicuk) feeds for updates as they happen, and find out more at www.londonmusicshow.com.

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cmDVD

PC MAC

Time+Space UVI Soundstation, 2045 dark dub samples, the latest reader demos, downbeat don Bonobo on video and more on this month's disc!

DVD contents Full software

Full software

Time+Space UVI Soundstation
(PC/Mac)

g200kg KeroVee (PC)

Voxengo SPAN (PC/Mac)

Demo software

discoDSP Discovery Pro R5
(PC/Mac)

IK Multimedia AmpliTube 3
(PC/Mac)

Image-Line Drumaxx (PC/Mac)

Loomer String (PC/Mac)

Stillwell Audio Bombardier
(PC/Mac)

Studio Units plugin collection (PC)

Tutorial files

...And The Kitchen Sink

cm Focus

Linear Recording in FL Studio

Off The Dial

Sound Essentials

Totally Trackers

Tricks With Time

Samples

2045 24-bit dark dub samples

Reader Music

ABSORB vs Sequel - *Play The Game*

Abstract Greens - *Electric Adonis*

CDUBYA - *Dream*

szdl - *ndrs*

TIME+SPACE UVI SOUNDSTATION (PC/MAC)

A huge collection of hits and loops in a gigantic soundbank for the amazing (and included) UVI Workstation player plug-in instrument. See over the page for step-by-step instructions on installing and using this awesome sample library.

System requirements

PC 2GHz CPU, 1GB RAM,

Windows XP SP2, VST/RTAS host or standalone

Mac G4 CPU, 1GB RAM, OS X 10.4,

AU/VST/RTAS host or standalone

Web www.timespace.com

www.uvisoundsource.com

G200KG KEROVEE (PC)

This clever freebie is designed to create extreme pitch correction effects in the style of Antares Auto-Tune. For more details, see *Freeware News* on p18.

System requirements

PC VST host

Web www.g200kg.com

VOXENGO SPAN (PC/MAC)

Updated with a new interface, new display modes and - at last - a Mac version, SPAN really puts the 'anal' back into frequency analysis.

System requirements

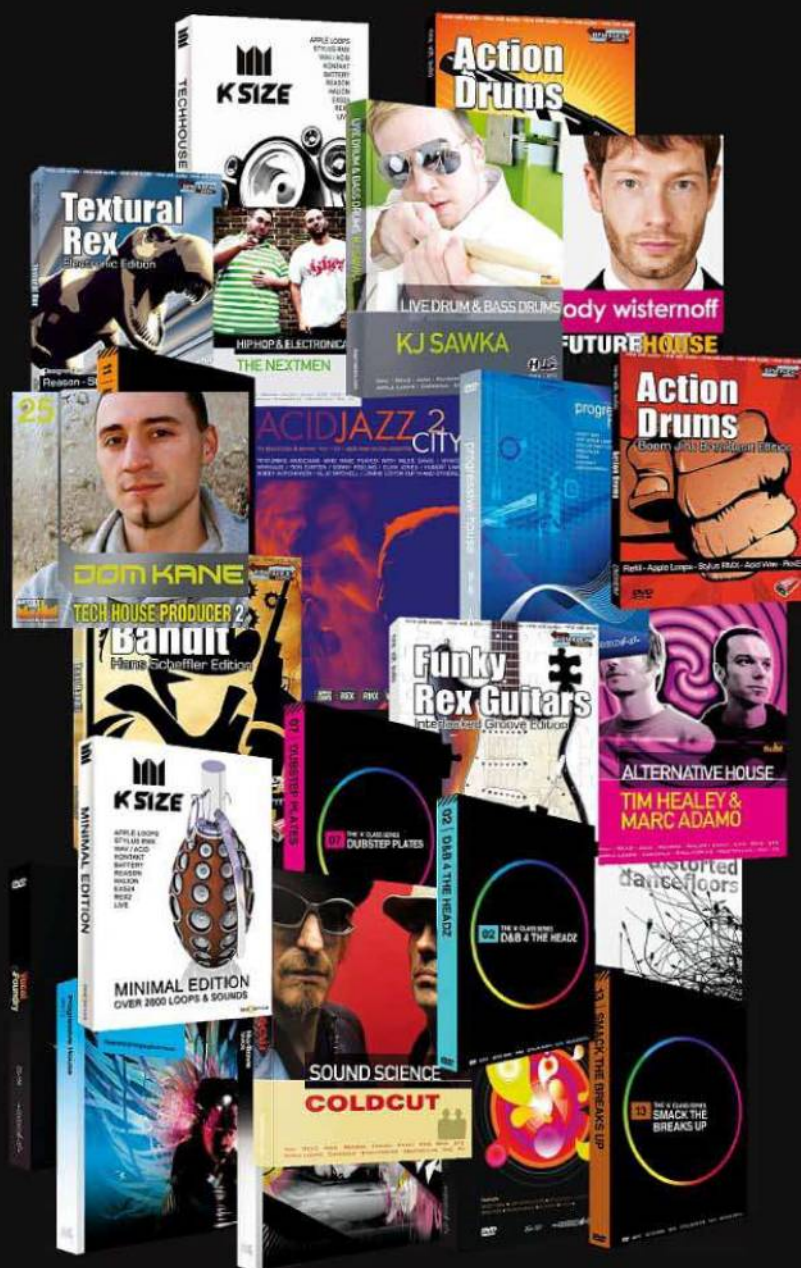
PC 2GHz CPU, 1GB RAM,

Windows XP, VST host

Mac 2GHz CPU, 1GB RAM,

OS X 10.4.11, AU/VST host

Web www.voxengo.com



This month's exclusive free software brings you a collection of samples from 33 Time+Space sound libraries, plus the UVI Workstation in which to play them back

Demo software

IMAGE-LINE DRUMAXX (PC/MAC)

This percussion synth from Image-Line will help you create those robotic rhythms you've always dreamed of, but be aware of the demo limitations, including silence inserted into the output and the inability to load saved patches.

System requirements

PC 2GHz SSE-compatible CPU, 512MB RAM, Windows XP, FL Studio, VST host or standalone

Mac 2GHz CPU, 512MB RAM, OS X 10.4,

AU/VST host or standalone

Web www.image-line.com

LOOMER STRING (PC/MAC)

If strings are your thing, you'll love Loomer's string machine synth, String, featuring divide down oscillators, five filter types and flexible routing. The demo won't allow you to load saved patches, regularly interrupts the output with silence and will only work for 30 seconds at a time.

System requirements

PC 1GHz SSE-compatible CPU, 512MB RAM, Windows XP, VST/RTAS host or standalone

Mac 1GHz CPU, 512MB RAM, OS X 10.4,

AU/VST/RTAS host or standalone

Web www.loomer.co.uk

STILLWELL AUDIO BOMBARDIER

(PC/MAC)

A bombastic bus compressor combining an RMS compression algorithm with five pre-emphasis filter modes, it's just the thing for slapping across your master bus. The demo has no limitations, but if you continue to use it after the trial period, you should buy a license.

System requirements

PC VST host

Mac AU/VST host

Web www.stillwellaudio.com

STUDIO UNITS PLUGIN COLLECTION (PC)

A modular effects processing environment with EQ, delay, compressors, filters and spectral processing, the Studio Units plugin collection is aimed at those interested in the more complex side of sound design. The demo version adds

Image-Line's Drumaxx is just the thing for Autechre-style pitched percussion loops



If you're into vintage string machine sounds, look no further than Loomer String

white noise to the output of some patches.

System requirements

PC VST host

Web www.studio-units.com

DISCODSP DISCOVERY PRO R5

(PC/MAC)

A veritable powerhouse of a plug-in synth, featuring 12 oscillators, sample playback functionality and a shedload of built-in effects. It's not possible to save your sounds using the demo version, and automation is also disabled.

System requirements

PC SSE2-capable CPU, 512MB RAM,

VST/RTAS host

Mac G4 CPU, 512MB RAM, OS X 10.5,

AU/VST/RTAS host

Web www.discodsp.com

IK MULTIMEDIA AMPLITUDE 3

(PC/MAC)

The latest Amplitude boasts over 160 modules, new cabinet and room models with freely movable mics, rotary speaker simulation, MIDI learn and loads of other exciting stuff. The demo functions fully for ten days, after which it will emit an interruptive noise every few seconds.

System requirements

PC Pentium 4 CPU, 1GB RAM, Windows XP, VST/RTAS host or standalone

Mac G4 CPU, 1GB RAM, OS X 10.4,

AU/VST/RTAS host or standalone

Web www.ikmultimedia.com

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!

Time+Space **PC** **MAC** UVI Soundstation



Time+Space and **cm** join forces to bring you an amazing 1GB+ sound library wrapped up in Ultimate Sound Bank's superb sample playback plug-in

> We've teamed up with soundware distributors Time+Space and ROMpler supremos Ultimate Sound Bank to give away this incredible and exclusive 1.1GB sample pack, culled from 33 pro libraries by some of the biggest names in business, including Best Service, Big Fish Audio, Sample Magic, Zero-G and Loopmasters. These royalty-free one-shots and loops include beats, basses, vocals, instrument riffs, synth lines, chord

progressions and sound effects in a broad range of styles, from acid jazz and gospel to dubstep and DnB.

The samples are supplied in UFS format for Ultimate Sound Bank's powerful UVI Workstation instrument, which you'll also find on the DVD. This amazing ROMpler boasts a comprehensive arsenal of sound design and performance features to help you transform these sounds beyond recognition, including playback of multiple

patches at once through separate mixer outputs, the ability to receive input on multiple MIDI channels, a variety of insert and send effects, and full patch editing facilities. It'll stretch loops to fit your DAW's project tempo with its great-sounding timestretching algorithms, and you can even drag sounds straight from the UVI Workstation interface onto audio tracks in your DAW.

In summary, then, UVI Workstation and the UVI

Soundstation soundbank make it an absolute cinch to quickly audition hundreds of loops and build professional-sounding tracks using them.

In this step-by-step tutorial, we'll show you how to install the UVI Workstation software and UVI Soundstation soundbank, and demonstrate just how easy it is to create a complete track using them in no time at all.

Put the DVD in your PC or Mac and we'll get started...



> Step by step

Creating a track from scratch with UVI Soundstation



1 > The first thing to do is to install the UVI Workstation plug-in. This sophisticated ROMpler is a really useful tool for playing back WAV files, REX files, and UFS format soundbanks like the UVI Soundstation. You'll find the installers for both PC and Mac in the **Software\Time+Space UVI Soundstation** folder.

2 > Run the installer and follow the instructions. Once this is done, you need to install the soundbank. Copy the **TimeSpace_Demo_Pack.ufs** and **Uvi_Demo_Pack.ufs** files to **Library\Application Support\UVISoundBanks** if you're on a Mac, or **C:\Program Files\UVISoundBanks** if you're on a PC.

3 > Now you're ready to try them out. Launch your plug-in-hosting DAW - we're using Reaper, which is also on the **cm** DVD. Set your project tempo to **130bpm** and bring up the UVI Workstation plug-in on an instrument track. You can check that the soundbanks are properly installed by double-clicking the first instrument slot where it says **Empty**.



4 > Expand the **Soundbanks** folder and you should see the banks within. Click on **TimeSpace_Demo_Pack**, and a list of seven sample library producers will appear. Each of these is a folder containing two to eight sample libraries. Let's kick things on with a beat. Open the **Sample Magic** folder, followed by **Nu Rave**, then click **nr_drm130_alslivegroove.wav** and **OK**.

5 > Now, we *could* use MIDI to trigger this sound, but it's less hassle to use UVI Workstation's handy drag-and-drop functionality. This will automatically stretch the audio to your DAW's project tempo. Open the **Loop** panel, and drag the **Drag & Drop** waveform onto an audio track.

6 > You'll see the loop appear on the audio track. You can now edit and arrange this like any other piece of audio - pretty slick. Create three copies of this beat to give us an eight-bar loop. Now let's select a different sound in the UVI Workstation plug-in and drag it, too, onto the arrangement.



7 > This time head to the **Big Fish Audio\Urban Contemporary Gospel** folder. Select the **02 - Vocals.wav** sample and click **OK**. In the **Loop** tab, change the mode from **Slice** to **Stretch** - this works much better with more sustained tonal sounds, such as this vocal.

8 > Drag the vocal onto a new audio track. You'll notice that the positioning of the vocal doesn't quite fit with the rhythm of the beat by default, but we can easily remedy this. Turn off your DAW's snap setting, and slide the vocal over, so that the first "higher" plays dead on the start of the third bar.

9 > The vocal sample's audio object now starts off the beat. We can fix this by dragging the start point over to the right, so that it starts on bar 2. Make sure you're actually adjusting the start point of the sample (the vocal's position remains unchanged), rather than moving the audio object (the vocal's position changes).

> Step by step Creating a track from scratch with UVI Soundstation (continued)



10> Slice the vocal's audio object at bars 5 and 6, and move the resulting clip over to fill in the empty space between bars 1 and 2. Select everything after bar 5 to get a handy, correctly positioned four-bar loop of the vocal that you can copy out to create an eight-bar loop.



11> This vocal is a little quiet, so let's turn the level of its track up to **+6dB**. Now we've got a beat and a vocal, let's add some instrumentation. Open up UVI Workstation, and this time select **Nine Volt Audio»Melodic Rex»100-Sprinkles A a.rx2** and click **OK**.



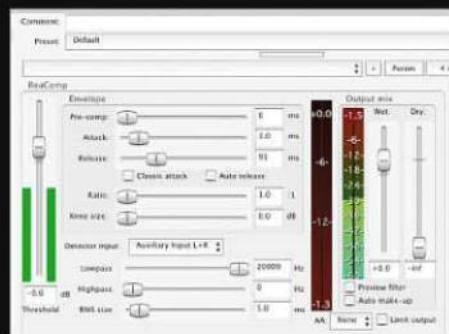
12> As before, drag the audio onto an audio channel using the **Drag & Drop** function. These beats, vocals and sparkly synth sounds are all well and good, but we need some bass to really get a groove going. To make our bassline, we're going to use an instrument patch.



13> Double-click the first instrument slot and select **UVI Demo Pack»15-Ultimate CS70M»RAW Sub to Lead-Light**. Click **OK** to load the patch. On the UVI Workstation MIDI track, copy the part we've drawn here. Our electro-gospel mash-up is taking shape, but the bass needs some sidechain compression to make it pump...



14> If you're not using Reaper, consult your DAW's documentation to see how sidechain routing is handled. In Reaper, add a ReaComp effect to the UVI Workstation channel from the **FX** menu. Change the **Detector Input** to **Auxiliary Input L+R**. Hit the **io** button on the UVI Workstation track, click the **Received** menu and select the track with the **nr_drm130_allivegroove** beat on it.



15> The audio is routed, but we need to send it to the auxiliary tracks, rather than the main 1/2 channels. Click the audio routing menu that currently says **1/2** and set it to **New Channels on Receiving Track»3/4**. Now, upon playback, you should see the threshold meter on the ReaComp pump in time with the beat.

POWER TIP

>Autopilot

To get even more out of these great sounds, be sure to investigate the UVI Workstation instrument's **FX** tab. This hosts dozens of effects across 11 categories, including impulse response reverbs, filters, delays, distortion and modulation effects. Effects can be added individually to each preset, the instrument's master output or either of the built-in send channels. To reorder the effects you've added, simply drag the title bar of one to the slot in the effects chain that you'd like it to occupy.



16> Set the **Threshold** to **-27.7dB**, the **Ratio** to **14.8** and the **Release** to **5ms**. This will give you that characteristic electro-house pump. Note that you'll only get this effect when the beat and the bass play at the same time. To make it pump without hearing the beat, create a channel with the beat on it and route it to the compressor's sidechain input, but uncheck the **Master/Parent Send** box.



17> Now let's create an arrangement. Start with just the beat and after eight bars add the sparkly synth. After another eight bars, it's breakdown time, where the drums stop playing and the bass and vocals come in. After eight bars of breakdown, we have a drop with the beats, bass and vocals. Eight bars later, the sparkly synth joins the party again and all the parts playing at once. **cm**

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PC

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- 97 Drum hits
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- 51 Loops
- 22 Sub bass hits

This collection of sounds was created using a wide selection of hardware reverbs and delays, including a Great British Spring housed in a drainpipe, a Roland Space Echo and a Moog Moogerfooger Analog Delay. The latter enables the delay feedback to be controlled by a foot pedal and routed through external effects, such as a Moogerfooger 12-Stage Phaser, which added shimmer to the repeats.

www.groovecriminals.co.uk

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- 10 Bass multisamples
- 6 Drum kits
- 40 Bass loops
- 22 FX
- 219 Beat loops and FX
- 112 Key and synth loops
- 9 Percussion loops

Programmed in Kontakt and

Battery, these beats were processed with a host of effects, including a Focusrite LiquidMix and a WEM Custom Copicat valve tape echo. A Stylophone, Jem monosynth, Kurzweil K2600r and Roland XP-30 were used for the synth sounds, routed through stompboxes, a Gyraf Audio G9 dual-valve preamp and a G-SSL bus compressor.

Alex Blanco and Johnny De'ath

- 39 Vocal snippets
- 80 FX and Synth hits
- 34 Synth loops
- 16 Beatbox FX and loops
- 12 Live drum construction kits
- 94 Omnichord samples
- 124 Programmed bass and drum sounds
- 85 Drum loops
- 226 Drum hits
- 193 Live bass and drum loops

This amazing selection of sounds from new cm sample providers Alex Blanco and Johnny De'ath includes live drum construction kits,

Fender bass loops, Korg Kaossilator sound effects, Omnichord grooves, drum hits and some MC toasting from Douge Reuben.

www.myspace.com/djalexblanco



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 **Bonobo**

Simon Green's latest album *Black Sands* is a glorious bringing together of organic instrumentation and digital processing. We caught up with him at his Hackney studio to find out how he gets his soulful sound, and in this exclusive video he shows us how he created the track *Kiara*.

Web www.bonobomusic.com



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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.

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VST host and sequencer with modular routing

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Create your own VST synths and effects

INSTRUMENTS

PowerFX Hütkins **CM** (PC)

Sample-based electronica synth

Ummet Ozcan Genesis **CM** (PC)

Another amazing virtual analogue synth

Muon CMplay (PC/Mac)

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Subtractive synth with ring and amp modulation

Homegrown Sounds Astralis **CM** (PC)

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Homegrown Sounds Astralis Orgone **CM** (PC)

Flexible sample-based synth

XT Software EnergyCM (PC/Mac)

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KResearch KR-Reverb **cm** Edition (PC/Mac)

Easy to use, algorithmic reverb effect

Blue Cat Audio FreqAnalyst **CM** (PC/Mac)

Sophisticated stereo spectral analyser



NuGen Audio Stereoizer **CM** (PC/Mac)

Useful mixing tool for control over your stereo spread

Sugar Bytes Artillery2 **cm** Edition (PC)

Multi-FX with internal sequencer

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 Audio CompressiveCM (PC/Mac)

Compressor/limiter with sidechain input

Audio Damage Pulse Modulator (PC/Mac)

Wild, stompbox-esque modulation effect

Betabugz Audio Vascillator (PC)

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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)

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MegaDelayMassCM (PC/Mac)

Sound design-orientated delay module

Sanford Phaser-CM (PC)

Phaser effect with advanced modulation abilities

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Easy-to-use double tracker



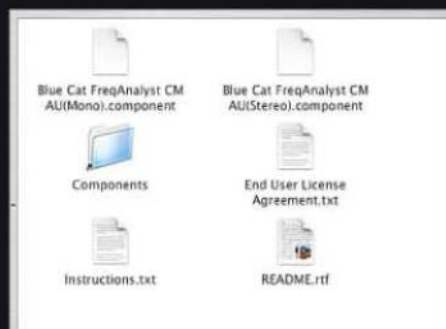
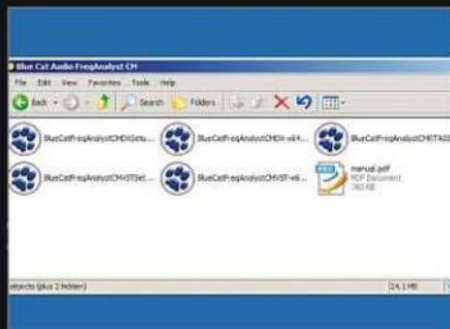
Create powerful analogue-style sounds with the indomitable Dominator

EQing beats with FreqAnalyst CM

We show you how to use our newly-updated signal analysis plug-in to better EQ your beats

PC

MAC



1 > FreqAnalyst CM, the **cm** Studio's signal analyser plug-in, has been updated and is now compatible with Windows RTAS, Windows x64 VST and 64-bit Mac AU. To install the PC versions, run the installers located in the **CM Studio\PC Software\Plug-ins\Blue Cat Audio FreqAnalyst CM**.

2 > For Mac, open the **CM Studio\Mac Software\Plug-ins\Blue Cat Audio FreqAnalyst CM** and double-click the disk image of your format. The **.component** or **.vst** files will appear with a shortcut to the plug-in folder - drag them across to install them. This plug-in is PPC Mac compatible, but only if you're using OS X 10.5 or later.

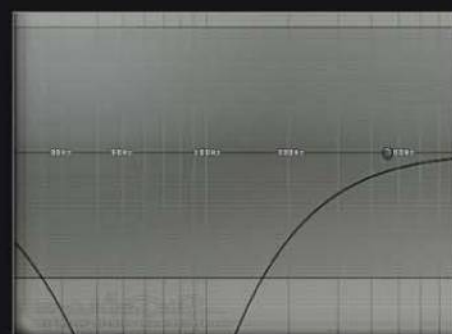
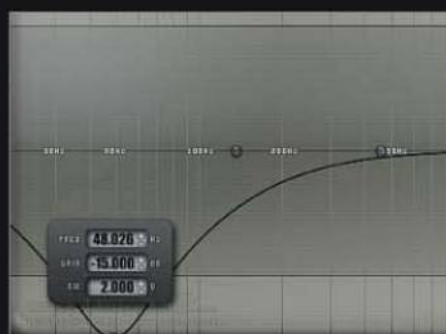
3 > FreqAnalyst comes in two flavours: stereo and mono. The stereo version requires that you register at www.bluecataudio.com/Register/Product_FreqAnalystCM before you can use it. You'll be given a username and key code that you'll need to enter the first time you run the plug-in, as shown here.



4 > Drag **JungleBreak 6.wav** from the **Tutorial Files/CM Focus** folder on the disc onto an audio track, and add FreqAnalyst CM as an insert effect. Set the tempo to **140bpm**, put loop markers either side of the beat and activate loop mode. We're going to play the loop back and examine it in real-time...

5 > When you play the loop back, you'll see two things in FreqAnalyst CM's main window. The first is the real-time spectral display, which bounces around in time with the beat. The second is a more-or less static curve that shows the peak level of each frequency.

6 > You'll see that there's one fairly large peak in the low end upon playback. Turn up the **Precision** knob at the bottom left-hand corner. Play the loop back again and you'll notice two distinct peaks in the lows - one at 48Hz and another at 86 Hz. Let's take them out to leave space for a big 4/4 kick track underneath.



7 > We can use the analyser with EQ to accurately edit the frequency content of the beat. Insert a parametric EQ plug-in before the analyser - any one will do, including the PC VST Electri-Q CM from the **cm** Studio. It's important to place the EQ before the analyser, so you can see how the processing affects the sound.

8 > Drag one of the nodes down to the **Frequency of 48Hz** and **Gain of -15dB**, as shown here. Set the **Bandwidth to 2.00** to cut a big chunk out of the low end. If you're using Electri-Q CM, you can enter data like this more accurately by double-clicking the EQ band's node.

9 > Now use another band to attack the **86Hz** region, again with **-15dB Gain**, but a more reserved **1.5** Bandwidth. Now we can add a kick drum underneath without worrying about clashing lows - find one on **cm DVD** in **Samples\24-Bit CM Dark Dub Samples\Groove Criminals\Drum Hits.cm**

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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

SZDL ndrs

Artist James Walsh
Contact soundcloud.com/szdl



> The post-rock concept behind ndrs is an combination of rock movement and extreme electronic noises, and you need to be able to hear the bottom two octaves to appreciate the pulsing eighth-note bass. In fact, the low end is a bit too much and might cause small speakers to bottom out, but better too much than

too little. The glitched programming of the top-end percussion, with delays and distortion, brings the ultra-modern edge, and the contrast between that and the rhythm guitar with mounting distortion really fires it.

The actual guitar build is frustrating, though, as you want it to happen quicker and more intently, but it doesn't get there until the end, where it suddenly comes in deafeningly loud. Perhaps if the early guitars were to build to a bigger crescendo and have a slightly edgier sound, there would be more payoff, as the distorted guitar would be less of a shock.

The guitars at the end obliterate everything else in the mix, so although they're a good addition and it's good that they're loud, they're a bit over the top and need attenuation.

What the artist says:

"This is one of the first electronic tracks I've done, having spent the last ten years in indie bands. I started with the chord progression and the rest of the track built itself from there. The majority of sounds are manipulated bass guitar, and the rest are taken from drum machines."

Equipment used Apple Mac mini G5, Ableton Live 5, Togu Audio Line TAL-Tube and TAL-Dub II, Shuriken Berrill, Audio Damage Pulse Modulator, Epiphone EB-3 bass guitar, Tech21 SansAmp TRI-A.C. guitar pedal

CDUBYA Dream

Artist Charlene Welk
Contact www.myspace.com/charlenewelk



> Canadian Charlene is a trained pianist with a beautiful voice. This track showcases both talents, as well as proving she can write a good song. With a down-tempo 90s R&B, jazzy feel akin to Erykah Badu, the song has plenty of space and a breezy feel.

It's hard to write, perform and produce entirely on your own - something always suffers. In this case, the song is good, as is the playing, and although the style is in the right area, the production lets it down. It's not miles off, though, and the vocal and song are certainly strong enough to win us over.

The incidental electronica noises are good, and the additional vocal touches in the gaps are great, but if you listen to it next to other tracks, it comes across as a good demo. Things don't quite sit together: the piano is very clean and straight. The same applies to the vocal sound - the tone is lovely and dry, but it's also very 'nice' and needs a bit of saturation to colour it. It could also do with a bit of support from double tracks and harmonies. Overall, though, there's a lot of promise here - Charlene is definitely one to watch.

What the artist says:

"I sat down at the keyboard and wrote the song first. Then I laid down the key track and built it with a bassline and loop. Everything else grew from that. I am pretty happy with the arrangement, but the producing/engineering part has definitely been an exercise in experimentation."

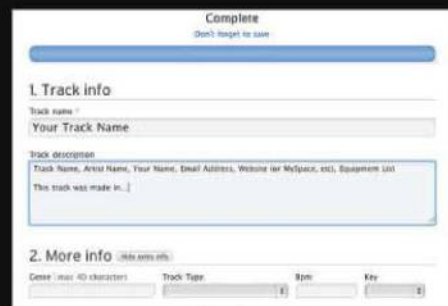
Equipment used Apple Mac and Logic Express, Waves L2 Ultramaximizer, Korg SP-100 keyboard, M-Audio Audiophile USB interface, Behringer XENYX 802 mixer, Audio Technica P48 mic, Yorkville YSM2P monitors



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.



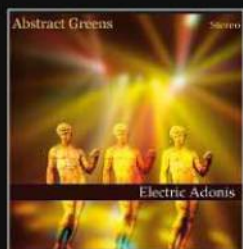
2 > Enter *all* of the following in the **Track description** box: track name, artist name, your name, email address, website (or MySpace), equipment list and a brief description of how your track was made.

ABSTRACT GREENS

Electric Adonis

Artist Richard Mulvey

Contact abstractgreens.bandcamp.com



> This gets the prize for band name of the month. And song name, come to think of it. What's good about *Electric Adonis* is the attitude of the vocal and the looseness of the backing track. It's a good example of how parts don't all need to be perfectly quantised – if this was tight, it would sound too neat. That said, it's too far

the other way at times, which is something to watch out for!

The chorus vocoder part has an eeriness that fits with the delivery of the main vocal. However, the arrangement in comparison to the verse feels empty and the chorus, particularly the early one, loses power.

There are some choice synth sounds playing melodies and the 16th-note bell sequence adds a lot of character. The wah guitar sound is a bit murky – if it was brighter, with a bit more bite, it could tie in with the high sequence and synths.

The overall mix lacks definition in the lower mids and bass end. If you listen to it beside MGMT's album, to which it bears similarities, the latter is still dirty but has much more low-end punch and clarity in the mid-range.

What the artist says:

"This track is taken from the album *Romeo Echo Victor (Deluxe)*. I wrote the track in Ableton Live 8 while experimenting with the vocoder. I came up with the title first and proceeded to write a tune that I felt would suit the title and lyrics."

Equipment used PC, Edirol UA-25, Ableton Live 8, Rob Papen Blue and Albino, GForce Software ImpOscar, Squire Telecaster guitar, Yamaha acoustic guitar, Rode NT3 mic

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!

What's wrong with my mix?

Label owner and veteran producer/engineer Tim Oliver gives his esteemed professional opinion on this month's featured reader demo

Producer/engineer Tim Oliver



With recent mixes in the bag for the likes of Damien Rice and Andrea Corr, plus work on the upcoming Goldfrapp album complete, Tim's had a busy winter. Now he's looking forward to the spring and the emergence of artist Nicole Fermie on his Top Cat label.

ABSORB VS SEQUEL

Play The Game

Artist Oliver Davy

Contact www.absorbvssequel.com



> Oliver refers to the style of *Play The Game* as "electrified grime" and "no step".

They're good names, but, oh, how the genres are breeding like rabbits: sub-genres and sub-sub-genres are everywhere. This is what I myself would call dubstep, but then that covers a multitude of crimes, some good, some bad, some truly atrocious. Luckily this falls into the first category. It's got much more to it than your usual stoner dubstep

offerings – for starters, it's got hooks and it's got form.

This is the original mix of the track, which has an orthodox 'pop' structure based around rapped verses and the repeated chorus with a varied middle section. You can hear the remixes on their website, too. The intro sets up a dark, intense atmosphere with a semi-acappella chorus over a distorted legato bass. It's a perfect opener, because the vocal is totally convincing, and I'm completely sold when the beat kicks in.

The verse bassline is classic dubstep. The rap is locked to the beat, especially during the little triplet jump – a great moment. I like the space in the track: only dubbed organ stabs break up the second half of the verse.

The first chorus is twice the speed of the intro, but it still feels just as dark. The only negative point is that the bass sound doesn't articulate so well in double time with other stuff around it. It growls as it reaches the bottom, which isn't as satisfying as the intro. The beat drops out and the bass changes for the middle section, only to be replaced by more spacey sounds. I think this section could be a bit more wayward than it is, or there could be a darker section before it to take you somewhere different.

The production is excellent: the feel is precise and the space in the construction is well balanced. The overall mix is tough and heavy, yet clear and bright, which is just how it should be – with the skilled arrangement, though, it probably mixed itself. Finally, the vocal sounds, especially in the chorus, are, as the kids would say, sick. I hope the album does well.

What the artist says:

"We wanted to produce something with a more grime-based feel to it and a catchy chorus. The triplet pattern helps move the drums along. We experimented with the main chorus vocal to get it sounding right, and decided on the ring modulator in the end. I'm really happy with it overall, especially the bassline."

Equipment used Custom PC, Cubase Studio 5, Native Instruments Komplete 5, Celemony Melodyne, Toontrack DFH Superior 2, Variety Of Sound Density, mda Splitter, Kjaerhus Audio Classic Series, Allen & Heath ZE ZED-R16 desk, Lexicon MX200 reverb, various guitar pedals



cm Producer Masterclass

BONOBO

The downtempo Ninja Tune artist welcomes you to his London-based home studio and guides you through some of his personal production techniques



Monkeying around

> Simon Green (aka Bonobo) has been steadily on this rise since his first release on Brighton's Tru Thoughts label, and even if you've not heard the name, you're likely to have heard his tracks: they've been featured on TV shows including *Lost*, *Nathan Barley*, *House* and, er, *Top Gear*, among others. However, Bonobo's music is far from just pleasant aural wallpaper. His latest album, *Black Sands*, combines forward-looking beats with catchy organic hooks and the beautiful, soulful vocals of Andriya Triana.

cm caught up with Simon in his Hackney studio to find out more about his intricate production style. How did he get into making music in the first place?

