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LONDON – Tel: +44 (0)20 7916 2828 · *GERMANY* – Tel: +49 61 31 9 42 5220
NEW YORK – Tel: +1 (212) 965 1400 · *HOLLYWOOD* – Tel: +1 (818) 753 8789
e-mail: enquiry@ams-neve.com www.ams-neve.com

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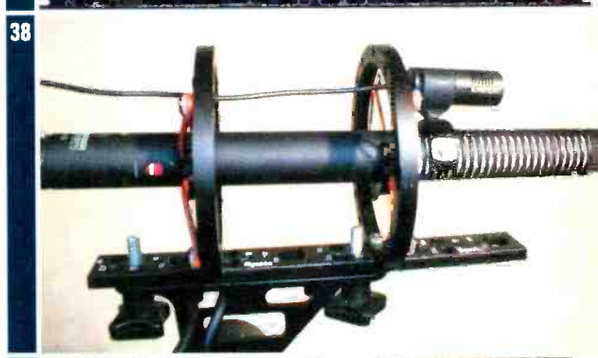

Listen up

MY LEADER last month, in which I drew attention to a letter expressing concern at the disparity in quality between original vinyl releases and there supposedly equivalent CD reissues, has generated a lot of response. What is interesting is that opinion is divided into those who have been long aware of substantial sonic discrepancies and those who suspect that it exists but have no proof. The first camp frequently has its own ideas about the reasons behind the differences with allegations of incorrect master use, ignorance and inaptitude on the part of the remasterer, and altogether darker, and potentially litigatious, allegations about record company policies and priorities in the treatment of these old recordings. The second camp asks for examples so they can judge for themselves.

Many might be wondering why we should be so concerned about comparisons to a now largely redundant and obsolete format but I'll counter this with the reminder that, as an industry, we have a responsibility to police audio quality and champion the cause of excellence. Not doing so undermines the justification for our existence and we might as well hand the whole lot over to a video edit suite that will bang the job out over a lunch hour. There's also the brewing thought that if this situation has already arisen in what is effectively one generation of format change, how well does it bode for any

subsequent format changes to the work you are completing today?

Education by first-hand experience is a vital aspect of keeping abreast of technological progress and, just as it is every audio practitioner's duty to hear high-bit, high-sampling rate comparisons, some evaluation of what has become of your predecessors' best work is also in order.

Suggested examples for listening material that qualify under the aforementioned criteria are welcome at the *Studio Sound* office. Let's hear this for ourselves and draw our own conclusions.

Zenon Schoepe, executive editor

Taken short

IN SEVERAL CONVERSATIONS spread over only a handful of weeks, I've found myself listening to pro-audio manufacturers telling chilling stories of component shortages. There is no consistency in the reasons for these as they concern everything from reissued valve equipment to latest-generation consoles, but the fact remains that professional audio is no longer in control of its technical destiny.

Proudly proclaiming that it was once only second in technical complexity to the space programme, the power seems to have slowly slipped from the hands of those with a vision of audio's future. In their place have appeared the forces of commerce and nature.

If it is unsurprising that valves for esoteric outboard are in increasingly short supply, it is considerably more so that a dearth of modern ICs should hinder the production of a current mixing desk. But while valves are now primarily sourced from stockpiles of old military and communications spares, certain chips are produced in huge numbers primarily for use in mobile phones, with audio a poor second. Meanwhile, Yamaha's discontinuation of the remarkable NS10M monitor is being put down to unavailability of wood pulp and Yamaha's inability to find a suitable alternative.

We got lucky with DAT—kind of. A 'consumer' format that found favour in the volume markets of data backup, the pro-audio applications of DAT were effectively underwritten by hi-fi R&D and computer production budgets. But DAT is the exception that proves the rule. And the rule is that we can no longer go it alone: too much of today's technology is too costly to too be too different. If we can tuck ourselves into the slipstream of high-volume, high-tech advance, we can continue to push audio to greater heights. If we step outside it, we are in danger of being blown away.

In the light of all this, it is likely that our greatest objective in future will be to go along for the ride without ending up at the wrong destination.

Tim Goodyer, editor

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United Business Media,
8 Montague Close, London Bridge,
London SE1 9UR, UK.
Fax: +44 (0)20 7407 7102
Net: www.studio-sound.com

Emails: (initialsurname@ubminternational.com)
Direct lines: +44 (0)20 7940 (extension).

EDITORIAL
Executive Editor: Zenon Schoepe. X: 8513
Editor: Tim Goodyer. X: 8578
Production Editor: Dawn Boultwood. X: 8523
Secretary: Eileen Sullivan. X: 8524

Consultant Editors:
Broadcast: Florian Camerer, ORF, Vienna.
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Postproduction: Paulo Biondo,
International Recording, Rome.
Lloyd Billing, The Tape Gallery, London.
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Consultants: Francis Rumsey; John Watkinson
Columnists: Dan Daley; Barry Fox; Kevin Hilton
Bench-testers: Keith Holland; Paul Miller
Regular Contributors: Jim Betteridge;
Richard Buskin; Simon Croft;
Ben Duncan; Dave Foister; Tim Frost;
Neil Hillman; Rob James; Caroline Moss; Philip
Newell; Terry Nelson; Martin Polon;
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News Editor: Phil Ward

ADVERTISEMENT SALES
Group Ad Manager: Richard Lawn. X: 8531
Ad Manager: Sue Gould. X: 8532
Deputy Ad Manager: Sam Patel X: 8542
Classified Sales: Peter Lawn. X: 8518
Ad Production: Mark Saunders. X: 8606
Circulation Manager: Luise Mulholland. X: 8653
PA to the Publisher: Lianne Davey. X: 8598
Associate Publisher: Joe Hosken. X: 8602
Publisher: Steve Haysom. X: 8521
Executive Director: Doug Shuard

SUBSCRIPTIONS
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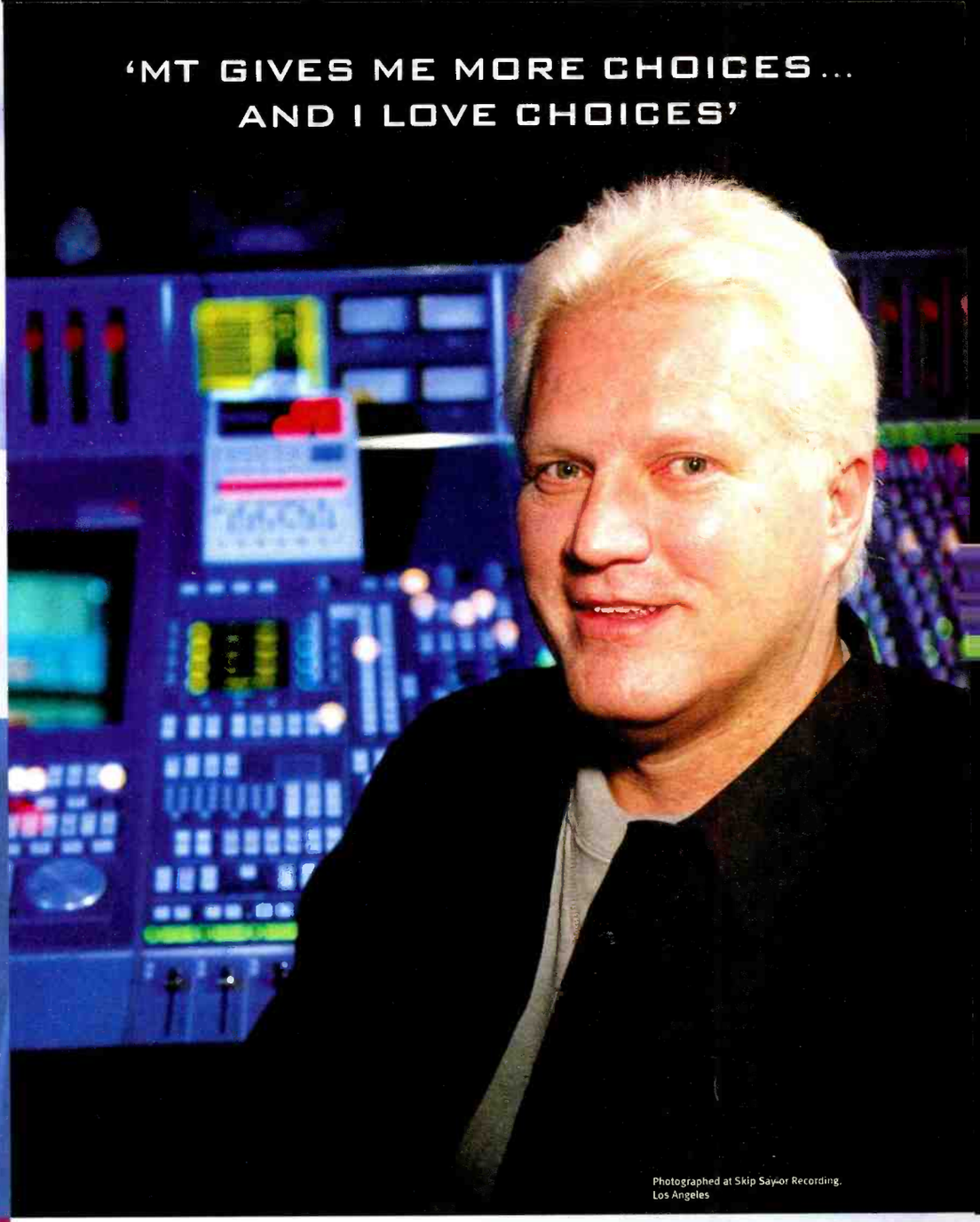
For subscriptions contact:
Studio Sound, United Business Media International
Ltd. Tower House, Lathkill Street, Market
Harborough, Leicestershire, LE16 9EF, UK.
Tel: +(0) 1858 438893
Fax: +(0) 1858 461739

'MT GIVES ME MORE CHOICES... AND I LOVE CHOICES'

"Mixing is like painting a picture. I don't want to use the same colours all the time. That's what's really cool about the MT; it gives me a larger palette to experiment with. But, if I need to, I can quickly get back to where I was."



Photographed at Skip Saylor Recording, Los Angeles

DIGITAL MIXING TIP

The ability to copy settings quickly is great. If I need a compressor gate setting, or I think the EQs and processing work in the same way for several vocal tracks... copy, copy, copy and it's done. The MT's speed is a tremendous advantage.

"When I work on the MT I can trust the most important tool in the recording process - my ears. I don't have to sit down to mix with predetermined ideas. One of the best things about working on this board is that I never feel confined or restricted."

TAAVI MÕTE

Top recording engineer and mixer Taavi Mõte has been involved in the creation of albums for a number of successful recording artists over the last two decades, and his golden touch continues into the 21st century.

The recordings on which Mõte has left his mark combine to a staggering figure of over 40 million units sold, with 15 Platinum and Multi-Platinum, and 25 Gold albums to date.

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Begbroke Oxford OX5 1RU England Tel: +44 (0)1865 842300 Fax: +44 (0)1865 842118
Email: sales@solid-state-logic.com www.solid-state-logic.com

NEW YORK	LOS ANGELES	TOKYO	PARIS	MILAN	TORONTO	SINGAPORE
+1 (212) 315 1111	+1 (1)323 463 4444	+81 (0)3 5474 1144	+33 (0)1 3460 4666	+39 039 2328 094	+1 (1)905 655 7792	+65 (0)438 2272

CONTRACTS

Australia: Perth-based Austereo's radio stations PM/FM and 94.5 have jointly ordered the first DSP Media Speed Console II. The order marks the third DSP station to go to Austereo, and comprises a DSP 16-track Digital Editing Processor, the DSP Speed Console, a Yamaha 02R and meter bridge, and JBL monitoring system. Meanwhile Seven Network has purchased three Euphonix System 5 digital consoles, following their use during last year's Olympic Games. Further orders for the System 5 are expected to follow.
Seven Network, Australia.
Tel: +61 3 9697 7527.
DSP Media, US. Tel: +1 818 487 5656.
Euphonix, US. Tel: +1 650 855 0400.

US: Nashville-based engineer and producer Chuck Ainlay has bought a second ATR 1-inch 'wide track' analogue stereo recorder, again in conjunction with Sound Stage Studio's rental division. Prompted by demand and following the first purchase by a matter of months, the new ATR will join the first serving artists including George Strait, Travis Tritt and Tricia Yearwood.
Sound Stage Studios, US.
Tel: +1 615-256-2676.
ATR, US. Tel: +1 717 852 7700.

France: Paris' Studio Damien has taken on board a Euphonix console and FAR 5.1 monitoring system. The FAR setup

employs AV-100 3-way monitors for LCR, four AV-6 rears and an LBE36A sub with over 5kW amplification delivering around 135dB and extending to 17Hz.
FAR, Belgium. Tel: +32 4 259 7412.

Far East: Sales for Euphonix' System 5 digital console include First Media in South Korea, whose desk is the first System 5 into the region. Recent sales in Japan include a 202-channel System 5 and 48-track R-1 digital multitrack to Sony Music Entertainment. Q-tec, a subsidiary of Pioneer Corporation, has also ordered a System 5, as has P-Three (a video division of Pyramidfilm) and Omnibus whose desk is the second System 5 to go into a Tokyo post facility.
Sony Music, Japan. Tel: +81 3 3266 5995.
Q-tec, Japan. Tel: +81 3 3589 2373.
Omnibus, Japan. Tel: +81 3 5410 6500.
Euphonix, US. Tel: +1 650 855 0400.

Moving down to move up

Philippines: Roadrunner Network, a Manila-based postproduction facility, has recently been undergoing renovations intended to not only give a new look to the facility, but to improve efficiency. For some years the company has operated from two sites in Legaspi Village, Makati. One on the first floor of Sedcco 1 Building, in Rada Street, and the other, the Gamboa Street facility, located in the First Midland Office Condominium. Says Danton Weineke, marketing manager of audio and new media at Roadrunner's RTV Division, 'Aside from our Sedcco site being due for a makeover, we wanted to bring all our services together in one place. So we've been moving our off-line facilities from the first floor to the ground floor of the Sedcco Building, and transferring one of our AudioFile workstations from our facilities in the Gamboa Street site to Sedcco as well. The Sedcco facility will host all our on-line and off-line editing, along with audio, telecine, computer graphics animation, and new media.'

Adds Arnedo 'Dodie' Lucas, managing director of Roadrunner RTV (Radio Television) Division adds, 'From the end of February, we will have a more comfortable and creative atmosphere to welcome our clients—and in our on-line and off-line editing suites we'll even have a little Zen garden with a fountain.'

Roadrunner operates Quantel Henrys W/ORE and Java plug-ins; Avid Media & Film Composers, and an Avid Symphony; AMS Neve AudioFiles, Audiovision, Pro Tools and MotU 1224s; an SGI and Challenge Server; Filmlab film processors; Westrex optical sound camera; and Sondor 35mm sound recorders. For multichannel sound, it uses a Dolby cinema encoder, Ultra Stereo cinema encoder and Dolby surround encoder. The audio studios include three multichannel rooms and a dedicated Foley pit.

Various divisions of the outfit are engaged in the production of radio commercials, jingles, scores and soundtrack production along with general audio, video and film postproduction, 3D graphics and digital film effects. The company also has a film lab and optical sound facilities. Roadrunner annually participates in the creation of approximately 40 feature films and 300 original-version commercials. The Roadrunner Network was formed from the merging of the former Videopost and PrePost companies.

Net gains for French radio

France: Yacast is set to broadcast leading French radio stations—including RTL, RTL2, Skyrock and Fun Radio—over the Internet. The service is hosted in KPNQwest's Paris CyberCentre and delivered over KPNQwest's European fibre-optic network. The streaming platform through which it is delivered is based on Microsoft's Windows Media Technologies 7 with content delivery provided by Inktomi technology.

'We are delivering a state-of-the-art platform based on premier media and content delivery software that gives companies like Yacast a competitive advantage in rolling out its Internet radio solutions,' says Julf Helsingius, KPNQwest's chief technology officer. 'It brings them closer to the content and allows them to interact with it—and the advertisers—in a way that is not possible over traditional radio.'

In addition to the KPNQwest network, Yacast will use an automatic content recognition system to associate web-based banner adverts to adverts being broadcast on-air and push them onto the KPNQwest streaming platform. This also enables association of links to artists' web sites, stills from albums,

Nevison returns to AMS Neve

AMS NEVE HAS APPOINTED three new directors to its board in a move that AMS Neve MD Mark Crabtree said also strengthens the balance sheet 'to ensure that all opportunities to take the company and its products forward are enabled'.

'My first mission after taking the company private from Siemens was to re-establish the heart of the company in its products, its expertise and its customers,' said Crabtree. 'The launch of DFC, Libra Live and Libra Post, AudioFile SC and now the stunning new Neve 88R graphically demonstrate the success of this phase. The enormously powerful and enthusiastic team I have now assembled is absolutely incredible and will really assist me in pushing forward our position and our products.'

Stuart Nevison, co-founder of AMS, joins to advise on marketing; John Lawrence, who was Chairman of Thorn EMI's technology companies, becomes AMS Neve's new Chairman; and Douglas Graham joins the Board with a wealth of business experience. Mark Crabtree spoke to *Studio Sound* about the developments.

Q: *What has precipitated these moves? Should it be described as a refinancing of AMS Neve?*

As the announcement said, the reason is 'to realise the great opportunities presented by its industry-leading product range—especially the enormous response to the new Neve 88R'. We have created such a good business here and I felt we could do even more with a stronger board and deeper pockets. The volume of work in progress required to meet the big demand for the 88R is high and it would not have made sense to turn business away.

Q: *What do each of the new board members bring to the party, what responsibilities will they hold and will they be involved with the day to day running of the company?*

The additional board members will be helpful for me in the day to day running of the company and form an excellent sounding board with a wealth of business experience.

John Lawrence has committed himself to two days per week on the company's business. He brings his great experience of chairmanship of a division of some 60 technology companies at Thorn EMI. He will be very helpful in matters of general corporate governance.

Stuart Nevison's understanding of the market is well known. He will provide advice on sales and marketing to the operational management and to me. We have already found this to be positive.

Douglas Graham is the procurement director. His special focus is therefore on purchasing which is a key function in a company like ours where our major expenditure is on materials. To have someone of his calibre able to focus on this area is marvellous.

Q: *Will the changes have any impact on your leadership and control of the direction of the company?*

Only positively in so far as it will free more time for me from some of the procedural things I have been doing, to the further benefit of the products and the market.

Q: *Have there been any other changes to the company as a result of this development such as staff losses or changes to the product portfolio?*

No differently to any other company in these competitive times, we need to monitor our cost base and make sure we have the right mix of skills in the areas where they are most effective. This we have always done, and will continue to do.

There should be no particular change to the portfolio direction—the market seems to be positive about that.

Q: *What is it like to be working again with your old partner Stuart Nevison? Can we expect to see him resume the high profile he enjoyed in AMS days?*

I have kept in close touch with Stuart, who has been a personal friend for over 35 years. In the period since departing under the Siemens ownership he has developed other successful careers, but has never lost his intense interest in the professional audio industry and the people and facilities he got to know so well over the years. He will not have the high profile of the past, but is already proving invaluable in supporting, encouraging and focusing senior staff with his unparalleled experience and 'feel' for our business.

US: New York-based Cool Beans Digital Audio post house has opened its new three-room facility offering identical studios, each centred on an Avid Audiovision workstation and Euphonix System 5 console. Co-founded by Chris Drozdowski and Mark Francke, the Multi-Video Group companies include New York-based Rhinoceros Editorial, Rhinoceros Post, Rhinoceros Visual Effects and Design and WAX Music and Sound Design. Associated international companies include Gravity Post Production in Tel Aviv and Digital Renaissance in Oberhausen, Germany. Multi-Video Group, US. Tel: +1 212 986 1577.

and links to partner web sites from which music can be purchased.

In the initial phase of the service, KPNQwest is providing 15,000 simultaneous streams for French listeners, plus 5,000 streams for international listeners. As demand increases the overall capacity is forecast to increase to 30,000 streams at 20kbit/s each plus 5kbit/s per stream for content-related data, using 750Mbit/s of bandwidth.

'We have pioneered a new multi-dimensional medium, and thanks to KPNQwest's hosting, bandwidth and streaming solutions, we can both enhance the Internet radio experience,' says Laurent-Cyril Vedel, director of international development at Yacast. 'This is all about co-operation between technology providers to deliver a ground-breaking solution not only for Internet radio listeners, but also for the advertisers, music distributors, artists and e-commerce players.'

Support for Napster

UK-US: Music download site, iCrunch (www.icrunch.com), has joined forces with US-based Napster to work with leading US music file-sharing service, Soma Recording. In a special deal with Soma, the Funk D'Void track 'To Ya Waistline' formed part of the Napster Featured Music Program during February. iCrunch sees this as the first move in a closer relationship with Napster. 'As pioneers in digital music, we recognised the potential of Napster and, while the rest of the industry was taking them to court, we started speaking to them,' said CEO, Alon Harnoy. 'We have been looking for a way in which we could supply high-quality music to Napster with the consent of the label, artist and publisher.'

As holder of the digital rights to the Soma catalogue including over 7,000 tracks from over 50 other leading UK indie and dance labels, iCrunch worked with all parties concerned in order to give Napster users easy access to the Funk D'Void track from the Soma catalogue. Under the deal, Napster users will be able to find and share this track. The track will be promoted on the Napster.com web site and the Napster client. Users can link through to a special microsite at www.icrunch.com/funkdvoid that will include other exclusive content, including an interview with Funk D'Void. 'We're really excited to work with Napster,' said Soma Records boss Richard Brown. 'This is great exposure for the Funk D'Void album. We were more than happy to join our friends at iCrunch in an arrangement that benefits us, Lars Sandberg from Funk D'Void and the Napster community.'

iCrunch has worked closely with Soma since signing the label's digital rights in Autumn 1999. Since then the two companies have collaborated on a number of major releases including recent remixes of Slam's 'Positive Education' track via Virgin.

In a separate announcement concerning the American Napster lawsuit, BMG Entertainment president and CEO Rolf Schmidt-Holtz said, 'BMG remains committed to the development of secure file sharing services that compensate our artists and other rights holders. BMG recognises the strong consumer demand for file sharing and will work with Napster in developing industry-supported services that bring fans closer to their favourite artists.

Australia courting the Net

Australia: Satellite Music Australia is to complement its existing Dalet Digital Media Systems broadcasting system with new multimedia publishing capabilities for television and the web. Having used a Dalet system for music database management and continuous broadcast for several years, SMA will 'enhance the radio experience of international audiences' by providing services simultaneously on Austar's interactive OpenTV platform and on the Internet. Listeners on radio, television and Internet channels will be able to access synchronised multimedia information related to song titles, purchase CDs and book concert tickets online. Greg Solomon, Chairman of SMA, explained, 'Dalet allows us to upgrade our existing services on a channel-by-channel basis, while offering our clients a total multimedia solution as well as continuing to maintain our leading edge in audio programming and broadcasting throughout Australia and the Asian region.
Satellite Music Australia. Net: www.satellitemusic.com.au

Euphonix stacks the deck

US: Euphonix recently demonstrated several new software applications in LA. Marketed initially to artists, engineers, producers, managers and record labels, and using Rocket Networks' secure Internet technology, E-deck and Listen-In software is intended to speed up the review and delivery of mixes.

E-deck allows password-protected PCM audio mix files in formats from stereo to DVD-quality 24-bit–96kHz 5.1 surround to be accessed from anywhere in the world through Windows 98/2000 (Apple support is planned) at a wide range of connection speeds. E-deck supports MP3, WAV and AIFF formats, and offers engineers real-time monitoring of EQ, level and compression changes applied to encoded MP3 files. Listen-In, which is controlled by E-deck, offers secure monitoring of remote studio sessions by multiple users through the use of Windows Media Server technology. Euphonix promises support of future audio formats for E-deck and Listen-In through plug-ins.

Euphonix also unveiled its R-1 AES31 TransferStation. Supplied on a high-performance PC (Windows 2000), with the capability of network or SAN integration, the system allows precious analogue

CONTRACTS

UK: Construction of the home studio of radio DJ Dave Lee Travis has been completed by Studio Schemes. Equipped with a 12-input Soundcraft Series 15 console and Spirit Absolute monitors, the setup enables Travis to broadcast live world-wide via ISDN. The complete facility, including soundproofing, custom furniture and air-conditioning, cost around £20,000.

Now handling the morning show at Classic Gold's 18-station chain, DLT is still renowned for his dramatic on-air resignation from BBC Radio One.
Studio Schemes, UK.
Tel: +44 1933 227730.
Soundcraft, UK. Tel: +44 1707 665000.

US: California's Extasy Studio group of studios has purchased 12 Apogee AD-8000 Special Edition convertors, taking its total past 20 and making it the largest user of AD-8000 systems in the world. The new systems are being used exclusively to partner Pro Tools systems.
Apogee Electronics, US.
Tel: +1 310 915 1000.

UK: Independent broadcast systems integrator, ATG Spectrum, has recently completed systems design and installation for Lip Sync Post's new premises in London's Soho. The facility houses six studios including two Dolby-approved dubbing theatres, two 5.1 studios for TV and DVD, and two recording studios all equipped with AMS Neve digital consoles. Meanwhile, London's Molinaire and Yorkshire Television have installed CEDAR DNS1000 Dynamic Noise Suppressors. YTV's unit is being used on Take Me and David Jason's new series Macawber, while Molinare's two DNS1000s have already seen use on a number of television projects. Also in Soho, Gemini Audio Productions has installed a second Amek DMS console. The 56-input, 24-fader desk is equipped with Amek's Supertrue automation and will provide a new studio for the post facility whose recent production credits include the Correspondent series for BBC 2 and the *Hitler's Henchman* documentary series for Channel 5-Flashback.
YTV, UK. Tel: +44 113 243 8283.
Molinaire, UK. Tel: +44 7439 2244.

CONTRACTS

ATG Spectrum, UK.
Tel: +44 1462 485444.
CEDAR Audio, UK.
Tel: +44 1223 881771.
Amek, UK. Tel: +44 161 868 2400.

Morocco: Moroccan Radio Television is to install 90 Dalet digital music and newsroom systems. The move is to assist broadcasting in three dialects and four different languages. Recording, editing, programming, and broadcasting at RTM's Rabat site will all be digital, with all material stored on a central database, allowing simultaneous access via an internal network which will be expanded to connect all RTM sites.
MRT, Morocco. Tel: +212 37 701576.
Dalet, France. Tel: +33 1 4038 0139.

US: New York's Millbrook Sound Studios has installed a TL Audio VTC tube console. To be installed as a 32-channel desk, the VTC will be expanded to 40 channels to serve the likes of Luscious Jackson, Ahmad Jamal and Joe Lynn Tuner. The first major project to be recorded on the VTC will be the new Blue Oyster Cult album.
HHb Communications, US.
Tel: +1 310 319 1111.

France: Paris-based Lincoln Studio has purchased a Sony DMX-R100 digital console for its main dubbing and post room. The 3-studio complex handles major foreign language dubbing work including Star Trek Voyager. Additionally, broadcast production company, Visual TV, has taken delivery of Midas Heritage 3000 and Heritage 1000 consoles to add to its inventory for OB vehicles. The

first job for the Heritage 1000 was the Euro 2000 football Championships in Belgium and Holland.
Visual TV, France. Tel: +33 1 4094 2007.
Sony BPE. Tel: +44 1256 355011.
Klark Teknik Group, UK.
Tel: +44 1562 741515.

Canada: Vancouver's Armoury Studios has purchased a Sony 3348 digital multitrack and Digidesign Pro Tools Mix Plus workstation system to sit beside its 72-channel SSL 4000G+ console, Studer analogue multitracks and copious vintage outboard. Owned by producer Bruce Fairbairn, Armoury has hosted

Poland: Warsaw's WFDiF has completed Poland's first fully-digital film mixing studio. Studio S1, Big Blue Studio, features an AMS Neve DFC console and AudioFile SC. The facility is ready to compete in the international market, and has been certified by THX and Dolby for 5.1 mixing. Big Blue, Poland. Tel: +48 22 851 1024.

multitrack masters to be digitised into the R-1 recorder, transferred and archived as AES31 files for posterity. AES31's BWF format and human-readable EDL guarantee future accessibility, says Euphonix.

Corporate coups

Europe: DK-Audio has announced the acquisition of the studio products division of fellow Danish manufacturer, Pro Television Technologies. PTV will bring its catalogue of sync generators, video vector scopes and colour analysers into DK-Audio's new video products division, moving its 13-strong staff to DK's base in Herlev. 'For a while DK-Audio has been looking to expand into the video sector,' said owner and CEO Karsten Hansen. 'We had, in fact, begun certain product developments. When the opportunity came to take on the PTV division we saw immediately the benefits and synergy effects that we can realise in development and production.'

Meanwhile, the development staff of Berlin-based CorTech shift allegiance from communication technology specialists DeTeWe to Rohde & Schwarz and set up at the new R&S Technology Center in Pandrup, Denmark. The move is intended to meet the increasing demands of the mobile radio market for suitable test and measurement equipment. 'Thanks to their development know-how in the field of wireless terminal equipment, our employees have ideal qualifications for the design of future test technology solutions,' stated Technology Center MD Ole Krog Larsen.

Concurrently, Fairlight On Air is to combine existing sales activities with Fairlight ESP's main distribution structure to provide the Fairlight Group with better service in the UK and European markets. Tim Cuthbertson, CEO for Fairlight On Air, is to relocate from The Netherlands to the UK and take responsibility for the resulting business unit, based in London. Cuthbertson commented, 'This move will enable us to pool resources and develop the UK and European markets in a constructive and economically advantageous manner. With the current convergence of film, TV, radio and Internet markets, this strategy will provide long term benefits to our customers.'

The Sydney operations of Fairlight On Air will also handle ESP product sales for Australia and New Zealand under the direction of recently appointed General Manager Jason Miltrup.

Soundscape solid

US-UK: DAW manufacturer Soundscape has responded to recent announcements regarding ownership of its technology supplier Sydec by emphasising that the business relationship between the two companies remains unchanged. For the foreseeable future, Soundscape says, the established pattern of international sales and distribution will continue under the stewardship of the Cardiff-based company. Speaking shortly after Frankfurt's Pro Light & Sound exhibition, commercial director Nick Owen said, 'During the show we confirmed that interested third parties have no intentions to alter the business relationships between Soundscape and its suppliers, and recent rumours about a change of ownership have no foundation.

'At the moment, we are looking forward to concentrating on the business issues in hand and continuing to improve the supply of Soundscape products. Welcome new partnerships always bring strength to the marketplace, and will provide further opportunities to commercialise our products.'

Technical director Chris Wright added, 'We were flattered by the recent international interest in our company and its products. This proves the core value of Soundscape technology and the resound-

Form, function & patent

EVIDENCE FILED AT THE UK Patent Office Trade Marks Registry by specialist agency Haseltine Lake Trademarks has secured acceptance of a microphone shape as a trade mark for the first time in British legal history.

The AKG C414 microphone is now protected by trademark as a design, fending off the challenge of potential imitators that the shape is dictated purely by functionality. The precedent set by the decision establishes the value of brand design in pro audio equipment, and should make technical piracy more difficult. Trade mark agent Anna Szpek spoke to *Studio Sound*...

Q: *How did AKG win the trade mark?*

Basically the Registry allowed the mark on the basis of distinctiveness acquired through use and trade evidence. Evidence from AKG about sales, and also statements by Paul Newis at BBC Radio Production Resources and Mark Thompson at Funky Junk, was used.

Q: *Did you have to contact anyone else?*

I also told the Registry that I had contacted several studios, and although engineers said that they recognised the AKG C414 from its shape, they were not prepared to submit formal evidence as they thought it may seem that they were favouring one make of microphone over another.

Q: *Can you tell us what was said in any of the statements?*

Mark Thompson's statement asserts that 'In my view a large-diaphragm condenser microphone can take any shape the manufacturer chooses', thereby countering the case that a given microphone by another manufacturer would look like the C414 if it was aimed at similar applications.

A further statement by Thompson adds that 'I am confident that I and any of my colleagues dealing in professional sound equipment would recognise a drawing of a C414, displaying no indication of the manufacturer, as an AKG microphone'.

Q: *Why is that relevant?*

What this means is that, following acceptance of this evidence by the Trade Marks Registry, non-AKG products bearing this resemblance are now potentially infringing a patented trade mark.

Q: *How did this application originate?*

A UK trade mark application was filed by AKG Acoustic gmbh in Vienna following a change in the law in the UK to allow shapes to be registered as a trademark. Each application must be proven, however.
Haseltine Lake Trademarks, UK. Tel: +44 20 7420 0500. Fax: +44 20 7420 0505.

The R-1 was put through its paces at the 20,000 strong Elton John Concert in Madison Square Gardens this year. A host of other stars also appeared on stage...

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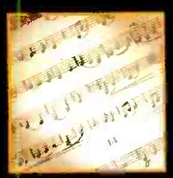

Tape-based recorders cannot keep up with today's demands for sound quality and speed.

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Germany: The new Bochum-based studio of German dance star ATB (aka Andre Tanneberger) is built around a 64-fader Soundtracs DPC-II digital console. Picking up a recommendation from producer and composer Frank Petersen, Tanneberger has mixed his current album, *Two Worlds* and single 'Let You Go' on the DPC-II. Geyer Audio & Video, meanwhile, has become the first facility in Germany to take CEDAR Audio's DNS1000 Dynamic Noise Suppressor.
ATB Studios. Tel: +49 234 579 390.
Soundtracs, UK. Tel: +44 1372 845600.
For-Tune, Germany.
Tel: +49 5481 94508 5.

ing success of the R.Ed DAWs and the Mixpander PCI DSP card.'

