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80 DIGITAL PIANOS: THE FUTURE IS NOW Is the big wooden box already irrelevant? Will

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COVER PHOTO: Paul Haggard. Color treatment: Richard Leeds

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DOMINIC MILANO



ANOTHER TURN OF THE MERRY-GO-ROUND

URE, THE GUYS ON OUR EDITOrial staff are talented, and they work hard (they'd better. . .), but *Keyboard* would be lost without the outside writers who contribute to these pages every month. Especially our columnists. We've had some stellar contributors over the years—far too many to mention, but names like Bob Moog (On Synthesizers, which debuted in Vol. I, No. 1), Chick Corea (Keyboards & Music, likewise from our first issue), Garrick Ohlsson (Master Class), and Tom Coster (Rock Technique—a dumb name for a column, but we weren't nearly as cool in 1978 as we are today) come to mind.

We do like to bring in fresh faces from time to time, though. Sometimes a columnist who has been with us for a while has to change his or her career priorities. And sometimes changes in the keyboard music scene demand that we fine-tune our coverage. So this month we'd like to welcome three new columnists. Well, actually only two of them are brandnew. Um—er, in fact only one of them is totally new. But they're all three new, honest. It's all in how you look at it. In any case, we're excited by the additions, and we think you will be too.

First up is **Dave Stewart**. Dave returns to our pages after a three-year vacation, during which he concentrated on recording projects with his partner Barbara Gaskin, including last year's CD *The Big Idea* on Rykodisc. Also, he was writing for some British and Japanese music mags, and when we spotted his byline and cheery prose, we got down on our knees and begged and pleaded. Dave has a way of putting his finger on the tough questions about what's musical, and while he's at it he's great fun to read. If you've never tried sight-reading or sequencing any of his original tunes, you're in for a treat. We're delighted to have him back.

Also not-quite-new is **Eric Turkel**, whose Arranging column actually started last month. Eric's book *Arranging Techniques for Synthesists* impressed us so much that we asked him to share his expertise with our readers. Those of you who spend your time in the studio staring at sequencer screens and scratching your heads will appreciate his practical tips.

Finally, the *real* new guy on the block is Norman Weinberg, author of *The Electronic* Drummer. His column on Drum Machine Programming, following in the footsteps of such notable contributors from years past as Jimmy Bralower and Billy Cobham, will explore trailblazing groove concepts for today's electronic percussionist. Rhythm is an even more important ingredient than harmony and melody in some forms of pop music these days, so Norm's column is sure to be popular.

Sad to say, we can't keep adding infinite numbers of pages to the magazine every month. To make room for the new columns, and for Craig Anderton's Power Sequencing column, which started a few months back, we've had to drop a couple of contributors who had been with us for several years. The monthly perspectives provided by William L. Fowler on music theory and Jeff Pressing on technique have helped make Keyboard the kind of magazine that musicians find most useful, and we'd like to thank them for meeting all those deadlines. Not that theory and technique aren't important any more; we'll still be devoting plenty of feature space to them in our pages. It's just that it's time for the column section to move on and delve into other areas. Onward and upward! -

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VOL. 17, NO. 4 (ISSUE #180) APRIL 1991

KEYBOARD (ISSN 0730-0158) is published monthly by Miller Freeman Publications, 500 Howard St., San Francisco, CA 94105. Telephone (415) 397-1881; FAX (415) 995-2486; TELEX #278273. Please direct all advertising and editorial inquiries to: KEYBOARD, 20085 Stevens Creek Blvd., Cupertino, CA 95014. Telephone (408) 446-1105; FAX (408) 446-1068; ITT TELEX #4994425. Second class postage paid at San Francisco, CA and additional mailing offices. SUBSCRIPTION RATES: U.S., \$35.95 for 12 issues. All orders from outside the U.S. must be accompanied by payment in U.S. funds with additional postage of \$10.00 per year for Canadian and Mexican surface mail, \$15.00 per year for international surface mail, or \$40.00 per year for air mail. All subscription orders, inquiries, and address changes should be sent to Box 58528, Boulder, CO 80322-8528. For quickets service, telephone toll-free 1-800-289-919 (in Colorado, (303) 447-9330. Please allow 6-8 weeks for address change to take effect, POSTMASTER: send address changes to KEYBOARD, Box 58528, Boulder, CO 80322-8528. KEYBOARD is a registered trademark of GPI publications, Inc., a subsidiary of Miller Freeman Publications, Inc., All material published in KEY-BOARD is copyrighted © 1991 by Miller Freeman Publications, inc. All rights reserved. Reproduction of material appearing in KEY-BOARD is forbidden without written permission. Publisher assumes no responsibility for return of unsolicited manuscripts, photos, or attwork. Homm microfilm, 35mm microfilm, 105mm microfiche, and article and issue photocopies are available from University Microfilms International, 300 N. Zeeb Rd., Ann Arbor, MI 48106, telephone (313) 761-4700.

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"Nevertheless, one had better know the rules."

-Samuel Butler, novelist and satirist

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Ray Manzarek & Vox Populi

[We hit a double bull's eye with our Feb. '91 cover story on Ray Manzarek. Readers seemed delighted with the Doors' alumnus on two counts: his strong reservations about contemporary pop music, and his defense of the Vox Continental electric organ's "cheesy California sound." Not coincidentally, Mark Vail's Feb. '91 Vintage Synths column also recalled the Vox. These combined reminiscences apparently woke several old Continental users from a long slumber and prompted them to share their memories of the instrument as well.]

Thank you for your lengthy and informative interview with Ray Manzarek. I began playing professionally in 1965-a time when anything seemed possible-at the tender age of 15. Artistic expression had suddenly become limitless. For a short while, music and art were critically important, and revolutionary change was the norm. Since then, music has grown and developed, but to a working-class musician like me, the Rolling Stones, Jimi Hendrix, the Beatles, and the Doors represented the peak of an eclectic balance, a renaissance, a blend of high thought and primitive feelings. Everything since then seems like a variation on the same thing. Ray's reflections on how to deal with these problems in today's music were right on the money.

By the way, I'm surprised that Ray didn't mention the Gibson compact organ, which he used on most Doors albums.

> Flash Allen Portland, ME

The Doors were always my favorite band, and Ray Manzarek was my major influence. His ability to mix very melodic, monophonic solos with the band's wicked, powerful rhythm made him the #1 rock organist. But I take exception to your associating him with the Vox Continental. Most photos show him with a Farfisa, either a Compact Deluxe or a Duo Compact.

Which leads me to your Feb. '91 Vintage Synths column on the Continental, which was both the best and worst axe of its time. It was the worst in that it was in the shop a lot, and it played like a sled. The keys were so spongy and slow that you couldn't play rapidly at all. But that black, orange, and chrome color scheme, and the Connie's sleek profile, made it the toughest-looking thing onstage. And the sound was outta sight. The bite of the Brass and IV drawbars outdid the B-3 for hard-**ass rock and** acid, so if you didn't mind lots of downtime or shredded fingers, the Vox was it.

I leave you with this anecdote. Before I saw my first Continental in late '66, I was only familiar with chord-button and doublemanual organs. On seeing the Vox, I broke up its owner by asking, "Where do you





make the chords?" Well, five years later he got a Minimoog, and the first thing he said to me was, "Don't ask about the chords!"

Clyde Lyman Fall River, MA

[Manzarek confirms that after Vox organs began being manufactured in Italy rather than England, he became sufficiently dissatisfied with what he saw as a greater keyboard fragility to briefly switch his allegiance to the Gibson Kalamazoo. He adds that many fans mistook the Gibson for a Farfisa organ, given similarities in the instruments' shapes; unlike Farfisas, though, the Kalamazoo had a flat top, ideal as a support for Manzarek's Rhodes Piano Bass.]

Why was Ray Manzarek featured in *Keyboard*, since his best-known work was done 25 years ago? Simple. The music of the Doors, like that of the Beatles, is timeless. I can think of quite a few "stars" you've featured whose names and music will be forgotten as soon as the next flavor *du jour* happens along. I think we could all use some of the idealism and spirituality that Manzarek represents. We must consider the whole chain before over-analyzing every link. Everything we do has an effect on someone, somewhere, even though we may be oblivious to it. This is especially true in these times of environmental awareness. Yes, it is possible for us oscillator tweakers to oppose the razing of the rainforests and still remain patriotic Americans. Thank you, Mr. Manzarek, for your "'60s relic mindset," because like the much-maligned vegetable broccoli, it may not taste good to many of us, but it is always good for you.

I was also impressed by Manzarek's tenacious defense of the Vox Continental, which taps into a topic that's been well-worn in your Letters pages. I get the impression that a lot of your readers are being forced to stick with old gear, perhaps due to lack of cash. You know all too well how they vent their frustrations at Keyboard, accusing you of being little more than a showcase for new products. Of course, we would all like to buy the latest rev of everything. But there must be a balance. The only new piece of gear I've bought is my sampler; all else is used stuff I bought at bargain prices. So, surprise: Your old gear is deeper than you ever imagined! If you're looking for that massive, wickedly toxic sound, it might be lurking inside that dusty box you resent so much. Get into it and maximize your potential through resourcefulness, experimentation, and paying attention to everything that goes on around you. You never know where inspiration will come from. You may never wind up on the cover of this magazine, but everyone can shine in his or her own light. In "The End," there is a time and place for everything, and everyone.

> David Waldman Silver Spring, MD

I played several Vox Continentals during the '60s, and the way I remember it, only the British models-identifiable by their British I.D. plates-had wooden keys. The British and Italian models also differed in the way the stand's cross-braces attached to the back of the organ. The British Vox's cross-braces formed an inverted V, while the Italian models made an asymmetrial X, like the one in the Paul Shaffer photo in Vintage Synths [Feb. '91]. There was a price difference too. In Seattle, the British Voxes were available for \$1,000 between 1964 and '66. Around '66 the Italian models arrived with a more affordable price of about \$600. By this time, though, the instrument was no longer as hot as it had been during the early years of the British Invasion.

Now, on the "made in the U.S.A." question. After introducing the Super Continental, Vox released another two-manual organ, called, I believe, the Baroque. The bottom manual was a Continental, with the coloring of the black and white keys reversed, but the top manual had a normalcolored keyboard and on-off tabs for harpsichord, celeste, vibes, and other sounds. We were told that this organ was made by Thomas in California. Perhaps this is how Vox service manuals came to refer to Thomas Organ parts.

Bill Hornibrook Goldendale, WA

No Pain, No Fame

Dominic Milano's column on the power of technology to cover up artistic shortcomings [Feb. '91] sublimely expressed my frustration with the music industry and the frightening trend in the mentalities of young musicians, or young people as a whole, for that matter: that of wanting wealth, fame, or ability without earning it. But I hesitate to place all the blame on technology. Rather, I am more prone to blame society—ourselves—for being obsessed with materialism and lacking long-term vision. Our society can't dream of tomorrows because we live in a media dream world today.

We have the power to change this. First, by rewarding only true talent through selective purchasing. And second, by teaching future generations the satisfaction and pride of striving for and achieving a goal.

> Thomas Korf Huntington, NY

Is the closed-mindedness I see in the Keyboard Letters column the reason why there is so much stylistic blandness in commercial music? As a cross-section of society, I'd say that Keyboard readers are as representative a group as any sociologist might hope for, and it seems from their letters that many of them are too unconcerned with other people's views. When arguments, anger, and negative emotions happen, it isn't the opposing opinion that's to blame; it's our failure to accept that opinion. No one will ever convince me to change my mind on a topic; only I can change my own mind. Neither will I be able to change anyone else's mind. So let's agree to disagree, whether it's about religion, the Gulf, somebody else's music, the role of music lawyers, or the way lane Child does her nose . . . er, I mean, hair.

Scott Fentress Van Nuys, CA

[Speaking of Jane Child, we've been getting a lot of pro and con letters about her since her June '90 cover story. There seems little point in batting this topic around for nearly a full year, but we did find one note that tied the controversy over Child's merits to a broader issue facing keyboard players today.]

The things that are so desperately wrong in the musical community are embodied in the first three letters of your Feb. '91 issue. Is Jane Child really just "a Paula Abdul ripoff"? Read the interview: She's a concert pianist who happens to like to write pop music, sings it well, arranges and plays all the parts, produces the whole product, and backs it up with live performance and a strong personal image. And it takes more God-given talent to write, arrange, and perform a good pop song than it takes to do the kind of overly-schooled, mile-a-minute jazz doodles popularized by Chick Corea and others in that genre.

Now, Chick Corea is a great player. But I hear many music school students who strive to master the styles of Corea, Josef Zawinul, etc. Put these people in a band, and they want to solo over everything, and play five-note chords when a three-note chord is proper to complement what the others are playing. They have no idea that "putting it in the pocket" and playing what's needed to make the song as a whole sound good are what's most important.

The Feb. '91 letter writers can't truthfully say that there isn't one thing they could learn from Jane Child, Jam & Lewis, Babyface, etc. After all, where are *their* big record deals?

Linda Chase Boston, MA

EPS-16 Plus

Great review of the EPS-16 Plus [Feb. '91], but you missed one point that may be of great interest to owners of the original EPS 13-bit model: How do samples sampled on the EPS-16 Plus but played back on the 13-bit models sound? Is there an improvement in fidelity as a result of sampling on the higher resolution machine?

Jim Piekarski Denton, TX

[In a word, no.]

Crook Set Straight

Keith Crook complains that he has come across no sequencer that automatically shifts controller events when notes are quantized [Letters, Feb. '91]. He clearly has not tried Dr. T's KCS (Atari ST, Amiga, or Mac). These programs automatically shift the controller events following a note when the note is moved by a quantize operation. This maintains the relationship between the note-on times and the controllers as originally recorded. You can thus correct for timing errors without losing the timbral feel created by the controllers.

> Emile Tobenfeld Dr. T's Music Software Newton, MA

Prince

Thanks a million for Robert L. Doerschuk's article on Prince's keyboard players [Jan. '91]. Matt Fink and Rosey Gaines provided a rare behind-the-scenes look at the work of a creative genius. But I

Send correspondence to Letters To The Editor, Keyboard Magazine, 20085 Stevens Creek, Cupertino, CA 95014.

NEXT MONTH

PATRICK MORAZ

Where's the party? Switzerland, if Yes alumnus and current Moody Blueser Moraz has his way. He's in charge of the musical side of his country's 700th birthday blowout later this year, and his plans are as spectacular as an Alpine vista.

YAMAHA SY77 CLINIC

Howard Massey explores the Super FM stratosphere, tackles polyrhythmic sequencing, and otherwise uncovers some of the SY77's neglected capabilities.

BARBARA DENNERLEIN

Is jazz organ dead? Not according to this twentysomething German innovator, who reveals how she forged an original B-3 style far from the shadow of Jimmy Smith.

NAMM, PART 2

Whatever you didn't read in this month's NAMM report will be covered here—including an eyewitness report of the already legendary Kawai waterfall.

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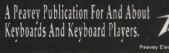


In response to your many requests for information concerning the Peavey DPM® 3, DPM® 35e, as well as keyboards and keyboard accessories in general, Key Issues ™ is glad to answer any questions you may have about keyboards and their operation.

• I own a DPM 3 and have purchased several disks of alternate programs from Peavey, as well as some other sound developers. I am very pleased with the quality and variety of sounds for the DPM 3. I have recently seen several sample disk sets offered for the DPM 3 which contain new samples and programs. I have not yet upgraded the sample memory of my instrument. Do I need to upgrade in order to utilize the sample disks, and if not, what would I gain from expanding the sample memory?

