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The Pro Audio Applications Magazine



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Permits precise level and pattern control, virtually eliminating comb filtering and lobing in an array.

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Improves overall tonal characteristics by dissipating the capacitance which occurs in the magnetic gap of a loudspeaker.

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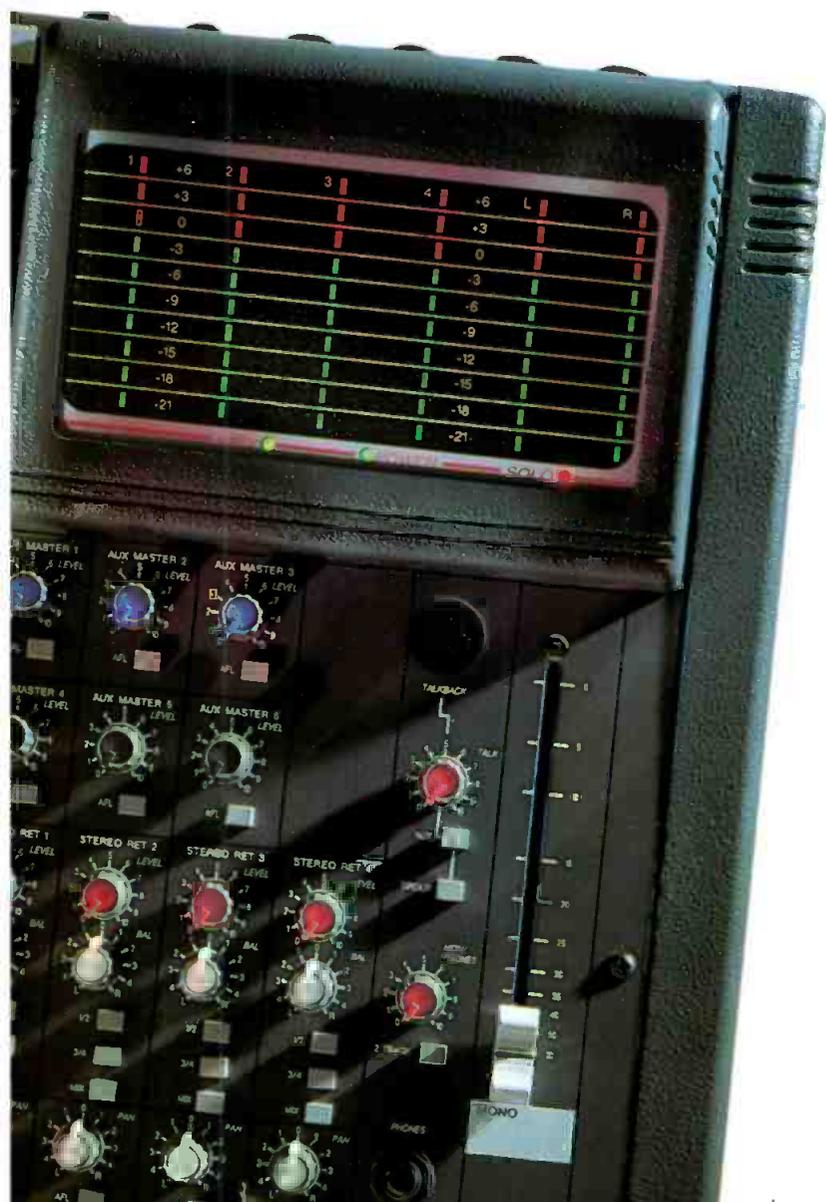
Dramatically reduces - by more than 20dB - 2nd harmonic distortion in the 50Hz to 100Hz range.

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Pioneer Professional Products Division

For more information on TAD by Pioneer and the TAD TCM Series, call (310) 816-0415 or FAX (310) 816-5941.

THESE CONSOLES SO MANY FEATUR COULDN'T FIT THE ALL ON THIS PAGE



SOLO. A new breed of console packed with more features per square inch than anything in its class. And the pure, transparent sound that has made Soundtracs so popular in studios and on stages around the world. At prices that make sense for today's cost-conscious professionals.

SOLO LIVE. Available in 16, 24 and 32 input frame sizes. Four independent sub-groups, right/left master and mono sum output. Four band EQ with two swept mids. Six auxiliary sends. Balanced inputs and outputs. Four stereo effect returns. 48V phantom powering for all mic inputs. Raised meter bridge.

SOLO MIDI RECORDING. Available in 16, 24 and 32 input frame sizes. Automated MIDI Muting on all channel inputs, monitor inputs, group outputs, stereo effect returns and auxiliary masters. Four band EQ with two swept Mids, assignable to monitor inputs. Six auxiliary sends—four assignable to monitor inputs. Four stereo effect returns with two band EQ, balance and level controls. Raised meter bridge.

We wanted to list *all* of the features on SOLO consoles but we ran out of space. If you want to find out more about e



SOUNDTRACS INC.

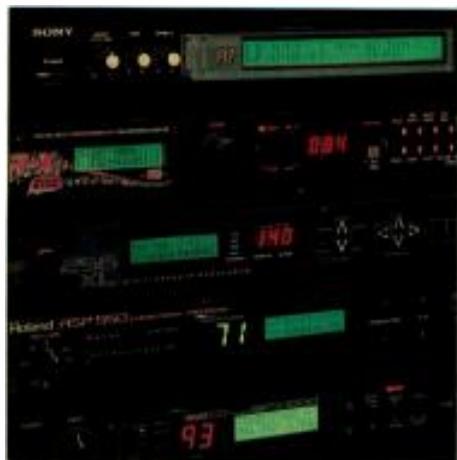
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Circle (3) on Rapid Facts Card

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Who said a workhorse can't be a thoroughbred?



The Sony PCM-7010 DAT Recorder

It wasn't Sony. Because the PCM-7010 was built from the ground up as a professional DAT recorder that can handle everything from music recording and on-air radio and television broadcasting to audio-for-video production and corporate multimedia systems.

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fade and confidence monitoring.

And, with its advanced options, you can record, playback and display SMPTE time code and store digital audio in memory for instant-start playback. If you want a workhorse DAT recorder that can do it all, today and tomorrow, you want the Sony PCM-7010. For more information, call the Sony Professional Audio Group at 1-800-635-SONY, ext. 7010.

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SONY

The Most Widely Used Studio Microphones.



Take a look around the next time you're in the studio. Ask the most demanding musicians and recording engineers what microphone they use to produce the brightest and clearest sound. You'll find that most of them prefer AKG 414's for recording their music's incredible dynamic range, subtle nuance and emotion.

It's no wonder that the 1990 and 1991 *Billboard* surveys found that AKG microphones are the "#1 Most Widely Used Studio Microphones."

For years the 414 series and its AKG signature sound have been a part of recording the best music in the business. That's why the 414 is a studio classic.

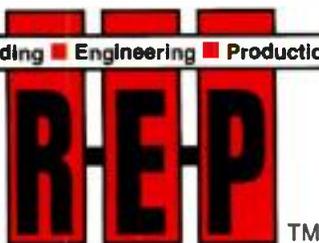


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Classic.



The 414 is available in two models, the C414 B-ULS and the C414 B-TL.



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R•E•P is an applications-based publication targeted at professional individuals and companies active in the commercial business of studio and field recording, audio for video, live sound production and related fields. Editorial content includes descriptions and demonstrations of audio production techniques, new products, equipment application, maintenance and audio environment design.

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From the Top

A sweet yet aggressive little something

We've been entertaining ourselves recently in preparation for this month's feature article on the current crop of mid-priced digital processing devices. In fact, I have before me a rack containing one each of just about everybody's current DSP effects processor. We have goodies from Lexicon, Dynacord, Ensonic, Digitech, Sony, Roland, ART, Yamaha ... you name it.

And it is very impressive. One device we evaluated does absolutely everything, bar nothing: verbs, ambiences, echoes, pitch shift, chorus/flange, dynamic delay, compression, parametric EQ, variable MIDI-driven envelopes, rotating speaker effects (with ramped speed changes), guitar distortion, tube guitar amps, and in any combination of up to four channels of DSP simultaneously. That's one to four mono channels or two stereo pairs in and out, with four Motorola 56001s assignable. We're talkin' serious horsepower here, with many MIPS, for hundreds of stackable effects. And it does them incredibly well, very quietly, with great versatility. All for 1.5 kilobucks.

What surprises me more than the bang-for-the-buck factor is how well these virtual environment boxes are able to supplant natural reality. Even as I jump with joy, reveling as the little techno-kid within played contentedly with these wonderful devices, I guiltily ask myself: Do these processors bode ill for our to-be-recorded audio engineering future, or are they merely the next generation of tools for our workchests, to be selectively applied in oh-so-professional ways?

It's hard *not* fall in love with boxes that give you instant *Wow!* You want plate? I just tweaked a plate patch with more shimmer, more depth, more background idle silence, more sheen than the freshly re-sprung EMT I mixed on downtown yesterday. Ambience? No room has more controllable, *natural sounding* ambient parameters, more

flexibility at the push of a soft key and a twist of the nudge knob than this device right over here. And tube warmth? I've spent days of my life getting that special sweet, yet aggressive bite out of one of my own 1958 Fender guitar amps. I know tube warmth, and that cold little black box there does one hell of a job getting it, in about 20 seconds. OK, a minute. It takes a long moment to fiddle down through the pages and fuss with the EQ settings and overdrive levels. That's a drawback. But the sound quality is *great*. Meaty, fat, real, with honest ambience and nary a hint of deceit.

However, the thoughtful, protective, philosophical side of me is hesitant to admit that these things are good, lest that admission hasten the threatened

... it's impossible not to get excited about the virtual acoustic worlds one can create ...

rapid demise of real honest-to-God acoustic recording — the *art* of our craft and the basis of our valuable accompanying skills, nurtured and developed in real live

rooms with real metal microphones.

But, I'll tell you honestly, it's impossible not to get excited about the virtual acoustic worlds one can create via addressing the firmware code inside these little chips. Yes, these boxes make it possible for anyone to instantly, stupidly get perfect "guitar amp in a hallway with touch of slap," and that arguably takes the talent out of recording. Phil Collins' snare at the touch of a button. Zappa's guitar. Jimi's wah-wah, only automatically swept by envelope tracking filters. Plug and go.

Is an "anti" attitude truly justified? When plates came in, I can imagine tiled-room purists said, "This is the beginning of the end." Later, when digital verbs showed up, plate aficionados said, "This is blasphemy!" And now we have black boxes that will do it all — from the emulation of classic tube compressors and '58 Fender Supers to Clearmountain's secret 480XL patch lifted from the "Sports" album. You tell me: Is the power of the acoustic universe suddenly in everyone's hands, on every budget desktop? Is that a good thing? Is it bad? What does it all mean? And why can't I find a decent ground lifter around this joint? ■

Mike Joseph
Editor

Letters

Occult Hyper-hype

From: Richard K. Fullmer, Acoustical Engineers, Inc., Salt Lake City, Utah.

The article in R•E•P March 1992 by Richard Guy, "Coils & Windings" is a pleasant breath of fresh air in the current audio climate of occult hyper-hype. Most of the currently working "audio engineers" have little understanding of the reasons for the established practices which they inherited, and gleefully dismiss them as archaic "fashion." Fortunately, Mother Nature has little respect for fashion, and those who have learned the fundamentals can steer a reasonable course around the "guru of the year" designers.

Properly applied audio transformers are capable of solving a multitude of "strange" effects, with an elegant simplicity that most engineers only dream about. Unless hit with a very large hammer, they will likely still meet specifications in the 22nd century. And they don't even require a power supply. As always, those who have neglected their history lessons will find life difficult.

Good Stuff

From: Richard P. Robinson, Trod Nossel Recording Studios, Wallingford, CT.

I love your magazine. Keep up the good work. No doubt that the industry needs a publication that will print real reviews, not to mention the rest of the good stuff you print.

I have to take exception to the statement on page 16 of the April 1992 R•E•P issue though: Rudy Van Gelder has been interviewed before (in) *Music and Sound Output*, August, 1986.

From: John P. Bazzano, Full Boar Productions, Norfolk, CT.

I've come to realize that I could order every recording industry magazine and they'd all have the same stupid stories, except for yours. Thank you very much for keeping me — and us — informed.

Editor: You're very welcome!

Valve Inquiry

From: Ashley C. Styles, Saturn Sound Recording Studio, New Costessey, Norwich, U.K.

Might I start this letter by singing the

praises of R•E•P? Living in England, with a good selection of reading material available relating to the recording business, I find that R•E•P has got to be the only publication available with such interesting technical articles; e.g. modifications to Dolby's, etc. I find R•E•P to be an excellent all around publication for those working in the recording business.

Again, with interest I have read various articles about producer's ideas on microphone choices. In our own studio, now in its 20th year, we use 75% valve equipment, not only for its nostalgic value, but also for its faithful sound reproduction qualities. It would be very interesting to hear thoughts on this subject from your readers, maybe in the form of a reader survey of who uses what valve equipment and more importantly, why?

Please keep up the good work.

Contents Explained

From: Dennis Dragon, Orange County, CA.

In reference to the risk of re-opening yet another "can of worms" mentioned in your March issue, regarding an unwanted 15kHz tone showing up on certain CDs as UNWANTED NOISE.

Mr. Wenocur and associate have identified, in my opinion, an often overlooked flaw in current recording practices, not CD manufacturing, of which I am guilty.

On many recording sessions, a television monitor of some sort is in close proximity to either an open microphone or the recording console. The horizontal scanning frequency of a television receiver in an audible 15.743kHz. What this can translate to is the printing of the tone on whatever tracks are being recorded at that time. Also, be aware that this tone can be both acoustically and electrically transmitted through mics or studio wiring.

If the engineer is not aware of this, for whatever reason, that tone will "follow" that track down through the mixdown and onto the final product, if it is not filtered out somewhere along the line. What further confirms my suspicions is where an orchestra or percussion (track) are making entrances. Good engineering practices would involve muting these tracks until their entrances, and also not filtering or chopping the top end, (keeping) the high-frequency content of these par-

ticular tracks. Thusly, the tones would "follow" these tracks.

I don't want to say that some engineers are incapable of hearing these higher frequencies, but I can say through personal experience that after many years of high monitor levels in the control room and being assaulted by the rock 'n' roll record machine, my hearing in this range has definitely been attenuated.

My practice these days is to be *aware* of television monitors and the recording process. I have learned that the bigger the TV, the more likely the leakage. Also, to confirm suspicions of someone incapable of hearing in these ranges, I "put up" a 15kHz tone in the monitors and see if it's noticed. If not, *beware!* The next 15.743kHz tone on your disc may be the fault of a faulty engineer!

Digital Secrets

From: Edgar Rothermich, Diplom Tonmeister, West Hollywood.

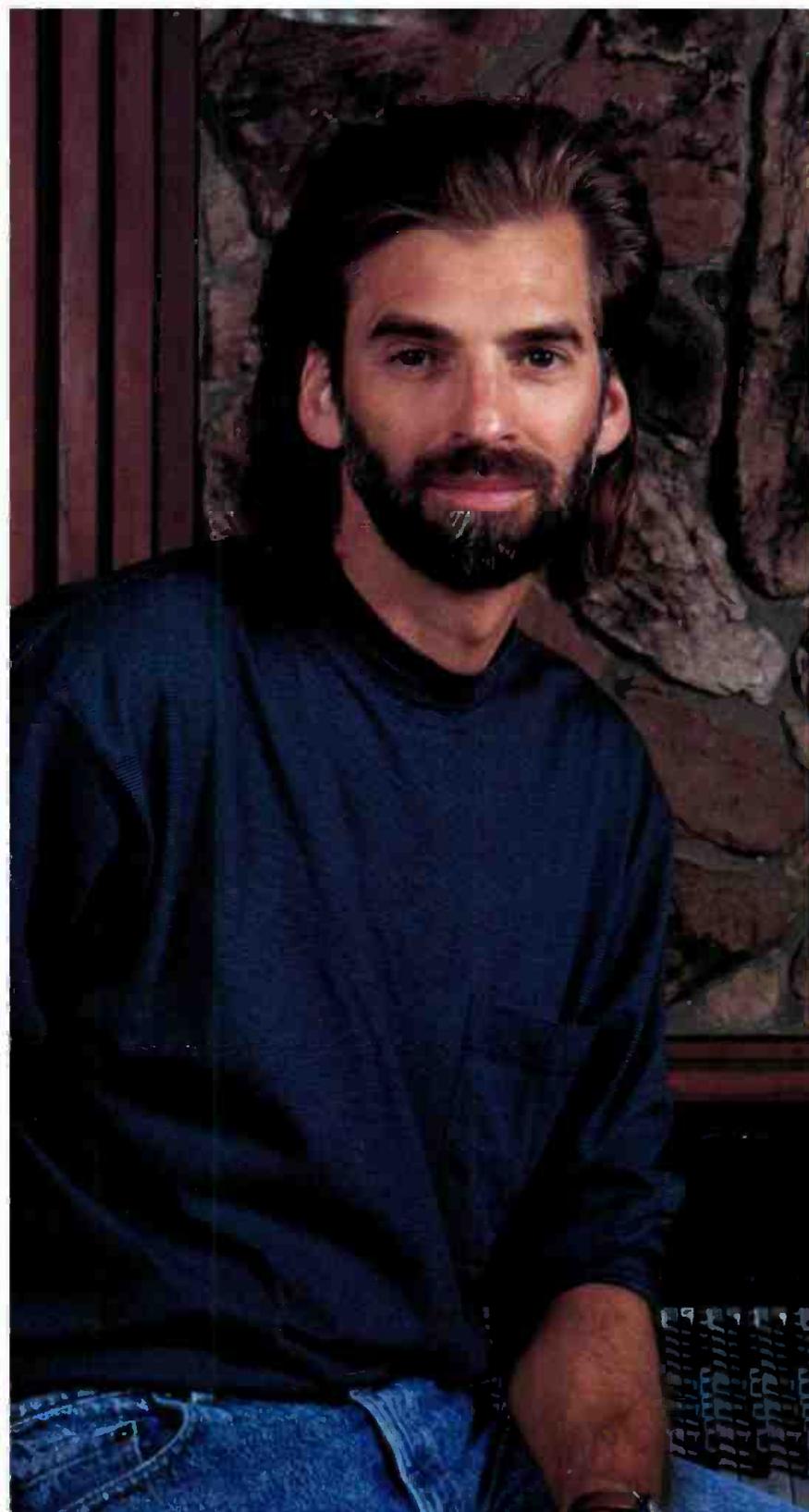
I want to ask you something about DAT sampling frequencies. Last week I ran into trouble with this item. Let me explain:

I had some songs to master, so I sent the signal from the DAT player to the analog input of the WaveFrame 1000 by using the internal digital mixer. (I then) took the digital output of the Wave to the digital input of my second DAT unit, a Sony 55ES. Despite the fact that the Wave should send an AES/EBU format signal and the Sony has an S/PDIF format, no problems occurred. The Sony recognized the signal as an 44.1 digital input and recorded it. So far so good.

We sent this 44.1 DAT Master to OMI to make a CD-R, and they told us that they had to convert the sampling frequency to 44.1, because on our DAT (there) is (only) 44.056 digital signal. So what does that mean? I (have) never before heard of a sampling frequency of 44.056 for DATs. It reminds me of the format on older Sony Fl and U-matic machines.

So what's going on here? Some more secrets about this "easy to handle" digital thing, that customers were not told about? I'm hoping you can help me and reveal these secrets. ■

Send letters to R•E•P Box 12901, Overland Park, KS 66282-2901; or fax 913-967-1905. Letters must be signed and may be edited for length and clarity.



When I return from the road, it's such a relief to have a home studio equipped with a console that gives me the freedom to be creative and experiment when the mood hits. My AMR console has all the professional features I need including a MIDI command center and up to 56 inputs available at mixdown. The possibilities are endless with this console."

Kenny Loggins



**Peavey Audio Media Research
Production Series™ Recording Consoles**

For more information about the Production Series™ 800, 1600, or 2400 Recording Consoles please contact your authorized Peavey AMR dealer or call/write to the factory for a free brochure.



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www.americanradiohistory.com

DID YOU KNOW ??

The Japanese islands are electrically divided down the middle? Specifically, all areas east of the Fuji River, including Tokyo are served by the Tokyo Power and Light Company with 60Hz service. Meanwhile, the western half of the country is served with 50Hz ac by the Osaka Power and Light Company. It seems that in the late 1890s each company imported generators (a 50Hz from Telefunken and a 60Hz from General Electric)

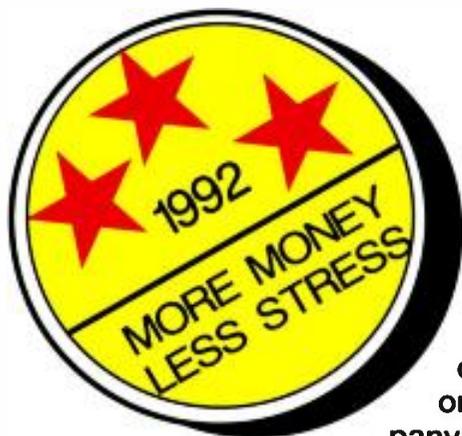


that still define the grid today. Courtesy *Denon News*, March/April 1992. ■

AUDIO GAMES

Rykodiscs is about to release a sequel to 1991's successful, "Play it by Ear — The First CD Sound Game." If you've been locked in a studio and missed

hearing about it, the game is a neo-Trivial Pursuit featuring soundbites of music and spoken word. In case you have the time, it makes for a great party game and can double as a handy SFX source for political banter and patented guitar licks. ■



From the R•E•P ARCHIVES:

In this presidential election year, and on the five year anniversary of the first R•E•P salary survey, history might provide some interesting perspective. Our June 1987 research revealed average median salaries ranged from \$34,250 (management) to \$27,500 (production staff), while 54% of the respondents had received salary increases in the previous calendar year. Tenure among respondents averaged 16.6 years on the job and nearly 2/3rds of the sample group enjoyed company-paid medical insurance.

So, in the vernacular of the Regan era, the question begs to be asked: Are you better off now than you were back then?

CITY OF ANGELS

Inevitably, the riots following the Rodney King verdict impacted the music industry. Hollywood recording facilities Studio 55 and Studio 56, respectively experienced vandalism and a break-in. And one video installation specialist, Shoreline Professional Video, was completely burned out on April 30th. Still, many L.A. industry pros expect the riot's most severe impact to be on the already anemic booking schedules at most studios.

Another hot LA topic is the continued disharmony between HARP (Hollywood Association of Recording Professionals) and many of the area's illegal home studios. Allegations, denials, and counter-allegations have been flying that HARP members have actively turned-in as many as three dozen home/project studios to local zoning officials. Anyone care to comment?

PEOPLE

Trend Watch

Gerhard G. Gruber, a 17-year Siemens employee was recently named president of Siemens Audio Inc. succeeding **Barry Roche** ... **Randall Curlee** has been appointed marketing manager at QSC Audio products ... Shure Brothers recently announced the promotion of **John F. Phelan** to general manager, international marketing and sales ... At Adamson Acoustic Design, **Paul Bauman** and **Andy Lam** have been appointed to the positions of chief engineer and electrical engineer respectively ... **Mark Lever** has joined WaveFrame Corporation as vice president of sales ... **Bad Animals** (Seattle) has named **Reed Ruddy** as studio manager ... **Howard Schwartz Recording** has added **Lorna Levine** to its staff as operations manager/director of client relations ... **ESE**, manufacturer of distribution amplifiers, clock systems and time code products has promoted two employees; **Bill Kaiser** is the new general manager and **Brian Way** is the new director of marketing and sales ... **Serge Rancev** was recently appointed group general manager for Audio Oz Pty., Ltd ... **Ken Lewis** is now on staff at Refraze Recording (Dayton, OH) ... **Basic Measuring Instruments**, a manufacturer of electric power analyzers announced the promotion of **William Stuntz** to president and CEO and the appointment of **Dick Piehl** as vice-president of engineering. ■

QUOTE:

"Intelligence isn't a plus in rock 'n' roll anyway. Most people in rock aren't very bright. If they weren't playing rock 'n' roll, they'd be working in some factory — and probably at the bottom rung."

Joe Elliott - Def Leppard lead singer, from the *Los Angeles Times* /Calendar, Sunday, May 17, 1992.

IN-LIMBO

A hot topic at the 1992 SPARS workstation conference in L.A. was the non-existent universal file exchange protocol for the digital production workplace. One specific proposal was made by Avid audio products manager Mac Leathurby for a digital audio/video file transfer system named Open Media Format (OMF). A lively discussion followed, as advantages and obstacles of such a system were raked across the coals. Anyone wishing specifics about the Avid proposal should contact:

**OMF Partners Program
Avid Technology Inc.
3 Burlington Woods
Burlington, MA 01803
617-221-6789**

DO THE LIMBO ...

The most common questions posed during the OMF discussion was, How low do you go, and exactly what is the lowest common "info" denominator between digital workstations? Are files to be transferred as single files? Will EQ, pan or dynamic control information be contained in the file? Will the file simply be multitrack audio, sans control info ... or control information devoid of audio?

No conclusions were reached. But most, if not all, participants stated in-principle support for the concept. In particular, New England Digital has already implemented OMF-compatible EDL files.

IN THE MEANTIME ...

Removable magneto optical discs (MODs) are viewed by some vendors as a near-term ointment for the file transfer problem. Unfortunately, MODs must rely on traditional "sneaker-net" transfer methods and still experience the traditional hand-carried logistical problems.

But Dolby Lab's new digital compression schemes seem to promise achievable file sharing capabilities between studios sans the human carrier. A successful late-April demonstration for N.Y. SPARS members by the Dolby Labs staff explained the Dolby AC-1, AC-2 and AC-3 techniques for coding and transmission of high-quality audio. And a 6,000-mile round-trip demo transmission was made using AC-2 encoded high-quality programming, over T-1 digital telecommunication lines, from Howard Schwartz Recording in N.Y. to Lawson Productions in Seattle. ■

Random Access

STUDIO UPDATE

Name/Location

Details

NORTHEAST

Videoworks/New York

Recently acquired a Korg SoundLink digital workstation.

Howard Schwartz Recording/
New York

Has added a second ScreenSound system and the SoundNet digital audio network.

Soundtrack Recording
Studios/Boston

Purchased two Yamaha DMC1000 digital mixing consoles docked to SSL ScreenSound systems for its New York and Boston facilities.

Clinton Recording Studios/New York

Installed 72 channels of Flying Faders automation in their Neve 8078 in Studio B: the first installation of its kind to retrofit the new faders into a classic older board.

SOUTHEAST

Audio Productions/Nashville

Added a Roland DM-80-8 hard disk system.

Masterfonics/Nashville

Purchased two Otari DTR-900II digital 32-track recorders and one Otari-MTR-100A 24-track recorder with Dolby SR.

Sheffield Remote
Recordings/Phoenix, MD

Has unveiled its new 48-foot remote audio truck featuring a 48-input SSL E/G console and a Neve 24-input console.

The Castle/Franklin, TN

Upgraded to a 32-channel Otari Series 54 console for B Room.

Imagine Recording/Nashville

Opened for business with a Studer A827 24-track recorder and extensive vintage hardware including a 20X8 API console.

Omni Sound/Nashville

Purchased an Otari MTR-90III 24-track recorder and DiskMix 3 Moving Fader automation for their Trident A-Range console.

SOUTHERN CALIFORNIA

Johnny Yuma Studios/Burbank

Completed a total control room upgrade with installation of a vintage 72-input Neve 8068 console.

Universal Studios/Hollywood

Has purchased their second SoundStation II digital audio production system.

GREAT BRITAIN

Amazon Studios/Liverpool

Has taken delivery of a 48-input Neve VR60 Legend with flying faders automation.

Abbey Road/London

Purchased a 72-input SSL 8000 G Series console with the Ultimatum dual automation system.

EUROPE

Digipro SA/Paris, Brussels and
Amsterdam

Has ordered two copies of the latest CEDAR Sound Restoration module; The Phase/Time Corrector.

Touchdown Studios/near Munich

Added A 60-channel post production version of the VR Legend console fitted with Flying Faders.

TIC Music/Vienna

Installed two Soundtracs consoles, a Quartz 48 and an In Line with Tracmix 2 automation, and a Sony Apr-24 into their new facility.

JAPAN

Yume Studio/Maebashi City

Recently installed a Soundtracs Quartz 32 production console.

NEWS NOTES

Klark-Teknik Electronics, Inc. recently changed its name to Pinnacle Audio. This move was made to reflect the company's changing role in the marketplace, and eliminate confusion with the various brand names distributed by the company.

Philips Electronics N.V., the inventor of the Digital Compact Cassette (DCC) has appointed Media Technologies Ltd. as the Technical Support Group for the manufacturers of DCC in North America.

QSC Audio has selected Lone Wolf to implement their Media Link Network protocol for the remote operation of EX Series power amplifiers.

Signature Music Library has announced the release of a new volume of Orchestra production music. Performed by the same live symphony players used in Mannheim Steamroller projects, the new themes offer atmospheres of prestige, challenge, grandeur, conflict and success.

Erich M. Friend and David D. Crawford have formed a theater consulting group, **Crawford-Friends Consultants, Inc.** The company specializes in performing arts technology and facility planning.

Gentner Communications Corporation has signed a letter of intent for the purchase of all products and technology of MacroMedia Inc. of Northfield, MN. The acquisition will be accounted for as an asset purchase, involving a nominal sum of stock and cash.

Audiomation Systems, the company that distributes the Uptown moving fader console automation systems, is now incorporated in the United States.