Recent installations of the RED DAW include five RED 32 DAWs to TV9 in Thailand, while ZDF, Europe's largest commercial broadcaster, has purchased several full RED 32 systems integrated with Discreet Edit video editing systems.

'We were also pleased to confirm at the show that The Royal Danish Music Conservatory has placed an order for two RED 32 systems and six iBOX convertors to be installed at their facilities in Copenhagen,' added Owen.

On demo at Frankfurt was a full RED 32 system with the new Mixpander DSP card and a full complement of DSP plug-ins.

Soundscape, UK. Tel: +44 29 20 540333.
Soundscape USA, Tel: 001 805 658 7375.

SIEL 2001

France: SIEL is to France what PLASA is to the UK—that is to say, the annual gathering for those involved in the live performance industry, be it mobile or fixed in terms of installation. This said, the vast majority of French pro-audio distributors were present at roll call between the 4–7 February, together with a creditable turnout of national manufacturers. While sound reinforcement systems were much in evidence, there was also a good showing of equipment such as hard-disk recorders and high-end outboard processors, showing the continued requirement for the 'studio on the road'.

UK: EMI Publishing in London's West End has installed a 32-channel TL Audio VTC console to serve EMI's artists and those hopeful of being signed to the label. The desk serves alongside an Otari MX80 24-track machine and occasionally a Logic Audio setup. TL Audio, UK. Tel: +44 1462 680888.

In terms of new releases, several stands were showing equipment fresh from NAMM in the States and some major names were making first appearances at SIEL, such as d&b audiotechnik from Germany and TSE from Spain. Since line arrays were 'rediscovered' last year (possibly due to the expanding success of L-Acoustics V-DOSC system), the trend remains unabated but it was interesting to see a prototype 'bent banana' mid-high array from APG. Although not a new concept, it is rare to see them outside of custom-built systems and APG could find a potential market in specialised applications such as large arenas and stadiums where zoned reinforcement systems are the norm.

In terms of attendance, SIEL 2001 was a success and this feeling was echoed by all exhibitors—some even almost complained of having too much. Rendez-vous next year for SIEL 2002.

MX-2424 Profile:

Jon Thornton, Head of Sound Technology, The Liverpool Institute for Performing Arts

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...no down time

"When choosing a hard disk recording 'standard' to equip all five studios, there was no room for error – disk or otherwise"

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APPOINTMENTS

Euphonix has appointed Ken Lancashire European sales manager. Lancashire joined the BBC as network radio broadcast engineer and has since been employed in engineering at Studer, Soundcraft and Amek. He is now responsible for sales in all key European territories.

Calrec Audio has appointed Jim Wilmer regional sales manager for North America. At 49, Wilmer counts four years as international marketing director at Rose Morris in his 30 years experience of pro audio.

POP Sound has appointed Steve Thompson as its first creative director, concentrating on developing emerging markets for digital broadcast, multichannel sound, and digital audio compression. The appointment consolidates Thompson's time as POP's staff mixer and director of digital audio compression.

Sennheiser and subsidiary Neumann have added to their executive boards. The developments leave Sennheiser managed by Volker Bartels, Dr Heinrich Esser and Rolf Meyer and Neumann adding Wolfgang Fraissinet and Stephan Peus appointed presidents of marketing and sales, and development and quality respectively. Rolf Meyer also takes the chair of Neumann's executive board.

The IBC Management Committee has appointed Quantel founder Peter Owen as Exhibition Chairman. Owen currently sits on the IBC Management Committee representing SMPTE, for whom he is an independent international governor. His appointment follows the retirement from the post of Bob van der Leeden who has held the role since 1994.

AMS Neve has appointed Guy Gampell as business development manager for postproduction. Having held positions at Akai and systems integration specialists, Feltech

Electronics, Gampell will liase between the postproduction community in the South East of England and AMS Neve's R&D department.

UK: Planet Audio has installed a custom Motionworker system, the first system to offer wordclock referenced machine control and synchronisation. The development enables analogue and video machine transports to be synchronised with Pro Tools. All machine transports come under the master transport controls on Planet's Neve VR legend but any connected machine can act as a master. Director and producer Rod Gammons said, 'Working with Logic and Pro Tools can be difficult when chasing tape and the time code is not referenced to house word clock. Many studios overlook this and an increasing number of sessions need to integrate Pro Tools (or Logic Audio) with both MIDI and analogue tape. Our Motionworker system makes this easy and our clients appreciate this attention to detail. Planet Audio has been built with the future in mind.'

Schertler takes Italian stage

ITALY: Italian TV's longest-running show, the annual Sanremo Festival of Italian Song, was recently held in Sanremo with an impressive outlay of cutting-edge digital technology by state broadcaster RAI. This year's was the 51st edition and the entire event was given five evenings of live prime-time TV on RAI 1, plus massive coverage by other broadcasters and the press. As well as domestic and international guests (Ricky Martin, 'gladiator' Russell Crowe and his band, rapper Eminem and Placebo), participants in the marathon song contest were 16 young acts and 16 big names.

To ensure that the juries voting in the theatre and other locations (as well as the millions of Italian and Eurovision viewers) were ensured optimum sound, RAI brought in a total of seven Stagetec Cantus consoles: a pair for in-house sound at the Ariston Theatre (32-fader 80 DSP and 32-fader 64 DSP), two on monitoring (48-fader 96 DSP and 16-fader 128 DSP), two in the music control room at the top of the theatre building (48-fader 96 DSP and 24-fader 80 DSP) and a 32-fader 80 DSP version in RAI's new all-digital 18-camera OB truck used for the event. The entire system, manned by a 25-strong RAI audio team, was connected via fibre-optics, part of which were left permanently installed at the venue and also included 19 Nexus Base devices.

The production was totally digital, but transmission was both digital and (terrestrial) analogue. Digital transmissions were beamed from Sanremo via satellite to RAI's

Saxa Rubra premises in Rome, from there via fibre-optics to the RAI Via Teulada centre, from which it reached digitally equipped households courtesy of Eutelsat Hot Bird 2.

For the second consecutive year, Schertler contact mics were used for the string sections of the show's 60-strong orchestra which accompanied all the contestants: the electrodynamic transducers comprised 16 Dyn-V for the violins; six Dyn-V for violas, six Dyn-C for the cellos and two Dyn-B on the double basses. The Swiss manufacturer's founder Stephan Schertler (himself a jazz bassist) explains 'Our patented transducers are based on a moving coil which moves through a decoupled magnetic field to create a voltage differential, resulting in truer response to string instrument bodies' vibrations and therefore giving acoustic quality closer to studio mics but without feedback or voice-over problems found with other mics'. Thanks to his experience as a musician, Schertler and partner Peter Koley have come up with a range of specialist mics that have 'won over converts from pop through jazz to bluegrass, including Charlie Haden, Ralph Towner and Didier Lockwood'.

Running Man

UK: This year's London Marathon will find *Studio Sound* publisher Steve Haysom making quick work of the distance under the pretext of raising cash for the UKBTS—the UK Brain Tumour Society—on behalf of Roger Gould, the charity's fundraising director. Looking lean and eager before the event, Mr Haysom commented, 'Roger lost his son, wife and mother-in-law to the disease, and as a fellow member of Westerham Rugby Football Club, I thought it was the least I could do to swell their coffers'.

Financial as well as moral support is welcomed on tel +44 20 7940 8512 or shaysom@ubminternational.com

Sonic and Daikin: masters of DVD

US-Japan: Sonic Solutions has reached an agreement with Japanese Daikin Industries to combine Daikin's DVD authoring business with Sonic's professional DVD operations. Under the agreement, Daikin will maintain an equity interest in Sonic Solutions while Sonic will acquire the Daikin products, including all intellectual property rights, and carry on development, marketing and sales activities world-wide.

'The addition of Daikin's technology will further strengthen our leadership position,' said Bob Doris, president of Sonic Solutions. 'Daikin introduced Scenarist, the first authoring application for professional DVD creation, in 1996 and that system is still a "gold standard" in the industry. Sonic has sold the largest number of professional DVD production systems of any company in the world. This deal combines the best with the best.'

'Sonic has been successful in providing professional users with DVD production systems,' added Kiyoshi Nakajima, general manager of Daikin's Comtec Computer Division in Tokyo. 'We're delighted to join forces with Sonic to continue to develop and enhance the strong tradition established by Scenarist, ReelDVD and other Daikin DVD products.'

Leon Silverman, executive vice president of Hollywood's Laser Pacific Media Corporation commented, 'Our Digital Media Services Group specialises in demanding and creative DVD projects, and we make heavy use of both the Sonic and Daikin applications. We have had a longstanding and fruitful relationship with Sonic, and combining these product lines assures us of continued success in serving the Hollywood community.'

As part of the move, Daikin US president Dr Panos Nasiopoulos will join Sonic as an executive vice president and Daikin's Jim Taylor will join Sonic as chief of DVD Technology. Daikin will continue to be the exclusive distributor and service provider of the Daikin-originated authoring products in Japan.

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RADIO NEW ZEALAND

Public Radio is alive and well in New Zealand, despite changing climates and an ever changing political environment. **Richard Hulse** charts the progress of antipodean broadcasting

NEW ZEALAND HAS the most deregulated radio market in the world. Deregulation began in 1988-89 with a new Governmental policy regime designed to promote competition and increase consumer choice. Prior to these changes around half of the country's 64 radio stations were owned by the NZ Government.

Until 1988, Radio New Zealand was part of the state owned Broadcasting Corporation of New Zealand. The BCNZ included Television New Zealand, The New Zealand Symphony Orchestra, *The Listener* (Radio and TV times) magazine, and a Broadcast Engineering Division. On its own, Radio NZ had 2,000 employees, 23 commercial stations, four non-commercial networks, a short-wave service and its own engineering division. A Broadcasting License fee was paid to fund The Corporation's non-commercial services.

By 1996, the BCNZ had been split into separate 'state owned enterprises', Radio NZ's commercial stations had been sold to private interests, the Orchestra became stand-alone and *The Listener* had been sold to a publishing company. TVNZ had to generate its own income from commercial revenue and the licence fee was being distributed on a programme-by-programme basis, although Radio New Zealand still received a bulk grant. The number of separate, continuous radio stations increased to 184, serving a population of 3.5m.

Today, radio frequencies are auctioned by the Ministry of Development Commerce—one highly desirable FM frequency in Christchurch sold two years ago for over $NZ1m (£300,000). There are many private operators ranging from hobbyists in bedrooms, student stations attached to Universities, Public Access stations through to national companies with stations in most main population centres. Against this backdrop of regulatory reform and increased competition came the need for greater financial accountability within public radio. The company has been restructured three times in the last decade as it strives to live within a static budget.

It was against this environment of change that Radio NZ also had to leave its home in Wellington, Broadcasting House. The move had to be completed in only 18 months. In that time three floors of a central city office building had to be completely refitted, new broadcast studios built, and the whole place 'wired for sound'. Today, Radio New Zealand has a staff of 247, and they provide two national networks, a full news service, a short-wave service and a range of New Zealand-made programmes. In the last two years Radio NZ has gone from making 95% of its programmes using analogue production equipment to nearly 100% digital, but more of that later.

Radio New Zealand has two main networks. National Radio is a talk (52%) and music (48%) based station that covers 97% of the population on a

range of AM and FM frequencies. There are also small (<500W) transmitters which are funded by local communities and receive a feed via satellite.

After a live all night programme consisting of music and pre-recorded feature programmes, the day opens at 6am with the flagship live news programme Morning Report looking in-depth at local and international events. After the midday hour consisting of a major news bulletin, rural and financial news, the afternoon is filled with a light classical hour, and In Touch with New Zealand. The host of this show, Wayne Mowat, was recently voted 'top music DJ' by readers of *The Listener*—each day he plays one hour of music from either a decade or year, ranging from the 30s through to the 80s. Checkpoint covers news in depth for an hour at 5pm and from 6pm there is a range of locally-produced and internationally-sourced programmes. The major round-up of the days news and current affairs is at 10pm and the final hour is devoted to a range of specialised programmes such as jazz, live concerts and The Mix, a contemporary music programme.

National Radio is free of sponsorship and advertising, and rates highly with listeners. Nationally it attracts over 0.5m listeners every week. The Saturday morning programme features in-depth interviews with internationally and locally known people from the arts, music, literature, science and technology. At times it manages a 20% market share nationally and some have joked that New Zealand grinds to a halt on Saturday mornings. In recent years local music content has been boosted to over 25%, sourced from commercial and private releases. Because of monetary constraints local 'popular music' recording is limited to specialised projects such as Live at Helen's which features live acoustic sets recorded at the Radio NZ Helen Young Studio in Auckland. Local music content was boosted to 100% during New Zealand Music Week and this proved popular with all listeners regardless of age.

Private Radio operators have accused the station of becoming too populist, and there has been continuing debate about the role of public radio. Radio New Zealand has continued to make a wide range of programmes for all New Zealanders, and to promote local music content.

Concert FM is the classical network, and reaches around 92% of the country on the FM band. It broadcasts classical music, music features and music reviews, as well as live broadcasts of the New Zealand Symphony Orchestra (NZSO), other local orchestras and chamber groups and visiting international artists. Up to 5% of the available audience listen nationally which is good for such a specialised format. At least 13% of the music is local content, and much of this is achieved by only six production staff. Concert FM aims to present its listeners with the best and this includes some jazz, world and contemporary popular music. Each week Composer Of The Week features one artist or sometimes a concept. Alongside the usual classical heavyweights Tim and Neil Finn have been featured, and last year a week was spent in Tin Pan Alley and another on the music of Brazil. Every two years there is a major international arts festival in Wellington, and staff cover every conceivable type of event from theatre through jazz, avant-garde and classical repertoire. There are also interviews and features about events. During one festival a staff engineer worked with artists as diverse as Steve Reich, The Ray Brown Trio, and Hesperion XX.

Because of the size of the market, Concert FM's recording engineers are also called on to record commercial projects for external clients. While this is not the main focus of the station, at the end of 2000 Concert FM released a commercial CD in conjunction with NZSO and Universal Records. It went gold in New Zealand four weeks after release and continues to sell solidly.

With the wide variety of work presented by local music events and 'mini festivals', production and engineering staff have to maintain a broad understanding of a range of styles and genres.

The third major service is Radio New Zealand International. This is separately funded through the Ministry of Foreign Affairs and Trade to broadcast to the nations of the South Pacific, but can also be heard in Europe and the Americas. It begins its day at 5.30 NZ DST with live and pre-recorded material of interest to a Pacific audience. There are also news bulletins in seven Pacific languages.

Helen Young Studio

The station has a 100kW transmitter located on the Rangitaiki plains in the central North Island of New Zealand. All transmission parameters such as frequency and power output are controlled remotely from the Wellington Studios. The transmitter site is unstaffed, but it is also possible to remotely change aerials and turn the transmitter on and off.

In June 2000 Radio NZ signed a deal with Sky Television so that National Radio and Concert FM are carried as audio only services on their satellite. This now means that for a small cost any New Zealander can access both services. Shortly after the deal was announced Sky sold their first decoder to a person without a TV set.

The two main networks are supplied material by three divisions. The News department is the largest and provides hourly news, as well as programmes like Morning Report. The Features section provides almost all of the locally made programmes, although a few are made by external contractors and others are sourced from public broadcasters world-wide.

Sound Archives/Nga Taonga Korero is wholly owned subsidiary, and it holds archives at two sites. The Christchurch (general) collection has thousands of hours of audio, relating to all aspects of NZ's history, from recollections of the land wars recorded in the 1930s to the current state of MMP politics. Nga Taonga Korero (the Treasures of Speech) is based in Auckland and holds Radio New Zealand's collection of Maori programmes.

Radio New Zealand has four main production studios in Wellington and three in Auckland. There are also smaller studios in Hamilton, Christchurch and Dunedin. The on-air studios are also located in Wellington. The new Wellington Studios were designed primarily around analogue desks—at the time of planning for the relocation there was not enough information about the reliability of digital desks, and the cost of what was available was prohibitive. The total cost of the move including construction of studios, some new equipment and the complete fit-out of offices was $NZ6m (£2m).

The Auckland studios were built in 1990. Two control rooms service the Helen Young Studio (named for a former Concert FM manager), a multi-use recording space with variable acoustics. One control room is fitted out for popular music production with 24 tracks of Dolby SR and an extensive collection of vintage mics, Neve modules and other outboard gear. The facility is available to external clients. The second control room is fitted for serious music production. The third is used for some on-air work and postproduction. Some other smaller self-drive spaces are used for news recording and processing.

Like most public broadcasters, Radio New Zealand considered digital systems at various times in its long history. The former engineering division

tried to develop an integrated business and presentation system in the mid eighties, but much of the technology required was still in its infancy and the project was abandoned. The Audisk system was used for successfully automating commercial stations for many years, although there was no production technology purchased until 1989—a single Pro Tools system for the editing and compilation of classical music programmes. As part of the last major restructuring in 1997, consultants suggested that new digital technology may be able to offer improvements in productivity and business performance, although projects to investigate this were not commenced until at least a year later.

The first digital news project started in 1997 just before the move from Broadcasting House. The aim of the project was to streamline the movement of audio and eliminate a number of manual tasks such as the logging of live on-air content for later re-use.

The News project team was looking for a system that allowed wide-spread sharing of audio and the automation of some tasks. The reliability of the system was a key factor because listeners and staff were used to the predictable service that analogue equipment provides. Also at issue was the size and performance of the system—the project team were not convinced that larger systems based on the technology of the time could meet the demands to be placed on it and be reliable enough. The main expected benefits were from the streamlining of existing practices.

The News division chose the CoSTAR system marketed by EDS, and later Maycom and now owned by Fairlight On-Air. Installation of CoSTAR began in 1999 and comprises some 80 user workstations. Additional workstations are used for automated tasks such as off-air logging. The system is powered by seven servers running Windows NT, with fibre-channel RAIDs and hardware redundancy. A Giga-Ethernet backbone is used to link the servers and NT workstations.

There is a smaller server in Auckland and stand-alone systems in other regions.

Workstations are fitted with various Digigram audio cards depending on the number of outputs and inputs required, and the CoSTAR software is configured to run MPEG Layer II at 256kbits/s and 48kHz sampling giving a total storage of 660 hours of stereo material. A CD-ROM server provides 3,000 hours of near on-line archival storage.

The system allows audio to be shared between regions, and there is a facility for filing voice reports over the phone or ISDN without human intervention. The system is now used for recording, processing and play-out of all news related audio and has replaced all analogue tape production.

CoSTAR is also used for a small amount of non-news presentation. All National Radio trailers are played from the system, and some programmes are pre-loaded from LP and other sources for convenience, reliability and speed. Some BBC features received via satellite are also played from the system. RNZI uses the system for playing its produced programmes and music. Rather than using a live-assist mode, music is also played from CD and automation is not used at all as a matter of policy because the company believes that Public Radio stations should have live presenters. Apart from this, analysis showed that the financial and human

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resources required for pre-loading audio (for either live-assist or automation purposes) were far greater than required by the status quo!

One useful feature CoSTAR has provided is a gateway to allow files to be transferred in from other systems that use different file formats and sample rates. For example, National Radio's trailers are made on SADiE and bounced to a shared network drive. CoSTAR then converts these 44.1kHz linear stereo .Wav files to its own format and places them in an 'incoming audio' directory. As a result the old NAB cart format has been phased out completely and the system will be able to accept other formats in the future.

The second digital project started after the move was completed and combined Feature programme production (including music editing and drama) and Presentation, although presentation was later merged with news for logistical and political reasons. Even though the project was to provide a tool for Features production, a project team made up of key staff from both the Features area and Operations (studio operators) was assembled to ensure key user groups were involved at all stages of the project. Because of the complexity of programme production as compared with News, this multi-disciplinary group did a lot more detailed work on examining and improving processes and work-practices.

During the course of the project it was found that the use of digital technology did not in itself bring improvements in productivity as had been suggested; rather it was how those resources were used and managed that made the difference.

A complete analysis of the programme making process was done, and the project team brainstormed ideas of how to improve it. It had been identified that while DAWs could be used simply as functional replacements for tape-recorders, this would result in more convoluted processes and bring a net drop in productivity. Including the whole process in the project, and treating it as a system made up of interdependent parts, largely eliminated this risk.

A range of systems were considered and SADiE was eventually chosen as being the most suitable for all the production tasks carried out by Features. It was easy to learn and it supported a range of skill levels through customisation of the user interface. It also had among the lowest 'Total Cost Of Ownership' of the systems examined—this term is common currency now, but during the project the concept was well understood and used as one of the selection criteria.

An audio network was considered, but unlike News where audio sharing was crucial it was found that most feature producers work on stand-alone projects and so did not need to share audio. It was however, deemed necessary to centralise storage of system and project information to aid the flow of work and to avoid confusion. To this end all SADiE workstations have been configured with a Q drive. In Auckland and Wellington this is provided by a file server, and in the regions it is a local drive. The Q drive holds all user profiles, templates and projects in a central location. Each producer has their own SCSI drive which is plugged into whatever local workstation they happen to be using. When they log in, there projects are accessed from the Q drive so there is never any confusion about which is the most current version of a project; there is only one version. The consistent system paths provided by the Q drive system also allow staff to back-up any project to hard disk, go to another region, restore the project and carry on working as if nothing had changed.

A recent funding increase will help Radio New Zealand consolidate and expand programming in some areas and has also allowed increased promotion of the station. The move to digital has enabled the quality and quantity of programmes to be improved and has brought production standards up to a par with other public broadcasters. □

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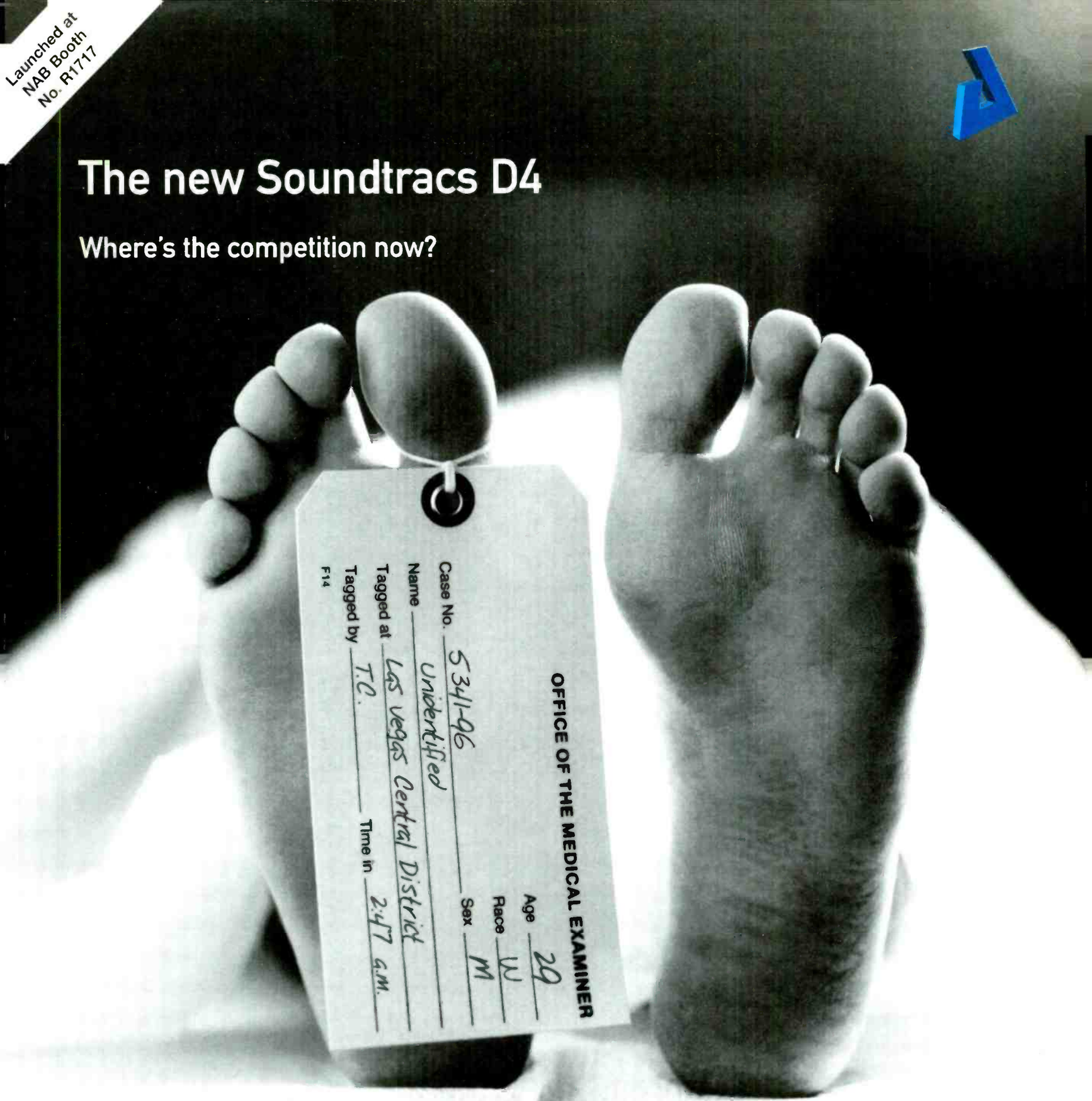

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DSP Media Postation II

Already established in territories close to its native Australia, DSP's Postation has had an update, a change of HQ and is ready for the rest of the postproduction world. **Rob James** reveals all

APART FROM THE OBVIOUS interpretation, the DSP in DSP Media is an acronym for Digital Studio Processing. In Europe and most of the US, the name seems to ring bells but few people actually know much about it or its products. In fact the Australian manufacturer has been successfully selling DAWs around the Pacific Rim for a decade or so. A few have even made their way into Europe and the US.

In the light of (often bitter) experience there is a rule of thumb, followed by many facility managers, which runs along the lines of, 'To avoid grief, never buy version one of anything until it has been around at least a year'.

The Postation II is a further development of Postation and has therefore long passed this milestone.

Postation II sets out to assemble all the core functions required for sound for picture post work into a cohesive, stylish and flexible package. The multitude of options can be a little bewildering at first. Beginning with the audio editor and recorder, DEP (Digital Editing Processor) is modular with 'Speed control' surface. It is offered in 16, 24 or 32-track versions. VCS 4 is the Virtual Control Surface for DSP's new 32 x 32 digital mixing processor (made by Panasonic). Postation II is also available with VCS 3 which uses one or two Yamaha 02R consoles driven from the VCS control surface. MP-1 is the Speed Monitor console which adds a surround monitoring system with 48 digital and 24 analogue inputs. NLV is the random access nonlinear video element. Each of these units consist of 19-inch rackmounting processors and I-O with a remote control surface. In full form the control surfaces are combined with Silicon Graphics LCD touch screens and designer furniture to make up the complete Postation II.

There is also an interesting networking option—TEAM—or Total Editing and Mixing system which supports all DSP Media systems including the Postation II, DEP audio editor and desktop systems.

The original Postation featured a 'wrap-around' layout, designed primarily for a single operator. The current layout is more open to accommodate a director or second operator.

NLV output is composite video using a Targa 2000 card. This is slated to be updated to the Targa 3000 which will add, among other things, SDI and S-video I-O and DV-25, MPEG2 or uncompressed recording capabilities. Pictures recorded at 25fps may be replayed at 24fps by automatic duplication of fields. True 24fps playback is under development.

The DLV is not simply a 'dumb' replay like having a Betacam on-line. The touch screen allows navigation through a project by simply touching locator frame tiles or using the on screen scroll bar. The editor and mixer automation locate with the picture. Basic cut, paste and move editing is included and an EDL can be exported. Imported EDLs can be used to conform the picture when changes occur. If a section has to be removed from a project this can be achieved by editing it out using the jog wheel on the DEP to set In and Out points. The edit is then reflected in the pictures. By using multiple playlists it is simple to produce different versions of a project using the same source pictures.

NLV also has a clever ADR package. Cue lines, beeps and GPIs are generated and lines of script may be displayed to the artist. The speed of the cue lines is altered by changing the length of pre-roll. Auto punch-in and out are performed ahead of the actual cue to provide 'handles'. A further refinement is the progress bar. When re-voicing into other languages this helps the artist by giving some indication of when to slow down or speed up. For those rare occasions where the script is available before the booking, time code cues and lines of dialogue can be entered into a laptop and transferred to the NLV. Up to 64 numbered takes are layered up as clips on the record track. All 64 takes may be viewed on screen to allow a compilation cue to be created from the good bits of the original takes. Three editing modes aid the process. Quick mode means editing commands only affect the uppermost clip on the track. Deep mode asks which layer it should perform the edit on and Full mode edits all the layers at once.

Another interesting development is almost ready for release. This will enable surround panning to be performed using the touch screen on the picture. Thus touching the top centre of the image will pan centre front, touching bottom centre pans centre rear.

The DEP editor uses SCSI Ultrawide hard disks with up to 32 tracks and 16,000 audio clips on a single drive. The limit on a single project is currently 10,000 clips. Sony SDT DDS drives are recommended for

back-up. Machine control allows for up to three external 9-pin devices. Regardless of whether the 16, 24 or 32-track option is chosen, all 32 tracks may be viewed and used although the number of simultaneously audible tracks is obviously restricted by the number of physically present tracks.

The main track sheet can display 8, 16, 24 or 32 tracks. Audio clips are displayed as solid blocks or waveforms. Fader position is displayed as an envelope line with markers indicating changes in EQ and so on. All automation is stored with the audio project and is clip based so moving a clip also moves any associated automation data.

In the main tracksheet, the tracks do not scroll. The play head moves across the screen and the screen pages at the boundaries. However, at the bottom of the screen two 'scroller' tracks are available which provide a more detailed, scrolling display of any two tracks selected from the tracksheet. Two waveforms can be overlayed on the same scroller to aid in matching waveforms for dialogue or sound effects replacement. An 'active window' automatically displays information relevant to the selected function—metering, layers, locate points machine control status automation. The functions displayed can be manually selected but the automatic contextual selection is the clever bit. The Help window leads you through logical sequences of commands and an overview window shows the whole project with the currently visible section highlighted in yellow. Other boxes display project information, sample rates, frame rates and so on. Audible scrub is across all 32 tracks. The waveform display can be switched to a combined linear and logarithmic mode. A useful aid when editing wide dynamic material.

Start and end Jump keys assist navigation by moving instantly between clips on the selected track or tracks or between markers on the NLV. The editor, the NLV and the automation each have 10 levels of undo.

DSP, like Pro Tools and Nuendo, uses rendered fades and crossfades and in this case they are somewhat lethargic. The advantage of rendering is, once completed, little or no processing effort is required and disk bandwidth is reduced since even a very long crossfade requires only one audio 'stream' from the disk. However fades and crossfades take time to crunch. The problem is, if the first attempt doesn't sound right, any adjustment of the parameters requires re-rendering. DSP avoids this to some extent with its 'turbo crossfade window' which allows a crossfade to be auditioned and the fade shape to be changed or asymmetric fades applied, without rendering, until you are happy with the result. DSP (digital signal processing this time) functions include; time dilation, varispeed, sample rate conversions and, perhaps more interesting, comparison and analysis of EQ and gain between clips.

The VCS 4 with its touch screen, 18 motorised faders acts as a remote control for the DMP (Digital Mixing Processor). DMPs can be stacked for a maximum 96 inputs and the 32 outputs can each have full EQ and dynamics processing.

On each and every channel, EQ is 6-band fully parametric plus HP and LP filters, dual dynamics and up to 8-channel surround panning. Parameters are altered using the single 'active knob' in conjunction with the touch screen. The jog wheel on the editor may also be used. Simultaneous surround, stereo and mono mixes may be generated with user selected fold down parameters.

The monitoring unit is new with 48 digital and 24 analogue inputs. It adds surround monitoring control for up to eight multiformat stem inputs and tape returns. These may be summed and routed to speakers. Four speaker feeds are provided, two with up to eight channels and two stereo with individual speaker solos and mutes. There are also two headphone outputs. Monitoring levels may be preset to user selected levels.

The TEAM networking appears well thought out.

It uses a central RAID server with up to eight clients plus an AV transfer station. This will allow connection to the Rocket Network as well as housekeeping and file interchange. The audio editors are connected by SCSI and Ethernet to the server and the NLVs simply by SCSI. In theory this configuration allows all the clients simultaneous read access to the same material at the same time. In practice this would be unlikely to happen and a more realistic scenario would be three rooms working on the same project. One is designated as the master and this delegates tracks to the others for full read-write privileges. In any event, by restricting the number of clients and using SCSI in this way the network should have more than adequate bandwidth. Another aspect of this is sound effects. DSP has already made arrangements with Sound Ideas to supply complete libraries already digitised onto hard disks. These can be made available to all workstations, simultaneously, via the RAID server. Future developments are likely to include more sophisticated cataloguing and searching abilities capable of handling very large libraries of effects.