Peavey offers a • complete series of sample disk sets for the DPM 3 created from the Prosonus[™] Sample Library. Each sample set contains two disks of new samples. as well as instrument programs using these samples. It is not necessary to expand the sample memory in order to utilize these sample sets. With the standard 64K sample memory, samples and programs can be loaded into the instrument one or two at a time depending on the size of the samples. Each sample set contains an average of 12 to 15 new samples and 20 to 30 new programs. Expanding the sample memory in the DPM 3 will allow loading many samples into internal memory at the same time. The sample memory is expandable up to 1 Megabyte, which would allow loading the complete contents of any sample set into the instrument at once.

Send your questions and comments to: KEY ISSUES/711 A Street / Meridian, MS 39302 or call (601) 483-5370



LETTERS

find it hard to believe that Prince has not sequenced in the studio yet. He may be an incredible artist, but he's not so incredible that he can get a sequenced sound when he's playing live to tape. Listen to "Tick Bang," from *Graffiti Bridge*, and see what I mean. Still, even though his band members may have bent the truth in describing his studio wizardry, that doesn't take away from the fact that Prince's talent is equivalent to about a dozen of today's top pop artists combined.

> Lenny Alberti Hollis, NY

Laptop Alternatives

In his review of the Atari Stacy computer [Feb. '91], Carter Scholz mentions that a generic IBM-compatible 286 laptop could be had for around \$2,500. While this is true, I must caution readers that most laptops lack the standard internal expansion slot necessary for the MPU-compatible MIDI interface required by most IBM music software. I am aware of a product called the One-Under, which adds a box containing an expansion slot to the bottom of the laptop, but this can cause the computer to sit unevenly and perhaps not fit into its case. Another alternative is a generic "lunchbox" style PC-compatible. These AC-powered portables can house your choice of standard AT-compatible motherboards, up to three disk drives, and either a gas-plasma or LCD screen in a package about 16" wide, 9" high, and 7" deep, with a removable full-sized keyboard (no numeric keypad) and a few extra expansion slots to boot. Although they share the Stacy's disadvantage of not running on batteries, and they are a bit larger and heavier than the laptops, they do have some advantages. First, since they use mostly standard boards internally, they can be expanded and upgraded as easily and inexpensively as a desktop. Second, because they are true IBM compatibles, they can obviously run any MS-DOS or Windows software. And third, but perhaps most important, they are very inexpensive. If you're willing to shop around, you can get a 286-equpped machine with 1Mb RAM, a 1.2Mb floppy, a 40Mb hard drive, and an LCD screen for as little as \$1,300.

Brian Batters Los Angeles, CA

Universal Ed/Librarians

In his review of universal editor/librarians for computers [Jan. '91], Michael Marans writes, "You could go broke buying software for all of your MIDI instruments, and since true multitasking still hasn't hit the scene, you can only address one of your instruments at a time from your computer." Not true! There have been true multitasking computers on the market for some time now. In fact, my Yamaha Clavinova and Roland D-110 are both hooked up to my Tandy Color Computer 3. I'm running Microware's OS-9 Level II, which is a true multi-user and multitasking operating system. The MIDI sequencing software I use is UltiMusE III. It handles up to 16 MIDI channels, and you enter a musical score on a graphic screen with a mouse, just as if you were writing music notation down on paper. You can do your music sequencing in one window, work on a patch library in another window, and even edit text in still another.

I'm pointing this out because not everyone knows the power of OS-9 or how cheaply you can set up a MIDI sequencer system with the Tandy computer. Not everyone can afford big expensive computers and their software.

> Bert Schneider Colorado Springs, CO

True multitasking has existed on personal computers since the Tandy CoCo, and I've been running simultaneous MIDI programs on my Commodore Amiga for almost four years. The AT&T PC7300 is another longtime multitasking PC, though few people use them for MIDI applications.

> Daniel J. Barrett Baltimore, MD

Michael Marans replies: "We hate to split hairs, but the operative (and qualifying) word in our universal ed/lib story was 'true' multitasking. By that, we mean the ability to not only have all of the programs up and running, but also to have them talking to each other. A number of companies have developed software operating systems that approximate this type of multitasking -Steinberg's M-ROS, Dr. T's MPE, C-Lab's Softlink, and Apple's MIDI Manager, to name a few-but none of these systems offers complete, transparent operation, and compatibility is often limited to programs developed by one manufacturer. If you know of a system that will let us edit our Creator sequence and have changes reflected graphically in our Finale file (while, of course, we're loading patches from X-or), please give us a call-we're getting desperate.]

Buyer's Guide Ad Infinitum

[Exhaustive as our Dec. '90 special Buyer's Guide and Mar. '91 follow-up list were, we are still hearing from a few companies whose names we inadvertently omitted from these issues. The last (we hope) addition is from National Music Systems, whose Digital PianoPlus should have been listed under our Peripheral Gear heading. This system, which adds MIDI to acoustic pianos, includes a control panel, MIDI keying strip, string silencer strip, and pedal switches, and is available for \$995 from National Music Systems, Box 4141, Utica, NY 13504; their phone numbers are (800) 284-3755 and (315) 792-7680.]

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BANGING vs. SCRAPING

DID SOMETHING FAIRLY WEIRD last week. Weird for a MIDI maniac, anyhow. I went out and rented a cello. For several years now I've been making music exclusively with MIDI, sequencers, and synthesizers. I love the freedom to compose and arrange without having to rely on other musicians to execute my ideas, and I love the seemingly inexhaustible resources of the sonic palette.

Still, something is missing. Something vital.

When I was but a wee sprat, I played the cello. I was good at it, in fact. But about the time the Beatles broke up, I sold the cello to buy a bass guitar. My mother told me I was making a big mistake.

Mom was right. Last week I fell to talking with some friends about a possible collaboration that would involve recording some direct-tohard-disk tracks to augment the MIDI sequences. The next day I phoned around, found a place that rents cellos, drove downtown, and walked out with one tucked under my arm. The sheer sensuous pleasure of playing it is intensely gratifying, even though, for the first time in years, I have to worry about things like tone production and intonation.

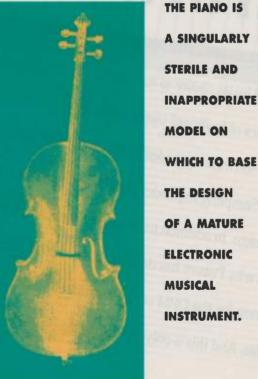
On a cello, you have to make each note. Shape it physically. If you don't draw the bow, there's no note. Every note has its own unique amplitude envelope, and you have to make a conscious or subconscious musical choice

about what sort of envelope that will be. At the same time, your left hand is adding vibrato. It's not merely that you can change the rate and depth of the vibrato during the course of the note, nor that you're expected to do so in order to create a musical phrase. It's that you can't avoid making a note-by-note decision about the vibrato. Even the absence of vibrato is a choice

Contrast this with the piano. In the piano, the key throws a hammer at a string. By the time the hammer strikes the string to create the tone, there is no direct physical linkage between the key lever and the hammer. You can wiggle your

finger all you want to on the key; it doesn't matter. You're out of the loop.

What I learned from picking up the cello again is that the piano is a singularly sterile and inappropriate model on which to base the design of a mature electronic musical instrument. Of course, it's far and away the dominant model. Hit a key, get a noise. The noise is shaped beforehand by a synthesizer programmer, and proceeds merrily on its way just the way a vi-



brating piano string does, with no further input from the musician, generally speaking, beyond telling it when to stop. Also, as on the piano, there tends to be only one kind of variation from note to note: Hit the key harder and the noise will get louder and/or brighter in response. Along the way, two of the factors that make the piano musically interesting have been eliminated. The acoustic resonances, with and without the pedal, are missing, and in most cases a synthesizer's action is a joke compared to the piano's.

Yes, there are other human/synthesizer interfaces. Unfortunately, most of these alternate controllers are modelled after existing instruments, and suffer from the limitations imposed by their ancestry, even though these limitations are largely needless in an electronic instrument.

But that isn't the big problem with alternate controllers. There are two big problems. First, they have to transmit the player's gestures over MIDI. And second, they have to make sounds using the available tone modules, which are designed with the limitations of the keyboard and MIDI firmly in mind.

What if somebody built an electronic instrument that could accurately sense and transmit the motions of seven or eight fingertips at a time, in three dimensions each? Yes, the MIDI spec allows you to define all the continuous controllers you'd need-but the transmission bandwidth isn't high enough. MIDI is simply too slow to carry the amount of information we're talking about.

Besides, even if MIDI could handle the data, what would today's typical synth module do with it? Suffer from input buffer overflow, most likely. Even the synthesizers that can handle high-bandwidth input without choking allow only a few fairly crude forms of real-time control over timbre. You can address amplitude, vibrato depth (of a vibrato LFO with a preset waveform and rate), pitch, and maybe filter cutoff frequency (and you'd better hope those cheapo digital filters don't sound grainy when they're modulated). What about modulating the envelope times or sample start point? Those are parameters that remain fixed for the duration of the note, so they still suffer from the limitations of the piano model. "Vector synthesis"? It's only amplitude modulation with a fancy new name. LFO rate modulation? Huzzah, huzzah! We're ready to throw a party to celebrate something so basic to good music-making that we ought to be taking it for granted.

A few companies, notably Ensonig, have gone a bit farther in allowing real-time control of their synth engines. Yamaha's EG bias control was a giant step in the right direction, too: It gave you timbral control over a single element within an ongoing sound. But Yamaha hasn't improved the EG bias system significantly since it was introduced in 1983. In particular, they don't give you separate control inputs for the EG bias of the six operators, other than by sending sys-ex packets (and you don't even want

Jim Aikin is the managing editor of Keyboard. His mom did not promise to bake him cookies if he admitted in print that she was right.



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GUEST EDITORIAL

to *think* about what that would do to the MIDI bandwidth).

Poly key pressure and matrix modulation are great tools. But how many musicians ever use those tools creatively? Why don't we? Because we're keyboard players, that's why. Throw the hammer at the string and then get on with the next note. The crude, awkward nature of the left-hand controllers we're given doesn't exactly encourage musicians to delve deeper into phrase-shaping—and when the musicians don't demand better real-time control, can you blame the manufacturers for not pouring a lot of money into it?

For the musician who wants expressive control, sample playback synths—today's industry standard—are nothing but a stumbling block. You can't get *any* significant real-time hooks into a sample to change its sound quality during the course of a note. A sample is, by definition, a dead, embalmed sound. You can layer five or six samples and control their amplitudes individually (if your sampler gives you enough controller inputs), but then you're using up five or six oscillators on every note, and you have to spend inordinate amounts of time matching and filtering the layered samples so that they don't blend into a mishmash.

(A side note: Synths and samplers are designed so that the keyboard will sound as uniform as possible from one end to the other. When multisamples are assigned across the keyboard, radical changes between one register and another are considered awful. Each cello string, on the other hand, has its own distinctive timbre. Change the fingering to put the melody on the *G* string rather than the *D*, or to shift from the *G* to the *D* at a different point in the phrase, and you've changed the expressive character of the line. No sample-playback synthesizer lets you choose where the breaks between the samples will fall, in spite of the musical importance of this factor.)

What would a truly responsive electronic musical instrument look like? First, it would have a bank of pads for choosing pitches. The pads would be small enough and close enough together that you could play rapid scale and arpeggio patterns. Possibly they would be arranged in tiers, like the keys of a typewriter. Of course the pitch of each pad would be programmable. Each pad would sense attack velocity and also pressure in three dimensions-laterally, forward/back, and down. (The closest thing we've seen to this so far is the Buchla Thunder, whose pads sense velocity, downward pressure, and position. Unfortunately, the Thunder doesn't have enough pads to let you play multi-octave phrases with freedom.)

In addition, our hypothetical instrument would have a large phrase-shaping touchpad—a two-dimensional electronic bow, if you will. The player would shape notes and phrases by stroking the pad. You could stroke it in circles, with quick back-and-forth scrubbing motions, or in long waves. The pad would sense the positions of at least three fingers, the distance between the fingers, their continuous velocity in two dimensions, the downward pressure, and possibly the total area covered by the fingers. (Area sensing would let you distinguish between fingertip playing and playing with a whole finger pressed flat, or with the palm.)

This controller would be hooked to a synth engine capable of responding to its output in a variety of musically sensitive ways. If samples were being triggered, something like a vocoder might be used to provide multi-band bandpass filtering. Waveshaping circuitry (remember pulse width modulation? other types of waveshaping are guite feasible) would let you add new harmonic components during the course of a note. You would be able to precisely scale the amount of effect that each type of controller data would have, and even to set up conditional routings, on the order of, "Use this data to raise the pitch of these harmonics if the phrase-shaping hand is moving left, but not if it's moving right." The instrument would be built around a fast enough processor that it could respond even to the most dense playing styles without any perceptible lag.

The instrument would have one other vital characteristic: Longevity. For musicians to be willing to dedicate the time needed to learn to perform musically on it, it would have to be available, in a stable configuration, for ten years at an absolute minimum. It would have to be supported by the manufacturer with believable assurances about that longevity, and with good training manuals and hardware and software service. Probably the manufacturer would have to promise that if they ever stopped building the instrument, they would make the design freely available to other companies, so that the instrument wouldn't become an orphan.

Sound like a pipe dream? Yeah, but there is one factor that might make it a little more realistic. . . . The cello that I rented is quite nice, but it's nothing special. It's been banged up and glued back together in several places, and some serious gouges in the neck have been filled and sanded down. The asking price, if I should decide to buy it: \$9,000. And that's for a completely obsolete, cantankerous box of wood that makes, by the most generous count, less than a dozen preset timbres.

Would I be willing to pay as much or more for an electronic instrument that I could actually play as expressively and responsively as I can a cello? You bet I would. And I suspect I'm not alone. Could such an instrument be built with today's technology and sold for a profit at that price? Maybe, if you consider that the R&D costs could be recouped over the course of ten or twenty years.

Is there a manufacturer with the guts to take on such a project, and the resources and the commitment to quality that would be necessary to do it *right*? Probably not. But they may be hurting themselves more than they realize. Somehow I don't think my next major equipment purchase is going to have an LCD and multiple voice outputs. I think it's more likely to be an old, banged-up box of wood that won't make any noise at all unless you drag a bunch of horsehair across it.

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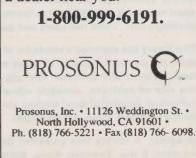
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I discovered a "hidden" area of my Roland D-70, which I can access by turning the machine on while holding down one of the buttons on the numeric keypad. Ever since I started fooling around with the various options contained in these hidden menus, my keyboard has been doing something strange: Instead of getting the usual scrolling welcome message on power-up, the display says "initializing," after which the machine functions normally. What's going on, and why aren't these options documented in the owner's manual?

> Peter Wagner River Vale, NJ

Almost every synth on the market has a "hidden" area that contains software routines for performing service diagnostics and machine calibrations. These menus are usually accessed by hitting some combination of buttons, or, as you discovered, by holding one or more buttons on power-up. Warning: Many of the procedures in these menus can cause serious harm to your instrument if they are executed by an ungualified person. At the very least, you might lose your patch data; at the worst, you could lose all calibrations and operating system information. In other words, don't mess around with these functions unless you know what you're doing. Fortunately, only two of the D-70's six hidden menu options are potentially damaging. Two others could be helpful in particular situations, so we've



outlined them below.

If you hold button 3 while turning on the machine, you can toggle the scrolling welcome message off and on. When the message is turned off, the display simply says "initializing"—the synth's way of telling you it's getting ready to go to work. Roland tells us that it takes about one-third as long for the D-70 to boot when the welcome message is off, so unless you're really lonely and need to have instruments talk to you, turn the message off and save yourself a bit of time; the machine will function normally in all other ways.

