The Innovation Game

Some would argue that modern Digital Audio Workstations (DAWs) are in danger of becoming too 'samey', so how are manufacturers continuing to carve a niche for themselves in this increasingly competitive market? Here's **Stephen Bennett** with an in-depth overview.

Have you ever wondered why so many animals and plants sport similar features even though they are spread many miles apart and have never met socially? Biologists call this tendency of organisms to demonstrate a consistency of adaptation to comparable ecological niches 'convergent evolution'.

A similar trait is clearly apparent in the mature world of Digital Audio Workstations (DAWs), with most of the main players' products looking more and more alike, feature-wise, with each iteration, although some software does diverge from the paradigm laid out by the DAW's common ancestor, Steinberg's Cubase. Cubase set the general pattern of DAW workflow early on and most of the software on the market today still conforms to many of the original design concepts featured in the first version for the Atari ST. Cubase featured – and still features – a central arrange page where recordings can be captured in a similar fashion to the way engineers worked with multitrack tape machines in the past.

The DAW is a flexible beast and most companies create their software from the ground up to be used for multiple tasks such as recording, editing, mixing, effects processing and the playing of virtual instruments (VIs) – which leaves software designers plenty of scope for innovation. Some DAWs, such as Cubase and Apple's Logic Pro, have evolved from their MIDI-only ancestors and tend to be full of features that composers may value, while others were designed primarily as audio recorders – for example, Avid's Pro Tools and Merging Technologies' Pyramix.

Some DAWs eschew the traditional 'tape recorder' paradigm and focus on looping and arrangement. The best-known software of this type is Ableton Live, which is, to continue the biological analogy, a duck-billed platypus among DAWs. Bitwig Studio, a relatively new DAW for Linux, Windows and OSX, is one of the few to follow in Live's musical footsteps, but E-Magic's (the original developer of Logic) first forays into the DAW world were with the Notator and Creator software for the Atari ST, both of which were built around similar concepts.

Ableton Live allows the user to perform real-time pitch and tempo manipulation and has therefore become as much of a performance tool

as a recording system. Its close integration with MAX for Live (a DSP processing environment) means that users can get right in there and code their own audio processing tools. A programme that could arguably be said to be Live's spiritual ancestor, the MIDI-only algorithmic composition software 'M' (originally released by Intelligent Music in the 1980s) has been resurrected, *Jurassic Park*-like, for the Macintosh by Cycling 74, the creators of Max/MSP. Whether this software will bite someone's

head off on the toilet remains to be seen.

Steinberg's Nuendo, with its ADR taker system and sophisticated video synchronisation tools, is designed from the ground up for audio post, while Cubase's VST expression feature is designed to breath life into orchestral library programming and is squarely aimed at the composer. There is a trend for innovative features from a particular DAW to eventually appear in other companies' products, so DAW manufacturers go to great lengths to attempt to stay one step ahead of the competition.