ADDRESS CHANGES

QSC Audio Products has moved all operations to: 1675 MacArthur Blvd., Costa Mesa, CA 92626-1468; 714-754-6175; fax 714-754-6174.

Opcode Systems has moved to: 3950 Fabian Way, Suite 100, Palo Alto, CA 94303; 415-856-3333; fax 415-856-3332; technical support 415-856-3331. ■

This is no Fairy Tale



This is real life. The frog won't turn into a prince and his voice won't sound like Diana Ross — at Brüel & Kjaer capturing reality is what we're all about.

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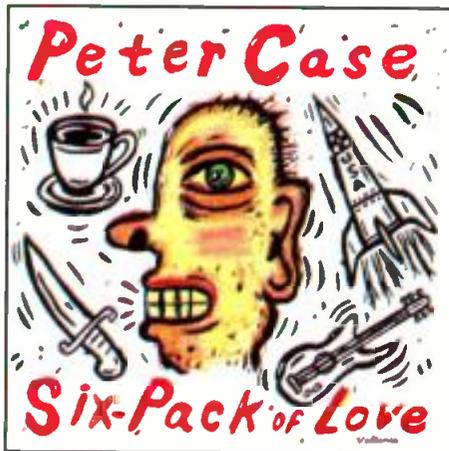
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Circle (8) on Rapid Facts Card



Peter Case: "Six Pack of Love"

Label: Geffen
 Produced by: Mitchell Froom and Peter Case
 Engineered by: Tchad Blake
 Mixed by: Tchad Blake
 Recorded at: Sunset Sound Factory
 Mixed at: Ocean Way (Los Angeles)
 Mastered by: Bob Ludwig at Masterdisk

Comments: Well, John Cougar can hop the first train back to the melon camp. Here's an artist with a gutsy, raw rock 'n' roll sound, and, to paraphrase another Froom client, Case's aim is much truer. Case may not be the next Dylan (or even the next McManus) but his songs have plenty to say. The arrangements are built around clangy guitars, twanging away through vintage amps whose volume knobs have nothing more to give. You can almost hear the power tubes begging for mercy; these are not the smooth, wet guitars of modern pop. Froom has made extensive use of vintage effects. Even the keyboards seem on the verge of meltdown. The Farfisa organ sounds as if it's been crying since "96 Tears" and it's still not getting its way.

There's also something that sounds a little like a cross between bagpipes and an accordion. I don't know what this one is. It's by no means pretty, but it gets the job done. If there's a single digital sampler in the whole production, I'll bet it's had a few transistors yanked out.

Of special interest: Peter Case does his part in the retro-production effort by sounding exactly like John Lennon turned up to 11. On some songs (e.g. "It's All Mine") the resemblance is uncanny. Froom has even included the heavy slap echo which often seemed to accompany Lennon vocals ("Deja Blues"). — Reviewed by Bill Copen

U2: "Achtung Baby"

Label: Island
 Produced by: Daniel Lanois, Brian Eno
 Engineered by: Flood
 Mixed by: Flood, Steve Lillywhite
 Recorded at: Hansa Ton Studios (Berlin); Dog Town, S.T.T., Windmill Lane (Dublin)
 Mastered by: Arnie Acosta at A&M, Los Angeles

Comments: Never known for their pristine recordings, U2 return with yet another uncannily poor recording that still manages to drive with power and excitement seldom found in any other rock band today. Considering their history of sub-garage audio quality, it is tempting to think that it was easy for Flood, Lillywhite and the rest of the control room crew to create these sonic monstrosities, yet, if this were so, everyone would be doing it. Producers and bands always say they want their records to sound like U2 records, and yet nobody else's do! [See the January 1992 R+E+P Interview, where Steve Lillywhite explains how hard they work to make their albums sound "spontaneous."]



Of Special Interest: Although the lead vocals on the opening cut "Zoo Station" sound like an engineering disaster — Bono is massively distorted and given telephone EQ — the effect sounds fresh and works. Bono pays tribute to his fascination with the '60s on "One," as the Edge uncharacteristically plays a sort of Buffalo Springfield guitar beat on top of the string section pads. ■



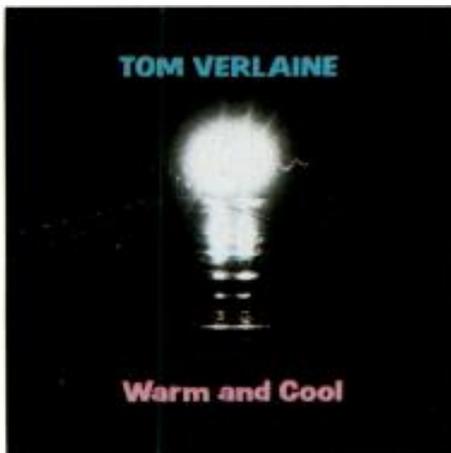
The Sullivan Years: "Happy Together - Sixties Rock"

Label: TVT Records
 Produced by: Mike Corso, Steve Gottlieb
 Engineered by: A.T. Michael MacDonald, Allan Tucker
 Mastered by: Foothill Productions, New York

Comments: Live-sound-for-television engineers must truly be the great unsung heroes in audio, and were it not for TVT's series of Sullivan reissues, the engineers — and these performances — might have remained unsung forever. The recording quality is variable, from slightly ragged (and sometimes terrible) to actually quite good. But what is amazing are the performances. Regardless of whether the vocalists were merely singing over backing tracks (come now, you don't really think all the groups had full horn and string sections brought in) or the bands were performing totally live, there is an energy, a magnetic quality to the performances that completely comes through on tape. With the tendency we often have toward high-tech audio snobbiness, it is easy to forget that, if nothing else, good production is getting a performance on tape. MacDonald and Tucker clearly did this.

Of Special Interest: All the tracks on this CD collection were recorded in 1967 and 1968. Groups featured include The Turtles, The Lovin' Spoonful, The Grass Roots, The Association, The Chambers Brothers and Paul Revere & The Raiders. Is the attractiveness of these tracks because these were two of the most fertile years in rock 'n' roll history? Or because the Sullivan show was rock's first introduction to mainstream audiences, its first shot at true legitimacy? ■

Dan Levitin is R+E+P's music production editor and he teaches Music Technology at Stanford University.



Tom Verlaine: "Warm and Cool"

Label: Rykodisc
Produced by: Tom Verlaine
Engineered by: Mario Salvati
Mixed by: Mario Salvati
Recorded at: Acoustilog (New York)
Mastered by: Toby Mountain at
Northeastern Digital Recording

Comments: This instrumental album features Verlaine (ex of Television) on guitar. The album is thick with mood, created by some unusually over-the-top effects. Vintage amplifier effects combine with some late '70s- style guitar effects (such as random pitch modulation), while the drums and cymbals are drenched in a large hall ambience. The overall feel and sound of the album is like walking into rehearsal in a large, empty, wooden-walled concert hall, and standing at the back of the room for an hour while the band runs through their set.

Of special interest: The opener "Those Harbor Lights," finds Verlaine's Dick Dale-style guitar drenched in a hugely rich and luscious spring reverb. The snare drum, played with brushes, sits underneath, massively reverbed. Every nuance of Verlaine's string attacks come through, and many different amplifier tones and colors are created as the tubes react to his attack changes. Verlaine reaches into his guitarists' bag of tricks, using volume pedal, tremolo, DDL, etc., and he does so naturally and unself-consciously.

FOCUS:

MARIO SALVATI, Engineer, "Warm and Cool"

R•E•P: What's that thick 'verb on the drums on "Harbor Lights"?

MS: Believe it or not, it's just stereo EMT tube plate, set between 2.5 to 2.8 seconds. Acoustilog has one of the finest-sounding ones I've ever heard. Plus the drums were very compressed so the sound of the drum room is in there also. We compress the drums to tape, using LA-2As on the overheads, feeding some Pultecs with a generous helping of 12K. We used very little reverb in the mix — most of what you're hearing is the room. There's a small amount of Lexicon 224 on guitar and toms; SPX90 on a room program for guitars; Gain Brain IIs on tom and snare.

R•E•P: Did you record guitar with effects or add them at mix?

MS: We recorded them wet except for some of the reverbs. The band played live; any kind of phasing, vibrato, delays and so on were done with Tom's pedals. Also, the various amps we used had an impact on the sound. Tom and I both have collections of amps. The main guitar in "Harbor Lights" is a Kustom Guitar hollow body, going through an Ampeg B15. We also have this old Altec tube limiter that was used on that — that's what gives it that snap.

R•E•P: As he changes his attack intensity on the strings you get different sounds out of the amp ...

MS: Yes, that's Tom and his fingers, but also a lot of that is how he played to the limiter. That particular sound comes from the Altec — it's very heavy compression with that warm sound. We're also using it on the new Television record. Other amps were Fender Super Reverb, Silvertone Twin 12, this little VOX AC15 that we used on some of the brighter, twinkly stuff and an old Magnatone.

R•E•P: I just got Fender's reissue of their 1963 Vibroverb — I love that ...

MS: Yes! Richard Lloyd, the other guitarist in Television, has one and we've actually used it quite a bit on this record. It's a really cool amp — it has that nice sweet sound and it has that great distortion. We're all big fans of it.

R•E•P: Do you tweak the sound at the amp for the artist?

MS: We've been working together for about 10 years and Tom's grown to trust me in that area. It's a combination. If he's going for something sometimes I'll make suggestions, and sometimes I'll actually go out to the amp and tweak it a bit with him in the control room. I do that for quite a few of the artists I work with.

Some of the other artists I work with don't have as much experience with imagining how things are going to sound through the microphone, so I'll adjust things at the amp to help them get the original sound they really wanted. But Tom's very knowledgeable about that stuff. We'll typically have about 15 or 20 amps here and another five to 10 guitars. And we'll try to get the right guitar/amp combination, which is a lot of fun.

We used almost exclusively Neumann tube mics. There's a U67 the studio owns we're particularly fond of. It was modified by Robert Derby who was a technician here at one point. We used a pair of Schoeps M221s for the drum overheads and some of the guitars. Also, LA-2As, Pultecs, Neve preamps and EQs, and some API EQ modules (the 550As) here and there.

Derby built me a pre-amp amp head that we call 'the brownie' and it's one of the best tube pre-amps in the world. It uses a 12AX7 pre-amp tube and a 6V6. If you have a guitar amp that runs on 6L6s, you can take them out and put 6V6s in their place; they sound so much sweeter. You can't go the other way, but this swap works. ■



Rick Vito: "King of Hearts"

Label: Modern Records/Atlantic
Produced by: Rick Vito, Terry Manning,
Lance Quinn

Engineered by: Terry Manning, Gary
Mallaber, Chris Brocius, Craig Fall
Mixed by: Obie O'Brien, Lance Quinn,
Brian Malouf, Phil "The Baker" Nicolo,
Steve Pouliot

Recorded at: Studio Six (Memphis);
Orchard Studio (Sherman Oaks, CA); Image
Studio, Score One Recording (Los
Angeles); Sigma Sound Studio
(Philadelphia)

Mixed at: Sanctuary Studio (Rumson,
NJ); Studio 4 (Philadelphia); Post Logic
Studio, Brooklyn Studio (Los Angeles)
Mastered by: Bernie Grundman

Comments: At its best, Vito's blues guitar playing holds up with the most masterful players. Indeed, the finest moments on "King of Hearts" occur when Vito eases back and lets his fingers run wild across the frets. The guitar tones are varied and superb (or should we say "Supra-perb?"). Only when Vito tries to tackle mainstream rock does he sound ill at ease. The songs are stylistically varied, running the gamut from flat out AOR rock ("Walk Another Mile," "Desiré" down-and-out Texas-style blues ("I'll Never Leave This Love Alive") to knockout Texas rock ("Honey Love").

Of special interest: "Honey Love" is a textbook study in ZZ Top production — open tuning, plate-reverbed buzzing guitars double tracked (Vito actually quadro-tracked them: see Focus) and thundering sampled snare hits. The outstanding track on the album, the instrumental "Walking With The Deco Man" finds one of the best uses of sloshy-wet reverb on the whammied lead guitar we've ever heard (at 2:07 into the tune).

FOCUS:

RICK VITO, Producer/Artist, "King of Hearts"

R•E•P: How do you record electric guitars so as to minimize amplifier noise?

RV: There are two ways to do it — if you use a guitar with a humbucking pickup you're going to have a lot fewer problems — that takes away most of the noise. If you're going for the single coil sound — this sounds dumb — but sometimes it's just a matter of finding the exact position in the room where the guitar is quiet. I don't play my amplifiers real loud and whenever possible I use a really low wattage amp like 5W or 10W. I've found that sonically you get a tone with a small wattage amp that you can't get with a high wattage amp. A cruddy speaker will help, too. I have a bunch of amps I like to use — Supro and National amplifiers that were made by the Valco Company back in the late '40s and '50s. Their amps are really cheesy — you'd never be able to play live with them, but they really record well. In fact, I just read somewhere that a lot of the Led Zep stuff was recorded with a Supro amp. Just sitting in the room with the amp you think it sounds crappy, but you stick a 57 on it and these tones come out that sound wonderful.

I think a lot of people don't realize that when they go for a guitar sound, if they're feeding too many watts and pushing too much volume, it just thins the sound out; it doesn't occur to them to go the other way.

R•E•P: Mark Knopfler said that when he was making "Money For Nothing" he really wanted to get a ZZ Top rhythm guitar sound, and that he called Billy Gibbons and Terry Manning [ZZ Top engineer] on the phone for help and they refused to tell him anything. On "Honey Love" you come a little closer to that sound. Did Terry give you any help with that?

RV: Terry definitely had something to do with that. The track used to sound more ZZ Top. I actually did stuff to make it sound less ZZ Top-ish. We were using two different amps being fed the same signal in stereo and we did that twice, with two different guitars and then blended that all together. Also, the guitar was played in an A tuning, so that may somehow add to the ZZ-ness of it. I think they do that on some songs that we're all familiar with.

R•E•P: What were some of the things you pulled out?

RV: There was a sequenced 'dikka digga digga digga' sound on a Moog synthesizer and I pulled that out, I had the drummer redo the hi-hat so it wasn't so straight, to make it more splashy. The first mix was real gnarly, but I smoothed that out a bit by pulling out one of the guitars.

Vocally, I put more of a rockabilly slap effect on the lead vox. That buzzing bee sound was done with an e-bow that we had a lot of fun with. I held it down over the A note and let it sustain. I might have used a Dumble amp on that tune. Alexander Dumble made amps for Stevie Ray Vaughan and David Lindley, they're all hand-made so they're very expensive. I got mine years ago when I was working with Jackson Browne. They're 100W. Another amp I use a lot is the old black-face Fender Deluxe Reverb.

R•E•P: Did a lot of the songs start out on 8-track, as demos?

RV: A couple of songs did — "Desire" and "Walk Another Mile." I had put these down as demos, with a drum machine. The record company heard them and said, "Don't change these too much," so I just embellished them. I added a live drummer, redid the vocals, and I left the lead guitars the way they were, but redid the rhythm guitar. We just caught something in that demo mode where nobody was thinking too hard about everything.

R•E•P: Are you thinking of producing some outside artists?

RV: Yes. One of my long-term goals is to produce some other artists. I'm looking for new young artists who are interested in keeping a very roots feel. Two guitars, bass and drums — that's what I'm good at. ■



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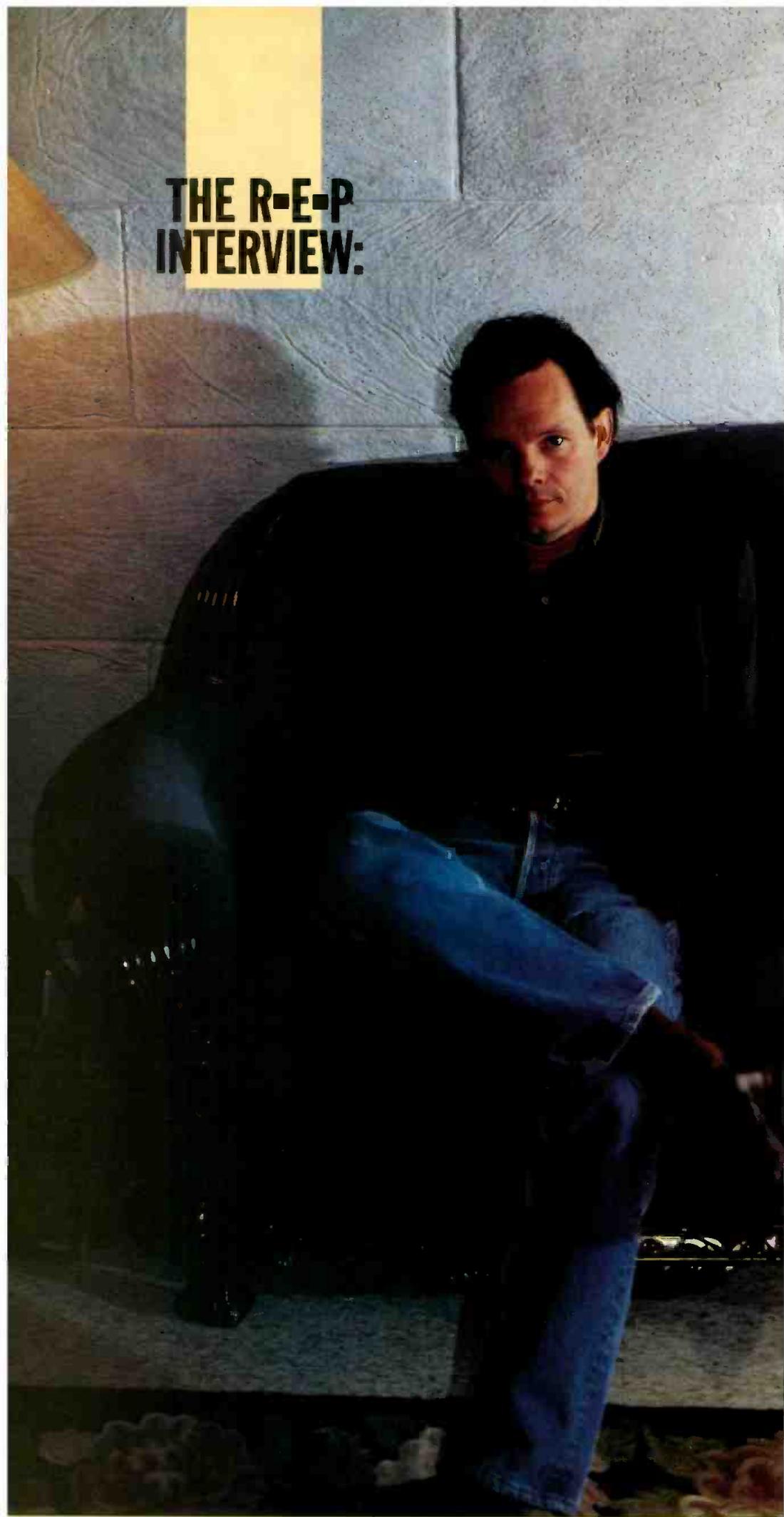
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THE R•E•P INTERVIEW:

By MAUREEN DRONEY

BILL BOTTRELL

Sometimes it feels as if we're drowning in dance pop records awash with homogeneous reverbs, endlessly sampled drums and vocals processed beyond recognition. But drop Madonna's "Like a Prayer" or Michael Jackson's "Black or White" on your CD player and notice the difference. Instead of copycat sounds and cheap tones, you hear real engineering. The difference is Bill Bottrell, one of the few engineers around who's not afraid to put real sounds, expertly recorded, up front, dry and in your face. His success proves that it's possible to achieve Grammy-nominated quality and top-of-the-charts impact.

R•E•P caught up with Bottrell at Toad Hall, his Pasadena, CA, studio, where he was working on his rollaround Neve 8058 console, producing the new David Baerwald album. All of Toad Hall's equipment, including the console, is on wheels and can be used in either of two rooms. On the day we were there, he was working in the larger room, which boasts a high, peaked ceiling topped with a skylight, and a back wall lined like a library with hardbacked books. (Bottrell assured us they are just acoustic treatment!) We adjourned to an upstairs lounge overlooking the studio, where Bottrell could talk and also keep an eye on the session.

R•E•P: This studio feels very comfortable, like a living room.

BB: People really like it here. We keep a very loose atmosphere. Sometimes things get done and sometimes they don't. I like it that way. I don't run a tight ship, on purpose. Technical considerations never take precedence over creative freedom considerations. The basic thing I try to do is just capture moments, put them on tape and put them out, unadulterated. Of course, for years earlier that wasn't the philosophy. The philosophy was to "engineer" things.

Maureen Droney is a production manager and engineer based in Los Angeles.

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R•E•P: You mean your philosophy?

BB: My philosophy, and a lot of people's philosophy. To put their creativity out and to impose it on the record as an engineer, or even as a producer. I'm trying to get away from that. I'm trying to get away from "engineering" in general. I'm trying to just avoid it. Avoid doing it, avoid having the engineer do it. The engineer is still here, understand, but he or she should be a ghost, creatively.

R•E•P: Being transparent, you mean,

were a couple of songs where the rough mix didn't have the right vocal on it or something, so we had to mix them. And we tried to get to the mental space where you're doing a rough mix, and we spent maybe 45 minutes doing the mixes. Because the tweaking, all the tweaking that's going on, I don't feel it anymore. I don't feel like it's valid. It's not honest. I think the tweaking has to come from the song, the music, the player and the performance.

R•E•P: So you believe a lot of the tweaking that's going on is coming from the ego of the engineer and not from the song?

BB: Yeah. This is where it all started to go wrong, in the late '70s when engineers and producers started being allowed to impose their frustrations as musicians on the records. And that never should have happened. Because the artists know what to do if they are really an artist, and the producer should just set up a situation where the artist feels free to do what they do. The engineer should record it and get out of the way. I've seen way too many examples of engineers hijacking a project and imposing their small-minded technical feelings on a thing. Artists have been brainwashed to think that this is how it is. Because it's been this way for 15 years now. There's a whole generation of artists who think that's how records are made and they don't question it.

R•E•P: But there are so many engineers who are working with artists, or maybe we shouldn't call them artists, who don't know what they want.

BB: Well, that's the phenomenon. Once you have this system set up where the artistry is spread thinner amongst more people, the producers and engineers, then the artist and the vision of the thing can be smaller and less significant. And that's what we've been having for a long time, with, of course, notable exceptions. And those exceptions are the only records where an artist truly has a vision, and a reason for being in the studio, and knows it, and refuses to be fooled by the system, and keeps the technology out of their way, consciously, much to the dismay of the engineer, I'm sure. Those records usually turn out to be true statements. They have something to say. Whether you like that kind of music or not, it doesn't matter. You can hear it in a minute. Some records are honest, and

some are manufactured bullshit.

I'm as guilty as anyone else, but I have at least spent the last 15 years learning these things. To me, the sound of an honest recording can be 1,000 times more impressive than one that's heavily tweaked out with the lame ideas of an engineer using 20 or 30 \$400 boxes lined up in a rack. The challenge now comes from capturing something pure and simple and honest, and having it sound spectacular, bigger than life. And when you capture some moment of people, or one person, or machines doing something great, and it's good, you try to avoid the layering that tends to happen. You just leave it. If it's good enough, it will make the album. If we get enough better things, then we'll leave it off.

It's not nostalgia, it's not a retro thing, or a roots thing, it's just honesty. And I think that's where things should go ... and will go.

R•E•P: Tell me a little about your background. Did you start out as a musician?

BB: I was a guitar player in high school and I gave it up, probably for similar reasons as most engineers. I was insecure and not up to the challenge of being a brilliant guitar player, so I went into engineering. In '85, I started producing with Thomas Dolby on "Aliens Ate My Buick," and as a producer I got my confidence back for being a musician. Once I got away from the knobs and buttons and started judging musical value, I realized, "I can do that," so I picked up the guitar and other instruments and started playing.

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between the music and the tape machine?

BB: Yeah. They are a presence personally, and they add to the mix of people in the room, and that's very important, but they don't attempt "engineering." They don't "tweak" things; they don't "get a sound." There's no such thing. You use good gear, the best gear. We use gear from the early '70s and late '60s — tubes or transistors, and you just put a mic up and record it. You don't bother any more than that.

My last album, we didn't mix. Everybody knows you can never beat the rough mixes, right? Well, we actually acted on that and insisted on not mixing, because, yet again, we found we couldn't beat the roughs. We had them all on DATs, so we just used those.

R•E•P: That was the new Wiretrain album, "No Soul, No Strain?"

BB: Yes. And there they are. There



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R•E•P: That's moving from engineer to musician, but how did you originally move from musician to engineer?

BB: I was in bands in high school, and we had worked in an 8-track studio. I was the amp guy in the band, and I could fix things. When I decided to get a job as an engineer, I went back to this studio in Hollywood. And the owner remembered me and gave me a job doing the lousy work — commercials, kids' albums, training films. I was never an assistant; I did get to jump right into engineering. But it was all old gear that didn't make much sense. Half the time I couldn't get signal to come out of the outputs.

R•E•P: While the client's sitting there looking at the clock?

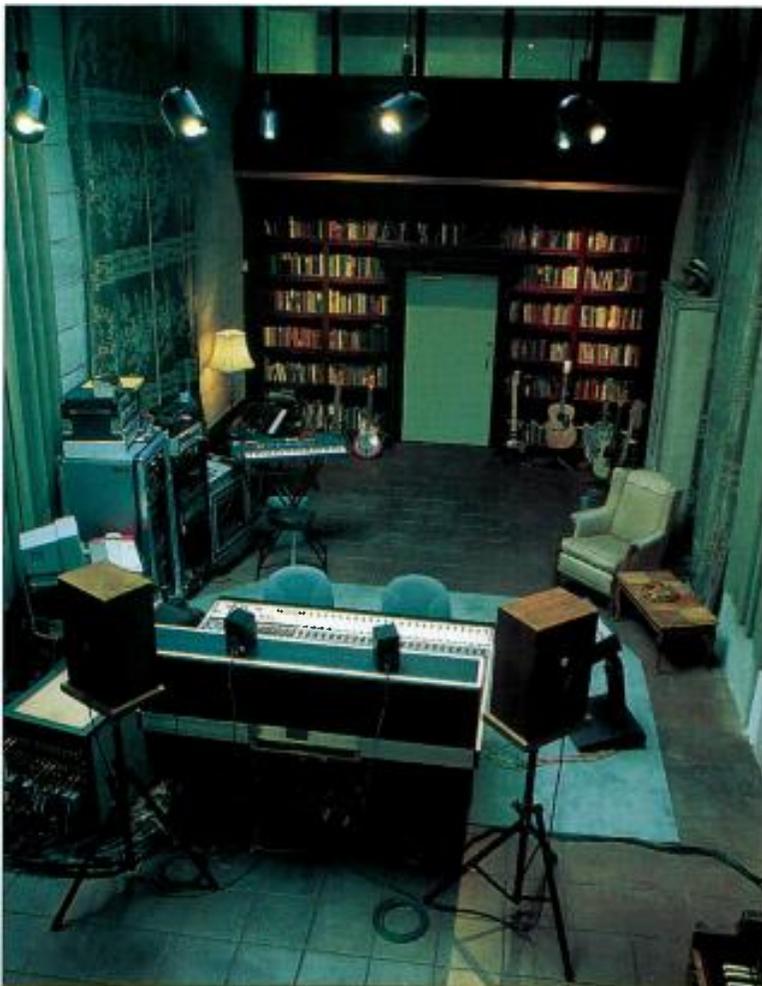
BB: Yeah, but everyone goes through that.

R•E•P: You did two records with ELO. How did that come about?

BB: My first professional gig was working at Soundcastle Studios. It was just getting started and I was the all-around engineer and maintenance and whatever. Jeff Lynne came to town and was searching for a studio with a Harrison console and UREI monitors and we had that combination. And he wanted to use the house engineer to cut a demo! This was just a dream! I had been a huge fan of his and I knew all of ELO's albums. I liked tweaking records the way he did. So I got everything set up for him with all the sounds the way I thought Jeff would like them. And he did; he loved it! I got to mix one song on that album, and then on the next album I mixed the whole thing. Then I engineered and mixed the next couple of albums. I learned a lot from Jeff Lynne.

R•E•P: I know an engineer who uses Pulp Culture from (Thomas Dolby's) "Aliens Ate My Buick" to check his monitors.

BB: I'm really proud of that record. Thomas actually got a Grammy nomi-



nation for Producer of the Year, and I'm not sure why I didn't, since I was co-producer. It was some kind of technicality.

R•E•P: How do you get so much silence on records?

BB: Self-control — that's all it is. You leave the silence and don't try to cover it up. You have to have confidence in the silence.

R•E•P: Actually, I meant sonically. You get a very wide dynamic range. Do you use noise reduction?

BB: No, I never use noise reduction.

R•E•P: Do you mix to digital?

BB: I usually mix to analog 2-track. I'm trying out right now a Studer from the late '50s — 1-inch tube. It's stunning! The problem is mastering. We'll have to carry it with us!

R•E•P: What did you mix to before you had this?

BB: Ampex ATR, 1/4-inch, 30ips.

R•E•P: Why don't you use 1/2-inch?

BB: I've never been happy with 1/2-inch because it has this awful head bump, and fringing ...

R•E•P: What's your basic drum tracking setup?

BB: Every song is different, but I have always used as few mics as possible. I

would never mic every drum. I've always used the room mics, or near room mics, even when it wasn't fashionable. I've always mic'd the drum kit as if it's one instrument, pretty much starting out with an overhead pair, a snare and a bass drum mic. I like my Schoeps tube mics for overheads, or one mono overhead U47 is a great sound.

R•E•P: Your records have great bass sounds.