Another of the D-70's hidden menu items is the Extended Product Mode. This mode allows sys-ex data to be transmitted and received in a fraction of the time it takes when you initiate dumps from the D-70's system page. Hold button 5 while powering up the machine, and you'll see three boxes for selecting the type of sys-ex dump you'd like to perform: F1 "Bulk dump all memory to MIDI", F2 "Bulk load all memory from MIDI", and F3 "Write card ID." This last function is used for formatting a RAM card. As with all formatting procedures, any data that may have been on the card will be completely erased when this function is executed.

Roland tells us that the D-70 contains a few other tricks, but they're a bit esoteric, so the company hasn't published any official documentation. If you're interested in finding out more about these special functions, contact one of Roland's product specialists at (213) 685-5141, or write to them at 7200 Dominion Circle, Los Angeles, CA 90040.

I've been unsuccessful in linking my Ensoniq EPS-16 Plus in a SCSI network with my Macintosh SE/30 and Eltekon removable-media hard drive. The EPS will talk to either device by itself, but if I hook the EPS to the Eltekon and the Eltekon to the Mac, nothing works right! I'm tired of plugging and unplugging cables. What can I do to get my system up and running?

Greg Alvarez Eugene, OR

The first thing you need to know about SCSI (Small Computer Systems Interface) is that a SCSI network should have exactly two "terminated" devices in it—one at each end of the chain. If you run too many terminated devices, or not enough, communications failures will

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be the least of your worries. The current load can actually burn out a board on your computer.

The Macintosh is terminated, and the EPS is terminated, so whatever hard drive you put between them should be unterminated. The Eltekon, as it happens, is also normally terminated when shipped from the factory, and this is probably the source of your present trouble. Removing its termination is simply a matter of taking off the lid and pulling two small yellow multi-pin resistor packs from the rear of the drive mechanism. This will void your warranty-but worse, it won't solve your communication problem. Both Ensonig and Eltekon tell us that removable drives with a Syquest mechanism (which is what the Eltekon is) don't like running in an unterminated state. We tried your hookup, and found that with the Eltekon unterminated, the EPS and the Mac could communicate bidirectionally, but while the EPS was able to read the hard disk directory successfully, it could not load files from it.

We can suggest two partial solutions: Buy a non-removable unterminated hard drive, or buy a couple of SCSI A/B switch boxes. File backup is a lot less fun with a non-removable drive, of course. With the switch boxes and the right connector cables, you should be able to use the Eltekon for data storage with either the Mac or the EPS without wrestling with cables, but you probably still won't be able to have all three units communicating with each other in a single session, because SCSI devices tend to inspect the SCSI network when they're first booted up, in order to find out what kind of universe they're living in today. No matter which position

the switch box is switched to, the EPS or Mac will only see one other SCSI device, and probably won't "mount" (recognize) the third one. You may be able to work around this by first getting the EPS to recognize the removable drive, then using a Mac cdev such as SCSI Tools to mount the EPS and/or the Eltekon. Then again, this is SCSI, so there are no guarantees.

If you put an unterminated hard drive in between your Mac and EPS, you'll need to add termination to it if you later want to use it with only the computer or the sampler, but not both. Adding termination to an unterminated hard drive is easy: Any computer accessories store should be able to sell you a SCSI terminator, which is a dummy plug that fits into one of the drive's two SCSI ports.

Another vital issue in SCSI communications is device ID numbers. Each piece of equipment must be given its own ID (in the range 0-7); if two units have the same ID, communications will break down. An SE/30 is always device #7, while its built-in hard disk is #0. The EPS is #3. None of these IDs, as it happens, can



Don't plan on using an external waveform editor with the Roland W-30.

be altered by the user, but most hard drives allow you to set the ID number; look for a small button or switch on the back panel.

I'm frustrated by the lack of editors for my Roland W-30. It's not even supported by Sound Designer and Alchemy, which work with the S-50/550/330 samplers. Wouldn't it be fairly easy to create a W-30 driver for these sampleediting programs?

> J. Nelson Portola Valley, CA

No. According to Roland, the W-30 was designed as an integrated workstation. Because of this, they felt that most users would not have the need to communicate with any external devices or software programs. Consequently, its operating system does not include any code for sample-dump communication.

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ANDRÉS JANKOWSKI

Styles: Post-minimalist, new roots rock. Age: 35. Influences: Peter Gabriel, Jimi Hendrix, the Beatles, the Residents, Burt Bacharach, Steve Reich, Holger Czukay, the Rollings Stones, Eduardo Galimany, Mark Isham, Bernard Herrmann. Main Instruments: Kurzweil Midiboard, Oberheim Matrix-12, Roland S-50 & S-330, Yamaha DX7II, Casio VZ-10M, Korg MS-20, Atari 1040 ST w/ C-Lab Notator. Contact: Niebuhrstr. 64, 1000 Berlin 12, Germany. (011-49-30) 323-3288.

HIS MONTH'S DISCOVERIES COLumn focuses on three very different minimalism-influenced composers, whose only other trait in common is a penchant toward the Beatles. The first time I heard Michael Robinson's music, it seemed almost too minimal: a single horn-like whistle sounding several times, then a baritone foghorn in 5/4, followed by a repeated 2/4 figure entering inside of that, with a melodic line in 7/4 joining in on top. And through all these rhythmic figures a certain spare, crystalline iciness prevailed.

"I'm not interested in making my music sound like it comes from live musicians," Robinson explains. "Quite frankly, I'm tired of the gestures used by human musicians; these gestures are just too ego-driven. Rather, I'm interest-

ed in discovering and liberating the expressive quality—the essence—of computer-controlled music. I want this music to emanate from the computer in the same way that other sounds emanate in nature, like wind and water."

It's an ambitious goal, one that places special demands on the listener. Robinson's sense of timing, phrasing, form, and flow guide listeners toward his alternative vision. His music has the clarity and ingenuousness of Chinese brush painting,

some of the hard geometric edginess of Kandinsky, and a detached, ethereal, and abstract quality that nonetheless seems bound to the tight forms found in some abstract Expressionist paintings. "When I lived in New York," he reports, "I saw a painting by Ad Reinhardt, and it inspired me to make music in a different way. It was a watershed artistic experience."

Andrés Jankowski's music, on the other hand, runs the full range of human idiosyncracies. "Even though my idiom could be called



MICHAEL ROBINSON

Style: Computer music. Influences: Mahler, Bach, John Cage, John Coltrane, Charlie Parker, the Beatles, the Doors. Main Instruments: Roland D-110, Atari 1040 ST w/ Dr. T's KCS Level 2. Contact: 220 N. Almont #4, Beverly Hills, CA 90211. (213) 278-8245.



WILLIAM HOUSTON

Style: Post-minimalist chamber & opera. Age: 37. Influences: Philip Glass, Brian Eno, Lou Reed, the Beatles. Main Instruments: Roland EP-50, Casio CZ-101. Contact: 446 Cherry Ave., Long Beach, CA 90802. (213) 434-8010.

post-minimal, I don't get locked into that label," he says. "Everything is open. If something in my music sounds like jazz, okay. If something sounds like a simple song, okay." Indeed, his work has a sprawling, rambling quality, in total contrast to Robinson's. Where Robinson may limit himself to only one texture in a given piece, Jankowski uses a startling array of timbres. Robinson's music persistently expresses a cool aloofness; Jankowsky's is full of the ebb and flow of human phrasing. Jankowski packs a remarkable density of elements into each moment. Repeated listening reveals nuance after subtlety, layer after level. His short gems manifest a richness of orchestration, humor, and heart that engages the attention and invites continued scrutiny.

William Houston is far closer to textbook minimalism than either Robinson or Jankowski. That is, he adheres to the approach of layering ever-changing musical cells. In his chamber ensemble Deo Optimo Maximo Etcetera Sundry (DOMES), Houston and ten other instrumentalists create a wonderfully tight-knit sound in which each part adds something to every other part. "Since the group is so big and the approach is orchestral, I like to have Diane Barkauskas [featured in Discoveries, Feb. '90] and me fill in colors not covered by other instruments. Because of the diversity of the keyboards, I can propel rhythms, fill out harmonies, and so on." DOMES often works with singers on concert excerpts from Houston's operas The XTC of Saint Teresa, which has been staged at the Japan America Theatre in Los Angeles, and Tarotterror.

Three different approaches. One stylistic label. Perhaps Mies van der Rohe was right in saying, "Less is more."

Titus Levi spends his free time promoting and producing events for the California Outside Music Association. If you'd like to appear in Discoveries, send a cassette of your best material, a biography (full name, age, style, influences, performance credits, future plans, and equipment), a publishable phone number and address at which readers may contact you, and a clear black-and-white photo of yourself with your keyboard setup. Photos should be labelled with your name and the photographer's name and address. All styles of music will be considered. Due to volume of submissions, material cannot be returned, and applicants will not be contacted unless accepted. Send all correspondence to Titus Levi, 5153 Hanbury St., Long Beach, CA 90808. Titus also invites all Discoveries alumni to keep in touch with news about career advances.

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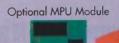
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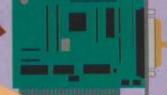
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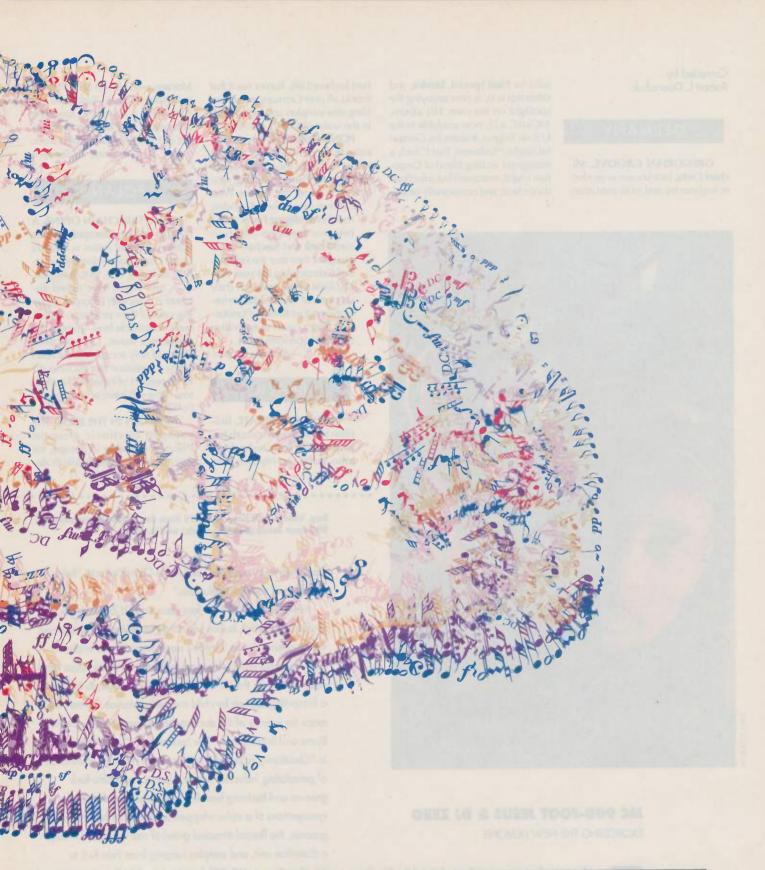
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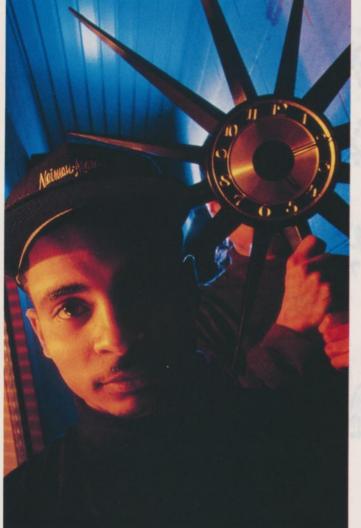


World Radio History

Compiled by Robert L. Doerschuk

GERMANY

GREGORIAN GROOVE. Michael Cretu, best known as producer, keyboardist, and mutli-instrumentalist for Moti Special, Sandra, and other top acts, is now enjoying the spotlight on his own. His album, *MCMXC a.D.*, now available in the U.S. on Enigma, features his German hit single, "Sadeness, Part I" (*sic*), a strange yet sizzling blend of Gregorian chant, restrained but infectious dance beat, and occasionally promi-



MC 900-FOOT JESUS & DJ ZERO

EXORCISING THE NEW DEMONS

verything you know is wrong!" proclaimed the Firesign Theater on their 1974 album of the same name, a ribrattling spoof of the nascent new age movement. Today, parodic cults abound. Among them are Decatur, Georgia's Church of Beaver Cleaver, and Dallas's Church of the SubGenius, an organization for "scoffers and blasphemers." "Pull the

nent keyboard fills. Rumor has it that monks all over Germany are scrambling after samplers and record deals in the wake of Cretu's success.

POND EXPANDS. After a little more than twelve years of success in East Germany, the popular synthbased group Pond is winning new fans throughout the former West

> German area as well. Founding member Wolfgang Fuchs added two new members—his twin sons Frank and Sascha—to the group for their tour through unified Germany late last year. One highlight of the trek was their spectacular multimedia performance at East Berlin's Planetarium, long a center of innovative electronic performances. —Andreas Schätzl

1000

BRAZIL

AZYMUTH UPDATE. Brazilian fusion group Azymuth has added a new keyboardist, Marinho Boffa, to replace Jota Moraes, who played on the band's two latest releases, *Tudo Bem* and *Curumim*. Azuymuth's founding keyboardist, José Roberto Bertrami, left in 1988 to follow a solo career. —Armando de Souteiro

POLAND

CD RETAIL CHAIN OPENS. A new private firm, Discopol, recently opened CD retail outlets in Poland's major cities. Major international labels, including CBS, EMI, Polygram, RCA, and Virgin, have signed distribution deals with Discopol, allowing sales of their products—previously unavailable here—through the company's stores. Unfortunately, Discopol only accepts Western currency, a limitation that excludes 85 to 90 percent of Polish CD collectors, who still have access only to Polish money.

NEW KIDS IN THE BLOC. The youngest electronic group in Poland—probably in Europe, for that matter—recently made its de-

Say, kids, what time is it? It's time for Dallas homeboys MC 900-foot Jesus (holding clock) and DJ Zero.

wool over your own eyes," exhort the Church's tracts. "Relax in the safety of your own delusions."

Now, Dallas's MC 900-foot Jesus and DJ Zero-Mark Griffin and Patrick Rollins when they're offstage-have joined the raspberry chorus. Griffin's stage name has its origins in Oral Roberts's vision of a giant messiah; the duo's major label debut, Hell with the Lid Off [Nettwerk/IRS], takes its title from a firespitting sermon by child evangelist Marjoe Gortner, Hell maps the interior of the dark continent discovered by David Byrne and Brian Eno in "The Jezebel Spirit" and Negativland in "Christianity is Stupid." Building on a rhythmic foundation of percolating industrial dance, hip-hop, and Afro-funk grooves and burbling bass lines, while adding the slithery syncopations of a stylus whipped back and forth in record grooves, the flannel-throated growl of rap vocals fed through a distortion unit, and samples ranging from Fela Kuti to Weather Report, MC 900-foot Jesus and DJ Zero have created a musical electroencephalogram of the American religious mind—epilepsy, ecstasy, and all.