The Postation II bursts fully grown onto the market in Europe and the US. This is not a brand new system, rather the product of years of continual development and user feedback. Like most mature products it has some baggage from this history. Some good, some bad. At heart the system uses PCs. The VCS and NLV sit on top of Windows NT and the DEP editor, AudiOS. This brings a few restrictions such as 8-character file names and the editor feels somehow older than the other components. The virtue is in the holistic approach. The future is integrated solutions and this system, at least at first acquaintance, feels 'all of a piece'. For example doing ADR from one screen makes a lot of sense.

There are some curiosities, no 'hot spots' on clips, rendered crossfades and apart from the faders there is only one knob to control the vast number of parameters on the mixer. Postation II and other DSP products will continue to develop—plug-ins will soon be available as will the standalone Vmotion nonlinear video recorder-player.

Postation II is a high-end system and will find itself up against some serious competition in the mature markets of Europe and the US. However, there is nothing quite like it in approach or appearance. For some applications, this alone will justify taking a closer look. □

Contact:

DSP Media, US.
Tel: +1 818 487 5656. **Fax:** +1 818 487 5660.
Net: www.dspmedia.com
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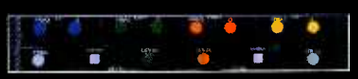

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Soundtracs D4

Proving that the transformation from analogue to digital desk manufacture can be achieved, Soundtracs continues its progress with a push higher. **Zenon Schoepe** gives an exclusive insight into its latest offering

STEPPING OUT WITH the most serious proposition in its relatively short but spectacularly successful career in digital desk production, the launch of the D4 at NAB is the most expensive and high-end product Soundtracs has ever made. Having effectively defined a new set of price-performance points with its existing products, the D4 has made the company taken further upmarket than ever before as a result of responses from potential customers for whom the still current DPCII didn't quite hit all the buttons. The result is a console that looks the part of flagship product and satisfies with more busing capability and important improvements in functionality and presentation, an observation that has been substantiated by the sale of the first two D4s to Valkieser in the Netherlands.

Connections with the DPCII are apparent and deliberate and the D4 should be regarded as not so much a replacement as a deluxe and enhanced model. The familiarity of operation has been retained as it has proved popular among users and is also reflected elsewhere in the company's product range. It's an approach that is distinct and satisfying for those who apply themselves to learning these desks and centres around the use of informative touchscreens surrounded by rotaries and switches that activate specific controls on a selected channel. However, it's the appearance and finer points of presentation of the D4 that make it look a bit special.

The worksurface is broken into two principle areas of different rakes the upper section of which has a surprisingly steep slope and is butted beneath the overhang of the front section allowing the positioning of a script caddie on rollers. Most importantly this arrangement goes a long way to decreasing apparent reach to the top of the desk. Ergonomics have been improved subtlely, the switch gear seems better, the surface is a classier shade of grey, the conductive plastic faders, for example, are improved in feel over the DPC as are pots tops.

It's an attractive package with an overwhelming air of expensive and refined quality and maturity. A variety of factors have appealed to me about all previous Soundtracs digital desks but the D4 is the first that I might be cornered into admitting looks a bit horny.

It uses the same channel processing card as the DPC but DSP has been increased with the result that busing capabilities have shot up enormously together with a cascade cability for interconnecting multiple desks. It's still run by a Windows-type operating system which has been cut down to remove all non essential overheads resulting in a smaller core which is by definition more reliable.

Yet it's the screens that catch your eye on first encounter. While the DPCII graphics cards are analogue, the D4 uses digital graphics cards which combined with a new type of screen creates a massive leap in legibility, clarity, resolution and wide viewing angle—some 80° in all directions. That's not saying that the screens on the DPC are inadequate, it's just that those on the D4 are fantastic. They're running to the same number of pixels but the combination of improvements results in displays that are incredibly vivid, things like on-screen meters look like hardware meters.

As this article cannot attempt to look at the new board in any enormous detail, I'll concentrate on the rudiments and pick out the differences. There is much commonality with the DPCII, much as there is with the DS3, Soundtracs has intentionally stuck to its guns on its established operational principles but it does run the Version 2 software, available also on the DPCII, which is something of a leap forward from the features on that desk the last time I played with it.

Inputs and outputs work identically to the DPCII with the same 8U racks with each one bringing in up to 56 I-Os with formats decided in blocks of eight from mic-line, AES-EBU (with paired SRCs), TDIF, ADAT and, as the desk runs on MADI, you can plug MADI straight in to it.

The desk is split into input sections and the master section just like the DPC. All input sections come with their own TFT screen complete with the traditional Soundtracs assortment of associated rotaries and switches. Top of the channel offers full input routeing with any inputs going to any of the channels along with the buses which can also be brought back in.

Channels can be made to run stereo with MS decoding. Inputs are named and channels are additionally named on eight character scribble strips. Up to 240ms of delay is available on each channel while input gain is always available on the upper rotary. A channel preset library stores complete channel strip settings together with a FLAT button for nulling. EQ is 4-band fully parametric, two full-range mid bands of bell and upper and lower bands switchable for shelving, bell and high or low pass. There are also separate high and low pass filters and a EQ preset library.

Dynamics are assisted by threshold markers on input signal bargraphs and gain reduction metering and similar principles apply for gating. Physical dynamics controls are arranged in a horizontal manner with keying from any input, channel or bus. High and low pass filters can be dropped into the side chain, adjacent channels can be linked and there's a preset dynamics library.

The silver strip that runs across the desk demarcates the upper faders and this is reflected in the colour of the screen when upper faders are selected. Aux bus

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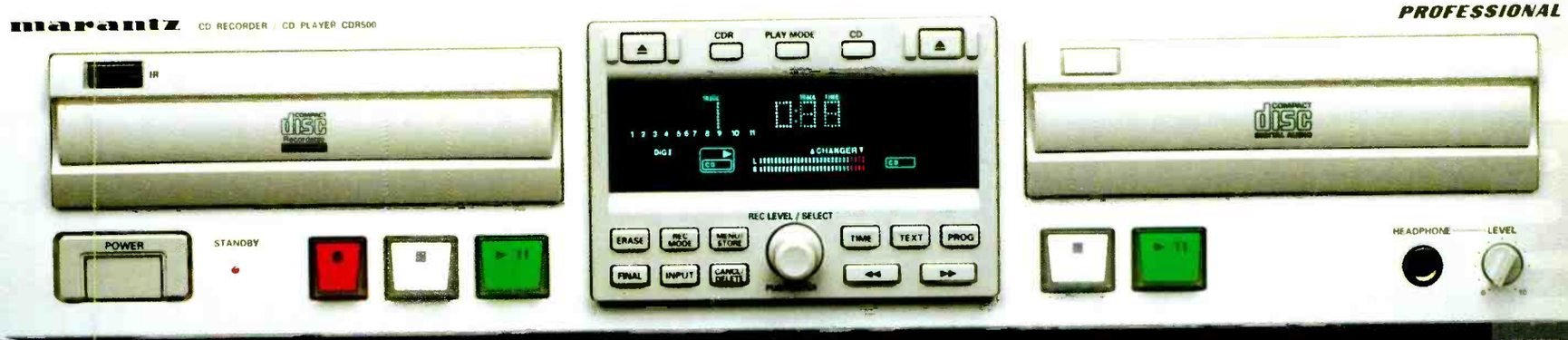

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access is achieved by scrolling up the configured auxes on screen, which brings us neatly to the D4's expanded busing capabilities. The desk has a 124 configurable buses which compares to the 40 buses of the DPC, a maximum of 20 of which can be auxes. D4 allows for 28 aux buses in mono or stereo.

Multichannel panning can be via rotaries, on push-button for fixed hard panning between the main destinations, or via joystick. Stereo channels are panned as a pair. The desk has two levels of divergence and a dedicated sub button with 18dB trim. Buses can be multiples of anything up to 7.1 and all have a limiter with variable threshold and release. Routeing is available to direct outputs, pre or post fader, and there are two inserts per channel.

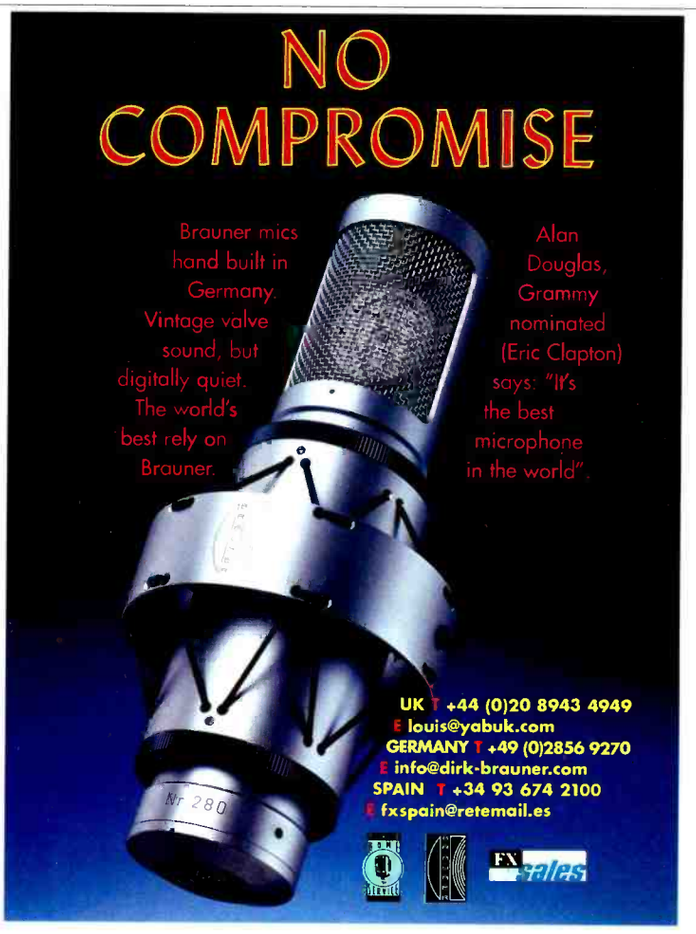
Version 2 has made the desk incredibly touch oriented and extremely fast for mode creation. Faders can be ganged quickly by simply touching the relevant items and you can similarly gang EQ, auxes and dynamics and routeing with panning held separately. Offsets can be dialled in simply by holding the relevant Solo and adjusting the relevant fader and the same applies on EQ. Gangs can also be broken up with a reverse of the process. This ganging trick is wonderful for configuring groups of channels for adjusting parameters across the gang, such as high pass filters and auxes, before breaking them up again to fine tune each channel individually.

Global bus setting is extensive and includes fast touch fader based setting of mix minus configurations, aux level settings plus channel move and swapping around the surface.

An important difference is that the DPC has EQ, fader mute and panning in the master section but D4 also has input gain, delay, dynamics control, direct send level, insert level and auxes allowing complete channel parameter control from the centrally positioned master control strip.

The desk can be split for two operators anywhere across the surface and once the split is instigated it is reflected in the automation which is treated as two mix passes. Other notables include 15:2 submixers which can draw from any inputs or buses, clever, flexible talkback, built-in diagnostics, auto save in background to full recovery files, and full file exchange through a server between other Soundtracs digital desks, excluding Virtua.

The meter bridge is another area of difference to the DPC and also contributes to the improved look of the D4. It's fully assignable for buses and can also go out of the desk in analogue or digital and feed external metering units. For inputs you can follow incoming signal, gate activity, dynamics, direct level, and insert



send. The meters are made up of tri-colour LEDs and will be able to be programmed for different ballistics.

Snapshots have come on significantly since the last time I looked at the software and now includes NEXT and PREVIOUS buttons and a Scope function which previews all channels that will be influenced by the next snapshot. You can also exclude channels from a Snapshot on the fly and hide non essential parameters from the screens and bring prioritised channels on faders to the surface.

The excellent multichannel monitoring control of the DPC is retained as is the automation with its excellent visual display of all automated parameters, enhanced considerably with v2 software. Significantly, the automation plays and records on the scrub wheel forwards and backwards. Impressive. Unlike the DPC the D4 can also take the EQ in and out of the automation independently.

Target markets for the D4 are film, broadcast, post and, it has to be said, live production. More buses also mean fewer compromises for those choosing the desk for 96kHz multichannel work. The refreshing honesty of Soundtracs wins through with its attitude to the digital desk bugbear issues in live production of redundancy and reliability. They explain to broadcasters that it may well crash because all digital desks do, despite what other manufacturers will say, and that dignified recovery is what matters. A full reboot takes under a minute, engine restart takes two seconds, and worksurface restart takes four seconds. Audio is only lost on an engine restart. I know, I've seen it.

Prices then. A 16-fader D4 starts at around £85,000 rising to around £250,000 for a 96-fader version depending on the I-O configuration, of course. You can realise 320 channels through one console with cascading in a master-slave configuration taking you well in to the realms of enormous. The D4 sits atop the Soundtracs product family tree that kicks off with the Virtua at £20-30,000, DS3 starting at £40,000 and rising to £70,000, DS-M starting at around £65,000 and rising to around £85,000, and the DPCII which weighs in at £65,000 and rises to around £150,000.

Desk image has been an issue for some customers in the past, according to Soundtracs, and it would seem that it has now more than matched expectations with this new board while preserving the highly visual and original nature of its digital desk brand.

The complexity of the D4 is relative. If you are new to digital desks and new to the Soundtracs 'method' then you will take to the primary operational principles fairly quickly but will need time to appreciate the desk's deeper character. DPCII and DS3 users will be able to sit behind the desk and go to work immediately and take their session with them. I believe that many will. This is a bold and significant development by an enthusiastic and ambitious manufacturer. □

Contact:

Soundtracs, UK.
Tel: +44 1372 845600
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Email: sales@soundtracs.co.uk
Net: www.soundtracs.com

You/Com ReporterMate

In at the beginning of the reporter's portable solid state recorder revolution, this Dutch company has identified and satisfied communications issues as a priority. **Zenon Schoepe** dials in from somewhere in Europe

CELEBRATING A SURPRISINGLY mature ten years this year, You/Com has origins that found it heavily in the telecoms business having spotted the opportunity and constructed and piloted an ISDN bandwagon in its native Holland and Benelux countries. As the original distributor for these territories of the CCS range of codecs it helped establish the brand as a standard drawing on its strong telecoms background at a time when local broadcasters were beginning to spot the potential and benefits of using ISDN for their transmission requirements.

Things took an interesting twist in the late 1990s when requests were received to manufacture a portable communications device with built-in solid state recorder. The company admits that at this point the 'fun' started as they went about designing and building the box after gleaning input from a variety of broadcasters throughout Europe. You/Com's developments coincided with something of a rash of similar portable devices, a situation that continues with the slow but steady decrease in price of removable solid state storage media, but the company's approach should be regarded as decidedly different from one crucial aspect. The ReporterMate is rightly described as a communications device first and foremost, and has been so from the outset, that has recording and editing capability built in. This is in contrast to other similar devices which have majored on the recording and editing side of their capabilities first and in some cases have added communications facilities at a later date.

This is perhaps to be expected from You/Com's telecoms background and the solution is about the most complete and elegant that exists on such a portable unit.

The second observation which is particularly important is that while this is an audio device it is not targeted at audio operators, it is targeted at news reporters. As such its essential operation is preposterously simple and while it would be possible to criticise, for example, the manner in which it edits in comparison to more refined models and principles established on DAWs, such criticisms are meaningless in much the same way that advanced editing is meaningless to the target reporter audience. Broadcast managers looking to outfit their news force with portable digital systems with complete communications independence will know that the reporter's interest and drive is for news and overelaborate editing and complex recording procedures dilute efficiency and distract them from what they are employed to do. The beauty of the ReporterMate is that it is a device of two layers: the upper layer for the simple effective acquisition and preparation of audio followed by foolproof transmission capabilities; and a deeper 'expert' level which the operator need never encounter or even know exists in the normal run of things. The latter layer allows the broadcast technicians to configure ReporterMates with default settings, including the preformating of the cards for resolution, and crucially a correct list of named telephone numbers and destinations for the communications side before they are handed out to the hungry news hounds. Simple really, but then it has to be.

Looking at the box then, the dimensions are compact and the eye is drawn immediately to the use of top-mounted membrane style switches. In practise, these will never be as satisfying to use as pushbuttons but as already explained traditional appraisals don't apply in the land of the reporter where the wipe clean, sealed surface provided by membrane switches arguably ensures lower maintenance and probably also keeps the price down.

The leading edge, which is what is visible on the machine when in a carry bag, has individual mic-line switching for pots controlling recording level and working in conjunction with bargraph LED meters, phones level (a built-in loudspeaker can be defeated) and a pot for mic-line and return signal mix. XLRs handle input and the headphones socket locks. Indicators show phantom power selection, low memory and low battery status. A pushbutton registers a retrievable 'mark' during recording while a second pushbutton with an associated LED instigates recording and record pause. Pushing the two together simultaneously stops recording.

The rear panel houses a wealth on multipin connectors including RS232, PC parallel, X.21 and a combi connector, which when used with the appropriate cable adaptor accesses balanced analogue, AES-EBU and analogue PSTN. There are also phono mains outputs, an ISDN socket and a power supply socket which can take a mains adaptor, car battery feed and external battery pack. Internally the box is powered by six NiMH rechargeable batteries which will yield some three hours of operation—longer if you engage the Sleep function and other power saving features.

The best side of the ReporterMate is its underneath where you'll find short form instructions on how to operate the box. The fact that a few lines can easily cover the essentials of recording, editing and comms says it all.

Top panel operation centres around a smallish LCD, which while it has adjustable contrast, is best viewed directly from the front in the operator's position. Linked to the display are four soft keys positioned below and a cluster to the right of it involved with cursor movement and editing functions. There's then an alphanumeric keypad and four buttons dedicated to the communications aspects. A further strip of buttons concerns itself with the recorder functions and record marking while a second strip is dedicated to editing and positioning of the 'virtual' head on the audio.

Two PCMCIA slots are provided on the right hand side of the machine, one to take a communications card for slotting in a modem, for example, and another for the recording card. Interestingly the card needs to be formatted before use at a predetermined MPEG format from 24kHz mono at 64kbit/s to 48kHz stereo at 384kbit/s which will yield 100-minute and 15-minute recording times respectively from a 48Mb card.

Recording could not be simpler. Set your mic level, press RECORD. Pressing STOP at the end is significant as it assigns the recording a take number automatically. You can also record a telephone conversation over ISDN by using the two level pots to control mic and the call volumes. You press CALL PHONE, dial the number and press RECORD. There is also the facility to mix the mic level as a voice-over on top of recorded playout for live broadcast or to record this 'performance' back in to the machine.

Editing is by necessity also simple by my reckoning and I have witnessed two fully paid-up reporters running this machine and exhibiting all the tell tale signs of confidence and comfort with the editing functions of the ReporterMate.

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Menu settings

- Date and time recording
- AutoAnswer
- Recording start and stop with Buzzer indication
- Key lock of all pushbuttons
- LCD contrast adjustment
- Phantom power
- Three position mic sensitivity
- Mono or stereo selection
- Analogue or digital input selection
- Monitor output selection to the same as headphones or ISDN return
- Recording resolution mode
- Three-position level automatic modulation detect recording
- Variable automatic stop recording delay
- Five position (history) prerecording buffer
- Select live communications port
- Adjustment and country codes of dialled numbers from abroad
- COM1 speed and settings

- Sleep timer
- Power down timer
- Backlight timer
- 'Pre-roll' for cue in and cue out edit points
- Warning beep level
- Battery capacity and battery efficiency settings adjustment for battery indicator display

All original Takes are kept in the machine, unless you specifically want to delete a section, and any edits on a Take are given new Take numbers. Compilation is then in to a playlist. You can jump along Marks made during recording or added during playback to move along the Take audio, or scroll backwards and forwards, or listen at slower speed together with a looped Repeat function. You enter Cue in and Cue out points for the edit. Takes can of course be named and deletions and insertions are possible in to the playlist. The process is not only logical but it is also consistent in its logic.

Logic also triumphs in the business of making connections for the transmission of audio via its codec. Aside from manual dialling the user can recall named destinations from an address book, which has been hopefully programmed by the reporter's technician, simply by scrolling down a list and selecting the destination. The ReporterMate will redial in the event of a failed or engaged connection and pressing END AUDIO terminates the connection. This can be performed with ISDN and through normal phone PSTN lines using an adaptor for the Combi connector.

Slipping a modem card in to the aforementioned PCMCIA socket, audio files can be transmitted using FTP via GSM, PSTN, ISDN or network. Numbers are entered or recalled in the usual manner and you can choose whether to send certain Takes, the entire recording or the playlist. The whole procedure is far more straightforward than I thought it would be.

While transferring audio the reporter gets a return signal and is also able to add live commentary and foolproof logic is implemented to prevent the creation of feedback loops.

Evaluation and appraisal of the ReporterMate depends ultimately upon the assessment by a broadcaster's technical heads of the abilities of its reporter's technical aptitude. The type and manner of news acquisition and how it is integrated in to the broadcaster's news infrastructure is probably more important than the reporters' leap from cassette or even MiniDisc acquisition. The willingness to place editing and compilation into the hands of the reporter off-site also has a big bearing on how a machine like this fits in and integrates. The good news about the ReporterMate is that it is truly simple in operation and most importantly eminently capable of returning news back to base.

It is a wonderfully complete and well thought out piece of equipment that has addressed what have traditionally been the 'hard parts' of return to base transmission first as a priority and backed it up with a highly accessible and flexible recorder-editor package. It deserves to do extremely well. □

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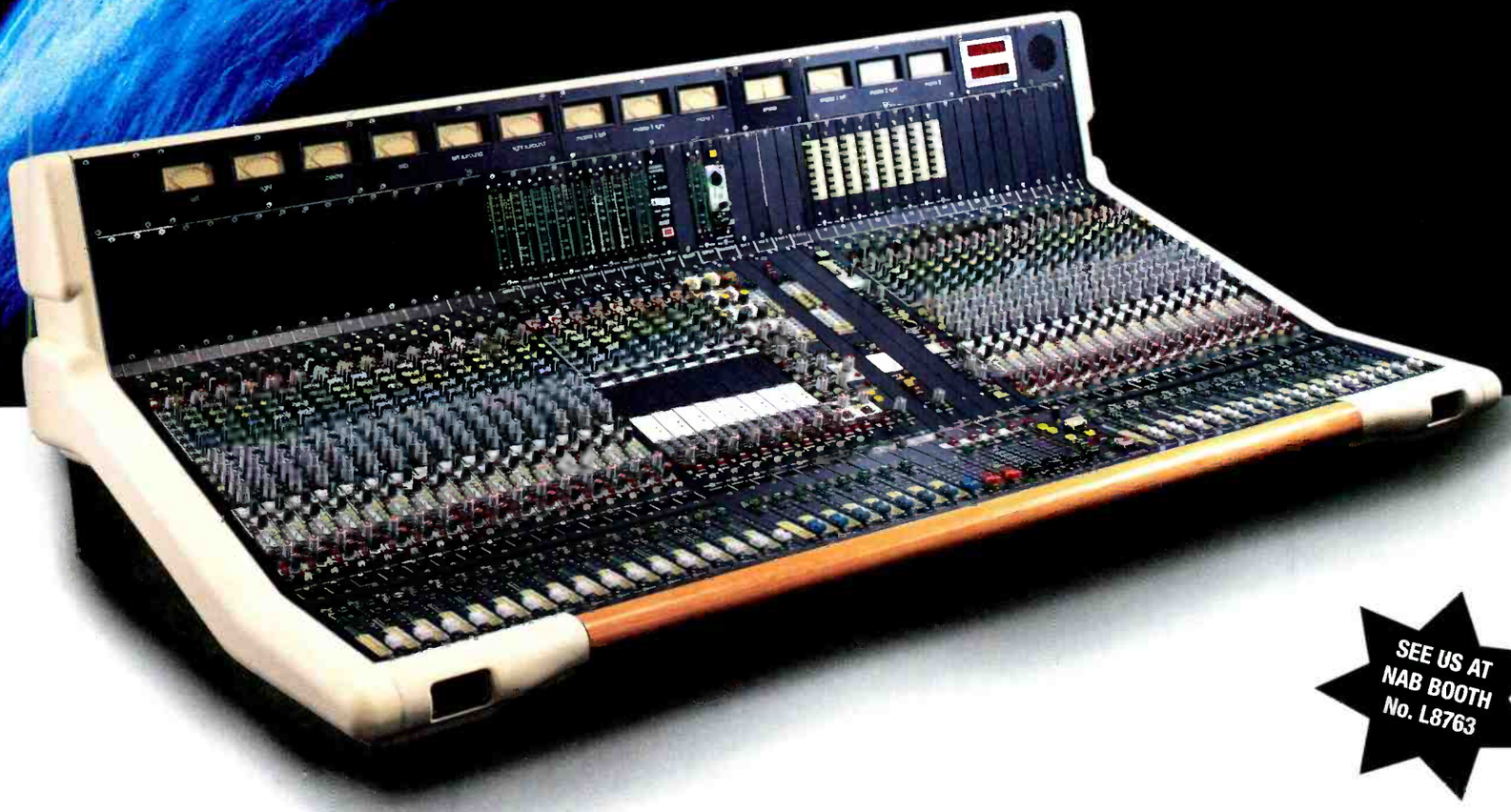

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Sony MDS-E10/MDS-E12

Bending the former consumer format still further to professional requirements, Sony's new MD machines are small, functional and desirable. **Zenon Schoepe** enjoys the difference

BUILDING ON THE UNSTOPPABLE acceptance of MiniDisc in carefully selected professional applications Sony has updated and improved on its highly successful MDS-E11—the first MD machine to go for a 1U-high layout. The key word here is improvement as it's important to acknowledge that the company has aimed for much more than a mark II version.

It is impossible to look at the MDS-E12 without at least being aware of the existence of the MDS-E10. Cursory and then more detailed glances will reveal little to differentiate these two packages. The remote controls are identical, the casing, layout and, for all intents and purposes, the functionality is identical, the difference lies entirely in the three-position switch on the right of the front panel and, by association, the rear panel. On the E12 this reads COAX, UNBALANCED and BALANCED while on the E10 it reads OPTICAL, COAX and ANALOGUE. What we have here is essentially the same model differentiated only by connectivity. The less highly well appointed E10 only has phono analogue I-Os with a rear panel variable analogue input level pot, plus coax and optical I-Os while the 'pro' incarnation of the E12 comes with the same, minus the optical I-Os, but with balanced XLR I-Os, plus 9-pin parallel port, relay I-O for daisy chaining machines, and RS232C.

Potential buyers would do well to assess the precise nature of their 'pro' connector requirements when assessing these two units. If you go in and out of analogue a lot then the E12 is the machine for you but, for a more rigid and fixed installation, the E10's digital I-O may be adequate for your purposes. The price differential between the two models makes this something of an issue if you are considering buying in bulk as a carefully planned mix and match approach will save you money.

Aside from the interconnect differences, in terms of operation we can regard the two machines as being identical.

There is some visual similarity in these two units to the original MDS-E11 but it might be expected given the fact that all are 1U devices that hope to cram a lot in to not a lot of space. Operationally there is also familiarity although the new units are certainly more refined—the display is much better—and also boast a higher button count although the E11's record level pots have disappeared. In terms of interconnectivity the E11 shares most with the higher-end E12 but the best news is the transport mechanism. While I can't swear that the new machines use the same slick and fabulous transport as the E11 (used incidentally in HHb's PortaDisc) it has a similar and impressive feel with exemplary loading and ejection characteristics. It's one of the most confidence inspiring MD mechanisms around.

Transport keys are PLAY/PAUSE, STOP and RECORD, which also serves for manual track marking, plus forward and backwards audible cue. Four buttons above these cover such things as adjustment via dial of input and output levels, track info and character selection and the mode of the disc time display. You can also enter a locate point and access it at the press of a single key and stipulate if you want Auto Cue (cue to the beginning of the audio) or Auto Pause (pauses at the end of a track) to be active or defeated.

And you get varispeed (±12.5%) adjustable on the fly in 0.5% steps and switched it in and out albeit with a momentary mute.

The deeper interesting stuff concerns itself with the push to make AMS (automatic music sensor) dial which aside from selecting tracks is employed in the menus to select parameters and adjust values. It works in conjunction with buttons marked as NO, YES and CLEAR which are pretty self-explanatory with the proviso that the first of these is also pressed to get into the menus in the first place.

The menus are where you perform the setup procedures, the all important editing of tracks and their naming.

A neat touch is a so-called multiaccess play mode. When an MD is loaded a memorising process takes place in which the beginning of tracks are stored in RAM for instant access and immediate playback. The downside is that record, varispeed, backwards and forwards cue, repeat play, auto pause, auto cue, mark and locate functions are rendered invalid. Depends on what you want to use it for after all.

There's also Smart Space and Auto Cut which insert 3-second silences automatically in place of extended gaps or lead outs. Used appropriately this is good.

Remote control possibilities deserve special explanation for a remote control is provided and indeed needed for certain functions if menu delving is to be reduced. Interestingly the remote can work on infra-red or be wired by connecting a cable from it to a socket on the back panel. However, the employment of a PS/2 keyboard connected to the front panel to control all the essential modes and functions of the machines is a fantastic idea that has been seen on other MD machines already. Not only can you name and enter text at something approaching a natural pace but you can also access transport control, control most 'deeper' functions directly and impose authority on the editing procedures of MD. Why this sort of 'road to Damascus moment' is still to be experienced by the designers of CD-R machines with text abilities is beyond me especially as audio culture is now steeped in keyboard shortcuts on DAWs, sequencers and even word processors. It's not that the supplied remote control is that bad, it isn't, but I like to be able to thump a key with conviction. Either way, the keyboard or supplied remote control are a definite improvement over using the front panel controls because it is fiddly. Remote operation requires the mother unit to be within easy sight as you'll still need to see the display.

Predictably the E12 and E10 have a very high level implementation of MD features and twists plus synchro recording, auto track numbering, etc, etc. These features become more important because they are easy to get to.

In the face of so many different compression algorithms in so many different media I no longer feel obliged to justify the sound quality of MD because viewed in this light it is quite simply not the horror that some would have us believe it is. It's not perfect, the E10 and E12 strangely use comparatively old ATRAC 3, but it is well up to the job when used appropriately.

Both machines are truly excellent performers and build on the excellence of the original 1U MDS-E11 that preceded them. Choosing between the two all comes down to the degree of connectivity you need, expect or want. That's a wonderfully secure decision to have to make and they're very easy to like. If you're looking to supplement your format arsenal with MiniDisc then you should start looking here. □

Contacts

Sony, UK
Tel: +44 1256 355011
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BYTES

dB Technologies MPA204

Studio Sound's definitive amplifier reviews continue with the dB Technologies MPA204. **Paul Miller** reports

WHERE ECONOMY, LIMITED SPACE and closefield monitoring are all factors in a studio's purchasing decision, amplifiers like the dB Technologies MPA204 find a comfortable niche. This 1U rack height design is cooled by conventional side-mounted heatsinking, unlike its bigger brothers, the MPA504 and MPA1004, that are equipped with one or more two-speed fans. Then again, with just one pair of power MOSFETs a side, the MPA204 becomes only moderately warm when driven continuously under load.

The amplifier's construction is functional if a little agricultural and includes individual rotary attenuators for its two channels. With no attenuation, the overall system gain is +26.5dB. Green, red and a yellow LED denote signal, peak overload and protection modes. Incidentally, however hard I tried, I never managed to trip the amplifier up. The rear panel of this slim design carries balanced 6.3mm jack inputs and a pair of Speakon 4-way outputs. The circuit topology includes the facility for bridged, parallel and conventional stereo operation with an optional ground lift. The incoming mains earth is connected to the chassis top-plate.

The amplifier is rated at 2x75W into 8Ω and 2x100W into 4Ω, specifications that are just achieved in practice and then only through lower mid and high frequencies. The trend is revealed by Fig.1, which shows power tailing off below 100Hz by up to 0.5dB into 8Ω and 0.6dB into 4Ω. Of greater practical significance is the MPA204's ability under dynamic, music-like conditions. With a transient of 10ms duration, the MPA204 has sufficient headroom to accommodate peaks of 102W, 145W, 109W (7.4A) and 59W (7.7A) into 8, 4, 2 and 1Ω loads with both channels driven. The profile is revealed by Fig.2 with the continuous power output trend provided by way of comparison in grey. Clearly, the amplifier is optimised for use with loads of 4Ω or more, thanks to its ~7.5A current limit.

With an amplifier of modest output, it's particularly instructive to profile its dynamic headroom versus transient duration in an effort to appreciate just how 'loud' it's likely to appear in practice. Fig.3 depicts this trend for 8Ω (black trace) and 4Ω (red trace) loads. With sustained bursts (towards the RHS of the graph), there's no dynamic headroom and, therefore, no more output than might be delivered under continuous conditions. The MPA204 only really starts to enjoy some headroom (~+0.3dB) with peaks of 100msec duration or less. Putting this into perspective, it's estimated that with <fortissimo> classical recordings, for example, peaks of 100msec duration may persist at +4dB over the maximum <continuous> level of the recording.

Then again, no special claims are made for its performance. The amplifier is well-protected by both 250V-2.5A PSU rail fuses and anti-thump relay muting, with additional electronic protection against over-temperature, RFI and high DC offsets. Incidentally, our sample registered an offset of -44mV on one channel, which is arguably a little high. Distortion is specified at <0.05% up to 1kHz and to <0.1% up to 20kHz, values that are met by some considerable margin on Fig.4 even if the left channel (black trace) seems quite a bit higher than the right (red trace) above a few kHz. The former was also the channel with the higher DC offset. Although the absolute values remain low (~0.005% to 1kHz), it's the <difference> between the channels above 1kHz that often exacts some sonic penalty.