BB: Thanks. I have a bass pre-amp that I designed myself years ago. It's an extremely high impedance pre-amp, with great big capacitors on the output that allow it to go down to, I think, 4Hz.

R•E•P: You mean you told someone what you wanted and they built it?

BB: No, I built it myself. I used to have more time. It's a good thing it doesn't break, because I don't know what I'd do without it. It's just standard chips of the day, 5534s, but I found a circuit in one of the old applications manuals that was for a high-input impedance modification to the chip. Other people were designing with FET chips, bi-FETs or whatever they were, which give you a high-input impedance, but those chips never sounded very good. It's probably a known circuit to raise the input impedance of these things, but I raised it to 10MHz or something, so the bass pickup can plug in there and just bridge into it and there's absolutely no loading on the pickup, and it just blows in and out of the thing. Then it's got a full-on +24 output, and a little gain pot. It's like a buffer. It buffers the bass pickup from all the gear. I usually just plug it right into the machine or into a limiter. By the way, a (Valley People) Dynamite limiter is good for that, too, if you adjust the dc offset wrong so every time it kicks in it gives a little dc thump on the output.

R•E•P: Those original Dynamites are great limiters.

BB: Limiters are the coolest thing in recording, the strongest tool. You could choose a hundred different limiters for a hundred different jobs, because they all do a different thing. It's much more powerful than tweaking equalization.

R•E•P: You and Patrick Leonard have cut some classic records together. How did you start working with him?

BB: Madonna heard "Aliens Ate My Buick" and wanted to work with me.

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She had Patrick call me to work on the "Like a Prayer" album, and Pat and I have worked together ever since. Pat's the one who conceived of "Toy Matinee," and, as part of the conception, he wanted me to produce. He wanted to be a musician in the band and he didn't want anything to do with producing.

R•E•P: You were both engineer and producer on "Toy Matinee." Kevin Gilbert's vocal sound is a real standout on that album. How it was recorded?

BB: With a tube U-47, not mine, but a rented one, a Neve Class A mic pre-amp, a Neve limiter and right into the tape recorder. As a matter of fact, that's the chain for everything I do. (Laughs) No, just kidding.

R•E•P: Your vocal sounds are really dry and really present. What are you using mix-wise to achieve that?

BB: Actually, it's what I'm not using mix-wise. Like reverb. Pavarotti can have reverb, but I'm just a rock 'n' roller, and somehow a concert hall doesn't have anything to do with it. I use a U-47 and a good amount of compression and avoid the temptation to boost the top end too much, and then just leave it alone.

There's nothing else. People aren't used to hearing a raw vocal shoved right up in their face and turned up loud. Listen to "Highway 61 Revisited." That's my vocal sound. Try it. But you have to have a U-47 and you can't be afraid to compress the living daylight out of it. If you're an audiophile guy, then you'd better not compress it, but then your records will sound like audiophile records, and that would be unfortunate.

R•E•P: What about drums? Are there any samples used to enhance Brian McCloud's drum sounds on "Toy Matinee"?

BB: No, that's just raw drums. Brian is fabulous.

R•E•P: Your mic of choice for acoustic guitars?

BB: Telefunken 251s and KM 54s, the tube version of KM 84s. Tube mics any chance you get, except for percussive things.

R•E•P: You knew Michael Jackson from the "Victory" album. How did you get together for the "Dangerous" album?

BB: I had worked a lot with Michael in between, but nothing that came to fruition. He was producing this time and when he called me to work with him, I said, "Well, now I'm a producer, Michael," and so I produced. The great part about it was Michael asked me to do things I'd never done. I'd never been a songwriter, and he asked me to write songs. So now I'm a songwriter.

R•E•P: And you're a rapper now, too! (on "Black or White").

BB: Yeah, I'm the rapper. I just kind of filled in things that weren't getting done. That song was sitting there with this big gaping hole for way too long and it was my production and my responsibility. I was afraid it would get left off the album if it always had this big hole in it when people heard it. So I put the rap in, and it was meant to be a demo for somebody else to do the words. Michael loved it ... and he said, "I'm gonna leave it!"

R•E•P: Why is it credited "Rap performance: L.T.B." on the liner notes?

BB: (Laughs) That's a reference to my

suburban upbringing. It was going to be 'MC Leave it to Beaver'!

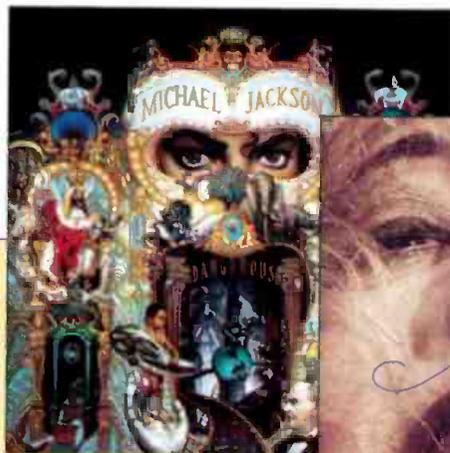
R•E•P: How long did you work on "Black or White"?

BB: Stretched out, more than two years. This is totally opposite to how I told you I work, right?

R•E•P: What's one essential Bill Bottrell recording effect?

BB: Brutal honesty.

R•E•P: At this point, screams from the studio below interrupted us and Bottrell had to depart to rejoin his session. ■



BILL BOTTRELL DISCOGRAPHY

Produced, David Baerwald, Untitled as of now, A&M 1992.

Produced, Wiretrain, "No Soul, No Strain," MCA 1992.

Co-produced/Co-wrote/Co-engineered, Michael Jackson, "Dangerous," Sony, 1991.

Produced/Music, Madonna, "Truth or Dare," Miramax Films, 1991.

Produced/Engineered/Co-wrote, Toy Matinee, "Toy Matinee," Warner Bros., 1990.

Co-produced/Tracks, Madonna, "Dick Tracy," Warner Bros., 1990.

Engineered/Mixed, Madonna, "Like a Prayer," Warner Bros., 1989. Nominated for Grammy — Best Engineering.

Engineered/Mixed, Tom Petty, "Full Moon Fever," MCA, 1989. Nominated for Grammy — Best Engineering.

Engineered/Mixed single, Traveling Wilbury's, "Traveling Wilbury's Vol. I," Warner Bros., 1988.

Co-produced/Engineered, Thomas Dolby, "Aliens Ate My Buick," EMI, 1987.

Mixed album, Maurice White, "Stand By Me," CBS, 1985.

Mixed single, Starship, "We Built This City," RCA, 1985.

Engineered/Mixed, The Jacksons, "Victory," CBS, 1984.

Engineered/Mixed, Dave Edmunds, "Slipping Away," 1983.

Engineered/Mixed, ELO, "Secret Messages," CBS, 1982.

Engineered/Mixed, ELO, "Time," CBS, 1980.

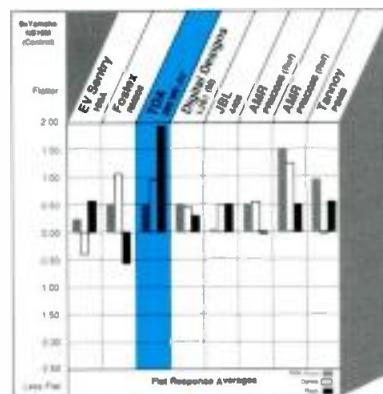
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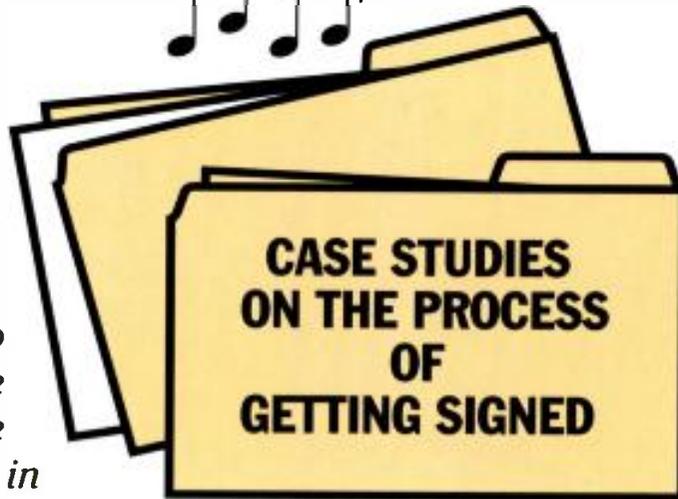


MODERN DEALS

By ERIC WENOCUR



These days record stores are overflowing with new acts. Most are unknown to the public until radio airplay and store visibility make them popular. But in many cases, what appears to be an artist's debut release may actually follow several lesser-known albums. How do new artists get recognition and record deals? Who is responsible for the devel-



opment and promotion of an unknown artist?

Although the record industry is certainly evolving in its way of doing business, some constants seem to remain. Budgets have become tighter (irrespective of today's slow economic

climate), but certain labels are still willing to finance an artist that it believes will make money. Also, the number of independently financed albums submitted for distribution deals is growing.

What follows are several case studies of the circumstances and record industry machinations that turned "unknowns" into well-known recording acts, plus some guidelines for bringing new artists into today's record industry.

Eric Wenocur is chief engineer at KLM Video, Bethesda, MD, and a recording engineer, producer and musician in the Washington, DC area.

SUZANNE VEGA

When the right management, production talent and contacts are brought together behind a new artist, the result can be record contracts and international success. But success is rarely achieved overnight, and a well-constructed business plan can make or break the process. Case in point:

It is 1982. Long-time friends Ron Fierstein, a New York attorney, and recording engineer Steve Addabbo decide to start an artist development company. AGF Entertainment is formed to manage and produce new artists, including playing an integral role in shaping the artist's recorded sound. Considering their current careers and experience as working musicians, Fierstein and Addabbo feel well-suited to the task. They decide to concentrate on finding and developing a single artist.

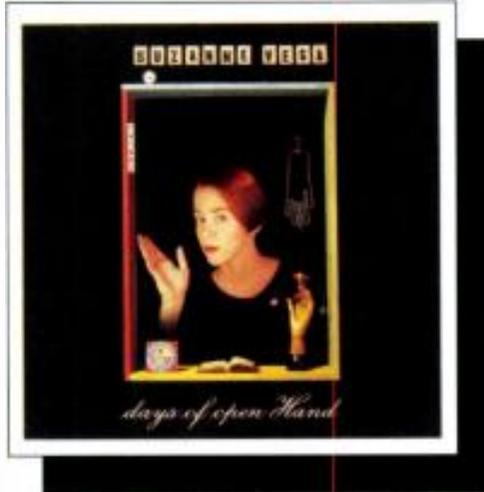
In early 1983, Fierstein is introduced to a secretary and struggling musician named Suzanne Vega. Attending a live performance, Fierstein and Addabbo are impressed with Vega's songs and invite her to record some simple guitar and vocal demos at their expense. Although Vega does not fit their original notion of a first client, Fierstein and Addabbo think that her songs are extraordinary and that she could be successful. She is signed to an exclusive management and production deal with AGF.

Musicians and songs are selected, and demos are cut by Addabbo. Using contacts developed through his music attorney, plus a lot of simple persistence, Fierstein begins the process of "shopping" the demos to record labels. Repeatedly, the A&R people reject his demo. At one point he gets a tape to Gil Friesen, then president of A&M Records, through a chance meeting with Cat Stevens' former manager. The tape is passed down to the A&R department and rejected.

AGF decides to work on developing a regional following for Vega, and she begins performing live with a band, rather than solo. Press attention increases, and a few labels send A&R representatives to her gigs. In mid-1984, after receiving additional demos and press clips from AGF, Friesen sends New York A&R rep Nancy Jeffries to hear Vega. Fierstein welcomes this interest with high hopes and meets Jeffries at the club.

Ironically, this opportunity almost becomes a disaster when the opening act, hearing that an A&R rep is present, refuses to leave the stage. Jeffries leaves, fed up, but returns later in the evening and really likes Vega. However, she thinks that getting A&M to

sign her might take some convincing, because Vega's material is hardly in fashion at that moment. They agree that it might help to suggest enlisting veteran producer Lenny Kaye to lend some industry experience to the project. Ultimately, Jeffries brings Jordan Harris, then head of A&R, to a gig and A&M decides to sign Vega, based on her clear artistic merit.



During this same period, a review in *The New York Times* hailing Vega as "the new Joni Mitchell" catches the attention of David Geffen, who contacts Fierstein about signing Vega to his label (although Geffen's A&R had passed on her earlier). Fierstein now has additional bargaining power, but decides to go with A&M because of the relationship they had already developed. In November 1984, AGF signs a "firm" 2-album deal with A&M on behalf of Vega.

As is typical of a "recording fund" deal, AGF was given a budget (as an advance on royalties) to deliver a complete, finished package to A&M, while the label reserved the right of producer approval. In this case, the album was budgeted at more than \$100,000, with the stipulation that Lenny Kaye would produce with Addabbo. AGF handled every aspect of the album's production, including all administrative, artistic and financial management tasks.

"Suzanne Vega" was released in April 1985. A&M had been one of several major labels that Fierstein had originally targeted for Vega's music, but it had taken nearly two years to cut a deal (hardly unusual in the industry, as it turns out). The first album sold modestly, but Vega's second album, "Solitude Standing," with the major hit "Luka," sold 3.2 million copies worldwide.

Interestingly, only 800,000 of those were sold in the U.S., thus validating the label's and Fierstein's commitment to developing a worldwide promotion

strategy. According to Fierstein, AGF felt from the beginning that "Luka" had "hit" potential. When it did well on college and AOR (Album Oriented Rock) radio, Charlie Minor, then head of promotion,

began a Top 40 campaign that paid off.

Changes in personnel at record labels are quite common and can wreak havoc with artists signed to the label. Vega's third album, "Days of Open Hand," probably would have done better than it did, but a major management upheaval at A&M coincided with the album's release. About the same time, an unauthorized remix of her single, "Tom's Diner," by an unknown duo called DNA, began to appear in London. The remix used Vega's original vocal over a dance rhythm track.

When A&M heard what was happening, it tracked down DNA and considered getting an injunction to prevent further play of the cut. However, indications were that this cut could become a big hit. With Vega's agreement, A&M bought the master of the remix from DNA and released it as "DNA featuring Suzanne Vega." Although AGF and A&M realized that it might steal attention from the recently released album, the risk turned out to be worth it when the remix became a smash. In the end, according to Fierstein, the DNA episode was generally beneficial for Vega's career, as well as earning her songwriter and artist royalties.

AGF Entertainment now represents several artists, its second signing being folk/pop singer songwriter Shawn Colvin (who Fierstein fortuitously "discovered" on the tour bus while Colvin was singing backup for Vega).

CONCLUSION

Foremost in the eyes of A&R executives are concept and direction for the artist and a management team already in action promoting the artist. After all, an artist/management package is attractive to record labels.

It is useful, if not critical, to have someone with credibility submitting tapes to A&R people. An attorney, manager, publishing company or record retail executive may serve this purpose. As the last case demonstrated, one shouldn't neglect, or allow the record company to neglect, the huge international market when promoting and distributing an album!



THE TRIPLETS

This deal has more to do with record industry machinations than pounding the pavement. It exemplifies the arbitrary way deals can change, through no fault of the artist, manager or producer. However, an act with potentially wide appeal, particularly in new crossover markets, can be attractive enough to overcome industry politics.

In mid-1989, producer Steve Barri, now vice president of A&R at Impact/MCA Records, was working as a consultant for Capitol Records. A demo of The Triplets (sisters Sylvia, Diana and Vicky Villegas) had been sent to A&R executive Tom Vickers and was brought to an A&R meeting. At this time, the Triplets were signed to Elektra as a hard rock act, based on their entry in the MTV Basement Tapes, but they

wanted to go in a different direction.

Also, they were doing a lot of studio and bilingual vocal work around New York. (They speak

fluent Spanish.) Coincidentally, Triplets manager Steve Allen

had also mentioned the group to Barri.

Tom Whalley, Capitol's head of A&R, was interested in the group (the bilingual aspect was a plus for crossover potential), and had Barri follow up with Allen. The group was brought to Capitol for a live audition, and everyone was impressed with their songs, personalities and charisma. However, just before contract negotiations for a Triplets deal began, Capitol president David Berman decided to leave. Whalley was also considering leaving, and this was seen by Barri and Allen as a possible problem if the Triplets were signed to Capitol.

Because Barri had been given the option to shop acts elsewhere if Capitol was not signing them, he took the demo tape to Ed Eckstein, A&R at Polygram. Eckstein was interested but had to wait for Capitol's decision. By now the contracts at Capitol were ready to go when Simon Potts took over A&R. Potts went to New York to see the Triplets live, but declined signing for Capitol.

Back at Polygram, Vickers had moved from Capitol and also encouraged Eckstein to sign the group. Polygram signed the Triplets to a 5-album deal. Eckstein and Allen asked Barri to produce the first album, based on the early demo tape. The album, budgeted at more than \$100,000, was financed

through a typical "advance on royalties" deal. Allen and Vickers are listed as executive producers because of their input in putting the project together.

"...Thicker Than Water" was released in March 1991 and has sold more than 200,000 copies, which is considered fairly successful for a first release (at least making back the recording advance). The first single, "You Don't Have to Go Home Tonight," went Top 10 on the CHR charts (Contemporary Hit, Top 40 format) and "Sunrise" reached the Top 10 on Adult Contemporary. After a year of promotion, the Spanish language versions of the cuts are beginning to take off, with "Dancing in the Shadows" reaching the Latin Top 10 in early 1992.

Interestingly, Barri feels that the best singles have not yet been released. One reason may be that the tunes recorded later sound fresher to the A&R people, which removes emphasis from earlier tunes, which had been considered potential hits. In support of the album, the Triplets have also made two videos. The first single reached the Top 10 on MTV and Top 2 on VH-1. A video will likely be made for the third single if it also moves up the Adult Contemporary charts.

Record labels are always on the lookout for new ways to promote acts. Barri cites the examples of Gladys Knight appearing on the "Oprah Winfrey Show," and VH-1's airing of Bonnie Raitt's videos from "Nick of Time" as opening previously untapped markets for these artists.

CONCLUSION

These days videos can definitely enhance an artist's recognition and sales. However, videos are meant to support the songs, not replace them. Record companies do not expect independents to provide finished videos, and actually may prefer to produce videos for an artist after signing, thus retaining creative control.

WAS (NOT WAS)

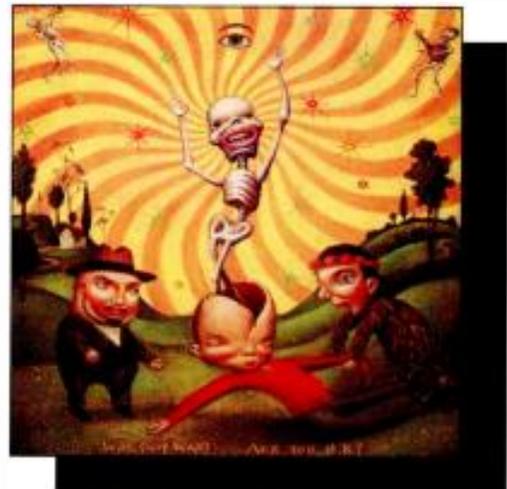
The stereotypical scenarios of bands getting record deals usually involve luck and perseverance, not just talent. Even when resources are available, it may require exceptional measures to get that first break. Then, there is no guarantee of unconditional support.

Anyone in the record industry should recognize the name Don Was, particularly since his production of Bonnie Raitt's Grammy winning album "Nick of Time." But his namesake band, Was (Not Was), had less than stellar begin-

nings. As a struggling musician with a family in late '70s Detroit, Don Fagenson was nearly destitute. (In fact, said Don, he even considered "robbing a drycleaner.")

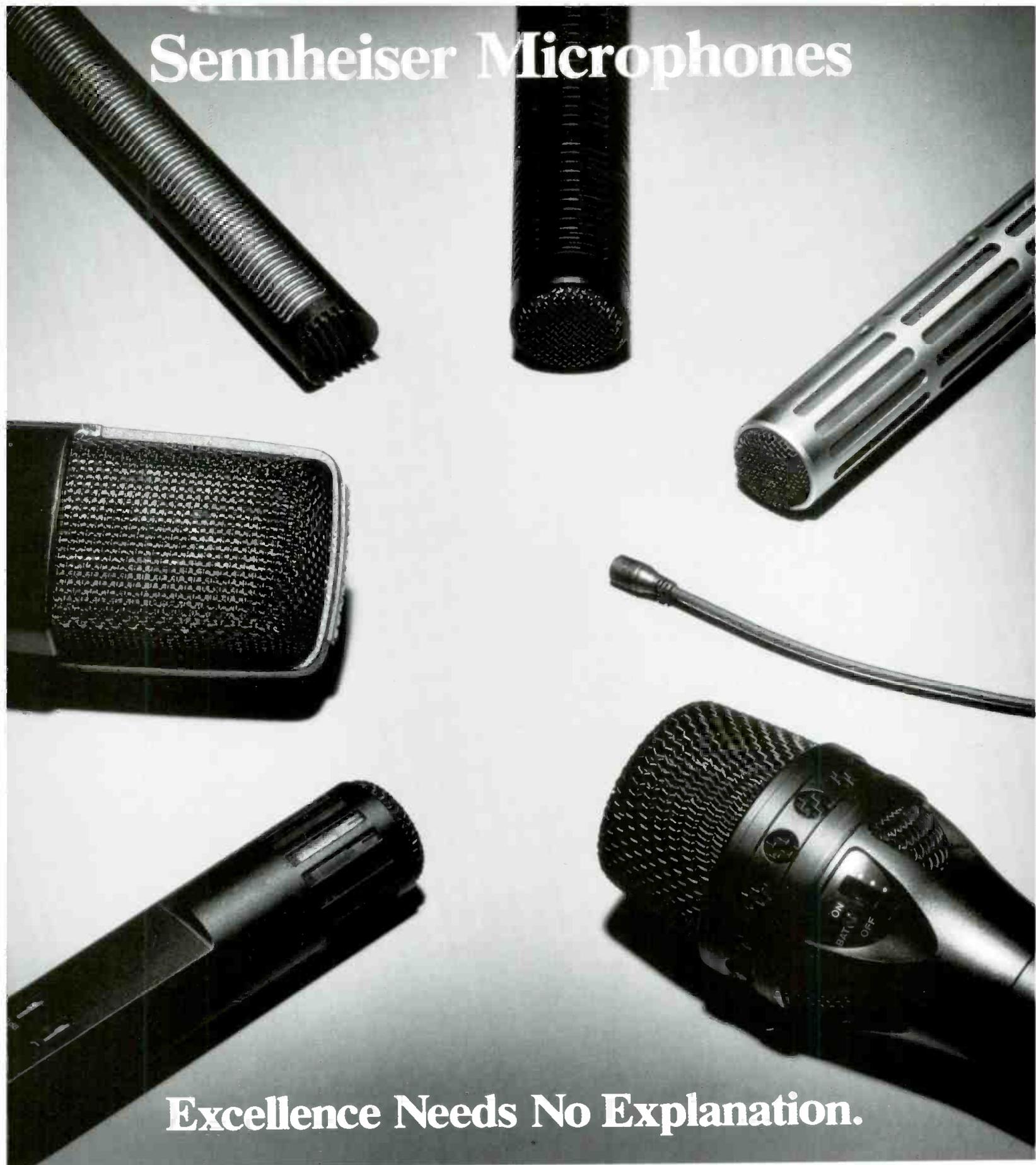
In a final, desperate attempt to garner some kind of musical success, Was contacted long-time friend and musical cohort David Weiss, then jazz critic for *The Los Angeles Times*. Together with business partner Jack Tann, and generous Sound Suite studio owner John Lewis, they recorded a single, "Wheel Me Out," featuring Weiss' mother on lead vocal.

"Wheel Me Out" was unusual in its blend of an R&B dance groove with heavy metal and jazz, a combination that would become a signature for Was (Not Was). Thinking that the single would go somewhere if he could just get it released, Was aimed his attack at Ze Records, a small label owned by Micheal Zilkha. However, he was stonewalled by the front desk secretary at Ze, and only Weiss' use of his *L.A. Times* credentials got their tape in to Zilkha. However, Was still had to hound Zilkha continuously for two months, even offering to forego payment to the band, just to get the single released.



Finally, Ze released "Wheel Me Out" and it got airplay and good press in Detroit. It also became a cult hit in England where Chris Blackwell, head of Island Records, signed Was (Not Was) to a single album deal. "Was (Not Was)," which incidentally is Was' favorite of their albums, was released in 1981, with a hit single, "Tell Me That I'm Dreaming." But disagreements arose with Island over the band's concept, particularly the use of several different lead singers, and Was (Not Was) was picked up by Geffen. Geffen A&R rep Danny Heaps, taking a significant career risk, signed them to a multi-album deal, with the release of "Born to Laugh at Tornadoes" in 1983.

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Once again, however, disagreements arose between the label and band

over its direction, this time focusing on the difficulty in promoting an R&B band led by two white guys and fronted by two black guys. Before Was' second album was finished, Geffen dropped the band, so they went to England and signed with Phonogram. There, David Bates, head of A&R, viewed selling Was (Not Was) as a challenge. "What Up, Dog?" was released in 1988, using many of the tracks recorded for Geffen's second album, with producer Paul Stavely O'Duffy brought in by Phonogram to help smooth out the production.

After the single "Walk the Dinosaur" went Top 10 in Europe, American label Chrysalis picked up distribution. Quite ironically, Kate Hyman, Chrysalis' head of A&R, was the receptionist at Ze Records who years earlier had turned Don Was away. "What Up, Dog?" is the album most familiar to the public but actually is the band's third.

By the time "Are You Ok?" was released on Chrysalis in 1990, the staff that had supported "What Up, Dog?" and helped push "Walk the Dinosaur" and "Spy in the House of Love" onto the charts, had left the company, and promotion of the new album was virtually ignored. However, the remake of "Papa's Got a Brand New Bag" went Top 10 outside the United States.

Was (Not Was) was originally conceived as a vehicle for Was and Weiss to get somewhere in the music business; "to make records together, but with better singers." It has evolved into a true band, with the key players having worked together for more than 10 years. Although the band has had several hit singles, Was (Not Was) has yet to make significant money. The lesson: Hit singles do not necessarily generate financial returns; there must be an audience willing to buy albums. Unfortunately, Was (Not Was) on the whole does not fit the image of the people who buy such dance singles as "Walk the Dinosaur." On the other hand, Was and Weiss still marvel at their ability to earn a decent living recording their music.

CONCLUSION

Do anything and everything possible to get demos or masters in the hands of A&R. To paraphrase Don Was, "Deals are made when the right material comes to a receptive A&R person at a time when he or she is in a position to make something happen." Be persistent; an act must have determination

as well as talent.

Artists who are purely "hit single driven" are not as likely to have a long recording career, yet will require a great deal of initial promotion (about \$250,000 for a new act). Labels would like to sign artists with long-term potential, but this is certainly not a rule.

Record companies are more interested in artists with a following. If the act shows a sizeable base of fans, from live performances or an independent

release, labels will take notice. (Often local record company personnel will notify A&R people of a promising act.) Likewise, demonstration of ability to sell many records regionally (in the tens of thousands) will get more attention. ■

Special thanks to the following people for their generous cooperation and insights: Steve Barrf, Ron Fierstein, Chris Ghiardi, Peter Leak (manager for 10,000 Maniacs), Dan Levitin, Jane O. and Don Was (hey, I owe you for the call).

GENESIS OF A DEBUT ALBUM

The artist calling himself E was signed by Polygram president Davitt Siegerson on the strength of demo tapes that he and co-producer (and occasional co-writer) Parthenon Huxley made together. His debut album, "A Man Called E," was released in March on Polydor. R-E-P's music production editor, Dan Levitin, spoke with E and Parthenon about how they met, and he asked them about their approaches to self-production.

R-E-P: There's one thing I like about your records in particular. Maybe it's an insult for you as a writer, but I would think it's a compliment for you as a producer: The songs all have these parts of other songs in them — not like recycled hooks — more like nods in the direction of songs. It's like you have certain songs bouncing around in your head, and you used pieces of them.

PH: I don't think it's insulting. I think it's natural for writers to do that. There are very few writers who could make an honest claim that they're not thieves. And I mean thieves in a benevolent sense. McCartney and Bowie have said it, that they have "borrowed" from others.

What happens is (the ideas) get assimilated — I really feel like my solo record was my record. It's like with the Nirvana record — it's really fun picking out the Black Sabbath drum fills, but that's Nirvana. It definitely sounds like them.

R-E-P: In that way, E's record sounds a bit like yours.

PH: Uh-oh.

R-E-P: There are some nice production things — melodic suggestions of other songs. For instance, on "Hello Cruel World" the bass line goes boom-boom-boom booda-boom-boom, like "Under Pressure."

PH: Um-hmm.

R-E-P: Was that intentional or did it

sneak itself in there?

PH: We recognized it as "Under Pressure" after awhile, but it just kind of happened. It wasn't calculated; it was more organic. You'll notice ours isn't exactly the same. Anyway, it's hard to copyright an octave.

R-E-P: Then "I've Been Kicked Around" reminds me of the Little River Band song "Lady."

PH: Well, the Little River Band was not something I would claim as an influence.

R-E-P: Who are the musicians on the album?

PH: E is playing keyboard, guitar; he did all the drum programming, harmonica — all the little weirdo things, like toy piano and synth strings. He's originally a drummer who taught himself all these other things. I think that's really impressive. I have battle-of-the-bands pictures of him in high school where he's the singing drummer. I played some guitar, a couple of solos I think, and our engineer, Jim Lange, played some B-3 and accordian. It was really just the three of us and some friends.