"I went through the usual teenage punk band phase, just bashing around on guitars," Simon says. "After that, I went to university in Brighton. At the time, the whole big beat thing was kicking off. Now everyone is a skinny-jeaned indie boy, but back then, everyone was a DJ. I knew some friends who were in a trip-hop band, using an Akai S950 - when I saw what you could do with a sampler, I started to make music properly."

The musical melting pot of the late 90s went on to influence Simon's early electronic tracks...

"I was inspired by a lot of the Ninja Tune stuff, and Mo' Wax. DJ Shadow was good! The whole sort of house and techno thing never really did it for me, and there was a group of people coming out of California that were making a more interesting, earthy sort of music, like Mike Kandel of Tranquillity Bass. Before that, you were either into bands, hip-hop or techno, and there wasn't much between them. When things started merging a little bit, and beat making got a bit more soulful, it got interesting."

Simon wasn't in Brighton to study music, but time at university still helped his music career.

"I was still in art college at the time. It was a four-year course, but in year one or two, I realised that getting into the world of art wasn't what I was aspiring to, because it was all a bit



Simon's studio is in the attic of his house, and proves that you don't need mountains of gear to produce great tunes

pretentious. The environment and those people were more valuable than any sort of art college education, though.

"I knew a lot of people who were making music in Brighton. Robert Luis had just started up the Tru Thoughts label, and someone suggested I play him some of my stuff. So I played him *Terrapin*, which I had just made - I thought it was a bit silly and that no one would really want to hear it, but it ended up being the first single and going on a compilation!"

In this exclusive tutorial, Simon shows us how he created the track *Kiara* from *Black Sands* - his fourth album on Ninja Tune, the label he signed to in 2001. Combining live strings, shuffling beat patterns, abstract noises and synthesised bass, *Kiara* is a funky epic that perfectly encapsulates Bonobo's sound. Be sure to check out the accompanying video on the **cm** DVD to hear Simon's production secrets straight from the monkey's mouth.

Web www.bonobomusic.com

Bonobo's selected gear

Apple Mac Pro
Emagic Logic Pro 6
MOTU 828 mkII
Native Instruments Kontakt
IK Multimedia Miroslav Philharmonik
Mackie Control Universal Pro
Clavia Nord Stage
Alesis Micron
Fender Rhodes 88
Fender Twin Reverb amplifier
Avalon VT-737 channel strip
TLA Ivory 5021 compressor
Lexicon MPX550 effects processor
Focusrite ISA One preamp
Novation SL Compact 49 controller
B&W CDM1 speakers

> Step by step Creating Bonobo's *Kiara*



1 > The first element to be added to the track is a 909 kick drum sample. "I don't usually use too many synthetic drums, but for this track, I wanted to build a beat out of old drum machine sounds," explains Simon. The kick is run through a PSP VintageWarmer, which gives it a little bit of drive and is used to boost the lows.



2 > Next come some layered snares, including a Dr. Rhythm clap sound, which is driven through a VintageWarmer to boost the top end, then Logic's Space Designer reverb. This is layered with a couple of handclap samples panned to the right and left. These play at slightly different times relative to the beat, creating an overlapping effect, as shown.

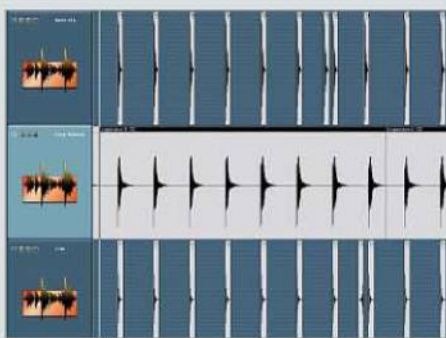


3 > The main beat is layered with other sounds, including extra percussion from NI's Kontakt sampler, and sidesticks and hi-hats placed on audio tracks. "They're really disjointed and sound a bit weird on their own, Simon notes, "but when you put them in context of the kicks, they sound just right. They've just been purposefully pulled about a bit, too."

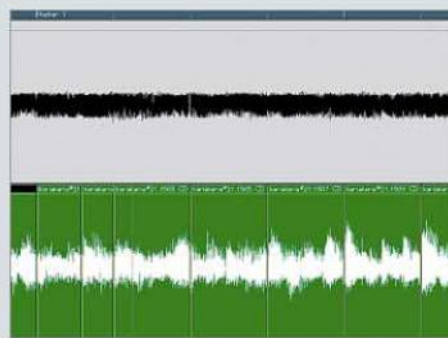
> Step by step Creating Bonobo's *Kiara* (continued)



4 > The shaker sound in the track is recorded in Simon's studio, through his Avalon compressor into a MOTU 828 MkII audio interface. This is cut up and rearranged to fit the track's rhythm perfectly, then compressed with the kick as the sidechain input, causing the sound to duck whenever the kick plays.



5 > Simon bounces all the snares together as a single audio file and compresses them heavily. "You really can't hear it - it's just the tail end of the compression, but I've mixed it in with the rest of snares to give it a bit of extra push," he elaborates.



6 > The musical foundation of the track comes from a sample taken from another track. "I think it was a kind of prog synth record from somewhere or other that I bought for a dollar from a bargain bin," Simon remembers. He slices this up manually to fit it with the beat.



7 > This is a trial and error process, according to Simon: "It's just a case of going through the sample, finding bits of rhythm in this fairly abstract noise - literally just dragging stuff around, so that it looks like it's going to fit! I'll just play around with until I've made enough chops and edits that it fits."



8 > To help the cut up loop fit with the drums, sidechain compression is used, again with the kick drum as the sidechain input. Once this has been applied, the loop sits better with the beat and is ready to have harmonies fitted around it.



9 > To create this harmony, Simon pulls up Logic's ESP synth and improvises around the loop and beat. "I just try throwing some notes against it and see what works!" he says. Adding the synth part helps put the loop in a musical context, too, giving the track a strong musical foundation upon which to build.



10 > The next addition to the track comes from a string patch in IK Multimedia Miroslav Philharmonik. Simon jams with a viola preset to come up with some chords that work with the existing musical material. "It's really just feeling around, seeing what feels right at the time," he admits. "After that, it's just a case of adding stuff to it and finding elements that work."



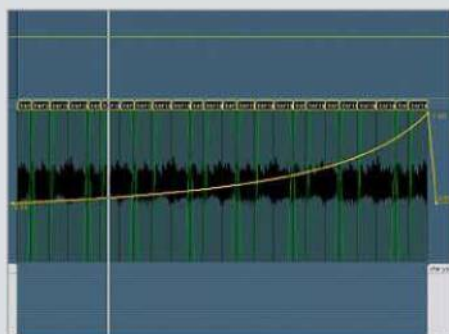
11 > One such element is a sound generated with an iPhone app called 8Bitone. "It's just like an 8-bit synth on the phone. 59p - it's amazing!" Simon enthuses. The sound is recorded into the audio interface via the compressor, and is drenched in dub-style reverb and delay within Logic Pro.



12 > To get a more realistic string sound, Simon records real string parts to replace the existing virtual instrument parts. "It just sounds infinitely better," he explains. The strings parts are all recorded by a single string player in his attic studio, then comped and layered on audio tracks in Logic.



13 > To add a rougher texture and more harmonic interest to the sliced up loop, Simon bounces it to another track and adds effects, including IK's AmpliTube guitar amp simulator and a stereo spread plug-in. Having this processed version on a different track helps maintain the integrity of the original sample, while also adding some extra interest over the top.



14 > During the intro section, Simon uses the Korg MS-20FX plug-in as a low-pass filter to gradually introduce the processed version of the loop. A non-linear automation curve is used to raise the cutoff frequency over a four-bar period, as seen here.



15 > The bassline is created with an Alesis Micron synthesiser. It's made up of two parts: a sub bass, which is spiced up with a little FM sweep at the end of the phrase, and a lead patch that doubles the bass and adds some fuzzy top end to the sound. And there you have it!

Hunting down the best found sounds

Bonobo's tracks are full of mysterious organic tones and intricate, individual sounds – a far cry from much of the synth-based electronic music that's prevalent these days. Simon's creative approach to using samples dates back to his first productions.

"I started making music on an Akai S950 and a rubbish little PC running Cakewalk... that was when Cakewalk was just a load of dots on a screen. There wasn't really much to work with, the Akai was only eight-note polyphonic and only had 1MB of memory.

"It was good to have these boundaries, though, because to make a tune with those constraints you really had to make every sound count. So, for example, you'd take a horn sample, and detune it to make the bassline. You had to recycle samples to make other things; it was a really restrictive way of working. It was a really good discipline for making structured minimal music – now you've got endless boundaries: the landscape is infinitely broad.

"I was particularly into that beat-digging culture at the time, really interested in breaks, and I was quite a snob in that respect. At the time, if you heard a snare drum that you recognised in a tune, you'd dismiss the whole tune, so I was really meticulous about sampling. I tried to find breaks and samples that no-one had used or no-one would recognise, really being quite elitist about it. It's different now that you don't have to do that so much; the rules have changed.

"There was also this argument at the time that, if you were making music with samplers, then it wasn't real music. You don't really get that any more, but it was something to kick against at the time, because it would make you get a bit more creative with it and try and do something that was going to really impress people."

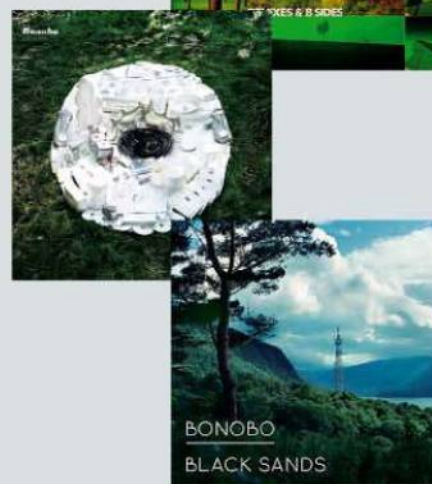
Where did you source these characterful samples?

"Just in charity shops, really! I used to go down to the London Road in Brighton, and for £3 you could get a big stack of records. I always started to find something that wasn't a hook but a foundation – usually a loop, some quirky little charity shop find – and build it up from there."

Do you still buy go digging for records in charity shops?

"No, not at all, because I get access to really good record shops in Tokyo and San Francisco, so the palette of possibilities for record shopping has expanded. Having said that, I don't actually approach music in that way anymore, I'm not so sample-based. I'm not starting with digging for loops and sounds, as the way I sample now is a bit more abstract. I might try to find a 20- or 30-minute percussion-free jazz odyssey and take some really interesting noises and filter them. That's what I look for in samples now: more atmospherics and ambience, rather than hooks and riffs. Now I'm a bit better at recording – I didn't have any gear back then – so now I know that if I really want a sound, I can make it. Now that I've got a few nice bits of kit, I can spend an entire afternoon miking a piano in a really weird way, then simply make the kind of sounds I used to be looking for, but still treat them the same.

"I play most of the instruments myself, apart from a couple of sax parts and some of the strings. I record pretty much everything here, but if I'm recording others, I'll use another studio. I found that one of the rooms downstairs was really good for recording acoustic things, though, so I'll get mic leads and stick them out of the window, and have my laptop set up as a metronome, hit record up here, run downstairs, record, head back up to check it, run back down to tweak the mics, etc!" **cm**



The Bonobo catalogue, including the fabulous downtempo tones of his most recent LP, *Black Sands*, out now on Ninja Tune

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Tricks with time

Spice up your tracks with some creative rhythmic techniques that will transform your sense of groove and melody

> Modern music is defined above all else by rhythm. The tempo of a track, which beats are emphasised and how the instrumentation works within these parameters are the simple factors that can take us from one end of the dance-or-rock music spectrum to the other.

It's perhaps surprising, then, that rhythm is one of the least discussed and openly explored aspects of modern music production – a situation that leaves many musicians stuck endlessly recycling the same old formulas and clichés, and many genres running out of ideas.

Rhythm can be thought of as a method of breaking up time into a series of regular, or at least regulated, steps. These steps typically include strong and weak elements, following some kind of pattern to give a piece of music a sense of a framework or structure.

Rhythm nation

The simplest aspect of rhythm to start with – and the one that most clearly defines music genres today – is tempo.

Our relationship with rhythm is thought by some to recall the relentless heartbeat we heard in the womb. Therefore, a tempo of around 60-80 beats per minute – the usual speed of the resting heart rate – tends to evoke a calm, relaxed state, whereas a tempo of more than 150 beats per minute would tend to induce a more

excited state.

Rhythm also has an interesting effect on how we perceive musical passages. Avant-garde composer John Cage noted that regular rhythms tend to cause sounds to be heard as if grouped together, while irregular rhythms tend to lead to sounds (and their relationships with other sounds) standing out and being heard in isolation. Many of the early drum 'n' bass pioneers – perhaps most notably, Photek – experimented heavily with this sort of thing, writing unconventional musical passages that would have sounded disjointed against more regular rhythms than the ones accompanying them.

In this feature, we'll guide you through a broad selection of common and less commonly used rhythmic concepts and techniques, aiming

both to break down and simplify how we think of rhythm – used with either melodic or percussive parts – and to give you ideas on how you can break away from established formulae and use rhythm to open up new possibilities in your own compositions.

Polyrhythms

A polyrhythm, as the name implies, is what you get when two different rhythms are played simultaneously. Although this could technically refer to almost any piece of polyphonic music, typically one of these rhythms will be broken up into a different number of subdivisions than is normally allowed by the time signature – such a beat is known as an ‘irrational’ rhythm.

An example of a simple polyrhythm is ‘three against two’: three evenly spaced notes played against two over the same period of time – a bar, say. To make sense of this combined polyrhythm, the bar can be divided up into six equal steps, with both parts starting on the first step, then one falling on every third (1 and 4) and the other falling on every second (1, 3 and 5).

Another commonly encountered polyrhythm is four against three. To make these rhythms work together, the bar can be divided up into 12



Just some of the bands known for their use of polyrhythms: Queen, Nine Inch Nails, Talking Heads and King Crimson

steps, with one rhythm falling on every fourth, starting at the first (1, 5 and 9), and the other falling on every third (1, 4, 7 and 10).

The number of steps required for more complex polyrhythms rises rapidly – a five against four polyrhythm requires the bar to be divided up into 20 equal steps. The number of steps required for any polyrhythm is the lowest common multiple of both numbers involved. Highly complex polyrhythms are used extensively throughout traditional West African and Indian music, with performers and

ensembles often employing multiple layers in different times, shifting the phase of instrument and rhythm parts, and sometimes not even having the downbeats coincide at all, but rather letting rhythms run freely to their own timing.

Polyrhythms are also used fairly extensively in pop and rock, too, with particularly famous examples including The Beatles’ *Happiness Is A Warm Gun*, Queen’s *The March of the Black Queen*, King Crimson’s *Discipline*, Talking Heads’ *Remain In Light* and Nine Inch Nails’ *La Mer*.

> Step by step

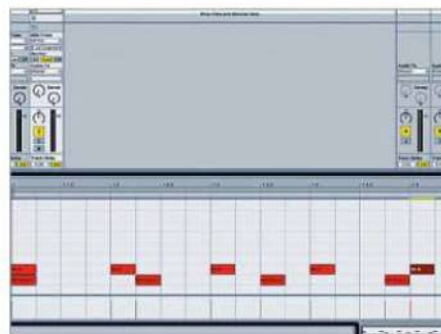
Programming polyrhythms



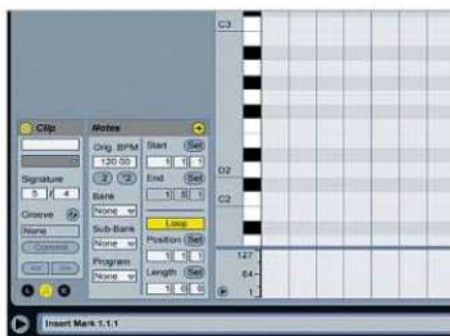
- 1 > Let’s create a simple five-against-four pattern. Load a drum machine or sampler and create a new MIDI sequence. For five against four, we need to divide our sequence into 20 steps – the lowest common multiple of five and four. Set the time signature of the sequence to 5/4 and the length to one whole bar. (We could set the time signature to 4/4 and come at the following steps from the other direction.)



- 2 > First, let’s place our 4/4 rhythm on this grid. Because we’re in 5/4, we’re going to have to ignore the actual beat numbering and divide our 20 steps up into four ourselves. This means placing notes on every fifth step, starting with the first step, which we count as step ‘zero’.



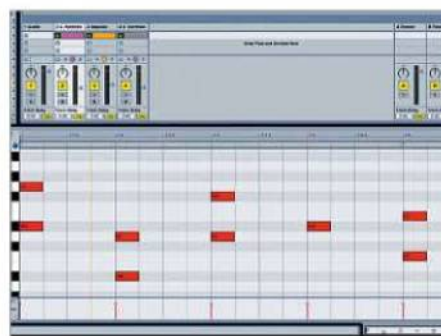
- 3 > Playing this back, it should sound like a regular old bar of 4/4. Adding a percussion part in 5/4 is much easier – we just place notes on the numbered beats and subdivisions thereof. Playing the two rhythms back together, you should hear a Latin-esque drum beat.



- 4 > The next part is a simple synth line in 4/4. To make this work, we’re going to need to divide our bar up into 20 steps again. Create a new MIDI track with a synth on it, and set its time signature to 5/4, its length to one whole bar and the snap/quantise to 1/32.



- 5 > We’re thinking of this track as being in 4/4, so rather than placing notes on the numbered beats on the timeline, place them on every fifth step again. This time, because we’re quantising to 1/32, we can fit twice as many notes in – including both upbeats and downbeats.



- 6 > Solo this and play it back. It should sound like a regular 4/4 part. Now create another MIDI channel and another track, and set it up the same way as before, with one bar of 5/4 and a quantise grid of 1/32, then write another synth part using the standard grid and the 5/4 beats displayed in the timeline.

Syncopation

Syncopation is a broad term used to describe any disturbance of a regular rhythm. This includes stressing a beat that wouldn't usually be stressed, missing a beat out that would usually be stressed, and stressing a beat where there wouldn't 'normally' be a beat at all.

Syncopation is thoroughly ubiquitous, being employed in every genre of music to some extent, especially dance music, where it's fundamental to defining the groove.

One of the simplest examples of syncopation is the 'missed beat', where a regular series of beats is interrupted by replacing one of them with a rest. This creates a sense of tension, and can instantly turn a simple 4/4 beat into something with a little more character. Missing a beat also tends to change which beats we hear as being emphasised. For example, in a straight 4/4 beat, the first and third beats are typically

felt as being stronger than the second and fourth - eg, ONE, two, THREE, four. However, when we miss out the third beat, we tend to carry that emphasised beat across, resulting in a groove in which the first and fourth beats appear strongest - ONE, two, (three), FOUR.

A variation on this is 'suspension', in which we tie two or more beats together, giving us a single sustained beat rather than two separate beats or a beat and a rest.

Strong accent

As we've mentioned, we tend to hear the first and third beats emphasised in a 4/4 rhythm. 'Even note' syncopation involves deliberately emphasising the second and fourth instead. This is often used in dance genres like drum 'n' bass, pop and rock, where these beats are accented with a snare - this is known as a 'backbeat'.

Even note syncopation has an interesting effect on how we perceive the beat. When the odd-numbered beats are emphasised, we tend to hear it as: ONE, two, ONE, two. However, when even notes are emphasised, we tend to hear it as a quadruple: one, TWO, three, FOUR. Modifying a rhythm in this way is known as 'backbeat transformation'.

Lastly we have offbeat syncopation, in which notes are shifted so that they fall in between beats rather than directly on them. This is standard practice in genres like reggae and ska, where instrument parts will typically emphasise upbeats and offbeats rather than downbeats, but pretty much all genres utilise offbeat syncopation to some extent.

> Step by step Latin-style syncopation



1 > Using a drum machine or sampler, create a simple 4/4 beat with kick drums on all four quarter-note beats and hi-hats on eighth-notes. To demonstrate an unsyncopated rhythm, find a suitable percussive sound, such as a sidestick and place hits on the downbeats, all in line with the kick drum.



2 > To turn this into a syncopated rhythm, rearrange the sidestick hits so that they fall on every third hi-hat rather than every second - you'll have to delete one of the four. You should now have a characteristically Latin-feeling rhythm.



3 > We can introduce further syncopation in the form of an anticipated bass part. Make a bassline with notes on all four beats, then shift the notes that fall on beats 1 and 3 back a 16th-note. Note: to have the first bass note overlap the first beat in Ableton Live's loop mode, adjust the loop start and end points as shown.

> Step by step Electro-house/trance synths on offbeats



1 > Modern trance and electro-house constantly use classic syncopation techniques on lead lines. Start off making a simple trance or house-style four-to-the-floor drum beat and layer it with some synth chords on another track, placed on all four beats.



2 > This gives a track a rather imposing, marching feel. To make our track flow a little more, try some offbeat syncopation by moving the synth chords so that they fall on the offbeats (between the main beats) instead. This style of syncopation works well with a heavy 4/4 beat, as it helps bridge the gaps between the drums.



3 > For another common form of offbeat syncopation, place the synth chords on every third 16th-note, rather than every fourth. You may notice that, unlike when our synth chords only fell on the on-beats or offbeats, this style of syncopation clearly defines our synth line as being grouped in one bar of four beats.

Odd time signatures

Modern dance, rock and pop music has something of an obsession with 4/4 – also known as Common time. This is because it's a very natural sounding time signature to work with, plus it makes it easy for DJs to beat-mix from one track into another, knowing that everything's going to be in the same time.

But 4/4 can also feel limiting. We've all experienced the frustrating realisation that there are only so many ways to arrange a drum beat along a sequence of 16 steps, or that there are only so many different things we can do with basslines and synth parts in Western music's favourite time signature. Breaking out of 4/4 can open up a whole world of new rhythmic patterns and musical ideas, as well as getting you away from that generally grid-like mentality and giving you an amazing amount of flexibility in terms of constructing rhythms.

Sign here, please

So, what is a time signature? Quite simply, a pair of numbers, the first of which represents the number of beats in a bar and the second representing the note value of each beat. 4/4 represents four quarter-note beats in a bar, 4/8 represents four eighth-note beats in a bar, and 5/4 represents five quarter note beats.

Many producers used to working in 4/4 can find it hard to break out of that and think in terms of less 'regular' time signatures, like 7/4 or 3/4. These sorts of 'odd' time signatures are found fairly frequently in rock music – Alice In Chains' *Them Bones* features a 7/8 verse, and Sound Garden's *Outshined* is in 7/4, while IDM and breakcore legend Venetian Snares makes heavy use of 7/4 and 7/8 rhythms.

A simple way to begin thinking outside the comfort zone of 4/4 is to get in the habit of

breaking bars up into shorter sections of more manageable beats. For example, a bar of 7/4 could be easier thought of as a bar of 4/4 followed by a bar of 3/4. Approaching it in this way would give your 7/4 beat a feel of ONE-two-three-four-ONE-two-three.

A 5/4 pattern could be thought of as a bar of 4/4 with an extra beat on the end, or it could be thought of as a bar of 2/4 followed by one of 3/4. When you get to really out-there signatures like 13/4, you realise there are many different ways to break a bar up into shorter sections, providing more rhythmical flexibility than you had in 4/4.

Once you become more comfortable working with a broader range of time signatures, you can start to mix them up, perhaps switching time signatures for bridges and choruses, throwing in extra beats and stringing sequences of varying time signatures together.

> Step by step

Making a 5/4 drum 'n' bass loop



1 > In this example, we're going to make a simple DnB loop in 5/4 by breaking the bar up into a section of three beats and a section of two beats. Create a MIDI channel and load a suitable drum instrument plug-in. Create a clip, set the time signature to 5/4 and start by sequencing a simple four-beat pattern with a beat-long gap at the end.



2 > Obviously this will loop nicely in 4/4, but with five beats in the bar, it isn't going to flow so well. Let's break it up into our two sections. Our first section of three beats should be fine as it is, but our next section of two beats should probably start with an emphasised beat, so delete the snare on the fourth beat in the bar and replace it with a kick.



3 > We can think of this two-beat section on its own for now, which gives us quite a lot of flexibility in terms of what we can do with the snare and whether we have another emphasised beat or not. In this case, let's put a snare on the next offbeat and another kick drum on the following beat.



4 > We can smooth this rhythm out by adding hi-hats on eighth-notes and maybe adding a grace note or two to help smooth the join between the three-beat and two-beat sections. Now we can think about adding a melodic line using the same technique. Create a new MIDI channel and load a synth bass patch.



5 > Again, we're going to write our three-beat section first. Place notes on the first and second beats, and a third on the following eighth-note offbeat. In Ableton Live you could set the loop length of the bass and drums clips to 3 beats in order to experiment with note placement and see what will and won't work.



6 > This simple pattern seems to work in 3/4, so for the two-beat section we'll probably want a note on the first beat – fill that in. As the track switches rhythm a bit in this section, we can use the bassline to smooth the progression a bit by placing notes on all the on- and offbeats. Check out **Time Signatures - D&B in 5-4.mp3** to hear the results of our experiments.

> Step by step **Displacing beats**



1 > Our next rhythmic trick is beat displacement (see boxout, right, for details). To demonstrate it, let's start with a simple drum beat and synth part. Create a MIDI channel and load up a drum instrument. Sequence a standard drum beat in 4/4, comprising at least bass drum, snare and hi-hat parts.



2 > To hear this effect properly we're also going to use a simple synth line, which is going to stay in time throughout. Create a new MIDI channel, load a plug-in synth and write a bar or two of MIDI data for it in a new clip.



3 > In Live, copy the MIDI clip with the drums to a spare slot on the same channel; in other DAWs, make a copy of the MIDI clip on the same track. This is going to be our displaced bar of drums. You can either use the Start point in Live's Notes section to pull or push the timing backwards or forwards, or select the MIDI notes and move them manually.

> Step by step **Beat displacement in action**



1 > Here we have a simple backbeat with kick drums on the first and third beats, and snares on the second and fourth. The beat you've typically got most flexibility with, in terms of beat displacement, is the third one, with the second kick drum on it. This would most commonly be displaced an eighth- or 16th-note back, or an eighth-note forward.



2 > This is such a common beat displacement that it certainly wouldn't surprise any listener. For some more interesting beat displacements, we can turn our attention to the second snare hit on beat 4. This can also be shifted an eighth- or 16th-note backwards or forwards.



3 > We can also experiment with displacing the first snare hit in a similar way. If we move it back an eighth-note, along with the second snare and second bass drum, we've effectively displaced most of our pattern, with just the first kick drum remaining in its proper place.



4 > Melodic lines can be displaced in the same way. By shifting a bass or lead line an eighth- or 16th-note either way, we can give our tracks a completely different feel. And of course, you don't have to move things by an eighth- or 16th-note - experiment with different distances, even turning snap off and moving notes entirely 'off the grid'.

Rhythmic illusions

Beat displacement can mean either changing the timing of a whole rhythm or just one or two single hits within it. In the case of the former, an entire drum beat might be temporarily shifted forwards or backwards in time, generally by either a 16th- or eighth-note, creating a deliberately confusing, disorientating effect. Other instruments typically remain unaffected, keeping to the pulse of the original beat, while the drums take on an out-of-sync feel, sometimes referred to as a 'rhythmic illusion'.

Beat displacement can also involve creating rhythmic variations within a regular drum beat by displacing individual hits - delaying a kick drum by an eighth-note, say, or bringing in a snare a 16th-note early.

Decent drummers play around with rhythms like this instinctively, while dance music genres like jungle and drumfunk have traditionally made heavy use of beat displacement, often using the technique as the focal point of a track.

When more than one drum hit in a bar is displaced, the effect can be used to create unexpected stutters and jumps, or to create the effect of a beat getting ahead of itself, then pulling back.

What's more, both forms of beat displacement can be combined in various ways, such as putting a beat out of sync, then displacing individual hits within it, or by putting just one drum part out of sync while displacing individual beats in other parts.

Further rhythmic trickery

A rhythmic technique used by rock and dance producers alike is to open a track with a musical line that suggests its own downbeat, then introduce a beat that shows the musical passage is actually set to a different downbeat, thus creating a sense of a beat displacement without actually displacing anything.

The musical line will usually be either offbeat syncopated or before-the-beat syncopated, yet without a drum part to define where the downbeat actually is, the brain tends to interpret the first note of any passage as a downbeat.

This technique has been used by acid house producers Hardfloor in the past, and is executed by The Hives in the opening of *Antidote*.

Automating subtle tempo changes can be a great way to raise and lower the energy of

different sections, and can go a long way towards adding some human feel to a track.

One reason this isn't often done with dance music is that not having a rigid tempo makes tracks difficult to mix. Another alternative, however, is the use of half-time or double-time.

By switching a tune to a half-time feel, with parts stretched out to cover double the space, a 160bpm track sounds like it's actually at 80bpm, - ie, where snares would've fallen on the second and fourth beats of the bar, they now fall only on the third. Another way to do this is to program a quick tempo change, leaving all the notes in

"Switching into double-time can make it appear that you've doubled the tempo"

place but literally halving the tempo of the track.

This technique is rather popular in DnB, where a half-time breakdown can have the effect of sounding like you've temporarily switched into a dubstep tune. The converse has also grown popular in dubstep, where switching into double-time can make it appear that you've doubled the tempo, enabling dubstep artists to explore breakbeat and DnB territory.

> Step by step

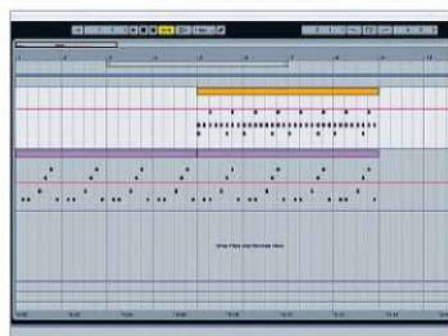
Introducing beats to 'undisplace' a rhythm



- 1 > This effect relies on opening a tune with a melody or rhythm in which the opening note - at least - is offbeat syncopated. Most commonly it'll come in on either the first offbeat in the bar, or the offbeat immediately before the first beat in the bar. Start by creating a standard backbeat drum part.



- 2 > On another track, write a simple melody line using offbeat syncopation and/or anticipated bass syncopation. This needs to work well with the drums, as when the beat's introduced, we'll need it to redefine how we hear and interpret the melody.



- 3 > Try muting the drum track and listening to the melody on its own. If you can forget how the melody worked with the drums, you should find that without a clear downbeat, the first note of the melody becomes the downbeat. Try playing this for four bars, then introducing the drums for the full effect.

> Step by step

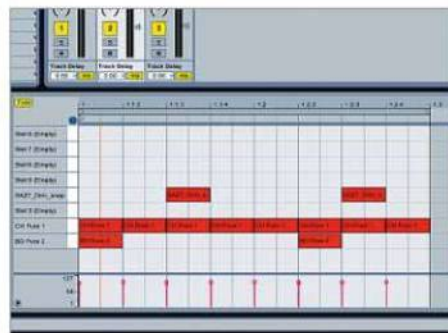
The half-time effect



- 1 > Half-time and double-time are useful rhythmic effects for changing the pace of a dance track - perhaps in a breakdown or chorus - without making it difficult for DJ. For this half-time example, create a simple drum beat at around 160-180bpm.