"People are surrounded by religion manifesting itself as pop culture these days," says Griffin, 34. "It's grist for the artistic mill. To me, televangelism is just a dramatic example of a dysbut in Koscian. Usmiech ("Smile") features 13-year-old Jacek Kozak on synths and electronic drums, 10-year-old Magda Kowalik on keyboards, and Jarek Janik, age 11, on percussion; all three Smilers also sing. Their upcoming debut album, *Smiling Faces*, will be geared toward kids their own age.

---Wojciech Kubiak

CANADA

SKA KEYBOARD GIANT DIES. Jamaican-born keyboardist Jackie Mittoo died of lung cancer at age 42 last December in Toronto. Mittoo built his reputation on a series of recordings with the Skatalites, through which many great Jamaican jazz and ska musicians passed, and Sound Dimension in the early '60s. He began playing for the pioneering Jamaican record label Studio One at age 15, then went on to record a number of solo LPs, including the instrumental albums Now and Macka Fat. In the mid-'70s, Mittoo settled in Toronto, where he founded the Stine-Jac label. Though often uncredited, his playing lives on not only in classic recordings by the Heptones, the Wailers, and Johnny Clarke, but also ever more frequently in samples.

-Ken Hunt

CZECHOSLOVAKIA

MULTI-MEDIA SPECTACLE ON TOUR. One of Czechoslovakia's more spectacular acts is Transmusic Company, an ensemble of electronic musicians specializing in performances that integrate visual and musical elements. Led by Milan Adamciak, the outfit consists of Martin Burlas, Peter Zagar, World View correspondent Peter Machajdik, and assorted dancers, mimes, painters, sculptors, and other other artists. Recent performances include appearances at the Slovak Week Festival

functional society. What I'm really interested in is the psychology of the way people perceive the world. TV evangelism provided a starting point because it struck me that there is a large segment of society that wants this devolution, this watering-down of its religious ideas. From there, I went on to people who have serious mental illnesses. I'm fascinated by the way the insane build up a picture of the world based on whatever information they get and assemble it in a completely unique way. It's like putting a jigsaw puzzle together so that all the pieces fit but it comes out looking like something entirely different than the manufacturer intended."

An earlier, eponymous, self-pressed EP featured "Born with Monkey Asses," which incorporated the voice of a paranoid schizophrenic babbling about, says Griffin, "how all the doctors in the institution are having sex with the laboratory animals and how, in order to cover up their misdeeds, they graft human asses onto the animal babies so that no one can tell they're animals." *Hell* includes "Spaceman," a talking blues for UFOlogists set to Novocaine jazz, "Truth is Out of Style," a hip-hop shuffle whose hilarious lyrics, delivered in an adenoidal yawp halfway between Jerry Lewis and the Beastie Boys, lampoon new age acolyte Shirley Maclaine, and "I'm Going Straight to Heaven," inspired by a streetcorner preacher who carries a ventriloquist's dummy and spouts staticky, distorted screeds through a toy microphone.

In recording "Heaven," Griffin processed his voice to emulate the Bible better's fuzz-choked harangues. Live, he often raps through an Alesis Quadraverb and a Chandler rack-mount guitar overdrive unit to "add menace to my voice." "There are a lot of different ways to get an aggres-



in Regensburg, Germany, the Bratislava Computer Art Festival, and People to People, a festival jointly organized by Prague's Society for New Music and France's *Est ou Est*. Burlas and Machajdik also plan to present their most recent works at a festival of Eastern European electronic music and computer art, scheduled to take place during September in Varese, Italy.

-Peter Machajdik

GREAT BRITAIN

RETURN OF PIANO 40. Res-

Piano 40 last staged in 1982, Howard Riley convened an all-star piano quartet for a British tour last January and February. Joining Riley were the veteran American jazz pianist Andrew Hill, East German-born keyboardist Ioachim Kuhn, and Jason

urrecting a project titled

Rebello. Each pianist played solo; there were no ensemble pieces. The tour was sponsored by the Contemporary Music Network of the British Arts Council.

-Ken Hunt

STUDIO ACTION. Ed Germano of the Hit Factory in New York won his legal battle to apply the name to London's CBS studio, which he recently acquired. He had been opposed by the production team Stock, Aitken, and Waterman, who claimed that their PWL studio was widely known as "the hit factory."... One of London's busiest studios, Master Rock, has closed

sive vocal sound," he notes. "One of them is just by having a great voice, like Chuck D of Public Enemy. If you have a wimpy white voice like mine, then you have to use electronics. What I do is take the Chandler overdrive unit and run it through a stereo flange. Also, I find that a Quadraverb setting with good heavy compression and a stereo spread helps a lot."

All backing tracks are on DAT. Samples are triggered by Griffin from an Ensoniq EPS keyboard, and turntables are played live by Rollins. "I view Zero as an instrumental soloist," says Griffin. "When I write the tunes, I envision four bars where I want him to do something, and I leave what he's going to do in that space up to him."

Monkeys with grafted buttocks notwithstanding, the strangest tale told by Griffin is the one he tells about the band's next record. It will be, he insists, a *fusion* album. Sort of. "I want to meld this cyber-rap thing with the music I listen to when I'm at home: Miles Davis, Tower Of Power, old Weather Report albums like *Sweetnighter*."

Griffin, whose first instrument is the trumpet, studied piano and theory at Kentucky's Morehead State, where he earned a degree in music. "My background is in theory," he stresses, "so I tend to think in terms of voice leadings. Of course, what I'm doing now is largely sampling and sequencing. For the next album, I have this intense desire to use oddball jazz chords and weird substitutions in a hip-hop context. Josef Zawinul I'm not, but I know a lot of good musicians and I know that together we can come up with an album that might approach the fusion of the early '70s, back when they had that edge that just isn't there anymore."

-Mark Dery

despite months of advanced bookings. High-interest loan repayments on the mixing desk—one of only two built under **Rupert Neve**'s supervision—left the company with debts of around \$3 million... The U.K.'s first studio designed specifically for new age recording opened last November. The New Age Production Suite is based around an Akai S1000 sampler, C-Lab software, and an appropriately mellow environment. Sessions can be booked by calling (from the States) 011-4481-808-9283.

-Mark Jenkins



QSOUND

THREE INTO TWO DOES GO

n an age when leaps in digital signal processing, recording media, and computer technology occur with blinding frequency, it's rather surprising that the way we listen to music—via a couple of speakers—has remained largely unchanged for the past 25 years. Stereo is nice, mind you, but not even the finest set of speakers is capable of delivering the detailed spatial resolution that the human ear is capable of discerning—until now.

Several companies have been working on systems designed to produce a three-dimensional spatial effect from two speakers. One of these systems, Archer Communications' QSound, accomplishes this via computer-controlled digital processing. Employing 15 DSP chips and a computer executing 15,000,000 instructions per second, the system encodes sound using a proprietary algorithm that alters the phase and amplitude of specific frequencies. The type of processing performed varies according to the frequency components of the sound and where in the spatial image the sound is to be placed. Good news for consumers: No additional stereo equipment—speakers, decoders, and so on—is needed in order to hear



the QSound effect. It is most noticeable when the listener is positioned in the "sweet spot" precisely between the two speakers, but you can hear enhanced stereo imaging from nearly any location in the room.

QSound was used on Madonna's best-of release, *The Immaculate Collection*. Madonna's production team—Shep Pettibone and Goh Hotoda—initially found the technology disconcerting. "When Shep and I began using Q," say Hotoda, "we realized we had to change our way of hearing. With ordinary stereo mixing, you're concerned with sound from the right, left, and center. With Q, you're putting sounds in different placement, like the numbers on the clock." The present system only supports static placement, but future plans include dynamic imaging and user-programmable ranges and horizon lines.

"In recording, I feel that Q is most effective when sounds are designed for it," Hotoda continues. On Freddy Jackson's latest single, "Do Me Again," Hotoda tailored the rhythm track to bring out the essence of QSound. "I think it would work particularly well with new age music and the recording of acoustic instruments," he adds.

Although recordings processed with QSound are likely to become more common in the future, at present there are only three systems available in the U.S., so access is limited. (The system is licensed to users, rather than sold.) You can hear QSound on Sting's *The Soul Cages*; plans are in the works to use the system on recordings by Janet Jackson, Bon Jovi, and Paula Abdul. And those of you who are kids at heart will be thrilled to learn that Nintendo has optioned the use of QSound for their video games. Imagine: Now you can have things blow up all around you, rather than just in your face.

Although some kinks still need to be ironed out—for example, QSound engineers are still searching for the optimum A/D and D/A converters—QSound will most likely succeed where the four-speaker "quadraphonic" system of the early 1970's failed. And as Hodota admits, "It may well change the way recording producers and engineers hear." We'll be listening too. —Robert Baranello

Just as with standard stereo, you'll get the most out of QSound if you're sitting in the "sweet spot." The speakers should be placed at least three feet in from the side walls, and shouldn't be angled inward more than 15 degrees. The listener should sit back at least half the distance between the speakers. Walkman owners need not apply: The process doesn't work through headphones.

UNITED STATES

CAREER UPDATE. The latest version of Yes, with Rick Wakeman and Tony Kaye sharing the keyboard duties, launches its U.S. tour in April. U.K. dates follow in June or July. (Thanks to Tiz Hay and the Yes Music Circle for keeping us posted.) . . . L.A. studio whiz Greg Phillinganes is handling keyboard parts on the current tour by guitar legend Eric Clapton. . . . Bruce Homsby makes a guest appearance on the upcoming *Trios* album by bassist Rob Wasserman. . . . Look for a quartet album by jazz piano legend-in-the-making Marcus Roberts in or around August. . . . Faith No More releases their next album this fall, with Roddy Bottum again at the keyboards. . . . After working solo throughout most of his career, Bob James is now part of a

COMPLEX INTERACTIONS

CHARLES COHEN'S MUSIC FOR DANCE AND THEATER



harles Cohen lives outside the law—the law of the marketplace, that is. In a market economy, that which sells, be it pain relievers, political programs, or pop songs, is good, and that which sells most is best. Cohen hasn't sold much of anything lately, certainly not records. "I've been totally irresponsible,

and I have no career," asserts the 45-year-old synthesist, who lives a life of "genteel poverty" in a woodsy hamlet near Philadelphia. "I've never really grown up, but unlike most adults, I can still play."

On Music for Dance and Theater [Generations Unlimited, Box 189, Riverton, NJ 08077], a cassette compilation of works spanning 1976 through 1988, Cohen does just that, turning handsprings on a high wire stretched between adulthood and childhood, superego and id. "Water," excerpted from the score for a mixed media work called Landing on the Blue Plane, reverberates with submarine crepitations and dreamy legato synth lines that twine and twist around each other like kelp fronds tossed by lazy currents. In "Blue Krishna," from a "visual poem" called Living Room at the Bottom of the Lake, Cohen traces erotic drawings in the air with a squiggling, Indian-sounding flute patch while tablas gulp and a fizzing synth impersonates a tambura. "The Street," from The Unexpected, a dance/theater piece, uses a dark, doomy, sequenced bass line, the swishing, splashing cymbals and hi-hat of a Roland Drumatix, barking dogs, and what sounds like the rhythmic tramp of heavy boots to conjure unsettling visions of secret police and hapless neighbors who vanish into night and fog.

A self-taught player, Cohen discovered electronic music while studying biology at New Mexico State University in 1964. "I was doing sound for a theater piece and rummaging through the music department library," he recalls, "and I came across *Poème électronique* by Edgard Varèse. It was late at night and I was alone in the music building, listening on head-



Against a backdrop of Buchla gear—Thunder at upper left, 200 series modular system below—Charles Cohen ponders the nature/music interface.

phones, and it blew my mind. The second mind-blower was hearing Morton Subotnick's *Silver Apples of the Moon* for the first time, which was also the first time I heard a Buchla synth. I just loved those sounds."

Those first stirrings marked the beginning of Cohen's infatuation with Don Buchla's highly idiosyncratic instruments. Now, 27 years later, the composer's setup consists entirely of Buchla synthesizers, none of which has a conventional keyboard: a Buchla 200 and the Music Easel, both modular analog systems; the Buchla 700, a digital integrated instrument; and the Buchla Thunder, a programmable MIDI controller whose 25 touchpads are arranged, not coincidentally, in the shape of the thunderbird of North American Indian lore.

"I like the unique way of physically gesturing you have with Buchla instruments," explains Cohen. "With his synthesizers, you're thinking sonically, almost sculpturally. And he has all these random functions built in, which give his machines a lifelike quality. I like complex interactions."

Of course, the ultimate in complex, random functions is nature itself, which Cohen has ample opportunity to observe up close in the rural area around his home. "The best electronic music concert I ever heard was a huge flock of crows sitting in a tree," he reflects. "I was sitting there, listening to these birds going back and forth, thinking, 'God, if I could just do *that*, get the timing, the energy, the humor, the surprise—everything.'" —Mark Dery real live band. Known as Fourplay, the group includes **Nathan East**, **Harvey Mason**, and **Lee Ritenour**-studio legends all. Their debut album is due out on Warner Bros. this summer. ... Some of the best jazz piano reissues are happening far from U.S. shores. Recently, for example, the first three **Richie Beirach** ECM albums were released in Japan. And The Real Ambassadors, an historic musical composed for Louis Armstrong by Dave Brubeck, is now available on the French Columbia label, along with three previously unissued Brubeck cuts. C'est la vie, American fans.

NEW VISTAS FOR NEW AGE.

The third annual International New Age Music Conference is scheduled for Apr. 24-27 in Santa Monica, California. Along with seminars on healing effects of music and other traditional topics, this year's conference will feature presentations by business consultants, software developers, hardware manufacturers, and other mainstream industry support types. Highlights include a presentation on computer technology and MIDI by Marc Mann, a talk on alternative tunings by Jonathan Glasier of the Interval Foundation, and an extensive presentation on new age music in Great Britain. Admission is \$295 by pre-registration, or \$345 at the door. A concert discount of \$25 is available to registered delegates. For more details, call the International New Age Music Conference at (213) 935-7774.

ELECTROACOUSTIC HISTORY. Curtis Roads of Computer Music Journal and Bruno Spoerri of the

Looking deeper into the mysteries of Hilt (L to R): Skinny Puppy bandmates Dwayne Goettel (with mask) and Cevin Key, Dave Ogilvie, and Al Nelson.

tempo, its hardcore drumming, corrosive guitar, and half-growled, half-bawled vocals the perfect soundtrack to footage of a drag racer flipping end over end, engulfed in flames and oily smoke. "Come Alive" is a somnambulant blues for organ, squalling overdriven guitar, and plaintive vocals that carom off the walls of an endless corridor leading from here to nowhere. "Jah Mon Rasta" is bruitist dub, its

reverberating drums, slithering synth bass, and whooshing, roaring hubbub of babbling voices and half-heard noises locating it somewhere between the avant-reggae of Adrian Sherwood and John Cage's celebration of chaos, *HPSCHD*. And "Squeltch" compresses an entire day's worth of banal conversation, musical fragments, and TV viewing into a four-minute cube of grainy, aliased samples and jittery, jouncing percussion loops.

Hilt's roll call includes former Flu vocalist/guitarist Alan Nelson, Skinny Puppy drummer/keyboardist Cevin Key, second keyboardist Dwayne Goettel, vocalist Nivek Ogre, appearing here under his given name, David Ogilvie, and a host of guest musicians, among them vocalist Betsy Martin and guitarist Mark Shaffer, both of Caterwaul.