The amplifier also exhibits what I assume is a slight crossover distortion at lower signal levels where, even at 1kHz, distortion increases to 0.02% at 1W-8Ω (0dBW), before falling back to 0.005% from 10W-8Ω until clipping. See Fig.5 for the full picture. A slight increase in output bias levels might linearise this performance without compromising its thermal stability. Nevertheless, the MPA204 could never be described as anything less than a 'low distortion' amplifier when compared with the likes of the Manley power amps reviewed last year!

Finally, a chunky RL network on the output ensures the amplifier remains stable with capacitive loads but pushes the output impedance up to ~0.07Ω. As a result the damping factor is a little lower than the 200:1 suggested by dB Technologies just as the response (re. 8Ω) is some -0.5dB down at 20kHz instead of the proposed -0.2dB. The tailoring of both high and low frequencies is evident on Fig.6 which, from the point of view of over-driving the amplifier, is probably very sensible indeed. But then 'sensible' just about sums up the MPA204—a modestly powerful and seemingly rugged amplifier with no unnecessary frills. □

Power Amplifier: dB Technologies MPA-204 (Rated Spec. in brackets where given):

	20Hz	1kHz	20kHz
Max Continuous Power Output,			
0.5% THD into 8ohm (two channel)	70W	80W (75W)	80W
0.5% THD into 4ohm (two channel)	85W	100W (100W)	100W
Frequency Response @ 0dBW	-0.7dB	0.0dB	-0.5dB
Dynamic Headroom (IHF)		+1.8dB (102W)	
Maximum Current (10msec, 1% THD)		7.7A	
Output Impedance	0.07ohm (0.04ohm)	0.065ohm	0.075ohm
Damping Factor	114 (>200)	123	107
	Balanced Input (Driven Unbalanced)		
Total Harmonic Distortion, 10W/8ohm	0.006%	0.006% (<0.05%)	0.06% (<0.1%)
Total Harmonic Distortion, 1W/8ohm		0.02%	
Total Harmonic Distortion, 50W/8ohm		0.004%	
Noise (A wtd, re. 0dBW)	-84.0dB/-86.7dB		
(re. 2/3 power)	-99.3dB/-102.5dB (<-98dB)		
Residual noise (unwtd)	-75.1dBV		
Input Sensitivity (for 0dBW)	134mV		
(for full output)	1186mV (775mV)		
Input loading	20kohm (20kohm)		
DC offset	-44mV / -8mV		
Serial Number	08B000962		
Retail Price	(Ex-VAT)		

Table.1: Measured performance against manufacturers spec

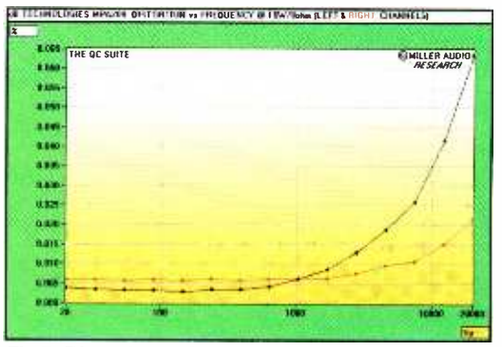

Fig.5: Distortion vs frequency

Fig.6: Output impedance and frequency response

Contact:

db Technologies, US
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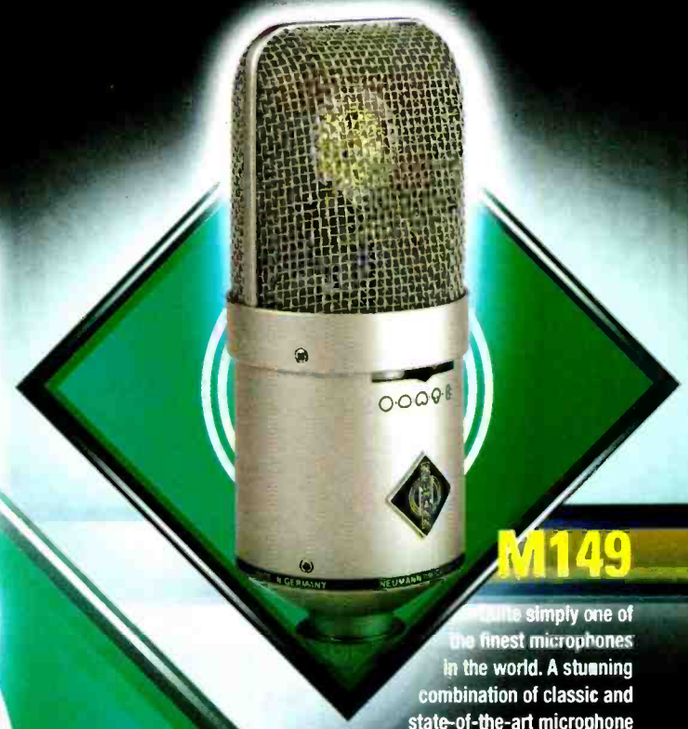

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To top it all, the M147 Tube is now available at a new unprecedented price. So whatever your budget, be with the best. Give your dealer a call.

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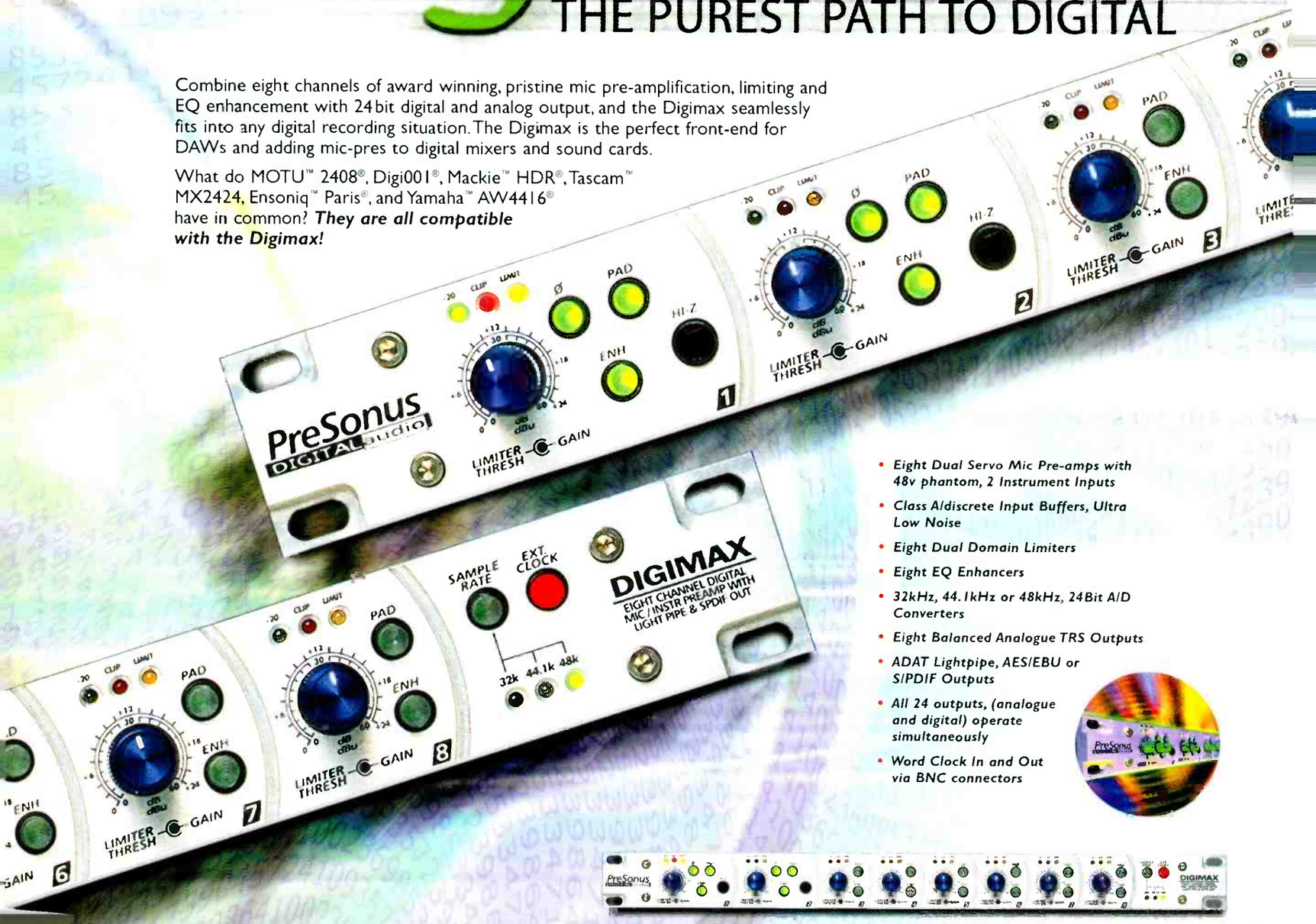

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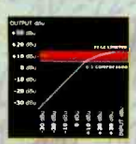

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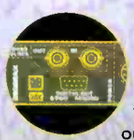

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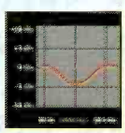

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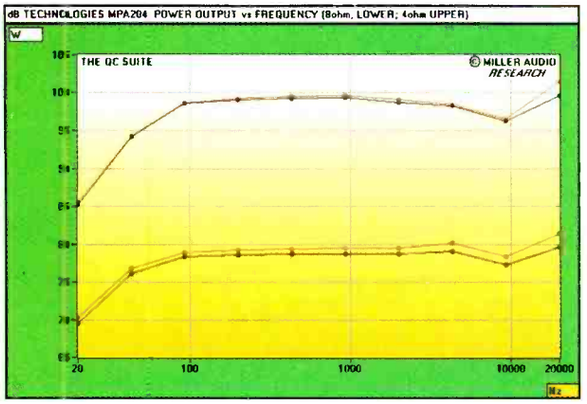


Fig.1: Power output vs frequency

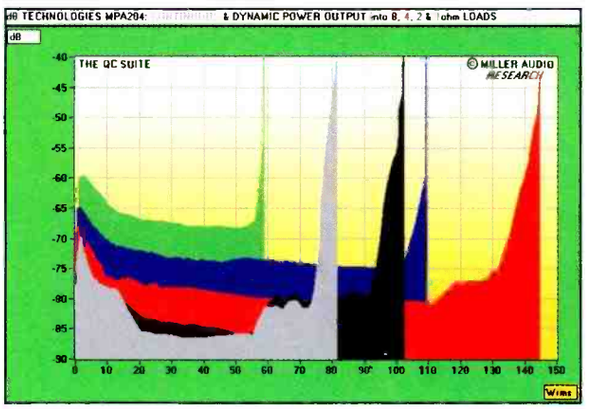


Fig.2: Continuous and dynamic power output

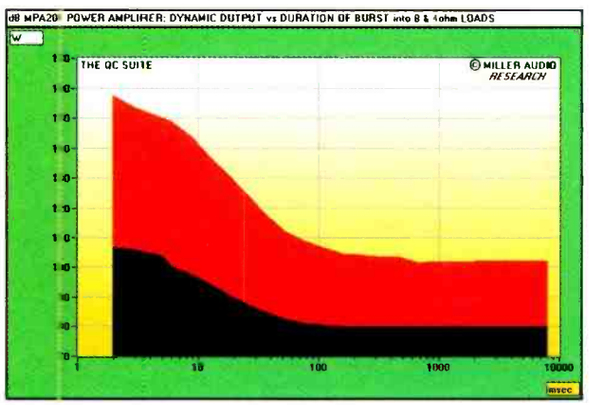


Fig.3: Dynamic output vs duration of burst

Fig.4: Distortion vs power output

Presonus DigiMax

Building on the success of its M80, Presonus' DigiMax adds conversion and ADAT interfacing. **Dave Foister** explores performance and options

PRESONUS FIRST CAME to my attention with the M80, a box of eight microphone preamps with a simple built-in stereo mixer and one or two little extras—a nicely-made unit with a good balance of functionality and frills. The company's range is not big but includes dual preamps, dual compressors, and a rack of eight dynamics processors with the MDM market in mind. Several of these themes are developed further in the DigiMax, another 8-channel microphone preamp, smaller than the M80 but with more features still.

The name makes it obvious that the analogue-only approach of the M80 has been augmented with digital outputs, circumventing the convertors in the destination recorder. Its intended market

is apparent from the fact that its default output format is ADAT lightpipe, carrying all eight preamp outputs, but no accompanying TDIF interface, even as an option. The tiny and convenient optical format has become something of a standard for PC interfaces and several other applications, so there is a host of situations that can benefit from using the DigiMax as a high-quality front end. The digital output is also available in a more flexible form on a 9-pin D connector; an optional breakout cable terminated in XLRs delivers four AES-EBU signals. Another breakout cable is available for SPDIF applications, and this also requires some internal jumpers to be moved. Nevertheless, the options cover most possible uses of the DigiMax, and for those who need the digital signal in Tascam format there are plenty of third-party interfaces around. Wordclock in and out is on BNCs; there's no high-sampling facility here, with 32kHz, 44.1kHz and 48kHz being the only rates available internally or externally.

The preamps themselves are not simply the M80 circuits squeezed into 1U. The claims for their quality remain, but the features are different and there are some extra bits. For a start, the eight are not identical: Channels 1 and 2 have phase invert switches added, and a high-impedance instrument input on the front panel, making their share of the space a little more than the others. The other functions are shared by all channels. Most are on the front panel, but the one that has been transferred to the back to save space is the phantom power switch, possibly a nuisance under some circumstances but perhaps unavoidable.

The rest is part standard stuff, part useful add-ons. The apparently single rotary control is in fact a dual-concentric, whose central knob adjusts input gain over a 60dB range and whose outer controls the threshold of a built-in limiter. The limiter is repeatedly referred to in the manual as dual-domain, without much in the way of explanation, but it does appear to employ a degree of look-ahead to make it bullet-proof. Its operation is shown by one of the three LEDs that appear on each channel: one for signal present at—20, one for clipping (with dire warnings that this should NEVER come on) and one for limiting. The final switch is marked ENH for enhance, and is an interesting departure from the M80's little extra. Among the familiar and functional controls on the M80 was a knob marked IDSS, for adding a variable amount of thickening similar to valve distortion or tape saturation. This was subtle in the extreme on most material, and a bolder approach has been taken on the DigiMax: a single pushbutton that fattens the sound by imposing a 'smile' type of frequency response. This appears to be a cut-only circuit, dipping everything between 250Hz and 5kHz, bottoming out 4dB down at 1kHz according to the graph in the manual. The result is just what you'd hope for, with a broad smoothness that doesn't jump out as EQ but does the job of boosting the perceived loudness very well. Having this individually selectable on each channel makes for a surprising degree of flexibility.

The analogue outputs from the individual preamps seem almost like an afterthought, even though for some people they may be the only requirement. They are impedance balanced outputs on TRS jacks, and PreSonus points out that even when working digitally the analogue feeds can be useful for monitoring if you need to avoid the slight time delay through the digital system.

The M80 had an outboard power supply, a not very pretty affair with a strange connector that could be accidentally inserted upside down without much difficulty. The much smaller DigiMax also needs a separate box, but now it has a smart aluminium front panel to match the main unit, with a row of LEDs to show the presence of the various rails and a huge red ON button. It's connected via a 5-pin XLR, so not much ambiguity there.

The DigiMax looks good in the current voguish style, being a lot less basically functional than previous PreSonus designs, and the quality of the internals and resulting sound will come as no surprise to those who have enjoyed PreSonus in the past. It does a bit more than the basic minimum in its own distinctive way and does it well, and is a useful option in the 8-pack market. □

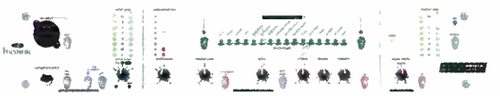
Contact:

Presonus, US
Tel: +1 225 344 7887
Fax: +1 225 926 8347
Web: www.presonus.com

NEW TECHNOLOGIES

Focusrite Penta

Designed as an affordable, high specification stereo analogue preset compressor, the Focusrite Platinum Penta will ship in May for £299 (inc VAT). It features an entirely



editable preset compressor offering a range of professionally compiled compression settings depending on the sound required or instrument involved. TubeTran technology can emulate VCA, optical and valve compressor sounds. The unit also features the same discrete transistor mic preamp as the VoiceMaster. Focusrite, UK. Tel: +44 1494 836307.

AEQ is E@sy

The E@sy range of products from AEQ can be configured with optional software to incorporate multi-user applications which give additional features for the equipment. This allows the creation of a talk show system for ISDN lines, a distributing and summing multiplexer console, an analogue and digital switching matrix, an intercom matrix and a broadcast automation system. Impact is a digital matrix capable of summing inputs and distributing outputs and has 12 AES-EBU I-Os which through cascading can create a 60 x 60 matrix. Analogue connections are catered for by the Caddy A–D/D–A which converts 24 analogue to 12 AES-EBU outputs and the reverse. Eagle is a 1U dual channel ISDN codec able to connect to European and US networks with connectivity available in G.711, G.722 and MPEG L2. It also has the AEQ LD algorithm for 15kHz joint stereo with low delay using two ISDN B channels. Swing is a portable codec, digital hybrid and mixer and has three mic inputs plus an auxiliary I-O, with a VU meter and compressor-limiter on the output. AEQ, Spain. Tel: +34 91 683 1300

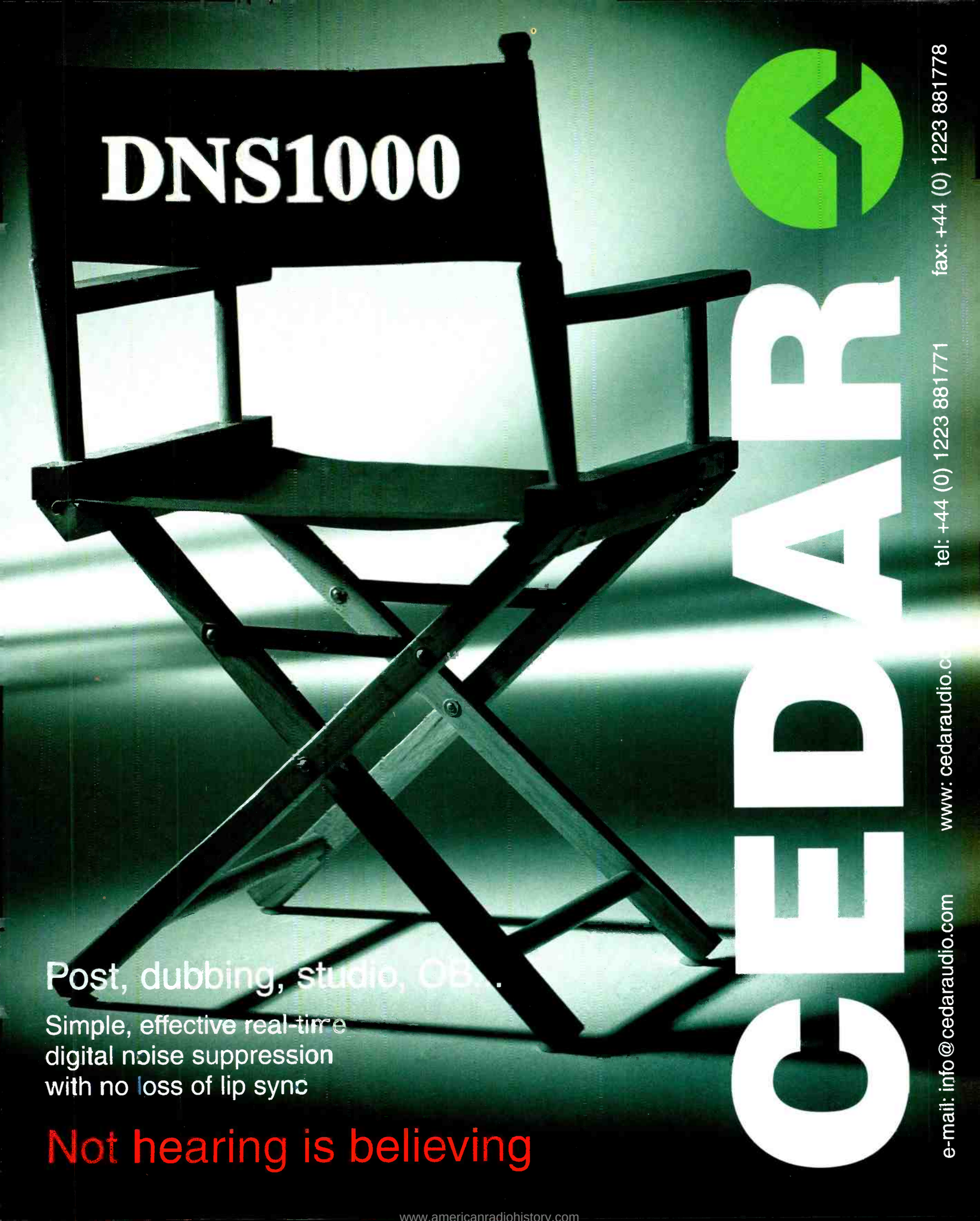
AT condenser

Audio-Technica's AT3035 cardioid condenser microphone is said to represent the next generation of its 30 Series

line. Featuring an all-new design, the large-diaphragm AT3035 has a fixed cardioid polar pattern and claims 20Hz to 20kHz response, high SPL handling (148dB) and an element yielding extremely low self-noise (12dB SPL). It comes standard with a newly-engineered professional shock mount and requires 11V-52V phantom power and has a switchable low-frequency roll-off (80Hz, 12dB/octave). Price is £199 (inc VAT). Audio-Technica, UK. Tel: +44 113 277 1441.

DPA large diaphragm A-B kit

The DPA Type 3532 is a complete A-B Stereo Kit consisting of two factory-matched omnidirectional large diaphragm microphones Type 4041 with 130V preamplifiers in a discrete class-A design. The specially selected and hand paired microphones are matched within 1dB on frequency response, sensitivity and self-noise. The maximum phase response difference from 50Hz to 20kHz is 10 degrees. With low self-noise and high SPL capability, the microphone is designed as a modular system, allowing the capsule to be unscrewed from the preamplifier. Two versions of preamplifiers are available. The 3532-S is a solid state preamplifier version, while the 3532-T is a pentode vacuum tube preamplifier version driven as a



Ambient Recording Emesser

German Ambient Recording has built its reputation in location circles and now has a mini-mixer, mini-shotgun and mini-figure-of-eight microphones. **Neil Hillman** goes for the eight

THE SMALL, NOT INSIGNIFICANT, and perhaps logical step from microphone accessories to microphone manufacture, has been undertaken by Ambient Recording with the introduction of its Tiny range. Known within the location filming fraternity for the well-respected Clockit portable location time code generators and digital slates, these new additions to the range mark an interesting departure from an established portfolio.

Comprehensively comprised of a full suite of mini-mixer, mini-shotgun and mini-figure-of-eight microphones, Ambient has addressed the pervasive DV Cam market by scaling its products to better suit the dimensions of the small-format Sony VX-2000/PD150 professional camcorders, and to make better use of the available camera facilities. Most DV camcorders have a 3.5mm 'plug-in power' socket to connect an external electret

microphone, but subsequent control over audio tracks is usually either via an ALC circuit or by a single control knob that affects both audio channels. Ambient's TinyMix is a small and light 2-channel solution that fits to the camera handle shoe, uses the on-board power, and enables dynamic or line-inputs to be used with the addition of individual level control of both channels. It also acts as a base for the TinyMike mini-shotgun microphone.

Both will be reviewed in the near future and I'll concentrate here on the third of the triumvirate—the Tiny Emesser, figure-of-eight microphone. My disposition to the concept of an un-matched figure-of-eight capsule clipped to the top of a standard shotgun microphone, to create an MS pair, was not as puritanical as perhaps others might be; after all, until I could spare my freelance cash I limped along in the early days of sporadic MS recording for TV with an AKG Blue Line figure-of-eight (rather cleverly I thought at the time) clipped to the top of my Sennheiser 416, such that a standard Rycote windgag could still be used rustle-free. Rather like a first car, it brings back fond memories although subsequent, more sophisticated, means of transporting transitory sound waves to tape underline the inadequacies of such naive, youthful zest, the actual performance often belied the theoretical limitations. And so it proved with the Ambient Emesser. Joined at the hip to an old and faithful 416, it provided a crisp and punchy response in general work-a-day sound gathering mode, with that same advantage of being protected and discretely tucked away within the manageable dimensions of a standard woolly windgag.

The microphone—little more than the element itself at 35mm long and 12 mm in diameter and 20g in weight—carries a thin lead back to a female 3-pin XLR connector connected to the main microphone, from where a further lead terminates in a 5-pin Cannon connector, wired to the standard 'stereo configuration', enabling quick and easy connection to standard extension cables for fish-pole operations. The mic is attached to the host microphone by means of a curved, plastic clip that is held in place by dual rubber bands, allowing—within reason—universal adaptability to professional microphones. The frequency response is given as being between 40Hz and 18kHz—I always roll 150Hz out of the bottom of the 'S' element in any case—with the sensitivity and output specifications being within a whisker of that stated for the Tiny shotgun.

So while the more established microphone manufacturers may not yet be running scared, the Ambient Emesser figure-of-eight microphone could still prove to be a worthwhile addition to a location sound recordist's flight case. □

Contact:

Ambient Recording, Germany
Tel: +49 89 651 8535
Fax: +49 89 651 8558
Net: www.ambient.de

NEW TECHNOLOGIES

cathode follower in a unity gain class-A design, which adds slight 2nd harmonic distortion. Included in the kit is the 2-channel high-voltage microphone amplifier Type HMA4000 and a Stereo Boom, packed with 6-pin audio cables in a Samsonite briefcase with a foam insert.
DPA, Denmark. Tel: +45 48 14 28 28

Audio PCs

Carillon has launched what it claims is the first Windows PC platform designed from the ground up exclusively for audio applications. Built in to rackmount casing the AC-1 has front mounted controls and connectors and low noise internal components. Front bays can incorporate various hardwired controls such as transport controls, MIDI controller knobs, audio input knobs and media drives. The AC-1 is available in a number of popular preconfigured hardware and software workstations for recording, editing and broadcast applications.
Carillon, UK. Tel: +44 20 7692 6611.

Latest CD-R

The latest CD-R machine from Marantz, the CDR-770 offers CD Text, audio DSP buffer, AES-EBU input, dynamic

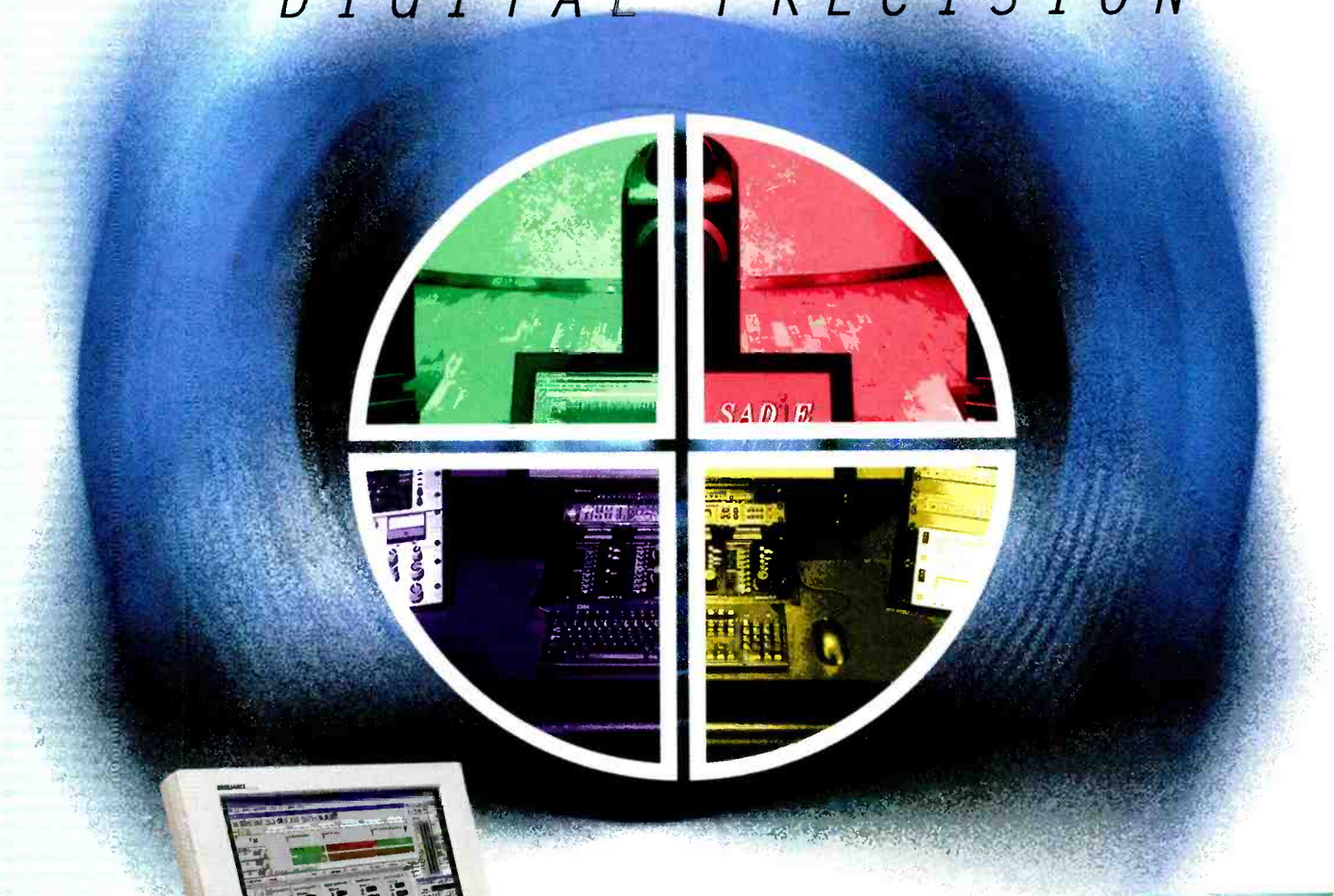
laser calibration, SRC and optical and coaxial SPDIF. Track IDs can be created manually or automatically with frame accurate writing through the buffer. Smart Auto Stop and Auto Finalise are also included.
Marantz, UK. Tel: +44 1753 686080.

610 preamp

Universal Audio's valve 2-610 is a vintage-style, two channel mic preamplifier based on the original amplifiers used in the 610 audio console of the 1960s which was used to record the The Beach Boys, The Doors and Frank Sinatra. Each amplifier is hand built with custom transformers incorporating double-sized alloy cores. Features include boost/cut settings, phantom power, direct inputs and variable impedance controls. It also has inputs for mic, high impedance input and direct input.
Universal Audio, US. Tel: +1 831 454 0630.

THE WHOLE PICTURE

DIGITAL PRECISION



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DIGITAL PRECISION

NEW TECHNOLOGIES

FAT 2 front end

Following on from the Fatman FAT 1 stereo valve compressor, TL Audio's FAT 2 Valve Front End couples a mono version of the FAT 1 valve compressor with a high quality onboard discrete valve mic preamp. Like the FAT 1,

15 preset compression settings are available, including five vocal programs and a wide range of instrument settings including electric and acoustic guitars, bass, keyboards and drums. Manual setting brings in threshold, ratio, attack, release and hard/soft knee controls. The mic input has phantom power and a 90Hz low cut filter and instrument and line inputs are also provided in a distinctive 3U half rack format.

TL Audio, UK. Tel: +44 1462 680888.

CoSTAR and Fusion

Fairlight On Air's CoSTAR's Web publishing is an automated Internet interface, which allows media in the CoSTAR databases to be published instantly to a web site. A template-driven model allows non-technical users

Drawmer DS501

Attempting to improve on the original 'frequency conscious' DS201 is what the new box from Drawmer is all about. **Zenon Schoepe**'s ears become punch drunk

I WOULDN'T BE ENTHRALLED by the prospect of redesigning a product that has attained industry standard status. When a good new product is released, intensive use generally reveals some irritations or shortcomings which can conveniently be addressed in the mark 2. But when a good new product is released that is ahead of the game there is no precedent and people end up using it in a way that is unique to that product.

The latter is very much the case with Drawmer's venerable DS201 which has enjoyed a product life that is almost unheard of in pro audio, being first launched in 1982 and remaining in production with the blip addition of the XLR version around the middle of the 1990s. The problem with trying to improve on the 'frequency conscious' DS201 is that everyone knows it, you'll find it everywhere and everyone, knows how to drive it. It's the gate that others are generally compared to and as such it is a hard act to follow.

Things have moved on since the launch of the DS201 and there are new techniques and more modern technologies available for gating purposes, not least within Drawmer's own product range I'll hasten to add. The DS501 should be regarded as the next generation DS201, a unit that retains the familiarity and rock solid proven performance of the original but adds some interesting and innovative extras.

So off we go complete with a DS201 on hand for immediate comparison purposes. There's still the same black panel with those nice knobs with the bright yellow colours except the knobs are smaller because there are more on the DS501—four to be precise to account for the two pots allocated to the new Peak Punch feature on each channel. You can rest assured that the DS201's traditional strengths have been retained and what you still have is two channels of sophisticated gating control linkable for stereo operation working on balanced XLR I-Os with mono jacks for the key inputs.