- 2 > We could program a tempo change at the point at which we want to go into half-time, but this would affect every track, and we might only want it to apply to individual ones. So instead, make a copy of your drum beat, double its length and space the hits out so that your one bar of drums is now spread across two.



- 3 > Double-time would more commonly be used as a variation in slower-paced genres, such as dubstep. To turn a standard drum loop into a double-time loop, copy the beat, as before, but this time halve the clip's length, change the quantise setting to 1/32, and squeeze your beats into this shorter space.

Time and rhythm tips

COMBINE MULTIPLE FORMS OF SYNCOPATION

Create rhythmically adventurous synth, bass and percussion lines by applying multiple forms of syncopation to simple sequences. Bringing in a lead synth line with before-the-beat phrasing can give it the effect of jumping out at the listener, while backbeat transformation can add weight and energy to dance tunes.

WORK IN DIFFERENT TIME SIGNATURES BY BREAKING BARS DOWN

If you're used to working in 4/4, it can sometimes be difficult to adapt to alternative time signatures. When working in less common time signatures, such as 5/4 and 7/4, it can help to think of the beat as being broken up into shorter sections of two, three or four beats. A 7/4 beat might be broken down into a bar of 4/4 followed by a bar of 3/4, for example.

SKIP BEATS TO EMPHASISE DIFFERENT BEATS

Sometimes a missed note can have more impact than a played one. Missed beat syncopation creates tension by giving us a rest when we expect to hear a note. It can also be used to emphasise other beats in a rhythm. Try unexpectedly missing out the first note of a bassline and notice how the second note now feels stronger.

STACK LOOPS OF MULTIPLE LENGTHS

DAWs like Ableton Live makes it easy to build up complex, evolving arrangements by layering beats of varying lengths on top of each other. Rather than sticking to beats and loops of lengths that divide down to four beats, try adding a few parts of unusual length, such as nine beats, 15 beats or even 90 beats, and notice how the arrangement changes as different parts of the mix go in and out of phase.

OFFBEAT SYNCOPATION ON TRANCE AND HOUSE LINES

Using offbeat syncopation on bass or synth lines can really help drive a rhythm track forwards. Emphasising the up and down beats with different instruments can add energy, giving tracks a sort of double-time feel - which is why it's such a popular type of phrasing in dance genres such as trance and electro.

SHIFT PARTS OUT OF SYNC TO ADD INTEREST

As an interesting and unexpected effect, try shifting one part temporarily out of phase by an eighth- or 16th-note. This is particularly effective when used on drum parts for just a bar or two, as it can give the effect of the rhythm collapsing in on itself, then setting itself right again.

CHANGE RHYTHM TIMINGS IN CHORUSES

Bridges and choruses make good places to switch rhythmic styles. Even if you're writing tunes for a club environment, where long, mixable sections in 4/4 will be required, you can still use these points to try different things out and break free of the grid-like mentality that much modern music is stuck in.

COMBINE RHYTHMIC EFFECTS

The next time you're starting a new track and feel like you want to break away from the rhythmic norm, try starting out with a standard sequence and applying a variety of rhythmic effects to it. Try altering the syncopation, then adding a layer to make it into a polyrhythm. Or why not try moving the whole sequence out of sync and then working it into a different time signature? **cm**



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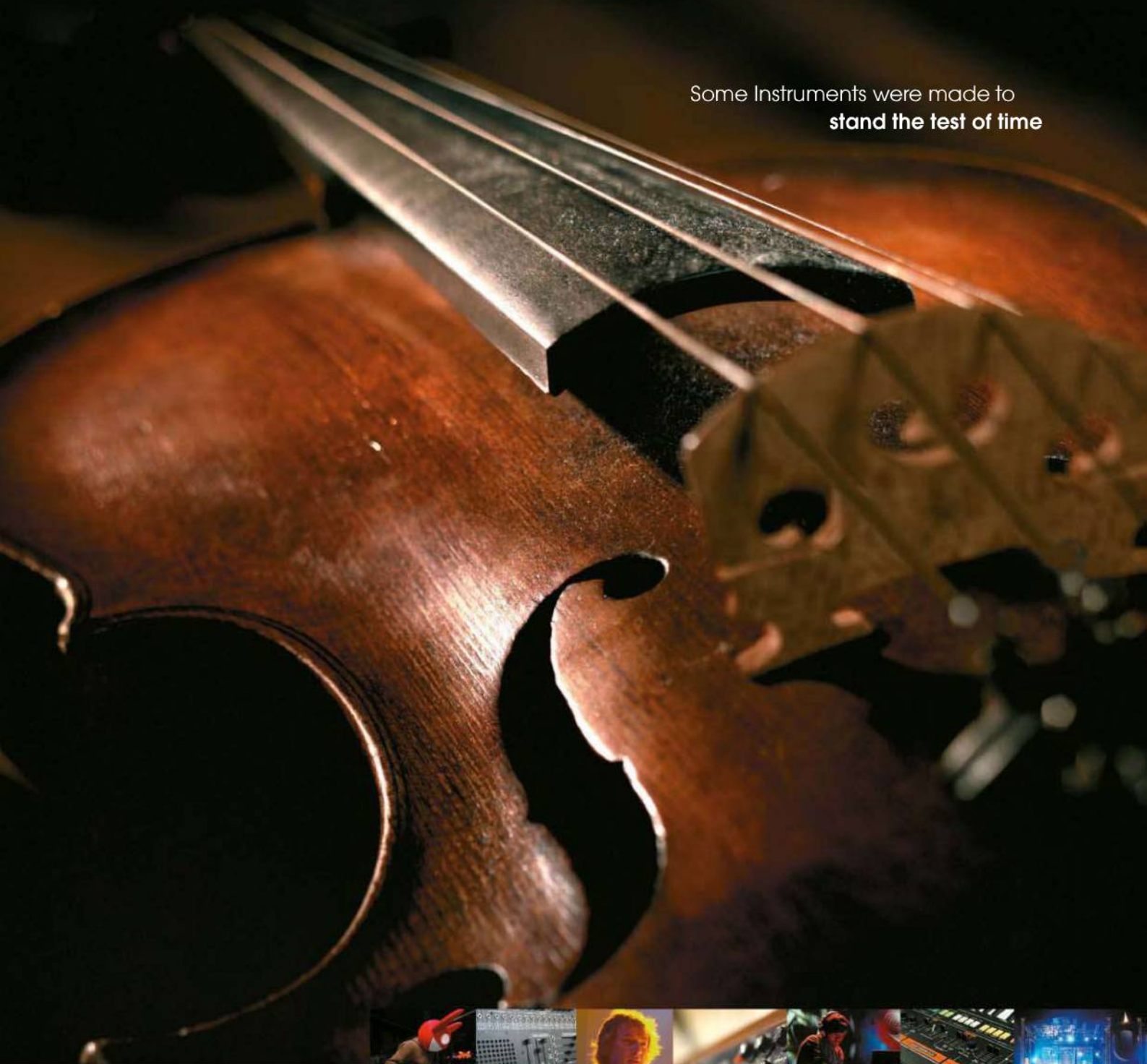
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hollywood
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draw musical
inspiration from
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> **Look around you. You might be in your kitchen, lounge, bedroom, down the pub, on the toilet... but wherever you are, there will be objects and surfaces in your environment that could be used to make music - and we're talking about something way beyond just tapping out a tune on the kitchen counter as you stir the pasta sauce.**

Foley sound has been a mainstay of the film and television industries since 'talkies' appeared in the late 20s. It's the art of creating filmic sound elements and effects in post-production, often using everyday objects. So, when a scene features a shooting, the foley artist won't necessarily fire a gun to recreate the sound. Rather, they'll record sounds from a range of sources, then process and layer them to create, in this example, the sound of a gun being fired.

There are countless ways to turn everyday objects into musical instruments, using them to create sounds to enhance your own productions. In this tutorial, we're going to show you some of these methods. We'll construct an entire dance track from scratch using foley sound and only foley sound. Not a single element of the final mix will come from anything but the sounds we've recorded ourselves.

To begin with, we'll suggest what items you can pull into your studio to for foley work, and show you how to record them effectively and avoid some common pitfalls. We'll be dealing with three separate elements - drums, bass and chords - showing you how to layer and process these effectively to turn a dropped book into a thumping, manic kick-drum loop, or a wine glass into a chord series. Along the way, we'll also take a look at the history of the art form (including the musicians who are using it today) and impart plenty of useful tips and tricks, so you can quite literally get cracking.



The right tools

The great thing about foley sound is that, for the most part, it doesn't rely on anything complicated. In fact, you'll find that domestic items around your house - whether in the kitchen, bathroom or lounge - will give you all the sounds you need.

Percussion is the easiest thing to tackle. Essentially, the recordings will come out of impact sounds - slamming books together, hitting the bottoms of saucepans or even punching a slab of meat. To get that booming kick drum, for example, try placing a book on the floor and dropping another, heavier book onto it from a short height.

To emulate synth tones and melodic instruments, you'll need to get creative. Making a wine glass 'sing' by rubbing a wet finger around the rim can create an endless variety of sounds, as can blowing across the top of a glass bottle. Don't be afraid to 'cheat' and use objects specifically designed to make musical tones (a small bell, for example) - if you feel it'll give you the right sound, use it.

Basslines can be tough, but any object that generates a tone with loads of low frequency information can work. A miked-up dustbin will give you the tone you need - and you'll even find that different shaped dustbins (square versus cylindrical, say) create sounds with varying characters.

Don't be afraid to experiment with combinations of objects or adapting items to create different timbres. Take pasta: dry, you can snap it for a percussive sound; cooked, you can squidge your hands into it for a squelchy sound that's just begging to be tweaked and processed.

Again, if it doesn't sound musical right away, don't worry - it will once we're done with it!



Mmm, there are tasty sounds aplenty to be found in the domestic kitchen

> Step by step Recording basics



- 1 > Different mics will require different settings, but as a rule, you should be in a relatively noise-free environment, with the mic roughly three feet away from your 'equipment'. Set the gain as high as you're comfortable with, as you want to capture as much of the sound as possible.



- 2 > We'll start by capturing some percussion sounds, and that means smacking things together. We create a snare drum using our two frying pans, and a kick with two heavy cookbooks. Don't worry too much about generating different notes - a single tone will suffice for now. (Audio on the DVD: **Books.wav**)



- 3 > To make a collection of other assorted percussion sounds, crack your eggs (away from the mic, of course!), snap your pasta and shake your jar of rice. For now, try to get single 'notes' out of the rice, in order to make a hi-hat sound that's easy to work with when it comes to editing. (Audio: **Rice.wav**)



- 4 > Fill a wineglass with water (or wine, if you prefer) and wet your finger. Run it around the rim with a little downward pressure in a smooth, even motion to generate a tone. Drink (or refill) some of what's in the glass to change the tone. It sounds piercing, but we'll be processing it later - just think of it as a raw synth waveform for now. (Audio: **Wine.wav**)



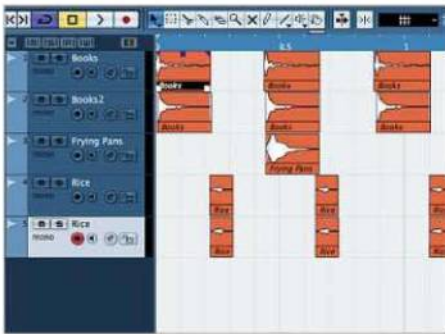
- 5 > For our bassline, we've positioned our mic in the dead centre of a big plastic dustbin, which we hit with a book (watch the gain on your mic preamp or audio interface, though, as you don't want to overload the signal). A rubber band stretched across a chair arm gives us a secondary bass tone. (Audio: **Bin.wav**)

POWER TIP

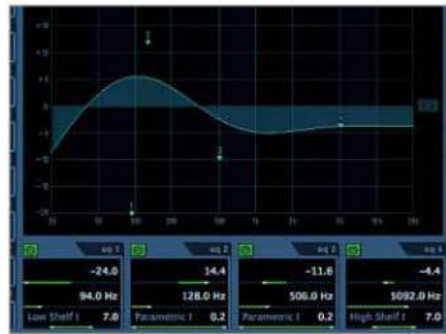
>A fine blend

It's always important to think creatively when choosing your foley objects, as what might be an obvious choice could in practice not really give the right sound. We initially picked a blender to create a bass, but it had too much mid-range to stand by itself in the mix. Bass needs *some* mid-range content, of course, but we were looking for a good hit of the low stuff. So we went back to the drawing board and pulled a massive dustbin into the studio to generate the required boom.

> Step by step Producing percussion



1 > To begin with, we go through our sounds and pick the ones that are most promising: low frequency, booming book sounds for the kick, sizzling rice for the hi-hats and so on. The key is not to worry about them sounding a little anaemic on their own - once you've layered them, as we have here, they'll start to sound a little less like... well, books, pots and pans.



2 > We process the kick first, to give our beat some backbone. We scoop some frequencies out of the mids and highs, and boost the bass. You can probably use the same EQ settings for each layer, but you'll need to experiment to get the low boom required for a decent kick.



3 > We use some parallel compression (with the pre-fader switch on), but it's still not sounding quite right. Some saturation should do it, so we wheel out WaveArts' Tube Saturator and tweak it to add some extra bass boost and warm up the sound a little. Now we've got a good pumping kick, which will sound even better with some compression. (Audio on the DVD: **Kick1.wav**)



4 > When EQing your snares, you can use similar tactics to your kick drum, as you'll want to remove some of the high-frequency content from your smashing pans. Snares will require a little more work than kicks, though, and the first thing is to send them to the parallel compression bus, and an additional bus with some distortion on it to shape the sound. (Audio: **Snare1.wav**)



5 > Snares respond to reverb better than kicks, so add some as an insert effect. A bit of delay won't go amiss either - here, we add a great metallic delay, which turns the snare into a growling monster. Layered on top of a kick, the snare gives the track an instant sense of character. (Audio: **Snare2.wav**)

POWER TIP

>Get real

When you're in the middle of processing sounds to represent musical elements, you might find that it's hard to remember that what you're creating is in fact a drum kit, and that it needs to be treated as such when mixing. So when you're done with your basic sounds, remember to spend some time on fades, panning and any automation you require. It's this, more than anything you can do to the basic sounds, that will make your percussion really come alive.

POWER TIP

>Changing tact

Percussion and rhythm tracks might lend themselves well to Foley sounds, but certain techniques don't. Take the hi-hat roll building to a climax - sure, you could treat your hi-hat sounds to some volume automation to mimic this, but it'll sound unnatural. One way you could get the effect is to flip through the pages of a book quickly - stretch, warp and process this sound and you'll have a neat drum roll. Nothing in foley is set in stone, so if you can't get the sound you want, look for something else.



6 > Finally, we come to the hi-hats. Editing is actually the most important thing here, as there's plenty of high-frequency content to be found in our rice-shaking already, so chop carefully to get a short, sharp sound. You can lop off a huge amount of low-frequency in your EQ as well, and boost the top end for some extra sizzle.



7 > We create a separate bus for our hi-hats containing a chorus effect and some reverb. You can keep the fader on the bus relatively low, as the effect needs to be quite subtle, but this applied to one or two layers will make your hi-hats pop out of the mix. (Audio: **Hats1.wav**)

The history of foley sound

Unlike most audio production techniques, foley sound has the distinction of being named after someone: Jack Donovan Foley. Foley, born in New York in 1891, got his start in the silent film era as a stuntman, director and props artist. When Warner Brothers first began to add sound to their films, he was drafted in to provide the non-musical sound effects: footsteps, gunshots, explosions – anything that couldn't be made by an instrument. One of the films he's most noted for working on is *Spartacus*, in which he managed to save an entire scene from being re-shot by post-producing the sound of the clanking leg irons worn by the slaves. In another movie, he generated the sound of a motor by recording, reversing and looping a burp.

We can safely assume that if Foley hadn't been around, someone else

would have stepped in and worked out how to produce these effects. However, the impact of Foley's work can't be underestimated. His techniques are the reason why the role of foley artist is, for some, a full-time job, sometimes involving the recruitment of sizeable teams of people.

In terms of music, the impact of foley sound is much more subtle – especially today, when so much sound is created 'in the box'. Part of the reason for this is the obvious fact that most music comes from voices and musical instruments, so foley sound – in the sense of using non-musical objects to create particular effects – isn't immediately relevant.

This doesn't mean that it's never used, though. Foley techniques are often employed to help shape the sound of a particular instrument – for example, using objects to control natural reverb is



Angle grinders, oil drums and hub caps: all musical instruments to Savage Aural Hotbed

an example of a foley sound. More explicitly, though, some ensembles make an artform out of bashing away at unusual objects. Take the Blue Man Group, for example, who stand onstage plucking old antennas and pieces of piping; or Slipknot, whose percussionist Shawn Crahan enjoys creating sounds with a baseball bat and an old beer keg onstage.

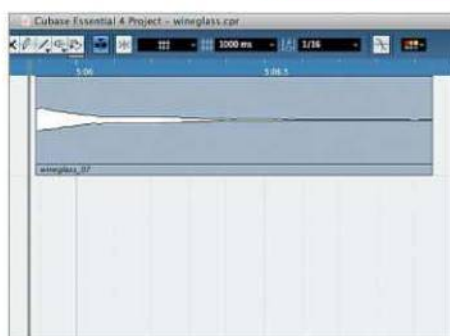
There are even groups whose music is based on the idea of using foley material – or as they term it, "found objects". One of these groups, Savage Aural Hotbed, make music with a selection of paraphernalia, including angle grinders, oil drums and hubcaps. Another, the Vienna Vegetable Orchestra, make clappers out of aubergines and castanets out of beans. We're even aware of artists who plug hardware units into broccoli and cauliflower, using their chemical properties to alter impedance and morph the tone – that's foley sound!

So while it's true that foley sound is historically a film and television technique – and that the latest hit from Ke\$ha or N-Dubz probably didn't use anything even remotely foley – it still has huge potential for creating unusual, unique and complex sounds.

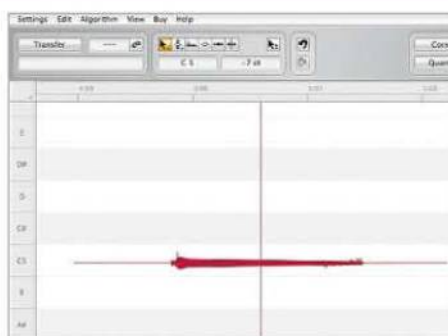


Visual performance outfit Blue Man Group beat a variety of different objects to create their percussion-driven sound

> Step by step Turning wine into sound



1 > Our wine glass tones will provide some character to our track. The natural reverb as we lifted our finger off the glass sounds great, so we take a few versions of it, chopping them off mid-waveform to give a low-frequency 'click' that accentuates the ringing. (Audio on the DVD: **Wineglass1.wav**)



2 > You'll often find that melodic sounds need a tweaking to make them work in a track properly. One thing that can help is a pitch processor like Celemony's Melodyne – here, we're lengthening one note and changing its pitch. We layer it with one of the other notes for some additional harmonics later on, too.



3 > You could spend hours tweaking phasers and flangers to mutate the sound, but that's not what we're after here. Instead, some gentle EQing (with a boost around 2.7kHz), plus some even gentler compression, helps shape the sound and raise the volume. (Audio: **Wineglass2.wav**)

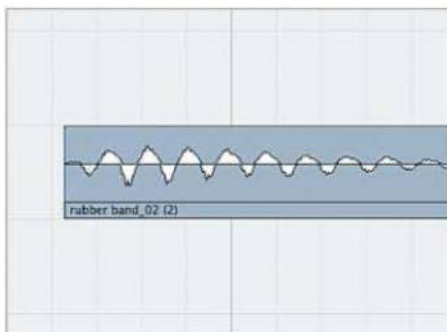
> Step by step Bass bins



- 1 > We're going to make two distinctive bass tones by layering the sounds from our rubber band, plastic bin and blender. After you've selected the particular sounds you want from your takes, select your whizzy blender tone and cut out all but the very bottom end, so that you're left with only a low rumble. (Audio on the DVD: **BlenderRumble.wav**)



- 2 > You'll want to cut a little bit less on your bin booms, but the principle is the same. When each is sounding suitably low, layer them up, taking care to eliminate any unwanted transient noise using fades. If your sounds are a little on the soft side, use your DAW's normalise function to increase the volume. (Audio: **BassBoom.wav**)



- 3 > For the rubber band sounds, more care is required. For starters, there's a nasty click right at the start, caused by the initial snap. Once we've got rid of that, we normalise the sound and use EQ to cut some of the top end, so that we're left with a buzzing bass tone.



- 4 > You shouldn't have to combine more than two or three rubber band samples, but you can treat the other layers quite differently to manipulate the sound. Try mixing a 'thin' rubber band sound with the full one you've just processed - you'll find that it gives it some extra mid-range character. (Audio: **RubberBands.wav**)

POWER TIP

>Chop chop

Foley sounds (and percussive bass notes in particular) often contain frequencies that can get in the way. A bass note might, for example, come with a particular snap or click - not something you want when trying to create a smooth tone. It's therefore important to spend a little more time carefully chopping and cutting your audio to lose these annoying bits. The more precise your cuts, the more natural your bass will sound, so zoom right in there. And don't be afraid of using fade-ins and -outs, too.



- 5 > Grouping or bouncing your sounds down into a sub-mix might be a good idea at this point, as it will enable you to apply some compression and do any global editing before adding the tones into your track. Finally, pay close attention to the lengths of the notes, as they'll more than likely have some natural reverb tails that you may or may not want to keep.



Our complete track, made using nothing but the foley sounds created here

The final mix

Fortunately, the sound we're going for is fairly minimalist, which means that, up to a point, the track is fairly easy to mix. To start with, we focus on balancing the low end, as there are quite a few sounds that occupy that region. Specifically, the big, booming bin sound we originally planned as a bassline works much better when added to the kick to give it some depth. We also take some time to create some drum rolls using a couple of our drum sounds, adding a phaser as an insert effect to make them stand out.

We manage to add some extra groove to the track almost by accident, too. At the start, the main rubber-band bassline is fairly straightforward - it works, but it isn't anything special. We arrange it on two tracks for timing purposes, and when we mute and unmute the second track rapidly (initially a misplaced mouse click), we find that the effect gives the bassline some swing, so we record some automation and leave it in there.

We encounter a couple of problems with the mix when we try to tackle the top end, though. For starters, the two wineglass tones we've chosen aren't gelling with the track at all, so we get rid of one of them and lower the volume of the other, as well as adding some subtle panning. This helps it fit with the bass and the percussion a lot better. We encounter similar problems when trying to use the cymbals as a build-up midway through the track, too, but a little volume automation soon fixes this.

As a final tweak on the stereo mix, we scoop a little off the bottom end and add some at the top with EQ, and use some light compression across the whole thing. One mixdown later, we have our tune. (Audio: **FinalMix.wav**)

Foley sound tips

SOUNDING OFF

As with any instrument, the recording environment shapes foley sounds. While it's good practice to record in an acoustically clean room, try introducing different objects for the sound to bounce off. Positioning a sheet of wood (a shelf works well) or glass next to the object you're recording can give the sound some extra depth.

PANDEMONIUM

If, like most people, you're using one mic to record your sounds, they'll all be in mono. This is fine, but you're not going to want your final track to be the same. Remember to introduce panning somewhere along the line, or use reverb to add some stereo spread and give your track a sense of space - of course, if you're using a combination of mono recordings and stereo samples, exercise some discretion.

FREQUENT FLYER

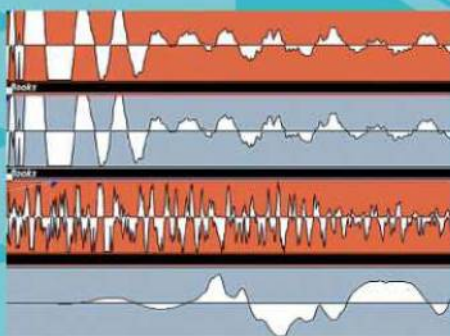
While you can certainly use high- and low-pass filters to shape your sounds, it's always better if the source has the right frequency content before you start. For example, you might find that a source you used for your bass notes has too much high- and mid-frequency 'pop'. If you're not sure, don't be afraid to have a look at the sound with a spectrum analyser and re-record, or you'll waste time trying to fix a sound that you could simply sort out at the source.

AMBIENT NOISE

Smashing pot lids together to get a crashing cymbal sound? Hold them up to your ears, one on either side, right after you strike them. You'll hear the reflections bouncing around and creating some fantastic ambience. To capture it, turn up your gain, smash the lids away from the mic (we can't emphasise that enough), then bring them in close. You'll have to position them based on whether the mic is bidirectional or unidirectional, but you should be able to capture a good dose of that eerie wash of sound.

CHEAT SHEET

Although we haven't done it anywhere in this guide, there's absolutely no reason why you shouldn't use software instruments to mess with the sound. Is your bass note not



To get the most out of foley sounds, you should really zoom in there and make the most precise cuts you can



Hiss can be a problem, especially when layering lots of foley sounds together, but a noise reduction plug-in like Algorithmix' powerful NoiseFree can help enormously

sounding punchy enough? Layer and combine it with a synth oscillator, and use that to sculpt the sound you like. Ultimately, the goal with using foley techniques is to add more sounds to your repertoire, so don't let it constrain you.

TURN IT UP

One of the main problems with foley sound involves simply getting enough usable signal in your audio. Because foley sounds involve bangs and smashes, the mic gain often gets turned way down low to protect the equipment. A better way, though, is to set a higher gain, then manipulate mic distance to add some oomph. Condenser mics get a bass boost if they're used up close, but if you're using a dynamic mic, you'll get better results from further away.

JUST IN TIME

We've mentioned elsewhere in this tutorial that you need to take care when chopping your audio up, but that becomes even more important when you start arranging your track. Once you've set your project tempo, you'll spend a fair amount of time simply lining up your audio, so that it's exactly on the beat. This can be a tedious job, so make sure your sounds are cut exactly where you want them to be, so you can use your DAW's snap function to align them perfectly.

BEND IT

Pitchshifting is certainly a good way to go about manipulating your foley sounds, but one technique for massaging really great tones out of them is to use pitch-bending. If you have a MIDI controller, map it to your DAW and start working that wheel. This

technique works particularly well on high-frequency chords and melodies, so experiment to get the sound you want.

HISS-TRIONICS

Obviously this depends hugely on your recording circumstances, but because you'll no doubt be dragging your mic into strange circumstances to get foley sounds, low-level hiss can often be a problem - particularly if you're planning to use natural reverb. A gate can often help silence that hiss, as can a dedicated noise reduction plug-in, such as Algorithmix's NoiseFree.

COPYCAT

Although this applies to most sound pre-processing, it's a good idea to keep a copy of your original, unprocessed sound when working with foley - even if what you're going to be doing to is non-destructive. Foley sounds don't always fit into music as easily as, say, synths, and you'll often find that if things aren't working out, going back to the original audio file can solve problems - so make sure you keep a copy close to hand.

SPARE PARTS

When you're experimenting with lots of material, you'll inevitably find yourself with pieces of sound that don't fit into the track you're trying to build. We cracked eggs at the beginning of this tutorial, but they didn't work in the final mix. However, after some time stretching, EQ automation and a flanger as an insert effect, we turned these sounds into a creepy, atmospheric build-up that we can use for another track. Part of foley sound involves building up a library, so even if you don't use a sound, hang on to it. **cm**

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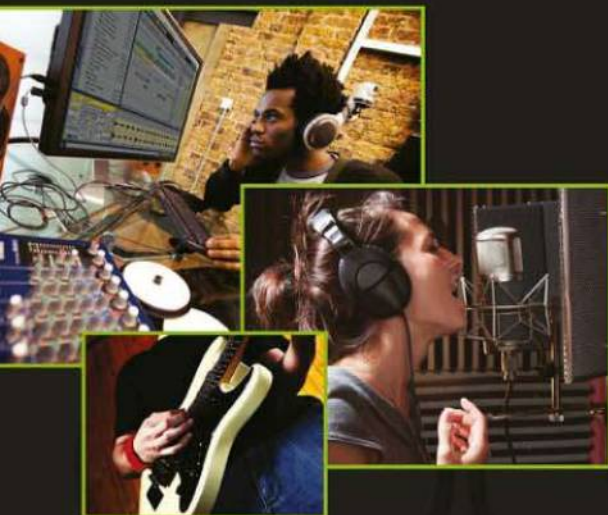


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LINEAR RECORDING IN FL STUDIO



Although Image-Line's DAW is primarily built for loop-based sequencing, it can also be used to capture and edit live instrumentation. Here's how...

> **FL Studio has always been a popular DAW for producing heavily sequenced electronic tracks, thanks in large part to its great MIDI pattern sequencing and flexible sample recording and editing. Like other DAWs focused on electronic music, FL Studio tends to be something of a jack of all trades. Functions usually associated with more linear-style DAWs pop up every once in a while, but the implementation of these is sometimes a bit quirky, and they're usually less full-featured than in the likes of Cubase and Sonar. The main point here, though, is convenience. Being able to record guitar riffs or vocals and sort them out inside FL Studio is more convenient than closing everything down and moving audio files between different DAWs. While FL Studio's audio recording facilities appear to have been**

primarily designed for sampling purposes, full-on musical performances can still be tracked, processed and enhanced with ease.

Thinking outside the box

So, as a 100% in-the-box FL Studio producer, why should you care that Image-Line's DAW can record long passages of audio? Well, a few acoustic or otherwise 'real' instruments thrown into an otherwise completely synthetic mix can add a lot of organic texture and character, and open up possibilities not readily apparent when working solely in the software realm. Recording audio can also be a lot of fun, if everything goes as planned, as can editing it afterwards.

When recording - particularly when recording vocal tracks - it's common practice for multiple takes to be recorded and the final performance compiled (or 'comped') together

from the best bits. This is a much easier and more practical way of achieving a great performance than trying over and over to nail the entire part in one go. Some might see this as 'cheating', but everyone does it and the concept will be particularly attractive to non-instrumentalist producers who simply don't have the chops to pull off perfect single takes. FL Studio may not have the powerful comp editing features of some of its rivals, but it's more than up to the job of handling the basics.

While FL Studio focuses on its excellent MIDI functions, its recording capabilities certainly prove good enough for some guitar noodling on a breakbeat track or a bit of rapping. In this tutorial, we'll show you how to lay down some audio tracks and build a larger than life performance from them, all without leaving the comfortable confines of FL Studio.

> Step by step Setting up FL Studio for recording



1 > First, hook all the necessary cables up to your audio interface. In FL Studio, open the **Audio Settings** window from the **Options** menu. Make sure the driver is set to an ASIO device, which is required to record audio. If no ASIO devices show up, install the universal **ASIO4all** driver from the **cmDVD**, or head to **asio4all.com**.



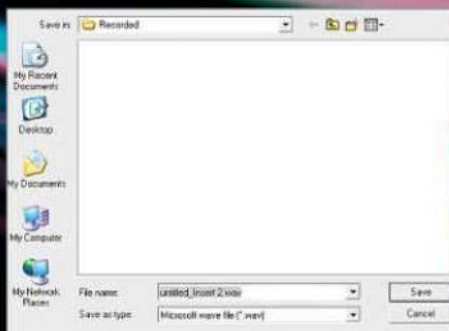
2 > Select an empty mixer track with nothing routed to it and choose the input you'll be recording from in the top **Input** menu. We're using an onboard soundcard, so it lists the inputs both as stereo and separate mono channels. The hardware synth we'll be recording is mono, so we select the left channel.



3 > Insert an Edison wave recorder/editor into that mixer track's first FX slot. In Edison, enable the **On Play** recording mode. In this mode, Edison will record audio only when its record button is pressed and FL Studio is playing the track.

> Step by step

Recording directly into the playlist



1 > Having selected an audio input on an empty mixer track (see step 2 on the previous page), click the disk icon at the bottom of the track to record arm the mixer. A file browser window will appear, so you can name the audio file you're about to create. Give it a descriptive name.