Apple's Logic Pro X features 'Drummer', which allows the composer to create authentic percussion tracks that vary – in a very human
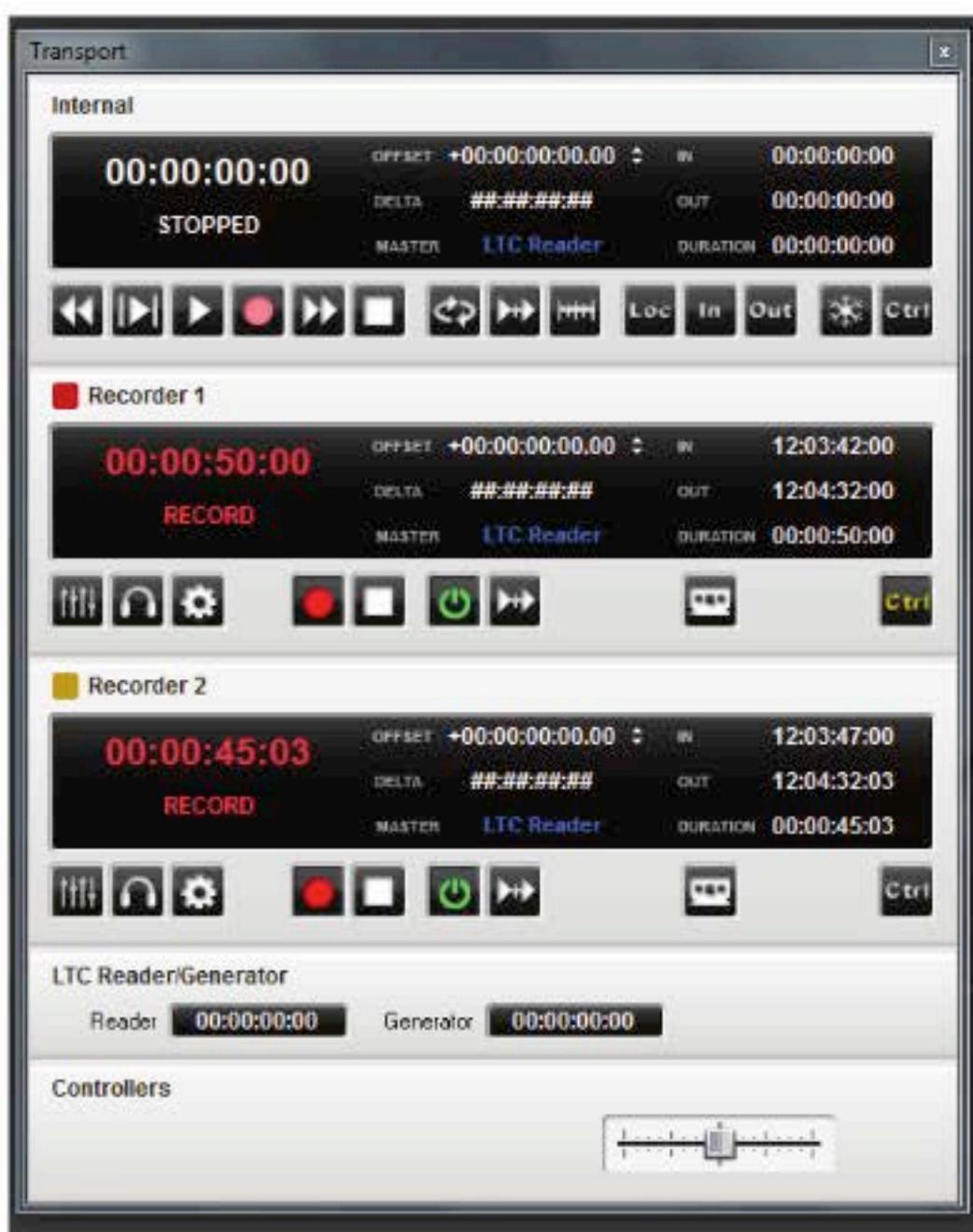
Pyramix from Merging Technologies is used for post-production TV and film, music production, CD/SACD mastering and many more audio-related industries

way – depending on the chosen 'style' of the virtual drummer. For demos, Drummer is perfect, but expect to hear the fruits of its self-generated paradiddles on a hit near you very soon.

TOOLS OF THE TRADE

The latest version of Avid's Pro Tools now features an embedded cloud computing-based collaboration system that allows composers and engineers to work on projects wherever they are in the world – and, if singing astronauts are anything to go by, off it as well.

One of Pro Tools' upcoming new features, the Marketplace, is a place to publish session files, stems and mixes directly from the DAW,

Whether this new ecosystem will help to sell more product remains to be seen, but as many of the most profitable audio projects are completed within Pro Tools, Avid is probably the best-placed manufacturer to have success in this area.

Merging's Pyramix can capture audio on up to four separate drives simultaneously and the takes can be edited before all the recording has been completed, while the latest iteration of Cubase features some innovative compositional tools, such as Chord Track, Chord Assistant and Chord Pads.

With the introduction of 64-bit processing, VCA mixers, pitch and tempo correction software, the bouncing of regions directly to disk and export of tracks as audio files, automation and efficient CPU processing, one may be tempted to think that most of the currently available DAWs have reached some kind of common evolutionary feature climax. However, all of the available software differs in the way they look, the Operating System and platforms they run on, and the sonic nature and type of their included plug-in instruments and effects. Workflow is a very personal thing; the choice of a DAW will often be based on personal familiarity with a particular product or based on the type of software that their collaborators may be using, rather than a focus on raw features.