We'll get on to Peak Punch in a moment but first the familiar. Boxed off low- and high-pass filters cover 25Hz-3kHz and 250Hz-30kHz respectively and are accompanied by an INTERNAL/EXTERNAL (key) trigger selection. Threshold (72dBFs to infinity), attack (10µs-1s), hold (10ms-2.5s), decay (5ms-4s) and range down to -80dB are all as expected. The observant will note that these values are not quite as those found on the DS201 in which the upper frequencies in both filters are marginally higher, the threshold doesn't go as low, the hold and decay constants both weigh in at around 2ms and the hold maximum is 2s. This is no big deal but

could be deemed an improvement in line with the way that the DS201 eventually ended up being used. For all intents and purposes the operation and results are the same. There's a GATE/DUCK switch, KEY LISTEN/GATE/BYPASS switch and those three traffic light LEDs to show you what the gate is doing. However, you do benefit from a four-LED ladder to show you the relationship of the signal to the threshold level as you will find on other Drawmer units.

Peak Punch has also been found on other Drawmer boxes although the implementation here is more adjustable in how the circuit, which effectively adds a

wallop of boost on the absolute front end of the gated signal, does its stuff. You are presented with pots that control the frequency band at which the effect will be applied (a variable 'band' from 75Hz-16kHz) and a level control which effectively controls the amount of boost at the selected frequency with the proviso that a 3-position switch allows the effect to be bypassed, to only activate the level control for full-band boosting, or to have both pots active.

I've got to say that this is good stuff. I have always liked Drawmer's punch effect but the ability to tune it and control the amount is pretty amazing. This is despite the fact that the section concerns itself only with a relatively minuscule portion of the envelope. It's great on drums and percussion, brass bits, bass and anything else that wants to be choppy and explosive to be at its best.

When attempting to tighten up two disparate signals via keying there is inevitably a loss of front end from the processed signal, after all if the two signals were tight enough then you wouldn't be embarking on this route in the first place, and dialling in punch at a frequency and amount that complements the signal is a perfect way of overcoming this predicament.

Then you also have the filters which can be pressed in to service in the key listen position to strip out parts of the programme should you be inclined to for remix purposes.

The appeal of the DS501 depends entirely on how you regard gates as tools. If you find that optimised auto boxes cover all your needs then you probably won't appreciate the need for at least one good fully functional and variable gate. You can use a gate as a plain old switch or you can use it creatively and advanced models like the DS501 can do both. Creative applications do tend to gravitate towards percussion processing and if you take the original DS201's capabilities as red then the addition of the highly adjustable punch features is a real extra benefit. Gating creates dynamics and adding this extra leading edge boost is impressive.

On the face of it you could regard the DS501 as just an upgrade on an industry standard but there is much in this box that makes it far more modern and contemporary in results and delivery. The best just got a whole lot better. Recommended. □

Contact:

Drawmer, UK.
Tel: +44 1924 378669.
Fax: +44 1924 290460.
Web: www.drawmer.co.uk

NEW TECHNOLOGIES

to drag and drop audio, text, graphics and video clips onto the Internet. This process automatically formats audio content for streaming on-line and related visual information can be displayed on the web site simultaneously. In addition, Station play lists and content can be made available for on-demand access. Fusion is specially designed for On Air broadcasting applications and offers cost-effective digital mixing, routing and control with DSP on all input and outputs. The console has a low profile mounting depth of 72mm, can handle 96 digital or analogue inputs per unit and can be scaled up to a total of 264 x 264 I-Os per DSP frame.
Fairlight On Air, Netherlands. Tel: +31 26 368 4925

Tube Meekrophone

Joemeek's latest Meekrophone the TB-47 offers a high gain valve preamp section with dual capsule. A multipattern power supply is included that can give stepped variation from omni to cardioid to fig8. It has a 1-inch gold, 6 micron condenser capsule and a large custom made output transformer. Also included is a custom-made shockmount, long mic cables and a rugged flight case. Joemeek, UK. Net: www.joemeek-uk.com

Mindprint AN/DI Pro

Aimed squarely at providing a quality front end for PC-based recording systems, AN/DI offers two channels of mic preamplification and conversion. **Dave Foister** samples its performance

PC AUDIO SYSTEMS are taking over the world, and a nice little cottage industry has grown-up providing decent interfaces between analogue and digital. The standard arrangement of questionable analogue electronics and a questionable convertor cohabiting in a hostile environment leaves a lot to be desired, and it doesn't take much to improve on. Frankly, some of the solutions aren't much of an improvement in themselves, but others have decided to take it seriously enough to produce devices that have much broader applications. One such is the AN/DI Pro from MindPrint, a German company specialising in entry-level accessible processors that look good and have high aspirations.

The concept of the AN/DI Pro is familiar enough; what sets it apart a little is its professional approach, with a 1U-high rackmount chassis, proper connectors, decent metering and high sample rate capability. The ingredients are a pretty comprehensive set of the things you need as a front end for a 2-channel digital system, allowing a variety of sources to be presented to the destination device in a variety of ways. All the way through, MindPrint's aim is to do it at as high a quality as possible.

In terms of its styling, the unit makes a good fist of looking grown-up and cool at the same time. The usual glossy maroon front panel is not just a mechanical support for the controls; it's a cosmetic finish over a satin aluminium backplate that shows through deliberate windows around the knobs and meters. The knobs complete the picture by having bright chrome caps, so the whole ensemble is more likely than most of its rack co-residents to catch the light and sparkle. It could have become tacky but it hasn't.

The microphone inputs appear on the front panel as conventional XLRs, and are fed to class-A input circuits before going any further. This is in line with MindPrint's conviction that digital audio inherently tends to be unmusical; most of its equipment sets out with the specific aim of putting the musicality back. Phantom power is switchable with one of several black pushbuttons, as is a 20dB pad. There is no filtering at the bottom, or anywhere else come to that, nor is there a phase reverse switch on either channel. The input gain is continuously variable, with a gain range not quite up to the top-end preamps but adequate for most purposes. Alongside the microphone input is a TRS jack, for once not an instrument input but a line input accepting full pro studio level—an immediate benefit compared with an onboard sound card whose headroom will always be limited by the PC's power supply rails however innately good it might be.

The input jack sits next to its associated level control, which is usefully separate from the mic amp gain. The two inputs can't be used simultaneously, but the separate gain controls are a useful bonus, removing the need to keep recalibrating when switching between sources. Gain setting is helped by big bright LED meters, colour-coded green and yellow either side of a nominal zero level and with a red maximum 8dB above that. The quoted dynamic range offered by all this is 108dB, so clearly not all the 24 bits are being exploited to the full, but it's still a very respectable figure.

Because of its intended use, the box doesn't have analogue outputs as such. It does, however, have insert points on both channels, which impressively are balanced with separate TRS jacks for send and return. The obvious upshot is that if you need an analogue feed you can take it from the insert send. Having said that, the more likely use is to provide good digital signals, and the AN/DI Pro is unusually well specified for a unit in this market. Its digital output is available simultaneously in AES-EBU and SPDIF formats, with the latter on both optical and coaxial connectors, and the internal clock offers a curious selection of three sample rates—44.1kHz, 48kHz and 96kHz. It will also run at 32kHz and 88.2kHz, filling in all the gaps, but for these it needs external sync.

This can be provided in several ways. Additional connectors are provided for AES-EBU and SPDIF sync, with a rear-panel switch to select which is to be used. Each has a corresponding output, for daisy-chaining the sync onwards elsewhere. These sync sources are over-ridden by the presence of proper word clock on a BNC, and the status and frequency of the sync signal in use is shown by LEDs on the front.

Perhaps a choice of word lengths and dither would be asking too much on a box at this price, but it's worth noting that it only works 24-bit; hook it direct to a 16-bit recorder and truncation is the result. The manual discusses this and other issues quite clearly, and is well-written for the home recordist although the pro may find it patronising.

But this shouldn't put the pro off; the AN/DI Pro does as good a job as many pro-only boxes on the market, with good clean quiet microphone preamps, a flexible layout and almost all the digital versatility you could ask for. It looks and acts the part, and should find homes outside its originally-intended market. □

Contact:

Mindprint, Germany
Tel: +49 6851 9050
Fax: +49 6851 905200
Email: mindprint@music&sales.com

NEW TECHNOLOGIES

Fire and safety

Designed for studio owners who have chosen not to meet local fire and safety regulations, Cabin Fever's eXtricaTe is a get around solution that will appeal to the budget conscious and requires only one window to operate. Effectively a close field monitor corner end cap that is screwed on to the loudspeaker box, the eXtricaTe is made of titanium with a diamond tip. In the event of a fire, or other life threatening development, the diamond tip can be used to score a cut in double glazed control room or outside windows. The weight of the monitor can then be used to strike against the glass to make a quick exit. The low profile device, which is claimed to have a negligible effect upon the performance of the loudspeakers, also has a built in bleeper and flashing LED to aid location in instances where an engineer has fallen a sleep and has awoken to find the control room full of smoke. Full mounting and operating instructions are included with a video that illustrates eXtricaTe's uses outside of fire and safety, such as the unexpected arrival of a landlord, the police or an old girlfriend. Options include a quick release for speaker cables, a blanking plate for rounded cornered speakers, and stickers that pronounce that a facility is 'eXtricaTe equipped'. Studio's adopting the eXtricaTe will qualify for discount consideration from certain insurers in much the same way as recognised car alarms will reduce vehicle insurance premiums.
Cabin Fever, UK. Tel: +44 20 8943 4949.

BGW studio amps

Coinciding with its 30th Anniversary, BGW has released the Pro400, Pro600 and Pro800 amps aimed at the recording and broadcast sectors. Using Class H design, the amps have conventional power supplies and have LED indicators for power, signal, clip, and VU, touchproof barrier strip speaker outputs, jack and XLR inputs, ground lift, mono/stereo/dual stereo switches, high pass filters, 1dB detented attenuators and a claimed sensitivity of 0.775 VRMS at full output.
BGW, US. Tel: +1 310 973 8090.

Core for Apple

Lexicon's Core 2 desktop audio system is now available for the Mac. The system provides a Mac interface with 24-bit A-D and D-A convertors, four analogue inputs (eight analogue outputs), plus eight channels of ADAT I-O and an SPDIF. The system is compatible with Cubase 4.1 and Logic 4.0. Mac support for the optional MP100 daughter board with 240 presets of classic Lexicon reverb as found on the MPX100 dual channel processor will be available shortly.
Pure, UK. Tel: +44 20 7328 0660.

NS10M discontinued and replaced

Yamaha is discontinuing the NS10M after 14 years due, it says, due to the special wood pulp used in the woofer cone no longer being available. The replacement is the MSP series powered monitors. The MSP10 features an 8-inch woofer housed in a bass reflex design cabinet and a 1-inch pure titanium dome tweeter with wide dispersion waveguide hom. The internal amps provide 120W for low frequencies

re·verb (rĭ-vûrb) 1. Lexicon

960L

The 960L sets the new industry standard for stereo and multi-channel reverbs while providing enough flexibility to grow as formats evolve. With support for 16 channels of I/O, the 960L meets the demands of any application today with ample flexibility to address the demands of tomorrow. A built-in CD-ROM allows for easy software upgrades ensuring that the 960L will remain at the forefront of performance and sound quality well into the future.

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Ridge Farm Gas Cooker

Reinventing a DI box as a mic preamp may seem straightforward but doing it with finesse is a fine art. **Dave Foister** finds life on the Farm to be character building

ONE OF THE MORE NOTABLE ITEMS of equipment in my studio is our Gas Cooker valve DI box—Ridge Farm's wacky unit that impressed me so much when I reviewed it that I bought one. Now a new version adds a dual-channel microphone preamplifier, sharing the valve circuitry and the general appearance.

The front is little changed from the original version, largely because the DI features remain much the same. In fact, this is an expanded version of the DI box rather

than a mic amp with DI facilities, as the emphasis is clearly still on the original function. Each channel has two silver toggles on the front, one for ground lift and the other introducing a 20dB passive pad. These and the big black knobs are, not surprisingly, the only controls. The gain knob is calibrated simply 0–10, with a nominal unity gain setting marked with an arrow. As before, going above this drives the valve progressively harder and can introduce a wide variety of effects, from subtle thickening to the onset of overdrive, depending on the source.

All the standard DI connectors are also on the front. Two-pole jacks carry the input and the local loop-through signal, although the latter is buffered with a 1.5kΩ source impedance rather than a straight parallel split. The input circuit has the hoped-for high input impedance—1MΩ—to deal with typical instrument pickup behaviour without typical HF losses. Alongside these jacks is the main balanced output on an XLR, delivering microphone level and impedance to the following console. This is worth noting, as it means the operation of the newly-added microphone preamps is not what you might at first expect.

The original Gas Cooker had line level outputs round the back. Previously they allowed the unit to work as an instrument preamplifier straight to console line inputs, or as a unity gain line stage for adding valve character; now there are the microphone preamplifiers built in, for which these outputs are the only logical ones to use. Their signals also appear on the front-panel XLRs, but only with a maximum gain of x3; the rear-panel outputs, on the other hand, can present a gain of x30. I make this around 30dB, which is on the low side for a general-purpose preamp but fine for a lot of close-up studio applications with condenser microphones. These are catered for phantom power, which is applied to both inputs simultaneously with another silver toggle switch, this time on the back. The odd thing is that these line-level outputs are unbalanced on two-pole jacks, with no level indication of any kind, so the thrust of the thing is to add distinct valve character to the microphone sound rather than be all things to all men.

This is not to say that the specs are poor, although they are not in the noiseless DC-to-light league to which the top-end units aspire. The frequency response is a respectable 18Hz–30kHz at the 1dB down points, and although the noise at maximum gain is quoted as—90dBm this should be fine for the kind of use intended.

This I suspect is the way to approach the Gas Cooker Mic-Pre. I have always enjoyed the original for recording all manner of instruments and to have all this plus the same kind of individual approach to microphone amplification is a useful addition to the palette. As a direct way to achieve a particular type of sound in the studio it's hard to think of anything that competes with it. □

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NEW TECHNOLOGIES

and 65W for high frequencies. The MSP5's offers a 5-inch woofer housed in a compact bass reflex design cabinet as with the MSP10's 1-inch pure titanium dome tweeter. Internal amps provide 40W for low frequencies and 27W for high frequencies. The newly announced SW10 powered subwoofer, with its long stroke 10-inch 180-watt woofer is said to compliment the MSP10.
Yamaha, UK. Tel: +44 1908 366700.

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Genelec, Finland. Tel: +358 17 813 311.

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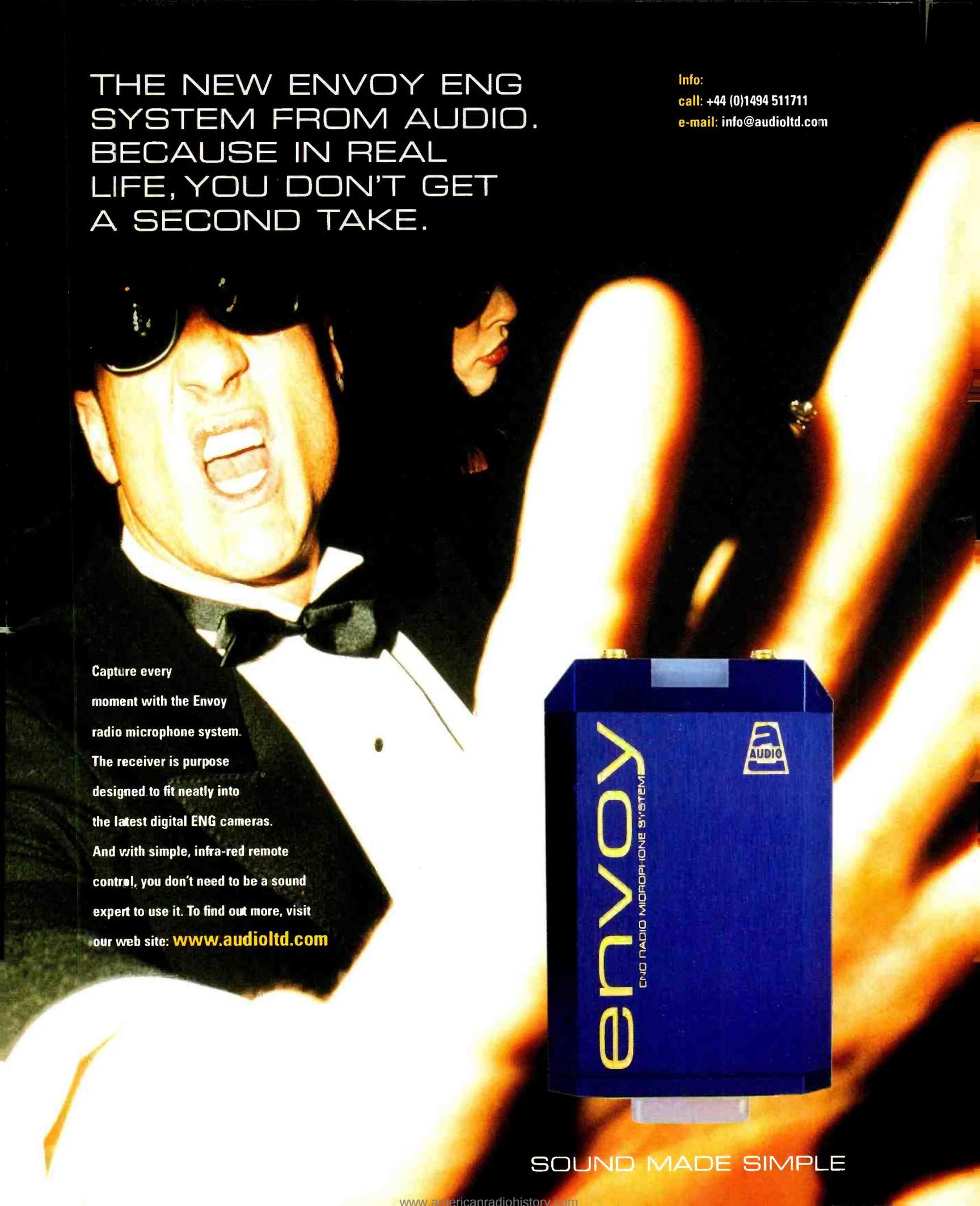

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SOUND MADE SIMPLE

HARVEY JAY GOLDBERG

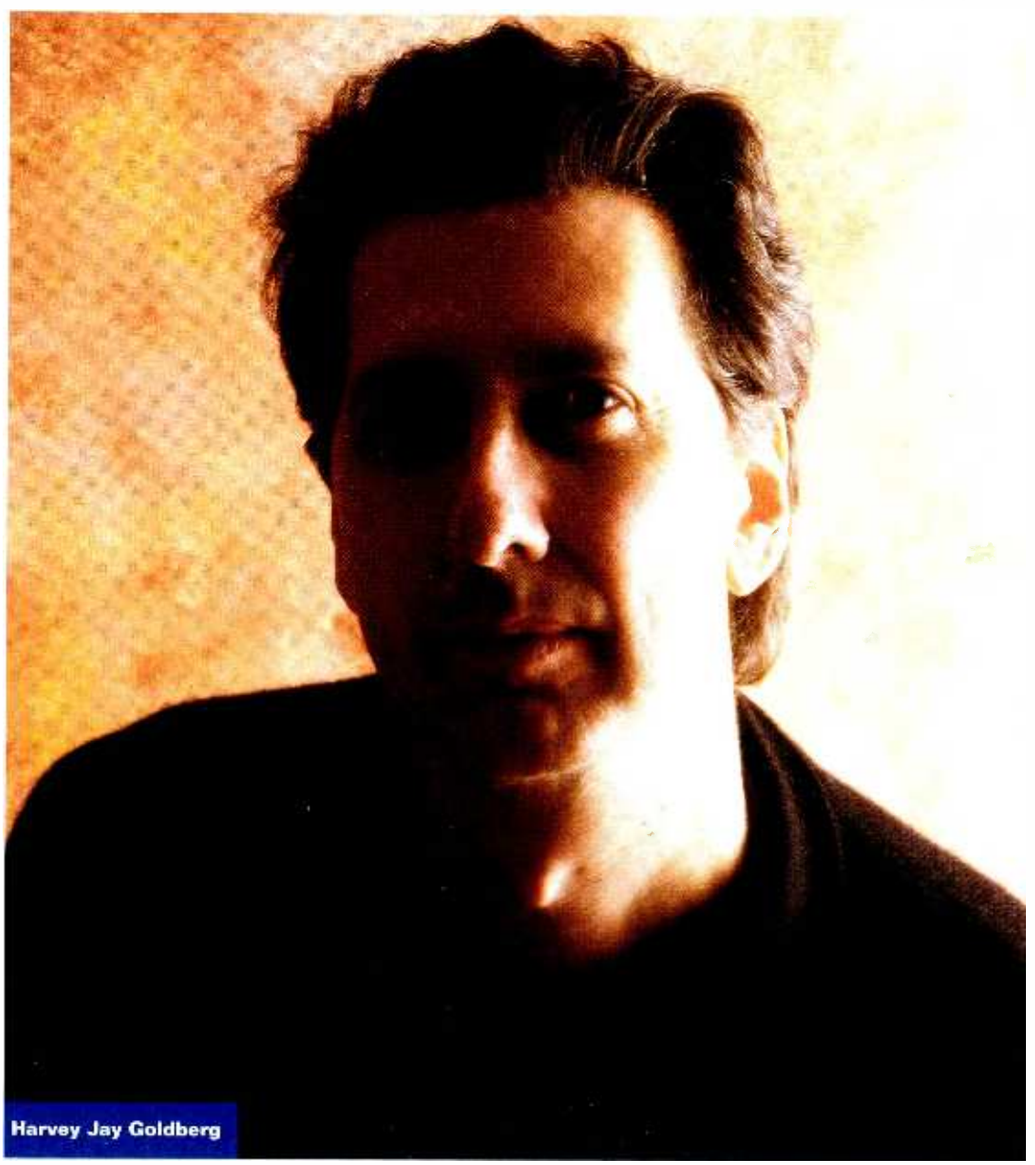
Where many engineers and producers have made their names through association with a single musical style, Harvey Goldberg has made a career of ecleticism. **Tim Goodyer** finds variety to be the spice of success

A TEENAGER during the sixties British invasion of the American charts, Harvey Jay Goldberg became enthralled by the music of the Beatles, the Rolling Stones, The Who and Led Zeppelin. But having bought a lot of records and attended a lot of concerts, he knew that all was not well with rock 'n' roll...

'I would see a brilliant band live, run out and buy the record and the record sucked,' he recalls. 'Or I'd buy a brilliant record, go and see the band and they weren't that good. And as a kid I was trying to work out why. I realised the only way I was going to find out was in a recording studio.'

At the age of 17 he moved to New York City and the mail room at Media Sound. This was 1970 and the idea of studios operating independently of the record companies was new. Soon, however, there would be independent producers using the independent studios, and with the tremendous volume of work passing through studios on both sides of the Atlantic, the young Goldberg was ideally placed for his engineering apprenticeship. His break came barely a year later when an unknown group called Kool and the Gang signed in to record some tracks for their debut album. The sessions spawned and album and three Top 10 singles—'Funky Stuff', 'Jungle Boogie' and 'Hollywood Swinger'.

'I came to New York thinking I was going to be working on rock 'n' roll records and there I was working on a post-James Brown funk record with musicians who weren't much older than me,' he muses. 'But because I came from rock 'n' roll and they came from a funk background, the records were kind of high-energy funk. In the breaks in the session we'd talk about music and we had such completely different influences. We'd even come in and play each other's records.'



Harvey Jay Goldberg

Goldberg's initial success opened the door to a series of funk and R&B acts as well as a classic liaison with Lonnie Liston Smith and beyond.

'Lonnie was kind of a jazz artist who got hip to Kool and the Gang because aside from James Brown they had been influenced by Coltrane. Because of Lonnie—who was being produced at that time by Bob Thiele (*Studio Sound*, December 1998), who had worked with Coltrane, ran the Impulse label and as an A&R man had signed Buddy Holly and Jackie Wilson. That lead to a relationship with Bob and jazz recording—he brought in phenomenal jazz players—from McCoy Tyner, Elvin Jones, Pharaoh Sanders. Again, this was not what I had come to New York to do, but I began to realise that had I gone straight into recording rock, everything that I recorded and mixed would have been all guitar because that's what I though it was about.

'Because I was thrown into these combinations of music, I was forced to learn about other instruments. Easily the first three years of my career was spent strictly on R&B, funk and jazz records.'

Later in the seventies, Goldberg formed what was to become a long relationship with Mamas and Papas mainstay John Phillips. The Mamas and Papas had just split up and Phillips had moved from California to New York. After some preliminary demo work, Phillips requested Goldberg's involvement in his recordings with the fledgling Rolling Stone Records. Some 30 years on, the album is only now seeing release under the title *Pay, Pack and Follow* on Eagle Records. Meanwhile, still only 20 and on staff at Media Sound, Goldberg's future was assured.

After working with Mick Jagger and Keith Richards on John Phillips' material, Goldberg found himself working with ex-David Bowie guitarist Mick Ronson serving the likes of Mott the Hoople's Ian Hunter, Ellen Foley and New York Dolls' David Johanssen, as well as the 'Face of 68', Peter Frampton. As the punk-new wave movement gathered momentum, Goldberg joined forces with British producer Mike Thorne working on, among other things, the recently reformed Soft Cell's 'Tainted Love' single and mixing two albums and a dance remix album.

'When we finished mixing 'Tainted Love', the record company sent it back and said "Aren't you going to put drums on?". And Mike said, "You don't understand..." It was a neat record even though it didn't have the interplay and musicianship that I was used to. I knew I was hearing something new.'

Goldberg subsequently mixed Till Tuesday, a huge American new wave act, as well as singles coming

in from England needing radio mixes and club mixes such as Bow Wow Wow ('I Want Candy') and Madness ('Our House'). His first production break came with Marianne Faithful, working alongside Wally Badarou and Barry Reynolds, and a relationship with Chris Blackwell saw him doing mixes for the Island label. A move to England in the mid eighties was inevitable but temporary, and his return to New York has proved as eventful as the rest of his career.

How did you respond to such a variety of work?

As you get older you appreciate different music but the industry likes to see people specialise. I just wanted to work on things that were good and, with my experience, I don't see why I shouldn't. To me, it's just an extension of my record collection. So long as you feel you can contribute something to a project, why not? And you're going to learn something new. If there's anything that's kept me fresh it's the fact that I never locked into one style of music. When you go from a rock band to a funk band to an electronic band, you have to stop to listen. When you do the same style of music over and over again you can fall into a formula—certain EQs and types of mic, reverbs you know are going to work. That's the name of the whole game. That's what I do for a profession: I listen.

How do differing projects relate to each other?

You always have to be open minded going into a record. It's a funny thing but when you start in on an album you try to find a system. And you get that system perfect at the end of the album but the problem is that it won't apply in the least to the next project. But that's one of the things I enjoy about making records: every time you begin with a clean slate.

Obviously it's good to have as much of a library in the back of your head so that whenever you run into what might be a brick wall for somebody else, you can draw on it as the key to getting over it.

Does the breadth of your work ever become baggage?

I don't think I've ever felt it was baggage; there's always something new to learn. Everybody comes in to make their point of view. The artist is the focus point of the whole thing and so the artist has the main point of view and it's up to me to catch up to that. Plus, technology is growing so fast that I'm always learning something new.

How does working with sequenced music relate to working without a rigid time structure?

Time fluctuation is not a terrible thing. If you go back to early Elvis records, Little Richard records, Otis Redding records, records that have stood the test of time, they speed up. That's a case of where the technology has detracted from the music. In those days the energy was raw and the technology was raw but those people were phenomenal players. Record companies today—and critics too—tend to ignore that. They've got it in their heads that to be a real rock 'n' roll band you're not meant to be able to play that well.

Sequencers have kind of screwed up people's concept of timing. I'm talking about records that were made before my time. A lot of what was exciting about those records was that they did speed up as they went along. Even Steve Cropper [guitarist from the Blues Brothers project] was talking about that. That's like a built-in excitement but now people are used to things staying steady all the way along.

Clockwise from top left: Kool and the Gang; Lonnie Liston Smith; John Phillips from his days in the Mamas and Papas; the newly reformed Soft Cell; and Blues Brothers 2000

When and why did you leave Media Sound to go independent?

I stayed until 1982-83 because they were good to me—very liberal with my schedule—and smart enough to realise that it didn't hurt to have somebody associated with all these projects associated with the studio. When the studios changed ownership I didn't feel the same loyalty to the new owner and I was becoming much more concerned about building my own career than feeling I had to help the studio.

Why did you make a move to England

At that point I was making a conscious effort to get into production and I went to England to look for an act. I was having trouble relating to what was starting to happen in the States. We were seeing what later would be called 'hair bands'. They had kind of a heavy metal sound but were very slick and, to me, they didn't have the heart and soul I was looking for. And because I'd had so much success in Britain, it made sense to go over and see what was going on.

So I did the rounds and ended up at a new Virgin label called Circa who had just signed a new act called Hue and Cry. They sent me the demo which was really easy for me to relate to because it was a combination of pop, R&B, light jazz... Also from what I could see of what was going on in England there was about to be a movement of that kind. There seemed to be kids who were 19 or 20 years old who had avoided becoming involved in the punk movement and were listening to Steely Dan and Stevie Wonder. The first thing we did was cut two songs one of which was 'Labour of Love', which was a Top 10 hit four months later. We went on to do the *Seduced and Abandoned* album and then a second album, *Remote*, with 'Looking For Linda' on it.

That tied up a five or six-year-period when I also produced a track for Texas the tie-in being that they're another Scottish band.

Why return to New York? And where did you fit back in to that scene?

By the early nineties I was exhausted because, effectively, I had been commuting from New York to London. Also the English music scene was changing again and becoming very dance orientated.

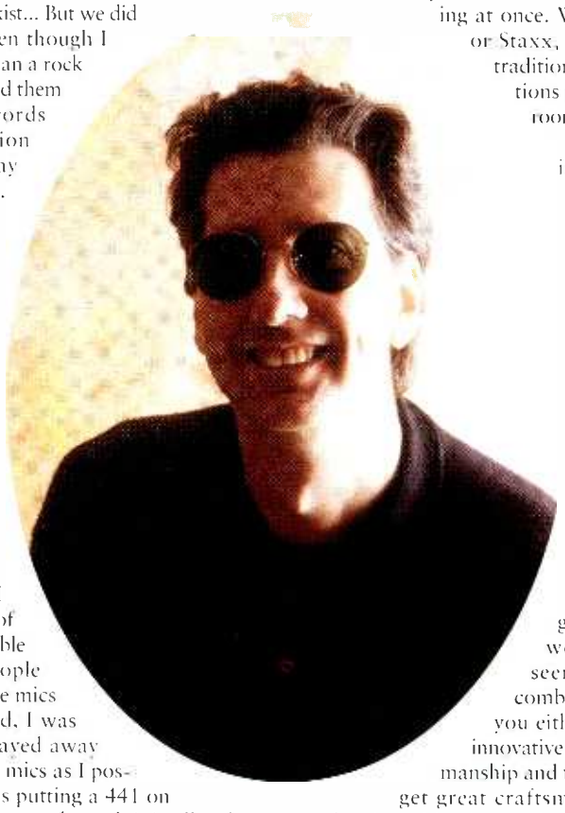
When I came back to New York I got involved with Bob Thiele again doing a series of jazz records. I also got involved with *The Letterman Show* that had moved from NBC to CBS and had taken over the Ed Sullivan Theatre. Michael Delugg, one of the guys who had trained me at Media was in charge of the music and had a state-of-the-art studio for mixing the music. It was comparable to any music studio you'd find in the city.

Television has been notoriously difficult to get right for rock bands, and they thought they should get some record people involved. Because of the move to the new theatre they had a stage big enough to take a whole band instead of having to use the house band. Now—thanks to Michael, and I'd like to think, myself—the show has the reputation that bands that would never dare playing live on television have no problem showing up and playing on the *Late Show*. Bands

like Pearl Jam who you'll never see on the television have been on the show several times. We even released a *Live from Letterman* album from the show. I then started to get back into record work again.

You worked on the Grammy winning Blues for Coltrane, *along with other notable jazz sessions with Bob Theile. How did that relate to your other experiences?*

I didn't really set out to make things that sounded like jazz records. I was aware that they were jazz records and therefore had to be recorded fast and the musicians had to feel like they weren't in a studio and that the engineer didn't exist... But we did record to multitrack even though I would mix them faster than a rock or pop record. But I mixed them like they were hot records aimed at a radio station rather than trying to stay true to a jazz sound. Everybody seemed to love it including the musicians. And that was one of the reasons Bob was happy to have me working on those records. He wanted to make records with great jazzers playing on them but he wanted them to sound like 'a record' rather than as if you were sitting in a club.



With the recording, in the back of my head I knew I had be conscious of isolation as much as possible but where most jazz people tend to go with expensive mics and try for a pure sound, I was using cheaper mics. I stayed away from as many condenser mics as I possibly could, even as far as putting a 441 on a sax. My attitude was more of a rock 'n' roll style —on the kit I'd put Shures and Sennheisers and run them to separate tracks just like I would a rock band. One of the things I learned early on is that in rock, pop and R&B, time is kept with the bass drum and snare, and the accents are done with the cymbals. Jazz is the reverse; time is kept with the cymbals and the accents come from the snare and bass drum. You have to be aware of that, because that's the way you're going to balance it. So you have to be aware that you're making something to sound hot on the radio but not at the expense of what these guys are playing.