2 > Using the selection tool (E), select the part of the track you'd like to loop around in the playlist. Recording just one section of a song at a time can make it easier to get a good take, but some like to record it all in one go, so opt for whichever way suits you best.



3 > In the Recording panel, switch on **Loop Record/Overdub**. FL Studio will now record a new audio file every time the playlist loops. It's a good idea to select more than the section you're recording by a bar or so, in order to give yourself time to get ready for the next loop.



4 > Click the **Record** button in the main transport bar. A window might pop up asking you what you'd like to record, click the **Record Audio Into Playlist** option. If that doesn't appear, right-click the **Record** button and make sure the **Audio** option is enabled. Press **Play** and go!

The scenic route

There are usually more than a couple of ways to do any given thing in FL Studio, each with advantages and disadvantages. In the rest of this tutorial, we'll be using Edison, but recording directly into the playlist can sometimes be the better option.

Edison, with its in-depth editing and drag-and-drop functionality, is a quick and simple solution for recording samples of any kind or bouncing parts to audio. In this tutorial, we're recording an analogue synth that's controlled by a MIDI Out channel in FL Studio. When recording directly to the playlist and looping in order to record multiple takes, FL Studio automatically selects the newly recorded audio clip channel in the step sequencer each time it loops. After the first take, the MIDI Out channel won't be selected any more and won't respond to the notes being played on the keyboard, which is very frustrating - but we can get round it with Edison. Recording audio directly into the playlist is easier to deal with when capturing more than one track simultaneously, like a set of drum mics or a stereo acoustic guitar setup, for example, as multiple Edison plug-ins are a pain to manage at the same time.

> Step by step Recording and editing in Edison



1 > Select the section of the track in which your recording will eventually be placed. On playback, FL Studio will loop this selection. At the beginning of every loop, Edison will add a marker to the audio, which makes separating each take much easier. You may want to have the selection slightly longer than the actual section of the track, so that you have a bit of time between each take.



2 > Click the **Record** button in Edison. It won't start recording until FL Studio starts playing. Pressing **Spacebar** with Edison selected will disarm it for recording, so select something else or just click the main **Play** button. And while you're at it, make sure that FL Studio is set to **Song** mode.

POWER TIP

>Monitor reverb

If listening to the raw, dry tracks while recording doesn't feel right (particularly likely with vocals), put a reverb plug-in on the mixer channel after the Edison to monitor the signal with some ambience. In fact, any effect will work in this manner - it might be beneficial to hear your guitar through an amp sim while recording, for example, and it can always be tweaked later, as only the dry sound is recorded.



3 > Now to perform your masterpiece. Relax. If you screw up, don't worry about it - just keep going. Anything really awful can be trimmed afterwards, before the audio is saved to disk. Continue playing after a mistake, rather than stopping completely and waiting for it to loop back again, as it's all going to be reconstructed after the fact anyway.



4 > When you're happy with what you've recorded, stop playback and have a listen. If there are some takes that simply have nothing good to offer, delete them. If you delete all the bad takes and don't feel like there's enough audio left to work with, deselect everything in Edison and try recording a few more takes. In this way, subsequent recordings will be added to the end of what you already have.



5 > Since we're already in an audio editor, we might as well clean up our recordings. Edison has a very surgical equaliser that's perfect for taking out hums or buzzes, like those caused by an electrical ground loop. It's also a good idea to EQ out all of the extreme low end (except for bass instruments, of course), as these low-frequency rumbles can soon stack up in the mix, ruining the sound.



6 > Edison also has a noise cleaning tool, which is useful when recording in less than ideal circumstances with a lot of noise. Select a portion of the recording where the noise is isolated and right-click the toothbrush button to acquire the noise profile. Then left-click the button with the entire recording selected to bring up options to remove the noise, although this should only be used in very severe cases.



7 > Go through each take and place markers on notable sections. Select a portion of the recording and press **M** to place a marker at the beginning of it, and give it a name by typing into the box that pops up. Put markers on particularly good or bad parts of the performance with descriptive names like 'Great pitchbend', 'Sloppy timing' and so on.



8 > Press **F2** to open the Properties window and give the recording a name. Once finished, use the drag-and-drop button on the far right to place the audio in the playlist. FL Studio will save the audio file to **FL Studio 9\ Data\Patches\Sliced Beats**, followed by the name you gave it. If it doesn't, it'll be called **Dragged_sample_76456.wav**, so do give it a sensible name!

> Step by step Arranging in the playlist



1 > With the recording in the playlist as an audio clip, click the wave icon at the top left of the clip and select **Chop»Chop Into Regions**. The audio clip will be sliced at every point where there's a marker, and FL Studio will display the name of the marker above each slice.



2 > Select each take and stack them in separate tracks. When you play it back, you'll find that it doesn't sound like the jumbled mess you're expecting, because the audio clip is set to cut itself. Double-click the audio clip to open the Channel Settings window, and in the **Misc** tab, drag **Cut** and **Cut By** down to **0**.



3 > Using the mute tool (**T**), go through each take (with the tracks containing the other takes muted) and mute the bad slices. With all the questionable parts muted, it'll be easier to choose between all the great ones. Don't delete them yet, just move them to a different track, as they might be needed later to fill some gaps.



4 > Using the mute tool again, try different combinations of the slices that are left. Once you've built your ideal composite, make sure that none of the slices overlap each other. If there is any overlap, use the slice tool (**C**) to chop the overlapping audio and mute it.



5 > Once everything's been comped together, it's highly likely that there'll be some timing inconsistencies. Turn grid snapping off and use the slip edit tool (**S**) to shift the audio around in each slice until the whole performance lines up smoothly. You can check out our finished example project on the **cm** DVD.

POWER TIP

>Keeping quiet

The updated playlist tracks in FL Studio 9 will prove very useful if you didn't bother to set up markers in Edison right after recording. Mute all but one of the takes and chop them up from there. Muting tracks can also be useful for testing out combinations of sliced audio, or trying out arrangement ideas.

Final considerations

Now that we have one great performance, we're left with a collection of rejected audio slices. Instead of just deleting them, consider the fact that they might be useful somewhere else. If you're planning on just looping the comped end result, the extra slices that didn't make the cut can be useful for adding variations later on, or even doubling up the audio in some places.

Each section of the recording comprises a slice of a single audio clip, which means that,

although it's been hacked and rearranged to death, each part is still sent to the same mixer track. This might put a damper on things if you were hoping to send certain slices to different tracks to pan them around, add reverb, etc, especially when layered. The audio clip can still be cloned and sent to a different track in the mixer, but any slices made, except for the markers added in Edison, won't transfer over.

The final performance that we're left with is

made up of many slices, which can vary wildly in level from slice to slice. The volume automation entry in the menu of any of the slices will add an automation track that can be used to fine-tune the volumes of the slices. Since each slice is still part of the same audio clip, the volume automation will affect all the slices. Thus, you can easily control the level of all the slices by resizing the automation clip to be as long as the performance and drawing points into it. **cm**

Hot cross fun

We further explore Renoise 2.5 with a look at its signal following and cross-track routing capabilities



> The new features added in the latest version of Renoise have certainly inspired us to get tracking with the program again. This time, we're going to look at what are, arguably, the two most important additions to Renoise 2.5: the Signal Follower and cross-track routing. The former is an elegant device that analyses the audio output of a track and automates user-specified parameters based on the values it generates. This opens up some incredibly powerful control possibilities and, thanks to the new

cross-track routing, it's now easy to send the automation of any Meta Device to any track - although unlike other Meta Devices, and to ensure that latency is not added to the signal chain, the Signal Follower can't be used to affect devices that appear on tracks to the left of its own host track, but this is a minor and easily avoidable issue.

In this tutorial, we're going to use the signal triggered by a drum loop to control the filter cutoff frequency on a simple bass drone sound, creating something that is so much more than

the sum of its parts.

First, there's some preparation to be done... Click the **Disk Browser** at the top of Renoise and load in **DrumLoop.wav**, located in the **Totally Trackers** folder on the **cm DVD**. Then click the next instrument slot (**01**) and load in **Bass.wav**. On the **Instrument Settings** tab at the bottom of the screen, set the loop type of the bass part to **PingPong** and the drum loop to **Forward**, then check the **Sync** box. This will ensure that your drum loop plays perfectly in sync no matter what pitch it's played back at.

>Step by step

Using Renoise 2.5's Signal Follower and cross-track routing



1 > Continue from last time or load **CM_trackers_tutorial_25start**. Set the tempo of the track to about **105bpm**. Press **Escape** to enter Renoise's edit mode, and with Instrument Slot **00** highlighted, insert any note at the top of track **01**. Now place a bass note of your choosing at the top of track **02**. (Continue or load **CM_trackers_tutorial_25a**)



2 > Select track **01** (containing our DrumLoop) and add a **Signal Follower** from the **Meta Devices** list under the **Track DSPs** tab, which you'll find at the bottom left. Add a **Filter Device** to the **Bass** track and set the **Resonance** to between **4** and **5**. The **Inertia** should be set to **Instant** or very fast. (Continue or load **CM_trackers_tutorial_25b**)



3 > Now go back to the Signal Follower on the drum track and change the **Destination** from **CT** (current track) to **02** (our bass track). In the next box along, choose **Filter 3** from the list, and finally, in the next box choose **Cutoff**. (Continue or load **CM_trackers_tutorial_25c**)



4 > Hit play, and with the track on loop, set the **Destination Off** value to around **-30%** and raise the **Destination Min** value to **0.16kHz**. Also, nudge the **Sensitivity** forward to around **53%** and the **Release** to **0.1s**. And do experiment here, as these settings will radically affect the sound of our bass. (Continue or load **CM_trackers_tutorial_25d**)



5 > Let's add an **LFO Device** on track **01** with a slow **Frequency** set to control the **Destination Max** of the Signal Follower. This will, in turn, automate the maximum Cutoff value in Filter 3, giving us a slow change in timbre over time. (Continue or load **CM_trackers_tutorial_25e**)



6 > Finally, add a **Send Device** to the Bass track, then place a **Filter** and a **Delay** on send **SO1**. Select **HighPass** in the Filter and reduce the **Delay Send** to around **-9dB**. You can change the other delay settings to suit. The result should be a beautifully filter-modulated bass rhythm!**cm**

Unchained melody

Following on from last month's introduction to melody, we go deeper this time with a look at the major scales and modes

> Over the next few issues, this column will be especially useful to readers who create their tracks with little or no musical training or knowledge. In order to facilitate our fluency with creating melody (or the tune/riff), we're going to concentrate on gaining an understanding of scales - major to begin with, but soon branching out into modes. We're also going to introduce, little by little, the concept of staff notation, as it's useful in the understanding of music theory, even if you never end up writing parts for musicians to play.

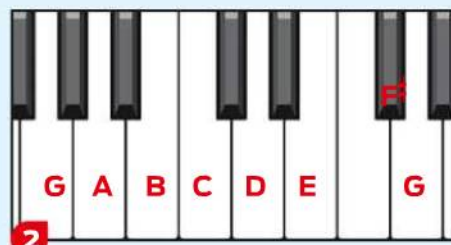
Major play

Let's focus on the common seven-note scales used in Western music from the Middle Ages to the 21st Century. For the past few hundred years, we've mostly heard music using major scales, so it only makes sense to start with them now. Regardless of which note you start on, every major scale has the same interval structure, based on tones, T (whole steps), and semitones, S (half steps): T T S T T T S.

Fortunately for the 'pianistically challenged', this pattern can be found on the white notes of any keyboard instrument starting with the note C (see Fig 1). Where a black note separates two white notes, they are a tone apart, which leaves E to F and B to C only a semitone apart. Put more generally, the gaps between the third and fourth notes and seventh and eighth notes of the scale are half of that which lies between the other notes. Remember, this isn't just for the C major scale, as every other major scale also conforms to this pattern - however, to recreate it on notes other than C, we will have to use some of the black notes on a keyboard.

Look sharp

Suppose we try to construct a major scale starting on the note G. Using the white notes sounds OK, until we reach F, which sounds too low. The scale produced, incidentally, is



1: The C major scale uses only the white notes, but notice that the gaps between them are different sizes 2: The G major scale requires us to use one black note, F[♯] 3: You also need one black note for F major, but this time it's B[♭]

perfectly valid and usable, and is actually called the Mixolydian scale or mode, but we're only after majors right now. We need to use the black note between F and G instead of the F, as this gives us the right set of intervals and the major scale sound (see Fig 2). The new note is a stand-in for F and we call it F[♯] (F sharp) in the context. It

immediately to its left instead. All of the other white notes sound fine, so for F major, we need to use B[♭] (B flat) instead of B. Again, this black note can be called A[♯] (A sharp), but in this context, it makes sense to call it B[♭]; as it's standing in for B. Make sense?

"The alternative bass note makes a surprising difference to the effect of each note"

can also be called G[♭] (G flat), but we'll get to that in a later issue.

Let's also try constructing a major scale on F itself (the natural, white-note version this time). We find that it's the fourth step, B, that stands out as being too high, so try using the black note

Mode selector

So we now have three major scales under our belt, which is a quarter of all the 12 possible - not bad for the first time round! Before we add any more, though, we're going to create some variations

on the ones we know...

A simple method of becoming familiar with any new scale with minimal keyboard technique is to hit the key note with your left hand and simply explore the scale freely with your right. The key note, otherwise known as the 'tonic' or 'root', is simply the starting note of the scale, so in C major it's C - rocket science this ain't! If you're using a piano-style sound with fading notes, you will need to re-strike this note from time to time. You can try this with all three major scales we've discussed here, but there is more: scales that use the same tone/semitone pattern as the major, but that do not start on the major's usual tonic are called modal scales or 'modes'. There'll be much more on this later, but for now, simply try sustaining the second or fifth notes of the major in your left hand while re-exploring the scale above. The alternative bass note makes a surprising difference to the effect of each note and increases your options dramatically. Try using the F major notes but play G underneath and you'll suddenly find yourself in G Dorian! **cm**

Staff notation

The gentlest introduction to staff (or stave) notation is to make the connection between the 'natural' notes (not flattened or sharpened), as in the raw notes as they appear on the stave, and the white notes on the keyboard. The most-familiar sound of the C major scale is represented most

simply in conventional musical notation, requiring only one extra 'out-rigger' note on a ledger line below the stave to start it off. A familiar mnemonic to remind you of the notes on the spaces between the lines is "FACE" (unfortunately the corresponding notes on the lines do not spell "BOOK").



It's easy enough reading the white note scale with no sharps or flats, but can you name (and play) the more random selection of notes that follows?

Nonrepetitive music



Audio renegade rachMiel explores patterns in music and encourages you to embrace constant change in your compositions

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.

> **Repetition is one of the defining features of music, occurring at all levels of a piece, macro or micro. Consider a typical pop song. At the macro level, choruses (music and lyrics) and verses (music alone) repeat. At the intermediate level, phrases repeat within choruses/verses (beat loops, for example), sub-phrases repeat within these phrases (hi-hat ticks), sub-phrases within sub-phrases (short fills), and so on. And at the micro level, audio waves repeat (oscillate) within individual notes. It's a feast of repetition!**

The fact that most music is repetitive makes it the norm, but not the law. So let's give this norm a good thrashing and make something a little crazier instead. But what is nonrepetitive music? Well, strictly speaking, white/colored noise is the only pure nonrepetitive sound (though, ironically, we perceive it as unchanging static). Every other sound has some degree of repetition in it, some periodicity of waveforms. But one would be hard pressed to call three minutes of white/colored noise a satisfying musical experience.

Micro machines

So at the micro level, we're pretty much stuck with (some degree of) repetition. But the higher up we go, the more possible it is to make compelling nonrepetitive

music. The intermediate level - that of the phrase/bar/cycle - is usually filled with repetition: drum loops, basslines, repeating patterns of foreground (melody) and background (accompaniment). All of these can be made less repetitious. Drum parts can 'keep the beat' very nicely without any looping, as

you'll see over the page. Basslines, melody and accompaniment can all do their respective tasks without relying on repeating patterns, too.

But there's a price to pay for avoiding intermediate-level repetition: it's hard work! Clicking the loop button is a hell of a lot easier than manually creating each and every beat of a five-minute groove. At the macro level, the door is wide open to nonrepetition. Instead of an A-B-A-B-A form, go for A-B-C-D-E. Or don't even divide into sections: one long, evolving A.

Avoid repeating yourself

Nonrepetitive music generally takes lots more time/energy to compose than repetitive music - imagine not being able to rely on any loops or patterns when producing a song! Nonrepetitive music is often less well received than repetitive music. Since patterns lie at the very foundation of most music, thwarting it probably won't win you any new fans. Nonrepetitive music is thus much more difficult to make and less likely to be adored. So why bother with it at all?

Well, if you're like me, you bother precisely because of its difficulty and unadorability - for the challenge of overcoming these obstacles *and* making good music to boot. If that doesn't do it for you, here are three more reasons for trying. You will be exploring a rarely visited form of musical expression, perhaps even discovering an entirely new one in the process; you will be expanding the breadth and depth of your compositional persona; and you will be acting in accord with nature, which is essentially nonrepetitive. Nature is full of cycles - days, years, seasons, breath, heartbeats, brainwaves, etc - but none of these ever repeat exactly. Try as you might, as Heraclitus put it, you just can't step in the same river twice.

"Clicking the loop button is a lot easier than manually creating each and every beat"

The depth of nonrepetitiveness

There are degrees of nonrepetitiveness, a continuum that spans the range between two poles. 100% nonrepetitive, would be the equivalent of white noise over all levels of a composition, micro (timbre) to macro (structure) - ie, unpredictable and utterly chaotic. On the other pole, 100% repetitive would be the equivalent of a steady sine wave over all compositional levels: utterly ordered and predictable. When you set out to

create a nonrepetitive piece, it's a good idea to consider what depth of nonrepetitiveness you're shooting for.

If you want to wade gently into the waters of nonrepetition, focus on sonic structures whose repetitiveness is clearly audible - loops, repeating gestures/phrases/choruses, etc - and lighten it by making the repeats less rote, less perceptible; take your lead from human players who always introduce some

degree of variation into repeats, intentionally or not (due to human playing inexactness).

If you want to dive much deeper, mercilessly route out all vestiges of audible repetitiveness (from the intermediate level upwards) and do whatever needs to be done to remove all trace of their existence. And if you want to drop to the very bottom of the ocean, do the same for all forms of repetition, whether audible or not.

>Step by step **Creating nonrepetitive music**

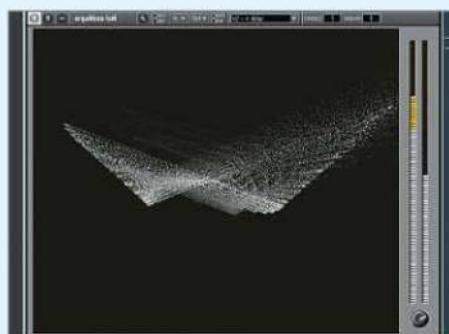
1 > To start things off, let's have a listen to the purest form of nonrepetitive sound at the micro level (waves/timbre): white noise. Here's a one-minute montage of four clouds of white and colored (achieved via filtering) noise: **Noise.wav**. The form is also nonrepetitive, so there are no echoes, no foreshadowing – just an ever-changing flow.



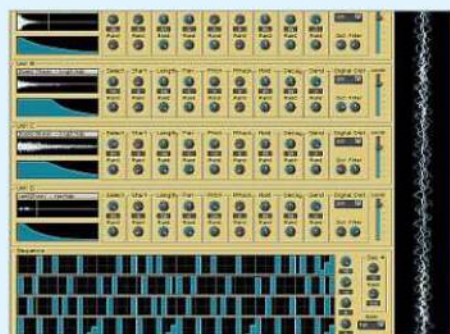
2 > Over the remaining five steps, I'll create a full-fledged nonrepetitive piece. I'll keep it short (under two minutes) and go quite deep with the nonrepetition: no looping (rote or loose), no rhythmic grid, no pitch grid, lots of internal modulation. I use my own Reaktor ensemble bassLine to create the bassline: **Bass.wav**. It's a bit dull as a solo, but it will do just fine in the mix.



3 > Next, I use the ensemble IIL FM to create a pad part: **Pad.wav**. There's no pitch or rhythmic grid at work here, and no looping or echoing either. I do, however, deploy a pedal point to anchor the entire piece pitch-wise: a low C $\sharp$ (or thereabouts) that sounds a total of five times over the course of the piece, three times in a row about halfway through.



4 > To make the melodic layer, I choose orgaNism teN, an ensemble that uses guided randomisation and real-time user control to generate theremin-like melodic lines. Here's the result: **Melody.wav**. Again, there's no rhythmic/pitch grids, no looping or echoing. There is, however, some repetition: more C $\sharp$ pedal point and multitap feedback delays.



5 > For the fourth and final layer, the all-important groove, I turn to an old and trusted friend, David Dayneko's fabulous beat machine Delivery. After having my way with it (adding custom sample maps, randomisation, EQ, delay), I manage to finagle out this warped 'drum' part: **Drums.wav**. There's virtually no repetition, except for the feedback delays.



6 > Here is the result of my nonrepetitive labours: **Piece.wav**. Hopefully it speaks to you. I mixed it in Sony Creative Software's Acid. From top to bottom, the layers are: melody, bass, pad and drums (two layers). I mastered it in Sound Forge, adding just a tad of excitement (with the Sonic Maximizer) and compression. Note how the pedal points anchor the piece harmonically.

Experimentalists' corner:
Nonrepetitiveness in extremis

Let's see how far we can push nonrepetitiveness. We've already established that nonrepetitiveness at the micro level is a compositional dead end (white noise), so let's limit our acts of extremis to the intermediate and macro realms. To that end, I present you with a challenge: create a piece that uses (as close as you can get to) absolutely no repetition in the intermediate to macro levels.

What does this mean? At the intermediate level: No loops of any kind (rote, near rote, a tad rote, etc). No patterns, for this imply repetition. No patterns means no rhythmic grids (meter, pulse, beat) and no pitch grids (scales, keys, chord progressions). No use of theme/variation, because they also imply modified repetition. At the macro level, there should be no discrete sections, because division

implies a kind of repetition, no 'thematic' material that appears in different forms throughout the piece, and no A-B-As, etc.

So, what's left? For me, this provides an ever-changing and unpredictable flow of sound. But your nonrepetitive in extremis music might be a different beast altogether. If you feel like sharing, contact me and give me a link (rachMiel.org), as I'd love to hear what you come up with.cm

Feedback loop

Our resident sound designer shows you how to turn a squealing electric guitar tone into an interesting synth effect



Grab Scot's audio and synth patches from the Tutorial Files folder

> **There are few sounds more appealing to my ears than the ear-splitting noise of guitar feedback. What's that? A die-hard synthesist professing an affinity for strings across a primitive plank of polished pine?**

I find the barely-contained, chaotic sound of a guitar in full squeal to be an ideal sonic source for my synths. And why not? We synthesists spend a lot of time finding ways to introduce a bit of unpredictability into the often sterile signal path of our synths. Easily bored by simple saw, square and sine waves, modular

aficionados cough up a lot of hard-earned dough to buy the latest cacophony generators, and there's no shortage of noisy plug-ins from which the desktop producer can choose.

Guitarists have always seen the appeal of integrating electronics into the signal path. Even while railing against the synth, plenty of axemen populate their pedal boards with bite-sized boxes that resemble individual synthesiser modules. Some guitarists go straight to the source. Pete Townshend, Phil Manzanera and Robert Fripp have famously tapped the power of

patchable, semi-modular synths in order to eke out ear-candy from their Strats and Les Pauls.

This month, I want to specifically address feedback. It's the sound of a guitar amp feeding back into the guitar's pickups, and the result is a frequency-rich, ever-shifting (and often aurally agonising) screech - it can be avoided, but it's often embellished by those of an experimental mindset (Fripp again). More often than not, I tap into this sound for use with my modular synths, and here I'm going to show you how you can achieve one of my favourite effects in software.

>Step by step

Creating a feedback loop effect



1 > I first used this technique in the 80s when I plumbed feedback samples through Digidesign's old Turbosynth modular instrument. Though it can be a little more interesting to manipulate live feedback, I suggest that we use a sample for our tutorial. I've recorded a fairly lengthy bit into a DAW. You can roll your own or use mine: **Feedback.wav**.

2 > Thankfully, we modern musicians have much more powerful options than Turbosynth. Here, we're going to use KarmaFX Synth, that most educational of virtual modular synths, but you can apply the same techniques to virtually any modular. Let's start with a fairly clean slate: load up the **ScotsBasic** patch from this month's **cm** DVD.

3 > There's not much to play with in this simple patch - just a sine wave, in fact. Let's replace the current analogue-style Generator mode (Osc 1) with a sampler, so we can play back our feedback recording. Click in the Generator's display and select the **Sampler** mode. This module has everything we need to play back and manipulate our feedback file.



4 > Samples can be loaded into the Sample oscillator simply by clicking the **Load** button in the lower-left corner. Bring in **Feedback.wav**. You'll immediately be able to trigger this from your keyboard. It's not very loud, so click the **Normalize** button to bump it up. Play a note around middle C and hold it. You might need to tune it using the **Frequency** knob in the Sampler, which I've set to **-26**.

5 > Our sample sustains nicely from beginning to end, then suddenly drops dead, so let's loop our sound in KarmaFX Synth to keep it going on strong. Click the **S** button to the right of the waveform. Some handles will appear. Drag them towards the centre to bracket a sizable chunk, as I have here, then right-click in the display to crossfade the loop.

6 > Now we're done fussing with the feedback sample, let's add a filter. Right-click in an empty area and select a **SVF** filter from the **Amp Module** Filter menu. Right-click on Amplifier1's title bar and disconnect Generator1 from the Input, replacing it with the new filter. Right-click the Filter's title bar to select **Generator1** as the **Input**.

RECOMMENDED LISTENING

DAVID BOWIE, *HEROES*

Listen in particular to the classic title track on this album, wherein you'll hear Robert Fripp combining controlled feedback with manipulation from an EMS Synthi. Fripp was a master at the art of controlled noise and he would 'play' the feedback by adjusting his distance from the amplifier for different tones and pitches. Brilliant.

THE WHO, *WHO'S NEXT*

To bust a common myth about this record, it was actually an organ, rather than a guitar, that was pumped through the synthesiser in the legendary *Won't Get Fooled Again*. In fact, Townshend used the same sort of percolating filter sequence that we're attempting to create in our tutorial below. Also contrary to popular belief, the sequence-like sound in *Baba O'Riley* turns out to have been played manually on a home organ!

PRO TIPS

BE CAREFUL!

If you attempt to create your own feedback, rather than use the audio I've provided, exercise caution. Feedback is potentially dangerous to your speakers and your ears (not to mention your relations with the neighbours). It's all too easy to lose control of the signal, so if you don't have confidence in your ability to keep it reigned in, don't mess about with it.

THE WONDERS OF THE EBOW

Heet Sounds' Ebow is a tiny handheld device that excites a guitar string by subjecting it to an electromagnetic field. The result is a fully controllable, harmonically rich and lively sound, not unlike that of feedback or even a string synth.

ALTERNATE AVENUES

You've got access to thousands of sounds in the average home studio environment. From mic feedback (dangerous!) to old-school delay effects, these sounds might very well provide some interesting starting points for patches like ours.

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 Cosmonauts.



- 7 >** Switch the filter's mode to **4 Pole** and reduce the **Cutoff** to **0.7kHz**. Boost the **Resonance** up to an ear-piercing **49** or so. Now for modulation - right-click in an empty area and select the **Envelope** module from the available **Modulation** options. This is a monster of an envelope generator, far more sophisticated than the usual ADSR envelope.



- 8 >** Right-click the Filter's **Cutoff** and select **Modular2** as the input source. Yep, that's our new Envelope generator. With held notes, you can hear it doing its thing to our feedback sample. Try switching the Controller1 module's mode to **Poly8** and play a chord. As you can hear, our sound might make for a fine pad, if we didn't have something else in mind.



- 9 >** Returning to our Envelope, we can see a few 'nodes' in the display that govern the envelope's shape. These are added by double-clicking in the display and deleted by right-clicking them. Moving the shape around is as simple as dragging the nodes or the lines between them. Let's create a complex, staircase-like shape, as I have here.



- 10 >** We've got the squelchy resonance of a synth, but wrapped around a sound that has a little more life and motion. Unfortunately, it now drops dead again once the envelope reaches the end. To rectify this, click the **S** button next to the display to loop the thing. Once again, you'll have to adjust the loop handles. I've looped near enough the whole thing here.



- 11 >** Our sample and envelope are looping along, so now you can adjust the speed of the rhythm by changing the Envelope's **Duration**. I found a setting of **28** to be nicely energetic. While you're at it, adjust the **Release** time of the ADSR attached to the Amplifier, so that the whole thing takes a bit longer to fade into silence once you release the keys.



- 12 >** Let's toss in a **Delay** module to spice things up. Stick it between Amplifier1 and Controller1. Set the **Delay** time to echo in sync with your envelope action - I've set mine to **58**. I've also used the Delay's built-in high-pass filter (**HP**) to roll off some of the lows for an old-school dub sound. You can, of course, embellish this. Here's my patch: **FeedbackLoop.fxp cm**

ILS

We catch up with the legendary breaks producer to talk beats, basslines and home mastering

> **ILS, aka Illian Walker, has been a leading light on the contemporary breaks scene for the best part of a decade. Although producing for over 15 years now, it was when his stunning single *Next Level* tore up the world's dance floors in 2002 that he truly earned his place at breakbeat's top table.**

Four albums and a smattering of awards later - including Best Single at Breakspoll 2002 and Best Album at Breakspoll 2008 - and ILS finds himself snowed under with an assortment of musical projects and his highly anticipated fifth studio album. For now, though, he's bestowing those production talents on projects of a more mainstream, commercial nature. We caught up with ILS at Spiral Studios in Fulham...

cm: It's been two years since *Paranoid Prophets* scooped Best Album at Breakspoll. What have you been up to since then?

ILS: "I've been pretty busy, as it goes. I did quite a lot of live performance with *Paranoid Prophets* - obviously you have to when you're promoting

stuff - and I was chopping and changing between record labels, and trying to keep up with the ever-changing business of the music industry, which has been changing at a rate previously unknown to man.

"I mean, here in Spiral Studios, they've gone from producing artists and developing up-and-coming vocalists to producing almost entirely for advertising, film and TV music. We're seeing commercial studios like this trying to change with the times and not get left behind. It's mostly publishing and multimedia content now. I've done a lot of that as a commercial programmer, but I love being a recording artist - that's what most people sign up for when they get into the music industry - so it's nice to do a bit of both.

"I'm in discussions with Distinctive about a new album right now as well. I usually do an album every two years or so."

cm: Can we expect the next one to be out later this year, then?

ILS: "Er, I've been a bit behind with that, actually. But yeah, I'm going to get some ideas together this year and probably write it next year. There's always a time delay between an artist submitting an album and getting it released - usually about six months between it being submitted to the label and them placing a release date for it and getting the press and whatnot around it. So even if I got one handed in by the end of this year, it wouldn't be out until next year. It's quite a slow process."

cm: What else has been keeping you busy?

ILS: "Well, I help out here at Spiral Studios every now and then. I don't do the nuts-and-bolts engineering - it's more a kind of production consultancy on projects that are moving towards the final stage. If one of our commercial projects doesn't sound quite right, then I'll come onboard to make sure the drums and bass sound like they were generated by a real dance producer... especially for things that are a bit more urban, or a little more electronic. A lot of



specialist advertising companies just don't have that kind of edge, you know?

"I've been experimenting with teaching as well - I really wanted to give it a go, so I did a bit of work for some of the bigger music academies in London. I enjoy producing quite a lot and I've always trained engineers in the studio, but doing it in a classroom format was a new challenge for me. It was actually quite scary. It's a bit like being a DJ... it's a form of live performance, standing in front of 15 people trying to explain stuff! So right now I'm just experimenting, keeping as busy as possible and trying to make the best use of every day. Moving with the times!"

cm How has your music production setup evolved over the years?