R-E-P: Your own record didn't sell very well. And E has a very pop, mainstream songwriting style. It seems like he could have gotten a bigger name producer with a better track record.

PH: Not on the budget we had. We wrote "Hello Cruel World" and

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"Nowheresville" together and the demos we made of those Impressed Davitt Sigerson at Polydor enough to give me the job. Davitt, of course, is the president of Polydor and he's the guy who signed E.

R•E•P: Where did you do those demos?

for. It's not a dirty little alternative record; he's not that kind of artist. These are good, classic songs, and I think we did a good job of bringing them to life without being overly syrupy. I think I'd be a little depressed if it sounded overproduced — if, for example, it had real strings on it. At the same time, it's a Hi-Fi recording that people

might want to hear again and again.

R•E•P: Can you talk about what you spent on the record?

PH: I guess I could. We made it for \$40,000, not a penny more.

R•E•P: And that includes...

PH: Everything.

R•E•P: Cassette copies for the label?

PH: OK. Almost everything.

R•E•P: Rentals, studio stuff?

PH: Yes. The label coughed up for the art work.

R•E•P: Did you have a vision when you were recording for the type of radio market you thought E would slip into?

PH: Well, I think that E will either be huge and cross over into about four different formats or he'll just

slip through the cracks.

R•E•P: When you're producing, do you package your sounds for formats? If you're going for AOR, do the guitars need to sound a certain way? If you're doing alternative, do the vocals and drums have to be...?

PH: I think we started out to make an alternative record, but I don't think we made one. I would say my allegiances are to the alternative vibe. But E's songs are really straightforward. There's nothing subversive about them. I would call Bob Dylan, U2 straight-up pop songwriters, too.



I really don't know what kind of a record it is. I think it grows on

you. That's kind of scary, because radio goes for the instant punch. Whether this record has that or not, we shall see.

R•E•P: You mentioned subversiveness. You're right; E doesn't have that subversiveness that Elvis Costello has. Elvis seems to try really hard to keep his songs from being pop, but E doesn't sabotage himself that way.

PH: I don't think E has the same things to say that Elvis Costello does. E is basically what he's singing about, a sad, lonely guy. He has a real poetic talent for making what are sad songs kind of buoyant. I think that's the tension in the album. He's like the most pathetic guy I've ever loved because the album certainly doesn't bring you down to listen to it. But if you were to compile a psychological profile from these 11 songs, it shows a guy who's pretty skeptical, I guess.

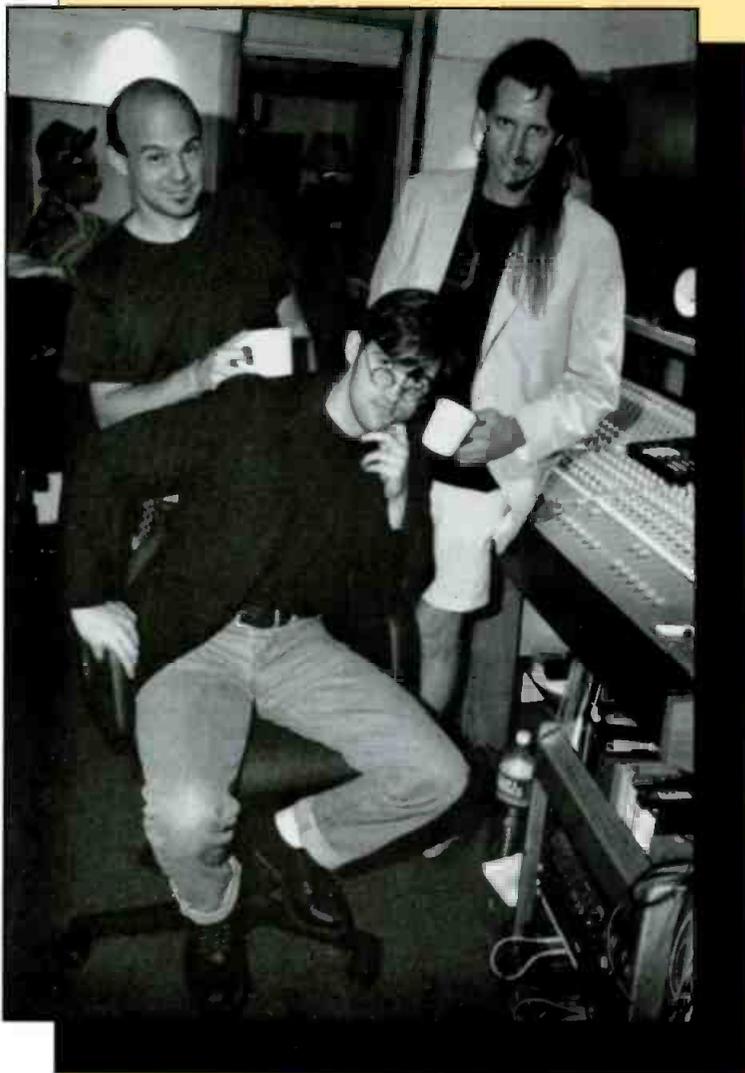
He's like the most pathetic guy I've ever loved because the album certainly doesn't bring you down to listen to it.

R•E•P: He seems as if he's still looking for love, at least.

PH: Right. E's not rejecting love. He'd love to have it, but at the moment things are pretty bleak.

R•E•P: How did you hook up with Parthenon?

E: Just by chance a woman at MCA Music had been interested in me, and I had said just for fun I would like to try co-writing with someone since I had never done that before. She sent me some tapes and one of them was Parthenon. "Hello Cruel World" was actually the demo Parthenon and I did. We fixed it up a little more, but almost the whole thing was what we



Standing, left to right: Jim Lang, Parthenon Huxley, seated: E. Photo by Allen Carrasco.

PH: At MCA Publishing. Davitt's big interview of me (to produce the album) was "When do you guys start?"

R•E•P: Well, I mean, there's all this potential here for E. Why didn't he go for Wilson Phillips' producers? They might have spent 10 times as much, but he might have sold 10 times as many records, too...

PH: I think E made the record he wanted to make. The demos charmed the pants off Davitt, and Davitt was adamant for us to just try to keep the spirit of the demos alive. I think we probably topped what we were going

originally did. I couldn't see how anyone else who the record company was gonna come up with could do better than what he and I were coming up with on our own. We seem to complement each other well. He monitors all of the musical things, keeping me in pitch and the kind of stuff that I'm not so great at. I'm not a trained musician. I monitor keeping the heart and soul alive.

R•E•P: Didn't you want to work with a producer with a track record of hits?

E: You're a kid from Virginia and it's nice to think you're working with this guy who's got all of these hits. I got really depressed about it at first, but once we were working, I was happy with what we were doing. Also, I figured I didn't have the money for that producer, and I guess I'm more adventurous than that.

R•E•P: How did you get connected to a record deal?

E: I came out to California from Virginia. I didn't know anybody at all, alone in the big city. After working as

a career film extra for a year, I started working for a music magazine in Los Angeles. I was the receptionist by day and a writer by night. I did the local notes column because that way I could meet A&R people. I passed out tapes to everybody who could possibly have anything to do with the music business — three years of sending tapes to record companies and getting rejected.

I eventually met Carter at a party at Stevie Nicks' house. Carter wanted to sign me to Atlantic. He was doing A&R for them, then, but they didn't want to sign me, and Carter decided to leave A&R and go into management. For a while I dropped songs off to him until he finally decided to manage me.

R•E•P: Do you use the Neil Young approach to songwriting, where you don't listen to anything else at all while you're writing, or the Chrissie Hynde approach, where you lock yourself in a room with a Kinks album for a week and then see what comes out?

E: I think I do both. When I'm working on my songs, that's all I'm listening to because it occupies all my time. There just

doesn't seem to be enough time to do anything but hear my songs. Then there are periods like now, where I'm painting and writing short stories and soaking in a lot of music.

R•E•P: That's you playing the hard rockin' solo in Misfits?

E: The inspiration for "Fitting in With the Misfits" was Neil Young. I consider it 28 years of angst being vented in 10 seconds. I'm a huge "Crazy Horse" fan.

R•E•P: Did you make lots of demos before making the album?

E: "Are You and Me Gonna Happen?" went through several versions on my 4-track. We had a total of three demos, two or three years of that song sitting around and trying to find its legs. By the way, did you already talk to Parthenon?

R•E•P: Yes.

E: Then I'd like to categorially state that everything Parthenon must have said is false. ■

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THE *Make-It-Happen* PERSON

By **RICHARD BUSKIN**



“It’s one thing paying what the studio quotes as a rate, but you really can do a lot better for yourself,” asserts Jill Dell’Abate, and she should know. After all, as one of the key participants in the steadily expanding field of production coordination, she spends a fair deal of her working time proving this very point.

“Everybody should know that rates are there to be negotiated,” she said, “and while the record companies obviously always try to get the best deal, specialists such as myself are better qualified to achieve this.”

Many people, especially those based in and around Los Angeles, are already familiar with the skills of a production coordinator, and others have heard about them. But there must also be a few who don’t have a clue as to what the term refers to. So, for those of us who thought it was just a new marketing description for a console fader, here is a brief explanation:

A production coordinator, in large part, is a trouble-shooter. This individual is hired by either a record company, a producer or an artist to deal with any problems that arise during the course of a recording project, whether they’re related to time, money or technology. Keeping everybody happy and everything running smoothly is the bottom line — hardly a simple task given the nature of the beast (or beasts) — and so the job requires heavy doses of experience, skill, patience, nerve and diplomacy.

Producers, of course, have always had assistants, but production coordinators, with their broader range of activities, have only really evolved during the past couple of decades, and then mainly on the West Coast. Elsewhere, they are either thinner on the ground or nowhere to be seen. So, for someone such as Dell’Abate, based on the East Coast, the territory is still wide open.

As a free-lancer since June 1991, Dell’Abate’s involvement nevertheless stretches back to her first post-school days in 1986, when she landed the job of assistant to producer Russ Titelman at Warner Brothers Records. Immediately thrown into the deep end with the Steve Winwood album “Back In The High Life,” she soon found herself traveling back and forth between office and studio, and

Richard Buskin is a free-lance music and film journalist based in London.

There's a new member on the production team: The studio production coordinator.

duly learning the ropes of production coordination courtesy of Titelman and the A&R administrator at Warner in Los Angeles.

"Every record is different," she said. "With someone like Eric Clapton, for instance, there was a lot more personal involvement because he needed more attention. I mean, if you're from London, then you need help just getting around out here, and so in that case I'll be far more involved sorting everything out — travel, accommodations, even doctors' recommendations — and that's pretty much par for the course."

Clapton's "Journeyman" record, in fact, was the last project on which Dell'Abate assisted Titelman before accepting Warner Music International's offer to become an A&R administrator. She had already embarked on a few outside projects while working for Titelman, but she felt that she would like to give herself a more rounded perspective by seeing things from a record company's point of view.

Eighteen months later, armed with greater experience and more outside clients under her belt, she felt confident enough to freelance as a production coordinator, boosted by a lengthy project with Phil Ramone, who was producing Phoebe Snow. This would allow her the time to properly set up her own business and help others, booking and negotiating studio time and rental equipment, taking responsibility for paying the technicians and musicians, administering the budget and overseeing every aspect of the recording.



THE *Make-It-Happen* PERSON

IS IT WORTH IT?

"I always save money on a project," Dell'Abate said. "Always. I'm sure there are people who put records together with no problem, but I could probably do it for a lot less money. The record companies, the A&R administrators, like to hire me because of this, and they're the ones who initially pay me, even though it is the artists who ultimately foot the bill because I'm being paid on their budget. This really doesn't end up making any difference, however, because I usually save them the same amount as my salary within the first week or so. You have to know what you're doing. Aside from this, when people are also busy with other jobs, they don't have the time to negotiate properly.

"Some of the producers who have been around a long time, such as Russ Titelman and Phil Ramone, are used to the personal attention and like you to be with them constantly. Newer producers, such as Hugh Padgham, prefer me not to be there. I would be in the

Keeping everybody happy and everything running smoothly is the bottom line -- hardly a simple task given the nature of the beast (or beasts) -- and so the job requires heavy doses of experience, skill, patience, nerve and diplomacy.

way if I was in the studio all the time, and he's quite happy to look after himself. He just wants me to set up the project, negotiate the rates, get the equipment in, make sure his travel is exactly the way he wants it, organize the musicians' payment, and

major studio here, as well as the major equipment companies that all know me on a first-name basis. I know the bottom-line rates. I know the top-line rates. I know if it's a huge budget how much I can afford to pay, and I know if it's a small budget how little I can afford to pay. Sometimes if we can't even afford to pay that little, I know how far I can go below that as a favor." Having recently worked with



Production coordinator Jill Dell'Abate with Dennis Muirhead of Muirhead Management.

then call me if there are any problems. I'll talk to him on a daily basis and I'll pop in every other day for an hour, but that'll be it.

"I will start with a specified budget, and it's then my job to sit down with the producer and make sure that we can do it for that money. We'll break everything down specifically, and I'll know exactly what's going to happen, right down to what equipment is going to be rented, what the format is — whether it's 24-track analog, 48-track analog, Dolby SR, digital — where it's going to be done, who's going to be working on it, and so on. I then put together a comprehensive budget, which is submitted to the record label for approval. Once that is approved, it's then really up to me to make sure that that's what we spend.

"My relationships with the studios in New York are very good; I know — and am often friends with — the managers at almost every

Padgham on a couple of Stateside recording projects, Dell'Abate has cemented ties with his manager, Dennis Muirhead, and set up a reciprocal arrangement whereby each can assist one another on both sides of the Atlantic. Production coordination has yet to take off in the U.K., and so having acted in this capacity for its own roster of producers and engineers during the past few years, Muirhead Management is now looking to do the same for outside clients.

EXPANDING FIELD

Jane Austin is Muirhead Management's production coordinator, and she thinks that it is only a matter of time before her line of work becomes commonplace in major music markets outside of America. "It's just a case of the record companies, the technicians and the musicians over here learning how much they can benefit from it," she said. "It is in all of their best

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THE *Make-It-Happen* PERSON

interests, and once they have experienced this, I am sure it will be a fairly standard practice.

"Because of our experience handling our own producers and engineers, we are well versed at Muirhead Management in giving them all of the assistance that they require before, during and after a recording project. Following on from this, we also enjoy good relationships with a large number of studios, record and equipment companies all over the U.K., and so we are in the position to know what

With the competition among studios fiercer than ever, and prices anything but fixed, Dell'Abate is always on the lookout for those previously unmentioned extra charges that have a nasty habit of popping up on invoices.

the best deals are and how to get them.

"Jill and I have already collaborated together on a few projects and trust each other's abilities, and so wherever possible we put work each other's way. When your own clients are traveling across the Atlantic, it's reassuring to be able to place them in the hands of somebody else and know that they are going to be well and reliably looked after."

Taking care of all prearrangements is one thing. Ensuring that they are realized, however, is quite another. With the competition among studios fiercer than ever, and prices anything but fixed, Dell'Abate is always on the lookout for those previously unmentioned

for certain items of in-house equipment — "floating gear" — but what she finds totally unacceptable is the practice of charging for goods or services that have never been requested or, indeed, provided.

"You constantly have to be watching every little thing," she said, "things that wouldn't normally be noticed by those working on the project. I mean, when Phil Ramone is working he doesn't have the time to sit there and go through every invoice at the end of the day in order to check all of the charges. There have been times when a studio has placed a bowl of fruit in the control room, and at the end of the day I've looked on my food receipts and seen that we've been charged for it! That's ridiculous to me, and while it may only be a little thing it all counts when you're trying to maintain a budget.

"There are a lot of times when I'll sit down and say, 'Well, wait a second. If we negotiated \$2,500 for the 48-track digital machine for a week, why am I now being asked to pay \$1,000 for one day? That's wrong. I'm not paying this. Change it.' Things like that happen all of the time, and so you constantly have to stay on your toes."

SCHEDULE MONSTERS

"Another important factor is the organizing of schedules so that you make optimum use of the studio time," Dell'Abate said. "If, for instance, you are using a percussion player and you want to use him on three tracks, make sure beforehand which tracks these are. Don't bring him in, send him home, bring him back and pay his expenses twice. That's just waste, and you have to be aware of all these things right throughout the project.

"At the end of the day, everyone wants to save money and everyone wants the project to run smoothly. You know that you have to work

extra charges that have a nasty habit of popping up on invoices. It may be standard for many studios to charge extra

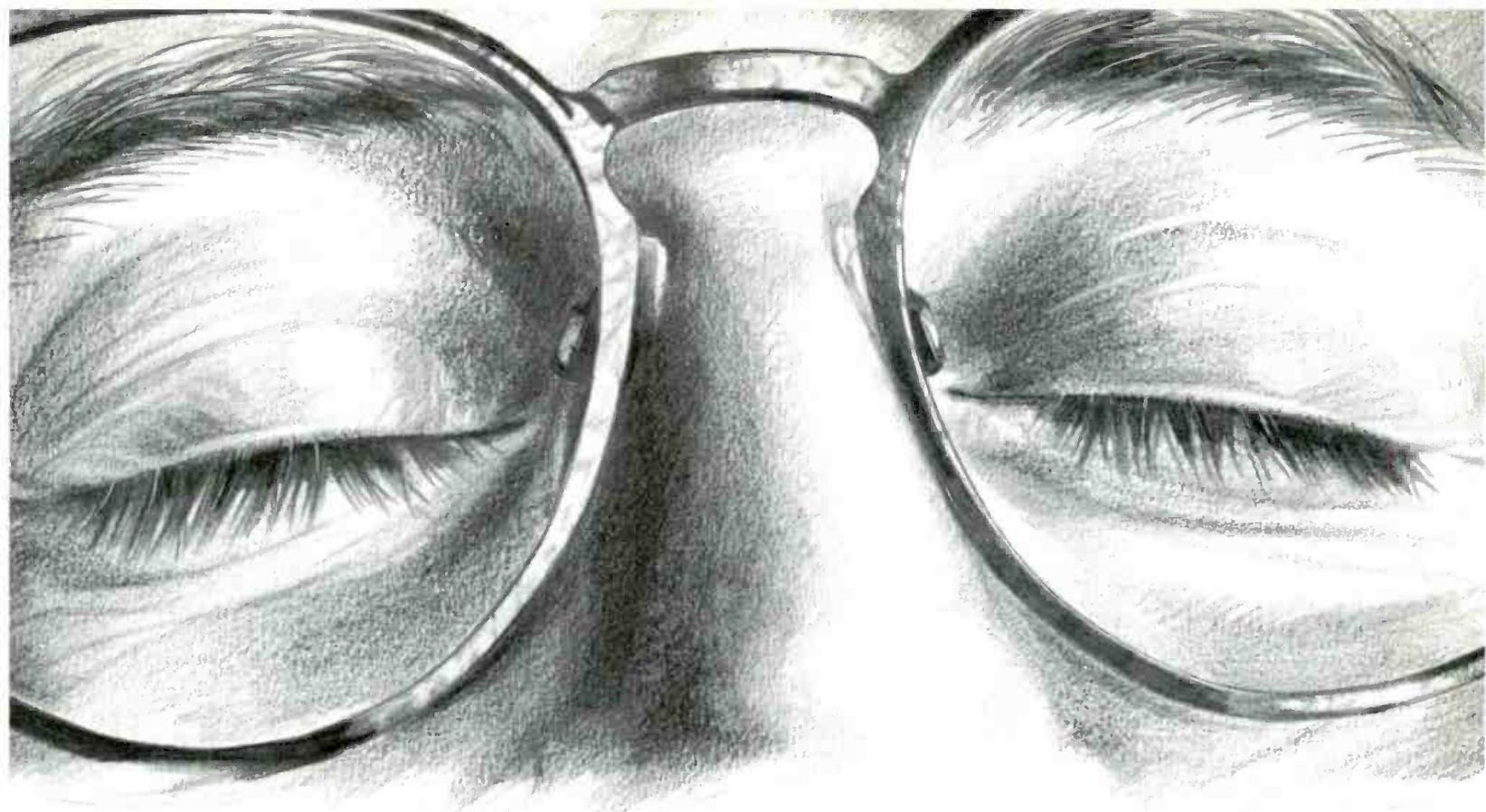
within a certain framework, and if an artist, for example, were to ask for something that was beyond what was called for, I would probably speak with the producer first and then we'd end up going to the record company. If a producer blatantly disregards the rules and goes wildly over budget, however, I can't be held responsible. I can only keep control of a project inasmuch as they have to stick with what they originally said they were going to do.

"Then again, a free-lance producer doesn't usually want that to happen. He wants to be hired again by the label and wants to prove that he can do an effective job. So, until now, I haven't had a problem where someone has been particularly aggressive or hostile toward their record company or their producer. This is the situation which they each have chosen, so I don't find myself caught in the crossfire of conflicting interests."

Recent work has included a steady stream of projects with the likes of Sony Music, WEA, SBK and A&M. Despite an average workload of three concurrent projects, and the confidence to handle up to five jobs at any one time, Dell'Abate is nevertheless aware of her limitations in terms of her geographically linked expertise. She finds no difficulty, for instance, in overseeing a project that is carried out in New York and Los Angeles, but she readily admits that there is no reason for someone to hire her when a recording is taking place entirely in California.

"I know that I'm really good at what I do and I don't believe that there's anyone better than me, at least on the East Coast," she said, "but this is the area where I specialize and that is why people come to me. In the future, of course, I could find myself managing producers, engineers and the like — a lot of coordinators end up doing that — but right now I'm perfectly content with what I'm doing. I've only just started, and so I'll think about diversifying in a year or two." ■

Jill Dell'Abate can be contacted at 203-532-0379 or 212-362-9068. Jane Austin can be reached at Muirhead Management at 011-44-71-351 5167; fax 011-44-71-352 1514.



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Evaluating the current crop of

By MIKE JOSEPH

Processing. By itself, the word conjures up images of altered audio states — swirling effects and twisting sonic signatures. Flanging, phasing, echoes and reverbs. Without processing, heavy metal would lack its thunder and Broadway sound designers would paint their soundscapes from a black and white pallet.

But other functions also fall into the realm of processing, such as dynamics, equalization, time delay, active panoramic positioning, ambient space generation, aural enhancement, pitch shifting and signal mixing. In the strictest terms, any analog audio signal that has been converted to digital bits and bytes, via a Motorola 56001 (or the any one of a number of other-brand or proprietary digital chips) has been processed.

Changing a signal's level or pan position in a stereo spread involves rewriting the code entirely. And rewriting code involves minuscule delays, as the signal is sampled and held, altered and rewritten. It can become quite involved just tracking the steps a digital signal goes through merely to have a few dB shaved off.

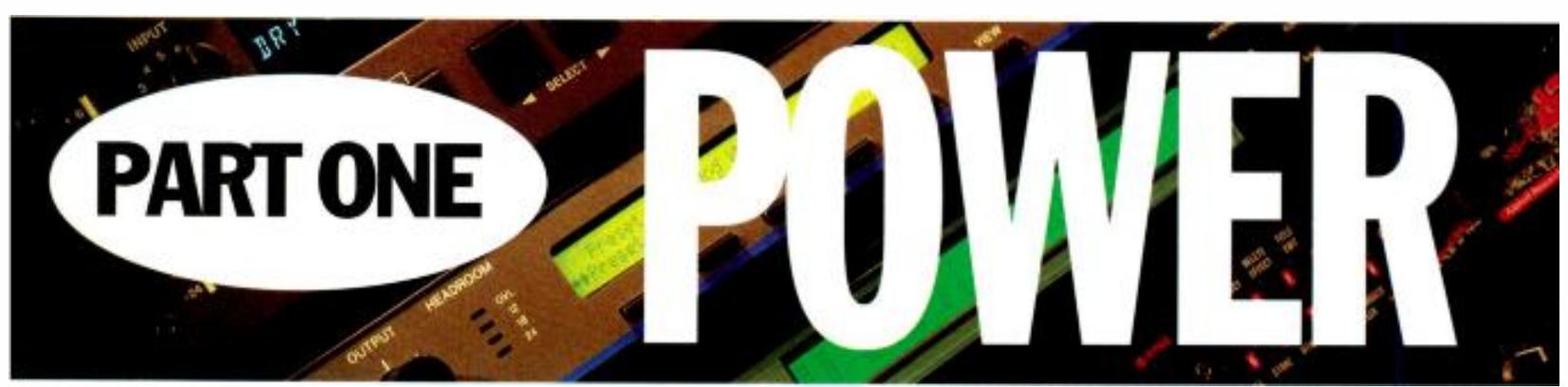
The units we evaluated — two from Sony and one each from Lexicon, Ensoniq, Dynacord, ART, Digitech, Yamaha and Roland (other companies queried were either out of the medium target price range or declined to play) — all convert the signal to digital code, at different clock rates and bit counts, in order to process and present. All are stereo in and out (except the Ensoniq, which, as

necessarily the most expensive, perform excellently while accomplishing multiple tasks. To say the least, we were quite surprised to discover how well some of these mid-priced wonders performed overall, in light of the processing power they contain. In short, we found that digital processing has certainly come a long way since the seminal Yamaha SPX 90 set the world on its ear a few short years ago.

How they do what they do

Virtually all of the current effects processors use algorithm structures — groupings of code into “modules” that, when cross-connected in different combinations, allow specific assignable parameter adjustments, providing the attributes of a program, patch or “sound.” Remember the older keyboard synthesizers, in which different modules (LFO, waveform oscillators, bandpass filters, etc.) could be “patched” together to create different types of modifiers? If an LFO drove an amplifier, you might get a tremolo effect. If it drove a Y-axis modulator, you would get vibrato. If a waveform split was “beat” against its original in or out of phase, the result would be comb-filtered phasing, or, with regenerative delay, flanging or a chorus.

Similarly do modern digital processors derive their effects. Simpler single digital processes, such as echoes, phasing, flanging, chorus, EQ, basic dynamics



PART ONE

POWER

we'll see later, offers far advanced multichannel flexibility), and most, owing to their price positioning in the \$440 to \$2,100 range, allow direct connection from musical instruments as well as placement in a send/receive loop, balanced or otherwise.

A number of the units can perform multiple functions simultaneously by proportionately spreading their DSP resources among different effects. Several of those with limited processing power compromise fidelity for flexibility to some degree. Others, not

control (gating, compression, expansion), etc. might use a single code module, or algorithm, to create their effect. Group two or more algorithms together, and complex effects may be created. Inter-patched delay, reverb, EQ, and dynamic gating allows a gated reverb with a long pre-delay.

Some effects, such as warble-free, pure-tone pitch shifting, are harder (read: more processing power required) to achieve. Pitch shifting involves sampling and holding a given digital word in a register,

Mike Joseph is editor of R•E•P.

mid-priced digital signal processors

reading it back at a different clock or sample speed, and splicing the non-real-time ends together without a glitch. Unique ways are created to "fill the hole" or lose the overage, where extra bits must be derived or lost. A box that provides pitch shifting, delay, EQ and reverb simultaneously certainly isn't doing it with one DSP chip, or isn't doing it very well if it does. It takes horsepower to get the better, more complex sounds, without giving up the quality aspects of audio we expect — wide dynamic range and signal bandwidth, low distortion, perceived clarity, brightness without harsh artifacts, and so on.

All models had extensive MIDI control and routing capabilities. And most of the MIDI-performance controls and general remote-control capabilities were so complex they could support an article unto themselves. For reasons linked to the space and time continuum, we will forgo MIDI control evaluation within this analysis. Generally, these models had switchable input/output levels, or medium adjustable values so as to interface with both the pro and MI universes. All had unbalanced 1/4-inch phone plugs, except the ART (balanced and/or unbalanced 1/4-inch) and the Sonys,

offered features not available on the others.

Raw fidelity was also more difficult to determine than one might imagine. How for example, do you compare two different reverb timbres (from among forty-five choices in a given box)? Bringing one device's sound in-line with another might require cranking in 8dB of top end from a second algorithm and altering the diffusion and reflectivity parameters altogether, and then what are you listening to? Not the original patch.

So too dynamics. What are you hearing on a dynamics algorithm when you are adding back 20dB of front-end gain to be able to hear the fidelity of the 20dB of compression occurring at a 10:1 ratio. Yes, we found out: *hiss* and *hum*. The console's? The device's? The single coil guitar's? The mic preamp's? There's more to it than lifting the leads and shorting the inputs. We tried to match, after all, real life, ugly as it may appear sometimes.

In the final call, much of what we discovered was evaluated subjectively. There is no real way to measure the distortion properties of a stereo delayed chorus, or the frequency response of a pitch-augmented, compressed bright plate

Harmonizer (with all the Mod Factory and sampling options), which we used as a reference standard. As I've been heard to say, every car is fast until you get it next to a faster car. The H-3500 is just such a vehicle—it doesn't get much faster than that.

The guilty parties

Sources used during the evaluation included a Kurzweil K2000 keyboard, with its excellent percussion and instrument samples (deftly manipulated by Doug Wilding, R•E•P and Live Sound! circulation manager); assorted Gibson and Fender electric guitars abused by this author and then taken direct; a Roland drum machine (driven to distraction by Anthony McLean, R•E•P features editor); and a Sennheiser MD-441U microphone. (Thank you, Donna Gibbons, for your vocalistic contributions!) McLean was also the resident guru of algorithm alchemy and decipherment. Every shop needs one ...

The evaluated processing devices are listed alphabetically, with a description of their active functions and capabilities, as well as our subjective wrap-up. Because of the quantity of information presented,

PROCESSING

which additionally had balanced XLR connectors. One upgrade available from Dynacord, called a DRP 20 "X," also offers balanced XLRs.