In addition to sharing songwriting and performing credits on *Call* the Ambulance, Key produced and engineered the album. "What we did, for the most part, was sync things up to tape with MIDI, and then lay down about eight tracks of guitar, keyboards, vocals, and so on," he relates. "We used an Atari with the Steinberg Pro-24, Version 3, as the main sequencer, driving everything. With the [Ensoniq] ESQ, which was our controller keyboard, we used a random patch generator program, which is brilliant. You can create an entire bank of the craziest sounds in about ten minutes. You give the machine a few ba-



CEVIN KEY

THE BUZZ-SAW AESTHETIC OF HILT

ith the patient rendered unconscious by electroconvulsive shocks, a surgical tool shaped like an ice pick was poked through an eye socket. Twisting the instrument, the surgeon destroyed part of the frontal lobes, cutting, according to the originator of the operation, "worry, phobias, and delusions out of the brain."

That, in the late '40s and early '50s, was a prefontal lobotomy. *Call the Ambulance Before I Hurt Myself* [Nettwerk, Canadian import], in 1991, is the first full-length release by Hilt, a Skinny Puppy spinoff whose songs amount to musical psychosurgery, gouging holes in the listener's gray matter.

Call the Ambulance weaves frayed shreds of industrial disco, grunge metal, hardcore, and *musique concrète* into the piebald quilt that has been called cyberpunk. "Hilter," the record's first cut, is a foreboding aural landscape swept by white noise dustdevils and haunted by the blips and fizzes of a Roland analog drum machine. "Get Stuck" drops wah-wah guitar, swooning strings, fuzzy vocals, and moaning, whispering synths onto trashcan-lid snares, ticking hi-hats, and metallic clinks and clanks. "Back to Insanity" hurtles along at a tachycardian Swiss Center for Computer Music have joined forces to found a society dedicating to recording the history of electroacoustic music, a discipline they characterize as "only fragmentarily documented. Many instruments have been destroyed, many techniques and ideas lost.... We believe a society should be formed whose purpose it is to provide a forum for the dissemination of information and to increase general awareness about the heritage of electroacoustic music." If you're interested in participating in this endeavor, or simply



in sending in suggestions on how it might be structured, contact Roads at *CMJ*, The MIT Press, E39-346, 55 Hayward St., Cambridge,

sic parameters—'Okay, I want this patch to sound a little bit like strings and a little bit like brass'—and it will give you as many variations on that as you want. It gets totally nutty by about the third mutation, which is the point at which most groups go ugh and we go yes!

"Most of our sampling—and nearly 100 percent of our sounds were sampled, except for the guitar stuff, which we blended with samples—was done on an Akai S900. And we used the cheesiest drum machines we could find. Some of my favorite drum machines are the Roland TR-606 and -808. Those machines bring me back to the thing I've liked all along, which is the cheesiness, the coldness, the general feel of electronic music. For bass synth, we used samples of Sequential Circuits' Prophet-5, which can't be replaced, and the Minimoog and the Multimoog. The old Minimoogs have the beefiest bottom end, with those three oscillators, and even though the Multimoog has only two, it's one of the greatest noisemakers, with all those noise generators. Also, its incredible modulation section and that screen-type pitch ribbon allow you to do these great, auitar-like solos."

It's hardly happenstance that *Call the Ambulance* is a powerfully evocative, almost cinematic record. Key is keenly interested in film: He cites *Road Warrior*, *Blade Runner*, and the movies of David Cronenberg as enduring influences, and points out that Skinny Puppy songs have incorporated samples from *The Legend of Hell House* and *The Exorcist*, while Hilt's latest includes dialog from *Children Shouldn't Play with Dead Things* and a blast on a seashell trumpet from *Beneath the Planet of the Apes*. Finally, the subterranean rumblings, radiator knocks, and hissing white noise in the soundtrack to David Lynch's *Eraserhead* left a stamp on Key's musical aesthetic that can be read to this day.

"Conceptually, I've been influenced by surrealist and horror films," he confirms, "and a lot of our sounds come from those sources as well. We put all these tidbits together and make up our own little movies." —Mark Dery MA 02142, or Spoerri at the Swiss Center for Computer Music, Sommerau, CH-8613 Oetwil am See, Switzerland. Spoerri can also be reached via his PAN file name BSPOERRI. CLIBURN HIGH-

LIGHTS GILMORE FEST. A rare solo recital by Van Cliburn caps this year's Irving S. Gilmore International Keyboard Festival, scheduled for Apr. 28-May 5 in Kalamazoo, Michigan. Performances will also be given by Claudio Arrau, Alicia de Larrocha, Chick Corea, a double bill of Billy Taylor and Ramsey Lewis, and a triple bill featuring Marian McPartland, George Shearing, and Steve Allen. In addition, a number of respected teachers will hold master classes, nineteenth-century pianos from the collection of Edmund M. Fredrick will be displayed, Malcolm Bilson will lecture and perform the complete sonatas of Mozart on the fortepiano, and Leon Fleisher will conduct a performance of the Kalamazoo Symphony Orchestra with a designated Gilmore Artist as soloist. Festival package tickets are available at \$80 per adult and \$72 per senior citizen or student; admission to the Cliburn concert alone ranges from \$10 to \$50. To order tickets, call (800) 347-4266 (if you prefer, 34-PIANO) or (616) 342-1166, or write the Irving S. Gilmore International Keyboard Festival Offices, Kalamazoo Center, 100 W. Michigan Ave., Kalamazoo, MI 49007.



In doing your part for what's left of our world, sometimes you have to move one step—or one page—at a time. It might not seem like much at first, but when those steps-or pages-begin to multiply, that adds up to a lot of grateful trees. So this month, we salute Akai, who won the hearts of forests throughout Japan and elsewhere when they decided to start using recycled paper for their manuals. According to Steve Howell of Akai's U.K. office, all of the DD1000, DL1000, S1100, and Mac editing software manuals put out by the company are being printed on recycled paper, and plans are being made to do the same on all their other published material. Ken Kondo, who represents Akai's EMI division in the U.S., explains that the cost of obtaining new paper products in Japan makes this policy economically sensible too. "The Japanese are big consumers of wood products," he notes. "Our houses are made of wood. Our chopsticks are made of wood. Consumption of computer paper has increased tremendously. So if we could save on use of wood-derived materials, we would naturally save money. In that sense, we have to recycle." They don't stop there, though. Kondo points out that saving energy is the rule in practically all aspects of office routine in Akai's Kawasaki home office. "Because air pollution is very bad in that area, we've been using electric cars for a long time to carry products from the factory to the warehouse. We always turn out the lights when we're not using the restroom. And we even have elevators that won't run unless a certain number of people are on board." Nice to see Akai on board here at Earthwatch too.

The Ultimate Music Machine!

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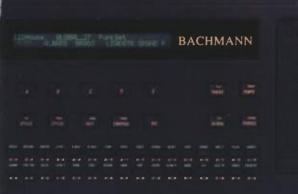


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BY MICHAEL MARANS

OF SPINAL

verything *looked* the same: Miles and miles of synth manufacturers, software developers, and accessory distributors; red- and blue-badged attendees milling about in hotel lobbies; old friends and acquaintances indulging in their yearly embraces. But something was very different. Our country was at war.

NAMM has traditionally been a party: after-hours soirees abound, the music flows freely, and a great deal of the business of buying and selling musical instruments—the real reason NAMM is held—is conducted in hotel lounges. This year, the lounges were bustling as usual, but the wide-screen TVs were tuned not to football games, but to CNN's coverage of the war. Conversations frequently swayed off course as the attention of one participant or another was diverted by the graphic images of Scud missles, troops, and assorted bemedalled generals that loomed incessantly in the background.

But as all-pervasive as the concern over the war was (and still is as of this writing), most people had the feeling that the show must go on. (Those who were there, anyway; many of the overseas personnel of foreign manufacturers were not in attendance, the result of orders from their corporate headquarters to eschew air travel.) So, in the tradition of past shows the Fernand L. Petiot marching band

dition of past shows, the Fernand L. Petiot marching band kicked off the proceedings, the rock stars (and appropriately bedecked hopefuls) rubbed elbows with executives in three-piece suits, and makers of pianos, synths, guitars, drums, tubas, and piccolos once again turned the Anaheim convention center into the world's biggest—and noisiest—music store.

In fact, this NAMM was the largest ever, with over 700 exhibitors hawking their wares to a reported 30,000+ attendees. Due to the sheer volume of gear that was on display, we have to divide our coverage of the show into two

parts. If you don't see what you're looking for this time around, be sure to tune in next month.

MIDI SOUND BOXES, BIG & LITTLE

Boy. Just when you get things all figured out . . . Wham! You're thrown a curve ball that leaves you swinging in the breeze. In this case, the pitch was delivered by **Roland**, whose new JD-800 (\$2,895) synth defies a convention adhered to by virtually every synth manufactured in the last five years: Keep the number of front-panel knobs and sliders to

World Radio History

the bare minimum—after all, knobs cost money. Well, you won't find any knobs *per* se on the JD-800, but you will find a host of sliders—59 in all—each one dedicated to a single, specific function. Talk about retro! (Talk about *happenin'*.) The upshot is that you can access virtually all of the synth's parameters in real time, and the sliders transmit sys-ex data, so you can record their movements into a sequencer. Of course, sliders don't make the machine—that requires a well-designed synth engine. Here too, the JD-800 is no slouch, offering 108 16-bit waveforms in ROM, selectable low–, high–, and bandpass filters (with resonance), four-way split/layering, six-way multitimbral operation, and built-in effects. How's it sound, you ask? If the preliminary patches we heard are any indication—darn good; the timbres ran the gamut from thick analog to crisp digital.



Of course, Roland never limits themselves to debuting just one new synth per show. Also on

hand was the JX-1 performance synthesizer (\$895), a compact, entry-level instrument featuring 64 preset sounds, and the S-750 sampler (\$4,995), a scaled-down (and thus less expensive) version of the S-770. In case you were wondering, the corner-cutting was performed in the hardware area—for example, the S-750 doesn't have a built-in hard disk—but it offers the same sound quality as its big brother. While we're on the subject: The new operating system software for the S-770, version 2.0, was being demonstrated. The update adds (among other things) a host of digital processing functions (including time compression/expansion, digital filtering, and sample-rate conversion), more flexible output routing options, and enhanced file management utilities.

If you're looking for a compact, workstation-style device, check out Roland's Studio M (\$2,695), which offers a 16-track sequencer, RS-PCM sounds, and eight hardware faders (for controlling mix, pan, and effects) in a stand-alone, keyboardless module.

Other features include 30note polyphony, eight-part multitimbral operation, built-in disk drive, and

When it comes to retro mania, nobody's more retro (and perhaps more mania-c) than Roland. Their new JD-800 synth brings back the glory days of synths that offered real-time timbre control; in this case, the job is performed by 59—count 'em—sliders.



EYBOARDS

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RETROMANIA

"smart" tape sync.

The **Rhodes** division of Roland followed the JD-800's retro theme and introduced the VK-1000 Drawbar Keyboard (\$3,295). The new keyboard produces a variety of organ sounds that can be edited in real time via 13 drawbars. Other features include three-part multitimbral operation and built-in effects (including, naturally, rotary speaker simulation).

You say you like the idea of drawbars? Well, you're going to love this: Hammond announced two new instruments designed in the tradition of the granddaddy of all drawbar organs, the B-3. The first, the XB-2 (\$1,895), is a single-manual version of the B3 that reportedly features the same sound as its classic ancestor. It even includes the standard 11-pin output for connecting the instrument to a Leslie speaker. As you may have guessed, it also has some new features, including MIDI, an LCD, a velocitysensing keyboard, and pitch and mod wheels. A full-sized, dual-manual version, the XB-3 (price not available) is also planned. Word has it that it will be a faithful (albeit digital) reissue of the original instrument. The news makes our hearts happy, but our backs are already aching at the prospect of moving from gig to gig.

Those of you who were holding out for the rack ver-

sion of Korg's Wavestation need wait no longer. The new unit, called the Wavestation A/D (\$2,495), offers the same set of ingredients that helped the keyboard version garner the 1990 "Hardware Innovation of the Year" award in Keyboard's Readers Poll. Of course, it also has a few extra goodies, such as additional ROM waves, stereo analog inputs, and new effects algorithms-vocoder and compressor/limiter-EQgate, to be exact. The analog inputs allow external audio signals to be used as waves by the synth engine and processed through the effects section. And if you shied away from the Wavestation because you thought it was strictly for making weird synth textures, check out Korg's new piano and drum ROM cards.

Got some cash burning a hole in your pocket? E-mu Systems has just the instrument for you, the Elllx (price to be determined), an expander for the Emulator Three. Fully compatible with EllI sound files, the EllIx comes standard with 8Mb of RAM (expandable to 32Mb), and offers eight polyphonic outputs, 32 dynamic digital filters with resonance, 18-bit DACs, sigma/delta analog-todigital converters with 64-

MIDI DANCING

Keyboardists have always complained about being stuck behind a rack of gear while the guitar player hogged the limelight. Those days may soon be over, thanks to the Soundbeam (price not available), a novel device (previously available only in the UK) from the folks at **Electronic Music Studios.** Here's

how it works: The Soundbeam projects a conical sonar beam; MIDI data is generated when an object—the human body, for example—enters the beam. Breaking the beam at various distances produces notes at different pitches; modulation and pitch-

bend can also be generated. The size of the beam can be adjusted, allowing you to control the device's output with either small movements or sweeping gestures.

So forget about doing your Hanon exercises and start taking dance lessons. After all, the future of MIDI is in your, uh, feet.

times oversampling, a 48kHz sample rate, 10-octave distortionless pitch-shifting, AES/ EBU digital I/O, and audio channels that can be configured as 16 stereo or 24 monophonic voices. The unit is expected to ship in the second half of '91.

Strictly in the cloak-anddagger department: We managed to get a sneak peek at a couple of instruments hidden behind some black drapes in the E-mu demo room. No official word from the company yet as to what goodies lay behind the front panels of these two keyboards, but we can safely say that they're based on E-mu's G and H chips—the same silicon found in the Proteus, the Emax II, and the new EIIIx. Stay tuned to *Keyboard* for late-breaking news.

When is a VHS tape not a VHS tape? When it's a Yamaha QY10 Compact Music Processor (\$399.00). Roughly the size and shape of the aforementioned cassette, the QY10 incorporates an eighttrack/eight-song sequencer, a 28-note polyphonic tone generator, a drum machine, and a keyboard pad-all designed to let you compose music anytime, anywhere. The eight-way multitimbral device contains an assortment of preset tones, including pianos, bass, brass, guitar, and strings, as well as 26 sampled drum sounds. Songs can be programmed using either the



The new Procussion drum module from E-mu contains over 1,000 16-bit drum sounds and a host of programming options.

preset patterns (which can be edited) or by entering your own chords. Real-time and step recording modes are supported, and a variety of editing utilities are available.

In the here today, gone tomorrow, and back the next day department: Kurzweil is back on the scene as a division of Young Chang. They were demoing a prototype of their new K2000 keyboard (price not available). The instrument, which sports a decidedly clean, modern look, reportedly is designed with an open architecture that supports sample playback, FM, and analog synthesis engines. What we heard sounded really promising; we'll keep you posted as the machine develops. In the meantime, the company is still touting their 1200-series keyboards and sound modules.

The grand prize for combining company comeback with retro mania goes to Gibson, who took over the ailing Oberheim Systems a while back. Gibson is offering the legendary Matrix 12 synth (for a mere \$6.399.00) and the Matrix 1000 (\$599.00), but the real news is their planned release of the OberM006 (approximately \$1,500 to \$5,000, depending on number of voices). The analog (remember that?) synth offers 12voice polyphony, 12-way multitimbral operation, matrix modulation, and four multi-stage envelopes per voice. But the real news is the unit's filters. Two VCFs per voice are provided; one is the original filter found on Oberheim's classic SEM module, and the other is the famous ladder filter-you know, the one that gave the Minimoog its trademark

sound. Rounding out the package: *lots* of knobs.