ILS: "My setup has just got smaller, lighter and more compact. The dream of being able to make music and travel around is finally here! Back in 2002 or 2003, they just couldn't sell it to me. I always thought a proper producer would have a fixed place of work - if nothing else, just because

the speakers and the outboard are so heavy.

"But these days, I'm actually enjoying the lightweight compactness of everything. I think that laptops and music software in general are where I always wanted them to be. People were always going, 'ILS, man, you've got to get this laptop'. And that was back in '97. People were always trying to sell me laptops and stuff... 'Man, you got to make your tunes using this - with Mac OS9, and it's got like a GM synth in it!'. But now that it's finally become a reality, it really is a joy to have everything in one box."

cm You were always a big fan of Akai samplers, weren't you?

ILS: "Akai samplers were real workhorses in the studio in my day, but I'm finding that, these days, it can all be done in one box. However, I actually used to like having a bit of outboard, especially when it came to samplers. With them, you get a secondary screen and secondary buttons, so you can have one hand on the sequencer and also work the sampler at the same time. It's

actually a much faster way of working, having separate windows and controls, but a lot of people just didn't get it. 'Why don't you have your sampler inside your computer?' they'd say. Well, because for me, it's slower, basically. That's why! I like working quickly. But now, my samplers have pretty much got dust on them, I tell you. I used to collect Akais, for some reason, and there's about three or four of them stacked up in my room. They're not even plugged in. So I'm really moving into laptop-only stuff."

cm If it was no extra effort to carry an Akai around, would you do it, or are you happy with what's coming out of the laptop?

ILS: "I'm happy with what I'm getting out of the laptop these days, because once you've put it through a sampler, you're looking at having a mixing desk as well, and I think for me, the whole point is that it's actually quite a joy to do internal mixing now. Especially with Logic 9 - the plug-in effects that come with that kind of software, the modern, standard 'built-in'



Master of the universe

"I'm quite into experimenting with home mastering now. A lot of people master tracks themselves because giving it to a professional suite can be a very expensive process. Nevertheless, if you can afford it, it really helps if you have a good idea of what the engineer's going to be facing when you send it through to them. That's my new thing - even if it's going to be sent somewhere like The Exchange in Camden, which is a really good mastering place, I'll always run it through iZotope's Ozone. I've got a few mastering presets that I've made for Ozone, so I'll run any mix I'm doing through those, then just listen to it and make notes. Then I'll correct everything before switching off all of the mastering plug-ins. And even if it isn't going to be mastered by me, it really helps to walk a mile in someone else's shoes, as it were. In that way, if you are going to send something through to a mastering engineer, you might as well have an idea of what he's going to be listening to."

mixdown capabilities are superior to what I could achieve using a Mackie desk and outboard gear. So factor in a sampler, a desk and some outboard and you're starting to look at a fair amount of space being used up... and then it just weighs a ton if you want to move it around!"

cm: Let's have a run down of your kit list. Logic and Live are your mainstays, right?

ILS: "Yeah, I've got Logic 8 on one computer, Logic 9 on another, and Ableton Live on another, just because everyone's going, 'Yeah, it's wicked'. But I don't know how I view it yet. I've fiddled around with Live and there are pros and cons, especially if you're preparing radio shows. Most people I know that work in radio use Ableton Live, just for the way it handles full tracks and the way you can blend them into each other. If I was preparing a radio show, then I'd probably fall back on Ableton Live, but for actual writing, construction and production of tracks, I'm using Logic 9 at the moment."

"And to be honest with you, from a lightweight point of view, I actually like Reason. It might sound a bit out of date, but it's the one application that just works on anything. It doesn't take up much memory, it's really light and it works on anything... if you've got a Reason disc in your back pocket, you don't even need a laptop. Just turn up pretty much anywhere that has a functioning computer and you're away."

"And, er... obviously it's wise not to use the Factory Sound Bank library, so you'll have to bring your own. I suppose that's where Loopmasters and people like that come into

play - if you've got a few of their REX packs, or something from name producers, then you've already got an artist's sketch pad. If you're doing the full painting on, say, Logic 9, then just doing the pencil sketches on Reason 4 is a good way to get ideas up and running. I'll throw up eight beats and see which ones combine well and which ones definitely don't before I start fiddling around with Logic's EXS samplers and whatnot, purely because that's a bit slower. I like the ease of use, just mixing beats in Reason."

"And obviously, from a teaching point of view, Reason's the one to use, because most people have access to a PC. If you really want to engage people and get them interested in music quickly, then use Reason 4 straight away. It's got a couple of pretty good synths in it, as well. I've spotted a few artist albums that I think use the Reason 4 sound libraries, and I'm like, 'Argh, no!'. I'm naming no names! Those sound libraries can be a bit generic, that's all."

"So yeah, I picked up a few Loopmasters libraries and that's kept me happy. They've given Reason 4 a new lease of life."

cm: Have you got any plug-ins that you regularly call upon?

ILS: "Yeah, I do. I did a rough outline for one of Placebo's singles, probably about four, five months ago - a track called *Bright Lights*. We had 12 hours to submit it and we didn't meet the deadline, but anyway, some of the plug-ins that I used a lot for it were by Camel Audio, especially CamelSpace. I don't like putting those directly on sounds, but I like using them for variations. Say I've got a keyboard stab - I'll run it through

two or three different CamelPhats or CamelSpace plug-ins and get some twisted versions. I'll bounce them down, so I've got three different versions of the same sound, then I'll switch that plug-in off, basically!

"I also like Ohm Force's stuff for the same reason - those guys really mash up signals, so if you're making variants of one sound and trying to get the most out of an instrument, then Camel Audio and Ohm Force are worth a look.

"Another good one that I used heavily on this mix was the Sugar Bytes Effectrix, which is fun. It's almost like having an engineer chop things up for you randomly. It just mashes things up, without chucking tons of delay and wash on things. It's a different type of process, more like scratching and gating. As an effect, I really like it because I used to have to spend hours and hours manually programming that sort of stuff, but now I just run it through half a dozen Effectrixes, then literally grab one bar off this bounce, another bar off that one and join them together. It can come up with some quite random things that can be surprising as well. So they're probably the three core plug-ins that I used on, say, that remix.

"I've also started using iZotope's Ozone internally on some of the beats and basslines, just to maximise them - I'll bounce versions of them down through it. Once again, I'll switch it off once I've bounced everything down, as it can be a little heavy on the processor. And that's about it. Those are the ones that I'd use for actually creating new sounds out of the existing sounds that I've been given.

"For me, it's more about trying to create new soundscapes and mutations"

"Finally, if you want to talk about quality reverbs and delays, then I'm actually happy with the high-end ones that come with sequencers. That's one of the reasons I like Logic. The Space Designer series with reverb and delay, is... well, it's all you need, really. But for me, it's more about trying to create new soundscapes and mutations - taking quite ordinary, mundane sounds and turning them into vibrant instruments. I'll use those other plug-ins to take a track in a totally different direction."

cm: Finally, other than a new album, what else have you got planned?

ILS: "Hmm, good question! At the moment, I'm just taking every month as it comes. I enjoy working abroad, which is why I'm keeping things loose right now. I quite often get the chance to go away for a month, to Australia or America, and it's hard to make long-term plans when you're living like that. But if I was going to stay in London permanently... maybe I'd produce some indie guitar bands. Just have a bit of fun with it. I had quite a bit of fun working on the Placebo parts, so if I came across a band that had outstanding lyrics, then that's something that would definitely keep me captivated." **cm**

Bass management

ILS knows a thing or two about badass basslines - in fact, an early version of his legendary breaks track *Next Level* literally brought the house down one night in Miami...

"Someone almost got killed by a huge chunk of the ceiling falling down when Adam Freeland played *Next Level*!" he exclaims. "It's kind of the desired effect - not killing people, though, you understand! I used to get my analogue basses out of a Korg Electribe, the EA-1. All of the other models in the series seemed to be really digital, but that blue one had the original, near-authentic sine bass sub - really low-end stuff - so I always layer that underneath it.

"You have to be careful when mixing bass. If the bass is too loud and you play your track in a club, then the PA system is going to overload and drown out all of the top end. The whole track just gets sucked under and all you'll hear is bass. A classic drum 'n' bass trick is to have really punchy basses that aren't actually mixed that loud. Then the track can be played louder, so the perceived level of bass is louder. A lot of the young pups in the studio always turn the bass up, but that's actually counter-productive - if you turn the bass down a little bit the track will actually be louder. I've had to explain that thousands of times, but it usually gets ignored and they'll turn the bass up anyway! It's trial and error. Aim to hit the entire frequency spectrum the best you can. Once that's done satisfactorily, bring the overall level down a bit."

ILS gear

Apple MacBook

Apple Logic Pro 8 and 9

Propellerhead Reason 4

Ableton Live

Camel Audio CamelSpace and CamelPhat

Ohm Force Ohm Boyz and Ohmicide

iZotope Ozone

Good to see a website that works similarly to most music download sites. The best thing about Clickproduce is when I'm stuck in the studio I can spend time hunting for an 'inspirational' sample to kick things into gear.

Oliver Lang

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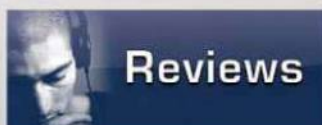
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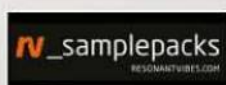
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92 DMG AUDIO EQUALITY

Do we really need another EQ? You bet, and this one is filter the brim with features (see what we did there?)

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- 1-4 A seriously flawed product that should be avoided
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A product has to really impress us with its functionality and features to win this one



If the product exceeds expectations for its price, it will receive this gong



In the opinion of our editor, the best product reviewed in the magazine this month



Vengeance-Sound **VPS: Metrum** £135

Can you kick it? Yes, you can with this all-new dedicated kick drum synthesiser from the minds behind the big red V

System requirements

PC P3 800MHz, 512MB RAM, Windows 2000/XP/Vista/7, VST host, Syncrosoft USB key

Mac 1.5GHz Intel CPU, 512MB RAM, OS X 10.4.8, VST/AU host, Syncrosoft USB key

> Sample supremos Vengeance-Sound branched out into plug-ins last year with the first in their Vengeance Producer Suite series, Multiband Sidechain. This effect made it a doddle to achieve sidechain pumping – a very common dance music production technique. Likewise, Metrum aims to make light work of the most fundamental – and often most important – element of any dance track: the kick drum.

Metrum is a VST/AU instrument, and the basic architecture replicates the technique used by Vengeance-Sound's Manuel Schleis to create the killer kicks that his sample packs are renowned for: a synthesised sine wave 'body' layer brings the beef, with up to three sampled 'attacks' layered on top to give character.

There are 330 genre-categorised presets, and they're just as powerful and production-ready as those in Vengeance-Sound's sample libraries. Metrum's smart Librarian is simplicity itself: click a preset to audition, double-click to load it. All presets respond to the mod wheel, and there are three GUI Modifier macro knobs that provide additional sound-shaping options – eg, to dial in extra reverb, reduce the sample rate, fade in a

ride cymbal sample, etc. Their functions are assignable, so it varies from preset to preset.

Attack, attack!

As well as complete kicks, there are presets for individual components: bodies and attacks. 1800 attack samples are included, covering kick drums (who'd have thought it?), snares, claps, hats, rides, clicks, noise blasts and more. These can be auditioned just like full presets and dragged onto a sample slot. You can set user sample folders, but you can't traverse subdirectories. 24-bit samples also didn't load (this is fixed in the imminent v1.0.2 update).

Let's first look at the synth oscillator. Like the other layers, its controls are visible at all times. The basics are mute and solo buttons, a volume dial and pitch control. The Shape knob takes the oscillator from a sine wave up to a near-triangle shape, while Drive applies distortion and Spike accentuates attack. Described as emphasising frequencies in the "stomach region", the Punch knob lives up to its name, adding – or removing – 'oomph' around the 130Hz region. Finally, there's a pitch control. Impressively, the small waveform

"The pitch envelope is the beating, booming heart of Metrum"

graphics (and those in the envelope screens) continually update to reflect your tweaks.

Let's env-elope

The main tone of a kick drum typically starts out high then drops low very quickly. Naturally, then, there's a pitch envelope, and this is the beating, booming heart of Metrum, where you determine whether your kick is a lazy, 808-esque affair; a ballsy 909-alike; a minimal click-meets-sub; a taut, momentary DnB jab; etc. It's an ADSR design, with nodes for each point and curve handles. There's an amplitude envelope, too.

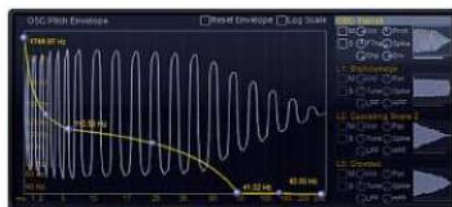
The sample slots also have pitch and amp envelopes, but their basic controls are different: mute, solo and volume are still present, but the rest comprise Pan, Tune, Spike, HPF and LPF, the latter being high- and low-pass filters - vital for slotting sounds into one cohesive kick.

At the global level, there's a master amplitude envelope applied to all layers, and a modulation envelope (see boxout). More options are found in the MIDI and System pages; for example, you can determine which layers respond to MIDI note (great for pitched jumpstyle kicks) and length, disable the master limiter, and decide what's affected by the excellent randomiser.

Next, effects. The most basic is a two-band EQ on the entire output. It has a spectrum analyser too, but it's only visible in the Effects page, so you can't see it when you really need to, such as while using the pitch envelope. We'd suggest an option to show an analyser instead of the (somewhat redundant) virtual keyboard.

The rest of the effects can be selectively applied to layers with toggle buttons, so you can easily exclude, say, the oscillator layer from the Distortion section - neat. Other effects are Bit Crusher, Stereo Matrix (widen or convert to mono), Stereo Delay (apply a short delay to either channel, to increase width), Room Reverb and Gated Reverb. The latter is tempo sync'd so that it's always heard on the offbeat, and it resets when a new note is played, so the reverb never obfuscates the kick itself - also neat! The only effect we're missing is one to narrow the stereo field, rather than just 'mono-ise' sounds.

One big oversight is that there's no undo/redo. Accidentally hit the Randomize! button just as you've dialled in the best kick drum you ever heard in your life and... Game over! However, v1.0.2 should be out by the time you read this, with a 'restore last preset' function for such moments, amongst other new features.



The synth oscillator's Pitch Envelope is the source of omph, thud, boom and various other onomatopoeias



The Mod Matrix page and sources menu - the destinations list is almost as big as Metrum's GUI!

Mod matrix tricks for your kicks

While you can create stomping kicks without ever going near Metrum's impressive modulation matrix, it's there for those seeking ultimate control. There are ten slots, and as with Metrum's effects, you can disable each with a power switch.

Modulation sources include MIDI velocity, key, pitchbend and mod wheel, as well as a selection of CCs. The three GUI Modifier knobs can also be controlled via CC, although this didn't work for us - Vengeance-Sound are aware of the issue and hope to fix it in an update. In the meantime, you can use host automation or set up alternative CC control in the matrix.

There's also a dedicated modulation envelope that can be used as a source, and the amplitude envelope of any layer may also function as such.

As for destinations, you're spoilt for choice - pretty much any parameter of the synth can be modulated, including layer settings, effects parameters, the GUI Modifier knobs, the strength of the other modulation slots, and even MIDI keytracking and the root key.

We particularly enjoyed binding the mod envelope to effects parameters (eg, bitcrusher frequency) and those of the oscillator, such as Drive and Shape, to add a touch of growl in the decay of the kick, or to sharpen the attack.

Bang to rights

In use, Metrum delivers the goods for any form of electronic music, be it house (all flavours), hardcore, RnB, hip-hop, DnB, hardstyle, etc. The sound is authentic and thoroughly slammin'. The timing is rock solid, too - as tight as placing samples on an audio track, at least in our test DAWs (Live and Cubase). If creating a kick from scratch, you still need the know-how to be able to tell when it's punching in the right places and not an overblown mess. You'll also have to resist the urge to continually tinker with your kick!

You could always combine your existing synths, samples and effects to create custom kick drums, of course. We cobbled together something like this in Ableton Live using Groups, and while it worked and sounded passable, we have to admit that it wasn't half as quick and easy as Metrum and the results weren't as good.

To sum up, although it's arguably not a vital purchase, the degree of effort and expertise that's gone into making Metrum has clearly paid off. We're sure some producers will wonder how they ever made do without it. **cm**

Contact info@vengeance-sound.com
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ISM BazzISM

N/A >> N/A >> £30

Dead simple kick drum synth - try layering it with samples

Vengeance-Sound sample packs

N/A >> N/A >> £65+

Terrific pro-standard kicks and more in good old WAV format

Verdict

For Pro-quality, floor-shaking kicks!
Easy to use but potentially quite deep
Excellent presets
Genuinely useful, fun randomise options

Against Pointless virtual keyboard
Spectrum analyser not always visible
No progressive stereo narrowing effect
No undo and minor bugs in v1.0.1

It's a specialist tool and not for everyone, but Metrum's convenience and quality of sound will delight those who take to it

9/10

PUNISH

Ups the input gain by 20dB, enabling you to push Decapitator over the edge!

METER

The meter is incredibly responsive - you'll enjoy slamming it into the red!

AUTO

Enable this and the output gain is reduced as you increase the drive



STEEP

Engages the 30dB/octave high-cut filter slope

STYLES

Choose the underlying modelled analogue circuit

GROOVE

In rhythm shape mode, the groove control enables you to add swing or shuffle to the synced panning



DIRECTION

In three of the modes, you can select whether the panning goes to the left, to the right or back and forth

SoundToys

SoundToys V4 \$495

PC MAC



System requirements

PC P4 CPU, Windows XP/Vista/7, VST/RTAS host, iLok

Mac G5/Intel CPU, OS X 10.4, AU/VST/RTAS host, iLok

> Those who buy the SoundToys effects invariably love them, but at \$495 for the native package, it's not an investment to be undertaken lightly. However, with two new plug-ins included and no price increase, v4 is already looking far more attractive than v3. Previously, the bundle included five core effects: Echoboy, Tremolator, Crystallizer, FilterFreak and PhaseMistress. Pro Tools users also benefited from the Speed timestretch plug-in, with its algorithm also available in Logic's Time and Pitch Machine. And TDM users could enjoy a further three legacy effects: SoundBlender, PitchDoctor and PurePitch. The pre-existing effects haven't changed, so we won't cover them in depth here, but we've put **cm113's** SoundToys v3 review on the disc, so you can find out what we make of them.

Overall, the plug-ins lean towards time/pitch effects, with a large slice of vintage flavour thrown in. Whether you want tape-type echo, rich analogue chorus, swirling pedal phase or rhythmic stereo filtering, it's all in there. And with an abundance of presets and simple parameters, you can produce both subtle and

crazy effects with ease. Possibly the most interesting of the lot is Crystallizer, which yields all manner of harmoniser-influenced weirdness.

So, how have things progressed? Well, the plug-in shell has a new menu-based preset system. All previous presets and expansions (such as the Richard Devine set) remain, but there's a 'new for v4' folder, too. Beyond that, though, it's all about the new plug-ins: Decapitator and PanMan.

Pan, man

PanMan is heavily influenced by rackmounted classics, such as Audio & Design's PanScan and Electrospace's Spanner. You may wonder why you'd need such a plug-in when most DAWs include an auto-panner anyway, not to mention the fact that you have automation at your disposal. Well, there are two reasons: simplicity and, uh, complexity. Allow us to clarify...

On the simplicity front, PanMan's five modes - LFO, Rhythm Step, Rhythm Shape, Random and Triggered (PingPong and Random Step) - enable you to set up either tempo synced or free-running autopans in a jiffy. And with simple

“Decapitator can do anything from subtle drive to sucking saturation”

global controls (offset, width and smoothing) and a hardware-style position meter, you’ve got quick control and visual feedback.

That, however, is only the tip of the iceberg. For the first three modes, the Tweak button opens the envelope/gate panel, where you’ll find level-dependent methods of further modulating the offset, width and, in LFO mode, panning rate. This turns PanMan into a dynamic effect that reacts to the level of the signal – going past the threshold provides more modulation.

By contrast, in the two triggered modes, when the threshold is exceeded, the signal is panned to a new position. Here, the Tweak option opens up the trigger filter page, where you can fine-tune and monitor the trigger signal.

This sort of flexibility can seem daunting, but we found creating dynamic effects a doddle and were particularly taken with the idea of panning that becomes wider as the signal level increases. PanMan has one last trick up its sleeve and that’s the option to effectively move signals ‘beyond’ the speakers (up to 105 degrees either side). This can be used either to create ultra-wide sounds, as with most stereo width processors, or simply to pan sounds past the usual limits of the speakers, which is less common and a great way to add extra space to busy mixes.

Losing your head

The brutally-monikered Decapitator stands as a bit of a departure for SoundToys, being a saturation plug-in. Sure, some of the SoundToys plug-ins have an analogue mode (see boxout), but this is in a different league altogether.

Controls-wise, you get input drive level, output trim (with optional auto gain compensation), output wet/dry and three EQ parameters (tone, variable low-cut and variable high-cut) to shape the sound. Note that the low-cut and tone controls affect the pre-saturation signal, whereas the high-cut is post-saturation. Further options include a steep setting for the high-cut filter (30dB rather than 6dB/octave) and Thump, which emphasises the cutoff point of the low-cut filter, described as adding a tape-esque thud to your sounds. Rounding things off is the Punish button – this piles on a hefty 20dB of input gain.

There are five saturation modes, and hardware heads will be thrilled to learn that these are modelled on an Ampex 350 tape



Lush sounds abound with the PhaseMistress phaser. Note the selection of Analog modes on the right



Make entire evenings disappear by playing around with the Rhythm Pattern Editor in FilterFreak

Hidden extras

You can easily get by with only using the main parameters on the SoundToys plug-ins, but it’s worth investigating the extended and hidden parameters. FilterFreak, PhaseMistress, Tremolator and now PanMan all feature a switch labelled Analog Mode. This brings in an additional saturation stage and includes a number of preset styles: Clean, Fat, Squash, Dirt, Crunch, Shred and Pump. There’s no actual level control, so the effect is driven by the prevailing signal level, and you’ll also notice an increase in CPU hit, but it all adds to the analogue flavour that SoundToys are renowned for.

The other main extras are accessed via localised Edit or Tweak buttons that open separate floating windows within the plug-in. Options here are plug-in- or even mode-specific (such as in PanMan, as explained in the main review). Some of the most impressive options are found in the LFO and rhythm modes of FilterFreak. In the first instance, you can use the LFO shape editor to design your own wave shape. Similarly, in rhythm mode, in addition to various preset rhythms, you can open the custom rhythm editor to create your own. For those who want it, there’s a great deal of power here.

recorder preamp (mode A), Chandler EMI TG Channel (E), Neve 1057 input channel (N) and Thermionic Culture’s Culture Vulture in triode (T) and pentode (P) settings. This results in five distinct effects, from the fizzy edge of styles N and A to the warmth of T, surprising openness of E and more destructive P. However, these effects change dramatically with increased drive, and we found that flipping the Punish button and pushing each to the limit produced the most destructive sound in mode E – not what we expected after use at more moderate levels.

Decapitator can do anything from subtle drive – for warming up an electric piano, say – to sucking saturation that’s perfectly suited to drum subgroups. It really sounds excellent and, what’s more, it’s not a CPU hog.

At \$99, the v4 upgrade is great value, though we doubt existing users will need much persuasion given the quality of the new plug-ins. For newcomers, the variety afforded by PanMan and Decapitator and zero price increase make the bundle more attractive than ever. **cm**

Contact via website
Web www.soundtoys.com
Info TDM version, \$1195; Native upgrade, \$99

Alternatively

u-he Uhbik

cm139 >> 10/10 >> \$236

It’s hard to beat the value of this bundle of nine great effects

Wave Arts Tube Saturator

cm148 >> 8/10 >> \$100

An incredibly realistic saturation plug-in, but very CPU-intensive

Verdict

For Splendid sound quality
Well designed saturation plug-in
Super-flexible autopanner
Sensible new preset management
Extended parameters for tweekers
Analogue mode on some plug-ins

Against Nothing!

If you’ve toyed with the idea of picking up this terrific bundle, then now’s the perfect time to take the plunge

10/10

DMG Audio EQuality £100

PC MAC



Get ready to (remove) rumble as we explore the bells and whistles of this feature-filled equaliser

> Dave Gamble is the man behind DMG Audio – you might not know his name, but he’s worked on a number of high-profile plug-in projects from respected companies such as Focusrite, Sonalksis and Brainworx. EQuality sees him striking out on his own, and a quick look at the feature list shows that he intends to hit the ground running. This EQ plug-in has nine bands (four bell/notch, two shelf/bell, dual high-pass and one low-pass), five EQ styles (see boxout), M/S processing, a spectrum analyser, foldable interface and more.

Scratch the surface and the features keep on coming. The Range slider scales the gain of all bands simultaneously, from -36dB to 36dB, with the negative settings enabling you to ‘flip’ your EQ curve, so boosts become cuts and vice versa. There’s a global EQ frequency Shift slider too, working as a multiplier ranging from 0.5 to 2.

Next up, you’ll find that the shelving bands have their own Shift knob, with which you can move their points of resonance. The gain/Q interaction is fully adjustable – with higher settings, increasing gain narrows the Q, which is a feature associated with analogue EQs.

Rounding things off is the ‘auto listen’ option, which solos the band you’re modifying, to assist with fine-tuning and locating problem frequencies. Amongst the many preferences, are meter ballistics and scaling options (VU, PPM, digital, BBC, full scale, K-12, K-14 and K-20).

Everything to gain

Given the feature set, EQuality sounds like it’d be a handful to use, but actually it’s not, and the manual is very helpful. This is a very powerful EQ in terms of sonic sculpting, and with up to 36dB cut and boost – plus the ability to shift the resonance of the shelves – you can easily create ear-splittingly loud boosts if you’re not careful. Also potent are the notch filters on the four main bell bands and the dual high-pass filters. The latter work nicely together – you’d typically use



one to remove rumble and the second to shape lower frequencies. Our only slight concern is that when using auto listen with the notch filters, the sharp Q combined with high gain can have you jumping out of your skin!

EQuality’s flexibility means you don’t have the point-and-shoot simplicity of a vintage EQ emulation. However, there’s plenty to like, particularly in terms of practicality. For subtle enhancements and extreme curves alike, EQuality sounds great. We found the gain range control particularly helpful for accentuating existing settings or reigning in over-enthusiastic cuts and boosts. And the global frequency shift is ideal for zoning in on that elusive sweet spot or adjusting an EQ curve to suit a particular instrument. Also helpful are the *eight* memory locations, undo/redo and the option to directly manhandle the curve by dragging nodes.

It may seem strange to get excited about yet another EQ plug-in, but EQuality packs so much in, you’ll genuinely love using it. A really excellent first product from DMGAudio. **cm**

Contact dave@dmgaudio.com
Web www.dmgaudio.com

It’s just a phase

EQuality includes five EQ modes. For most uses, DMG suggest using Digital or Digital+, the latter having a slightly more accurate high-end response. Both are zero-latency and CPU-efficient. It’s worth saying that these modes have been designed to sound ‘analogue’, so don’t be put off by the names.

The remaining three all employ impulse-response-based (FIR) techniques. The Linear Phase option gives zero phase distortion but with some processing

latency. The Analogue Phase mode uses a similar technique but instead replicates the phase shifts of an analogue EQ and should sound extremely close to the Digital option. Finally, Minimum Phase shifts the energy of the impulse response to the start, so there’s no delay and minimal transient smearing. The differences between modes are subtle, but they can become more pronounced if you have other processing following the EQ, such as saturation/distortion.

System requirements

PC Windows XP/Vista/ 7 (32-/64-bit),
VST/RTAS host

Mac G4/G5/Intel CPU, OS X 10.4,
VST/AU/RTAS host

Alternatively

FabFilter Pro-Q

cm148 >> 9/10 >> £148

Offers regular and linear phase modes and a superb GUI

112dB Redline Equalizer

cm145 >> 10/10 >> \$169

One of the most feature-packed of EQs, with a terrific sound to boot

Verdict

For Very powerful all-round EQ

Five EQ modes

Integrated analyser

Eight A/B memory locations

Auto-listen feature

Low CPU hit in Digital mode

Against There’s a lot to take in

Watch your speakers with auto listen!

This professional equaliser is a great start for DMG Audio. If it’s any indicator of their future output, we’re all ears

9/10

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Loomer String

£59

PC MAC

Fancy a bit of strings-attached fun? This cunningly named synth just might satiate your urges

> The 70s saw the emergence of so-called string machines: synths designed to mimic the sound of an orchestral string section. They didn't sound much like the real thing, but their distinctive sound made units like the Solina String Ensemble and Elka Rhapsody popular in their own right. Loomer String aims to give you that string machine sound in virtual form.

String synths sounded different to polysynths of the day because they used 'divide-down' oscillator technology - instead of oscillators that change pitch as you play, they might use a bank of oscillators to cover all 12 notes in the top octave of the keyboard, then 'divided down' each of those oscillators to cover the lower octaves and thus the entire keyboard. These produce a fairly thin tone, so to thicken them up and give a 'string section' effect, a built-in chorus circuit would be employed. These went beyond the usual single-voice design (ie, one modulated delay line mixed with the dry signal) and instead delivered an 'ensemble' using multiple delay lines (the famous ARP Solina had three voices, for example), each with its own LFO.

String has two layers, each with its own divide-down oscillator, a simple AR envelope, velocity control and a filter section. The layers can be blended or triggered across different keyzones. The bypassable filter section has five modes: low-, band- and high-pass, HP/LP Pair (high- and low-pass in series) and nine-band EQ. The filters respond to velocity and aftertouch.

The modulation section's LFO can be used for vibrato or filter modulation, and there's an envelope that can be applied to the filters, too. No string machine would be complete without chorus, and String's emulates the 'bucket brigade' design of analogue models, which used chains of capacitors as a primitive 'analogue sampling' method. String offers a vintage ensemble mode and a modern, thicker chorus. There's also stereo phaser and a stereo delay (which also features bucket brigade modelling).



Loomer String is neatly laid out, easy to program and light on your CPU. The 80 presets cover a wide range of string sounds, with some split-layer presets and a selection of basses and leads. Being so straightforward, it's very quick and easy to customise presets to your needs.

String theory

The sound quality is superb, with just the right balance of vintage tone and digital clarity. The sound could best be described as cinematic, albeit in a late-70s sci-fi/horror fashion. String can easily stretch from Vangelis-like soundtrack to Prodigy-esque sound module strings.

Being a string synth, the range of sounds is limited, and our most-used presets were simply variations on a theme. The basses and leads are nothing to write home about, but that's fair enough - you're not buying this synth for those.

Loomer have managed to capture the simplistic sound and spirit of classic era string synths, and the excellent vintage-modelled effects are instrumental in its authenticity. **cm**

Contact support@loomer.co.uk
Web www.loomer.co.uk

System requirements

PC 1GHz SSE CPU, 512MB RAM,
Windows XP/Vista/7, VST/RTAS host

Mac 1GHz Intel/PPC CPU, 512MB RAM,
OS X 10.4, AU/VST/RTAS host

Linux 1GHz x86-based SSE CPU,
512MB RAM

Alternatively

FXpansion DCAM: Synth Squad
cm143 >> 9/10 >> £185

Contains three synths, one of which is a great string machine emulation

GForce Virtual String Machine
cm122 >> 9/10 >> £151

Many classic units were sampled to create this splendid ROMpler

Verdict

For Classic sound

Easy to program

Effects are very musical

Low CPU usage

Against GUI response a little clunky

Limited range of useful sounds

Like the original string machines, String is a one-trick pony, but it's a rather good trick, we have to say

8/10

One envelope to rule them all

One quirk of early string synths was that the polyphonic divide-down oscillator arrangement was often connected to a single amplitude envelope, which meant multiple voices had to share the same envelope. Some synths handled this by retriggering the envelope every time a note was pressed, so that sustained notes were cut off abruptly when a new note was pressed. Others worked by passing any new notes through minus the envelope.