Also because of jazz, I tend to mic very close to the cymbals. And while I didn't have to worry about the bass leaking into the drums as I would with a rock band, I did have to worry about the drums leaking into an upright bass. I did also blanket the hell out of the piano. I didn't close it because you can hear it's closed but you can blanket the hell out of it.

How did you get involved with the Blues Brothers 2000 *recording?*

I got a call from Paul Shaffer, who was to be the musical director, to work with him on the album.

It was a phenomenal project. We spent five to six months on it and recorded about two-and-a-half albums of music. There's not much of a movie to see but there's so much music. We cut the rhythm tracks very live, which I love to do, and again it was real R&B-rock kind of grooves. It's got that energy that, if you haven't got it by the third take, you're probably better coming back to the track later on. From an engineering standpoint, I don't have to have perfect sound at that point, it's so much better to get the music on tape and fine tune the sounds at the mix.

We recorded it at Sound on Sound with an assistant named Jason Standard. That was when he grew up—he hasn't found anything as difficult since then.

It seems to me that America has made records over the years where there were more people playing at once. Whether it was Motown or Staxx, American records have traditionally had big rhythm sections playing together in small rooms. And they sound great. The thrill of that recording was that everybody turned up to sing and play on it—from Aretha Franklin to Erykah Badu. You tend to go through the cycle of 'They don't make them like they used to' to 'That's just nostalgia' but while I was working on the *Blues Brothers* and hearing Wilson Pickett sing, they don't make them like that any more. There was a time when people had great talent, great craftsmanship and were innovative, and it seems you don't get that combination any more. Now you either get something that's innovative in concept but the craftsmanship and talent isn't there. Or you get great craftsmanship and talent but there's nothing innovative about it.

Is this the fault of recording artists or the recording industry?

Somebody said it isn't that musicianship is dead, artist development is dead. The record companies don't have the luxury any more of developing anything. In all fairness to the A&R people, they are under so much pressure to get a hit right from the first record. And if you're under that sort of pressure, then the only indication of something being a success is if it sounds like something that is already a success. Everybody blames them, but I understand what they're going through.

How do you equate your experiences to your original enthusiasm for music?

Above all, the reason I was attracted to this business is that I'm an inspiration junkie. I tend to look for inspiration through music and that comes from hearing something new.

Goldberg's relationship with John Phillips will be further documented by the release of an album entitled *Slow Starter*, again on Eagle Records, in September. Phillips, however, died of heart failure aged 65 last month. □

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FIRST WE LISTEN

How did you approach the mixing?

It's all new, so anything goes—in my case it did! I gave Jon the first tape to master four tracks for a sampler. After those we mixed them all again, because you say, 'Well, that's not right'. Mixing The Who's music can be very tiring, because it's very up in front of your face, there's no real gaps. I was working from 11 in the morning until 6 or 7, sometimes 8 o'clock. And sometimes at 6 o'clock I'd look at Will, and he'd look at me, and we'd both have the same look—'Yeah, let's go home', because it was getting worse...

Mixing The Who isn't an easy job—one of the main things is getting the energy over. And the energy really comes from John and Pete, so the drums are down rather than up, because you lose the guitar punch, which is what it's all about. Normally with The Who I put bass on one side and guitar on the other—you can't do it any other way. The keyboards in the centre go into the centre speaker, with a bit of spread to the left and right using the spread panpot on the SSL. It's not ideal for everybody, but with a three-piece band it's mono if you do it any other way. It's more like being at the gig. The best live album was *Live at Leeds*, which I did all the groundwork for in 1969 on a Vortexion stereo machine with a couple of mics onstage. People say 'Ah you've done it like *Live at Leeds*', but that's the only way to do it. It's difficult now, because John has four channels of bass, so it's a hard thing to get together, you have to work at it.

Was the mix compressed at all?

I very rarely compress a mix but I love the compressors in the SSL boards so I used the onboard one. I borrowed an outboard SSL one from Will for doing a mix down at John [Entwhistle]'s.

Did you use the channel compressors on the Axiom?

I used them on some things, but much to Will's disgust—because you couldn't store the settings—I used two dbx 160s, the old compressors, and a Summit stereo compressor for acoustic guitars, and a stereo Tube Tech.

Would you work in 5.1 again?

I wouldn't turn it down if the project was right. The album I think which would sound good on it would be Pete's orchestral Sadler's Wells gig.

[I then had the pleasure of seeing and hearing a couple of the mixes, including Bob's favourite, 'Relay', which was supremely exciting. As the track finished, he turned to Astley; 'Is 'Magic Bus' on this one?' 'Nah, actually I don't want to hear any more...!' It was 6 o'clock, and time to go home.] □

Sanctuary Mobiles—Will Shapland

WILL SHAPLAND HAS BEEN involved with Manor Mobiles for 13 years, chief engineer since 1988. After ownership was transferred from EMI to the Sanctuary Group last year, the three Manor trucks became part of the same fleet as the former Fleetwood Mobiles. All are now being repainted and re-christened as Sanctuary Mobiles.

Q *What was Bob best at?*

I think having experience of The Who was useful. You wouldn't necessarily assume to pan the bass left—up the middle just doesn't work with The Who, because John Entwhistle has a noisy, nasty sound, that rarely has any deep bass—you have to treat it as two guitars. It's incredibly tiring mixing The Who. His concentration was better than mine! If I mixed it my way, I'd probably have tidied them up too much. I was surprised they sounded so good using the Axiom, you'd think it would be better analogue and old-fashioned, but we'd done a quick stereo mix on the SSL 4000 truck but the Axiom stuff sounded better. I've no idea why, but it worked well.

Q *What format did you mix to?*

DA-88, going in by converting AES-EBU outputs to TDIF, digital all the way.

Q *Is surround monitoring a permanent fixture in the truck?*

Yes, very soon, the same Quested F11s with the sub will be built-in, because with the Axiom it's so easy to switch different pan formats.

Q *What are the difficulties mixing in 5.1?*

Well you can't check it in your car or anywhere. You can take it to another 5.1 room, but who's to say their's is any better? It'll be nice when you've got a DVD burner to take a disc home, or a car 5.1 system.

Q *What are your plans for future surround work?*

We've got a multichannel SADiE, and I think we might try to go further down the line in the DVD mastering process, even possibly having DTS or Dolby encoders, which make a big difference. A lot of people are doing stuff and experimenting. You can have the most perfect monitoring system, but it might not work when people stick it on their TV at home.

Q *What's different now you are under Sanctuary Group's wing?*

It's still fairly early days. But having the Fleetwood trucks alongside justifies having a full-time maintenance engineer, and we get way more back-up than we used to, so more money is being spent. There is less pressure on me, I was previously the only full-time senior engineer, and the only person who knew the trucks inside out. Having been in competition with Fleetwood for so long, inevitably we have different ways of operating, and we are trying to get the best of both ways of working, rather than there being one overriding dogma. Fleetwood have usually spent more time on individual projects, attending production meetings, whereas I didn't often have time to do that. But we were always good at making sure we had great engineers who were appropriate for the job. We've got some great projects in the pipeline, where we can hopefully show the strength of the new organisation.

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STEVE HAYNES

The growth of the international film market has seen a consistent rise in volume and sophistication of 'foreign language versions'. Steve Haynes tells **Richard Buskin** about dubbing and Rugrats

AFTER A BRIEF STINT as a 35mm cinema projectionist, Steve Haynes joined the University of York's Educational Technology Department as a junior technician during the late 1960s and experienced his own form of heaven. A radio ham and keen musician who built his own guitar and amplifier, Haynes loved an environment that afforded him the opportunity to dabble with all forms of recording equipment. Soon, however, he felt drawn towards the twin worlds of film and TV, and this interest led to a job as a trainee assistant sound recordist at Yorkshire Television.

In the early 1970s practically everything was still shot on film, and so Haynes initially worked on the road as a member of the film crew, before satisfying his desire for more creativity by then moving into post-production dubbing. Now immersed in both music and technology, he was at last doing what he really wanted, and eventually became YTV's head of postproduction sound. Haynes worked on a wide range of the network's biggest productions, from *A Touch of Frost* to *The Darling Buds of May* and became a devotee of the AMS Neve AudioFile and the Logic console, and in the early 1990s YTV purchased the first Logic II. In 1997, lured by the new technology as well as the prospect of film work, he returned to London and a job with DB Post Production. Three years later he became director of sound at Lip Sync, where he is a re-recording mixer.

Established as a production house 14 years ago, Lip Sync specialises in film and television trailers, adverts, and TV production and postproduction. However, it was Steve Haynes who accepted the responsibility of setting up the company's fully-fledged sound facility in London's Soho district, comprising two large studios each equipped with a 32-channel DFC, THX monitors and Dolby EX Surround, two smaller studios, two prep rooms, and a central apparatus room. Half a dozen AudioFiles are at the heart of a comprehensive array of gear.

In addition to high-end TV work, Haynes also enjoys mixing foreign-language movie dubs, something which he first did at DB Post. This came about because many of the recordings made in overseas territories were not only sub-standard, but also disparate due to differences in culture and approach.

'You must have seen those English-language films dubbed in Italian,' says Haynes. 'Everything's horribly close-miked and it just sounds like it's been dubbed. It doesn't sound like it's part of the film.'

Consequently, in an effort to ensure that foreign audiences enjoy a largely similar movie experience, the filmmakers have taken charge of the situation by supervising the dubbing and centralising the mix. This is where Lip Sync fits in, Steve Haynes having recently worked on the Hindi, Telugu and Tamil versions of *Gladiator*, and the Japanese, Latin American Spanish and Brazilian versions of *The Grinch Who Stole Christmas*, as well as the Flemish, Dutch, Danish, Spanish and German versions of *Rugrats in Paris*.

Does this more controlled process of dubbing and mixing mean that foreign audiences are no longer getting what they are necessarily accustomed to?

Well, no matter the language, I think directors have a particular idea as to the way in which they want audiences to experience a film. You know, when you're doing a foreign version, the idea is to emulate exactly the original sound. For instance, in *Gladiator*, when he shouts in the Colisseum, you get that lovely slap echo off the walls. You've got to have that same sound. He's got to be distant and with just the right echo. The only difference is, whatever he says is in another language.

More use of subtitles would certainly cut down on your work...

There aren't many films with subtitles that I've enjoyed. Your eyes dwell on the subtitles and you miss a lot of what's in the visual.

Well, at least you're hearing the true voices.

Yes, but if the foreign version is done well, then the difference should be minimal. I supervised the Hindi version of *Gladiator*, and the casting director had done a fantastic job choosing the voices. I mean, the guy who did Ollie Reed's voice really did sound like he smoked 50 cigarettes a day — It matched exactly, and it was like Ollie Reed speaking Hindi. It was really, really good. There again, for Russell Crowe's character, the actor had that same dark brown kind of voice, and it was a joy to watch.

While the studios want to ensure standardisation of the mix, they obviously don't have the time or resources to take care of all this post work...

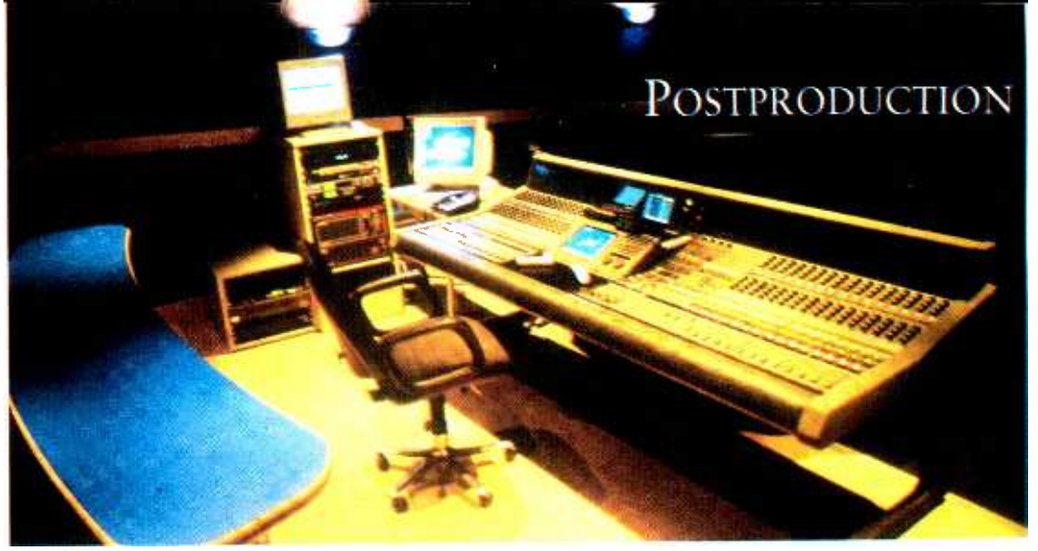
Oh God, no. I mean, *Gladiator* went out in at least 22 different languages, and that's an enormous amount of work. I think *The Grinch* went out in 30 languages. It's big business, and it would just clog up the studios.

While you did the Indian language versions of Gladiator, *who took care of the others?*

They were all spread among the various studios.

But wasn't that defeating the original objective of having a central place to do the mix?

Well, all of the studios are pretty close together.



They're nearly all based in Soho—they're certainly all based in London—and we all work in a pretty similar way. If, for instance, you've got a postproduction supervisor coming from a firm like UIP—which is handling a Nickleodeon film like *Rugrats*—then he will be able to go around from studio to studio. After all, if you did it all in one studio you'd be doing it for weeks. It's almost a week per film, and if you have, say, 20 different languages, it would take too long to get them all done. You know, who would you put last? These things tend to get released in America first, then in the UK, then in Europe, then in Eastern Europe, and so on, but not over the course of 20 weeks.

So from the film companies' perspective, what they are interested in is not so much everything being done on identical gear and by the same people, but that there is a standard level of facility and ability.

Yes, and we're all mates anyway. We all know one another, and I think the technical standards are similar.

What are the specific problems and solutions of different language versioning? Do different languages present different problems?

Yes, they do. Some languages are quite similar to English, but others are quite different and they will take much longer to say, "Yes, he's over there." They'll jabber on for hours.

Hasn't care been taken during the translation and recording processes to match mouth movements?

Yes, but obviously not all actors are in shot all of the time, so you can often start a sentence when you're looking at the back of someone's head, and then cut 'round to his face and end the sentence when his mouth stops moving. There are lots of little tricks like that which you can use to make it work; you can sync it up at the front or at the end, and you can put a little cut where someone takes a breath

But where the language is more elaborate, isn't that taken into consideration during the recording?

Yes, they do try, and often they do have a slightly different slant on the story. I mean, Japanese can certainly take a long time to say the equivalent thing...

Does lip syncing almost go out of the window at that point?

No, we try not to. Our main consideration is always to give the cinema-goer the impression that it's been done in their language.

Do you speed up the dialogue to fit it in?

Well, occasionally I have done this, but not by a lot. Obviously, you don't want people talking like lunatics. You've got to be able to listen to it. When we do the Do by we have a native speaker present, and this person can point out if we've cut a syllable or something.

How do you set up the desk? Is there a general approach for this type of work?

Yes. The M&E generally comes in on a DA-88—or sometimes on an Akai MO—and the voices come in the same way, and what we usually do is put them into the AudioFile so that we can manipulate them. It's so quick—If you think, "I wonder if that'll look better a frame later," you can do it in a trice. So I usually set up the desk where one stem will be the final mix. I'll also usually have the print master up in the AudioFile, because while we do run the film when we're mastering it to the Dolby, what we do is lift the film up onto a VMOD. This saves a lot of time beating up and down the film; you can go back 15 seconds in half a second.

So, we run that, and we also have the English print master sound in the AudioFile, which I send to another set of tracks, and then I'll send the dialogue—with reverb and anything else that we've added—to yet another set of tracks. This means that you can then record a clean set of dialogues. You're obviously recording a final mix, but also the idea is that I can switch between the stems on the desk very quickly—it's just a little matrix of buttons—and I can compare what was done in English to the way we've got it. You know, "Was his voice really that loud there?" or "Did it have that amount of echo on it?" You can just switch quickly between them.

Obviously we run the film in English before we do anything else—we sit and watch it and take notes, and so on—but you can't always remember every syllable. So, it's nice to switch the stem that you're monitoring.

Being that the delivery medium is nearly always a DA-88, we will lay off onto a 6-track for the SR digital. Another DA-88 will have the clean dialogues, and then usually on Tracks 7 and 8 they will have both the LT/RT mix, which is the 6-track mix folded down through the DS4E, giving you left total and right total; effectively Dolby Pro Logic. That is used to make the stereo variable area track—the optical track—which is on every single film as well as the Dolby digital. The idea here is that if the Dolby digital gives out, then the CP65 monitoring device in the cinema will automatically switch over to the SR sound—the optical sound—and hopefully most of the audience won't notice any difference. It'll be 4-track as opposed to 6-track, but at least it won't go completely silent, and then if the digits sort themselves out it'll come back on. To be honest, it is pretty good—The digi's are pretty reliable.

What do you use for monitoring?

JBLs in a cinema setup; eight surround speakers because of the EX, left-centre-right, and a massive great sub. The subs have got about 1 kW pumping into them because of the size of the rooms... You know, the rooms are 5.1, but they are Dolby stereo surround EX, so there are left-centre-rights, and then the surround is stereo—left surround and right surround—and that goes into the EX decoder, which produces four channels; left-back and left-surround, and right-back and right-surround. The decoder works in various different modes depending on what's on the surround signal. I mean, if there's a mono signal—in other words, if it's completely in phase—then it will activate the two rear speakers and come out from directly behind you, but if it's a stereo signal and there's lots of phase inconsistency, it will come out of the two surround speakers at either side of you. It's a good system. It works well, and it's a good way of basically getting eight channels out of 5.1.

According to the different foreign language versions, do you treat the various components differently?

Well, whatever the M&E is supplied as, that's just carried on. It goes straight through. Obviously the dialogues aren't often panned around, and so it's rare that they'll go to the rear, although funnily enough they do in *Rugrats in Paris*. There is a shout where Chucky runs towards the camera, and starts in the centre speaker and ends up in the rears. However, usually they're just in the centre speaker.

While you're invariably trying to duplicate the original, do you ever listen to the original and think, 'I don't really like what they've done'?

Oh yes. Quite often. I quite often sit there and think, 'Ooh, I wouldn't have done that.' But that doesn't mean to say that we don't do it. We still emulate what's on the print master. □

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LIVE AND DIRECT

London dance radio station CN Soho Live is off the air but reaching a world-wide audience. **Simon Trask** tunes in to the wired alternative

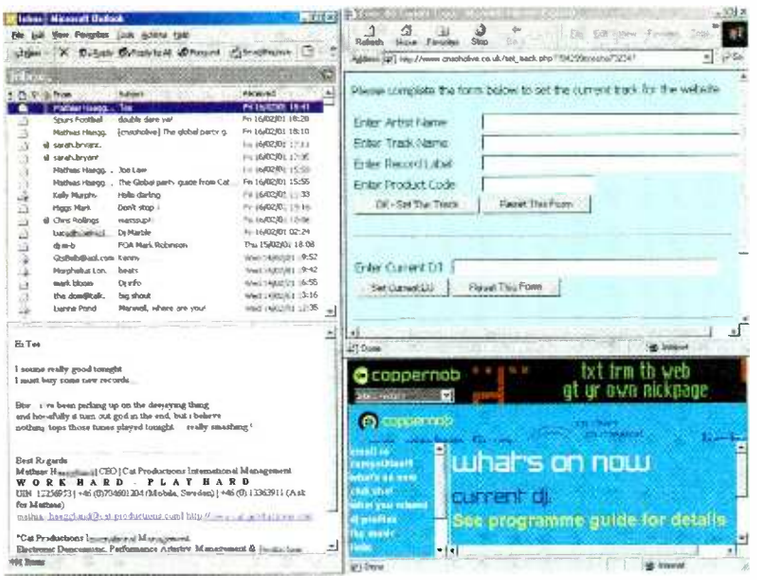
LONDON-BASED DANCE MUSIC radio traditionally means Kiss FM or any number of pirate radio stations. CN Soho Live is a London-based station that plays club and underground dance music 24–7 and isn't licensed to broadcast over the airwaves—yet when it sends out its signal it's not breaking the law. But then you won't find CN Soho Live anywhere on a radio dial. Type the address www.cnsoholive.co.uk into your web browser and you'll have tracked it down. Yes, it's an Internet radio station—or, more accurately, an Internet-only radio station, at least at the moment.

CN Soho Live is owned by marketing and communications company Coppernob.com, which was launched last October by Coppernob Clothing founder Gifi Fields. Coppernob.com provides online portals aimed at a young, club-going crowd. Among these portals are news and events guide Clubbed.com, Coppernob Special Events for latest artist news, reviews and videos as well as live webcasts, and CN Soho Live, which is the first of a number of Internet radio stations planned by the company under the aegis of Coppernob Radio Ltd. Coppernob.com also offers a range of IT, Internet and telecoms services through its Coppernob Business Services arm. Among these, it operates a Virtual ISP, Coppernob Connection, and provides web hosting services, both in conjunction with telco affiliate Cable & Wireless, and also provides an audio and video digitising service.

CN Soho Live, with its emphasis on club and underground DJs spinning mix sets live in the studio, fits well into the content and portal side of Coppernob's business. The station began webcasting last October but Coppernob Radio's programming director, Mark Robinson, says that planning and organisation has been ongoing for the past 18 months.

For anyone who thinks that Internet-only radio stations are all run on shoestring budgets, it's worth pointing out that Robinson projects a yearly all-in running cost of £350,000–£400,000 for CN Soho Live. And although it's currently an Internet-only station, negotiations are under way with Sky to transmit the station out over Sky Digital, opening up a listenership base of 5m subscribers and growing. With Sky Digital satellite uplinking and transmission cost factored in, Robinson puts the yearly running costs of CN Soho Live at around £500,000.

The station gets its revenue from advertising, both web site banner ads and the more traditional radio spots (currently there's one ad break an hour, soon to be increased to one every half hour), so the audience reach of Sky will allow it to increase that revenue. Cable & Wireless, which actually webcasts the station's audio stream over the Internet from its Internet Solutions Centre facility in Swindon, has



apparently yet to deliver any Internet streaming stats. One listenership indicator that is available, however, is the current upper limit on simultaneous streams, which is set at 8000 (though this limit could easily be raised if necessary, says Robinson). As for hits on the station's web site, between October 13th and December 31st there were over 1,330,000 hits from around the world, while at February 26th the number had grown to 1,850,000 (figures measured by WebTrends).

'Currently our site hits are going up 6%–10% every week,' Robinson reveals. 'That's obviously feedback from the links that we're putting up, and word's spreading. We add roughly a hundred links a week at like-minded sites. Clubs, communities, record labels, fashion, e-magazines, record shops. Either they have an 'add a link' facility or I'll email them and get them to do it. We give out a link that launches the player, so people can listen directly from the sites that they're surfing. We've done that with at least 300 web sites.'

The CN Soho Live web site, which is hosted by C&W at its Swindon facility, has a link for listeners to provide email feedback to the studio. Robinson says that they regularly receive emails from listeners in the US, Australia, New Zealand, Japan, the Far East, both East and West Europe, and South Africa 'to name a few places'. Other features of the site include programme schedules, a chat facility, track listings from previous programmes, the track currently being played, an online ordering facility which uses Pinnacle Distribution for (mail) order fulfilment, and a video feed from a Canon webcam located in the DJ studio. During the DJs' shows, which tend to get rather lively and party-like in the studio, this last feature delivers images at a modest three frames per second from the studio to the web site. The images are delivered (in Motion JPEG format) to a window in the user's web browser using Java Applets (though currently not for Mac users). More ambitiously, visitors to the site can take it in turns to remotely control the pan, tilt and zoom on the webcam for two minutes.

Operating out of studios formerly owned by the BBC, and now leased by Coppernob from Merlin Communications, the company was formed in 1997 from the privatisation of the BBC's transmission network. Merlin operates the shortwave transmission network which delivers the BBC's World Service around the globe. A direct X.21 link between the studios and Bush House, the home of the World Service, still exists and is maintained and operated by Merlin as part of the lease. CN Soho Live currently uses it as one option for bringing live webcast feeds from clubs into the studio, and plans to use it as the first link stage for transmitting over Sky. At the same time it has two ISDN2e (128kbps) links to C&W's Swindon facility. One of these is a point-to-point connection for delivering the encoded audio stream to Cable & Wireless for Internet webcasting, and the other is a dialup connection which is used either to deliver the aforementioned live webcam pictures from the studio to the web site or to provide an alternative to the X.21 link for delivering live webcast feeds into the studio from clubs. Currently CN Soho Live's own Internet access is via a regular 56k analogue dial-up connection to Coppernob's Virtual ISP. This ISDN/dial-up arrangement, which the station's head producer and technical coordinator Chris Rollings aptly describes as 'a bit kind of higgledy-piggledy', was a temporary fix which has become somewhat longer thanks to the inaction of BT, which was originally supposed to lay in a 2Mbps leased line to the studios last October, to provide a direct link to Swindon.

'BT in their wisdom brought it in to the ground floor and then just kind of left it,' says Robinson ruefully. 'Since then we've been trying to get hold of them to come back in and actually bring it down here. Once the pipe is installed we'll still keep the ISDNs for backup, and if we've got a live event it can come in through one of the ISDNs and then go back out through the pipe, which will carry the audio signal and the webcam [to Swindon] as well as supply us with an Internet connection.'

Having looked at all the options for audio streaming, Coppernob chose to go with Windows Media. One significant reason was that, unlike Real Networks, Microsoft doesn't charge per stream, and so costs are much more favourable. Comments Robinson: "We chose Windows Media (a) to keep the cost down, (b) because almost every single PC in the world has got it, and (c) because it supports the Mac as well as Windows—although it's debatable as

Equipment list

Studios 1 and 2 (same equipment in both except where indicated):

1 x Sonifex Sovereign 15-channel broadcast mixer (Studio 1)
1 x Sonifex Sovereign 16-channel broadcast mixer (Studio 2)
3 x Technics SL1210 Mk 2 turntables
1 x Pioneer DJM600 DJ mixer
1 x Pioneer EFX 500 effects unit
1 x Pioneer CDJ500 Mk II CD player
2 x Denon DN C630 CD players
2 x Denon 990-R MiniDisc players
1 x Pioneer CT205 R twin cassette deck
1 x Tascam DA-20 Mk 2 DAT recorder-player
1 x Sonifex HY-02 telephone hybrid modules
1 x Cambridge Audio A1 Mk 3 amp
2 x Absolute 2 Spirit Monitor loudspeakers
1 x Audio-Technica AT4033a microphone
4 x ATM31a microphone (Studio 1)
2 X ATM31a microphone (Studio 2)
1 x Audio Technica AT Mx351 microphone submixer (Studio 1)
1 x Pentium II 400 Windows PC fitted with an Antex LX-24M soundcard and hosting BSI WaveStation and Syntrillium Cool Edit Pro software

Central Technical Area (CTA)

1 x Pentium II 400 Windows PC fitted with an Antex LX-24M soundcard and hosting BSI WaveStation software, with additional SCSI hard drives storing MP3 files of 58 minutes' duration and standard .WAV files of trailers and commercials
1 x Pentium II 350 Windows PC, time-syncing with Rugby using Sonifex Mentor clock synchronisation PC card and software
1 x 3com 16-port 10/100Mbps Ethernet LAN hub
1 x Inovonics Model 250 AM-FM Broadcast Processor
1 x Sonifex Station Master centralised line-routeing audio control unit
1 x KW Electronics DSP127 Digital Audio Codec connected to X.21 link to Bush House
3 x JVC video recorders for 8-hour play 'logging' of output
2 x Compaq ProLiant audio streaming servers (one hot standby) streaming Windows Media audio
2 x BT ISDN2e terminal adaptors

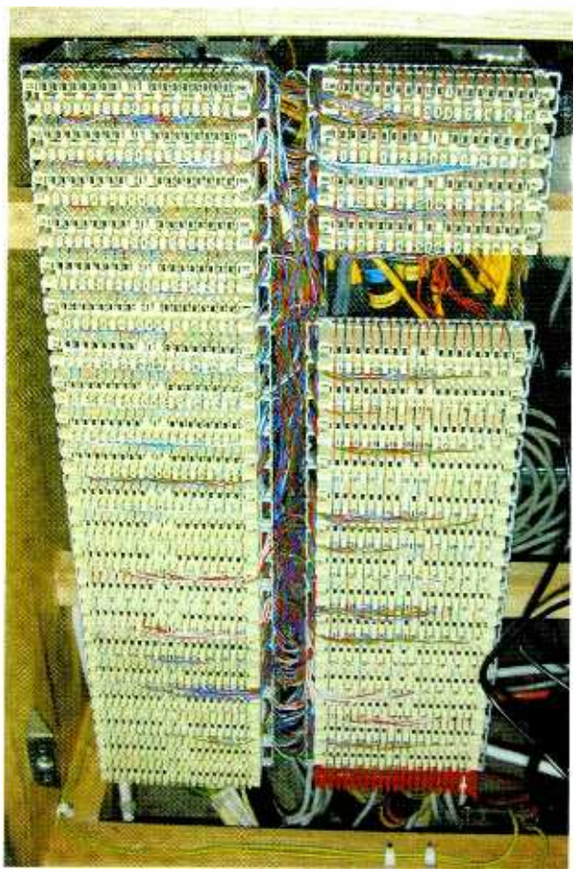
Equipment Web Links:

Antex LX-24M:
http://www.antex.com/products/broadcast/lx-24m.html and
http://www.broadcast.co.uk/antex_lx-24.htm
BSI WaveStation:
http://www.bsiusa.com/software/wavestat/wavestat.htm and
http://www.broadcast.co.uk/wavestation.htm
Compaq ProLiant:
http://www5.compaq.com/products/servers/platforms/
KW Electronics DSP127:
http://www.kw-electronics.co.uk/dsp127.htm
Inovonics 250:
http://www.inovon.com/products/inov250p.htm
Sonifex HY-02:
http://www.sonifex.co.uk/tbu/page.shtml
Sonifex Mentor:
http://www.sonifex.co.uk/mentor/content.shtml
Sonifex Sovereign:
http://www.sonifex.co.uk/mixers/sovereign/content.shtml
Syntrillium Cool Edit Pro:
http://www.syntrillium.com/cep/ and
http://www.broadcast.co.uk/cep12.htm

to how good the Mac support is. To better cater for Mac users the station is planning to launch a QuickTime stream as well.

Currently, CN Soho Live streams at 22kbps. When the station launched, it chose to go with 33kbps, but found that users were experiencing stream buffering all the time on analogue dialup connections. 'We tried dropping down to 20, but the quality was really bad so we upped it to 22 and the quality was acceptable, so it's a happy medium,' says Robinson.

Adds Rollings: 'One of the things we would like to do, and are looking at doing, is supporting probably three levels of connection: a broadband connection, a mid-range, ISDN-type connection, and a Mickey Mouse connection. Giving people the option to click on whichever one they think they can connect to.'



CN Soho Live's basement space basically consists of two studios, a central technical area housing signal processing and I-O equipment, and some office space. In addition to Robinson and Rollings, the station employs several producers. 'Some of them are freelance, some of them are on staff,' says Rollings. 'The idea is that we've always got someone here who's here on behalf of the station, who understands both technically what should be going on, so if there is a breakdown we can then deal with that, and also administratively what should be going on.'

The producers' responsibility, then, is to look after the DJs (who are, as Robinson puts it, 'generally crazy party animals'), record any jingles and ads that are needed, and make sure that all the relevant paperwork is done, such as PRS, MCPS and PPL returns. The station even has its own compliance officer, who comes in one day a week. CN Soho Live has done deals with all the majors except BMG, and currently has a database of over 300,000 tracks. Robinson estimates that when work on the database is finished it will contain over 1½-million tracks. Rather than buy in a standard database, Coppernob is putting together its own, containing not only all the relevant track details and 30s samples but also complete tracks. 'We're talking about having a server capacity of something like four terabytes,' says James Henderson, Coppernob's Business Development Manager. 'We've been working on the database since March of last year. There are two or three reasons for having it. One is to run the other genre stations we have planned, which will be automated. When a track's playing, the database will bring up composer details and publishing details and whatever, which obviously gives us the PPL and PRS and all that information, so that's done. Plus that information will get used on the web site for e-commerce, so if you hear a track and you want to go and check out the CD you'll get album art, details of the album, and 30s samples of the tracks. We've had discussions with people about selling individual tracks for digital download so that people can make their own CDs, because right now people don't want to download a whole CD in one go, but at the moment we have no plans for digital download sales.'

CN Soho Live generally broadcasts from London clubs, such as Garage City at Bar Rumba, but will be venturing further afield to a weekender event at Caister, and further still to the Miami dance music conference.