Those clever people at Steinberg were also the progenitors – in 1996 – of that most useful innovation, the audio plug-in, with their Virtual Studio Technology (VST) protocol. While many companies have since developed their own proprietary plug-in formats, such as Audio Units (AU) from Apple and Avid's Audio eXtension (AAX), these mostly perform in the same fashion as Steinberg's protocol. Because each manufacturer makes its Software Development Kits (SDK) open to all, it allows the big fish in the DAW world to take advantage of plug-ins created by smaller fry. This enables innovations

Chord Pads are one new feature of Cubase Pro 8
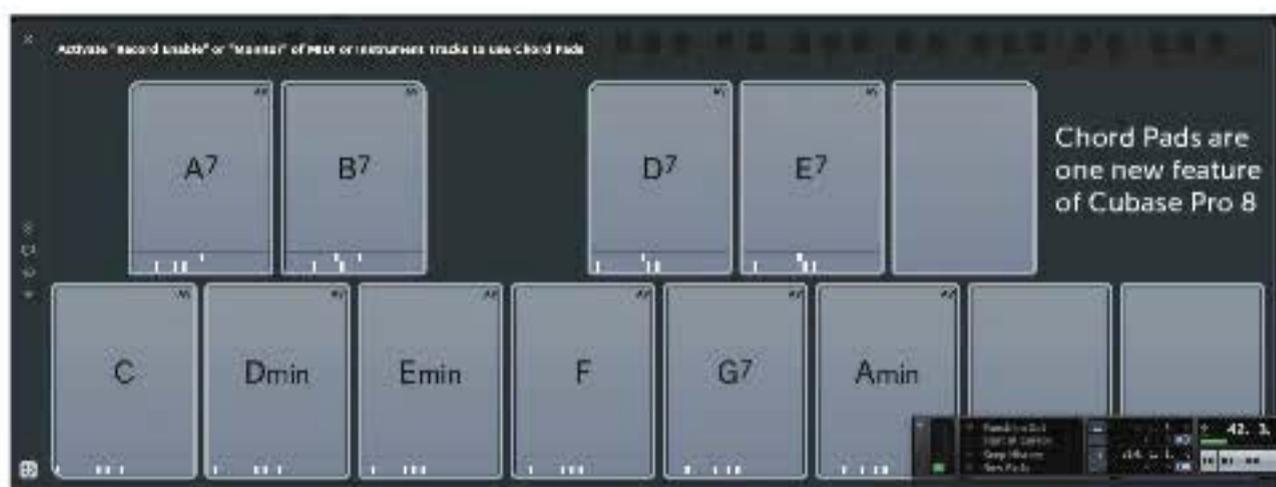
in plug-in design to move at a greater pace than is possible in the behemoth DAW itself, as the resources required to move from a great idea to a downloadable product are easily within the grasp of most programmers.

THIRD-PARTY PLAYERS

In reality, the addition of third-party plug-ins, such as Synchro Arts' Vocalign for ADR, which is often found in Pro Tools-based post facilities or Pyramix's optional ADR package, can take up the slack where the DAW itself is lacking and many DAWs bundle third-party plug-ins to enhance the basic features of the software.

Quite a few of the 'standard' features in modern DAWs, such as drum replacement and pitch and tempo correction, first appeared as separate plug-ins whose conceptual ideas – and sometimes code – have since been subsumed into the DAW.

Major names in hardware processing and electronic musical instruments have also entered the plug-in market, with virtual versions of their classic equipment. This obviously makes a lot of sense where the original was a digital design, such as Eventide's H3000 plug-in – an emulation of their vintage pitch shifting hardware – but there are many examples of recreations of analogue gear.

While several companies have resurrected other manufacturers' classic designs, such as the Xils lab emulations of the EMS VCS3 and Vocoder, UVI's Emulator II and GForce's Oddity and MTron Pro, some of the original manufacturers are also getting in on the digital act. The UAD platform is proving popular with those companies keen on creating emulations of their own hardware, as the

DSP card effectively acts as a 'dongle', making the software almost impossible to crack and the Universal Audio format currently sports plug-ins from most of the top manufacturers of hardware, such as Lexicon, Neve, API, Manley, Marshall, Tube Tech and Valley People. While some may feel this slavish emulation of older hardware demonstrates a lack of innovation, releasing the engineer from the limitations of using one or two instances of a piece of hardware opens up new creative possibilities for everyone.

In any case, in tandem to these recreations, there are plenty of examples of exciting and innovative plug-ins being developed, such as Izotope's Ozone mastering plug-in and the company's 'Swiss army knife' audio restoration suite, RX. Innovation can come in many guises and even in the field of the now almost traditional orchestral library, East West is pushing the boundaries of what is possible – and available – with its Composer Cloud, a subscriber-based system that offers instant access to over 9,000 of its high-quality instruments.