To recreate the first of these two, each of Loomer String's two amp envelopes and the filter envelope features its own retrigger switch. When activated, this means the envelope retriggers whenever a new note is pressed.

While in polyphonic mode, each voice has its own attack/release amp envelope. In Paraphonic mode, all voices within a single layer share the same amp envelope and the 'envelope bypass' effect can be emulated.

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bility to load 3rd party VST effects and VST instruments directly in Independence. Drag'n'drop support for audio and midi files. Completely redesigned and improved audio engine.

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Image-Line Drumaxx \$99

PC MAC



Our favourite Belgian software developers prove that synthetic drums don't all have to be imitations of vintage Roland drum machines

System requirements

PC 2GHz SSE-compatible CPU, 512MB RAM, Windows XP/Vista/7, VST/AU host or FL Studio

Mac G4 PPC/Intel CPU, 512MB RAM, OS X 10.4/10.5

> The latest product to pad out Image-Line's ever-increasing range of virtual instruments is Drumaxx, a physical modelling-based drum synthesiser with built-in sequencing. Most drum machines use subtractive synthesis (ie, oscillators and filters), samples or a combination of the two, but physical modelling recreates instrument sounds using a mathematical model of a physical sound source - in this case, a drum.

Using this, you can edit the physical properties of the drum and the way it's struck, rather than being restricted to sample, filter and envelope settings. The subtle nuances and natural variations between hits in, say, a drum roll, are easily emulated, helping to avoid the recognisable 'machine gun' effect of every hit sounding exactly the same.

Drumaxx gives you 16 fully editable drum pads to work with - each of which can be routed to its own output for further mixing and effects processing. These cover the full range of standard drum hits, from bass drums and snares to hi-hats and cymbals, to more exotic-sounding percussion instruments. Behind each drum model is the same synthesis architecture: a

modelled drum membrane that vibrates when struck by a mallet.

Super models

Clicking a drum pad in the top half of the screen brings up the relevant settings for that sound in the Modelling Controls section, which occupies the midsection of the GUI. From here, the physical properties of the drum head, the mallet and the striking action can be modified, enabling you to control parameters such as the membrane material, its thickness, tension and shape. Any of these can then be modulated by MIDI velocity, enabling natural variations in timbre to be performed or programmed.

There are also high-, mid- and low-frequency filters, enabling frequencies to be filtered out and resonances controlled or highlighted. The mid-range filter is also attached to an envelope generator, enabling the cutoff point to be modulated when the drum is struck.

From these relatively simple controls, it's almost surprising that such a wide range of drum sounds can be synthesised. But Drumaxx has no problem delivering everything from

"It should appeal to anyone looking for interesting, original percussion for experimental genres"

snare and cymbals to glitchy special effects sounds and dance hits.

Drumaxx also features a simple 909-style step sequencer. Parts can be recorded and played back independently of your DAW, with pattern lengths varying from 1 to 64 steps, and they can be assigned to trigger from different MIDI notes. See the boxout for more on this.

As for Drumaxx's sound quality, things are clean and well defined, with an impressive low end on bass drums and a clear treble on hi-hats and cymbals. The level of realism is quite impressive for completely synthetic drums, although Drumaxx is no competition for decent sample libraries and drum ROMplers.

Browsing the preset kits and patterns – which cover a fairly standard range of rock, hip-hop and dance drums – you may start to wonder where Drumaxx fits in, as none of the examples are authentic enough to carry tunes in their respective genres. Despite being more realistic than your average beatbox, the sounds have an unmistakably synthetic quality.

The bass drums and snares produced by Drumaxx are fairly restrained and conservative – don't expect huge trance kicks or slammin' hard house snares – while the hi-hats are somewhat more versatile and could slot into a broader range of music genres.

Let's get physical

It's only when you start experimenting that Drumaxx's hidden potential comes to light: it's far more interesting than just another 909-clone or drum module. Taking the drum presets into slightly more unnatural settings, it quickly becomes apparent that this product's real strength could lie in providing a range of easily programmable, experimental sounds for genres such as IDM, glitch-hop and micro house.

Glitchy noise snares, 'hippy' hats and tuned percussion sounds are a breeze for Drumaxx, and along with the immediacy of the step sequencer, it doesn't take long at all before you're coming up with Autechre- and



Parameters can be modulated by velocity, whether you're playing by MIDI or using the sequencer

Seq' and destroy

MIDI notes can trigger individual drum pads or entire sequences in Drumaxx, with the exact notes for each being user-definable. Up to 16 patterns can be defined per patch, and the supplied presets come with patterns that are handy for getting a feel for the kits.

The sequencer itself is an old-school affair with 16 programming buttons shown on the GUI. Select a drum pad to edit its sequence by clicking the buttons: a lit button indicates that a hit will be played at that position. In fact, sequences can be any length from one step to 64, with the Pattern Bar selector used to switch through the additional banks of steps.

When triggering patterns via MIDI, the rhythm will play as long as the note is held (or until you release the sustain pedal), which enables some neat improvisations. You can set up multiple patterns for, say, kick, hi-hat and snare rhythms, then mash them up on the fly.

Other niceties include swing and tiny velocity sliders next to each step. There's also a simple play/pause button on the interface that can trigger the current sequence without you having to reach for your MIDI controller.

Drumaxx's sequencer is well implemented and a neat bonus, although we wouldn't go so far as to say that it's a key selling point.



Each pad can be assigned to one of three groups (useful for open/closed hi-hats) and one of ten extra outputs

Monolake-style beats and percussion loops.

Another useful application of this drum machine could be in creating beats to layer with and bolster existing drums in genres like DnB and dubstep. It could certainly produce more novel results than the usual 808 and 909 kits.

We tested Drumaxx on a Windows system and experienced no issues – however, many OS X users have reported serious problems getting Drumaxx to work on their machines, so do give the demo a good go first if you're on a Mac.

Beat it

Overall, Drumaxx is a great-sounding drum machine with a nicely laid out GUI and a novel approach to drum synthesis. It won't take the place of a real drummer or a set of good drum samples for professional recordings requiring acoustic tubs, nor is it likely to be a main source of beats for use in club music. However, it should appeal to anyone looking for interesting, original percussion for experimental genres, or those seeking the kind of flexibility, customisation and on-the-fly tweakability to which synthesis is ideally suited. **cm**

Contact via website
Web www.image-line.com

Alternatively

Audio Damage Tattoo

cm150 >> 8/10 >> \$79

Easy-to-use synthetic beatbox with innovative sequencing functions

D16 Group Drumazon

cm112 >> 9/10 >> €129

Thunderous virtual Roland TR-909 with extended synthesis options

Verdict

For Sounds great

Fun and easy to program

Flexible synthesis engine

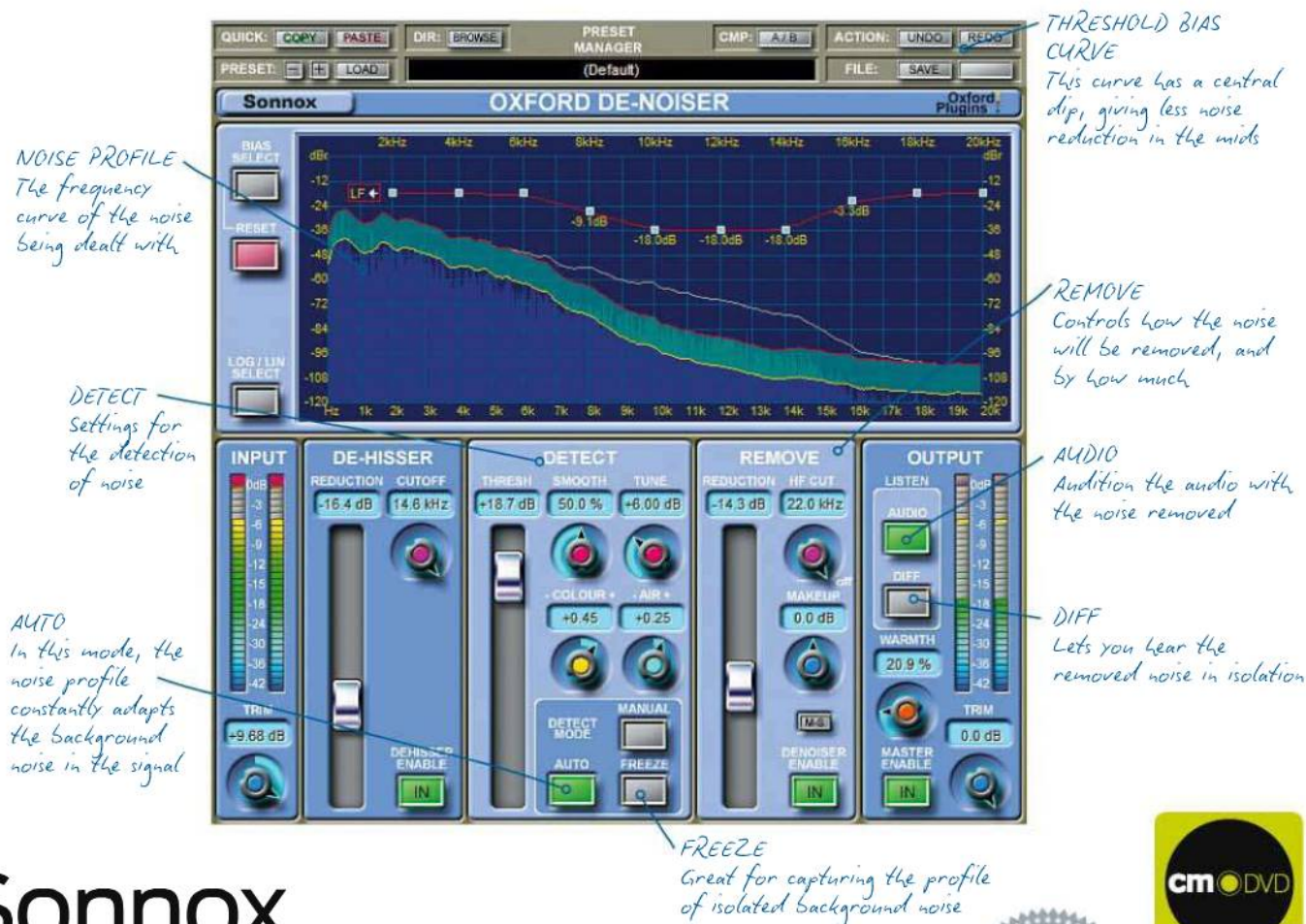
Low CPU usage

Against Somewhat brief manual

Not especially 'hard' or realistic

It's not suitable for all occasions, but Drumaxx's decidedly different take on digital drums is a breath of fresh air

8/10



Sonnox Restore £1404

PC MAC



Audio restoration software can be your greatest ally when it comes to combating unwanted noise, but is this new package friend or foe?

System requirements

PC 1GB RAM, Windows XP/Vista 32, VST/RTAS host, iLok

Mac 1GB RAM, OS X 10.4, AU/VST/RTAS host, iLok

> Prior to the digital revolution, noise was a by-product of the physical media used to store music - remember the crackle of records and the background hiss of cassette? The transition to digital consumer formats banished such physicality-related artifacts, but noise is still very much a concern when recording.

Background hum and noise can contaminate recorded parts, and can be caused by dodgy cables or grounding issues, or electrical clicking from devices on the same mains circuit (kettles, fridges, etc). Video can suffer to the point where dialogue is masked by wind or motor noise from the camera, and of course, material transferred from tape or vinyl may very well still suffer from the artifacts mentioned earlier.

Noise pollution

To combat noise problems post-recording, or to restore audio sourced from elderly formats, we can turn to noise reduction software such as Sonnox's Restore suite. It features three plug-ins - Oxford DeClicker, DeBuzzer and DeNoiser - which are designed to suppress clicks, pops, crackles, scratches, hums, buzzes and noise.

Restore can work at up to 96kHz, and if you need to use more than one plug-in, Sonnox advise placing the DeClicker first, then the DeBuzzer and/or DeNoiser, depending on which nuisance elements are most prevalent.

DeClicker offers three sections, De-Pop, De-Click and De-Crackle, dealing with noise events of durations up to 10ms, 3ms and 0.4ms respectively. Each section has its own threshold and sensitivity controls, for dialling in optimal detection. Once this is done, DeClicker's algorithms distinguish between noise events and audio content, the former showing up as colour-coded dots on the graphical display. With some types of material (eg, distorted guitars), the DeClicker can falsely flag up wanted audio events as clicks or crackles, but that's easily solved by utilising the Exclude Box function - a scalable box that you draw on the main graphical display to exclude events within a certain duration/level range from processing.

You hum it, I'll erase it

DeBuzzer offers hum and buzz removal, and operates using either a Comb filter for buzzes

“Tools that are perfect for almost any audio restoration situation”

with many harmonics, or a more CPU-hungry Parametric response, for situations with fewer harmonics present. You can set the fundamental frequency of buzzes manually with the large Hz knob or by using the effective Auto mode, which quickly zeroes in on hum. You can set the sensitivity (to avoid over-zealous EQing), degree of removal in dB and much more besides.

The remaining plug-in, DeNoiser, has three sections: Detect, Remove and De-Hisser. It's designed to remove constant broadband noise, such as tape hiss. Like other such plug-ins, it basically works by breaking the signal into many separate frequency bands and individually gating them according to the settings. This works best when the plug-in knows the frequency curve of the noise (aka, noise profile), and the DeNoiser can automatically calculate this for you if required. To influence which frequencies are targeted most aggressively, you can drag points on the display to create a bias curve, eg, to remove more high-frequency noise. The Colour and Air knobs are simpler tools for tweaking the bass and treble response.

To deal more effectively with noise that's constant in its frequency response, you can play back a section featuring only background noise (eg, between songs on a tape), wait until the plug-in has discerned the noise profile, then hit the Freeze button to 'lock' its profile.

As with any denoiser plug-in, extreme noise removal can result in the audio becoming dull and soft, and to this end, there's a Warmth knob that reintroduces some of the 'lost' harmonics. There's also a De-Hisser section that works independently from the rest of the plug-in, for more aggressive reduction of treble noise.

Beyond compare

All three plug-ins enable you to audition the removed noise events using the Diff button (very handy for making sure you're not removing too much good audio), and they all have A/B functions and undo/redo. There are



The red lines indicate problem frequencies as detected by De-Buzzer - click one to target it for hum removal



The DeClicker's Dialogue Mode offers separate controls for vocal and non-vocal sections

Dialogue box

Activate the DeClicker's Dialogue Mode and a bunch of extra controls pop up. This mode is designed specifically for dialogue restoration work, and works by separately categorising events as dialogue and non-dialogue, then enabling you to process them separately with two full sets of DeClicker controls. Thus you can use more aggressive settings on the non-vocal sections without adversely affecting the audibility of the vocal sections - very clever!

In practice, it's pretty easy to do. You set the voice threshold control much as you'd set that of a noise gate, so any

audio events breaching it are processed with the Above Set parameters, and the others with the Below Set. To fine-tune the way the DeClicker categorises events, there are sidechained low- and high-frequency filters and a real-time spectrum analyser, not to mention a level profile chart, both of which appear at the bottom of the main window.

This mode can work magic on video footage, and despite being dubbed Dialogue Mode, it's suitable for other restoration situations where you need different settings for loud and quiet events.

many more features than we can possibly cover here, so check out the manual on the **cm** DVD to find out exactly how the Restore suite works.

Sonnox spent 18 months on R&D for Restore and it really shows. They've done an excellent job of crafting a well-rounded set of intuitive, versatile tools that are perfect for almost any restoration situation and capable of bafflingly good results - we were able to salvage some audio material that we previously assumed to have been beyond repair. We used Restore to salvage material from old cassettes and vinyl, multitrack recordings on two-inch tape (that suffered from 'ghost noise'), and takes that had been infested with mains hum. We tried the plug-ins from iZotope RX (the Advanced version of which costs \$1199) on the same material, and found Restore to be superior, both in terms of sonic quality and workflow (but note that RX also offers powerful spectral editing functions).

Though the price tag puts it out of the reach of the casual hobbyist, for anyone who does a lot of restoration, mastering or film work, Restore could well be a sound investment and perhaps even an essential purchase. **cm**

Contact support@sonnoxplugins.com
Web www.sonnoxplugins.com

Alternatively

Wave Arts Master Restoration
N/A >> N/A >> \$400

Has anti-noise, -click and -hum plug-ins, with a gate, too

iZotope RX
cm125 >> 10/10 >> \$349

Offers spectral editing and aims to eradicate noise, hum, clicks and even clipping

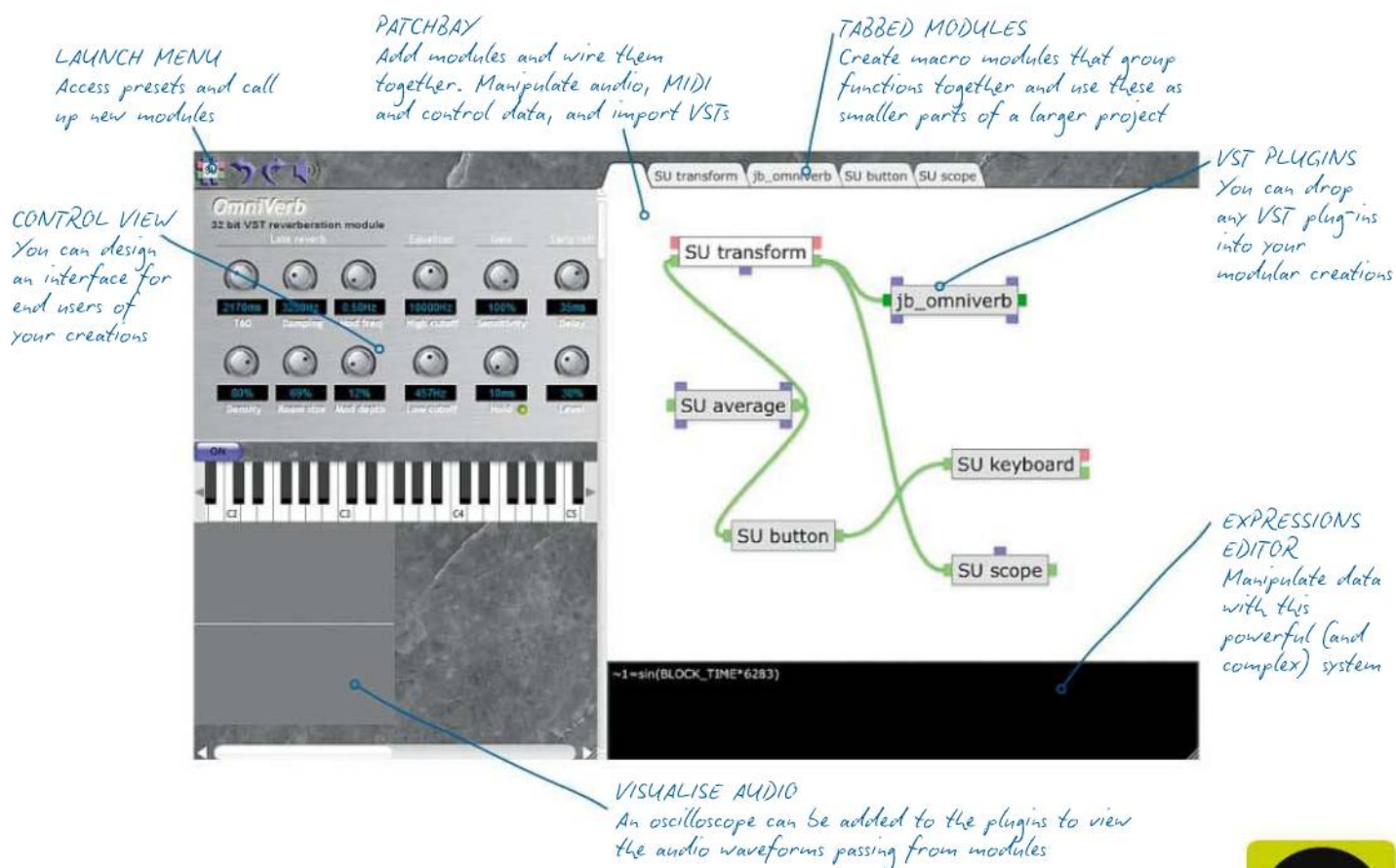
Verdict

For Easy to get good results
Best noise reduction we've used
Well thought-out controls
Perfect for film or dialogue work
DeBuzzer is scarily effective

Against Professional price tag

For cleaning up your musical act, Restore is a first-class restoration plug-in package, knocking the spots off others we've tried

10/10



Studio Units Software

Studio Units

plugin collection \$117

PC



System requirements

PC Windows XP/Vista/7, VST host

> They say that first impressions count, and the graphical interface of the Studio Units plugin collection lets it down on that front. We're not sure about the slate texture, for example, and the primary colour scheme reminds us of plug-in design circa 1998 rather than 2010.

But the functionality behind the GUI is very much 21st century, and can be approached from two directions. Firstly, there's a library of 11 VST effects plug-ins that can be inserted into your own projects just like any other. These range from compression and equalisation through to filtering and vocoding - see boxout for more on these. They sound good, and the manual goes into plenty of detail on how to get the most out of them. They're not going to rival dedicated high-end plug-ins, but that's OK - they won't be the reason you buy Studio Units.

The real power lies in the prosaically named

'SU synth' and 'SU effect' VST plug-ins. These are portals to an underworld of sound design, audio manipulation and synth creation. They allow you to build sound processing patches in the Studio Units modular environment, and alongside the standard stereo versions, there are alternatives that can handle 4, 8, 16 and 32 channels, if your host is up to the task. Each offers an empty window of opportunity, where a patch can be created from scratch using a range of bundled modules.

Clunk click

A clunky point-and-click interface opens a module and preset browser. Studio Units takes the same modular paradigm used by industry stalwarts like Reaktor and Max/MSP. Each of its integrated modules has MIDI, audio and parameter nodes, coloured red, blue and green,

"The trouble is that generating sound isn't purely drag and drop"

and these can be dragged to the inputs and outputs of other modules to connect them. The GUI displays these connections very effectively with nicely anti-aliased cables, and even when the patch gets complicated, you can usually find your way around the routing without too much difficulty. Studio Units does all this in real time, which aids immediacy and tempts you into making fine adjustments you might otherwise leave alone.

Painful programming

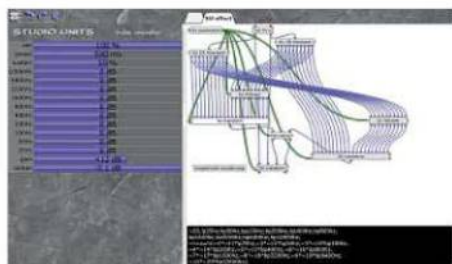
Understanding how to combine the building blocks is difficult, however. You won't find oscillators, LFOs and envelopes, and you won't find the inputs and outputs labelled as you would with Reaktor or SynthEdit. Instead, you'll find modules more familiar to programmers and synth enthusiasts; and - the biggest hurdle of all - there's a seriously steep learning curve.

The trouble is that generating sound isn't purely drag and drop - it also involves some programming. Many of the modules feature a small 'blackboard' area that's used to hold mathematical expressions describing their function, and each module's capabilities are far from intuitive. The scariest example of this is the 'transform' module, an immensely complex beast that's mostly used to generate sound. It features over 40 separate mathematical functions, the list of which reads like a primer in applied mathematics.

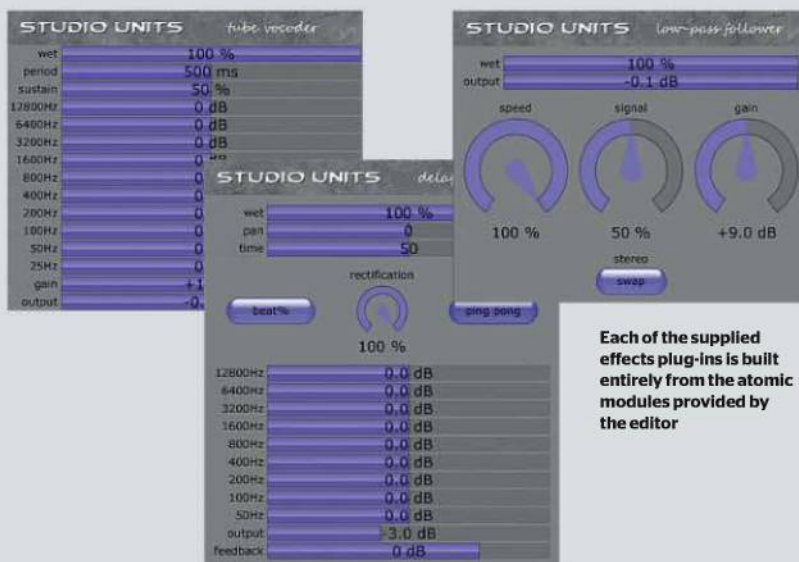
If you do have a background in maths or programming, creating expressions isn't really difficult, but it can dampen the mood for spontaneous creativity. We would have liked features such as code completion, a common library of expressions or in-line documentation. As it is, you spend too long poring over a module's documented capabilities while making small changes to the expression. It's a little like message boxes in Max/MSP, where you define their function from a series of keywords, only the keywords aren't that easily visible and their parameters don't automatically appear.

Das Modul

Thankfully, it's not all high-brow scientific tinkering, as there are also some surprisingly immediate modules. SU Valve, for example, emulates the harmonic distortion of valve equipment, and you can easily pipe audio into



Any of the bundled plug-ins can be unlocked to reveal how they're wired, which can be most educational



Each of the supplied effects plug-ins is built entirely from the atomic modules provided by the editor

In effect

The 11 bundled effects fall into the esoteric category, offering variations on filtering and analogue emulation. There's a 10-band twin-tube vocoder, for example, which can create extreme equalised and resonant effects, with or without plenty of round, tube-like saturation. Another favourite is a low-pass filter attached to an envelope follower. This does a great job of adding lush, warm sweeps to rhythmic material. In a similar vein, the transient controller makes it easy to dial in ducked separation to your breaks and beats, and there's an excellent delay with nine bands of equalisation.

Alongside all of these, you'll also find

a handful of analogue-aping EQ and compression effects. The Mastering Equaliser is particularly impressive, although, like some of the other effects, it can add latency (almost a second's worth in this particular case) with the Mastering Equaliser. No problem for offline use, but it's an important consideration if you like to work live.

We would have liked to see more presets for the effects - some creations, like the delay equaliser, have plenty, while others have none. All of these effects can be loaded into the main SU synth/effect editing environment, where you can pop the hood off them and examine their inner workings.

and out of it without resorting to expressions. It's the same with the immense IIR Filterbank, a powerhouse of sublime filtering possibilities. And one of Studio Units' best features is that, as well as being a VST plug-in itself, it can load other VST plug-ins as modules within the setup, opening up all kinds of possibilities. It's also relatively easy to tie controls to faders, knobs, buttons and even a piano keyboard, all of which are included as modules.

Studio Units is a difficult application to summarise. It's complex, comprehensive and confounding. If you have the time, patience and ability, you can achieve almost anything via its austere, slate-textured windows and mind-blowing expressions editor. But unlike Max/MSP and Reaktor, it isn't a package that warrants the asking price for its presets alone (though granted it is a lot more affordable than those two apps), and beginner's guides don't exist. Maybe 12 months of user-created content will change things, but at the moment, to get the most from Studio Units, you will need to delve into the editor and create your own patches, which may be enough to deter most. **cm**

Contact via website
Web www.studio-units.com

Alternatively

Outsim SynthMaker
cm108 >> 9/10 >> £65/£125
Modular affair with DSP-style programming and export-to-VST

Cycling '74 Max/MSP 5
cm128 >> 10/10 >> \$495
Superb modular system with tons of examples and tutorials

Verdict

For Incredibly versatile
Hosts VST plug-ins
Powerful expression editor

Against Complex and technical
Not beginner-friendly
You can't create standalone plug-ins

Technically impressive if overly technical, with more content, tutorials and a bit of polish, this package could really shine

7/10

Stillwell Audio Bombardier \$59

PC MAC



Want to drop the bomb on your productions? This highly explosive bus compressor could be the ordnance you need

> By their own admission, Bombardier is Stillwell Audio's most ambitious effort to date. Like most bus compressors, the goal is smooth, musical compression for everything from mixes and groups to solo instruments.

Rather than emulate one classic compressor, Bombardier brings together many desirable features, both new and old. Most significantly, its detector circuit can operate in either feedback (old school) and feedforward (modern) modes. Then, the sidechain circuit includes five detector modes – see boxout for further info.

To help achieve a smooth response, Bombardier also uses RMS rather than peak detection. However, as a further flexibility, both the knee shape and the RMS window length can be fully adjusted.

Bombs away!

As well as Attack, Release and Ratio controls, Bombardier has two auto-release modes (Slow and Fast) and Bomb, where attack and release are “effectively instantaneous”. You’ll also find external sidechaining, a parallel compression Mix knob and a Range control, enabling you to limit the maximum amount of gain reduction.

For more audible sound shaping, Bombardier has a post-compression Drive and a variable Sag control that further modifies the sidechain to give increased sensitivity to strong signals. There’s also 4x oversampling, which increases the sound quality in exchange for an additional CPU hit, and you can tweak the knee shape.

With its dashboard-influenced graphics, Bombardier certainly looks the part, but the sound is what it’s all about. Even at the basic default settings, lowering the threshold instantly reveals great responsiveness. In practice, switching feedback topology is also significant, and we found feedforward to be great for fast material (drums or picked bass) and more audible compression, while feedback proved better when general ‘glue’ was needed.



The RMS window size has a great effect on the sound, too. At minimum (0.1ms) and with fast release settings, you can turn Bombardier into a very aggressive peak-type compressor. But for the most part, the RMS setting adjusts its sensitivity to short transients, and getting this right is key to achieving a smooth response. The detector modes are subtle, taking a little getting used to (the manual is useful here), but once you know what to listen for, there’s lots of flavour on offer, and the cryptically-named presets helps to put them into context.

The Drive and Sag controls add real character without being overbearing and act almost as ‘mini compressors’ in their own right. Sag offers a particularly tasty way to add further squashed character to drums.

Bombardier is an incredibly accomplished plug-in that goes beyond its bus compressor remit, and although its oversampling mode increases the CPU hit, we wouldn’t be put off using it with this active all the time. At \$59, it’s also one hell of a bargain. **cm**

Contact via website
Web www.stillwellaudio.com

System requirements

PC Windows XP/Vista/7 (32-/64-bit), VST host

Mac OS X 10.4, AU/VST host

Alternatively

Cytomic The Glue
cm146 >> 9/10 >> \$99

This SSL-influenced bus compressor greatly impressed us

Voxengo Deft Compressor
N/A >> N/A >> \$100

Another affordable bus-specific compressor. Expect a review soon.

Private detective

Bombardier includes five detector modes – Flat, Punch, Heft, Firm and Lift – four of which modify the detector signal. Punch emphasises high-frequency content, so that it pushes the compressor harder. The result is less bass dominance in the compression. Heft shifts the emphasis to the mid-range, while controlling high frequencies. As with Punch, bass pumping is reduced, but the mid presence is more dominant. Firm also pushes the mids, but high and low

frequencies are less influenced by the emphasis curve, so the overall effect isn’t as aggressive as Punch. Finally, Lift is a more traditional detector curve, de-emphasising the low frequencies (though not via a high-pass filter, as the manual points out), and leaving everything else unmodified. The result is reduced pumping without too much additional colouration.