A level playing field

We tried to compare the devices on equal terms, for example, reverb tonality mano y mano, chorus depth and freedom from noise, or EQ range and flexibility. But of course, many

with no HF damping and a steep-slope downward expansion (soft gate) on the trailing tail. It was what we heard, in comparison to the dry signal, on a pair of excellent monitors, in a controlled and familiar environment, that evaluations were based on.

For a subjective comparable standard, we also had an ace-in-the-hole. Eventide kindly donated a brand new, fully rigged H-3500 Ultra-

we will cover the Lexicon, Sony, Roland and Yamaha units in next month's Power Processing, Part Two.

If a specific device catches your eye, we highly recommend that you contact the manufacturer to find your nearest dealer and that you give them a visit and a listen. We guarantee it'll be worth your time. Until you've played with the current crop of processors, you don't know what you've been missing!

THE PLAYERS

ART (Applied Research and Technology) DR-X 2100

DESCRIPTION: Proprietary 24-bit VLSI ASIC with more than 60 effects and 115 factory presets. 200 memory locations total (90 for user memory). Unlike the other units, effects are generated using both analog and digital circuitry. Seven categories of algorithms exist: analog effects, signal frequency shaping, swept/modulated effects, natural reverb, gated reverb, delay and utility/level.

The unit has sampling and pitch shifting capabilities, reverb, vocal enhancement, rotary effects, equalization, panning, built-in guitar tuner and tone generator. Some effects can be stacked (pitch transposing and reverb), but multiple simultaneous digital effects are limited. It is a single rack space unit intended for live performance and production.

RETAIL PRICE: \$619.

FUNCTIONS AND EFFECTS: Compressor, distortion, equalizer, expander/noise gate, reverb, ambience, delay, pitch transposer, auto panning, harmonic excitation, flange/chorus, special effects.

CONTROLS: Encoder wheel; preset, parameter, value, enter, add effect, delete effect, title edit, MIDI, recall, store, bypass, edit mode, utility, and sampler record/arm and



trigger buttons; single input and output level sliders; no power switch.

INTERFACE: Two 1/4-inch unbalanced input jacks, 1M Ω ; two 1/4-inch balanced/unbalanced output jacks, 600 Ω and 1k Ω respectively; two 1/4-inch footswitch jacks; MIDI in, out and through DIN jacks.

REVERBS OFFERED: Halls, rooms, chambers, plates, gated reverb.

EVALUATION: Most of these reverbs are part and parcel of factory presets that include DDL, filtering and dynamics integral. The basic reverb sounds, though, are generally pleasant to work with and listen to.

Although not the quietest raw algorithms (compared to other units or the H-3500 at many times the price), the quality is good, and the range of adjustability is comprehensive. For example, preset 3, the vocal chamber, provides the following variable param-

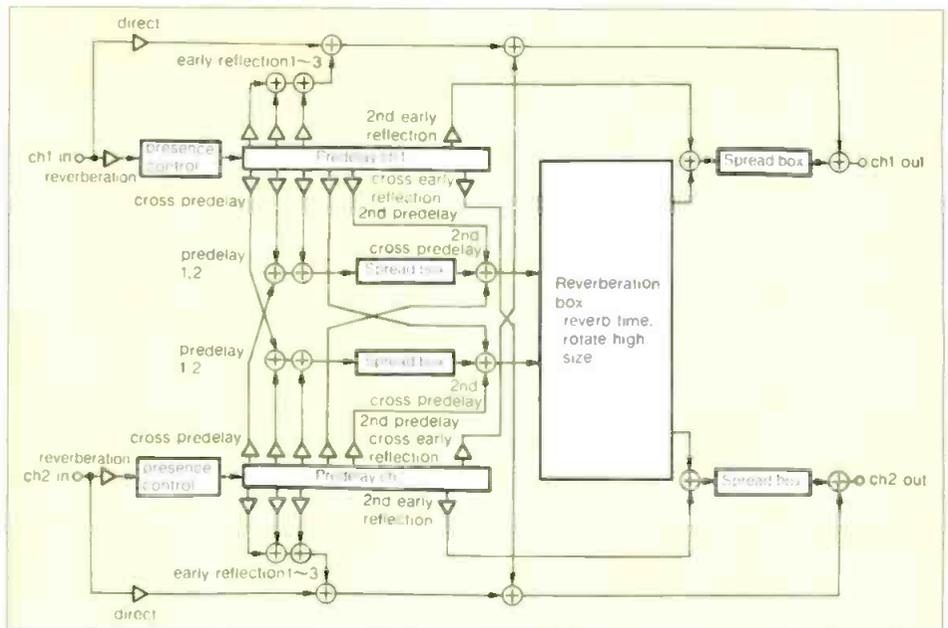


Plate Reverberation Algorithm 3 (Sony DPS-R7) as evaluated in July R•E•P.

eters: wood/rug mix, master effect level to 100%; reverb type (Room 3), pre-delay in or out, decay time, HF damping to 100%; position (direct to indirect sound field mix) to 100%; LPF (HF cut) by frequency knee, diffusion to 100%; and reverb level to 100%. The flexibility in varying the sound quality is good.

The reverbs suffer slightly from chitter and grit but are bright when you want them to be and dense enough to be real. Some warble or "bounce" was evident on certain programs, although it was hard to isolate the cause: DDL? Subtle chorus? Auto panning? For

effect of the Drive, expansion and compression actions. Again, not the quietest we have heard.

CHORUS/FLANGE/PHASE OFFERED: Everything from deep notch sweeps, tunnel-like and regenerated, to fat, warm or trebly choruses are possible. DDL and verbs are combined with most of these as factory presets, although they can be minimized or (mostly) removed to suit taste.

EVALUATION: As with many instrument-intended processors, the flanging and chorus effects are important, and no doubt much effort was put into getting them right. Our guess is that these are analog effects, so the sound is rich and deep but with slightly more noticeable noise. Many had gates or expanders as part of the presets. The sounds were not always crystalline bright and clear, but they were definitely

good on direct instruments. One thing we did determine: the Rotating Leslie program, a combination, we believe, of flange, pitch shift, DDL and whimsy, would be better off disincluded.

DYNAMICS (COMPRESS/EXPAND/GATE) OFFERED: An analog algorithm exists for compression, which means certain presets include the Drive parameter mentioned above (pre-gain boost, such as a guitar amp might have with a preamp level or overdrive control), slope (ratio, from 1:1 to hard limit, and two reverse settings), attack (2ms to 50ms) and release (500ms to 2sec) times, and output level adjustment. It is unclear whether these dynamics are before or after the digital processing. A noise gate, with simple 0 to 100% threshold range adjustment, is located in the last step of the signal chain.

An analog expansion function allows threshold range and ratio (1:1.5 to 1:5) to be set within a given preset, separately variable

critical work, this may be a problem. Noise and background hiss was evident on the Big Drum Kit and several other verb patches, possibly because the front-end "Drive" level and compression are part of many of these programs.

The same modulated noise appeared on the Diet Chorus and Spinning Space programs, all using the Drive compression parameter. Some combination delay and chorus programs suffered equally. Not all patches were noisy, and the hiss or modulation amount could be minimized by altering the dynamics, EQ or level parameters.

DELAYS OFFERED: Various and assorted slaps and cluster returns, as well as DDL (also found as part of many other presets).

EVALUATION: As expected, this "easy to get right" effect as featured on the DR-X is flexible and functional. Some breathing on these and other programs gives away the

from the compressor functions, although the detector is shared (attack and release settings effect both).

EVALUATION: Within reverb, chorus, pitch shift and some room ambience presets, judicious use can provide just the right amount of punch or sustain. Not really recommended for stand-alone vocal or guitar work separate from the effect. In certain programs, compression modulated the existing noise level noticeably.

The noise gate works as predicted, with a generally smooth, positive engagement. Smoother functions could be found with the expander, which acted fine inside the effects chains we tried. Because of some noise incumbent in stacking analog and digital effects, the expander contributed greatly to the perceived quietness of the unit in many settings. Some breathing was identifiable.

EQUALIZATION OFFERED: Algorithms (integral as part of many presets) are featured for 7-band equalization ($\pm 15\text{dB}$ from 40Hz to 10kHz), and low pass filtering, selectable by knee frequency (30 choices).

EVALUATION: Nothing fancy here. The algorithms are part of the preset sounds, before the digital processing. As such, they are best used as tailoring within effects. To this application, they were effective. The 7-band equalizer displays in bar graphs.

PITCH SHIFT OFFERED: Fixed partials and ascending or descending, with or without DDL, verb, etc. Choice of smooth, normal or fast processing is provided, varying the delay (processing) time and, of course, affecting the quality of the transposition. Range is up or down one octave.

EVALUATION: The pitch shift fidelity was generally good, although simple. The effect is best left as a timbre coloring to bass, guitars, synths and maybe some percussion. Not the best for stand-alone vox, as some warbling is evident.

OTHER EFFECTS OFFERED: Tremelo, panning, harmonic exciter algorithms, rotating speaker, bizarre echoes, pitch shift arpeggiations, upward/downward spirals, ricochets. Also, a unique, built-in guitar and bass tuner and tone generator allow utilitarian convenience for you stringed instrumentalists.

EVALUATION: These are definitely effects for effects' sake. Use at your own risk! Again, the Leslie effect is especially dicey. The tuner and oscillator are a nice, convenient touch, however.

WRAP-UP: The DR-X 2100 is intuitive to use, clean enough for most basic production work, and the price is right. The verbs are generally smooth and deep. It is important to optimize the gain staging to get the most out

of the noise performance, especially because of the presence of analog effects, although the presence of hiss and breathing are usually not real drawbacks. Some of the presets are more receptive to outside noise (especially in a unbalanced environment with other digital gadgets or video monitors/screens around). Gates and expanders are part of many of these susceptible presets, no doubt for this reason. Be warned.

The received manual was photocopied and, although generally complete, contained some inaccuracies. It was rough but thorough. The LCD window, even with an angle adjustment, was difficult to read from too far above or below.

The flexibility allowed in stacking different algorithms together provides a large palette of potential textures. The overall musicality of the device was good, and we would suggest it for use either as an instrument interface (effects right off the axe) or in a medium level sound reinforcement aux loop. It is probably not the piece to hook up to your balanced +4 NEVE sends, but as a guitar or keyboard do-everything box, or even as a vocal subgroup processor, the ART per-

CONTROLS: Compare, store, scroll direction, title, utility, bypass, parameter buttons; input, output and mix potentiometers.

INTERFACE: Two unbalanced/balanced 1/4-inch TRS jacks for inputs and the same for outputs, two footswitch jacks, MIDI in/out/thru DIN jacks. Input levels and impedances are +18dBv max and 40k Ω , respectively, with the output delivering +18dBv max with a 51 Ω source impedance.

REVERBS OFFERED: Studio, club, chamber, hall, room, arena, gated reverb, reverse reverb.

EVALUATION: Although not all the programmable presets have every parameter function available for alteration, the capability to vary the sound to taste is excellent. Parameters provided include decay time, pre-delay time, HF damping, accent envelope (adjusts reverse reverb envelope accent), reflectivity (diffuse vs. hard reflective surface balance), room volume (0.1 for closet-sized space, 1.0 for Taj Mahal), room size (selects between studio, club, chamber, hall or arena) and

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forms well. And some of the sounds were even downright wonderful — the Mellow 12 String preset, for example, is stunning!

DIGITECH DSP-256XL

DESCRIPTION: Proprietary HISC 20-bit VLSI digital processor provides 17 different effects algorithms, stacking up to four simultaneously. 256 program locations are divided into 128 factory presets and 128 user-definable patches. Reverbs, modulated ef-

position (close to distant reverberative field mix).

The basic sounds of the unit are quite good, with no harshness on the regular verb settings (some on reverse settings), and a warm, smooth full decay available, with lots of tonal variation possible.

Some slight background noise buildup is evident on the Ambient Snare, Cathedral and Opera House settings, and a rise in hiss is traceable to the bottom (counter-clockwise) positioning of the input attenuator, but most programs are quiet.



fects, delays and equalization are supported, in stereo, with 88dB SNR. 16-bit linear PCM conversion is used for the A/Ds and D/As.

RETAIL PRICE: \$439.95

FUNCTIONS AND EFFECTS: Ping-pong, multitap and slap-back delays; chorus; flanging; large and small rooms; gated, reverse and "ultimate" reverbs; 9-band graphic and 3-band parametric EQs; low pass and comb filter; digital mixer and stereo imaging.

Overall, the reverb quality is very musical. The ambient presets were quite good. The Early Reflections room ambience setting deserves special mention. In short, there's something here for everyone.

DELAYS OFFERED: Two ranges, up to 750ms and up to 1,500ms.

EVALUATION: Parameter adjustability includes delay level, feedback amount, separate right, center and left multitap delay times, and multitap feedback delay (a return

to the multiple delay effects). As imaginable, most delays are straightforward and easy to do. The 256's delay settings are clean and work well. Considerable flexibility is provided, with delay combinations available on other algorithms.

CHORUS/FLANGE OFFERED: Both chorus and flanging are created by modulating one leg of a split signal, adding variable amounts of delay and/or regeneration, and recombining the signal. Other related effects are offered as presets, such as I Love Leslie and Rotary Organ (rotating speaker).

EVALUATION: Generally, the many chorus and flange programs work well. Everything from bright to dark is offered, with the majority being quiet, clean, well spread and usable right out of the box. The one exception? You guessed it ... the rotating speaker effect. This has to be one of the roughest Leslie imitations ever heard

DYNAMICS OFFERED: Gate only, with envelope, decay time and mix level parameters adjustable.

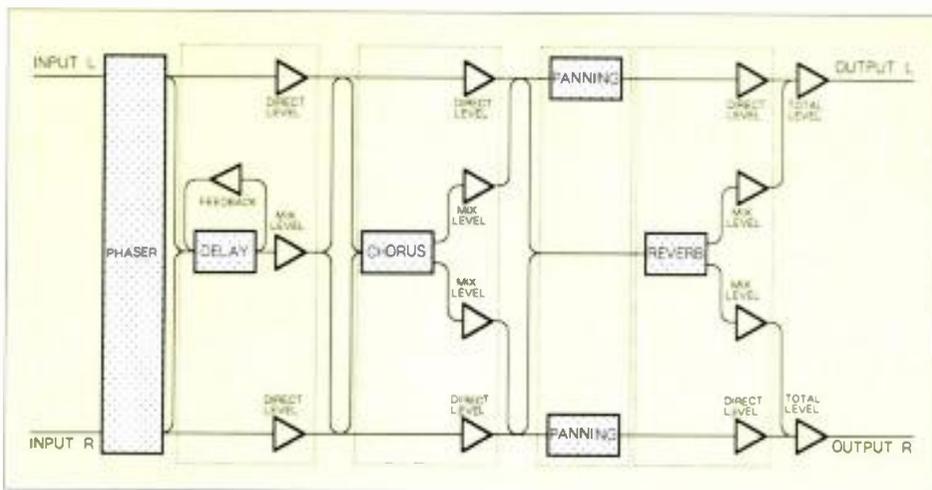
EVALUATION: No surprise here — the gate functions exist primarily as part of the gated reverb programs, which, because of the complex nature of the reverb decay, diffusion slope, etc., can't really be judged separately. In context, however, the gates work very well, with flexibility and no identifiable side effects.

EQUALIZATION OFFERED: Stand-alone stereo graphics (in low-, mid- and high-boost program versions) and several parametric presets (which are really just 3-band sweep EQs with no "Q" parameters).

EVALUATION: The graphic equalizers are clean and moderately quiet (not great), but suffer from being too gentle, whether using the low-boost or high-boost program. In a number of graphic settings, it was impossible to tell which band was having 15dB boosted, even when punching the Compare button in and out. Pretty gentle. The so-called parametrics were better.

WRAP-UP: The DSP-256XL is an all-around, high-quality reverb, delay and modulation effects device, easily at home in a middle level studio. A number of the programs really shine, although some fall short of perfection. Not all of the settings are as quiet as they should be for critical studio production work, but for most activities, such as live sound or on-stage/in-studio instrument use, the Digitech performs well.

The controls are among the most straightforward and intuitive we found (we never referred to the manual for navigational pointers), and the parameter groupings and control flexibility were wonderful.



Multi-4 Algorithm phaser, delay, chorus, panning, reverb (Roland RSP-550) as evaluated in July R•E•P.

The manual itself presents the different program's signal flow in easy-to-understand drawings, equating the parameter functions to separate stacked effects boxes, interconnected and cross-patched. For those who like to read, the clarity of the manual's easy-to-follow pictures and clear functional descriptions make life easy.

DYNACORD DRP 20

DESCRIPTION: An NEC-manufactured, Dynacord-designed, 32-bit floating point chip powers this 2-channel (2 x mono or full stereo) multi-effects processor. The DRP 20 features 16-bit converters, and comes with 100 factory preset programs and 128 user memory locations.

There are 26 algorithms in the programs, which include reverb, echo, chorus, flanger, doubler and multitap delay. Special features include mono RCA tape in and out jacks for saving program setups to analog tape, a power cord ground lift switch, and parameter indications switchable between relative numerical values (0 to 100) and dBs. The unit occupies two rack units of space.

RETAIL PRICE: \$2,195

FUNCTIONS AND EFFECTS: The programs, called Effects Structures by Dynacord, include 2-channel Echo, VCO-Echo Stereo, Plate Reverb, Room Reverb, Echo + Plate,

(additive reverb, in essence), Freeze Manual, Plate Reverb & Gate, Room Reverb & Gate, Gated Reverb, Echo & Gated Reverb, Multitap 2x3, Multitap 2x6, Multitap Presets, Stereo Flanger and Stereo Chorus.

Additionally, gating and bass/treble parameter adjustments are available inside programs, but not individually.

CONTROLS: Single stereo input level; input sensitivity switch (line vs. instrument); edit effect and parameter buttons; select scroll, factory and user program selection, mute, MIDI setup, bypass, parameter wheel, enter, copy, compare and store buttons; single output level control and power switch.

INTERFACE: 1/4-inch unbalanced pair of inputs and outputs (XLR balanced available in the DRP 20X model), input level and impedance 3V max and 50k Ω , respectively. Output level 1.55V nominal. Three remote switch jacks for bypass, step along and mute. MIDI in and thru jacks. RCA tape in and out jacks for data backup.

REVERBS OFFERED: Room reverb, hall, plate, live space, gated reverb. Parameters offered include pre-delay, reverb type, reflection clustering, reverb onset delay, transient buildup, room geometry (cathedral, cave, tube, cube, shattering), room size in CBM, decay time, high and low damping, gate or reverse threshold, time and release,



Echo + Room, VCO/Echo + Plate, VCO/Echo + Room, Echo + Live Reverb, L=Echo/R=Plate, L=Echo/R=Room, L=VCO/R=Plate, L+VCO/R+Room, L=Echo/R=Live, Freeze Automatic

and freeze triggering type.

EVALUATION: The Germans must be used to bigger rooms than we are. To wit, their small room titles call up parameters indicat-

ing spaces thousands of cubic meters in volume. We would call their big rooms cathedrals or gymnasiums.

Generally, the DRP 20's reverb programs really shine. They are very quiet, thick, smooth, extremely variable from dark to bright, flexible in sizes and dispersions offered, and easy to navigate through. The room ambiances are superb, with special merits going to Safe Sex 1 and 2 and Conga Room — nice, intimate, musically colored spaces (they sounded great on guitar, piano, voice and drums). We really liked the wooden floor and carpet parameter attributes.

The gated and reverse reverbs are also exceptional — extremely quiet, chitter-free, uncolored (unless you want them to be), and most important, usable. Worth a mention is factory preset 65, labelled Reverse Snare FX, which is a gated plate with the unique property of taking on the pitch of the source, tunnel-like, as if the verb were filtered through an auto-tuned VCF. Simply lovely. Also good were the non-linear reverb decays — very contemporary and, again, appropriate to the sources. They sounded great in musical context.

DELAY OFFERED: Assorted slapbacks, doubles, multitaps and cluster returns, separate and as part of various reverb presets.

EVALUATION: The DDL effects are clean and simple, with good flexibility offered in level, spacing and return locations. Not as variable as some units, which offer full panoramic positioning, feedback amount and level on each return, the Dynacord lets you do just about anything you might want, quickly and cleanly.

CHORUS/FLANGE OFFERED: Stereo chorus and flanging, with and without delay.

EVALUATION: The factory presets offered are somewhat anemic — either shallow and simple, or exaggerated with too much regeneration and tunneling. However, by extensive fiddling with the parameters, some useful effects can be derived. All told, however, the chorus is not quite up-to-par with other companies' offerings.

Chorus and flange parameter adjustments include left and right level, treble, bass, modulation depth and speed, intensity and feedback, the latter two both in and out of polarity.

DYNAMICS OFFERED: Only gating, as part of the room and plate reverb settings.

EVALUATION: The gating and reverse reverb functions, integral to many of the presets, work flawlessly, providing effective and extremely usable decay envelope manipulation.

EQUALIZATION OFFERED: Tone (treble response tilt), bass and treble are featured as part of the presets.

EVALUATION: The tone adjustments and 2-band EQ as offered up on the presets provide gentle brightening of the effected signal. They appear to be shelves with gradual slopes, fixed in frequency. They are smoothly effective in turning a full-sounding plate, say, into a bright percussive plate, when further dispersion and damping adjustments are added.

WRAP-UP: The pedigree and intent of the Dynacord is evident in the fact that the program presets arrive favoring a fully wet balance. This is a device designed to be inserted into the sends and receives of a console, although instrument levels and usage can be addressed. The strength of the DRP 20 lies in the reverb quality, which is excellent by any standards. The fidelity, timbre, tonality and freedom from noise are reminiscent of a top-end Lexicon, as is the adjustability and ease with which a good, usable setting can be derived.

The DDL effects are good. The choruses and flanging effects, however, leave something to be desired. It's not that they are bad, once set up. It's just that they lack those certain somethings — call them depth, sparkle and imaging — that so many of the

full dynamics control, equalization, believable rotary speaker effects, vocoder, aural enhancer and inverse expander.

Unlike most other devices, any given DSP chip can be dedicated to performing one function entirely, and then the combinations of processors can be stacked or cross-patched. Entire signal chains can be created, for example: compression/expansion/gating, followed by equalization, into room ambience and then plate reverb.

More than 400 effects presets exist, determined by which processor configuration is selected, with 200 factory programs resident in ROM and 200 RAM locations available for user edits. A dedicated 128kbyte computer is onboard to navigate and control the system. The unit is two rack spaces high.

RETAIL PRICE: \$1,495.

FUNCTIONS AND EFFECTS: Algorithms available to each of the four processors include the following: small room reverb, large room reverb, small plate, large plate, hall reverb, reverse reverb, gated reverb, non-linear reverb, non-linear reverb 2, multitap delay, dual delay, tempo delay, VCF-

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much less expensive analog and digital boxes do so well. In their favor, the modulation effects are extremely quiet.

All in all, the Dynacord would be an excellent unit to have available on a tracking or mixing session, no matter the high quality of equipment used alongside. This is a top-notch performer, by any standard.

ENSONIQ DP/4

DESCRIPTION: The DP/4 parallel effects processor is not your typical digital device. It achieves multi-effect capabilities by matrixing four discrete inputs through four discrete DSP processors to four discrete outputs. To complicate matters, virtually any combination of the above can be created: one input to four processors in series (or parallel) to stereo outputs; or 2 x stereo into two DSPs, each pair into 2 x stereo; or a stereo input paralleling two mono inputs into discrete DSPs, then into discrete outputs. Got it? The Ensoniq is roughly equivalent to having two dual-mono (or a pair of stereo) processing devices in one package.

The unit uses 16-bit conversion, and four 24-bit proprietary DSPs (with a total of 40 MIPS of power!), and features more than 30 algorithms available to each one simultaneously. Because of the huge amount of processing power available (two to four times that of competitive units), many effects, unattainable elsewhere, are possible, including digital mixing to stereo, tube guitar amp distortion (you have to hear it to believe it!),

distortion, guitar amps 1, 2 and 3, speaker cabinet, tunable speaker, rotating speaker, EQ-chorus-DDL, EQ-vibrato-DDL, EQ-panner-DDL, EQ-flanger-DDL, EQ-tremolo-DDL, phaser-DDL, 8-voice chorus, flanger, pitch shifter, pitch shift-DDL, EQ-compressor, inverse expander, de-esser, duckergate, parametric EQ, aural enhancer, vocoder, sine wave tone, pitch shift (2U), and 3-second delay (2U).

CONTROLS: Four input and four output level controls; write/copy, cancel/undo, scroll, select, edit/compare and system/MIDI buttons; a master and A, B, C and D bypass/active configuration buttons; and a power switch.

INTERFACE: Four unbalanced input and output 1/4-inch jacks, two TRS 1/4-inch footswitch and control voltage pedal jacks, and MIDI in/out/thru DIN jacks. Input and output impedances are 1M Ω and 2.6k Ω , respectively.

REVERBS OFFERED: Small room reverb, large room reverb, small plate, large plate, hall reverb, reverse reverb, gated reverb, non-linear reverb.

EVALUATION: By configuring the processors so that inputs 1 and 2 drive DSP A and B and feed outputs 1 and 2, respectively, it is possible to address the reverb programs (or other individual effects) discretely. When one engages all of the processors in a single

or stereo source configuration, *too many* options exist: compression, expansion, gating, equalization, DDL and reverb simultaneously in a *simple* configuration!

The reverb algorithms by themselves are very good — full, dense, with only the slightest touch of edge or chitter in some of the more widely spread diffusion and decay definition settings. Considerable flexibility is provided thanks to the large number of alterable parameters. The hall reverb patch, for example, provides the following adjustments: mix (wet to dry), level, decay time (up to 250 seconds), two diffusion parameters, pre-delay time, HF bandwidth, HF damping, LF decay time, position balance (0-100 for three locations — close, middle and far field), two early-reflection parameters (time, level and send to reverb), primary send, detune rate and depth, and decay definition.

By varying the basic algorithms (room, hall, plate, etc.) and adjusting the parameters, it is possible to fine-tune the verbs to

sounds we have ever heard, bar none. The scary part is there are *so many options from which to choose!* Any of the couple of dozen presets available from the multiple configuration setups are excellent, before you even start manipulating the parameters.

DYNAMICS (COMPRESS/EXPAND/GATE) OFFERED: Compressor, expander, gate as part of the same algorithm, all available simultaneously.

EVALUATION: We wouldn't trade in our 1176s, but for digital dynamics control, these are very effective. They are best realized as part of other algorithm combinations — for example, feeding guitar amp emulators (adding sustain and tube distortion), holding a chorus patch signal at one volume, or playing with reverb dynamics on drums or percussion.

In context, the compressor provides every control (and then some) that an analog unit

EQUALIZATION OFFERED: A number of different types of equalization are available. Some are part of other algorithms (from the several swept frequencies with variable Q of the tunable speaker, to the shelved bass, two peak/dip mids with Q and adjustable high-band shelf that is part of the de-esser sidechain). Others stand alone, such as the dedicated stereo rumble filter or 4-band fully configured parametric. Remember, four processors in series, each running an EQ algorithm, would provide 16 bands of selectable parametric control!

EVALUATION: The musicality and strength of these equalization bands is quite good. In combination with other algorithms, the EQ allows tonal variation, which can make or break a sound. Alone or in a processing chain, the EQ sections perform well.

PITCH SHIFT OFFERED: Three pitch shift algorithms are available — pitch shift/DDL, 1U (unit, or DSP chip) pitch shift, good for doubling or flavoring, and 2U pitch shifting. The latter, using a "splicer-type" algorithm, employs a second chip to detect waveform zero crossing points, providing smoother, less glitchy audio.

EVALUATION: The 2U algorithm provides excellent sound quality, with shifting ± 1 octave. The fidelity is good enough to stand alone. The other programs, whether used individually or as part of reverb, chorus or vocal enhancement patches, are effective in stereo vocal or instrument spreads, or used as gentle background colorings. Either way, with two separate tunable pitches available in the algorithms, and the ability of 1U patches to select smooth or fast transforms, you will be tempted to use the effect on a large number of sources.

OTHER EFFECTS OFFERED: Vocoder, Auto Wah Wah, Mutron, guitar amps in rooms (amazing — from Marshall stacks cranked up to "11" to a Fender Champ on a metal folding chair, you'll swear they're real!), speaker cabinets, thunder and rainstorms, aural enhancer, rotating speaker (with inertia control), tone and noise generators, space effects, weirdo undefinable creations, etc.

EVALUATION: If you can think of it and understand the physical fundamentals and operation of the box well enough, you can realize your wildest sonic fantasies. When it comes to creating sounds — real or imagined — the Ensoniq excels.

WRAP-UP: This device is a sound designer's dream. And it does far too much to fully cover within our dreaded space limitations. It is extremely flexible, with wide dynamic range, generally low background noise and wonderful musicality. The reverbs and pitch

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exactly the sound you want. Overall, very impressive.

DELAY OFFERED: DDL, dual delay, multitap, tempo delay.