And now back to the future: Peavey previewed a few additions to their DPM line, including the DPM SP (\$649), a stand-alone sample-playback module (see photo caption above). If you want to record your own samples, you can hook the DPM SP to the DPM SX sampling expander (\$349); samples can also be loaded via MIDI sample dump. Also new: The DPM 2 (\$1,399), a lower-priced version of the DPM 3. Most of the features of the new keyboard are the same as on the original, but the DPM 2 doesn't have a sequencer or a built-in disk drive.

Hot on the heels of their GB-1 session trainer module, Kawai anPeavey expands their DMP line with the DPM SP sample-playback module. The unit can hold up to 32Mb of 16-bit samples, and features 16-note polyphony, 16-way multitimbral operation, a built-in disk drive, SCSI, four polyphonic outputs, and waveform editing utilities.

nounced the GB-2 (\$349). What's a session trainer, you ask? Simple: a device that contains arrangements of a number of songs in a variety of musical styles. The idea is to improve your chops by playing along. The GB-2 features improved sound quality over its predecessor, the ability to program your own songs, a card slot for additional song programs, and an external audio input. Now go practice!

MIDI TOYS YOU CAN'T LIVE WITHOUT

Those folks at **Roland** have been busy, busy, busy!

First out of the shoot comes the MC-50 Micro Composer (\$895), a dedicated seguencer based on Roland's popular MRC and MRP operating systems. Features include real-time and stepmode recording, eight 16channel tracks, separate rhythm and tempo tracks, event editing, song link, and "smart" tape sync. Next in line: The A-220 MIDI separator, a rack-mount device that separates note information from channel information. Notes can be separated by range (for creating splits) or by individual note number, thus allowing you to assign separate notes on the same MIDI channel to specific sound sources. Also new: The SBX-1000 MIDI cueing box

THE HANDS-DOWN HIT OF THE SHOW

Yo! Homeperson! You say you want to hip-hop around the house, Jack?

Well, all you gotta do is fork over 99 bucks to your local Casio dealer, and you'll be the proud owner of the Rapman—the latest,

greatest, funkiest music-makin' package this side of a turntable and an 808. Yeah, it's plastic. Yeah, it's fluff. But hey, homey, so's Cheese Whiz, and y'all know how popular that stuff is! This thing is way cool!

It's got 30 hot beats, 25 tones, a built-in mini-turntable for making scratch sounds, a couple of built-in sound effects (including the ever-popular orchestra hit), and, of course, a microphone for rappin' into. What's that you say? Your voice is too light and high-pitched for you to be taken seriously as a rapper? Just hit the "voice effector" switch and your friends will swear you're Grand-master MC DJ Fresh Loc. Or, at the very least, his hairy-armed sister.

Okay, don't take our word for it—go try the Rapman yourself. But take extra cash, 'cuz you're gonna want to buy two or three of these babies. The alternative is to share yours, but once you let it out of your hands you're gonna have to beg, plead, and drop to your knees to get it back.



E-mu's new Procussion[™] Maximum Percussion Module doesn't do anything in a small way.

Over 1000 drum and percussion sounds based on 16-bit samples from the Emulator[™] III library flawlessly reproduced by our celebrated G-chip. Each one too big, too hot, too real to be described by words.

So stop reading. And beat a path to your E-mu

every element of your sound by inputs such as velocity, trigger rate, tempo, and more. And to reproduce all your intricate rhythms perfectly, Procussion has a lightningfast MIDI response time.

With unprecedented editing and layering capabilities, you have maximum flexibility to create startling new sounds. Our 32-voice polyphony ensures

dealer to hear Procussion. Since you'll probably have to wait in line, you'll have time to read the rest.



Whether it's rock, hip hop, heavy metal, or Latin percussion, Procussion delivers maximum selection. Organized into 128 drum kits, there are literally hundreds of killer kicks, snares, and toms. And with our multi-channel MIDI capability, you can play up to 16 different kits at the same time.

Of course, great drum parts require more than great samples. You also need the subtle nuances and dynamics that define virtuoso drumming. Exactly where Procussion shines. Extensive real-time modulation and expressive controls, including our remarkable Super-switch[™] software, allow you to control virtually that even truly huge sounds won't reduce you to a 3-piece drum kit.

Since Procussion's from E-mu, we don't have to tell you how easy it is to use. Or that it's made in the U.S.A. So put yourself in front of Procussion. Crank it up. Then brace yourself for maximum impact.



E-mu Systems, Inc. applied magic for the arts

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RETROMANIA

(\$3,495), which provides SMPTE-based synchronization of MIDI events. Features include a 16-track sequencer (compatible with Super-MRC software data), cue sheet utilities, tap tempo functions, and two built-in disk drives.

And then came Boss. another division of Roland, They previewed their BL-1 MIDI bulk librarian (\$275), which can transmit sys-ex bulk dumps and receive them from most instruments that can initiate a dump from their front panels. The unit can store up to 32Kbytes of data internally (in non-volatile memory): optional RAM cards can also be used. Also from Boss, the FC-50 MIDI foot controller (\$199.95), designed for transmitting MIDI program change commands. Jacks are provided for optional footpedals and footswitches, which can be used to generate MIDI controller functions such as volume and sustain. Other MIDI pedal controllers were on display: Digitech had the MC-7 (\$129) and PMC-10 (\$299.95), ART showed the X-

15 Ultrafoot (\$249), and **Rolls** debuted their MIDI pedal controller, the MP80EX (\$99.95). Doncha just love competition?

Oberheim was displaying a couple of new Perf/X units, called the Drummer and the Strummer (\$199 each). The first one can create and play over 1,000 different drum rhythms, but the twist is that these rhythms are generated while you perform your regular keyboard part. Interaction is the name of the game: Play sparse, and the Drummer plays a sparse part; stop playing and the Drummer plays a fill. Naturally, control over a variety of performance parameters is provided. Strummer is used to automatically convert keyboard voicings into "legal" guitar voicings. For added realism, you can program the "strum" rate and direction. Look out, Eddie Van H.

More power in your pocket from the folks at Anatek: Pocket Curve (\$99), which can generate one of 18 graduated velocity curves or six Being stuck on a long

plane ride doesn't mean you can't be creative. All it takes is Yamaha's QY10 composition module, which features an eight-track/eight-song sequencer, a 28-note polyphonic tone generator, a drum machine, and a keyboard pad all in one compact unit. (Inspiration not included.)

fixed velocity values: Pocket Mapper (\$99), which allows you to remap up to 15 MIDI controllers; Pocket Mac (\$69), a one-in by two-out MIDI interface for the Macintosh: and MIDIMatch (\$99), a MIDI-to-XLR line driver (\$99). A bit larger than pocket-sized, but eminently useful nonetheless, is the SMP-16 programmable MIDI/audio patchbay (\$999). The unit features a 16 x 16 MIDI-controlled audio patchbay, a 7 x 8 MIDI patchbay with merging and processing,

a bit-accurate SMPTE reader/generator, and inputs for up to six MIDI controller signals. Also previewed was the SMP-7 MIDI patchbay (\$449), which offers many of the same features as the SMP-16 (less the audio patchbay) and contains a built-in Macintosh MIDI interface.

MIDIman previewed the Syncman Pro (\$599), a singlespace rack-mount module that can read/write SMPTE, convert SMPTE to MTC and DTL, and generate a MIDI event hit list.

NAMMUSIC

What would a NAMM show be without great music? A rarity, that's what. This year's lineup of performers was no exception; great players from all avenues of music were featured on the show floor in intimate demo booths, and after-hours in the hotel ballrooms. The roster of guest appearances read like a *Who's Who* of rock and roll, though for some reason, there were many more guitarists and drummers than keyboardists. Highlights included Tom Coster and Jan Hammer performing at the Korg booth, and members of Spyro Gyra playing for Yamaha. At E-mu's press party, the band D'Cückoo (featured in our Feb. '91 Alternate Controllers column) wowed the audience with their fresh, lively sound. But perhaps the hottest ticket was to the Korg/Marshall-sponsored Spinal Tap concert. All of the original members of the band were onstage performing their inimitable brand of (ahem) rock. Actually the band did have one new **member**: **drum**mer Russ Kunkel. As you may be aware, the band's earlier drummers had a habit of spontaneously combusting. Hey, Russ . . . *Russ*?

As usual, our favorite musical interludes were the ones offered by the various manufacturers' product specialists. Gerry Bassermann—outfitted in full beatnik regalia and reciting bad poetry—brought down the house at E-mu's Club Delphi, ably aided by former *Keyboard* columnist Herb Jimmerson on keyboards and Drastik Plastik's Reek Havok on drums and (would you believe?) coconuts. Eric Persing led a hot, dynamic band, which included such notables as Chester Thompson and Richard Souther, in regular performances at the Roland booth. And once again, the guys from Korg—Jack Hotop, Jordan Rudes, John Lehmkuhl, and Ben Dowling—knocked us out with their amazing displays of keyboard virtuosity. We can hardly wait 'til next year.

RETROMANIA

Other features include tempo map creation, tap tempo, lock to video frame redraw, jam sync, flywheeling, auto-punch, MIDI merge, and sys-ex functions. Enough, already!

While we're talking sync: IL Cooper added a few new products to their line, including the PPS-2 synchronizer (\$169.95), the Sync-Link MIDI interface/synchronizer (\$199.50), and the CS-1 control station (\$599). The PPS-2-an updated version of the PPS-1—features SMPTE read/write and conversion to MTC and DTL, jam sync, flywheeling, and "smart" sync read/write. The Sync-Link performs all of the same functions and includes a dual-port Macintosh MIDI interface. The CS-1 is a hardware control interface designed for use with hard disk recording systems, sequencers, and multimedia software.

Niche had their Mix Automation Station (\$599) on display at the booth of their distributor, the Russ Jones Marketing Group. Designed for use as a controller for their Audio Control Module as well

as for a variety of sequencers and digital workstations, the Automation Station provides data entry and transport control via its 15 hardware faders, soft keys, and jog/shuttle wheel. Among its features: absolute, relative, and immediate fader modes, nested groups, and programmable fader/mute groups. Russ lones also announced that they have taken over the distribution of Musonix's Cue Cube and MIDI Beacon. The good news is that Jones reports that the prices of these two products will be lowered.

From Audio Architecture comes the Function Junction 8 x 8 and Function Junction Plus 16 x 16 MIDI patchbay/processors (prices not available). The units allow unlimited rout-

World Radio History

ing and merging of all inputs and outputs, plus processing utilities that include data filtering, delay, transposition, cross-fading/switching, and controller remapping. Layered/overlapping zones are supported, and zones can be shared/split between individual keyboards/ controllers. The basic Function Junction can be expanded to a 16 x 64 system with the addition of the Plus 16.

Those IBM-based sequencing masters at **Voyetra** have introduced a whole new line of MIDI interfaces that abandon the traditional MPU-401style architecture. Instead, the interfaces are based on "VAPI," Voyetra's new universal MIDI protocol. The V-22 interfaces feature multiple ports, and the V-24s models offer multiple ports and SMPTE read/write capability. V-22 (2-in x 2-out), \$129.95.

Ing and merging of all inputs and outputs, plus pro-

> V-22m (2-in x 2-out, MPUcompatible), \$219.95. SMPTE upgrade for V-22, \$199.95. V-24s (2-in x 4-out, SMPTE), \$299.95. V-24sm (2-in x 4out, SMPTE, MPU-compatible), \$389.95.

> The folks at Lone Wolf—innovators in the world of MIDI local area networks (LANs)—have introduced two new devices. The first, called the MediaLink Multimedia Communications Controller, is a chip that allows simultaneous transmission of a variety of data formats. This would enable incompatible systems such as CD players, synths, tape decks, VCRs, and so on to be linked by a common standard. The second product,

ALESIS DOES IT AGAIN

Alesis seems hell-bent on bringing high-tech to the masses; their products manage to hit price points that bring marketing execs at rival manufacturers to their knees. And their forthcoming product—the A-DAT digital recorder—threatens not only to keep the courts crammed with manufacturers seeking Chapter 11 relief, but to (dare we say) revolutionize the recording industry.

The sleek, medium-sized A-DAT can record eight tracks of digital audio on standard S-VHS video tapes. So far, so good. You can link up to 16 A-DAT modules together—that's 128 tracks. So far, even better. You can synchronize modules with single-sample accuracy (48kHz sample rate), which allows you to do full editing/bouncing (for example, drop the third verse vocal over the second verse bass part and the first verse drums). Even varispeed is supported. And SMPTE. So far, **really** great. But the thing the A-DAT does best of all is hit an unbelievable price point: \$3,999 per module. No, we're not kidding.

Multiple A-DATs are linked using the optional BRC (for big remote control; the LRC—little remote control—comes standard). The BRC will set you back about \$2,000, but that still

> keeps the price of a 16-track digital recording setup at about \$10,000. Pro studios could configure a 32-track system for \$18,000. You don't have to be a math wizard to figure out that 48-, 60-, or 72-track A-DAT systems would still be ridiculously low-priced when compared to the current crop of quarter-million dollar recorders now in use.

> The A-DAT is scheduled for release at the end of the year; we'll be using the time to save our pennies. Hey, Dominic, about that raise....

dubbed MediaLink Network Management Software, provides a graphic interface for programming the MediaLink Multimedia Network System. Contact Lone Wolf for details on price and availability.

For those of you with extralarge setups, Opcode previewed the Studio V MIDI interface (price not available), which provides support for 256 MIDI channels. And Mark of the Unicorn's MIDI Time Piece is now available for the IBM (\$595).

BEAT BOXES

What single-space rackmount unit has over 1,000 16bit drum sounds and enough edit parameters to keep even a iaded programmer happy? The new Procussion drum module (\$995) from E-mu Systems, of course. Featuring samples culled from the Emulator Three library, the Procussion offers 64 ROM and 64 RAM kits, each with 24 independent zones. Zones can overlap, allowing up to eight samples to be layered on a single key. Extensive modulation routing provides real time control over a variety of parameters. Other features include 16-way multitimbral operation, 32-voice polyphony, and global commands that allow the unit to be easily set up for use with

keyboards, drum machines, electronic drum kits, and most commercially available percussion controllers.

Alesis was displaying the SR-16 drum machine (\$399), a successor to their popular HR series. The unit features 233 sounds (many in stereo and/or with ambience), 16-voice polyphony, 100 preset and 100 user-programmable patterns, and something the company calls dynamic articulation, which affords velocity control over a drum's timbre. Also new: the D4 drum module, a single-space rack-mount unit that contains over 400 16bit sounds. Drummers will be happy to know that the D4 has six audio input triggers, and can function as a trigger-to-MIDI interface. A special trigger velocity curve is also implemented that's designed to let you replace sounds on multitrack tape with sounds from the D4.

Two new products from Yamaha were on display: The RY30 programmable rhythm synthesizer (\$595), and the DTS70 drum trigger system (\$945). The RY30 is a drum machine that affords real-time synth-style parameter control over filter, pitch, envelope, velocity, and timing. The 2Mb of 16-bit sound data is stored in battery-backed RAM, allowing you to access the entire voice memory (96 internal, 36 card) at any given time. Round-

IF YOU THOUGHT YOU WERE CONFUSED BEFORE . .

Did you know that MIDI sequencers sample? And that they can

suffer from aliasing distortion? That's the word from **Covox**, whose newsletter contained an assortment of equally hilarious misinformation. Another eye-opener: MIDI allows you to "create and play music as never before—even if you're not a musician! If you can imagine it, you can play it!" We guess the brainwave-to-MIDI link has arrived.