If this is all too much, use the Flat mode – it doesn’t modify the detector signal at all.

Verdict

For Smooth and musical sound
Oversampling option for higher quality
Perfect for both mixing and mastering
Flexible detector options
Feedback and feedforward topology

Against GUI is an acquired taste

Bombardier goes far beyond bus compression to deliver a flexible and flavoursome dynamics processor

9/10

THE NEXT EPISODE.



MASCHINE is the next episode in professional beat production. It combines the hands-on feel and sequencing of classic grooveboxes with advanced sampling, effects, and seamless DAW integration. New features include 6GB of production-ready sounds, MPC library import, 16 Levels, and vintage MPC60/SP 1200* character – over 50 enhancements in all. MASCHINE continues to evolve so you can focus on creating the perfect beat.

www.native-instruments.com/maschine



*MPC60 is a trademark of Akai Professional, LLC. SP 1200 is a trademark of E-mu Systems, Inc. Trademarks used only to identify the equipment whose sound was modeled and does not imply an official endorsement.

NI NATIVE INSTRUMENTS

THE FUTURE OF SOUND

cm mini reviews

A rapid-fire round-up of sample libraries, ROMplers and more

Galaxy Pianos Vintage D €129

Format Kontakt Player/Kontakt 4
Contact mail@bestservice.de
Web www.bestsERVICE.de

Here we have a sampled version of the 1920 Hamburg-built Steinway Model D that resides at Bauer Studios, Germany. The sampling process used the studio's Neve console with both new and vintage mics, and the piano was recorded with no EQ or compression. Kontakt's lossless data compression has kept the disk footprint down to a very reasonable 5GB.

Vintage D has just one Kontakt patch, but it's not light on tweakability. You can dial in noises (pedal, hammer, damper and string) and overtones. You also get player and audience perspectives, three lid positions, re-pedalling/half-pedalling articulations and a soft pedal option. If that's not enough, you'll also find tone controls, basic compression, stereo width adjustment, and convolution reverb. Finally, there's the Warp Engine, which has four effects (offering bit-crushing, pitchshifting, filtering, delay, and more) and the Pad Machine, which mixes in synthetic pad sounds.

Giving the ivories a tinkle, the sound is sublime, with a lovely rounded tone but the capacity to cut through at higher velocities. Beyond this, the effects options take it into more creative territory, which will appeal to soundtrack producers.

9/10



Native Instruments Abbey Road 70s Drums €99

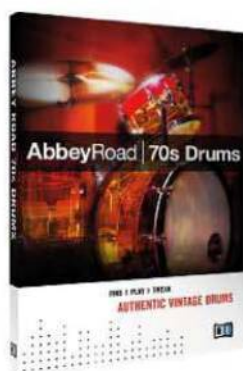
Format Kontakt 4/Kontakt Player
Contact via website
Web www.native-instruments.com

NI's Abbey Road Drums series continues into the 1970s. This time, the two kits are a Ludwig Vistalite Tequila Sunrise (for that big John Bonham sound) and a Premier kit (think tight Pink Floyd tones). Both were tracked to Ampex 456 tape (16-track with Dolby), and the 32,000-ish samples losslessly compressed into 6.5GB.

Each kit comes in 'full' and 'lite' variations, with two snare drums. There's also a bonus Glyn Johns Ludwig Vistalite instrument using his renowned four-mic set up. The interface is just like Abbey Road 60s Drums, and includes attack, hold and decay for each kit element. You also get a good selection of articulations (including damped, half-open and open kicks for the Ludwig). Both kits sound very different, with Abbey Road's famous Studio Two playing a starring role for the open kit. Surprisingly usable is the four-mic kit, although it's far less expensive than the full open kit.

Overall, Abbey Road 70s Drums is arguably more sonically useful than the 60s package - the only downside remains slow loading times for the full kits.

9/10



MXL Studio 1 USB £115

Format USB 1.1/2.0
Contact Musictrack, 01767 313447
Web www.mxl-mics.com

This is MXL's most affordable USB mic pack, and it contains a cardioid condenser microphone with basic 1-in/2-out audio interfacing (16-bit at 44.1/48kHz). The audio out is on a front-mounted mini-jack, while the USB cable also supplies power for the mic. The whole package comes in a compact hard plastic carry case, complete with small foldaway desktop stand and 10-foot USB cable.

The Studio 1 uses standard USB audio drivers, making Mac and PC installation easy. You'll also spot a red 'activity' LED at the bottom of the grill. It offers low-latency monitoring of the mic signal through 'phones, but there are no physical controls to dial this in, so you're dependent on your OS features. Instructions are given to set this up in Windows, but there are none for Mac - it seems the low-latency monitoring is for PC users only.

We found the sound reasonable, although very different (and less rounded) than their more pricey USB.009 mic (8/10, cm151). The MXL Studio 1 USB scores high on affordability and makes an excellent podcasting kit, but for studio use, we'd suggest saving up for something more serious.

7/10



iceGear Argon £1.19

Format iPhone/iPod touch app (not compatible with iPod touch 1G)

Contact iphone-support@icegear.net

Web iphone.icegear.net

It may be just a monophonic synth with a GUI that's prejudiced against fat fingers, but Argon has won our hearts. From wispy, nostalgic leads drowned in noise and delay, to formant wobbles, croaking basslines and the soft pulses of thirds and fifths, Argon can – and frequently does – sound awesome. It's not a broad palette, trapped somewhere between 1972 and 1984, but it's a sound full of character, complexity and fun.

The GUI presents two horizontally scrolling layers. The topmost provides access to ten pages of parameters and each parameter is drawn in a radial, anti-aliased style that Ableton Live users will immediately recognise. The lower layer is a scrollable keyboard that lets you switch octaves by dragging the lower border.

Argon's incredible sound is thanks to a trio of oscillators and a Minimog-like signal path. You can choose between saw, square, sine and noise



for two oscillators, while a third adds formant generation. There's FM and AM, and six different filter types, with 24, 18, 12 and 6dB/oct low-pass modes. An ADSR and LFO give amplitude and filter modulation, and you get distortion, EQ and delay effects. There's even a visual step sequencer and a four-bar loop recorder that features overdubbing, so you can stack up parts to create a tune. You can save the output to an

internal preset or beam a WAV across a WiFi connection.

We'd like to see named presets and fake velocity (ie, based on where you touch the keys), but all this is besides the point. Argon is the closest thing we've found to carrying a vintage monosynth with us on the bus, only it's far less obtrusive and costs less than the ticket home.

9/10

Cakewalk A-500S £129

Format PC/Mac, USB 1.1

Contact Roland UK, 01792 702701

Web www.roland.co.uk

The A-500S is straightforward enough, but the branding may have you a little perplexed – in fact, it appears identical to the Edirol PCR-50, but with black casing. MIDI controller keyboards from the Roland stable once came via Edirol, but the decision has now been taken to emblazon them with a 'Cakewalk by Roland' logo.

Whichever channel they choose to sell them through, Roland/Edirol/Cakewalk always seem to produce keyboards that play well, and the A-500S proves the point. It may only have four octaves – the bare minimum for 'proper playing'

– but its synth-style action is smooth and musical. Its lightness means that it's not the best for pianists, but at least you can adjust the velocity curve to suit your playing style.

Another Roland trademark is the combined pitch/mod wheel, which works as well as ever. More commonplace are the octave up/down switches, and there are two more buttons to set the MIDI channel and transmit program changes – the latter pair double up as DAW stop/start buttons when you enter the Controller mode.

There's an assignable Value knob, though it's so small that it feels more like you're a twiddling a shirt button than a piece of studio equipment. A 3-digit LED display completes the top panel.

Connections are conveniently positioned on the side, making it easier to use the A-500 on a

desk in front of a QWERTY keyboard. You'll find ports for sustain and expression pedals, MIDI Out, USB and the power supply (not supplied). The keyboard can run on USB bus power, too, but if you're away from your computer, you can always power it from four AA batteries.

If you're looking to get as much bang for your buck as possible, a keyboard with more controls will be a better bet than the A-500S, and its lack of these does mean that there's some button-mashing involved when you want to make detailed settings. However, it looks and feels the part, and the supplied bundle of Cakewalk software (including Sonar 8.5 LE for PC and Rapture LE for PC and Mac) makes it a credible computer music starter kit.

7/10



Soundware round-up

Samplestar **Elektrik5** £29

Web www.soundstosample.com

Contact via website

Format WAV



This 750MB electro/progressive house pack offers bass loops, melodies, drum loops, single drum hits, synth one-shots, FX and more. The drums folder houses 191 hits, featuring kicks, snares, cymbals, hi-hats and 49 short, blippy synth percussion noises. Bizarrely, every kick is layered with the exact same hi-hat sound, but otherwise the production standard is good, with some juicy synth parts. There are 20 'loop kits' offering complementary synth parts, and the pack leans more towards loops than nuts-and-bolts offerings like Vengeance-Sound's Electro Shock, so it's a better choice for novices. Pros will find plenty to put to use, too, though, as the overall vibe is authentic and the loops offer scope for creative chopping.

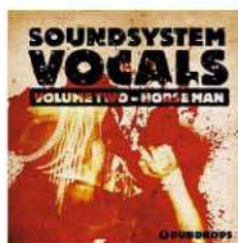
8/10

Loopmasters **Soundsystem Vocals Vol. 2 - Horseman** £18

Web www.loopmasters.com

Contact info@loopmasters.com

Format AIFF, REX2, Stylus RMX, HALion, Kontakt, EXS, SFZ, GarageBand



Horseman is a "notorious old skool toaster from the 80s", and here, he spits out almost 300 phrases that bring to mind those ragga vocals that used to pop up everywhere: "This one going out to all the dub pirates!" We can imagine these heralding an explosive DnB riff ("Now hear dis!") - or wending their way over the top of a heavy dubstep track ("Orrrriginal style!"). We could've done without the delayed versions of phrases (all are supplied dry, too), and it's annoying that Horseman's orations are split across two volumes. But overall, this is authentic and fun.

7/10

Push Button Bang **Future Garage** £20

Web www.loopmasters.com

Contact info@loopmasters.com

Format REX, WAV



We're not sure who this 500MB pack is aimed at, and perhaps its creators aren't either, as they cite three very different genres (UK garage, dubstep and techno) as the styles it draws inspiration from. Cross-genre packs can be great, but only if they're top quality. The one-shots here offer only Abstract FX (rather 90s-sounding), sub bass hits and ten weak vocal stabs. Beats come as percussive tops and kick loops (some have snares, etc, too), but there are no one-shot drums. There are suspect sample start positions in a few places and the drums are paper thin. That just leaves Textures (more dated FX) and the Tonal Loops, which do have some interesting bits. It all feels slightly random and sketchy, with not enough attention to detail - even the rhythmic sounds are entitled 'RYTHM'... 'Nuff said.

4/10



Sample Magic **Dubstep and Grime** £47

Web www.samplemagic.com

Contact via website

Format WAV, REX, Apple Loops, EXS, HALion, Kontakt, Monolith

There are a fair few dubstep packs about at the moment, but this one from Sample Magic stands out from the crowd. It's not just the creative naming (we particularly enjoyed one bass loop entitled 'Bag of Gits') but also the toughness of the sound design. Some attempts at this genre can sound weedy and thin, but there are some searing basses and punchy drums here. The pack is a 1.8GB download (the WAV section adds up to 741MB, with other formats duplicating this content). You get drum, 'top' (ie, high-end percussion), vox, bass and synth loops, as well as full mixed "combi loops", which we're not so keen on. The 291 drum and 50 single-shot bass noises hits display plenty of heft, clout and dirt, as do the 50 single-shot bass noises. Filthy FX are also on hand.

There are some inconsistencies - not every sound is a winner - and we'd have liked dry versions of some of the delayed/reverbed sounds. Overall, there's a slightly flat, dry quality to this pack that it can't quite shake, but perhaps that's just what you need to convey the sound of urban decay. In any case, it's a solid library.

7/10

Goldbaby **The FatJuno-6** \$49

Web www.goldbaby.co.nz

Contact info@goldbaby.co.nz

Format EXS, Kontakt, WAV



Wow! This is stunning - go and buy it now! What, you need more information? Well,

the FatJuno-6 is a terribly-named, fantastically-executed multisample collection created using a Roland Juno-6 running through a UBK Fatso processor. The results are astonishing: huge-sounding, instantly usable, authentic Juno sounds for a mere fistful of dollars!

There are 140 patches here, which is more than enough at this price, but they've all been crafted with the intention of being combined into new, exciting hybrids. You've got everything from raw oscillator samples to enormous multi-layered beasts.

Our only criticism: this pack is so good, we would have happily paid extra for more content. How about it, Goldbaby?

10/10



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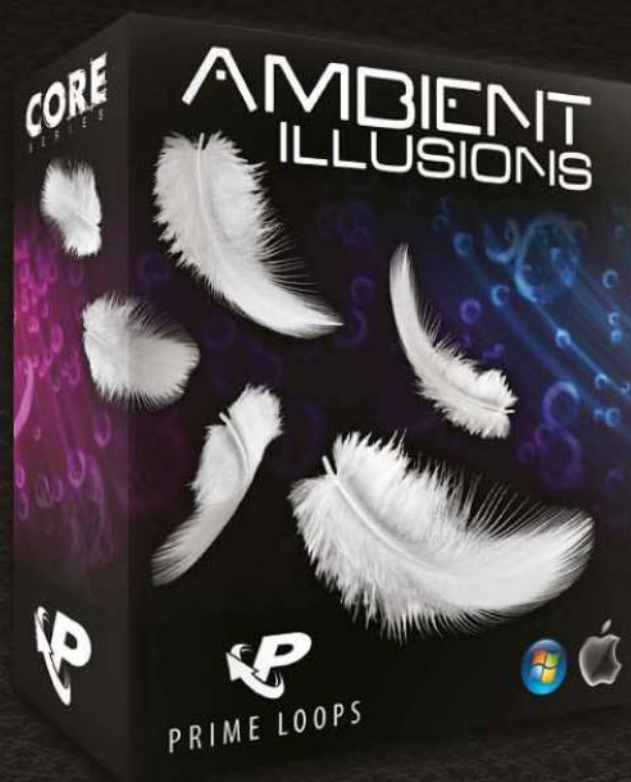
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The best new gear from the last three issues...



u-he
ACE €69 PC MAC

Rating 10/10
Reviewed **cm**149
Contact urs@u-he.com
Web www.acesynth.com

What Is It? A next-level synth from DSP genius Urs Heckmann, this semi-modular monster features an "any cable everywhere" ethos, enabling one to wire up all manner of bonkers patches via an addictive interface. What's more, ACE's price seems to be inversely proportional to its sonic quality: it sounds a million bucks yet costs a relative pittance!

Verdict "This exceptional synth is about as close as software gets to a genuine analogue semi-modular experience. It really is ace!"



Native Instruments
Traktor Kontrol X1 £175 PC MAC

Rating 10/10
Reviewed **cm**150
Contact via website
Web www.native-instruments.com

What Is It? A controller primarily for use with NI's Traktor software, the X1 has clearly been designed by those who understand the needs of digital DJs. There are no gimmicky platters and nary a fader to be found - instead, you get controls for applying effects, juggling loops and operating the transport.

Verdict "The X1 is a supremely well designed piece of kit that'll delight Traktor-wielding DJs."



Acoustica
Mixcraft 5 £69 PC

Rating 9/10
Reviewed **cm**151
Contact Et Cetera, 01706 285650
Web www.acoustica.com

What Is It? An entry-level DAW for Windows, Mixcraft is ideal for PC users who secretly covet the Mac's GarageBand app. We liked previous versions of Mixcraft, but we reckon it's come of age with v5. New features include automation, send tracks, video tracks, a mixer, notation editor and new plug-ins like AAS's great Lounge Lizard Session electric piano.

Verdict "A lot of solid and sensible tweaks have made Mixcraft one to seriously consider, and it represents great value for money"

What we've been using this month



Ronan Macdonald
Editor

I've lost my noggin over SoundToys v4's Decapitator saturation plug-in. It's head and shoulders above the competition, and stands as yet another reason to give your analogue outboard the chop.



Lee du-Caine
Deputy Editor

I've been getting a real kick out of Vengeance-Sound's Metrum of late. It's got more kick and punch than Mike Tyson riding an angry mule and is more user-friendly than both put together.



Tim Cant
Multimedia Editor

Having spent a fortune on cosmetic surgery, my pop career seemed doomed, as I'd not budgeted for a copy of Auto-Tune. Thanks to g200kg's free KeroVee, however, the plan is back on.



Craig Hitchings
Production Assistant

Thanks to Loomer, I've added a new String to my production bow. Their virtual string machine is just the thing for lending a retro vibe to clean, modern productions.



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- The beginners' guide to MIDI and sequencing
- Emulating effects
- Sounds of sci-fi II
- Producer Masterclass: dan le sac
- IK AmpliTube 3, Avid Eleven Rack, Image-Line Harmless, D16 Syntorus and more reviewed



Issue 150 April 2010

- 1000 Sony Creative Software samples and 1,985 techno samples on the DVD
- The beginners' guide to synths
- Unrestricted Axes
- The Low-End Theory
- Producer Masterclass: Super8 & Tab
- NI Traktor Kontrol X1, Audio Damage Tattoo, Steinberg CI2 and more reviewed



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- Nomad Factory MFX-Rack and 2043 Ultimate Sample Toolkit samples on the DVD
- The beginners' guide to audio and sampling
- The Max factor (Max for Live)
- Mid/side mastering
- Producer Masterclass: Foamo
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- Zynewave Podium 2 CM and 1,994 fidget house samples on the DVD
- The beginners' guide to effects
- Instant arrangement (build tracks fast)
- 'Casting the net (make pro-quality podcasts)
- Producer Masterclass: Subscape
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Issue 147 January 2010

- NuGen Audio Stereoizer CM and 2041 vocal samples on the DVD
- Resampling!
- Hardware vs software
- The cm guide to Sonar 8.5
- Producer Masterclass: Shut Up & Dance
- NI Guitar Rig 4 Pro, Spectrasonics Trilian, SSL X-Verb, VSL Vienna Suite and more reviewed



Issue 146 December '09

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>Your questions answered

Q&A

Can't decide which kit should be at the top of your shopping list? Is your current setup giving you grief? Or do you really want to know how your favourite artist gets their signature sound? Send your questions to cmhelp@futurenet.co.uk

Mud on your bass

Question I'm a bassist, working on my first CD, and some of the tracks involve different bass guitar parts together in one song, mixed on top of each other in the style of recordings by people like Marcus Miller, Victor Wooten and Wojtek Pilichowski.

I've tried slightly different EQ boosts and cuts, but the inherent low frequencies mean that things quickly get very muddy, and I want to avoid extreme panning to separate the parts. Can you help me?

David Gotteri

Answer Mixing can be difficult when working with a lot of parts that occupy similar frequency



Dedicated bass amp simulations, like IK Multimedia's Ampeg SVX, can help give you a distinctive low end

as you please afterwards.

You mention that you want to avoid extreme panning, but even subtle panning can help. You should also consider using stereo effects - for example, chorus can be used to move a sound's energy towards the 'sides' of the mix. You could apply chorus to the 'backing' parts while leaving space in the middle for the lead part - or vice versa, of course. You should use a chorus plug-in with a high-pass filter, so that the bass frequencies aren't affected.

Crucially, it's important to think about how the track is going to work in composition and arrangement terms - the parts need to work with each other, rather than against each other, especially when you're harmonising the lower registers. Try leaving gaps in one bass part that can be filled in by another, and when notes between parts do overlap in an obvious way, try adjusting these parts so that the harmonies produced are simple intervals like fifths and octaves, or perhaps thirds. Being sensible at the composition stage will make your life easier at the mixing stage!

COMPUTER music QUESTION OF THE MONTH

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The writer of our *Question of the Month* will receive their choice of two Artist Series sample libraries courtesy of Loopmasters. www.loopmasters.com

ranges, particularly with regard to bass. If you have several parts that are occupying the lower registers of the instrument (whether they're double-tracked or playing harmonies), try applying a high-pass filter to all but one of them, to roll off the fundamental frequencies of the 'supporting' parts. This will help to prevent the low end getting cluttered, giving greater definition, and will also help to alleviate low-end phasing issues.

Another trick you can use is to try varying not just the EQ but the amp and effect settings, to help differentiate parts and push their energy into different frequency spaces. Virtual bass amp software, such as IK Multimedia Ampeg SVX and Studio Devil Virtual Bass Amp, is great for this, as you can record the direct tone of your bass, then change the amp sound

Transient trouble

Question I've recently switched from Cubase to Ableton Live and have noticed that some loops sound slightly different in Live compared to Cubase. They just don't hit as hard when they first come in. I thought this was because of Live's timestretching, but it happens even when Warp is turned off. I also made sure to match the levels. Does Live just have an inferior sound engine to Cubase?

Elliot Davidson

Answer What you're experiencing is due to the fact that Live automatically adds fades to the start and end of audio clips by default. This is to prevent clicks that occur when the audio starts or stops at a non-zero value. This feature can be annoying for the more experienced producer, as it will noticeably soften the initial transient of an audio clip.

You can turn this feature off by going to **Options»Preferences**, selecting the **Record/Warp/Launch** tab and deactivating the **Create Fades on Clip Edges** option. This won't affect clips that you've already added to a project. To



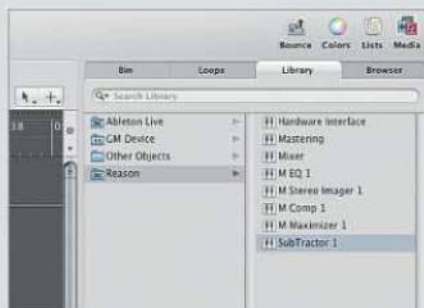
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> Step by step

ReWiring Logic and Reason



- 1 > Launch Logic Pro and start a new project, then load Reason. It's essential that you launch Logic before Reason or ReWire won't work properly. Start a new project in Reason, right-click the rack and select **SubTractor Analogue Synthesizer**.



- 2 > In Logic, select **Track>New** in the arrangement panel. Specify 1 new **External MIDI track**, and click the **Create** button. In the **Library** panel to the right, click the **Reason** folder, then **SubTractor 1** from the list of Reason devices.

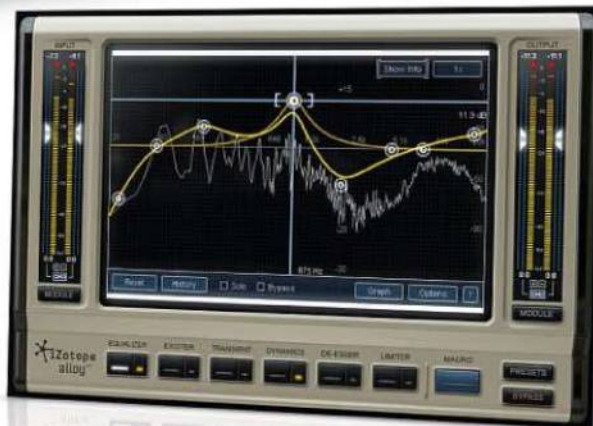


- 3 > You can now trigger the SubTractor instrument from the MIDI track, but you won't hear anything yet. To remedy this, open the **Mixer** and select **Options>Create New Auxiliary Channel Strips**. Set the **Format** to **Stereo** and the **Input** to **Reason>RW:Mix L/R**. Click the **Create** button and you're ready to rock!



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Inject some analogue-style dirt and warmth by employing a channel strip plug-in such as iZotope's Alloy and its excellent Exciter module



Logical Reasoning

Question I recently got a copy of Logic Studio and, since I've been using Reason for about four years, I've decided to use both applications in ReWire mode. I'm rather familiar with Reason's instruments and effects, so I was wondering if there's a way to use Reason's effects in Logic, or even process Reason's instruments inside Logic's mixer.

Kamal Tehrani

Answer There's no way to use Reason's instruments and effects inside Logic directly, but it is indeed possible to route sounds from Reason into Logic's mixer. This is a pretty simple process, and you'll find step-by-step instructions on how to do it in the *ReWiring Logic and Reason* walkthrough on this very page.

Level pegging

Question I was wondering if there was an equation or something for adding up levels of different tracks when mixing them together to find out the total volume. For example, if you mix two sounds at -1dB, the master out will clip over 0dB, and the more you add, the louder it will get. I have been struggling to stop clipping and I find myself drowning out certain sounds and having to play with levels constantly until I get it even nearly right. Do

you have any advice for how loud to make your first few sounds to leave room for the rest, or do you just play with the volumes constantly, too?

John Walklett

Answer If you were to stack two identical audio tracks in your DAW, a volume reduction of 6dB per track would be required for the total output amplitude to be the same level as one of the tracks running alone. However, when it comes to practical mixing, you're obviously not going to be using identical tracks, so they're going to be peaking at different levels. Thus any kind of equation is essentially going to be useless in the real world.

You really do need to use your ears and find a balance that suits the kind of mix you want to achieve. There are various mixing philosophies that producers employ - one might constantly adjust the faders during a mix, whereas another might pull them all down when it's time for the final mixdown, then gradually raise them, beginning with the core elements such as the drums, vocals and bassline. Give that a go.

Regarding clipping of the master bus, you can simply turn down the master fader to avoid this. Lowering it by, say, 6dB is the same as turning down every channel by 6dB. Don't fall into the trap of trying to keep the master bus level as high as possible to 'use all the bits' and thus avoid damaging the sound quality - this is entirely unnecessary with today's software and hardware. While mixing, turn all the tracks down to a comfortable level, so that they're nowhere

"You really do need to use your ears and find a balance that suits the kind of mix you want to achieve"

near peaking, and simply turn up your audio interface output. Once you've got a great mix, you can think about mastering it, to get it up to the volume level of a commercial track.

If you're having trouble with sounds being drowned out, first try turning down the other sounds in the mix (rather than constantly turning everything up!). The problem may be that you're including sounds that conflict with each other, not just in terms of their timing, but because they're clashing in the same frequency ranges. Ways to deal with this include using EQ to strip away unnecessary frequencies (it's extremely common to use high-pass filtering on everything except the kick and bassline) and sidechain compression to make sure that the bassline ducks out when the kick plays, for example. You might even rethink your arrangement or programming, so that clashing parts don't play at the same time. See our *Beginners' Guide to Mixing* (p24) for more.

Art installation

Question I'm having problems trying to install Togu Audio Line's TAL-U-No-62. There is no setup file in the folder, just a DLL file. How do I install it? I've installed other plug-ins, but there are a few like this without installers, just DLL files and I can't install any of them! I use Cubase 4, by the way.

Roboh

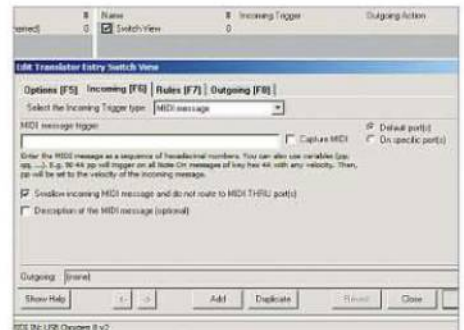
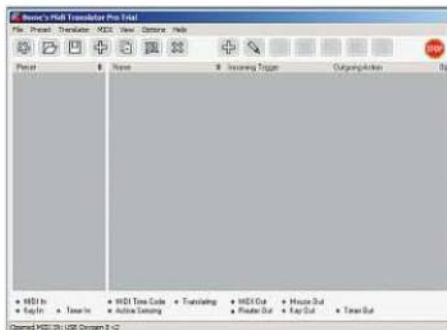
Answer Some VST plug-ins are distributed as simple DLL files, which don't need installers – all you need to do is copy them over to your shared VST plug-ins folder. If you're using Steinberg Cubase 4, this is likely located at **C:\Program Files\Steinberg\plug-ins** or **C:\Program Files\Steinberg\plug-ins**. It's best to quit Cubase before copying any files over, then restart Cubase, which will ensure that it scans for new

plug-ins. If you absolutely have to add a plug-in while Cubase is running, you can use the **Update** button in the **Devices>Plug-in Information** window to rescan the plug-ins directory. You can also use this window to add new shared plug-ins folders, in case you have any that have been installed to another location, for whatever reason.

Switching over

Question I am going to upgrade my PC laptop soon, which will of course come with Windows 7. However, I'd like to stay with XP – will I be able to run XP at 64-bit on a new machine? Will I need a special copy of XP for this, and are there issues with software compatibility here? Ableton Live is my main DAW, plus I also run a lot of Native Instruments and Spectrasonics software,

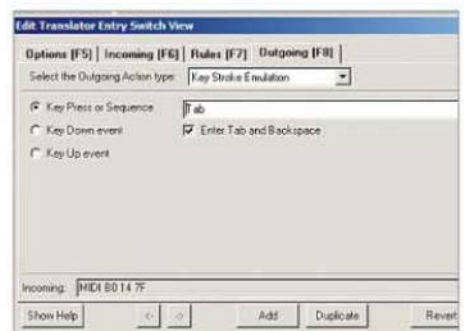
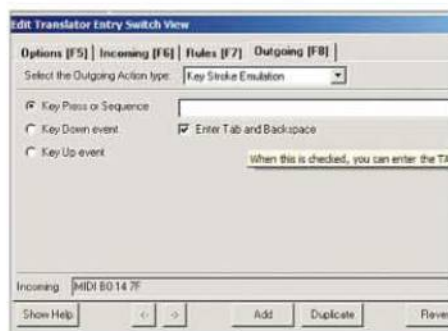
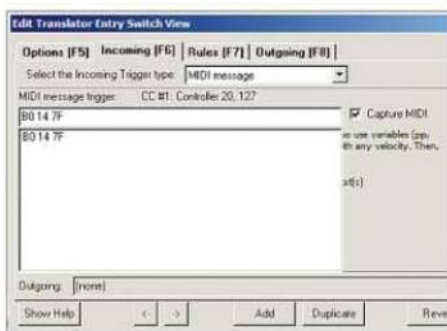
Question How do I use my Akai MPK49 controller to switch views and scroll around in Ableton Live? Jerko Kramarić



1 > You can use software such as MIDI Pipe or Bome's MIDI Translator to convert the MIDI signals from any controller – including the MPK49 – into keystrokes. MIDI Pipe is free, but MIDI Translator is multiplatform, so we're going to use that instead. Download the demo from www.bome.com, install it and run the program before you launch Live.

2 > Open **MIDI>MIDI Ports**. Locate your MIDI controller in the Port Alias list – make sure you pick the one with **MIDI IN** as its **Port Type**. Once you've selected the correct MIDI input, click the **OK** button to exit this screen. Now when you press a button, you should see the **MIDI In** indicator at the bottom left-hand corner of the display light up.

3 > The next thing you need to do is create a Translator. To do this, select **Translator>Add**. A new Translator will appear in the menu on the right hand side of the screen. Enter **Switch View**, as it's named, and press **Return**. Double-click the newly created Translator to bring up its edit window.



4 > You'll be presented with the Incoming panel. This is where you set up the MIDI input you want to translate. Check the **Capture MIDI** checkbox and hold down the button on your MIDI controller that you want to use to switch the view. Deselect **Capture MIDI** before you release the button in case it sends a different value on release.

5 > Click the **Outgoing** tab, and open the **Outgoing Action** menu, followed by **Key Stroke Emulation**, which enables you to choose the key on your QWERTY keyboard that you want the MIDI message to be translated to. Switching view in Live uses the **Tab** key, so we need to click the **Enter Tab and Backspace** checkbox, as shown here.

6 > Click in the **Key Press or Sequencer** field and press **Tab**. Click the **Apply** button at the bottom right-hand corner to confirm the settings, then **Close** the window. Now open Live, where you'll find that pressing the MIDI button will switch view! Once you've confirmed it works, you can set up other buttons to be translated to arrow keys for scrolling.

as well as tons of freeware. I'm just trying to get the most bang for my buck, I guess, but I also want to avoid the huge headaches and the always-scary process of changing OS.