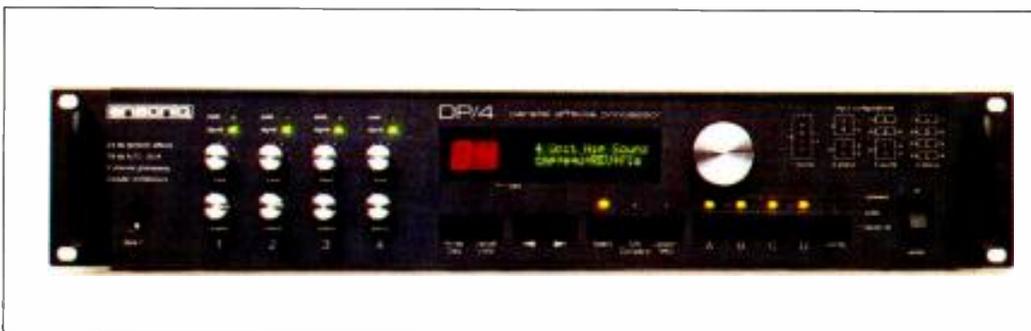
EVALUATION: As with all of the other algorithms and combinations achievable, there is so much adjustment capability present that you can't merely state that the delays are good or bad. Suffice it to say, if you can hear a delay sound in your head, you can create it with the DP/4. And they can be as quiet, bright or deep as you want.

CHORUS/FLANGE/PHASE OFFERED: Available are stereo chorus, flange and phase

provides, including a gain reduction bargraph meter. As with many nudge-button digital devices, however, operations are slowed down by having to scroll to different window displays to adjust separate input drive, threshold, attack and release parameters.

The downward expander and gates are both quite good, with the added advantage of their being available full time, along with the compressor. And although we didn't play with them extensively, signal ducker, inverse expander and de-esser algorithms exist, available for use along with any other algorithms. Can you say "comprehensive"?

The quality of the dynamics control is very good, but unless it is part of a general DP/4 signal processing chain (for example, an



shift, with or without active panning, compression, EQ, DDL, reverb, rotating speaker (with inertia control!), tube guitar amplifier, tunable speaker, pitch shift, etc., etc., etc.

EVALUATION: No matter which effect chosen, whether dry (one DSP processor) or a fully stacked plate (no pun implied), these are without a doubt the best modulated

electric guitar track feeding the compressor/expander, then a chorus, into a guitar amp patch and onward to a reverb program), you might still would want to use your analog outboard for the quality stuff. There's still something special about a tube or discrete detection circuit, with all due respect to digital emulation...

Descent Into Chaos... Or A Time For Change?

By David Scheirman

The sound reinforcement industry has perhaps never been so volatile. Whether it's the major touring industry sound market, or special events and regional rental work, or installation contracting, or the consulting community, all aspects of the sound business as we know it seem to be, somehow, "different" — unstable, wildly fluctuating, unpredictable. "Things just don't seem to be the way they used to," one sound company owner complained to me recently. "It's hard to predict anything. Even my regular clients seem edgy."

Although the 1992 concert touring season is on its way to a recovery from last year's unusually slow period, all phases of the sound industry show signs of being in a state of flux. A changing game, unexpected moves, different players, subtle differences.

Is it just the sound industry that is in transition? Or is it all of society? To judge from recent global events (the Persian Gulf War, collapse of the Berlin Wall, dissolution of the USSR, civil war in Yugoslavia, rebellions in China, Afghanistan and now Thailand), something seems to be in the air. In our own country, the unsettling Los Angeles riots and the unprecedented popularity of an independent Presidential candidate (Perot) show that we Americans are not immune to changes.

To some, it might seem to be descent into chaos. To others, it might seem a time for new opportunities. Perhaps it is both. A major touring sound company loses one of its premier clients to a competitor after a 14-year relationship ... another major company loses key management and engineering personnel who leave to form a spin-off new startup company ... a major installed-system concert venue switches sound system suppliers to an out-of-town company after many years of local service ... an upstart, unknown young band goes from clubs to sta-

dium tour offers in one year's time ... a major speaker manufacturer offers tour support by way of providing multiple speaker enclosures directly to a performing artist, thus rankling the big P.A. rental firms, who view it as unexpected competition in a soft market ... a new theme park venue rips out one type of brand-new speaker system at multiple sites and installs a competitive one ... a rock festival is held inside the Kremlin walls ... corporations hire heavy metal acts for company sales meetings while heavy metal concert clubs switch over to presenting big band and supper-club music ... an audio software program is marketed in the U.S. by a speaker manufacturer, while in the U.K. that company's distributor's major competition has rights to the same program ... a touring sound company starts a successful permanent installation division while an established installation contracting firm purchases a sophisticated rental sound system. It has all happened since the first of the year. If this doesn't sound like an industry "in transition," then I don't know what does.

Something that seems like chaos to some can mean an open door for new opportunities to another. When things are thrown into chaos, big changes are often the result. Yet, many of us are not prepared psychologically, financially, or logistically to cope with too much change in a short time period.

In his book "Chaos: Making A New Science" (Penguin Press, 1987), author James Gleick states: "Where chaos begins, classical science stops ... chaos is a history of discovery. The new science (of chaos) has spawned its own language ... chaos breaks up the lines that separate scientific disciplines."

In other words, disorderly chaos in a system or structure, whether it is in nature (wave theory, wildlife populations, weather patterns, and such) or in human affairs (economics, scientific development, or social events) often heralds the onset of a new order, a different way of being ... a situation that is not only changing, but that has *already changed*. In short, chaos often means revolution.

What are some revolutions or turning cycles that we see in the sound industry today? What is happening with live sound operations, with tour support, with audio product development and manufacturing, with system rentals, with concert acts, with event

venues, that is unexpected, unplanned for and that leads to a feeling that "everything's falling apart?"

- Public expectations: Due to higher fidelity in consumer electronics, audiences know the difference between good and bad sound more so than ever before. It's harder to fool the guy who bought the ticket.

- Data processing and communications: More of us know even more about who is doing what, where the action is, what companies are bidding on what installation jobs or concert tours, who's in trouble, what's new.

- Intelligence versus bulk: Huge, dumb sound systems and companies are being joined or replaced by smaller, component-based "intelligent" integrated systems and precision smaller companies that rely on digital control, advance planning and national support networks to respond quickly to a changing marketplace.

- Mass versus information: Audio gear becomes smaller, lighter, more complex, with less bulk and weight, more internal precision parts and "smarts."

- Market saturation: More vendors are providing the same services and commodities (whether power amplifiers or fully-staffed concert P.A.'s) ... the low bidder becomes 'king.'

- Global marketplace: Japanese and European products flood the U.S. American products are sought in these same countries. Developing nations want it all from everywhere.

- Time compression: Even though time hasn't really 'compressed' itself, the rate of change has increased in all realms. More is expected, more quickly, with less time than ever before to do it in.

- Knowledge gap: The distance between high-technology wizards and the rest of the population widens. Specialists are urgently required and jealously guarded. Education needs increase faster than do the education systems that exist to spread the knowledge.

Does the above all lead to a pattern of chaos? Not necessarily. The road crew member, the pro audio manufacturer, the house soundman, the P.A. company manager, the system designer all can look at their own situations and find chances to either let things "fly apart," or they can learn to grow and profit from new opportunities.

If chaos does indeed herald a time of new discovery, then perhaps there are
Continued on page 63

MIXING IN ★ MOSCOW

SOUND REINFORCEMENT

By DAVID SCHEIRMAN

Once upon a time, sound system engineers and operators in the Soviet Union had a hard time getting the right tools to do their job. There were few sources of modern audio equipment, and what engineering and manufacturing resources there were in the country often went into making products for the military and aerospace industries. Trade restrictions and political situations made travel, product importing and information exchange difficult.

As the Soviet satellites in Eastern Europe began to flex their economic muscle in the 1970s, the Soviet Union started to develop sources of audio electronics gear. Companies in such countries as Hungary, Yugoslavia and Czechoslovakia began to produce signal processing equipment, solid-state power amplifiers, mixing consoles and speaker compo-

David Scheirman is R•E•P's live sound consulting editor and president of Concert Sound Consultants, Julian, CA.



(Above) H. Petrovich, audio director for the Vakhantgov Theater, located on central Moscow's Arvat Street, at his Studer mixing console.

nents. These system elements found their way into installed sound systems within the Soviet Union as the national state traded such raw materials as minerals, fur and oil for manufactured goods from its European partners.

By the 1980s, trade with Western Europe was no longer as difficult. Electronic equipment manufacturers in England, France and Germany, for example, were able to export their products into the Soviet Union with less difficulty than during the peak of the Cold War. Other companies, including Studer, Siemens and Philips, found the Soviet Union to be an enthusiastic market for condenser microphones,

Behind the once-ominous Iron Curtain look at the rapidly changing audio reinforcement industry.



Traveling back

and economic upheaval at the time — revolution, world war or coup.

Today, a Moscow theater directory lists more than 50 establishments, government and private, presenting everything from “Madame Butterfly” and “Don Quixote” to “King Lear” and “Othello,” from a Prokofiev ballet or a Beethoven Symphony to “Swan Lake.” Jazz, rock and ‘new art’ concerts are commonplace, with events being

staged nightly in any available space: hotel lobbies, cafes and empty warehouses.

Often, the price of admittance is so high that only tourists can afford to attend. For example, a jazz brunch featuring the New Moscow Jazz Band was advertised for Sunday, March 1, 1992, at the Hotel Savoy in Moscow. Ticket prices were (U.S.) \$30, then the equivalent of 3,000 rubles — about two months’ salary for the average Russian worker!

Let’s look at a few examples of how Russian soundmixers were doing their jobs as of February 1992 and how they are doing it.

THE VAKHTANGOV THEATER: COMIC FOLK OPERAS

On Arbat Street, close to a huge building that Stalin had erected to house his Foreign Ministry offices, the Vakhtangov Theater has presented popular folk theater productions since near the turn of the century. Seating approximately 1,200 people, the venue has a thrust proscenium stage with compact orchestra pit and three balconies. High in the top balcony at the rear wall sits a sound booth, where I found audio director H. Petrovich manning a Studer mixing console.

The theater also boasts Studer tape machines and has a small room dedicated to sound effects and vocal recordings. Tesla graphic equalizers manufactured in Hungary and a Czech-made wireless microphone receiver the size of a window air-conditioning unit competed for space within the crowded booth.

The resident theater company was presenting its popular version of “Princess Turandot,” a politically slanted romantic comedy that has been a local favorite since the Communist revolution in 1917. Petrovich said that keeping a good stock of fresh recording tape on hand had been a problem for him and that he needed more reliable, compact RF microphone systems.

Located directly across the street from one of Moscow’s oldest established classical music schools, the Tchaikovsky Conservatory’s Great Hall presents programs nearly every night of the week. A variety of symphony orchestras and world-renowned guest soloists appear on the wooden stage in front of a massive pipe organ. Large framed portraits of the world’s great composers line the walls, and the chandelier holders are cast in brass and shaped like treble clefs.

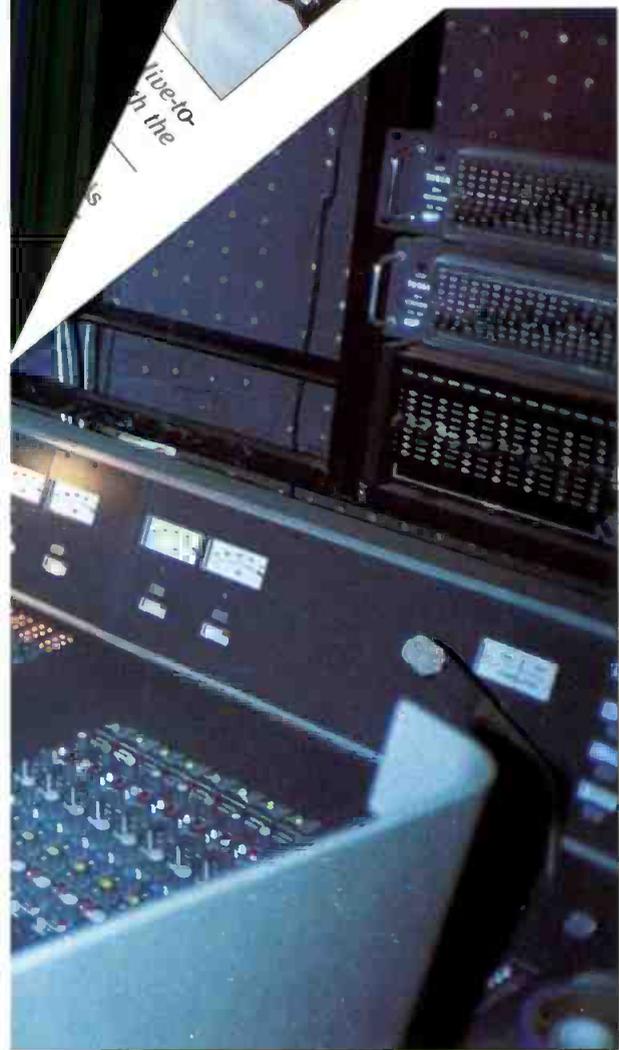
Loudspeaker voice coils, compression drivers and tube-type power amps were all built from scratch and were in service for more than 25 years.

Attending a performance by the Sophie Nerie Symphony Orchestra with guest artist Cheng Song, a featured pianist from China, I noticed a collection of expensive microphones suspended above the musicians, even though the natural acoustics of the warm, wooden hall seemed to preclude the use of any sound reinforcement. Poking around in a hallway, I located the mic-line termination point. All of those Neumanns and AKGs were routed to a Studer broadcast console, in use to present a real-time radio mix to listening Muscovites at home.

A cheerful, professional woman operating the desk advised me that she had received audio training in England, having spent five years working with the BBC in London. She now was responsible for doing remote broadcast and recording dates for the radio station, and she specialized in orchestral music. She previewed a few input channels over a pair of Hungarian-made 3-

state of flux, and currency exchange is a no-man’s-land of changing laws, unknown values and other dilemmas.

The Russian people have always placed a high value on the cultural arts, regardless of governmental situations. Opera, theatrical performances, ballet and orchestral productions have been staged in Moscow throughout the past century, with few interruptions because of any political or eco-



MIXING IN ★ MOSCOW

SOUND REINFORCEMENT

way monitor speakers set against the wall. Her wish list included acoustical treatment materials for some of the rooms in which she had to work.

THE INSTITUTE OF ART & MUSIC: SYMPHONIES TO HEAVY METAL

Housed in a former government building that once was the headquarters for the Soviet's Air Defense Ministry, college courses taught here feature everything from modern dance to music composition, painting to stained-glass artwork. The students are exposed to a variety of new ideas, in addition to having the chance to study traditional art and music programs.

A compact 'institute hall' seating perhaps 500 is used to present student programs that range from stand-up comedy to heavy-metal bands. Large left and right line arrays were hung from the ceiling flanking the proscenium stage. A student technician said that they had assembled the speaker boxes using components imported from Greece and Italy: 18-inch and 12-inch cone loudspeakers and bullet-type compression tweeters loaded into ducted, modular enclosures.

While an electric guitar class was in progress down the hall (carefully studying English metal guitar licks over headphones), and a symphony orchestra ran through pieces for an upcoming program on a nearby stage, an aerobics class worked out in the student lounge with music played over a massive disco-style system, built on a foundation of horn-loaded bass cabinets.

SPECIAL EVENT SOUND, CORPORATE-STYLE

In one central Moscow meeting hall with a long, low ceiling, I found audio and lighting technicians preparing for an upcoming meeting and dinner-dance show that night. It



A symphonic music mixing specialist poses at her Studer broadcast console during a radio mix for a Moscow station. She learned her craft while on staff for five years with BBC.

was a common scene: A corporation was hosting a fund-raising dinner to benefit a local charity, receiving public-relations benefits while serving a good cause. In this case, the corporation was McDonald's, and the charity was a local relief fund for orphaned and homeless children.

A cheerful sound technician dressed in a white lab-style coat showed me his Dynacord mixing console equipped with a large multipair disconnect. The desk could be operated off one side of

the room for dinner events such as those or located in the center of the hall for pop-style music shows. All loudspeakers in use were also manufactured by Dynacord.

A facility executive said that the hall, although still officially owned by the government, is looking for ways to market itself as a private meeting space — for rental by outside companies for lectures and conventions, as well as other special events that will help to generate revenue.



The Institute's disco-style stage in the student lounge, featuring enough hardware to shake the walls. Loudspeaker components and cabinets are sourced from Greece, Hungary and Italy.

"It has been a long and complex process ... since our country's politics have been undergoing many changes recently."

— Victor Kondakov

**INSIDE THE KREMLIN:
NEW TECHNOLOGIES**

In 1961, the Soviet Union's major government assembly building in Moscow, the Kremlin Palace, needed a new sound system. Because of the political situation and trade restrictions, the Soviets had to construct everything themselves, from mixers to power amplifiers to loudspeaker enclosures. For the record, the multiarray system that was installed 30 years ago in the Kremlin Palace featured five gargantuan enclosures, each 15 feet tall and weighing more than 1,500 kilograms. Loudspeaker voice coils, compression drivers and tube-type power amps were all built from scratch for that install and were in service for more than 25 years. In 1985, that system was overhauled, upgraded and a new con-



Installed in 1985, the Kremlin Palace's Siemens mixing console is 27 feet long. Operated by staff tonmeisters, the console has separate sections with different input and output modules to serve lecture, theatrical and orchestral events.

sole from the German manufacturer Siemens was installed.

The console, still in use, is an astonishing nine meters long (about 27 feet) because of three different sections included for different types of programs: congress lectures using special seat-

back speakers on each of the 6,000 chairs, theatrical productions using the five main arrays, and symphonic programs that use the room's 250 hidden, distributed ceiling speakers for artificial ambience. The console is operated by the facility's staff

Hey Glenn, what do you do with your 56K?

Glenn Meadows is the president of Masterfonics Inc. in Nashville, Tennessee. His mastering credits, 350 of which have achieved Gold/Platinum status, include: Alabama, Hank Williams Jr., Dan Fogelberg, and Reba McEntire. Recent 56K projects include: Steely Dan Gold Extended/MCA, Reba McEntire/MCA, and Sawyer Brown Curb/Capitol. He has been mastering since 1973.

"The 56K has made my life much easier. In an effort to find a digital mastering system suitable to my needs, I evaluated several other systems on different platforms. The 56K proved significantly easier to use and faster to learn, as well as very quick to do the type of edits I normally did with analog tape.



The playlist in SoundStage is the most intuitive I have seen. I use it daily for quickly changing the song order on compact discs, as well as reassembling songs for different required mixes. What used to be done in a day with tape can now be done in minutes with the 56K.

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MIXING IN ★ MOSCOW

SOUND REINFORCEMENT

pro audio technologies, including 64 dual-channel power amplifiers from Crest Audio, linked to an IBM-format computer with Crest's new NexSys system network interface, one of the first such system installations anywhere in the world. It also features computer-

stocked audio testing facility that includes equipment from Bruel & Kjaer and Audio Precision

"We are interested in having the very best audio system possible here," said Kondakov when I visited his private office and test lab. "It has been a long and complex process to have this system designed and installed, since our country's politics have been undergoing many changes recently."

Next on the Kremlin Palace's wish is list is a new, automated mixing console. Proposals from both Neumann and Neve are under consideration. With the new openness emerging in Russian society, and with economic reforms and inevitable growth on the horizon, the doors may open soon for a greater amount of exchange between the Soviet Union and the United States, both technologically and culturally. In fact, if Mr. P.P. Nilov, director for the Kremlin Palace, gets his wish fulfilled, Moscow residents may soon be able to line up for tickets to see such Broadway-style productions as "Phantom of the Opera" or "Cats."

"We have the ideal facility here to present almost any type of entertainment event," Nilov told me. "Our stage size, electrical facilities and technical crew are capable



The studio control room in the Kremlin Palace features a Studer console and tape machines. The facility's sound director, Zoya Boltneva, is at left (in green sweater).

tone-masters, who blend a knowledge of classical music and acoustics. Most are 50 to 60 years old.

The Kremlin Palace boasts an on-site recording studio facility, which is used to handle the live recording of orchestral and dramatic productions along with the playback of tapes and special effects for some shows.

A modern Studer mixing console and multitrack tape machines are available, along with compact disc and DAT systems, signal processing from American and English manufacturers Lexicon and Calrec, and even a pair of Auratones for near-field monitoring.

"We are going to be doing more different types of shows in here as time goes on," said Zoya Boltneva, sound department director for the Kremlin Palace. "We recently had an Italian opera here ... lecturers from Japan, the USA and Europe ... and we hosted our first rock concert inside the Kremlin. Then, we had a 5-day rock festival featuring Russian bands, produced by Stas Namin, an independent concert promoter. We had some damage to our upholstered seats, but the program certainly did draw large, enthusiastic crowds."

In 1991, the facility received a new sound reinforcement system that includes some of the latest in American

controlled equalizers from Industrial Research Products, and AKG's computer-controlled Delta Stereophony digital signal processing system for audio image localization.

Loudspeaker systems installed by West German contractor Janssen Light & Sound Line include MT-4 Manifold enclosures and smaller DeltaMax systems from Electro-Voice. Compact AE-2 units from Apogee are used as center fill units on the huge stage, with its 100-foot-wide proscenium opening.

The facility's chief sound engineer, Victor Kondakov, maintains a well-



Tucked away in a 'secret' audio testing lab are the latest items from Bruel & Kjaer and Audio Precision. Shown from left are Kremlin Palace sound director Zoya Boltneva, author David Scheirman and chief sound engineer Victor Kondakov.

of handling most anything. We look forward to some exciting shows in the future." ■

Analog Tape Deck Timing Problems

By M. Raymond Jason

Last month I examined that insidious and idiosyncratic problem of analog recording known as wow and flutter. Two other analog-only problems, probably not addressed on your ATR's specification sheet, are timing accuracy and long-term timing consistency.

TIMING — TWO VARIABLES

The elapsed time, speed and length of a segment of tape are related by the following equation:

$$\text{Elapsed time} = \text{length/speed}$$

On first examination, this appears to say that timing and speed are inversely proportional, which would indicate that a "speed" problem and a "timing" problem are in fact no more than different names for the same problem. But the "constant" of this "proportionality" is tape length, which, because of tape's unavoidable and significant linear elasticity, should not be assumed constant. That is, when performance is critical, tape timing must be considered a function of *two* variables: speed and length.

THREE VARIABLES FOR LENGTH

Three factors influence a tape's effective length. In decreasing order of importance they are tension, humidity and temperature. As a rule of thumb, one second of error in a 30-minute program results from a tension change of three ounces, a humidity change of 50%, or a temperature change of 30°F.

Of these factors, only tension is under your control during maintenance and alignment. An in-line tension gauge is the best and quickest way to check tension, and it should be part of your toolkit. But also include a thermometer and a hygrometer.

CAPSTAN/PINCH-ROLLER PROBLEMS

The second variable in the timing equation is speed, which, on most ATRs, is controlled by the capstan/pinch-roller system. Any deviation

from perfect rotational velocity or perfect capstan diameter will show up as a timing error.

For 1/4-inch-diameter capstans, variation between diameters of just 0.0001 inches (0.1 mil or 100 micro-inches) will result in timing differentials of 1.5 seconds per hour (regardless of tape speed). Manufacturing tolerances can vary by several tenths of mils, and tape wear can reduce capstan diameter by mils.

Half-inch capstans, although more expensive and prone to greater flutter given their slower rotation, exhibit half the timing error of 1/4-inch capstans for the same diameter difference. Use a micrometer accurate to 0.0001 inches to measure all of your ATR capstans, then calculate the expected timing differentials with the following formula:

$$\text{Error (sec/hr)} = 3,600 \frac{d_{\text{capstan}} - d_{\text{ref}}}{d_{\text{ref}}}$$

Tape slippage from a dirty, damaged or poorly adjusted pinch-roller will enlist the tension differential across the capstan as an additional speed factor. Avoid this out-of-control situation by ensuring that all tape operators know how and when to clean the capstan and pinch-roller, and by checking pinch-roller pressure and supply/takeup tensions as part of routine maintenance.

These days it's difficult to find an ATR that does not employ a crystal reference for capstan velocity. An accurate frequency counter (applied at a point in the capstan drive circuit that will not load the oscillator) will tell you how the crystal circuit is doing. Accuracy should be at least 0.01%. Your ATR's service manual should provide proper voltages, waveforms and frequencies to look for in the capstan drive circuit.

If your ATR uses an ac-referenced (hysteresis-synchronous) capstan motor, then the accuracy of your capstan velocity is in the hands of the local power utility, and there isn't much more to say about it.

TWO KINDS OF SYMPTOMS

Timing problems give rise to two kinds of symptoms: timing error and pitch error. Both are often present simultaneously, but this need not be the case. Here are two examples of how a timing error might present itself: A program, carefully produced to

run precisely 30 minutes, ends up running 10 seconds over; or the best takes of a recording turned up at opposite ends of the same reel of tape. You splice them together and the second is off pitch.

Either of these symptoms can be caused by either of the two major sources of timing error described above: tape-length variation or incorrect capstan diameter.

TROUBLESHOOTING TIMING PROBLEMS

Timing problems almost always show up as relative problems between two ATRs. First of all, which two ATRs are involved and which of the two has the problem, if not both? For ATRs that use constant-torque drive to the reel motors (an older, lower-tech predecessor to constant-tension drive), timing problems are also common from the head to the tail of a reel on the same machine.

The previous equation provides a quick check of whether differences in capstan diameter account for the observed timing problem. For an overall check, sensitive to all sources of timing error, simply compare the playback frequency of a 10kHz recorded tone on each of your machines. Include measurements at the head and tail of a full reel to uncover differential tension problems. The following equation translates the frequency differential into a timing differential:

$$\text{Error (sec/hr)} = 3,600 \frac{\text{frequency 1} - \text{frequency 2}}{\text{frequency 2}}$$

You'll need a stable oscillator, and frequency drift should be less than 1Hz per minute. To achieve this stability, most oscillators must be on for about an hour. You'll also need an accurate and stable frequency counter capable of reading 5-digit frequencies in increments of 1Hz. To create a reference tape, choose an ATR with constant-tension reel drive, a well-aligned transport, and a pinch-roller and capstan in excellent condition. Thoroughly clean the tape path. After allowing 10 or 20 seconds of recording time at the head of a full reel of tape (for tensions to stabilize), record one minute of 10kHz tone at nominal level. In using the tape for measurement, allow time for the transport under test to stabilize before reading the frequency. ■

M. Raymond Jason is an electronic engineer at National Public Radio in Washington, DC.

The Need For Speed

By Rick Schwartz

With a fast enough computer and well-designed hardware, you should never have to wait for a workstation to do something. It should be waiting for you. We are entering a time where the operator will be the limiting factor — not the equipment. With this in mind, we need to consider new ways of improving ourselves.

MOUSE = SNAIL

Ask a professional typist how the use of a mouse affects their typing speed. You may be surprised by the answer. It goes something like this: "The mouse is useful for selecting items on the screen, but avoid using it more than you need, because it forces you to take your right hand off the keyboard where it belongs." Fortunately, only a small part of the time we spend editing sound involves naming files, but the point is well taken.

TYPING TRAUMA

If you don't already know how to type, then learn. It's never too late. It drives clients crazy to watch someone hunt-and-peck around a keyboard. There are good instructional typing programs available that will get you up to speed in weeks (Try "Mavis Beacon Teaches Typing"). Unless you are already a 10-key expert, spend some time training on the numeric keypad as well. After typing several hundred 8-digit SMPTE addresses, you will wish you had.

THE KEY(S) TO SPEED

You can save time if you don't use the mouse to select menu commands. Pull-down menus are useful for new users, but the menus are too slow to be used in a fast-paced session. This is why most applications include keyboard equivalents for popular editing commands, such as cut and paste. A keyboard equivalent is a shortcut that

involves a modifier key pressed along with one or more other keys. Command and control are popular modifier keys; others are option and shift. Use software such as QuickKeys or ResEdit to create keyboard equivalents for every command you use on a regular basis. Print out the list of commands and study it until you have memorized each one of them.

FINGER FATIGUE

Although it's important to make your keyboard equivalents easy to memorize, it is far more important that they are selected with ergonomics in mind. Place similar commands in the same area of the keyboard so they can easily be reached by the left hand. Try to make it so you never have to take your right hand off the mouse, except to name a file. To keep enough editing keys in reach, you will be forced to use modifier keys.

We are entering a time where the operator will be the limiting factor -- not the equipment.

To make your keys easier to remember, pick a convention and stick with it. For example, if *option z* is used to zoom in, make *option + shift z* equal to zoom out. Continue to use *option + shift* to perform the opposite of a plain option command. I know this sounds a bit confusing, but it will become second nature before you know it.

Also, use command keys for making things easier to reach. By mapping the '+' or '=' key on the numeric keypad to a colon, you can quickly type SMPTE addresses, saving two keystrokes per colon (plus the time you spend moving your hand on and off the numeric keypad).

FUN WITH FUNCTION KEYS

If your keyboard has function keys, use them. Function keys are ideal for commands you don't use often, because they are harder to reach than other keys. You can have up to 60 commands on a single row of function keys, by using modifier keys along with the function key. Use them for setting up digital I/O, time code, preference selection and sequences of command keys.

MACRO-MANIA

Think about the kinds of things you do every day, such as setting up a digital interface to record from a DAT machine or striping time code. You should use macros for anything that you do on a regular basis. A macro is a sequence of keyboard commands and mouse actions. When macro software plays back a sequence, it will repeat the keystrokes as fast as the machine can take them. In most cases, things move so fast you can barely see what's happening. Macros are real client pleasers.

THE WAITING GAME

I have always been amazed to see how long clients will wait for a reel change on an analog system. The constant activity keeps them occupied. Most digital workstations have no visible moving parts. Waiting a few seconds seems to take forever.

There are several things you can do to pick up the pace of a session. Always let the clients know what you are doing. It makes them feel as if they are part of the session, instead of an outsider. Most people are a little alienated by the technology. The more understanding they have, the more enjoyable their experience will be. Always let them know why they are waiting and what the benefit will be. Most people will take a little extra time if they can see and hear the benefit. After a while you may even find them getting into the act by telling you to move this "blob" there or shorten "such and such." Visual editing helps them to understand.