This one really enlightened us: "Add more MIDI cables and you could play an entire orchestra with one keyboard." Man, oh man. Think of all the money we could have saved if we had just bought more *cables* instead of more *sound modules*.

Thanks, Covox, for clearing things up for us. We can't wait until Zubin Mehta finds out that he'll be able to expand the sound of his orchestra simply by conducting with more batons.

ing out the features: velocitysensitive pads and the ability to trigger patterns from a single MIDI note-on. The DTS70 is a 12-input trigger-to-MIDI interface that offers a variety of programming options, including individual MIDI velocity curves for each note and the ability to stack, crossfade, and alternate up to four notes per input. If you're looking for triggers to drive the DTS70, you might want to check out Fishman's new Purple Microdot (price not available), which reportedly has a much hotter "spike" and a faster rise time than conventional triggers.

If you're tired of doing your own drum programming, take a look at Roland's new CR-80 Human Rhythm Player, a drum unit with pre-programmed rhythms, high-quality sound, and the ability to create real-time variations. The CR-80's sound source is the same one used in the company's successful R-series drum machines; sounds range from jazz to rock to TR-808 to sound effects. Rhythm styles include jazz, rock, R & B, and Latin-even lambada, for those of you into doing a little dirty dancin'. In addition to the 36 built-in styles, the unit accepts the TN-SCI-series and MSL-15 music style cards.

And from Simmons, the company that practically invented electronic drums, comes the new SDS2000R (\$2,329), a five-piece electronic drum kit/acoustic drum triggering system. The system features 16-bit samples, built-in

Kurzweil's new K2000 keyboard features open architecture that supports sample playback, FM, and analog synthesis engines.

RETROMANIA

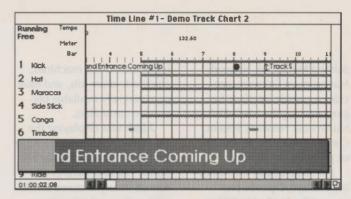
digital reverb, polyphonic voice outputs, and dynamic voice allocation.

MILES AND MILES OF CODE

We didn't witness any amazing breakthroughs in software development at the show, but we did find a slew of updates, upgrades, and adaptations of existing programs. So let's all take a deep breath and see if we can get through the entire list without turning blue.

Dr. T's debuted the Macintosh version of their universal ed/lib software, X-oR (\$399), which offers new features such as expanded librarian utilities, a patch compare function, support for the MOTU MIDI Timepiece, and the ability to load files stored

in Opcode format. They also introduced Intro+, a starter kit for the IBM (\$299) and Mac (\$399) computers that includes a MIDI interface, MIDI cables, sequencing software (Beyond in the Mac version, Prism for the IBM), and notation software (Copyist Apprentice for IBM. Music Writer for Mac). On the educational front, they offered Adventures in Musicland (Macintosh, \$79), a collection of four musical games based on the characters in Alice in Wonderland, and Composer Ouest (Amiga, price not available), which teaches music history through the work of great composers. Dr. T's also announced KCS 3.5 for the Amiga (\$300, \$400 for Level II), which adds music notation and real-time graphic note and controller editing, and Copyist 2.0 for the IBM



Designed for use during recording and mixdown sessions, Opcode's new Track Chart program can generate track charts, time lines, and track overviews of your music.

(\$299), which implements a variety of new features such as VGA and EGA display capability, enhanced mouse support, and improved on-screen fonts and symbols.

Opcode hasn't exactly been lying down on the job either. They announced six new products/updates: OMS (for Open MIDI System) is a software program for the Mac that allows you to graphically describe and "wire" your MIDI system. (Not sold separately.) Galaxy Plus Editors (\$379) integrates the Galaxy universal librarian with Opcode's graphic editors. The software comes complete with editing templates for over 40 synths, including the E-mu Proteus 2 and the Korg Wavestation. Track Chart, a program *Continued on page* 43



What would you do if you lost all your music in the next 30 seconds?

Cry. A lot, probably. But that wouldn't help you remember the subtleties of a great melody. Or bring back the project you're working on under deadline. What a nightmare.

sfo

We have a simple solution to this very real possibility. **DataDisk.** The direct MIDI to disk storage unit that backs up your hard work in an instant push button operation. Connected to the end of your MIDI chain, it stores 800K of Sys Ex data directly to standard 3.5" floppy disks.

And DataDisk is multi-lingual, capable of receiving data from all popular brands of

musical equipment. So why pay \$50 a piece for ROM cards when you can store 1000s of synth patches on a single one-dollar floppy disk? You can even name files, so you're safe, cost-effective *and* organized. Plus, our new *SQ* software lets you use DataDisk as a real time MIDI sequencer so you don't have to lug your computer to gigs.

A power failure or loss of data could turn your musical dreams into bad memories, in just seconds. Protect your time and creativity. Pick up a DataDisk at your Alesis dealer today.



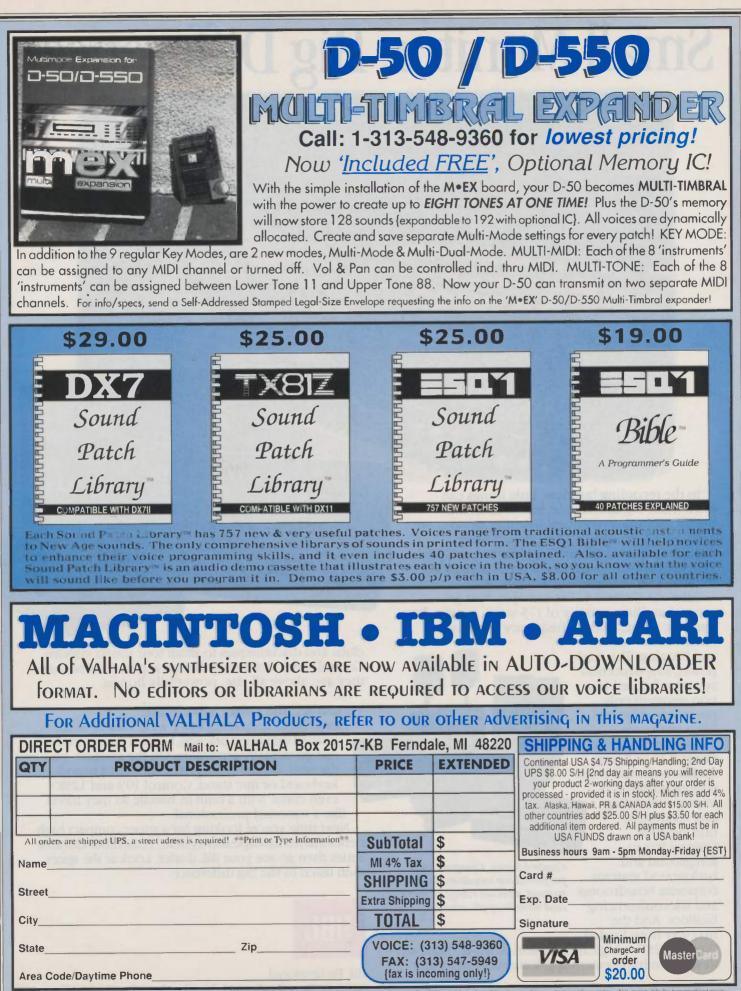
19" Rack mountable. 800K of direct MIDI to disc Sys Ex data storage on 3.5" floppy disks. Real time sequencer. \$449 suggested retail. Slightly higher in Canada.



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Roland	ag II on	S YAM/	AHA
D50, D10, D20, D110, D5, G	R50 SY	77/TG77, SY55/T	G55, SY22/TG33
Top 40 \$40 Digital 40	O. O.	Top 40 Orchestral	\$65. 65.
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RAMS (M256D/M256E) \$5	5.		
KORG		KAW	
M1, M1r, M3r		K1/K1r	
	645.	Top 40 \$40. New Age 40.	\$50. 50.
Orchestral New Age	45. 45.	Orchestral 40. Rock 40.	50. 50.
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{3.5" disk only - 200 prg/100 comb ea.}	340.	DPM3 / DP	
All four volumes on disk \$1	130.	Top 40 Orchestral	\$50. 50. 50.
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For Additional products, refer to out other advertising in this magazine.	For information, very or to check on the 1-313 . The number below is for the number below is for <u>ORDERS ONLY</u> ! When ready along wi Minimum ChargeCard order: \$20 ORDERS ONLY call	oice listings, assistant e status of an order ca 54.8-936 or placing Visa or MasterCa calling, have your card num th the expiration date. 100 Business Hours 9am-5:00pm M-F (E 1: 1-800-648-6434 ext. 50	all: Drd ber (ST)
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Small Monitor. Big Difference.

In the recording business, little things can often make big differences. Studio monitors, highly sophisticated critical listening devices, are certainly no exception. Our Control Series'" compact personal monitoring systems each provide the performance characteristics demanded in today's recording environments.

Take our Control 5th for example. You get power handling capacity of 175 watts, outstanding dynamic range, smooth frequency response

and excellent clarity and imaging. This high power, low distortion system is housed in a non-resonant polypropylene structural foam enclosure.

Today you can find Control 1's in home studios and midi workstations; Control 5's in major recording and teleproduction facilities; Control 10's in foreground and background systems, corporate boardrooms and teleconferencing

facilities. And the



Control Series. Compact high performance monitors designed to meet a broad range of fixed and mobile applications.

two-way horn loaded Control 12SR, a logical extension of the technology, in sound reinforcement applications from supper clubs and discotheques to small tour sound systems. Control Series meets such diverse applications because they are, above all else, powerfully honest.

Versatility, the Other Advantage.

Designed to accommodate a wide variety of specialized mounting brackets, Control Series monitors can go virtually anywhere. On the console, on the wall, on the ceiling, in a rack, on a tripod, keyboard or mic stand. Control 10's and 12SR's even come with a built-in handle so they travel like a seasoned professional.

Next time you're looking for a super compact high performance loudspeaker system, remember Control Series then go see your JBL dealer. Look at the specs, then listen to the big difference.



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RFTROMA

Continued from page 38

designed for use during recording and mixdown sessions, can generate both track charts and time lines or track overviews of vour music. Data can be entered by hand, imported from MIDI files, or loaded directly from Vision and Studio Vision. Max (\$395), the graphic programming environment, is now available through dealers (see the review on page 132). Vision (\$495) and Studio Vision (\$995) have been upgraded to version 1.3, which (among other things) eliminates the 32-MIDI channel limit and adds support for 29.97 non-drop SMPTE format. Opcode also announced that Studio Vision now supports four tracks of digital audio; all that's needed is for Digidesign to finish the reguired hardware.

Passport had a few new

developments of their own: Master Tracks Pro v. 4.5 for the Mac (\$495) adds MIDI Manager support, overdub record mode, loop recording, onscreen faders, and programmable device-name tables to the popular sequencing software. AudioTrax (\$199) combines MIDI sequencing with two tracks of eight-bit audio. The IBM versions of Master Tracks Pro (\$395) and Trax (\$99.95) have been updated for use with Microsoft windows 3.0. Score 3 (\$995) music publishing software for the IBM is an updated version of the original Score program that features expanded memory for accommodating larger scores, enhanced text, improved layout functions, additional editing utilities, new symbols, and multi-staff part extraction. Also available is ScoreInput



Want to practice but don't have a band? Kawai's GB-2 Session Trainer provides the back-up; you just plug in and play along.

(\$199.95), a real-time input utility program designed for use with Score. And finally, version 2.0 of Encore is now available (\$595, upgrade available for a nominal fee to registered Encore owners). New features include an expanded symbol library, improved layout utilities, automatic beaming, and extensive key commands to the popular music composition/notation program.

IBM users will be happy to

know that Vovetra has officially released Sequencer Plus v. 4.0. So many new features have been added that we couldn't possibly list them all here, but you'll find a host of new MIDI, record/playback, SMPTE, timing, tempo, and transform functions. Other developments include dropping Sequencer Plus 1 and 2 from the line and replacing them with Sequencer Plus Junior (\$69.95) and Classic



*Suggested retail price.

RETROMANIA

(\$169.95). As usual, upgrade paths are provided. Way to go, Voyetra.

Steinberg/Jones previewed v. 1.8 of Cubase for the Macintosh (price to be determined). They also announced that a Wavestation ed/lib program will be released shortly, and that a Cubase/Sound Tools package is in the works. Steinberg/Jones software is distributed in the US by the Russ Jones Marketing Group.

Thoughtproces-

sors introduced version 2.2 of The Note Processor notation software (\$295) for the IBM, which offers an improved MIDI sequencer, new text input features, enhanced graphic editing, and new fonts. The Canadian company Oktal debuted the Multi Junior MIDI sequencing software, Impact MIDI processor environment,



Korg's Wavestation is now available as a rack-mount. The "A/D" in the device's name refers to the fact that it contains analog inputs for external audio signals. These signals can be used as waves by the synth engine and processed through the effects section.

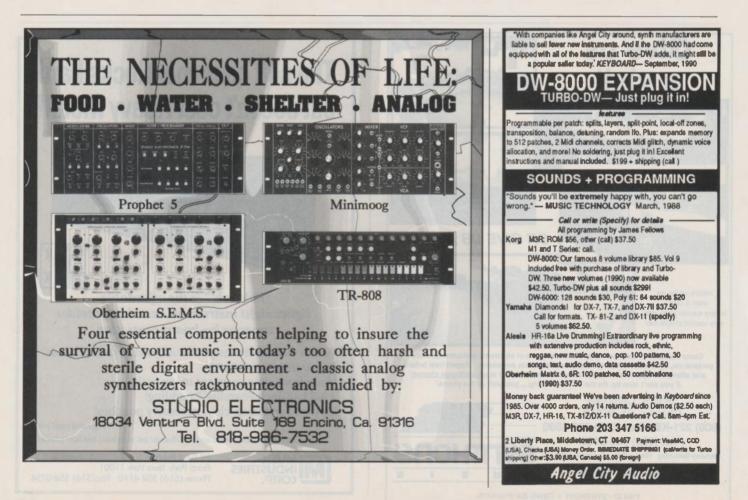
and WS Editor, an editor/librarian package for the Wavestation. Contact Korg Canada for pricing and availability. Mark of the Unicorn was demoing Performer v. 3.6,

C-LAB UPDATE

A short time ago we reported that Alexander Publishing would be taking over distribution of C-Lab products from Digidesign. It turns out that the deal was never finalized, and that Alexander is not authorized to represent the C-Lab line. Here's what's really going on, straight from the mouths of the C-Labians:

- To date, C-Lab has not decided on how their products will be distributed in the US. A decision will be forthcoming.
- There will be no price increase in C-Lab products.
- There will be no additional charge for customer service/support.

C-Lab also announced a joint venture with Atari Computer. The two companies are establishing a program that will provide comprehensive sales and support assistance to 50 key dealers across the country.



f you've ever wished for a fast, easy way to edit, program or manipulate your MIDI equipment - Wish no more! FaderMaster[™] is an extremely powerful yet easy-to-use remote MIDI Command Controller/Programmer/Editor/Mixer for virtually everything that has MIDI!

When we say easy, we mean it! Simply connect a MIDI cable to your keyboard, tone module or digital effects processor (reverb, delay, EO, etc.). and gain access to eight different MIDI parameters at once, and in real time! MIDI-sequencing musicians can use FaderMaster to alleviate MIDI frustration.