Also, how important is getting a decent soundcard? I currently use an Mbox, so am I not even using the computer's built-in soundcard at all? Also, besides the obvious factors such as processor speed, RAM, plus hard drive speed and space, what other options and capabilities should I make sure my new laptop comes with?

Evan

Answer Well, Evan, there's bad news, more bad news, and then some good news. Avid (as Digidesign are now known) have never released 64-bit drivers for the Mbox, and since the release of Pro Tools 8.0.3, the original Mbox is no longer supported. Also, to add

insult to injury, Microsoft have discontinued the 64-bit versions of Windows XP, although you might be still able to find a copy on eBay.

Now for some good news: Windows 7 isn't nearly as diabolical as Vista, and shouldn't give you too many headaches as you migrate from XP. What you must do is check that any audio interface you buy has appropriate 32- or 64-bit Windows 7 drivers. Currently, Avid only offer beta Windows 7 32- and 64-bit drivers, so it's worth bearing that in mind if you intend to upgrade to their Mbox 2.

The only real alternative to going 64-bit is to attempt to install Windows XP 32-bit onto your new laptop. This can be a tricky process, however, as you may need to use a process called 'slipstreaming' to create an XP install disc containing the more modern drivers that your new laptop needs. While it's true that 32-bit Windows XP won't be able to make use

of any memory over 4GB, Ableton Live is still currently only a 32-bit application, so until Ableton release a 64-bit version, it won't make a great difference.

You're right about built-in sound systems: when you use an audio interface like the Mbox, the soundcard is not being used and has no effect at all on the sounds coming from your music software. Aside from the factors you mention, you should make sure your laptop has decent battery life if you're going to be using it on the move a lot. Also, be sure that it's the right size for you – large screens are better to look at, but if you're planning on whipping out your machine on a train or plane, you could find the bulk prohibitive in such a cramped space. Finally, make sure the keyboard and trackpad are also to your liking, as ergonomics and comfort are essential considerations when buying any computer.

Question

How do I make a house-style organ stab with freeware?
Scott Sutliff



1 > To make the kind of organ stab sound popularised by house anthems such as Robin S' *Show Me Love* and Nightcrawlers' *Push the Feeling On*, pretty much any virtual analogue synth with more than two oscillators will do. We're going to use TAL-Elek7ro, because as well as having three oscillators, it also has cool FM capabilities. Load it up in your DAW.

2 > The default preset is a big, horrible, buzzy noise, but we can soon tame it into something much groovier. In the first oscillator panel, deactivate **Sync**, set the wave shape to **Sine** and turn the **Semitone** tuning up to **+7**, as we have here. Elek7ro doesn't display the actual tuning, so you'll have to use your ears.

3 > In the Mixer panel, turn the volume of **OSC 2** up to maximum and set the **Semitone** tuning knob in the Oscillator 2 panel to **+12**. Change the wave shape to **Sine** as well. We want the start of the sound to have a bit of harmonic bite, but to quickly mellow out, so we're going to use the filter envelope to do just that.



4 > Set the **Sustain** knob in the Filter section to the minimum possible, and turn the **Cutoff** all the way down, too. Set the **Contour** knob to between 12 and one o'clock to turn up the amount of filter envelope modulation. Set the **Key** knob to 12 o'clock, so that filter Cutoff frequency follows the note played.

5 > Currently, the envelope is a little long, so turn the **Decay** down to 12 o'clock. You can now tailor the sound to your exact specifications using the filter **Cutoff**, **Contour** and filter envelope **Decay** knobs. You can also add a bell-like quality to the sound by tuning up the **FM** knobs in the **OSC 2** panel.

6 > For the final touch, add a little chorus, and some extremely subtle delay and reverb, all in your DAW. This sound can sometimes be quite dark and muddy, so be carefully not to wash it out with too much delay or reverb. You may find that a mid-range EQ boost helps bring out the bite at the start of the sound, too.

Question How do I create classic 60s sound effects using **cm** synths?

Stephen Jones



1 > Getting the kind of sound effects and noises used in such 60s classics as the Harry Palmer films and Gerry Anderson TV shows is actually pretty straightforward with the synths in the **CM Studio** folder on the DVD. We're going to use AlphaCM - install it if you haven't already, and load it in your DAW.

2 > The first thing we need to do is load AlphaCM's 'empty' preset. Click the patch name and scroll down all the way to the bottom of the list to locate **z_init**. Click it to load the patch. Most of these 60s sounds are based around simple sine waves, so the first thing we're going to do is set AlphaCM to generate a pure sine.

3 > Turn the **Osc** knob in the Mixer panel all the way to the left, so that we can only hear oscillator 1, and set oscillator 1's **Balance** knob all the way over to the left, too, so that we just hear the first waveshape. Currently this waveshape is set to sawtooth. Click where it says **Sawtooth** and select **Sine** from the list.



4 > Now when you play a note on your MIDI keyboard, you'll hear a pure sine wave. This simple tone can be used to create both Theremin-style sounds and burbling sci-fi effects. We're going to use the synth's LFO to modulate the oscillator's pitch for both. Set the first source in the matrix to **LFO1**, and the destination to **Osc1 Pitch**.

5 > Without turning up the modulation amount, this routing won't do anything. We're going to use the modulation wheel to control the modulation amount, so in the last line of the matrix, set the source to **Modulation Wheel** and the destination to **Matrix Depth 1**. Set the modulation level to **1.00**.

6 > Now when you play a note with the modulation wheel turned up, the LFO will modulate the pitch. Click the LFO's **Sync** value, currently set to **1/8**, and change it to **Off** - we want to control the rate manually. Set the **Freq** knob to between 1 and 2 o'clock, as we have here. This will give you a pleasant, natural-sounding vibrato.



7 > A Theremin glides between notes rather than jumping, so mimic this by clicking the button that says **Off** in the Glide panel twice, turning it **On**. Set the **Time** knob to 1 o'clock and **Voices** in the menu below the Mix panel to **Mono**.

8 > You can now play the synth glissando - notes will slide smoothly from one to the next. Save this patch, as we've going to make a relatively minor change that will nevertheless change the sound quite drastically. Set the Glide mode back to **Off**.

9 > Next, adjust the modulation level in the first row of the modulation matrix down to **-24.00**, and change the LFO's shape from **Triangle** to **Sawtooth**. Now play a note and sweep the **Rate** knob to find the right pitch modulation speed for your ideal effect. **cm**

JUNGLE BREAKS

Junglist beats are making a comeback, so rediscover the art of manual beat-slicing as we show you how to use them in your tracks



> There have been few styles of underground dance music as unique and notorious as jungle. Its combination of heavy basslines and twisted, mashed-up breakbeats gave it a feel quite unlike anything else. While the lineage of DnB can be traced back to the very earliest days of hardcore rave music, the radical breakbeat manipulation that characterises jungle developed much more quickly.

The first tracks with really prominent breakbeat edits began appearing on labels like Moving Shadow during 1993, with Omni Trio's *Renegade Snares* and Deep Blue's *Helicopter Tune* among the better known examples.

Although beats had always been an important part of hardcore, they now became the focus of tracks - pitched snare edits took the place of hooks, and timestretched breakbeats served as melody lines. As jungle developed, the ravey noises and stabs of 92-era hardcore started to disappear, until the genre - from the minimal, atmospheric sounds of DJ Crystl's *Roll the Beats* to the jump-up ragga of Krome & Time's *Ganja Man* - became driven almost entirely by drums and bass.

This style of DnB would in a few short years be replaced by the more minimal sounds of Alex Reece-style 2-step and industrial Ed Rush-esque tech-step. However,

"Pitched snare edits took the place of hooks, and stretched breaks served as melody lines"

over the past few years, jungle beats have seen a resurgence in DnB, dubstep and wobble house. Big tunes such as Skream's remix of La Roux's *In for the Kill* and Danny Byrd's modern day jungle mash-up *Shock Out* have brought the bonkers sounds of jungle beats back into the spotlight, so in this tutorial, we're going to take a look at some classic jungle production techniques that will have you rolling out the riddims in no time.

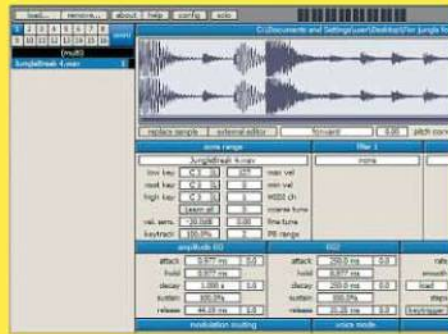
You'll find a selection of suitably junglist breaks in 24-bit WAV format on the DVD, and we'll be showing you how you can slice, dice, pitch and process them into amazing new sounds.

So, without further ado, prepare to get seriously old-school as we revisit some timeless, seminal sounds and rinse one out for the jungle massive.

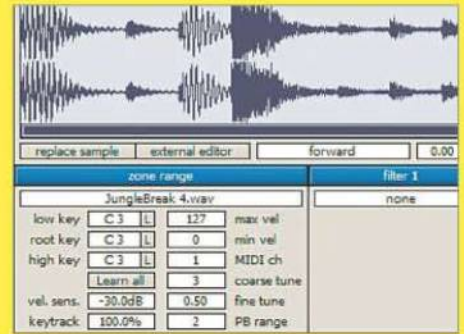
> Step by step Old school beat-slicing



1 > An easy way to get an authentic jungle feel is to chop your breaks into chunks, rather than individual beats. You can use any software sampler for this, but we're going for Vember Audio's shortcircuit, which you can download for free from www.vemberaudio.se. Call it up in your DAW, set the tempo to **170bpm**, and drag **JungleBreak 4.wav** from the **cm DVD** onto note C3 in your sampler.



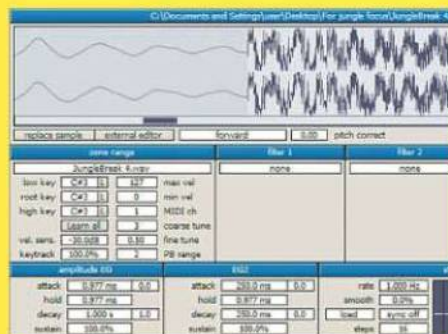
2 > Because we're playing the sample back at the original tempo in the sampler, it's out of the time with the project. We need to pitch it up to put it in time. Trigger the sample to play over one bar and put your DAW in loop mode. Turn on your DAW's metronome and locate the sample's pitch controls - access these in shortcircuit by double-clicking the sample name.



3 > Currently the break is playing back too slowly, so start by increasing the **Coarse** (or semitone) **Tune** field in your sampler until it's sitting roughly in time with the metronome. Then use the **Fine** (or cent) **Tune** field to get the beat sounding as tight as possible. You should find that a setting of **+3 semitones** and **50 cents** gets this particular beat sounding reasonably tight.



4 > Remember when working with sampled breakbeats that their timing maybe not be perfect, and they'll likely have their own swing. This can cause issues when layering drum parts and other breaks over the top of them, but we'll look at that later. For now, copy the keyzone to the next key up. In shortcircuit, right-click the keyzone in the menu on the left and select **Clone (Next Free Key)**.



5 > Move the start point of the sample so that it begins with the snare using your sampler's waveform editor. In shortcircuit, this is done by right-clicking the waveform and selecting **Set Zone Start**. Zoom in to set the start point at the exact start of the snare - turn off the 'snap to zero' function to make this easier.



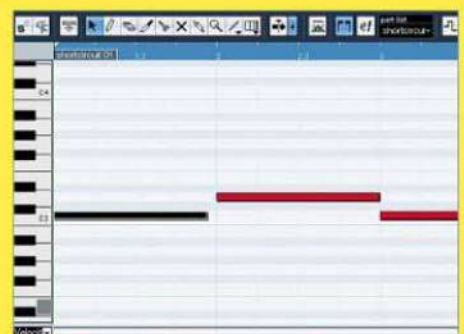
6 > Now edit the MIDI part, so that the second sample is triggered on the second beat of the bar, like so. On playback, the beat should sound just the same as it did before. The crucial difference is that you can now trigger the snare to play whenever you want. By slicing up more parts of the beat in this way, we can reprogram the pattern of the beat as we see fit.



7 > Copy the second slice onto the next key. This time, set the start point to the beginning of what some onomatopoeically describe as the "chicken tikka" hi-hat rhythm, as shown here. The MIDI should also be edited such that the third sample is triggered half way through the bar.



8 > We could slice out the second snare, but in this beat, it's the same as the first, so let's get to the fun stuff - rearranging the break. Copy the MIDI pattern we've drawn here. The break will play back in time, but you'll notice that the pattern has been completely changed.



9 > There's one hitch - there's a small bit of snare at the end of the kick sample before the hi-hat section. This can be killed by turning the MIDI editor's snap off and making the note that triggers the kick part slightly shorter. Go too short, however, and the beat will sound truncated, so zoom in to help you get it to exactly the right length.

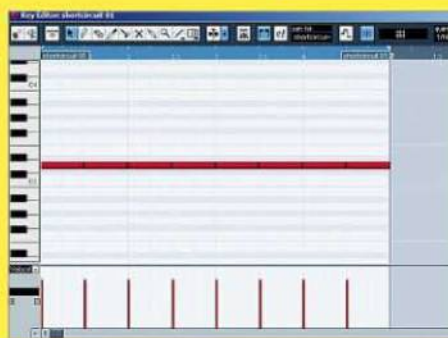
Source direct

If you want to make your own jungle breaks, you're going to need some source material to start with. You'll find a selection of ready-to-rock beats on the disc, in the **Tutorial Files/Focus** folder, but there are plenty of other places to get your hands on funky fresh loops. One extremely useful resource is junglebreaks.co.uk, which features a selection of classic breakbeats in high quality WAV format. This excellent site is packed with information, including where you can find the full versions of the tracks used, and also mentions some of the classic jungle and DnB tracks that the breaks were used in.

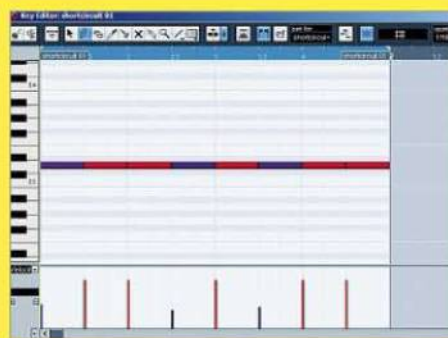
If you fancy a little lightweight beat-mining, there are some excellent compilation albums of famous breakbeat tracks out there. For the best quality possible, you'll want to make sure you acquire these in a lossless format such as CD or WAV. If your local record shop can't help, try an online one such as Amazon or, for downloadable WAVs, www.junodownload.com.

There are also plenty of sample libraries available offering both vintage-style breakbeats (such as Industrial Strength's *Vintage Breaks, Volume 1*, available for download from www.loopmasters.com), and classic breaks (like *Jungle Frenzy*, which can be picked up at www.timespace.com).

> Step by step Using velocity and length



1 > Continuing with the beat we've already created, let's look at how subtle velocity changes can help a beat sound more 'rolling'. Delete the previous MIDI pattern and copy the one shown here, which has the hi-hat slice on eighth-notes. The constant velocity level makes it sound unnatural and un-rhythmic, so let's funk it up a bit.



2 > Turn down the velocity levels of the first, fourth and sixth notes, as shown. The simple loop now has much more energy and groove - not because we've added volume, but because we've taken it away at strategic points. Understanding the importance of contrast such as this is essential when it comes to programming beats in any style of music.

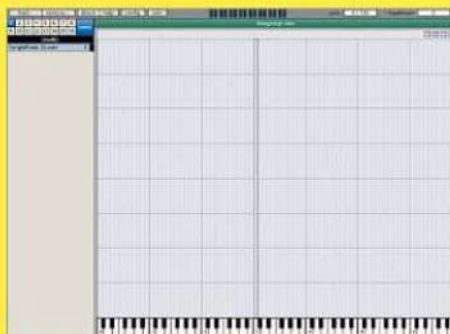


3 > Copy this pattern shown here. This is another classic jungle technique - creating a delay-style effect on drum sounds by repeating them quickly with falling velocity levels. You can also do this with rising velocity levels to create a reverse delay-style effect.



4 > You can get a less rolling feel by turning off your sequencer's snap function and decreasing the length of the notes, as we have here. This will play only the first slice of each sample, giving a 'steppier' feel that's closer to that late-era jungle sound.

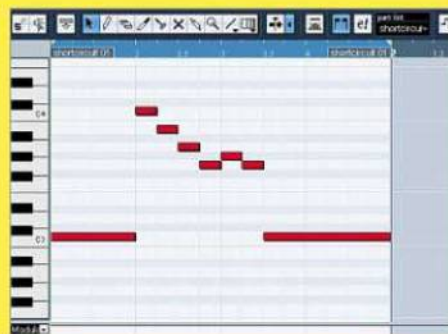
> Step by step Pitched snare effects



1 > Create a new project and load your sampler. This time, we're going to create a classic pitched snare effect in the style of Krome & Time, amongst others. Create a sampler and drag **JungleBreak 11.wav** onto note C3, and set your DAW to 170bpm, which is more or less the tempo of the break.



2 > We want to be able to play this sample across the keyboard, so drag the **High Key** up a few octaves. Then, bring up the waveform display of the sample and locate the first snare, which is the third major beat, as shown above. Now when we play the sample, it'll start with the snare, and we can play it chromatically like an instrument.



3 > Copy the pattern we've used here to create a 'rushy' jungle beat with a pitched snare motif. If you want to use other slices of the beat, too, simply create a new keyzone in the area below the keys that the snare starts on. You can use this pitched snare effect on other drum sounds, too, but it works best with snares, generally.

> Step by step **Timestretching and pitchshifting effects**

1 > Back in the early 90s, hardware samplers had limited audio editing capabilities, but some of them featured basic timestretching. We can replicate this effect in software, specifically with Native Instruments Kontakt, the demo of which can be downloaded from NI's website. Start a new project at 170bpm, load Kontakt and drag **JungleBreak 11.wav** onto it, creating a new instrument.



3 > This mode applies real-time granular timestretching. To get an approximation of classic old-school hardware sampler timestretching, change the pitchshifting mode from **Default** to **Large (e.g. polyphonic)**. If you're using a MIDI controller, try playing the beat back in different octaves to hear that magnificent metallic timestretching effect.



5 > By default, the Kontakt instrument's pitchbend range is set to only a couple of semitones. We want to be able to bend it through a whole octave, enabling us to get something close to the Eventide Harmonizer real-time pitchbend of Rufuge Crew's *Terminator*. To do this, click the **Mod** tab in the Source panel and turn the pitchbend modulation amount up to full.



2 > Click the spanner icon to open the editor, then click the **Mapping Editor** button. Stretch the sample's keyzone across the whole of the keyboard. This enables us to play it up and down the entire keyboard, but in default Direct From Disc (DFD) mode, the tempo of the break will change. Switch to **Time Machine 2** mode instead.



4 > Currently the **Release** of the amplitude AHDSR envelope is set to **300ms**. Turn it all the way down to **0ms**. Create a MIDI object and copy the pattern shown here, which plays on ascending octaves. For the last bar, it should play on the second octave and pitchbend up smoothly. Remember to set the pitchbend at the start of the first bar to **0**.



6 > There you have it: authentic-sounding old-school pitchshifting. For another twist on this effect, turn Kontakt's **Speed** knob down to **50%**. The beats retain their pitch, but play at half speed, creating yet more awesome granular processing artifacts. Also, try the old **Time Machine** pitchshifting mode, which gives the beats a slightly different timbre.

Five classic jungle beats

Engineers Without Fears - Rhythm

The B-side of the much more famous *Spiritual Aura*, the aptly-titled *Rhythm*, creates a rushy, melodic tangle of pitchshifted beats, and is laced with simple but effective drum edits.

www.youtube.com/watch?v=qWGqX49q9vQ

**Nookie - Give A Little Love (94 Lick)**

This hands-in-the-air anthem from DnB veteran Nookie interweaves the Amen break with 4x4 kicks and catchy pitchshifted fills. This track shows how well jungle-style breakbeat programming can work with 4x4 beats.

www.youtube.com/watch?v=GSRkBBk777E

**Renegade - Terrorist**

One of the definitive jungle tracks, this heavy tune from Ray Keith's Renegade alter-ego combines funky Amen rhythms with rolling *Think* breaks. A massively influential track, *Terrorist* set the template for the countless Amen mash-ups that followed.

www.youtube.com/watch?v=ppkoQFhQ2Hg

**Krome & Time - The License**

Original junglists Krome & Time take Amen mash-ups to their logical conclusion with this crazy slice of ragga jungle, featuring ridiculous snare rolls and ludicrous cymbal crashes. The pair score bonus points for include some subtle touches of *Funky Mule* along with the Amen madness.

www.youtube.com/watch?v=OWi0bemx6Ho

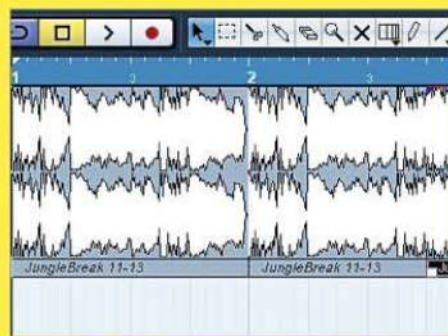
**Omni Trio - Torn**

Omni Trio's *Renegade Snares* might be his most famous work, but his back catalogue is full of gems, including this slice of breakbeat bliss, which boasts a tight, rolling intro, a drop featuring epileptic Amen edits with timestretched snare hits, and some excellent filter and phasing effects.

www.youtube.com/watch?v=GkAHMeBAN6U



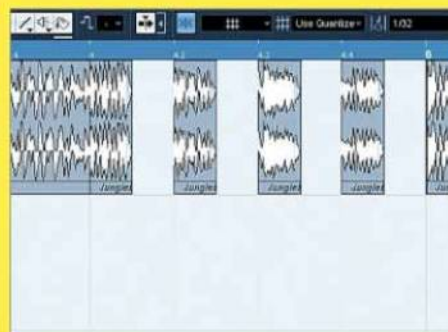
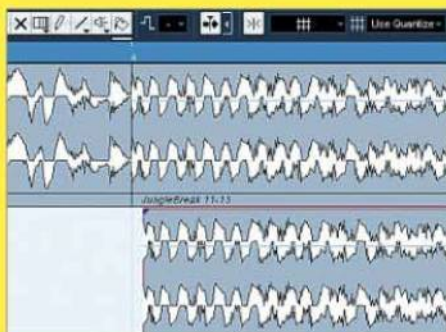
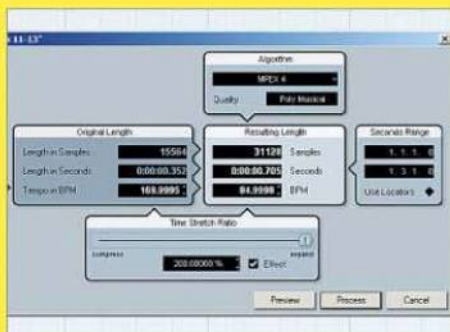
> Step by step Classic jungle processing effects



1 > Now let's use a few more classic jungle effects to create a completely mashed up beat. Start by creating a new project in your DAW, and set the tempo to 170bpm. Drag **JungleBreak 11.wav** onto an audio track and copy it out so that it plays eight times, as shown.

2 > Slice the second bar at the third beat, where the second snare plays. We want to pitch this down an octave without granular processing. To do this in Cubase (see your DAW's documentation on pitchshifting if you're not using Cubase), right-click the snare and select **Process>Pitch Shift**. Deactivate the **Time Correction** checkbox, and set the **Transpose** amount to **-12 semitones**.

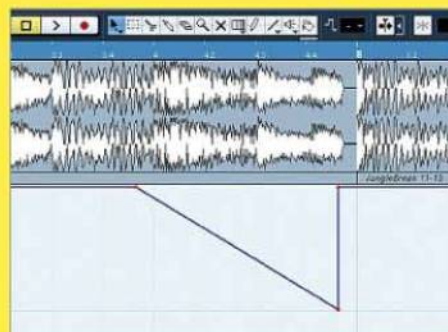
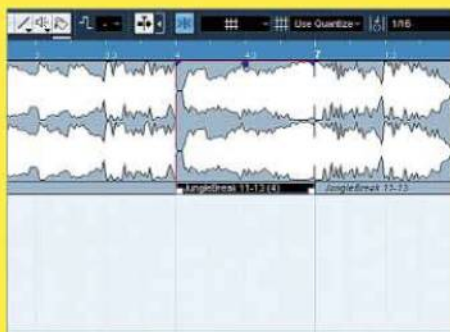
3 > Click **Process** to pitch the snare down. This sort of processing works in a variety of ways in different DAWs - if the process causes the snare to overlap the first beat of the next bar, shorten it so that it finishes at the end of the bar. Pitching the beats up in the same way works, too, but of course, you'll need a longer beat, as it will play through in half the time when pitched up an octave.



4 > Next, slice at the second snare in the third bar. We want to timestretch the beat. If you're using Cubase, right-click the snare and select **Process>Time-stretch**. Set the **Algorithm** to **MPEX4 Poly Musical**, and the **Time Stretch Ratio** to **200%**. Click **Process** to stretch the snare. Again, shorten it if it overlaps the start of the next bar.

5 > Slice at the second snare in the fourth bar. Copy the snare down onto a new audio track, but move it to the right slightly with snap turned off, so that it plays slightly later than the original. Turn both down to **-3dB**. This creates a phasing effect, which can be adjusted by moving the copied snare backwards or forwards in time.

6 > Slice the second snare of the fifth bar. We're going to perform a rapid chop on this beat. Set your DAW's snap to **1/32**, and slice at each 32nd-note. Delete every second slice and you'll get a stuttery chopping effect. You may find that adjusting the fade settings helps blend everything together if these slices click or are slurred.



7 > Reversed beats are always good fun and can help lead into a new section or simply spice up a beat that's flagging. Slice out the snare in the sixth bar, and reverse it - in Cubase this is done by right-clicking it and selecting **Process>Reverse**.

8 > Another classic jungle technique, as employed by the likes of Doc Scott and PhoteK, is the low-pass filter fill. Add a filter plug-in to the track - pretty much any one will do - and set it to low-pass mode. Automate the cutoff frequency, so that it drops over the final beat of the seventh bar.

9 > Depending on your DAW and filter plug-in, you may notice that even if you return the filter cutoff frequency to maximum dead on the first beat of the next bar, it doesn't actually return to its maximum value during that beat. To compensate for this, turn your DAW's snap function off and move the automation curve slightly to the left. **cm**

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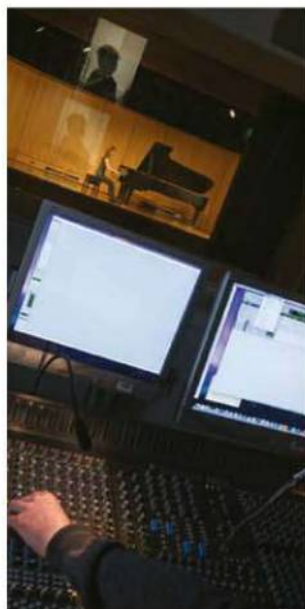
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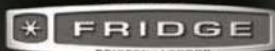
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- Experience with and a passion for electric guitars or bass guitars
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- Experience using MAC and PC computers as well as Microsoft Office.

For more information on the company and the job please visit the website: <http://www.warwick.de>

To apply for this role please e-mail your CV to Hans-Peter Wilfer at jobs@warwick.de

This role will involve the successful candidate relocating to Markneukirchen, Germany for a period of at least 2 years after which the opportunity to work from a different location could be considered.

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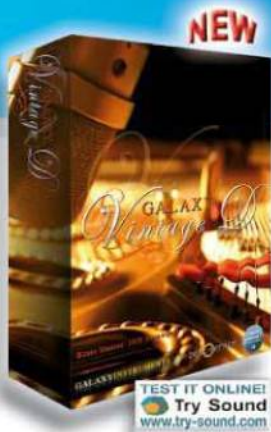
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All magazine and disc contents subject to change



GALAXY Vintage D

**A legendary grand piano
now a virtual instrument!**

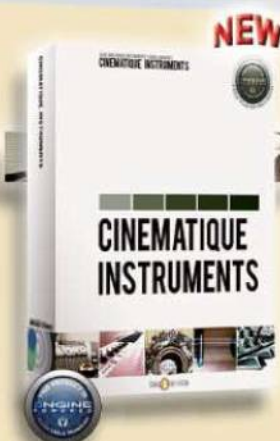
Best Service. Galaxy Instruments has released Galaxy Vintage D, a virtual grand piano that is based on samples of Bauer Studios' famous 1920 Steinway D, which has served for legendary recordings. This exceptional Steinway concert grand was built in 1920 in Hamburg in the German factory of Steinway & Sons. Over the last 90 years it has achieved a deep and intimate character and a beautiful singing tone.

Some of the best pianists have recorded legendary albums on this instrument, among them Keith Jarrett, Chick Corea, Carla Bley, Guillermo and Gonzalo Rubalcaba, Abdullah Ibrahim, Wolfgang Dauner, John Taylor and many others. Richie Beirach called it „the best piano in the world“.

Galaxy Instruments has now released this legendary piano as a virtual instrument.

Galaxy Vintage D is the first product of the Galaxy pianos product line, equipped with the new Kontakt 4 engine offering more features, better performance, lossless sample compression and an all new user interface, designed specially for Galaxy Pianos.

Virtual Instrument incl. Player £ 115,-



CINEMATIQUE INSTRUMENTS

Best Service. Cinematique Instruments sets a focus on weird, odd and rare instruments which adds a subtle and individual character to your music production.

The library contains wonderful string instruments such as an autoharp, a 36 string instrument with a series of chord bars, a kantele, a traditional plucked 5-string instrument of the zither family native to Finland, a wooden celtic nylon harp or a bowed psaltery, an instrument of the zither family such as a kind of a wooden soundbox with unstopped strings over it. Beyond a nice collection of percussion sounds Cinematique Instruments features also strange and rare keyboard instruments such as the low-price, garbage Super-Sound EK-470 e-piano, the charming organ with its electric fan which blows air across reeds or the organic and warm Zeitter & Winkelmann Piano.

But there are also special sound packs called Glass, Metallic Objects, Experimental Box and Downbeat Box. These sound packs are an amazing source of individual and inspiring textures, pads, mallets and percussions instruments. Cinematique Instruments nearly recorded everything they could get their hands on. They beat and knocked doors and sideboards of a metallic kitchen with timpani mallets, brushes, sticks, fingers and fists, they tapped with fingers and timpani mallets against lids, rubbed around the glass rim and they assembled instruments from unique sounds such as station-announcements, trains, paper crumpling, acoustic and electronic noise, station hum, underground-railway noise, pneumatic doors, crown cap shaking, glitches, noise, hiss, hum and other weirdness.

Cinematique Instruments' goal and ultimate ambition is to inspire everyone by using its highly playable and unique instruments providing a lot of opportunities for your music production.

Virtual Instrument incl. Player £ 175,-

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ENGINE is based on the high-end sampler Independence Pro and offers all performance-features of a contemporary sample engine. ENGINE was developed by Best Service in cooperation with Yellow Tools

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All instruments were sampled and looped perfectly and inserted into the best service ENGINE.

Virtual Instrument PC/MAC £ 219

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- 778 Bases (in 39 subgroups)
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- 200 Organs (in 11 subgroups)
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Library:

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- More than 100.000 single samples
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"Overall, this is a highly impressive system that takes the crown as the most flat-out powerful we've ever used, yet costs a fair bit less than previous contenders. Can't be bad!"

Verdict

For: Very, quiet and stays cool
Powerful, overclocked i7 CPU
Stylish looks

Against: Not much!



Computer Music Magazine
December 2009 issue

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