SEEING IS BELIEVING

After a while, you will be able to make edits without even hearing the program material. This really amazes clients who are used to working with a blade. Learn to identify hum, hiss, digital clocking and dc offset problems, lip-smacks, rumble, phase and pops from the waveform display. Of course, you always should check every edit before going on.

KNOW THY SYSTEM

Spend some quality time with your system until you know everything there is to know about it. Know its strengths (so you can flaunt them) and its weaknesses (so you can avoid them). Use work-arounds to avoid

Rick Schwartz is a contributing editor to R•E•P and director of post production at Post Complex, Los Angeles.

problems and get around limitations. Make sure you know the use and reason for every button and command on your system. Sometimes clients will ask you to do the strangest things. You need to have as many tricks up your sleeve as possible. Never pull out an owner's manual during a session unless you want your client to lose all faith in your abilities.

SCREEN ORGANIZATION

Keep your screens organized, so you know exactly where everything is. It is important to adopt some type of filing and naming convention. Before you start a project, create folders for each spot. It takes a little extra time to put things in the right place, but you will be glad you did several hours into a session. Avoid naming like things with similar titles. When the disk operating system puts them in a list, it normally sorts them alphabetically, visually

truncating after so many characters. Abbreviate when possible and keep a written log of your naming rules.

Some people like to add a brief prefix to separate sounds by group — for example, DIA, MX and FX. It's normally better to segregate different spots by folder, because their names tend to be long. I always add an asterisk to sounds that I create so I remember to archive them later. Later, I can search and locate them easily. If you share a system with other users, make sure to label each folder with a trash date. (i.e., Save until 6/21.)

STARTING FRESH

It's much better starting with a freshly initialized disk. After some use, the low-level format on the disk starts to wear off and you may start having sector problems. Formatting a disk guarantees the directory will be free from problems and the disk is fully

erational. It also makes it easier for the disk operating system to locate files, which sometimes translates into improved performance.

OTHER TIPS

If you have a large monitor and work a lot with waveforms, try to keep your windows as small as possible. It takes much longer to draw a 19-inch window than it does to draw a 4-inch window. Also, make sure you have the latest version of software, but never use beta software on a paid session (unless you are prepared to lose a client).

Don't stop here. There are many other ways to improve your speed. Learning to operate a digital workstation is not that much different from playing a musical instrument. Lots of practice will always pay off when it comes time to perform. ■

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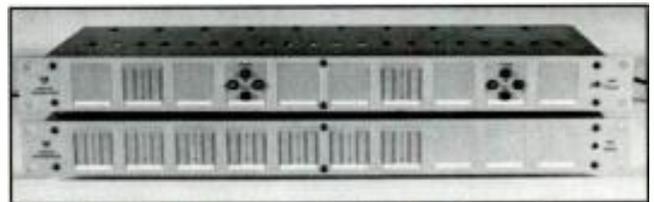
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Circle (24) on Rapid Facts Card

Technology and Politics

By Tim Sadler

Most topics that stir the online community are controversial. And during leap and election years, controversy and politics seem inseparable. So it was that I posed a "hot" topic currently popularized in the press under the rubric of the electronic town meeting (ETM); a concept not dissimilar to what we are doing with the R•E•P: On-Line forum on CompuServe.

Potentially, if the ETM concept takes hold, today's power brokers may begin to lose their grip, whole new paradigms of mass media production/distribution could evolve and the ETM might end-run the ossified status quo of the communications industry.

I'd hoped to avoid political implications and stick with technology issues. But politics and technology seem inseparable these days as most political messages are produced, transmitted and received via audio/video technologies, while dramatic changes continue in how information is engineered, produced and delivered.

So the call when out like this:

Message: #8735, S/14 REP Magazine
Date: Thu, May 21, 1992 9:47:25 a.m.
Subject: Electronic Town Meetings
From: Tim Sadler [REP] 75300,3142
To: All

At the risk of becoming embroiled in a discussion of the candidates, I am curious what you, as regular users of this interactive online medium, think of Mr. Perot's idea of policy formulation by electronic town meetings via interactive television?

As it happens, I live in a town in New England that uses the town meeting-type of government. While it is sometimes cumbersome and often boisterous, no one could say that it is not representative of the community's will.

As participants in this online community, we know that the technology necessary to implement the ETM (Electronic Town Meeting) exists. And while voter validation must be considered, it is an issue well within the resources of current technology.

Tim Sadler is president of IntraMedia, a media software consultancy and Sysop of R•E•P: On-Line. His CompuServe address is 75300,3142.

Here, in the online community, we make our feelings known every day to hardware manufacturers, software publishers, editorialists and even sometimes our elected representatives (remember the CongressGram). So why not use ETMs to take the pulse of the country?

Any takers? — Tim Sadler, Sysop, R•E•P: On-Line

What follows is a sample of the thread and passions that have begun to unravel on R•E•P: On-Line ...

Message: #8835, S/14 REP Magazine
Date: Fri, May 22, 1992 7:44:17 a.m.
Subject: #8795-ETMs
From: John Egenes 76427,3172

I know that the tech is here 'now' to do this, but it isn't friendly enough yet. When I first got into this MIDI stuff (and other computer-related things) I was affected like most others. About half the time I was infuriated with the learning curves and lack of standards. Things are getting better and better, but buying a new synth is still an intimidating thing.

When you buy a new telephone, you don't even have to read the manual to be able to use it. They're all standard. Same goes for driving a car. All different, but all the same. When the technology for ETMs gets to this point, we'll have them. In fact, I don't think we can 'stop' them.

Message: #8924, S/14 REP Magazine
Date: Tue, May 26, 1992 8:44:24 a.m.
Subject: #8835-ETMs
From: Tim Sadler [REP] 75300,3142
To: John Egenes 76427,3172
Reply: #8962 (1 reply)

Yes, I think the interface plays a larger role than might be obvious. Can you give us some thoughts on what an interactive TV interface might look like and how it would work?

Message: #8962, S/14 REP Magazine
Date: Tue, May 26, 1992 6:52:04 p.m.
Subject: #8924-ETMs
From: John Egenes 76427,3172

Offhand, I'd say it might be a TV with a simple menu in the corner, also carrying live coverage of whatever event might be taking place. You could have a remote unit (clicker) that pointed at the screen and moved the cursor around to choose what you want. Or, it might be as simple as giving you multiple choices (yes=1, no=2, to vote for Joe Shmoe, hit #3, etc.) much like voice messaging telephones do now. There's a unit for my satellite dish called a "Video Pal," which lets me subscribe

on the spot to pay per view stuff. I don't see that it would be a big jump to having something like that—that lets you interact. But back to the actual interface; I think an on-screen menu, that's simple and straightforward, operated by either a remote, or touch-screen, or both.

Message: #8847, S/14 REP Magazine
Date: Sat, May 23, 1992 1:32:09 a.m.
Subject: #8736-ETMs

From: James Chandler Jr. 74406,2107

Excuse me for getting a bit abstract, but I think the main challenge for electronic government is designing in the proper amount of damping, Q, or whatever relevant engineering term we wish to use. One of the main advantages of the American system over the last 300 years has been ability to change in a moderated fashion. Not changeless, like lead, or instant change, like supercritical uranium. Regulated change.

In electronic control systems, too slow feedback runs the car off the road from under-steer (Republican). Too fast feedback runs the car off the road from over-steer (Democrat). Critical damping is the proper amount of response to changing conditions. The problem with a mass electronic vote: It's too fast. If something weird happens internationally (like IRAQ) or nationally (like LA riots), the media gets everyone pumped up. If responses are polled and acted on within 24 hours, mass hysteria will give non-optimal solutions, and probably get us in deeper ♦♦♦ than we were in to begin with. The ponderous method of present courts and legislatures may in fact be too slow, but excessively fast corrections can be as bad or worse.

POSTSCRIPT ...

You have to think of online discussions as episodic. Almost every message generates new questions that will be addressed in subsequent messages. If this discussion seems unfinished, that is because it is. By the time you read this in the magazine, we will have moved on to the next subjects of interest maybe on to copy-code protection and tape tax. Join us on CompuServe's R•E•P: On-Line Forum and get involved in the debate, wherever you want to help take it. ■

To receive your free CompuServe introductory Membership, courtesy of R•E•P, call 1-800-524-3388 and ask for representative #232. Tell them you're an R•E•P subscriber. R•E•P's CompuServe editorial address is 75300-3141.

The Next Generation

By Pete Caldwell

What would you say the most significant change has been in the audio recording industry in the last 20 years? Digital recording? Computer control? Diversification? Audio for video post-production technology?

I would say that one area has undergone a change even more fundamental than the technological revolution, and this area has been more far-reaching than the wildly diversifying marketplace where we do business.

What could be more dynamic than technology and the marketplace? Why, people, of course. And what is so different about the people in the recording studio business today? How are they different from the way they were 20 years ago? Read on, and the truth shall add to your burden.

The chief engineer at our studios is a man of some broad experience in the ways of audio. As did so many of us, he began in the '60s and worked his way through live broadcasts and records and ads and TV sound and heaven only knows what all, learning and creating the technology as he went along. He was asked by NARAS to speak on a panel for students who were studying to become recording engineers. One student asked him how he would suggest that they prepare to become recording engineers.

Our wise panelist thought for a moment and then said, "Here's what you do. Go home, stay up all night, and listen to the same song over and over." This is funny because it is, in part, true. It is also a little bit jaded, again because it is true. Apart from this it illustrates a point. There is a wide gap between these kids who are seriously trying to formally educate themselves to follow in our footsteps and this wise, talented technician of an earlier generation. He may have a degree in electrical engineering and in music, but he had never heard of a degree in audio recording sciences or in commercial music. They didn't exist 20 years ago.

When I discussed this article with Mike Joseph, the editor of R•E•P, he listened to my premise, and then he

said, "You're right. When I started out, I got a 4-track and recorded everything and everyone I could find." We all did. That's how you did it back then. You just started. You hung around. You swept the floor. You learned by your mistakes. You made tapes at home. You improvised your own career path, your own curriculum, your own professional agenda, because there were no well-traveled paths to follow.

Well, things are different today. For better or for worse, there are alternatives to winging it. The last 10 years have seen an incredible proliferation of formal recording schools and educational programs of every sort. This is partly a trendy thing and an attempt by educational institutions to attract students. Most of all, it's a coming of age for our industry. There is a stamp of legitimacy on anything that has a college course named after it. Perhaps now my mother will stop asking me what I want to do when I grow up.

On the surface this would seem to be a good thing — more aspiring engineers and technicians with more training. Unfortunately, this is an area of considerable controversy. The problems, some say, are as follows:

- 1) Colleges and educational programs are pumping out students at a rate that far exceeds the industry's needs.
- 2) Graduates haven't learned anything about the "real world" of recording.
- 3) The quality of the graduates is uneven, some pretty good, some bordering on dysfunctional, thereby cheapening the credential of the degree.
- 4) Perhaps most important, the expectations of the graduates from the programs are too high. Studio owners say these kids expect to graduate, get a job and start mixing hit records just like that. Alas, there is some truth in these criticisms, but, as always, we tend to spend so much time saying what is wrong with something that we cease to acknowledge what is right with it.

What is right with all of this, it seems to me, is a great deal:

- 1) Our industry is growing in many different ways. Certainly not many of these students will end up mixing hit records, but a good number will end up in audio careers that exist today or will exist tomorrow, but were unheard of 20 years ago.

- 2) The fact that applicants have college degrees does not mean that we won't employ many of the same training techniques that we have always

used to teach them "real world" recording. We can still start them sweeping the floor if we like. Most are willing.

I will, however, suggest that it's a good idea for all of us to take a close look at our in-house training programs, some of which are a cross between hell week and a medieval rite of passage.

- 3) The quality of graduates from educational programs at all levels and in all fields of endeavor is uneven. Still, certain institutions on the whole are going to rise to the top and produce better-equipped candidates than others. This alone will be helpful in hiring, but the existence of these programs will never replace the personal interview or on-the-job training.

- 4) Finally, the question of attitude and expectations is testy. The schools are caught between the desire to attract students and the reality of the job market. Most of the good programs are quite frank with their students when it comes to discussions of career progress scenarios beyond the degree.

This is the present situation, and I suggest to you that this is the most significant change in the audio recording industry in the last 20 years. I have always thought that people are the most important element of this industry, not technology, and here we have a whole new generation of recording professionals who are being educated expressly for careers in this industry. How our industry absorbs this fact and these graduates will determine the character of audio recording in the next two decades.

SPARS has spent a lot of time with educators. We have more than 30 Educational Associate Members. We meet regularly with educational members to discuss these and other issues. SPARS is about to release to members a paper titled "Audio Recording Studio Organization" for use in curricula design and course study context.

Our industry should welcome these educators to our ranks. We should all establish contact with schools offering recording programs in our respective areas and offer assistance and feedback. Twenty years ago we were a fledgling industry. Today it is these educators who have the fledgling programs. Some are pretty good right now, and all are getting better fast. ■

Pete Caldwell is the SPARS chairman of the board and president of Doppler Studios, Atlanta.

The Society of Professional Audio Recording Services is the industry's best source of business information. For details on activities or membership, contact SPARS at 4300 10th Ave. N., Lake Worth, FL 33461; 407-641-6648; fax 407-642-8263.

HANDS ON:

THE BRAINSTORM SR-15 DISTRIPALYZER

By RICK SCHWARTZ



Although there are many synchronizers and time code readers or generators on the market, few devices exist that help us identify and correct problems we may encounter. The Brainstorm SR-15 Distripalyzer is one such device. It consists of three tightly integrated time code problem-solvers in a small package. It's called the Distripalyzer because it includes a distributor/reshaper, pilot tone stripper and time code analyzer. Let's start with the distributor/reshaper located in the center of the unit.

Analog tape recorders have a hard time recording and reproducing digital signals, meaningsquare waves, such as time code (See Figure 3). Badly rounded edges make the time code hard to read and almost impossible to accurately resolve to. The reshaper in the SR-15 straightens the edges, eliminating amplitude distortion. It also

causes output levels to remain consistent, regardless of input level fluctuations.

The SR-15 incorporates the same reshaping circuitry as the existing and popular SR-1, but it has five individually buffered outputs instead of one. Buffered outputs are important because waveform distortion can occur when the signal is loaded down too much, as is the case when you mult it to different devices using a patch bay. Its built-in distribution amp is perfect for sending clean code to console automation systems, synchronizers, a MIDI interface, hard disk workstation or whatever else needs it.

The reshaper also helps to prevent crosstalk by providing several rise time settings. Try the square wave setting for high-speed reshaping or when feeding a time code reader directly. For all other applications, use the SMPTE or EBU settings, which help to reduce crosstalk and signal bleed. The reshaper works at any speed, forward

or backward. It also reshapes code before it is fed to the analyzer, so amplitude distortions won't be reflected in your measurements.

DISPLAYING DROPOUTS

The time code analyzer in the SR-15 does three things. Foremost, it checks the format, frame rate and stability. Next, it checks for proper video phase. Finally, it checks for errors. The first time you feed time code into the SR-15, the unit displays the number 24, 25 or 30fps, indicating frame rate format. After two seconds the device starts reading time code.

There are two readouts in the analyzer section. The top readout displays time code and user bits. Below that is a 4-digit display that shows frame rate and field rate. On the side are four LEDs labeled ASCII, COLOR FRAME, DROP FRAME and VIDEO CODE. The ASCII LED shows whether user bits are ASCII or hex. COLOR FRAME shows the presence of a color flag. The DROP

Rick Schwartz is a contributing editor to R•E•P and director of post production at Post Complex, Los Angeles.

FRAME LED shows the presence of a drop frame flag, but also warns against a missing flag or the presence of a false flag. The VIDEO CODE LED shows whether the time code is properly phased with video.

It's like a SMPTE magnifying glass — a great diagnostic tool that allows the user to try things several ways, in order to find out which works best.

Time code errors are detected by a microprocessor that checks for bad sync words, discontinuous addresses, repeated frames, dropouts and video loss. As soon as the SR-15 detects an error, its main display will start blinking and indicate the error type. It keeps the first error in memory until you reset it. When you stop tape or interrupt input, the main display indicates where the error occurred. When code is reapplied, it resets the unit to start analyzing the code again.

Although our evaluation unit did not have it, future models will include a manual reset button. Earlier units can be reset by switching to "user" and then back to "code." The decision to only remember one error was made to keep the unit easy to use and to keep the price down. However, the RS-232 option enables a complete report to be printed (See "Hardware Options," page 58).

FIELDS AND FRAMES

The video input on the rear panel allows the unit to reference to a video signal. The SR-15 will differentiate between synchronous, out-of-phase and drifting time code. When the reader display switch is set to "user," the SR-15 shows the alignment of time code to video sync, specifically, which time code bit number is aligned with the video field 1, line 5. If the unit displays 'bit 79' and is not changing, the code is "synchronous" (See Figure 4).

This condition is sometimes hard to find in the real world. As long as video drive is within a few bits of 79, you shouldn't have any serious problems —assuming it stays on that bit number. This condition is called resolved, but out-of-phase, and is indicated when the VIDEO CODE LED blinks mostly on. If the number in the display drifts, you

shouldn't use the code because it is asynchronous. This condition will be confirmed by the VIDEO CODE LED blinking mostly off. When there is no video reference present, the VIDEO CODE LED is off.

THE STRIPPER

Pilot tones are often used in film work and as a time code safety. In the event your time code track becomes damaged, you can still resolve the tape using the sync tone. The SR-15 can extract a pilot or sync tone from any source, including time code, video or ac mains. Unlike some other units, the SR-15 extracts a tone that is synchronous with its source. If the source is time code, the zero crossing of the sine wave will line up with the end of the sync word. For video, it corresponds to Field 1, Line 5 of the video source. For mains, it lines up with the zero crossing of the ac mains.

SYNCHRONICITY

The SR-15 will generate either a sine or square wave field rate sync tone. Sine waves are better suited for use with analog machines, because they are easy to record and they bleed less. Square waves sometimes work better on digital audio workstations or digital multitrack machines.

In an audio post-production situation where you are locked to a video reference, you want your sync tone to be locked to the same source (59.94). But when you are stripping from a 2-inch machine with time code, refer-

ence the sync tone to time code and not to a video reference. If you always strip from code referenced to video sync, the two signals will be exactly phased and will not drift.

By the way, it's always a good idea to print time code at the same time you print sync, so that any variations will be common to both sources.

INSTALLATION

The SR-15 should be permanently installed into your synchronization

Time Code Error Report:

```
*** FORMAT ***
30 Drop Frame
User bits: HEX
00000000
** VIDEO REFERENCE **
Present
V Drive at Bit 39
*** START TIME ***
09.03.48.08

** ADDRESS ERRORS **
09.04.48.16 Dropout
09.10.31.27 Change in color status
09.10.36.05 Bad sync word
09.10.36.13 Discontinuous ascending
09.10.37.00 Change in count format: 30
09.10.38.02 Discontinuous ascending
09.11.13.19 Bad sync word
09.11.13.23 Discontinuous ascending
09.11.13.24 Invalid address
09.11.14.00 Change in count format: 24
09.11.26.19 Bad bit
09.11.26.23 Change in color status
09.11.26.23 Bad sync word
09.11.26.28 Dropout
09.11.26.27 Change in user status flag
09.11.26.29 Invalid address
09.11.27.00 Invalid address
09.11.27.01 Change in user status flag
09.11.27.02 Change in count format: 25
09.13.45.02 Change in color status
09.14.26.14 Bad bit
09.14.26.14 Code stopped

***** SUMMARY *****
VIDEO SYNC: Not Resolved to Video
Parity Bit Active

*****END TIME*****
09.14.26.14
```

Figure 1. The comprehensive time code error report can be sent to an external printer or computer.

chain and always be on-line. This way it can detect time code errors immediately, before you commit any recording to bad time code. To install the unit, first patch the output of your master time code source into the rear panel input of the SR-15. Next patch the outputs of the distributor/reshaper to reading equipment or to all slave machines.

About the only thing this box does not do is to analyze VITC, but that would likely double its price.

In a typical audio-post situation, this would include a 1/2-inch video work print, 2-inch multitrack, 1/4-inch 4-track and maybe even a digital audio workstation. Striping through the SR-15 allows the user to simultaneously make several copies with individual output level control. The front panel input select switch makes it easy to compare the signal coming off tape to the original source. You may be surprised by the difference between the two, especially with videotape machines.

The SR-15 works in balanced or unbalanced systems. Although pin polarity will not affect time code, it can cause a pilot tone error of frame, if Pin 3 on the XLR connector is not high. A video signal is used by the analyzer to verify the phase of the time code and also to extract a pilot tone. Connect your external video reference to the rear-panel VIDEO IN jack. The "video loop" allows the video reference to be patched through to the input of your time code generator if needed. The SR-15 also has a 75Ω termination switch if needed.

HARDWARE OPTIONS

Although the SR-15 has only been shipping since January, the company already plans a number of hardware options. Through an RS-232 port, the unit will send a comprehensive time code report to an external printer or computer. The report will list each error, along with its address and description, as well as the format type and SMPTE start and end times. (See Figure 1.)

Also included with the RS-232 upgrade is an internal beeper and error-detection event relay. The relay can be used as a remote enunciator, which could show the difference between good and bad code. A simple modifica-

tion could allow the relay on the SR-15 to stop a tape machine when a time code dropout occurs. The estimated cost of the RS-232 upgrade is approximately \$100. A video option for the SR-15 is also planned. The spare BNC connector on the back of the unit will be used for a multiformat composite sync generator.

DOCUMENTATION

The manual is written for working professionals who don't have time to read about the history of time code, but who need to find an answer fast. It is filled with charts, illustrations and wiring diagrams. Many sections are followed by brief, yet interesting tips. The only thing missing is a summary chart that lists every type of time code problem, its effect on your project, and, most important, how to fix it.

TIME IS MONEY

The base price of the SR-15 is \$1,095. Although the unit is not cheap, it will quickly pay for itself by eliminating time code-related downtime. During our evaluation, our studio was having problems with a client's tape drifting out of sync. We quickly patched the output from the multitrack into the SR-15 and hit the play button. Immedi-

Continued on page 60

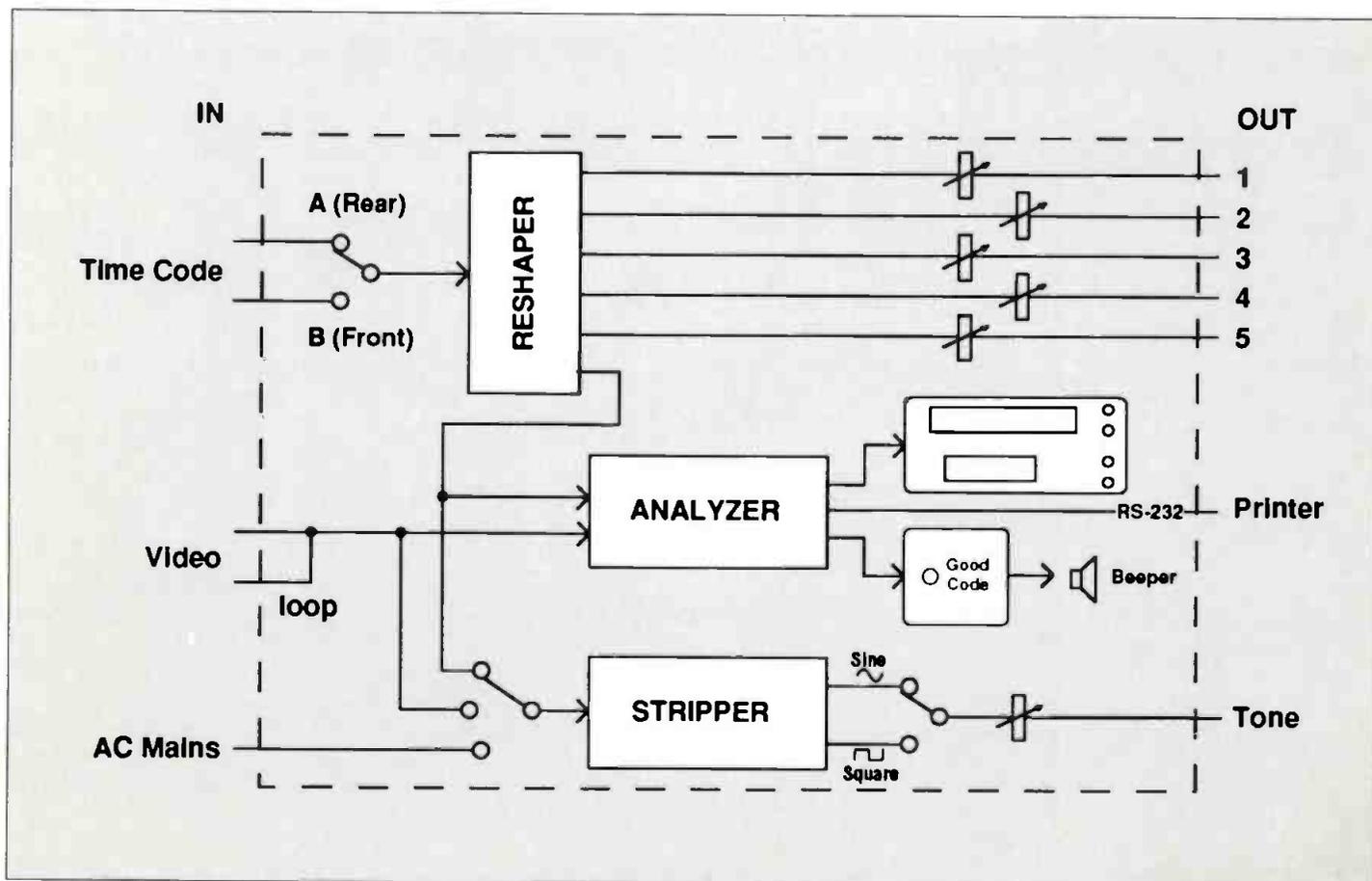


Figure 2. Signal flowchart for the SR-15 showing the reshaping, analyzing and stripper functions.

SOMETIMES 30 EQUALS 29.97

I can't tell you how many times I have attempted to explain the difference between standard and color frame rates, only to get a puzzled look. This is especially true when I mention that even though a videotape says it has 30-frame-count format, it almost always has a 29.97fps rate. How can you tell whether a tape was actually striped with true 30-frame code? Most studios can't.

Striping time code normally occurs at the same time the assistant engineer is putting up mics, making patches and preparing his morning cup of coffee. Little thought is given to the matter until hours later when problems show up. Sometimes it takes a while to get far enough into a project until the drift in sync becomes obvious. Bad time code can turn a simple 4-hour session into a 10-hour nightmare.

There are too many types of synchronization problems: mixed frame rates, non-reshaped code, time code dropouts, an unresolved master or even an improperly set drop-frame flag. If you have the luxury of striping a tape yourself, the tape will lock while it is in your studio. But unless you carefully follow a number of precautions, there is no guarantee it will lock in another studio.

What about a master that you didn't stripe? How should you stripe the slave if you can't tell what frame rate the master was? There must be some way of analyzing time code to make sure it is OK — and pointing the finger if it is not. This is an issue, because he who causes the problem usually pays for the problem.

There are many time code horror stories, including the generator that drops three frames instead of two, or the one that has a drop-frame flag, but non-drop code. We've even heard of some early MIDI boxes that would drop four frames one period and then none the next. The overall frame count was correct, but the way it was getting there was totally absurd.

Caveat emptor, or get a Brainstorm. ■



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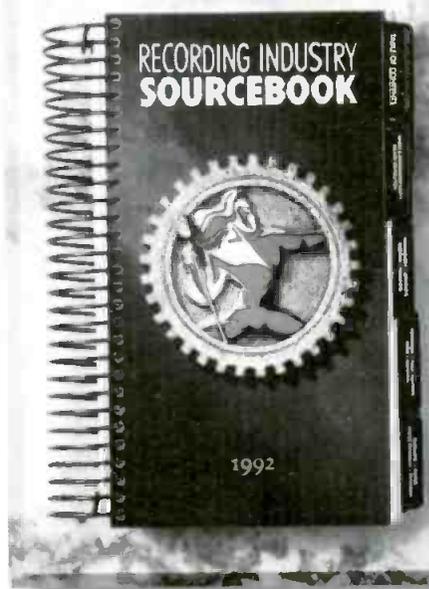
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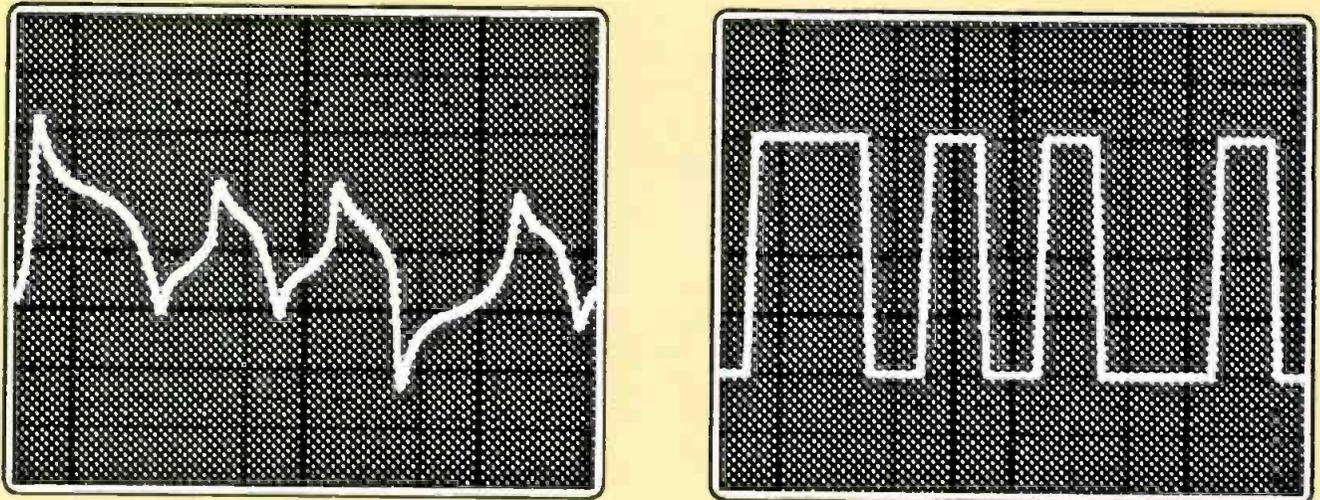


Figure 3. Depiction of waveform displays showing reshaping capabilities of SR-15 on original signals off analog tape (left) and end result (right).