As mentioned earlier, CN Soho Live has two possible routes into the studio when it's webcasting live from a club night. This also affords them two possible ways of capturing the audio at the club. One is to use a CDQPrima 'black box' ISDN audio codec to deliver an ISDN2 point-to-point audio feed to a Telos box which is reserved for their use at Bush House. The signal is then brought up to audio level out of the Telos, then patched across to an apt-X 100 codec, and delivered over the dedicated X.21 link to the studio, where a KW Electronics DSP 127 apt-X 100 codec box returns the signal to line-level audio, which is then fed into the studio so that ads and jingles can be dropped into the stream. The resulting signal is then delivered to a Compaq ProLiant server for real-time Windows Media encoding and delivery out over the point-to-point 128k ISDN2e circuit to Swindon, where it's finally webcast out over the Internet by Cable & Wireless. This will be the preferred method for the Miami webcasts, as it'll be more reliable than a transatlantic Internet connection. The alternative way of capturing and delivering the audio stream is for CN Soho Live to take along a PC to the club and dial in over 128k ISDN to an IP address at Swindon, then capture, encode and stream the audio live in Windows Media format to that address, which is dialled into and polled over 128k ISDN by the studio. The signal is then decoded and returned to

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FIRST WE LISTEN

line-level in the studio, after which it follows the same path as described for the other method. Henderson tells a good war story about getting an ISDN connection in and working at the Camden Palace for their first live webcast, when they finally got both ISDN channels up and running just two minutes before they were due to go live. However, according to Rollings it's now becoming more common for clubs to have ISDN ready-installed to the DJ booth, as it's understood to be the standard for sending audio out from events.

CN Soho Live's two studios house virtually the same equipment. Studio 1, however, is used for production work, while the larger Studio 2 is where the DJs do their shows. The three-sided layout in Studio 2 has the DJ setup of three Technics SL1200 decks and a Pioneer DJ mixer and effects unit to the right of the DJ, the Sonifex Sovereign broadcast mixer centre front, and to the left the PC running Broadcast Software International's Wavestation on-air digital audio automation software and Outlook Express email software, plus a rack of CD, MD and cassette players for music brought in on these formats. Vinyl is of course the primary format, but some of the DJs also create their own tracks and bring them in to play on their shows as exclusives. As the DJs play records, they type the track details into a web form on the computer for the 'currently playing' feature on the web site, and of course can also check the incoming emails from listeners. All audio outputs are routed into the Sovereign, and from there a stereo signal is sent across to the CTA (Central Technical Area) equipment room and an Inovonics Model 250 AM-FM Broadcast Processor, where some compression is applied, as Rollings puts it, 'to deal with the fact that the DJs have basically got no concept of levels when applied to radio'. However, this is the only processing applied to the audio before it's encoded into Windows Media format and sent down to Swindon over the ISDN link.

Rollings is a veteran radio man whose resume includes stints at Talk Radio and Virgin Radio, and who for a time back in the seventies and eighties worked shipside on original pirate Radio Caroline ('Some of the best days of my life!'). Today he laments the state of commercial radio in the UK, with its automated playlists and 'professional voiceover artists' replacing personality and individuality, and feels that there's a backlash underway.

'I think people generally speaking will be looking for alternative ways of finding something that has a more grassroots-y feel to it. If something feels like it's original and genuine, and not part of some corporate, well-managed kind of machine that just sits there, I think people will start moving towards it. And as the Internet becomes freer and freer, and cheaper, then people will find their entertainment or their stimulation from it, rather than from what the big major groups have to offer. And that is one of the major problems I see, the fact that you've got EMAP, you've got the Capital Group, and you've got GWR owning the 200 radio stations that we have across the whole country. So there's no freedom of individuality, no freedom of new entrants or anything like that. So the entrants will go down different routes, such as using the Internet, such as using Sky Digital.' □

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THE NEW FRONTIER

Managing audio bandwidth for Internet broadcast is as essential as it is misunderstood. Aphex' **Marvin Caesar** discusses dynamics processing for streaming audio

THE RIGHT TYPE and amount of dynamics processing can greatly improve the performance of almost every audio system, especially transmission systems. Given the unique challenges of getting audio through the Internet, dynamic processing is absolutely essential. People should drop (at least for the foreseeable future) the fantasy about getting high-fidelity through the Internet. The goal is to get as good as possible.

Here are my recommendations; long-winded explanations to follow for those who care: Make sure the source material is as clean as possible. Roll off as many lows (at least below 50Hz) and highs (at least above 15kHz) as is tolerable. Use a combination of wide or split-band levelling and compression to maintain a more consistent average level but without making the audio sounding 'compressed'. Use a peak limiter so that the level can be brought up to the highest possible resolution, but the maximum peak into the encoder should not exceed -6dBfs.

The weakest link of the streaming audio chain is its relatively low transmission rate—sometimes less than 56k. One channel of 44.1kHz, 16-bit audio stream itself requires over 700kHz (that is without any preamble, user bits and so on). Obviously the audio must be heavily bit-rate reduced (compressed). The various compression schemes, MP3 being the most well known, discard those audio signals that are masked by louder signals. How much must be discarded is determined by how severe the compression ratio is. The narrower the transmission path, the higher the compression ratio (more that is discarded). The higher the ratio, therefore, the greater the effect on the audio.

In order to minimise the amount of work the bit-rate reduction processor must perform, it is best to feed it audio that is bandwidth limited, low noise, high resolution, and limited dynamic range. If the encoding system does not have to deal with very low or very high frequencies it can better use its resources in the pass band. In addition, reducing the bandwidth will allow the following dynamics processor(s) to work better.

Similarly, high noise levels can also use up resources. And when the signal is converted at the highest possible resolution it is further away from the system noise (normalising does not reduce noise). Properly limited dynamic range assures that the highest level signal will not be distorted and the lowest level signal will be well above the noise floor.

In order to properly discuss dynamics processing further it is important to agree on definitions for the various processes. Levelling has a high compression ratio with slow time constants (attack and release). Compression has a low compression ratio (usually less than 3:1, but often defined as less than 8:1) with faster time constants. Limiting has a high compression ratio (greater than 8:1) with very fast time constants. Clipping has an infinite compression ratio with instantaneous attack and release.

The higher the compression ratio and the faster the time constants the greater the effect on the audio quality. This is where the issue of threshold comes in. The lower the threshold, the more the signal will be over threshold and into processing. Since clipping and limiting have both high ratio and fast time constants, these processes should be used only for protection and the thresholds should be set high. Levelling has slow time constants and compression has low ratios, thus having less effect on the audio so the thresholds

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can be set lower. Understanding these processes allows the user to pick the appropriate process for the job.

There is some controversy regarding the relative merits of analogue versus digital dynamics processing. Based on our own listening tests and the opinions of people we respect, analogue processing is much more natural sounding as well as more effective. We have an obvious bias, so people should do their own listening.

An argument against digital dynamics processing other than its sonic performance is that it can introduce artefacts (sometimes referred to as 'grunge') into the pass band. Dynamics processing is, by definition, amplitude modulation. When the processing generates frequencies above the Nyquist frequency the result is aliasing distortion. In his paper *A Worst Case Analysis for Analog-Quality (Alias-free) Digital Dynamics Processing*, (Journal of the AES, November 1999, Volume 47, No. 11) Dan Mapes-Riordan establishes that in order to match the performance of an analogue clipper a digital processor must have an internal sampling rate of 5MHz! The issue here is that any additional noise, in this case generated by the digital dynamics processor itself, will consume encoding resources.

Analogue or digital, the dynamics processing should create a consistent average level and an absolute maximum peak level without sounding overly processed. The processing should be set up so that the leveller-compressor is giving about 6dB-10dB of total gain reduction with an input of 0Vu. If there is no leveller, the compressor should be set for no more than 3:1 ratio with fairly slow attack and release times. If there is no peak limiter following the compressor, the ratio should be increased and the attack time shortened. That, however, will have a much greater effect on the audio quality.

A compressor-limiter will not perform as well in this situation because these devices typically have an increasing ratio as input increases. This means that an input that is higher in level will sound different (more compressed) than lower level input signals. The output of the leveller-compressor or compressor should then be fed into a peak limiter set so that it is not doing more than 6dB of limiting.

One of the most common mistakes I have seen is the use of a limiter to bring low level signals up—do not make this mistake, your audio will definitely sound processed. Furthermore, an audio signal that has extremely limited dynamic range will increase the probability that the encoding system will discard audible signals because there won't be enough differential between high level and low level signals. One of the advantages of a high-quality leveller-compressor before a peak limiter is that it ensures that the peak limiter will never have to do too much work.

The output of the limiter should be set so that the maximum input to the encoder is -6dBfs. Resolution is diminished by 1-bit, but there is a reason for the extra headroom.

One of the artefacts introduced by bit-rate reduction is overshoot, that is to say a signal can have a higher amplitude coming out of the encoding system than going in. The overshoot can be caused by phase distortion and the Gibbs effect. When a signal is phase distorted the peak levels are no longer the same. The filtering that takes place in the encoding system causes the phase distortion. When the harmonics of a square wave are filtered out the result is a sine wave, but with a 3dB higher peak level. This is called the Gibbs effect and most people do not have a clue that it exists. But if you do not allow for it, your clean audio can be distorted through the encoding system.

Understanding the effects of both bit-rate reduction and dynamics processing will allow you to maintain as much audio quality as possible. The techniques suggested here are just a starting point and I strongly suggest that you play with different devices and settings. □

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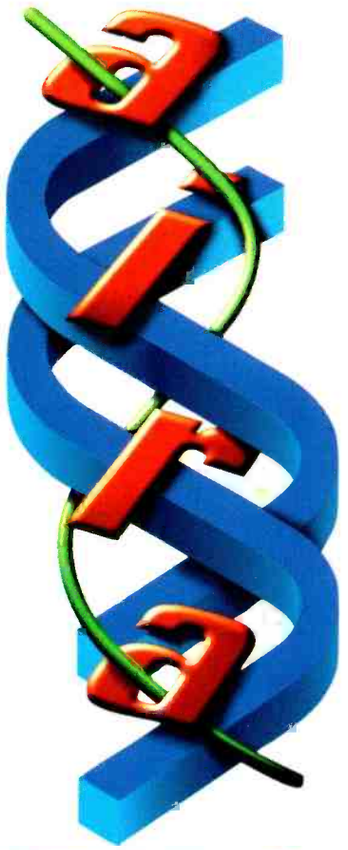
EXPOTUS

2001 SSAIRAs VOTING

Here are the nominations for this year's *Studio Sound* Audio Industry recognition awards which means it's time for you, the reader, to start voting...



NOMINATE!

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Nominations:

1 Large scale console
Calrec Alpha 100
Soundtracs DS-M
Studer D950 M2
AMS Neve 88R

2 Medium to small scale console
Sony DMX-R100
Amek Media 5.1
Soundcraft RM1D

3 Outboard dynamics
Drawmer Mercenary 1969
Focusrite Platinum
Mixmaster
Universal Audio UA1176
TL Audio Fat-1
Ridge Farm Boiler
tc Electronic Triple-C
Universal Audio LA-2A
API 2500
Empirical Labs Fatso Jnr

4 Outboard preamp
dbx 386
Avalon AD2022
Presonus Digimax

5 Outboard equaliser
Millennia Media
Origin STT-1
Klark Teknik DN4000
Focusrite ISA110LE
Fairman TMEQ
Amek Channel-in-a-Box

6 Outboard Reverb
Lexicon 960L
Sony DRE-S777
tc System 6000

7 Combined outboard device
Sintefex Replicator
tc Electronic M-One
Millennia Media
Origin STT-1
Roland VP9000
Amek Channel-in-a-Box
Lexicon MXP500
dbx 376
Eventide DSP7000
Presonus VXP

8 Monitor
Genelec S30D
KRK V8
Blueroom Minipod
DAS Monitor 6
JBL LSR25P
Fostex NF1-A
PMC TB2S
Klein & Hummel 0198
ATC T16

9 Microphone
Microtech Gefell M930
Neumann KMS105
Lectrosonics 110-series
AKG C2000B
Sennheiser MKH800
Audio Technica AT895
Beyerdynamic Opus
Rode NT3
AKG 4500B-BC
Shure KSM44
Rode Classic II

10 Audio editor
Sonic Foundry Vegas Video
Steinberg Nuendo
Emagic Logic Audio
Platinum 4.5
Digidesign Pro Tools 5.1
Yamaha D24
Alesis Masterlink
Tascam MX2424
Fostex D2424

11 Audio recorder
Tascam DA-78HR
Yamaha CDR1000
Tascam CD-RW700
Marantz CDR500
Tascam DA-98HR
Tascam CD-RW2000
HHB BurnIT
Sony MDS-E12
Marantz CDR631

12 Location-portable equipment
Cooper Sound CS104
HHB Portadisc
Wendt X2

13 Plug-in
Sounds Logical WaveWarp
Kind of Loud RealVerb 5.1
TC Works Voice Tools

14 Special category
Digital Audio Denmark
ADDA 2402
Rosendahl Nanosyncs
C-Lab TimeMachine
Microboards StartREC
CEDAR DNS1000
Line 6 POD Pro
Drawmer Masterflow
DC2496
Dolby DM100
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Voting Form

READER ID NUMBER:

1. Large scale console	8. Monitor
2. Medium-small console	9. Microphone
3. Outboard dynamics	10. Audio editor
4. Outboard preamp	11. Audio recorder
5. Outboard equaliser	12 Location-portable
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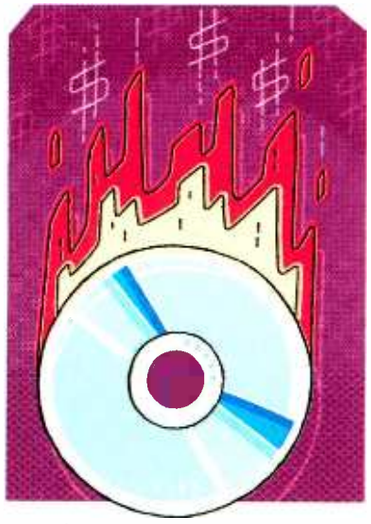
The protection racket

The vexed issue of copyright protection has had everyone clamouring for justice. But when you get what you want you don't want it, writes **Barry Fox**

LEONARDO CHIARIGLIONE is giving up the job of heading the Secure Digital Music Initiative. Although few people object to the idea of watermarking MP3 on the Internet, Chiariglione was clearly distressed by the bad publicity the SDMI got after inviting hackers to try and defeat its pet systems. The SDMI is still ducking and diving on what the hackers achieved and this has heightened suspicion that none of the systems work reliably. Audibility of marking high-quality music remains a contentious issue. Chiariglione's departure has created an information vacuum.

Philips and Sony are selling SACD with the promise that there will be no analogue watermarking. DVD-Audio is turning out to be the damp squib most of us expected—players cost $1000, there is a handful of DVD-A discs and DVD-Video can deliver everything



that most people want, with or without pictures, with or without surround, and with coding up to 24 bits and 96kHz. Verance is charging hefty royalties for protecting music. The record companies will not pay to mark music software with a system in contention.

This is what makes a recent and rather dull announcement from Macrovision so interesting: 'Macrovision Corporation announced today that its SafeAudio Toolkit for CD-audio copy-protection has completed an initial beta test with a major record label. This test was conducted by the customer in advance of initiating a round of internal testing for the beta version of the SafeAudio technology itself.

'SafeAudio is a secure audio copy-protection process that was jointly developed by Macrovision and TTR Technologies. It is applied during the mastering process at CD manufacturing facilities and is designed to prevent unauthorised copying of music CDs.

'We believe that SafeAudio provides an opportunity for the music industry to regain the billions of dollars lost to unauthorised casual copying. We are eager to start our beta trials and to get the technology into the hands of the music labels for evaluations.'

SafeAudio grew out of a system called AudioLock that was developed by British company CDilla, before Macrovision bought it out. News of AudioLock caused an outcry because it stopped a music CD playing on a PC-ROM drive, and thus prevented PC burning. As many people pointed out, they legitimately play original CDs on their PCs while working, without any intention of copying. Macrovision then modified the idea, to let an original music CD play on any CD drive, consumer or PC, but extra subcode data disabled the digital outputs.

A spokesman for Macrovision assures that in its current form SafeAudio allows playback of CDs on all existing players and ROM drives but a recorder, either tabletop or PC burner, refuses to make a copy. It all sounds too good to be true.

Last year Macrovision ran its own tests in the UK and San Francisco Bay Area, releasing SafeDisc discs and checking for customer complaints. Modifications were made and Macrovision now feels confident there is a good balance between blocking copying but not interfering with playback of original CDs. One of the Big Five major record labels is now running its own tests and, if successful, there will be pilot production for consumer trials. Macrovision says it will then be up to the record companies to decide whether they want to risk upsetting customers by selling CDs which will not copy on existing CD recorders. 'We are just providing the technology,' says the UK MD David Simmons.

The UK is the ideal place to trial the system. Section 107 of Britain's Copyright, Designs and Patents Act of 1988 makes it a criminal offence to sell unauthorised music copies, with six-month jail penalties possible. Section 296 lets the copyright holder take civil action against anyone who sells a device to defeat copy protection or publishes DIY details. Section 70 permits time-shifting of radio and TV broadcasts for personal use, but does not allow home copying of music recordings. It is clearly impractical to sue individuals on what they do at home, so CD burning is a privilege by default not a legal right. SafeDisc would enforce UK law by stopping people doing what they have until now been able to do, but should not be doing. The British Phonographic Industry has always been opposed to home copying and has also funded research into spoiler systems which seek to stop home taping. But surprisingly the BPI was unaware of the Macrovision system. Spokeswoman Sarah Roberts refuses to say that the BPI welcomes the system even though it would achieve what the BPI has been wanting.

Macrovision is not the only company hoping to spoil things for home dubbers and present the BPI members with a commercial dilemma. Rakvere of the Isle of Man recently revealed details of a system which it claims can prevent dubbing onto analogue tape. The company's patent (GB 2 348 736) shows it to be an update of the old spoiler idea, first mooted by the Beatles' Apple Electronics. Apple used a high-pitched tone which was supposed to beat with the tape bias but the tone was audible or filtered out. The new system analyses the original sound and adds high-pitched tones at frequencies which are masked by the music, so that normal play is not affected. When a recording is made the tones mix with tape machine's bias signal. Mixing creates lower frequency tones that are heard when the recording is played. The spoiler tones can speak the Dalek message, 'This is an illegal recording'.

Navel manoeuvres

Adopting alternative philosophies to help make sense of today's audio industry may not be quite as absurd as it sounds, writes **Dan Daley**

OEDIPUS: WHO PAID for the wedding? You can't have everything—where would you put it? Existentialism has been creeping into my private discourses on the state of the music recording business lately; it was only a matter of time before it would begin to leak out around the edges of the more public forums. But existentialism, that cerebral parlour trick of the philosophical salon set, is proving useful in attempting to get a handle on what's going on here in the universe of technology. Certainly, the old approaches are increasingly less effective—when you get to the point of questioning the reality of your existence, a calculator with two AAA batteries seems a bit underpowered.

Cruising some of the chat rooms and newsgroups that many US pro-audio people subscribe to, this creeping existentialism manifests itself in much the same way Zelig in the Woody Allen film of the same name. Amidst the technical communications and postings seeking help on mic placement, plug-ins and A–D convertors, a running debate is emerging as to the viability of the professional recording studio as a business. It is, to use a human metaphor, the beginnings of conscious awareness of our own mortality. In people terms, this usually sets in around age six or seven, when we mourn our first dead sparrow or squashed squirrel, introducing us to the concept of an end that we spend the rest of our lives attempting to deny. But for most of us, along the way the morbid nature of the enquiries evolves into asking all sorts of other hypothetical questions about things that ultimately contribute to the increased quality of life of the entire species.

Working on the assumption that the music business is by nature part of an extended adolescence (an assumption that may seriously affect the number of free drinks I can cadge at the hotel bar during AES), it stands to reason that the notion of its demise has taken some time to get itself acknowledged. More to the point, I suppose, is how assertive the denial of the end has become. The Teac 8-track of the 1980s was more than a warning shot over the bow; they were the speedy little cruisers that buzzed and stung the battleships relentlessly, and they were immune to swatting, as LA studios found when they tried to organise a defence against them in 1989.

Products like the Alesis ADAT added fuel to the fire over the next decade. But it was the Internet, and its dual ability to enhance both piracy and onanistic music recording, that turned smouldering embers into a fiery maelstrom. Pirates pulling down music from all over, and either sending it on further down the www pipeline or turning it into discs-on-demand for illicit retail purposes, eroded the economic underpinnings of the record label business; and the elimination of shuttling ADAT tapes between garages, either via the sneaker-net or FedEx, by using the Net to host recording sessions, holds the potential to wreak similar havoc on conventional studios.

The reaction to all this has been a curiously and uniquely human combination of denial and fascination. When Internet-based recording topics are raised, they

often garner the same widened eye sockets that any cool new piece of gear elicits in techies. However, the thought that each new gee-gaw is sharp at both ends is rarely acknowledged. Most of the threads on these chat sites still concern themselves with the blithe mechanics of what the participants are doing right at this moment—which mic is best for this application, how do you get so-and-so plug-in to do such-and-such. When the notion of what they'll be doing five years from now comes up—which it still does rarely but more so than before—it usually takes the form of a diatribe against those who contend that the way things have been for the last 40-odd years is changing. In short, this is one navel few in the business seem to want to contemplate.

That's because, I think, no acceptable post-apocalyptic entertainment media business scenario has yet emerged. There is no clear flight plan into the future, which makes remaining in the present that much more desirable. It's situations such as these that graphically explain the emotional hold that organised religion has had on societies for thousands of years: when the next famine was as unpredictable as it was inexplicable, religion provided a sense of future and a rationale for believing in one. That kind of faith in the future, though, is harder to come by in a world and a profession that relies on reading the meters for reassurance. No one really knows how the decisions of the board of directors at AOL Time Warner will affect how entertainment will be created and managed in the future. All we do know is that, based on past experience, those decisions will be primarily predicated on pleasing shareholders, not audiophiles.

The future will emerge, and it will do so the same way that the present did, with new technologies and ways of doing things relentlessly assimilating themselves into the landscape of music production.

But hope is found every time a bird flies by. And I'm not talking about the blue sort over the Cliffs of Dover. What I mean is, birds are direct descendants of certain species of dinosaurs, reinvented, by the grace of Darwinism, to a changing environment. They're not as big as they used to be but they're still carnivores and they seem happy enough. The challenge of the business of recording music—and of all of the technical and creative disciplines involved in making entertainment media—will be in choosing the evolutionary paths that lead to the right futures. And there will be more than one future; the New Economy, despite a mass of dot-bombs over the last year, proves that business is not a zero-sum game. It's 2001. It's time to check in with the navel.

The road to download

As a source of music the Internet is here to stay. How we manage it is the real issue, writes **Kevin Hilton**

THE INTERNET IS DERIDED as a technology that is perfect for people with no friends. While some members of the perceived computer-generation may lack a few of the social graces (but are they any worse than radio anoraks, trainspotters or home studio owners?), the Internet opens up the world. For those who are pretty much tied to the house—people with young children or those with physical or sensory impairments—it means they can have hundreds of friends, all within easy reach.

It is this that has scared the modems off the record industry. Professional pirates are well-organised members of the criminal fraternity with a supporting infrastructure but it always seemed that the companies were more concerned about casual piracy, people recording their friend's albums onto cassettes or buying CDs, dubbing them and then returning them on some pretext. (I recently heard of someone who does this as a form of commercial terrorism and who says the shops only get annoyed after the seventh or eighth time.)

Causal piracy would be restricted to immediate, physical friends, so maybe albums were being copied only four or five times. Multiply this around the world and the total is a hefty one; but it is still nothing compared to the damage done by professional pirates and bootleggers, producing the kind of thing sold in markets and at car boot sales. However you slice it, it is still copyright theft and deprives artists and songwriters of their dues.

Record companies take up this argument on behalf of their talent but it is not overly cynical to conclude that the big labels are largely concerned for their own profits. Piracy has had the secondary effect of contributing to the conservatism of record companies, which put the real money into either established names or proven current trends (the boy band phenomena being the obvious example). New talent is coming through but only after a struggle.

That a European Commission is finally investigating the high price of CDs is welcome but the record companies continue to play the aggrieved party. Until recently they only had shadowy villains or faceless, irresponsible home tapers to vilify; but in 1999 their nemesis was given a name and an identity: Napster. Other Internet 'music-swap' companies followed but it was Napster, and its puppy-eyed creator Shawn Fanning, that the combines took exception to.

Last year the Big Five record companies—Warner, Sony, EMI, BMG and Universal—brought an injunction against Napster to prevent it distributing music for free. While the estimated 50 million users of the service probably saw themselves as either new age warriors against corporate domination or slacker swappers merely wanting to share their tastes and enthusiasms with others, Napster was clearly cutting into the royalties of artists.

In February a US appeals court upheld the injunction and while it did not order Napster to be closed down, by preventing the site from handling material it knows to be copyrighted it has effectively killed the service. Napster has already formed an alliance with German media group Bertelsmann, which owns BMG, to create a subscription distribution operation. This will provide for copyright payments but there are still doubts as to whether people will subscribe to download music.

Connection speeds and the availability of big names on the Net have made web music a niche interest. There are those who enjoy hunching over the computer screen looking for gems, downloading them and then burning off their own CDs. But they are a minority. John Axon, executive director of the Performing Rights Society, comments, 'While certain majors have started trials they haven't put their biggest acts on-line for security reasons. And there is still a massive investment in retail floor space, so there are still huge hurdles to overcome before music is widely available on-line.'

Paul Birch, MD of independent label group Revolver Music and a board member of both the BPI and PPL, does not see a market for on-line distribution at the moment. 'Questions really revolve around when the technology has developed enough,' he said. 'I'm not sure the economic model works well for the record business in its present form.'

It is significant that of the majors, only EMI commented on this issue—and that was an anodyne statement about wanting to distribute its catalogue to as many people as possible. Other companies, like Warner, are now tied in with ISPs and have to consult the US on what to say. No comment was forthcoming.

There is the further issue of the future of pre-packaged music. Paul Birch observes that a self-burned CD containing downloaded material does not have the same value as a professionally produced disc. In reality it is only a small step up from the home-made compilation tapes we made as kids, for which we designed our own inlay cards.

Downloaded music will become a part of the overall record industry machine but possibly only for promotional purposes. Copyright must be protected —that is key—but Napster embodies two important things that the majors appear happy to strangle: innovation and freedom. And that can't be good...

MOTION PORTRAYAL

Television and film pictures are supposed to move, yet in reality they do not. **John Watkinson** explains how accurate motion portrayal is essential to realism

THE WORD CINEMA is derived from the Greek word for motion. The terms 'motion pictures' and 'movies' are commonly used to describe what we see at the 'cinema', yet these are all inaccurate descriptions of the cinematic medium. Today's film, television and graphics systems do not present moving pictures at all. Instead they present a series of still pictures at a frequency known as the frame rate. This series of stills is converted—with more or less success—to an illusion of motion in the human visual system by a mechanism called fusion. The way that the HVS interprets periodically updated still pictures to obtain an illusion of motion has only been put on a scientific basis relatively recently. Most of today's image portrayal systems were designed empirically before this knowledge was available and it is hardly surprising that in the absence of a theory the results are often poor and guided by rules of thumb.

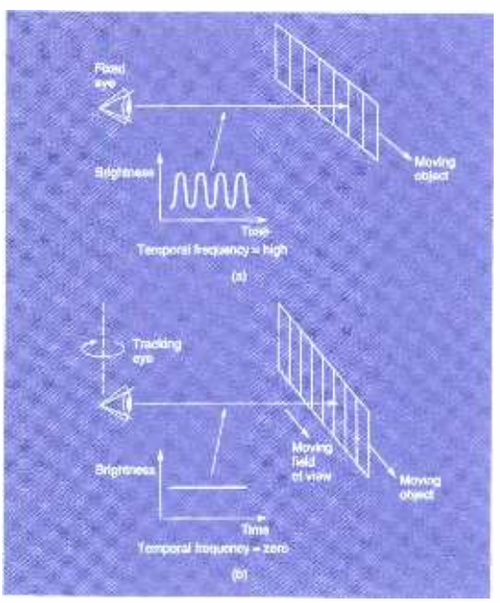


Fig.1: In (a) a detailed object moves past a fixed eye, causing temporal frequencies beyond the response of the eye. This is the cause of motion blur. In (b) the eye tracks the motion and the temporal frequency becomes zero. Motion blur cannot then occur

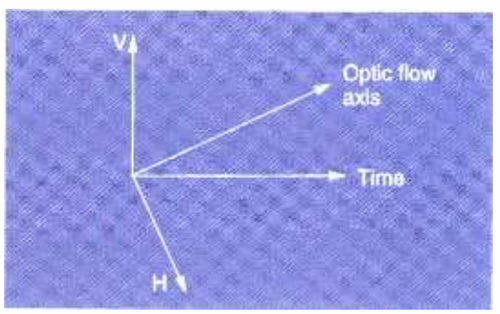


Fig.2: The conventional view of sampled moving images

In an earlier article it was shown how the eye operates slowly to improve resolution. If the eye were static, a detailed object moving past it would give rise to temporal frequencies, as Fig.1a shows. The temporal frequency is given by the detail in the object, in lines per millimetre, multiplied by the speed. A highly detailed object can reach high temporal frequencies even at slow speeds, yet the eye cannot respond to high temporal frequencies; a fixed eye cannot resolve detail in moving objects. The solution is that in practice the eye moves to follow objects of interest. Fig.1b shows that when the eye is following an object the image becomes stationary on the retina and the temporal frequencies are brought to zero. The greatest resolution is then possible.

This ability of the eye to follow motion has a great bearing on the way that discrete frames are perceived as a continuously-moving picture and affects the design of motion compensated equipment. The criterion for comparing moving image portrayal systems has to be the apparent resolution perceived by the viewer in an object moving within the limits of accurate eye tracking. The traditional metric of static resolution in film and television has to be abandoned as unrepresentative of the viewing experience and replaced with a more appropriate metric known as dynamic resolution.

The conventional view of sampled moving images is that shown in Fig.2 and having three axes: vertical, horizontal and temporal. These orthogonal axes would suggest that what happens in, for example, the time axis does not affect the image plane yet this is inadequate to explain the experience of the human viewer. It might be thought that the temporal sampling process could be returned to the continuous time domain by a temporal filter. In fact, temporal filters destroy image quality in the presence of motion and should be avoided. The only acceptable temporal filter in a moving image portrayal system is the persistence of vision of the eye. Although this is temporal with respect to the eye, the fact that the eye can track means that persistence of vision does not filter on the time axis of the display.

Fig.1b shows an eye tracking a real detailed moving object. The tracking process renders the object stationary with respect to the retina and so the eye can perceive detail. Fig.3 shows the eye tracking the same object, but this time on the screen of an image portrayal system. The camera and display are fixed. This results in high temporal frequencies being present in the imaging system.

Consider an example of a moving object containing moderate detail of 80 cycles per picture width. If the object moves at a speed of one picture width per second, the temporal frequency due to the object modulation moving past a given pixel in the fixed camera is 80Hz. In conventional systems, this temporal frequency is sampled at the frame rate, typically only 24, 25 or 30Hz. According to conventional sampling theory, this is a recipe for aliasing, whereas film and television are known to work reasonably well. One may be forgiven for wondering what is going on and the explanation is based on the fact that eye tracking has a dramatic effect.

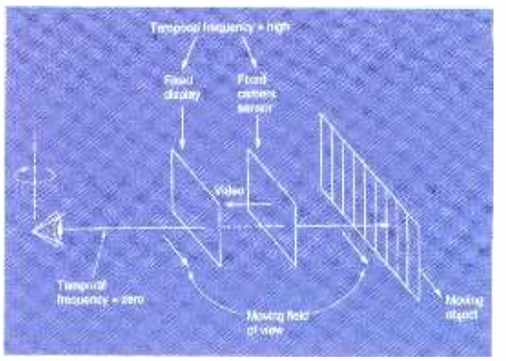


Fig.3: An object moves past a camera, and is tracked on a monitor by the eye. The high temporal frequencies cause aliasing in the TV signal, but these are not perceived by the tracking eye as this reduces the temporal frequency to zero

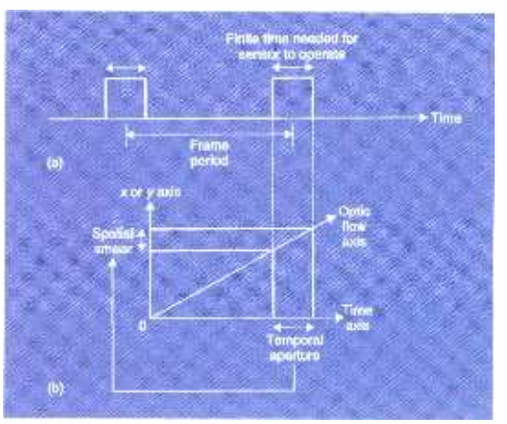


Fig.4: (a) Ideal sampling requires images to be sampled in an instant. This is impossible as all practical sensors require finite time to operate. This sampling time is a temporal aperture effect. As (b) shows, the temporal aperture reflects in the optic flow axis to cause image smear on the sensor

When the moving eye tracks an object on the screen, the viewer is watching with respect to the optic flow axis, not the time axis, and these are not parallel when there is motion. The optic flow axis is defined as an imaginary axis in the spatio-temporal volume which joins the same points on objects in successive frames. Clearly when many objects move independently there will be one optic flow axis for each, although the HVS can only track one at a time. As the optic flow axis is not orthogonal to the image plane, it has a component in the image plane. Thus temporal filtering in the system does not have the same effect as persistence of vision.

The result is that events on the time axis can affect the image. The ideal mechanism is for the image to be captured and displayed at a single vanishingly short point on the time axis, as the perfect reconstruction theory of sampling would suggest. Fig.4a

shows that in practice this is not possible, as finite light energy has to fall on all sensors and be created by all displays and this takes time. The result is a temporal aperture effect. Fig.4b shows that this reflects in the optic flow axis to cause smear in the image plane which reduces resolution in moving objects.