The composer and engineer now have available a wide range of recording platforms and processing tools. Though it may seem that the development of the DAW has converged to such an extent that there is little to choose between the competitors' products, the very different workflows and focus on where the software is likely to be used means that there is still real choices to be made. The tsunami of plug-in innovation appears to show no signs of abating however, and the next few years of development will bring tools that are unheard of in our philosophy. The next stage in evolution of digital tools should further enhance the creative possibilities in audio production.

Stephen Bennett
has been involved in music production for over 30 years. Based in Norwich he splits his time between writing books and articles on music technology, recording and touring, and lecturing at the University of East Anglia.

iZotope's Ozone 6 offers a complete mastering platform

Katie Tavini

Romesh Dodangoda

Ian Palmer

> "I actually think sometimes DAWs don't progress quickly enough."
> **Ian Palmer**

Ian: I find updates a little frustrating. Not in themselves, but when you have to organise lots of different software to do one little upgrade. The combination of OSX, Waves and Pro Tools has been a fairly precarious path to upgrade on at times.

Romesh: If my system is stable, then I usually won't update it for a while as I don't have a lot of time to be troubleshooting if I have a lot of sessions I need to work on. If it starts altering the way you work and it means you have to adjust to fit the DAW, then it can become a problem.

Katie: As long as a DAW does the job you need it to, there's not really much point in upgrading. There doesn't seem much point in upgrading each year just for one or two extra features which you might spend a couple of days learning and then never use.

Do you agree that some DAWs are becoming too similar to one another? Should companies be doing more to set themselves apart?

Ian: I guess that a combination of the two is a good balance. If I went into the Nuendo environment, for example, I would have to learn

where things are and what they are labelled, new icons, etc. But the basic structure of a DAW is standard just like a mixing desk is. A bus might be called an Aux or a Group track but they perform the same job.

Ryan: To me, great tools are the ones that empower you, which usually is a product of your connection to them. Most DAWs have the same features and do the same things but each of them feels a bit different. I think people should use whichever DAW makes the most sense to them and the way they think. Ultimately, someone's comfort with a DAW will far outweigh the advantages of the very minor nuances between the different platforms.

Romesh: I think a lot of the DAWs out there have applications that they are really good for and that make them stand out. Nuendo for me is great because it is great all round for tracking, mixing and also working with video. It's great that there is choice out there so users can find something that suits their workflow and what they are looking to do with it.

Katie: I think manufacturers are trying to go for an all-in-one package. It's more noticeable with things like PreSonus Studio One's ability to generate DDP files. It's basically a DAW that you can record, mix and then master in. Home studios are everywhere, and I think companies are trying to use that to their advantage.

Are you a big plug-in user? Do you have any favourites?

Ian: I love plug-ins and couldn't live with out them. I use them extensively when I edit and

mix. My favourite editing plug-in has to be iZotope's RX4. It's just so powerful for cleaning up production sound. I really like the addition of the Dialogue DeNoiser component – useful if you cannot find some suitable noise for the DeNoiser to Learn.

For mixing I love the Renaissance plug-ins by Waves. The UI is simple and easy to use, plus they sound good. I use the REQ and RComp on all my dialogue tracks as my go to plug-ins for television mixing.

Ryan: Universal Audio has really cornered the market on emulations. Every one of its plug-ins has a distinct flavour, which often isn't the case with plug-ins. The AMS RMX16 has a sound that was so prevalent in the '80s and it's incredible when a plug-in can emulate the hardware so accurately that you're instantly able to recreate that era. Their entire plug-in line is incredible.

For me, McDSP is my go-to for everything else. They are incredibly forward-thinking with their plug-ins. They make them so feature-rich that they're unparalleled in the amount of control that they offer.

Also, often the problem with plug-ins is that they fall apart if pushed too hard, but McDSP are musical even at extremes. CompressorBank, FilterBank, and the NF575 Noise Filter make it into every mix that I do.

Romesh: I tend to use a lot of analogue equipment for tracking so when the audio hits the DAW, there is not a lot I need to do to the sound. However, if I do go to plug-ins, I'm a big fan of Universal Audio. They sound great!

Katie: I'm not a heavy plug-in user, but my go-tos are Sonnox EQ, dynamics and limiter, and the Brainworx Digital V2. I love how transparent and natural sounding Sonnox plug-ins are, and I love the M/S processing on the BXV2.