Continued from page 58

ately, it became clear that there were several problems with the tape. The video sync light was blinking mostly off and the frame rate was drifting all over the place. The clients could clearly see the problem.

A common misconception is that if a tape has SMPTE time code, there is no way to have problems. This couldn't be further from the truth, of course.

As it turned out, a project studio had striped the tape with time code generated from an inexpensive MIDI interface device that had no stable reference or house sync. A common misconception is that if a tape has SMPTE

time code, there is no way to have problems. This couldn't be further from the truth, of course.

The time code analyzer in the SR-15 gives you instant feedback, so you know about any potential problems early in a session. And clients can immediately see where the problems really lie (such as on their own tapes). Often, if a studio discovers problems with a client's tape several hours after the beginning of the session, it becomes the studio's problem. If problems are found within the first few minutes, however, it's the client's responsibility.

CAVEATS

The SR-15 is constructed of quality components, but there are several small nits. In order to simultaneously display SMPTE and frame rate, a small window was used. Also, the SR-15 uses an external 8.5 ac power supply. This box costs too much to use a wall wart. Let's hope that Brainstorm will offer an IEC-type ac jack after it obtains UL approval. Speaking of requests, the

SR-15 is a great diagnostic tool, but it does little to solve the problems that it flags. I would like to see products from the company that address the problems of frame-rate conversion and phase correction.

SUMMARY

Once in a while, a product comes along that is so useful and innovative, you wonder how you've gotten along without it. The Brainstorm SR-15 is that kind of product. It's like a SMPTE magnifying glass — a great diagnostic tool that allows the user to try things several ways, in order to find out which works best.

About the only thing this box does not do is to analyze VITC, but that would likely double its price. Although some of the LED displays are non-intuitive, the presence of a "good code" LED is idiot proof. The SR-15 is powerful, easy to use and essential for any studio that uses time code.

Circle (100) on Rapid Facts Card ■

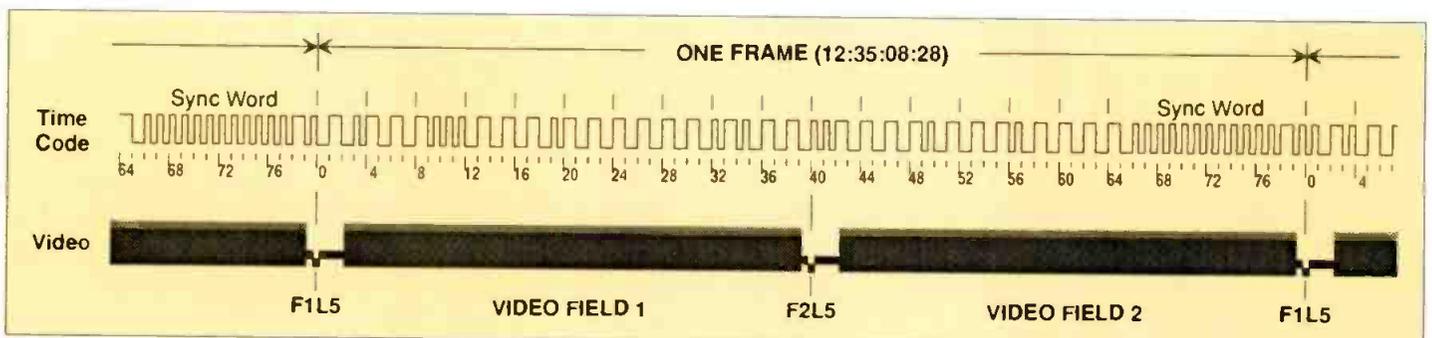


Figure 4. To be synchronous with video, the beginning of each time code word must coincide exactly with the beginning of the video frame it describes (i.e. time code bit 79 lines up with video Field 1, Line 5).

What The World Needs Now ...

By Laurel Cash-Jones and Fred Jones

Just when you thought that the world of recording was becoming a safer place, yet another new (and incompatible) digital format is being introduced to you. However, this may not be such a bad idea!

Let us explain this seeming paradox. As you are probably aware, at least two of the most popular digital formats that are in your professional recording environment (DAT and CD) started their rather complicated life as consumer items.

Although these products have been greatly enhanced with other features, such as time code, there are some in the professional world who are more than a little concerned that we are perhaps limiting ourselves by adapting these consumer devices to fit our needs. Furthermore, they think, we are compromising (sound quality), instead of creating them specifically for use in what can sometimes be a very challenging environment.

Take location sound recording. DAT has been experimented with quite frequently over the past several years, with results ranging from spectacular to disappointing. As we all know, the road is a dangerous place for any type of electronic device. Many a frustrated engineer, confronted with a device that has just screwed up a perfect take, has tossed one of these wonders into the nearest lake or over a cliff for revenge.

Ever since the introduction of digital recording, the people at Nagra-Kudelski were being pressured to introduce a digital equivalent of the then industry-standard Nagra recorder for use on location recording. When Nagra did not jump on the DAT bandwagon, the recording universe (as small as it is) was surprised. Evidently, Nagra wouldn't introduce a digital recorder for field use until it found a format that would be superior in sound quality, and at least as stable and as rugged as the analog machines that it was currently producing.

For several years, the folks at Nagra

have shown various prototypes of digital recorders at assorted trade shows to mixed reviews. The recording industry, which is known for its infinite patience and understanding, said, "Why not just come out with a DAT machine with time code?"

"No," was the Nagra answer. "We want something better."

During this period of time, the video and film industries were going through growing pains with the clamor of people wanting better audio. New video formats, such as D1 and D2, were being introduced. These new formats had four digital audio channels with "CD-quality" sound.



Field engineers were wanting to capture more than two channels of audio in the field — time code, sync, cue tracks and audio. Nagra was watching from the wings, all the while trying to develop a product that was more than just an adaptation of another format that would only serve the industry in the short run. In other words, when Nagra introduced its new format, it would stand the test of time.

Well, the waiting is over. Nagra has introduced a new machine for location recording that could set the standard for years to come. Yes, it is a new and incompatible format to the rest of the recording world, but it also offers the professional field recordist more reliability and features than anything else.

Unveiled at the 1992 NAB show in Las Vegas, the Nagra-D is a dual-format, 4-channel or 2-channel, battery-powered, portable, digital recorder. Using a helical scan rotary head open reel design, the Nagra-D employs 5-inch reels of 1/4-inch digital tape on which you may record up to 58 minutes in the 4-channel mode, or one hour and 56

minutes in the 2-channel mode. It allows 7-inch reels and a larger cover optionally.

The Nagra-D gives you extremely high resolution because of its 24-bit recording format, with playback at 18-bit. There is a planned upgrade of the A/D converters to 20-bit when lower power consumption A/D converters become available. Four bits per channel are allocated to command data presented at the AES/EBU digital I/O.

One advantage to the open reel rotary head format is the access to the heads for cleaning, plus it allows for editing in the field with a razor blade. In addition to the four discrete audio channels, there are three longitudinal audio tracks that supplement the digital ones: a control track, which can log markers indicating the start point of each helical scan; a time code track that conforms to SMPTE/EBU video and cinema standards; and a cue track.

The cue track can receive a mix of all four digital channels, record commentary information via an external cue mic, or encode Dropout Files Management Data/ECC (Error Correction Code).

The tape speed is 3.89ips for 4-channel operation; the 2-channel speed is 1.98ips. And the unit comes with an industry-standard 2-hour Betacam battery pack! Level and fade pots are concentrically mounted with the outer ring controlling the channel signals and the inner ring controlling the fade function. All channels' fade controls can be grouped and controlled by a single knob.

The fade function actually puts a fade control signal onto the tape. This signal then fades the audio without actually affecting the audio. This also allows you to switch in or defeat a fade during subsequent playback, in case the director changes his mind. But we know that never happens in the real world, right?

Although other manufacturers have jumped into the world of location recording, nobody has more experience than Nagra. Most of us in the industry want compatibility of formats. We also want the best quality equipment to do our job. Perhaps Nagra may teach us the value of patience. If this unit performs as well as those that have preceded it, it deserves the serious consideration of the professional recording community. ■

Circle (101) on Rapid Facts Card

Laurel Cash-Jones is an editorial consultant to R•E•P and a free-lance writer. Fred Jones is a free-lance engineer, producer and writer.

Cutting Edge

SONITECH DSP-BASED INTERFACES

Sonitech's new DSP-based interfaces allow SPARCstations, PCs and VME-based systems to run speech, audio, telephone and multimedia applications. The Stereo Audio/Telephone Interface Box and the Digital Audio Interface use a serial port that provides a direct interface with Sonitech's TMS320C30-based SPIRIT-30 DSP boards and with most other digital signal processors with serial ports.

The SAIB is a 16-bit stereo A/D and D/A converter with dynamic range of up to 80dB. It includes a built-in anti-aliasing filter, is fully software programmable for input and output sections for gain, sampling rate (8 to 48kHz) and word size, and features three options for the input and four options for the output.

The DAI is a simple interface to CD players or DAT decks using either S/PDIF or AES/EBU interconnections. It supports input and output rates of 32, 44.1 and 48 ksamples/sec (stereo) and audio word sizes of 16 to 24 bits. Outputs can be synchronized to inputs or independently operated, or external synchronization for multi-track applications.

Circle (102) on Rapid Facts Card

NAKAMICHI DAT RECORDER

Nakamichi's 1000 DAT tape system boasts a 4-head design and features fast, gentle tape loading and a unique half-load position. The new DAT's operational system includes a calibrated ROM system, glitch cancellation circuitry, 2-speed twin-PPL digital audio interface and an auto-calibration A/D converter.

The 1000 also employs Nakamichi's exclusive F.A.S.T. (Fast Access Stationary Tape Guide Transport) mechanism. A major departure from VCR-derived designs, this patented design not only ensures more precise and reliable tape positioning, but also quickly establishes the required alignment each time a tape is loaded.

The total system is comprised of a Digital Audio Recorder, a Remote Controller and a Digital Audio Processor. Multiple recorders can be connected to a single audio processor and each processor can be loaded with multiple I/O formats. Digital level meters and digital muting circuitry are standard.

Circle (103) on Rapid Facts Card

BEYERDYNAMIC SUPERCARDIOID MIC

Beyerdynamic's M 424 is a miniature supercardioid dynamic mic incorporating TG-X technology and neodymium magnets. While physically small, the

M 424 provides high sensitivity, a tight polar pattern, fast transient response plus the capacity to withstand high SPL sound sources.

The 424 Series is designed to provide superb intelligibility for a variety of miking assignments including instrument miking applications within a recording/sound reinforcement environment, a broadcast studio or intercom talkback. A pre-mounted slim profile gooseneck version is designated as the SHM 424.

Circle (104) on Rapid Facts Card

ALLEN & HEATH MIXING CONSOLES

The Allen & Heath GS-3 series of mixing consoles is designed specifically to interface with the latest generation of studio equipment and multitrack tape machines. Available in 16 x 8 x 2 or 24 x 8 x 2 standard in-line formats, there is an optional 8-channel expander allowing both 16- and 24-channel, 8-bus standard sizes to be expanded to a full 32-channel format.

The GS-3 also offers an on-board MIDI mute automation system called the V4 plus, which features FET switching for silent muting of channel, monitor, and effects sends and returns. The V4 also has programmable function keys that are capable of "learning" most MIDI commands to allow remote access and control of virtually any MIDI device including tape transports and sequencers while sending and receiving MIDI program change, etc.

The in-line format and routing facilities allow up to 32-track recording and mixdown to 2-track mastering machines without the need for re-patching. Four dedicated stereo effects returns and two signal paths per channel provide a maximum of 40, 56, or 72 inputs with EQ available for mixdown.

Circle (105) on Rapid Facts Card

DIGIDESIGN TAPE BACKUP

The Digidesign ProArchive 8mm (DAT) tape backup unit combines a storage capacity of 5Gbytes and data transfer rate of 500kbytes/sec to deliver advanced storage capacity (over 16 track-hours of continuous digital audio data without data compression) and advanced upload/download speed

in a three rack-space unit. The smaller ProArchive 4mm can store up to 2Gbytes of uncompressed data with a data transfer rate of 233kbytes/sec in a black two rack-space case.

Included with each ProArchive unit is the ProArchive software, an application designed to simplify the task of backing up the huge data files normally associated with digital audio and video. When used in systems with a Pro Tools System Accelerator, both ProArchive models support background backup and restoration, leaving the computer available for editing audio data or other general tasks.

Circle (106) on Rapid Facts Card

EAW NEARFIELD MONITORS

EAW's MS103 and MS63 Ultimate Fidelity Nearfield Systems were designed for high level reproduction in the near

field. Both are 3-way systems incorporating a 12-inch (MS63) or 15-inch (MS103), woofer, a 6-inch carbon fiber midrange cone driver, and a soft dome tweeter. To maintain dispersion at a constant 120° from 500Hz up, the MS Series tweeter is coupled to the air using a specially designed WGP waveguide.

Circle (107) on Rapid Facts Card

ACOUSTILOG SPEAKER SWITCHER

Acoustilog has introduced the S5-4 speaker Switcher, a 4-position speaker selector for studio use. The S5-4 will connect three pairs of small speakers and one pair of large speakers using only a single stereo amplifier. It features automatic equalizer switching, speaker fuses, low-frequency speaker protection level trims and remote control capability.

Circle (108) on Rapid Facts Card

APOGEE CONVERTER SYSTEM

Apogee Electronics Corporation's PS-1000 power supply unit combines with the company's popular AD-500 and DA-1000E portable reference converters and the RM-1000 rack-mount carrier frame to create an integrated digital audio converter system intended for CD mastering, digital workstations and video post production suites.

Because both converters are powered by the flexible PS-1000, this Apogee system can operate anywhere in the world on 100, 120, 220 and 240V mains supplies.

Circle (109) on Rapid Facts Card

AUDIO SYSTEM DESIGN USA

Audio System Design USA has introduced its new Sherman GX-Series 2 line of concert sound reinforcement systems. Designed for high-power applications, the Series 2 systems, which include the GX-Commando S2 and GX-B218/S2, feature upgraded components. The GX-Commando/S2 has been improved with a 2-inch HF compression driver, a 7-inch horn-loaded Kevlar cone with increased power handling for mid-range, and two 15-inch bass drivers with 4-inch voice coils and dual suspension for extended low-frequency. The GX-B215/S2 and GX-B218/S2 sub-bass systems use similar dual 15-inch and 18-inch drive units for extended low-frequency power handling performance. Series 2 systems can be configured for use in bi-amped or tri-amped applications.

Circle (110) on Rapid Facts Card

CEDAR SPLIT RECOMBINE SYSTEM

CEDAR Audio has produced the Cedar Split Recombine System. Available as a real-time software module that may be loaded onto any existing CEDARSystem, this module reduces many of the amplitude distortions introduced by digital and analog recording and transmission errors, microphone crackle and breakup, FM radio crackle and interference, line spikes and digital errors. The module will also re-

move embedded crackle, small scratches that have been distorted by low-pass filtering and the distortion or signal breakup caused by groove wall damage. Working entirely in the digital domain, the module operates at all industry standard sample rates. All processing is performed in real-time. And, if needed, the module may be operated as a 'black box' — processing audio material as it is played from the source directly to the mastering medium.

Circle (111) on Rapid Facts Card

NATIONAL INSTRUMENTS ACCELERATOR BOARD

National Instruments has released the NB-DSP2305, the company's latest high-performance digital signal processing (DSP) and analysis accelerator board for Macintosh II and Quadra computers. With the NB-DSP2305 and any of the company's NB Series plug-in data acquisition boards, system developers can acquire analog and digital signals and perform numerically intensive data processing and analysis operations in much less time than with the Macintosh processor alone. The new board has a 40MHz version of the TI TMS320C30 32-bit floating-point DSP chip and a NuBus master interface that can directly access Macintosh NuBus boards. ■

Circle (112) on Rapid Facts Card

Live & Direct

Continued from page 45

things to look forward to that we can only imagine. Who will invent the ideal computer-controlled audio system network? Or the perfect acoustical interface between speaker system and listening audience? Or an affordable digital mixing console that works well? Or *the* package tour heard 'round-the-world? Or the wireless system that sounds better than cable? Or the 5-pound, 2500W amplifier?

A sound industry climate such as today's is reminiscent of two decades ago ... a time when the music industry and public taste were changing to a more active, boisterous style.

We don't know if we can look forward to chaos or dissolution, or innovation and progress ... but one thing is for certain: We can look forward to change, coming from unexpected directions. What to do?

- Be open to new information. Learn, become educated, be a student again.
- Don't hang on to excess baggage. Whether obsolete equipment or rusty skills, make room for the new.
- Link up, network, co-support, joint-venture, and cooperate. Use your assets to prepare for growth and to respond to new opportunities.
- Whether personally or corporately, be open to the future. Help create it. ■



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Frequency (Hz)	Level (dB)
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200	0
300	0
400	0
500	0
600	0
700	0
800	0
900	0
1000	0
1100	0
1200	0
1300	0
1400	0
1500	0
1600	0
1700	0
1800	0
1900	0
2000	0
2200	0
2400	0
2600	0
2800	0
3000	0
3200	0
3400	0
3600	0
3800	0
4000	0
4200	0
4400	0
4600	0
4800	0
5000	0
5200	0
5400	0
5600	0
5800	0
6000	0
6200	0
6400	0
6600	0
6800	0
7000	0
7200	0
7400	0
7600	0
7800	0
8000	0
8200	0
8400	0
8600	0
8800	0
9000	0
9200	0
9400	0
9600	0
9800	0
10000	0

Circle (25) on Rapid Facts Card

SOFTWARE

LONE WOLF VIRTUAL STAGE SOFTWARE

The Virtual Stage is a dramatic breakthrough for show setup and control. It combines the powerful Virtual Stage Software and Lone Wolf's fiber optic-based MIDITap, the MediaLink network hardware. Users can now view, configure and control entire show setup instantly. A graphic interface provides user-definable and factory-supplied icons for every device in your system. All setups can be graphically or textually printed out for future reference. Complex setups and routings can be recalled instantly.

Circle (113) on Rapid Facts Card

AUDIO ANIMATION TRANSMISSION-OPERATING SOFTWARE

Audio Animation has released Version 2.2 Paragon-transmission-Operating Software. This software enhancement is being supplied to existing paragon-transmission owners at no charge and will be included as standard equipment with each unit that leaves the Audio Animation corporate facilities.

Circle (114) on Rapid Facts Card

MACSPEAKERZ

True Image Audio recently released Version 2.5 of the MacSpeakerz loudspeaker design application for Macintosh computers. Significant improvements in this upgrade package include two available choices for the frequency response scale: the original 0dB Mode and new dB SPL Mode, which is read with frequency response plots and displays predicted SPL of the subsystem versus frequency. The dB SPL scale will also predict how loud the speaker will play at any power level entered in the Input Power field of the Driver and Subsystem Parameters window. This feature is used to derate system power below the driver's maximum thermal power rating to avoid violating the excursion limit for any driver mounted to a particular enclosure.

Version 2.5's revised analysis menu offers users a choice of three different decibel per division settings and also allows the users to zoom in for detail or out for perspective.

Circle (115) on Rapid Facts Card

AUDIO TEKNOLOGY INCORPORATED

ATI has announced the L.E.A.P. (Loudspeaker Enclosure Analysis Program) Version 4.1 and an upgrade to the previous version L.E.A.P. (V 3.11). A complete 20Hz to 20kHz multi-way design program, this new program is also capable of accurate non-linear modeling of low-end driver response as well as complete passive and active crossover analysis and optimization. Box design types include sealed, vented, passive radiator and sealed and vented rear chamber bandpass enclosures. Users of this box design CAE/CAD software include JBL, Renkus Heinz, Polk Audio, Cerwin-Vega, Bose, Infinity, Klipsch and Tannoy.

ATI also announced a new acoustic and electrical measurement system for loudspeakers. The LMS (Loudspeaker Measurement System) is a PC-based gated swept sine wave test instrument capable of performing sound pressure measurement, impedance, distortion analysis and other loudspeaker analysis.

Circle (116) on Rapid Facts Card

SCIENTIFIC DESIGN SOFTWARE

Scientific Design Software has released BoxOpt, an enclosure simulation and optimization design program designed to develop complex loudspeaker/enclosure systems. BoxOpt uses advanced circuit simulation and gradient optimization to analyze and optimize system designs. BoxOpt can design sealed, vented, passive radiator, all multi-chamber enclosures (fifth, sixth, seventh, quasi-seventh, etc.) and isobaric enclosure configurations and can also model designs with more than two chambers. A non-lumped parameter "model" is used for calculations to ensure accurate simulations.

BoxOpt provides active filter simulation for modeling of active crossovers and filter-assisted alignments. Passive filters are included for modeling interaction with other systems.

Included with BoxOpt is the SDS Driver File Manager (DFM) program. With over 1,000 drivers, the database eliminates redundant data entry. DFM performs searches on driver database to locate drivers by parameters or system design criteria. ■

Circle (117) on Rapid Facts Card

shifting programs are quite good, but the modulated effects are great. The seemingly simple areas where digital processors often fall down — dynamics controls and equalization — are handled effectively by the DP/4. It's easy with this unit to say that it does virtually everything, and does it well.

There is, however, one aspect of the device that might contribute to operator confusion: There is almost too much variability, too many places that programs can "hide." Any single preset number can actually represent one of four different processor configurations (single source in, dual source, three source and four source), with associated DSP feeds and output routings.

These options overlook 18 different possible groupings of the four DSP's cross-patch arrangements. Does processor A feed B serially or in parallel? Do the first two feed the last two serially, or are all four in parallel? Does the feedback loop go around the last processor or all the way to the first DSP? And, oh, yes — how is it hardwired? The input and output jacks are "smart," so certain configurations are only possible if the unit is wired properly. Each program, especially the complex combinations, is determined foremost by the processor configuration selected. As you can see, this gets deep really fast.

It is safe to say that every program's sound (algorithm combination and configuration routing) is immensely variable and flexible. To use an analogy: Most processor manufacturers give you puzzle pieces, some pictures of what the finished puzzle looks like, and instructions on how it goes together. Ensoniq does all of that, but it lets you take the puzzle pieces down to component parts — paint and paper and cardboard — and then gives you some scissors to shape your own pieces.

Fortunately, you have to work a little harder to get down to the deeper layers of algorithm and configuration design. Casual users can do just fine without getting into trouble. They can turn it on, dial in some great sounds, tweak them and start cutting. As it should be.

And the manual is extremely comprehensive, covering not only the general concepts behind this complex unit, but also the specifics of navigating and controlling every single function. Easily, this was the largest "book" delivered, with more than 100 pages.

In short, a wonderful device for those who like to roll up their sleeves and dive right in. Check out the Ensoniq if you really want to see what's up with the current devices.

Next month, we'll continue this evaluation with the Lexicon LXP-15, Roland RSP 550, Sony DPS-D7 and DPS-R7, and the Yamaha SPX 1000. Until then ... ■

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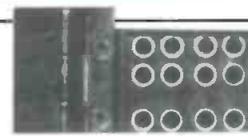
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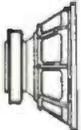
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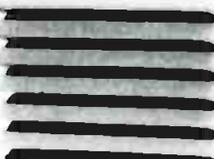
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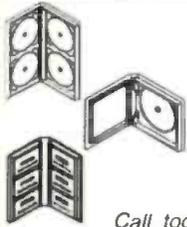
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Aligned Audio	71	39	718-788-6969
Ampex Recording Media	17	10	415-367-3809
Anything Audio	67	33	617-426-2875
Aphex Systems Ltd.	35	17	818-767-2929
ARX Systems	53	23	714-649-2346
Bauer Communications	68	40	800-627-7277
Bruel & Kjaer/TGI North America	11	8	519-745-1158
DB Engineering	66	31	617-782-4838
DBX, Div. of AKG Acoustics	21	12	510-351-3500
Demeter Amplification	68	37	818-986-7103
Drawmer	29	16	508-650-9444
Excel Audio Systems	31	20	714-993-7412
Genelec	37	18	508-650-9444
Innovative Audio	68	37	818-986-7103
JBL Professional	BAC		818-893-8411
Madisound Speaker Components	66	30	608-831-3433
Magnetic Reference Lab Inc.	63	25	415-965-8187
Markertek Video Supply	68	35	914-246-3036
Mercenary Audio	65	unlisted	617-784-7610
M.T.U.	59	26	919-870-0344
National Foam Inc.	66	34	800-356-0944
Peavey Electronics Corp.	7	7	601-483-5365
Recording Industry Source	59	27	213-841-2700
Reliance Plastics & Package	69	38	201-473-7200
Seam Tech	68	36	415-543-0170
Sennheiser Electronics Corp.	27	15	203-434-9190
Sony Professional Audio	3		800-635-SONY
Soundcraft U.S.A.	15		818-893-8411
Soundtracs Div. Samson Tech.	1	3	516-932-3810
Tascam	IBC	2	213-726-0303
Technical Audio Devices	IFC	1	213-816-0415
TOA Electronics	23	13	800-733-7088
Turtle Beach Softworks	49	21	717-843-6916
Wohler Technologies, Inc.	53	24	415-285-5462
World Class Tapes	67	32	313-662-0669
Yamaha International Corp.	19	11	800-395-1313

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Telefax: 310-393-2381

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38th Floor
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New York, NY 10106
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Clifton Road
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LIST RENTAL SERVICES REPRESENTATIVE

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Orient Echo, Inc.
1101 Grand Maison
Shimomiyabi-Cho, 2-18
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From Day One, digital audio has been synonymous with superb sound. Superb, yet marred by the "harshness" inherent in the normal A/D and D/A conversion process.

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Now, having heard all this, you may still choose to purchase a competitor's digital machine without first listening to the DA-800.

Pity.

To arrange for a personal demonstration, please call (213) 726-0303. Or write TASCAM, 7733 Telegraph Road, Montebello, CA 90640.

TASCAM II.

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Circle (2) on Rapid Facts Card

The 4200 Series. Designed For The Control Room, Not The Living Room.

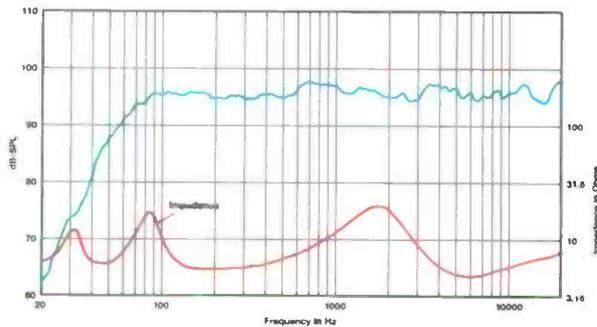
Today's recording studio has evolved into a multi-function facility which simultaneously addresses the specialized needs of music recording, film and video post, and radio production. In this environment, where the most critical listening often occurs in the final mix, close proximity monitors are often more important than the mains. The problem: most console top monitors, unfortunately, were designed for the living room not the control room. Until now.

With the 4200 Series we're taking our stand from where you sit: right where you work at the console. Designed, engineered and tested from this position, the 4200 Series is the first console mount monitor created specifically for the professional recording environment.

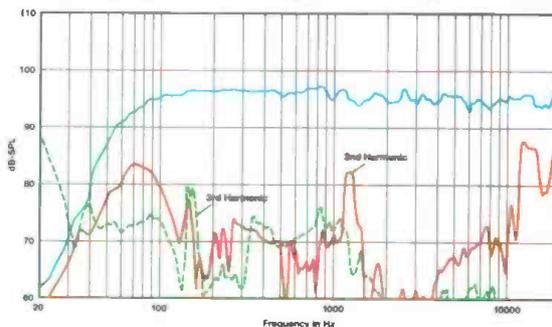
Both models give you pin-point imaging by delivering high and low frequency information to your ears at precisely the same instant. By virtue of their symmetrical design the 4200 Series monitors are mirror imaged.

And so nothing gets in the way of your music, the 4200 Series introduces our uniquely sculpted Multi-Radial™ baffles incorporating newly designed pure titanium tweeters and low frequency transducers. The combination of these technologies successfully corrects time arrival anomalies and eliminates baffle diffraction distortion.

4200 Series: console top monitors designed in the studio, for the studio, with sonic performance rivaling much more expensive monitors. 4200 Series: the shape, and sound, of things to come. Available at your local authorized JBL Professional dealer.



Frequency Response (Model 4206): 96 dB at 1 m, typical console listening levels



Distortion vs. Frequency (Model 4208) 96 dB at 1 m, typical console listening levels (distortion raised 20 dB)



JBL Professional
8500 Balboa Boulevard, Northridge, CA 91329

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