The eye can resolve detail in moving objects by tracking and there is no fundamental reason why this should not be possible in a well-engineered image portrayal system. These are, however, extremely rare. In most systems the level of motion-induced artefacts is so high that it is often better to induce smear to disguise what is happening. This is so common that it has led to the misguided belief that there will always be motion blur.

Fig.5 shows that real scenes contain many spatial frequencies rather than hypothetical sine waves. The mass of an object is carried in low spatial frequencies and the temporal frequency due to motion is quite low and does not alias. This allows the eye to track a moving object. When the eye is tracking, it views the series of presented pictures along the optic flow axis. Eye tracking superimposes each version of the sampled object on the same location in the retina, allowing the spatial detail to be seen. Note that aliasing occurs on the time axis but this is not seen by the tracking eye. It is only eye tracking which allows the use of such low picture rates. However well low picture rates work on the tracked object, it is important to consider what happens on parts of the picture which are not being tracked.

It is a consequence of Fig.5 that the observer perceives the direction of motion of an object before the object can be seen in detail. The detail can only be seen when the eye has achieved tracking.

When the eye is tracking, successive pictures appear in different places with respect to the retina. In other words if an object is moving down the screen and followed by the eye, the screen, and the background image portrayed on it, is actually moving up with respect to the retina. However, in real life eye tracking, the motion of the background will be smooth, but in an image portrayal system based on periodic presentation of frames, the background will be presented to the retina in a different position in each frame. The retina separately perceives each impression of the background leading to an effect called background strobing (Fig.6).

The criterion for the selection of a display frame rate in an imaging system is sufficient reduction of background strobing. It is a myth that the display rate simply needs to exceed the critical flicker frequency. Manufacturers of graphics displays that use frame rates well in excess of those used in film and television are doing so for a valid reason: it gives better results! Note that the display rate and the transmission rate need not be the same in an advanced system. The picture rate may artificially be increased prior to display.

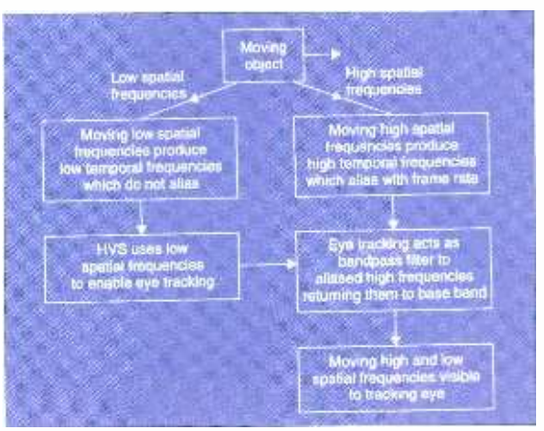


Fig.5: A real moving object contains a range of spatial frequencies. The low frequencies allow eye tracking to be performed, and once the eye is tracking correctly, the aliased high frequencies are hetererodyned back to their correct baseband frequency so that detail can be seen in moving areas

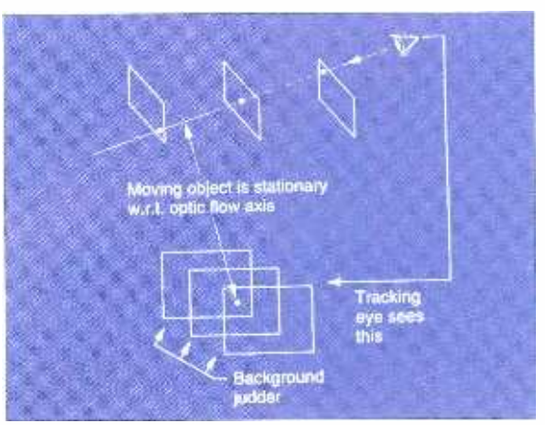


Fig.6: When a tracking eye follows a moving object on a screen, that screen will be seen in a different place at each picture. This is the origin of background strobing

SHORTCUTS TO SADiE

Since its release in 1990 the SADiE hard-disk editor has become widely used in a number of diverse fields. **Richard Hulse** gives some tips and techniques

I USE SADIE DAILY for a range of tasks ranging from music editing and mastering though to audio restoration and radio broadcast production. Over the last couple of years I have picked a number of ideas such as speeding up operations by replacing mouse clicks with hotkeys.

Many SADiE functions can be assigned to hotkeys in the set up window under 'hotkeys'. In addition to the 'F' keys (F1, F2...) it is possible to use unmodified letter keys by inserting the following lines in the system.ini file: [Sadie Debug] no hotkey modifier=0 This gives you about 50 single keys that can be used. The only downside is that named locate points no longer work, so keep a list of your hotkeys handy until they are committed to memory.

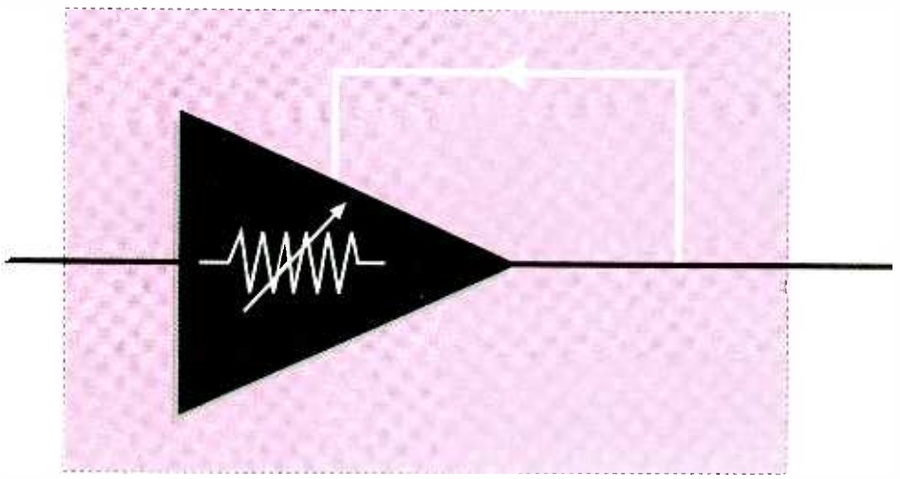


Fig.1: SADiE compression configuration schematic

Another useful idea is to turn on 'sticky keys' in the Accessibility Control Panel. This allows you to use one finger to press key combinations—press a modifier like Control first and then the required key second. If you are in the (bad) habit of stretching one hand to access modified keys, sticky keys can reduce the strain on your hands. Once you have learnt all the main hotkeys it is possible to dispense with the main tool bar which does clean up the screen.

Most SADiE users are familiar with the Slip Right function. This mode keeps everything to the right of the currently selected clip 'stuck' together and maintains the relative time locations while moving pieces around. Slip Left is also a useful function. I use it when recording voice tracks as it allows out-takes to be deleted and rough edits made while the clip is still being recorded. You can also top and tail and name clips on the fly which makes things much easier later.

Slip Left also allows preceding clips to be butted to the left edge of a selected clip. When a clip is selected with Slip off (or in Slip Right mode) the remove gap function butts the selected clip against the right edge of the clip to its immediate left. When Slip Left is on, the clip to the left of the selection butts to the left edge. Try it—select a clip and toggle between both Slip modes while using butt—it is harder to describe it than to show.

The third Slip mode is Both. This can be used while in the Playlist Edit mode to give similar functionality to that provided in the Trim window. As an added bonus, all the hotkeys that are used in the Trim window for previewing edits also work in Playlist Edit mode.

SADiE has a basic compressor that can be dragged into mixer strips as required, and a good digital limiter for mastering applications. Using the standard compressor and a simple technique (that was outlined in *Studio Sound* a few years ago), a subtle compression effect can be achieved. The technique involves splitting the audio into two paths—one contains a compressor, the other nothing—and mixing them back together (Fig.1). The compressor is set to a large amount of gain reduction, and at high input levels its effect on the mixed output is very small. At lower levels the compressor feed start to predominate, causing an increase in output level. The transfer characteristic at the settings originally suggested gave a transfer characteristic of 1.12:1 or 4dB of lift at -32dB.

The setup is simple. Set up two bus masters with the same input and output routeing and insert a compressor in one of them (Fig.2). Set the compressor as follows: Threshold -56dB, attack-5mS, release—0.10s, ratio—2:1. SADiE time-aligns any bus outputs, regardless of what processing is used and this means that EQ can also be used to provide frequency-dependant compression. Table 1 shows the settings required for various amounts of lift. The threshold is always -47dBFS.

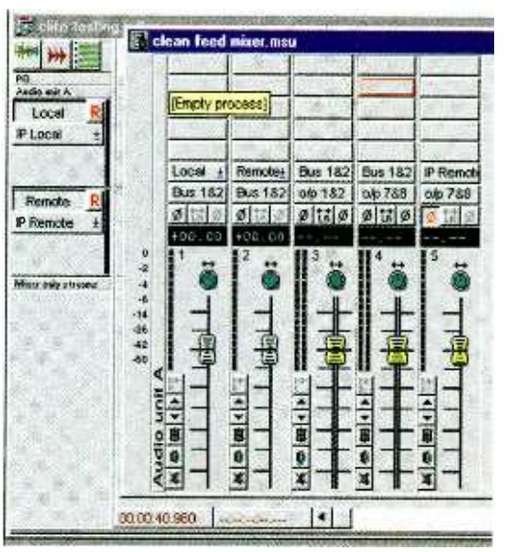
SADiE has a built-in MS decoder which is used to decode MS recordings that have been made in the raw MS format. The decoder can also be used as an MS encoder allowing a stereo mix to be separated into its middle (sum or L+R) and side (difference or L-R) components for individual processing. It is well known that stereo width can be altered by changing the difference component manually. Some mastering engineers find it necessary to EQ and compress (or expand) one or other of the separated feeds to repair or enhance an existing stereo mix. The compressor described here can be used to alter the difference component slightly and this has the effect of increasing the apparent reverb in a mix. Use small amounts with caution, though.

One feature I use a lot for broadcast production is background recording. Programmes that are compiled 'as-live' can be recorded in the background and the clip opened in the foreground to be edited as required. For music programmes with voice links this allows any retakes to be quickly edited while the rest of the programme continues to be recorded. Background recording also allows SADiE to be used to play back pre-recorded tracks and record at the same time.

The SADiE mixer can be used to premix several inputs to stereo. An example is where you have three or four mics being used in an interview. Each can be fed to a separate input on SADiE (via a mixer of course) and routed to a mono fader where different EQ and compression can be applied. These faders can then be sub-mixed to a stereo bus that is then recorded to a stream. I always record two-way interviews on a stereo stream as this allows more flexibility during postproduction; panning EQ and compression can be changed to best suit the particular programme by the compilation engineer.

Version 3 of SADiE introduced us to a new editing mode that is useful for de-humming and gap removal—region editing. When this mode is turned on from the main tool bar a new tool bar pops up with the salient features on it. This is also where the CEDAR manual de-clicker and de-thumper are driven from.

I use only a few functions and prefer to use hotkeys.



Remote site clean feed setup on SADiE

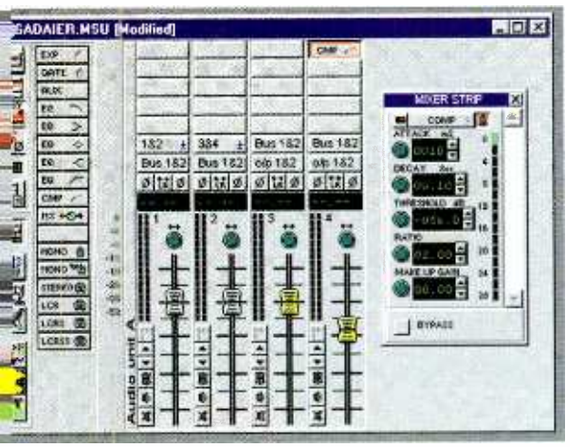


Fig.2: Routeing for 'Hulse' compression configuration

SHIFT + R turns on region editing and the cursor changes to a pencil to signify this. Dragging the pencil across a section of audio highlights it red. SADiE uses the left and right markers for defining the edges of regions and these can be moved simply by clicking and dragging.

SADiE also allows individual users to have their own settings which includes hotkeys and other system parameters. One useful feature in large facilities is the option to centralise the storage of users' settings and project files. In order to use this facility all SADiE workstations need to be connected to a server. The server should be set up so that each client PC has access to the following directory structure:

Q:\ DESKTOPS
PROJECTS
SETTINGS
TEMPLATES

The SADiE user database is stored in the root directory.

The User Management utility has an option to specify the location of all the user settings files and the database. This should be changed to point to the new shared drive.

In the project management section of each users setup (.ini) file, the default path is set to Q:\PROJECTS\USERNAME Each time a new project is created, it is automatically saved to this location. The browse feature allows projects to be created in a location other than the default. This allows the studio operator to create projects in the personal directory of the producer they are currently working with. When open project is selected, the open dialogue defaults to the users' personal directory. This makes it easier for individuals to distinguish their own projects. Backup and Restore work as normal; they use the projects drive and path to restore.

A common drive reduces the number of projects that end up being duplicated on local hard disks. We also use the drive to hold master copies of software, greatly increasing the speed at which updates can be done.

One other feature of our LAN is a transfer directory which acts as a gateway to the on-air system.

When doing interviews or live programmes with guests at remote locations it is necessary to clean-feed the remote site. A clean feed is a cue feed that contains everything that is going on at the recording location minus the incoming feed itself. This is fine for live interviews but some kind of 'tape cue' is required for recorded programmes.

When you are compiling live to SADiE with a remote site, they must be able to hear everything as it is compiled in SADiE, minus live contributions. This is because of the delay induced by fixed contribution circuits and ISDN lines. The routeing of local and remote feeds to different SADiE inputs and the addition of two extra faders on the mixer can create a clean-feed mechanism that automatically generates a mix minus feed while live inserts are being recorded. During playback previously recorded remote material is included in the cue feed.

A practical example of this is Radio New Zealand's *Country Life* programme. This is compiled 'as-live' every Friday. One presenter is based in Wellington where the programme is compiled and recorded, while the other presenter is located at the other end of an ISDN link. Any re-takes are done as drop-ins in real-time—the engineer drops into record as required for edits, and the talent just picks up as they hear the out-point. This technique greatly reduces editing time later.

If you have access to the Internet I'd also recommend that you join the SADiE users list at http://webbd.nls.net:8080/~SADiE. The Web Board can be configured to send post to a specified email address and so also works like any mail list. □

Lift @ threshold	Compressor Return	Master Offset
1	-32.5	0.20
2	-25.8	0.43
3	-21.4	0.70
4	-18.1	1.01
5	-15.3	1.37
6	-12.7	1.80
7	-10.3	2.30
8	-8	2.91
9	-5.6	3.64
10	-3.2	4.54
11	-0.6	5.67
12	2.1	7.15
13	5.4	9.19
14	9.8	12.23
15	16.5	17.77

Table 1: Lift settings

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The name game

WHEN I WAS INVOLVED in the MI industry during the wonderful eighties, I worried for the companies naming their instruments. For in place of such wonders as the Odyssey, Jupiter, Kat, Prophet and Avatar were appearing monsters called DX7, OB-8, D50 and S900. Music seemed to be losing its humanity.

Now it seems that professional audio is enjoying the reverse experience. From such wonders as the early numbers of Neve mixing desks and the SSL k-series consoles to follow, we are moving into the crazy world of names that the music industry has left behind. I worry about the Meckrophone, for example. And then there is the Pallendrometer (in the March issue of *Studio Sound* that should surely have been in April). We have the Orville, the Boiler and the Gas Cooker, the Fat Man and the Fatso... And worst of all there is the Broadhurst Gardens Number 1. Is this really a piece of professional recording equipment or is it a gardening compost? It certainly does not speak to me of sound or music. Although I must confess a ready affection for those things bearing a lady's name like Angela, Sadie and Big Bottom!

Certainly the instruments of the eighties brought new possibilities to making music, but they seemed to be the work of inventors and marketers who had little connection with the real world of music and emotions. I resented these numbers taking away the character of my profession but now, much as the French dislike foreign words clouding their language, I am alarmed by the ridiculous names that are appearing in our working world.

Perhaps I could suggest the establishment of a forum to discuss consistency in the nomenclature of our business and other pressing issues. We could call it the Collaboration of Real Audio Professionals, and talk merde toujours.

P Y Gerbil, France

Chocolate obsession

PLEASE CAN YOU tell me the name of the song from the Cadbury's Flake adverts. Do you know what the singer's name is? It is impossible to find any info on the web at all!

Andrew O Brien, SPQR (via web site)

Tim Goodyer replies

Understandably, I feel, George Cadbury's company is far more eager to provide details of its history and its products on its web site than to pander to the whims of sad people with a preoccupation for fetishistic advertising (see my answer to the Millennium's Most significant Advert: *Studio Sound*, December 1999). So having looked, you'll know that Flake is free from ethanol, nuts, colour, corn (including maize), egg, gluten-wheat, and all animal-based ingredients except for milk.

But what you need to know, Andrew, is that the song that accompanies the recent Flake television advert ('Snowflake') doesn't have a title, having been specially composed by the Ronnie Bond Agency for TVWA who handle the Cadbury advertising account. Sadly, TVWA have no record of the name of the session singer.

Personally, I preferred the seventies version of the Flake ad with the soaring sax on the fade-out and Alan Price's song for an Old Spice aftershave ad is somewhat overlooked. But if it's chocolate music that does it for you, you might dance your way through Shanks and Bigfoot's 'Sweet Like Chocolate' and the Chocolate Dandies' eponymous Australian release to PFM's classic 'Chocolate Kings'. Then again...

World beater

THANK YOU for the possibility to subscribe to your magazine. I just would like to stress: your magazine, *Studio Sound*, is the best I have ever seen in my life.

Alexander Grigojev, director of SLA 'Access', Latvia

Weakest link p2

WITH REFERENCE TO THE article on Stereo by Howard L Yentis in the March 2001 edition of *Studio Sound*, and as sound supervisor on the first series of *The Weakest Link* may I be allowed to make a couple of comments?

Firstly, Mr Yentis refers to 'the music being out of phase with the dialogue' which, when monoed 'causes the music to disappear to a very low level'.

In order for this to occur, the music must, of course, be out of phase with 'itself' (that is left leg phase reversed relative to right). It has no phase correlation with the dialogue at all! This situation can, of course, occur during the making of the programme, but a good pair of ears supplemented by appropriate M-S metering should spot it.

However, having spoken to one of the sound crew on the show, he tells me that after the studio recording, an edit suite 'did' manage to produce some out of phase music tracks which were supposed to be sorted out, but never were. So, not a funny caused by surround sound, just good old human error!

Secondly, as a general point, there will always be a mono compatibility question in broadcasting, and Mr Yentis' plea for wider stereo imaging will, I'm afraid, only make it worse. By definition, sounds panned away from the centre will sound quieter than a central image, and much work has been done in the past, by the BBC amongst others, to quantify and allow for this unavoidable effect.

Andy Pearce, Head of Sound, Capital Studios

April

9–10
AES UK Conference
Church House, Westminster, London, UK.
Contact: Heather Lane.
Tel: +44 (0)1628 663725.
Fax: +44 (0)1628 667002.
Email: uk @aes.org

18–20
DVD Europe 2001
Business Design Centre, London, UK.
Contact: Lianne Davey.
Tel: +44 (0)20 7940 8623.
Fax: +44 (0)20 7407 7102.
Email: lkdavey@ubminternational.com

18–22
Media Broadcast International
Beirut, Lebanon.

23–26
NAB
Las Vegas Convention Center,
Las Vegas, US.
Contact: Exhibitions and Events.
Tel: +1 202 429 5300.
Fax: +1 202 438 7327.
Email: webmaster@nab.org
Net: www.nab.org

28–1
Disma Music Show 2001
Rimini Trade Fair Corporation,
47900 Rimini, Via della Fiera 52, Italy.
Contact: Exhibitions and Events.
Tel: +39 0541 711 711.
Fax: +39 0541 786 686.
Net: www.fierarimini.it

29
National Vintage Communications Fair
NEC, Hall 11, Birmingham, UK.
Contact: Exhibitions and Events.
Tel: +44 1392 411565.
Net: www.angelfire.com/tx/sunpress/index.html

May

5–7
Broadcast International
Tel Aviv, Israel.

10–13
Showtech 2001
Messe Berlin, Messedamn 22
D-14055 Berlin, Germany.
Contact: Overseas Trade Show Agencies.
Tel: +44 (0)20 7886 3106.
Fax: +44 (0)20 7886 3101.
Email: james.eliot@montex.co.uk
Net: www.showtech.de

12–15
110th AES
RAI Conference and Exhibition Centre, Amsterdam, The Netherlands.
Contact: AES.
Tel: +1 212 661 8528.
Email: 110th_exhibits@aes.org
Net: www.aes.org

14–15
Internet Broadcasting
The Hatton, London, UK.
Contact: Exhibitions and Events.
Tel: +44 (0)20 7827 6774.
Fax: +44 (0)20 7827 6775.
Net: www.smi-online.co.uk/broadcasting.asp

16–19
CALM China Pro Audio
Beijing, China.

22
Introduction to DVD (Boxer Systems Course)
Soho Showroom, Poland Street, London, UK.
Contact: Events.
Tel: +44 (0)20 7287 2446.

23
Advanced DVD Techniques (Spruce Technologies–Boxer Systems Course)
Soho Showroom, Poland Street, London, UK.
Contact: Events.
Tel: +44 (0)20 7287 2446.

28–31
One TO One Int Exhibition
Jeddah, Saudi Arabia

June

5–7
AES Brazil 2001
International Trade Mart,
Centro Textil, Sao Paulo, Brazil.
Contact: AES.
Tel: +5511 7291 8188.
Fax: +5511 7291 0200.
Email: wcoml@francal.com.br

13–15
AES Regional Convention
Tokyo, Japan.

15–17
GAB Convention
Macon, Georgia,US.

18–22
Broadcast Asia 2001
Singapore Expo, Singapore.
Contact: Singapore Exhibitions Services Pte Ltd.
Tel: +65 738 6776.
Fax: +65 732 6776.
Email: info@sesmontnet.com
Net: www.broadcast-asia.com
UK contact: Overseas Exhibition Services.
Tel: +44 207 862 2080.
Fax: +44 207 862 2088.
Email: broadcastasia@montnet.com
Net: www.broadcast-asia.com

20–21
Wireless Professional Radio Communications Exhibition
Sydney, Australia.

20–23
MITIL 2001
Vevey, Switzerland.
Contact: MITIL 2001.
Tel: +41 (0)21 925 8031.
Fax: +41 (0)21 925 8035.
Email: info@mitil.org
Net: www.mitil.org
Net: www.namm.com

21–22
Broadcast Content Management 2001
The British Library, London, UK.
Contact: Lianne Davey.
Tel: +44 (0)20 7940 8623.
Fax: +44 (0)20 7407 7102.
Email: lkdavey@ubminternational.com

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< Continued from page 82

Video: Jackfields Media Systems
Audio jackfields: Moses and Mitchell
Wiring: NWE Ltd
Design services: NWE Ltd
Flight cases: Original Metal
Receivers & other domestic items: Philips
Audio disk editor: 360 Systems Shortcut
Audio routeing switcher: Pro-Bel analogue 64 x 64 stereo

'There are a few manufacturers making routeing switchers. After all, a routeing switcher is a routeing switcher, and the thing that distinguishes them is the quality of the control software. The user-friendliness of that software is the be-all and end-all, and while I've used and worked with these products, I've always found that Pro-Bel is superior.

They've always stayed one step ahead of the game in producing the things that people want. You know, it's easy to achieve what you want it to do, instead of having to go down the kind of tortuous route that is necessitated by other products.'

SDI Routeing switcher: Pro-Bel 96 x 192

'A few years ago, a 64 x 64 routeing switcher was about as big as you ever saw in the biggest trucks, and even then you'd think "What on earth will they use all that for?" Well, they've since quadrupled, and 96 x 192 is now average.

They've tended to become asymmetric, with a lot more outputs than inputs, because the expectation for these big productions is that the director can walk in and the entire monitor stack can be pre-programmed at the drop of a hat. That means everything has to go through the routeing switcher, and that's indicative of the fact that requirements have intensified, a lot of which is down to Sky in the UK, who have changed the face of sports outside broadcasts. I mean, years ago when I worked for the BBC and ITV, six cameras on a football match were plenty. Now you've got 20 cameras on a Premier League match, and you can double that for the FA Cup Final. In fact, I'm currently doing some plans for the coverage of the Ryder Cup golf in September, and there will be 60 cameras involved on that.'

Audio line ident inserter: Prospect Electronics
Compressor-limiters, gates, reverbs: Raper & Waymann
Telephone exchange: Robert Leacroft Ltd 6 DEL x 24 extension
Miscellaneous items: RS Components
Teletex decoder & UHF receiver: Shootview
Digital processing & PAL decoding: Snell & Willcox
Camera channels & lenses: 12 x Sony BPE BVP-950 camera channels and lenses

'Really there are three main manufacturers of broadcast cameras; Sony, Ikegami and Philips, although Ikegami aren't as big in the UK as in the US. When all is said and done, after negotiating with these companies you find that their prices are much the same, and they all have their technical merits and their technical deficiencies. So, what it really boils down to is that if a company already has a lot of Sony cameras and you're building them a new truck, they're better off buying more Sony cameras. The same goes for Ikegami and Philips, because the compatibility issue is important.

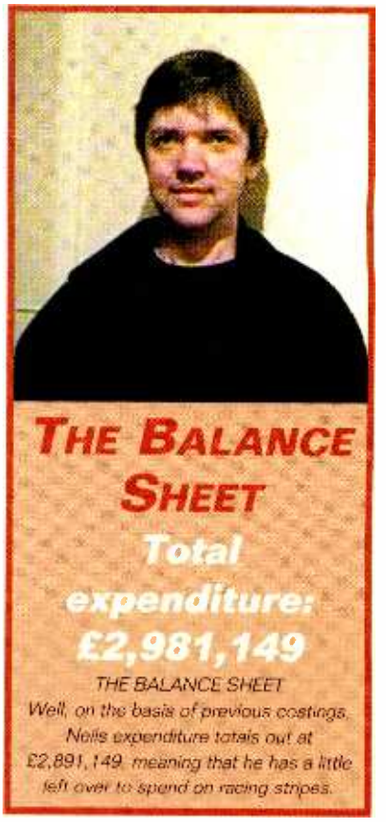
'You see, although the trucks get more complex, the time allowed to set them up and get ready to go on air is constantly diminishing. That's partly because of financial constraints and partly because they're so busy, and therefore the more flexibility you can have, the better.'

Grade 1 picture monitors: Sony BPE
Additional control units: 8 x Sony BPE (CCUs for OB3)
Aerial masts: South Midlands Communications
SDI signal monitoring: Tektronix WFM601
Under monitor display & tally system: Television Systems
Communications matrix: Telex Communications 64 ports

'A few years ago, comms on the truck were simple; they were just the director talking to the cameraman and the commentators, and that was about it really. Now, however, the comm requirements are fantastically complicated, and has to cater for everything under the sun. Well, Telex were the first people to really come along with a workable—and I emphasise the word "workable", because there were others—software communications matrix system. As a result, they have become the number one choice.

'It's completely user-configurable via the software, so, instead of a man sitting in front of a huge patch panel, you've got a man sitting in front of a computer, programming. All of these requirements can be controlled by the software.'

Audio ANC radio mics, ENG, Miscellaneous: Trantec
Master sync generators & Auto changeover: Trilogy Broadcast
Panning heads, bases & tripods: Vinten Broadcast
Tractor unit: Volvo Commercial Volvo FH12 460
Voltage regulators: Watford Controls
VTR audio monitoring units: Wohler



CHEESE TOP 10

1	Cheese Cheese Me	⇧	6	Cinderella Mozarella	⇧
2	Gouda Golly Miss Molly	⇦	7	She Loves You (Gruyere Yeah)	⇧
3	Johnny Brie Good	⇩	8	The Gouda, the Bad and the Ugly	⇦
4	The Fat Lady of Limburger	⇧	9	Scary Muensters	⇦
5	Gates of Edam	⇦	10	Gouda Vibrations	⇩

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NEIL WILSON'S SPORTS OB TRUCK

With outside broadcast work blossoming, new trucks are constantly in demand. Outside broadcast specialist Neil Wilson takes **Richard Buskin** for a ride

STARTING OUT AS A BBC studio engineer in 1975, Neil Wilson subsequently took over as director of engineering at Carlton Communications until that company became an ITV franchise holder. In 1995, Carlton Television secured a five-year deal to cover the PGA European Golf Tour, and while accepting a contract to build all of the OB vehicles for that assignment, Wilson went freelance and involved himself with his own company, Neil Wilson Enterprises.

Wilson started building OB trucks for Carlton in the mid-eighties, as a sideline to his main work of constructing post-production facilities. However, following the aforementioned golf-related contract, business exploded and Wilson has never looked back. He built six trucks and trailers for the tour, and this led to other work.

That being the case, and in light of the fact that an OB truck can be assembled for anywhere from about £500,000 to an all-the-bells-and-whistles £4m, Wilson has been provided with the funds to deliver a comprehensive yet not overly flashy setup. He, in turn, has opted for a 13.6m tri-axial trailer with expanding sides, providing for 12–20 cameras, based on the choice features of three OBs that he has built during the past three years...

Coach-building and trailer

'The most important thing about the vehicle is the coach-building, and this is a factor that people sometimes overlook. They look to the cheapest possible route, but it doesn't always turn out to be cheap, especially if the thing falls to bits after a couple of years. This vehicle is built on a standard commercial vehicle chassis, and it has to fit in with all of the currently in-force UK and European road regulations, which is something that I have to guarantee. I mean, I have to calculate in advance what it's going to weigh, because it would be quite easy to load it up with equipment and then discover too late that it's overweight.

'There again, while the gross vehicle weight cannot be exceeded as far as the regulations are concerned, you also cannot exceed the gross weight for each axle, so all of those things have to be worked out in advance. Hydraulic landing legs rigidise the vehicle when it's parked, and also make sure that it's level.

'For this money you get a bare chassis, onto which is custom-built an expanding-sides body. You get a choice as to whether it is built from prefabricated TRP panels, which is the newer method of construction, or traditional aluminium rivetted panels. Either way, the cost isn't dissimilar. Also, for £375,000 you would expect the vehicle to be equipped with all of its furniture—its desks and racks—and for the basic electrical installation to be included for lighting, heating, air conditioning, ventilation, that kind of thing.

'There are various bespoke OB coach-building companies—including two or three in the UK that I would recommend to do the highest quality work—while there are numerous others that can do an adequate job. ASGB is what I consider to be the number one company.'

Miscellaneous coach-building additions

'This is something that I always include in any budget, because you have to agree a fairly lengthy contract with these companies to start with, and while I try to foresee everything I have never yet built a truck where somebody hasn't come along halfway through and said, "Actually, wouldn't it be nice if you did such-and-such?" So, I always try to get them to allow for an extra £10,000, because that's what it usually comes to.'

Microphones & headsets: Beyerdynamic
Cable stock: Bryant Broadcast
Audio console: 48-channel Calrec S2

'This is what I believe to be the Rolls-Royce of sound mixers, and the proof is that they sell many of them in the US, which is no mean feat for a British product made in an old textile mill in Hebdon Bridge, Yorkshire. I've installed many S2s, and I'm impressed by the build quality, the engineering quality, the performance and the reliability. While 48 channels is the bare minimum for light entertainment jobs, it's the norm for sports events. After all, these days they've got half the desk tied up with VTR machines playing back, then there are all the commentators, and the rest of the desk is taken up with effects coverage. I've often seen and worked on jobs where 48 channels are nowhere near enough, and they've brought in a separate sub-mixer.'

Miscellaneous audio connectors & equipment: Canford Audio
SDI-PAL monitoring convertors: Crystal Vision
Aux mixers: CTP Systems 6-channel
PC equipment: Dell Computers
Surround sound encoders-decoders: Dolby Labs
Cable drums: Dowling Design
Timecode reader-generator: Evertz
Slow-motion disk recorder system: EVS Broadcast
Production & audio loudspeakers: Genelec
RF Microwave equipment: Gigawave Antennas Ltd
Production switcher & DVE: Grass Valley Group

'Up until about five years ago, Grass Valley had a virtual monopoly in production switchers and vision mixers at this level, but then they allowed Sony to get a foot in the door, and because Sony came out with a better product, Grass Valley lost out. Sony have since held that monopoly themselves—certainly in the UK nobody would have thought of building a big truck without a Sony mixer in it—but of late the tables have again been turned. These things become bigger and more complex all the time, and whereas Sony have failed to come out with anything new, Grass Valley have recently released something that is superior.'

Wet weather camera covers: Halkon Hunt
Monochrome preview monitors: Ikegami UK
Production grade 2 Monitors: JVC Professional Products
Clock displays: Leitch Electronics
Pivalite window glazing: Marcus Summers

'This is quite common in trucks now. It's glazing within the vehicle's interior bulkheads, and it can be controlled electrically — If you want complete privacy, you turn a knob and the glass goes opaque. Apparently, Bill Gates has this in his office. It costs £1,000 a sheet, so I don't suppose he's bothered about that.'

Continued on page 80 >

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