Sequencer Mixing Made Easy

Just imagine how much faster and more effectively you'll be able to "mix" the MIDI volume of your sequenced tracks using eight faders at a time. FaderMaster eliminates the aggravation every sequencing musician experiences when using a mouse or keypad to "mix" or edit MIDI volume. If you blow it and need to punch in, FaderMaster's intelligent design permits easy and seamless re-recording of continuous MIDI data. Any combination of tracks and MIDI channels can be grouped onto one fader, allowing them to act as a subgroup.

Create "Human Feel"

Use FaderMaster to delay both MIDI clocks and MIDI note data. Any MIDI note can be assigned to any fader and delayed in real time. For example, use

FaderMaster to delay MIDI drum notes and re-record that data onto a new sequencer track. This clever feature is useful for adding that "human feel" to your sequenced drum tracks.

Double the Power of your Digital Effects Processor

Connect FaderMaster to virtually any MIDI effects processor, and use any or all of the eight faders to control eight different parameters in real time. For example, assign one of the faders to alter reverb time, and another to control delay time, or chorus, pitch change, EQ, or

FINALLY **A simple** way to double the power of your MIDI gear.

any parameter you like. Using a fader to control these functions eliminates the inconvenience of pushing buttons or scrolling through sub pages to get to the parameter you wish to edit. In addition, vou can record this controller/sys-ex information onto your MIDI sequencer for automated effects playback.

Easy Synthesizer Editing

Use FaderMaster to program, edit or manipulate eight of your synthesizer parameters at a time - without the tedium of all those sub-pages! Whether it's quick convenient access to the attack, decay, and filter settings; or simply volume, fine tune or program change commands, FaderMaster brings all this control to your fingertips.

Simplified Programming

We've included over twenty presets for synths from Korg, Kawai, Roland, Emu, Yamaha, Oberheim, Ensoniq and others. We've also included presets for **Digital Effects from** Alesis, ART, Lexicon, DigiTech and Roland. Of course there's no problem defining setups of your own CCCCC for all kinds of MIDI equipment; we've made it extremely simple! Each Fader can be individually programmed to send MIDI Volume, MIDI Notes, Program Change, Pitch Bend, After Touch, **Continuous Controller** Data of all types and even Non-Registered Controllers. Once programmed, your set-up can be saved for fast easy recall. System Exclusive data can be pro-

grammed externally from our optional Macintosh or Atari software disk.

J.L. Cooper takes pride in creating feature packed, easy to use and affordable solutions. And FaderMaster is no exception. Ideal for both live and studio applications, the possibilities are endless. See FaderMaster today at your local J.L. Cooper Dealer. Suggested Retail only \$299.00! Optional software for programming and storage only \$29.95.

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Introducing FaderMaster from J.L. Cooper. **The Ultimate MIDI Command Controller.** Fast, Easy and **Flexible for** only \$299.00!

which adds real-time editing and input quantization. They also announced that Digital Performer (price not available), which integrates Performer with Digidesign's Sound Accelerator and Audiomedia cards, will be shipping soon.

Roland has new utility software for their MC-500 sequencer. The MRM-500 MIDI file converter (\$110) converts standard MIDI files into the format used by their MC-series sequencers (and vice-versa). This allows you to create your sequences on an Atari or IBM computer,



then convert them to MRC format; just the thing for performing musicians who'd prefer to tote a dedicated sequencer to the gig rather than a computer, or for songwriting

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Keyboard/Vocal Accompaniment Backing a singer Intros to songs Chord construction Phrasing and voice-leading Booklet included Keyboard Improvisation Building solos from motifs Chord substitutions Various approaches to improvising Each point supported with musical examples Booklet included	 Keyboard Workshop Insights into improvisation, composition, and practice A new song is composed on-screen and performed by a trio Booklet included Electric Workshop Chick's approach to synthesizers How he uses synths in compositions and creates sounds Plays a "tribute" to influences John Coltrane, Bud Powell, and Paco de Lucia A new composition is played by a trio Booklet included
George Duke Also available: Richard Tee \$39.95 Each Plus \$5.00 shippi N.Y	Keyboard Workshop Electric Workshop Keyboard/Vocal Accompaniment Keyboard Improvisation Contemporary Piano ing and handling per order (\$6.00 per tape outside the U.S.) State residents add local sales tax. ble to: DCI Music Video, 541 Ave of the Americas, New York, NY 10011
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Take 13 drawbars, three-way multitimbral operation, and built-in effects. Mix 'em all up with a dash of retro and what do you get? The Rhodes VK-1000 drawbar keyboard.

partners who own different (and hence incompatible) systems.

And there was a lot going on in the world of editor/librarian software. Turtle Beach announced version 1.1 of Oview VFX, which fixes a few bugs and adds support for the VFX-SD II, and version 2.0 of Oview Proteus, which offers support for all Proteus models, including those with the InVision ROM sounds installed. Sample Vision 2.0, which adds a host of new features and new drivers, will be shipping in March. (Prices not available.) The three programs will no longer be copy-protected. Synetics introduced the RocKit-R-8 and R-5 ed/lib programs for the Roland R-8 and R-5 drum machines (IBM, \$189.95 and \$169.95, respectively). Interval Music Systems displayed their KMX Patchbay remote editing software (Atari, available soon for Macintosh; for KMX MIDI Central, \$50; for KMX 8 x 8, \$30). Sound Quest was demoing version 2.0 of their MIDI Quest universal editor/librarian (Mac, IBM, Atari, Amiga, \$249). They also announced the availability of Tech Quest (\$100), a program that lets you design your own MIDI Quest editing templates.

And if music alone isn't artistic enough for you, check out Hologramophone Research's Pixound for the Amiga (\$99), which allows you to "use the musical fingerprint of any image to create, play, and record complex and unique new music." The company also showed Hyperchord (Amiga, \$159), a dynamic riff sequencer that lets you create short sequences and manipulate them in real time.

UP & COMING

Whew! That was a lot of stuff. But there's still more. Next month: Hard disk recording systems, home keyboards, acoustic pianos, mixers, recorders, effects devices, sounds, and assorted goodies. See you then!

Does <u>your</u> ear need a tune-up?

If you're like most keyboardists, your ear is running a little rough. It needs a precision tuning—<u>fast</u>!

Take this test: Do any of these apply to you?

- □ I get nervous when I play in front of people.
- People say I sing and/or play out of tune.
- It's hard for me to transpose songs to new keys.
- I improvise poorly because I can't envision the tones I want to play.
- I try to steal "licks" from records, but the tones flash by too quickly.
- I can't figure out chord progressions without my keyboard.
- I have all these incredible musical ideas "in my head," but I can't seem to play them without a lot of bad notes.
- It's embarrassing when I get "lost" and can't find my place.
- It takes me longer than I like to learn and memorize a new tune.
- □ I have difficulty singing harmony.
- My friends seem to enjoy music more than me because they have a better ear.
- My playing is caught in a rut that I can't seem to climb out of.

You know the problems.

But do you know how easily a Relative Pitch tune-up can precision tune your *performance*?

Relative Pitch is essential to tune up your ear, and is a completely separate ability from Perfect Pitch. Learn more about both on your FREE Introductory Tape-available through this offer. You've got a lot of talent hidden inside you. But you'll never fully tap into it until you *tune up your ear*!

Why? Because music is a HEARING art. Even with the finest instrument, the bottom line in music is this: how well you play depends on how well you hear.

A tuned ear is a sleek performer. It gives you skill and control—the kind you need to improvise, compose and perform with confidence.

An untuned ear is a hassle. It's like driving in a fog. It cramps your creativity and drags down your natural talent.

Most keyboardists already know the value of a great ear, but don't do anything about it. Their loss is your gain. You can join the smart players who have discovered David L. Burge's **Relative Pitch Ear-Training Course**. They've found that the difference between hearing or not hearing is only a matter of listening!

How to own a laser-sharp ear:

According to David L. Burge, you can tune your ear with *Relative Pitch*, your ability to judge *relationships* between tones and chords.

How important is Relative Pitch?

It's absolutely essential! Relative Pitch is what organizes tones into your own personal experience of music. Relative Pitch tells you if a chord is major, or minor, or "dominant 7 sharp five." Relative Pitch allows you to imagine any sequence of tones in your head, and then play it—in any key. Relative Pitch even tells you if you're sharp or flat compared to others.

The point is this: Relative Pitch enables you to understand and appreciate the *total musical picture*.

You already have some degree of Relative Pitch. Otherwise, your ear would have stalled out long ago.

But a complete Relative Pitch tune-up is another story. How do you get it?

Just get the **Relative Pitch Ear-Training Course**, by David L. Burge. It's loaded with precise ear-opening drills, with the answers right there on tape for you. *It's easy!* All you do is put on a cassette—*and listen!*

You'll learn to hear and recognize a complete "catalog" of chords and countless other musical sounds. David will show you the *easy* way—and the *only* way to really do it right. The more you hear, the more your abilities will multiply. Finally, you'll have the ear you've always needed to unlock your full creative potential!

Whether you are already a good listener, or the newest beginner, the **Relative Pitch Ear-Training Course** has all the drills you need to perfectly tune your ear from ground zero. *No music reading necessary!*

Test-drive a tape—FREE!

Want a sample tape? If you'll cover shipping, we'll send your first tape *absolutely FREE (a \$14.95 value)!*

Or save extra shipping charges and start with more lessons—all covered by our **90-Day Money Back Guarantee:** Enjoy each tape at your own relaxed pace, one at a time. You'll gain lightening fast hearing skills with each lesson, or simply return all unopened tapes within 90 days for a FULL REFUND! There's no risk you keep only the tapes you actually use!

Remember: Your ear is your most precious musical asset. Don't waste it! Order your own Relative Pitch Ear-Training Course—and tune up for life! Do it NOW!

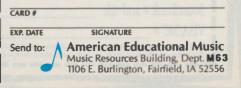
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Tuning your ear is fun! Just put on a cassette and listen! No music reading required.



Please allow 3-5 weeks for delivery. For 1 week delivery from our studio, add \$2 and write "RUSH!" on your envelope. Canadians may remit bank or postal money order in U.S. dollars. Shipping for foreign orders except Canada: \$12/Level or \$35 for Complete Course, lowa residents add 4% tax.

I'd prefer to charge my Visa/MasterCard:



It's tough when your new synth is phased out to make room for "the latest" technology. But at Sound Source Unlimited, we're famous for making synths sound like completely different machines, even the latest ones. We still support some of the most popular digital synths around, even models from the early '80s (when digital synthesis was merely a fantasy for most artists). This month, we're offering incredible prices to those who believe that newer isn't necessarily better.

H

Yamaha V50 100 Performances/100 Voices	Retail	SALE
V501 New York Collection—Classic FM textures	sk \$39.95	\$23.97
V502 New Age Collection—M1 VFX style De V503 Los Angeles Collection—D-50 & M1 emulations De	K. 339.97	\$23.97 \$23.97
V505 Hos Angeles Collection—U- W & Sil Emiliations	16 \$20 05	\$23.97
V505 Down Under Collection Australia-inspired		\$23.97
Yamaha TX802 64 Performances/64 Single Voices	Retail	SALE
80201 Soundtrack—D-50 re-creations Die	sk: \$3 .95	\$20.97
80203 Power Synths—Classic analog FM 16 bit	sk \$34.95	\$20.97
80205 L/A Voices-Analog to M1 style	ik: \$34.97	\$20.97
	Retail	SALE
	1 \$79.95	\$47.97
0704 Super L/A Voices Disk \$49.95 \$29.97 ROM	1: \$79.95	\$47.97
Yamaha DX711D/DX711FD All controllers implemented	Retail	SALE
T01 Soundtrack D50 re-creations		\$17.97
702 Top Forty—Classic FM 16 bit		\$17.97
"04 L/A Voices II—D-50 "Impressions" Dis		\$17.97
705 Pianos and Guitars—Fractionally scaled		\$17.97 \$17.97
706 Soundtrack II—MI, SYT7 & D-50 style Dis	1. (30.05	\$17.97
707 Keyboard Collection—Planos to synths'	1. \$70.05	\$17.97
708 Super L/A Voices—D-70-style soundsDis	k \$20.05	\$17.97
709 Symphonic Collection—Orchestral type sounds	k: \$29.95	\$17.97
T10 Classic FM Voices—"we're back. "	k \$29.95	\$17.97
7011 Library Pack Soundtrack, Classic Synths and Top Forty Dis	k \$84.95	\$37.95
Yamaha DX711 <i>E</i> ! Grey Matter equipped	Retail	SALE
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Few jazz pianists, new or established, show a stylistic range as vast as that of Marilyn Crispell. Now 42 years old, Crispell has recorded familiar ballads, Monk tunes, and completely free solo and ensemble perfor-8 mances on a number of albums, the most ш recent being Live in San Francisco [Music \mathbf{m} 0 & Arts, Box 771, Berkeley, CA 94701] and 2 Live in Zurich [Leo, c/o North Country Dis-> 8 tributors, the Cadence Bldg., Redwood, NY 13679]. Yet even while teetering on the edge of mainstream acceptance, Crispell still recalls a time when, as an acolyte pianist years ago, she ran head-first into a wall of intolerance where she least expected it-from a collection of major jazz innovators.

"I auditioned for this artist touring program in New York City," she remembers. "On the panel were guys like Wynton Marsalis Ron Carter, Lester Bowie, and Muhal Richard Abrams. I played [the late Thelonious Monks] 'Ruby My Dear.' Later, after I had been turned down, a friend of mine who was on the panel told me

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PHOTOGRAPHY BY HARRY BORDEN

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MARILYNC

about the discussion that followed my performance, when Ron Carter said, 'I resented her putting her shit on Monk.' That, to me, showed a quintessential misunderstanding of the whole spirit of jazz."

For Crispell, jazz is about taking P chances. During her days as a composition and piano major at the Peabody Music School and the New England Conservatory, the sirens of improvisation began luring her away from classical repertoire. Even before an epiphanal encounter with the music of Cecil Taylor, she felt restless with written music and tempted by the urge to vent her emotions in jagged, dissonant ex-

temporizations. "I used to play some very atonal improvisations on my own, thinking that nobody would listen if I did them in public. They'd hate it. At that time, I'd never heard of Cecil Taylor, so when I finally did hear him, it was a revelation. It gave me the conviction to go ahead with my own perceptions of how I would like to improvise."

Through study of the music of Taylor, Horace Silver, McCoy Tyner, Paul Bley, and Keith Jarrett, Crispell found ideas and techniques that fit neatly into her emerging aesthetic. Almost immediately, problems arose from the conflict she sensed between the exhilaration she picked up from these new influences, and the claustrophobia imposed by her formal musical background. "I heard another kind of phrasing and rhythm that I wanted to get into, but I wasn't able to break out of my classical training," she explains. "A classical pianist could play a line, and then Cecil Taylor could play the same line but make it sound totally different because of his phrasing and rhythmic approach. This really made me feel boxed in at first. But then, after a while, when it occurred to me that I would never be able to get rid of all that, I realized that I shouldn't try to. It's

a part of who I am."

Thus liberated, Crispell soon evolved a style that seemed based, at first glance, on the integration of wildly diverse elements. But despite the jostle of free jazz, Baroque counterpoint, swing, and cocktail lounge sentiment in her work, she professes surprise at the suggestion that these different influences demand conflicting approaches. "For me, the only things that matter are whether I get an emotional reaction from a piece of music, and whether that music has a logical continuity. No matter what I'm playing, I have the same harmonic concept. It carries over from one piece to the next, just like your hands tend to fall into certain positions after a while."

As to playing consonantly within traditional structures and much more freely in more experimental settings, Crispell cautions, "The notes I don't play are actually more important than the ones I do play. There are certain things I deliberately avoid doing. I don't try to hit cer-Continued on page 54

PAGE 1 OF LEAD SHEET FOR "TROMOS"

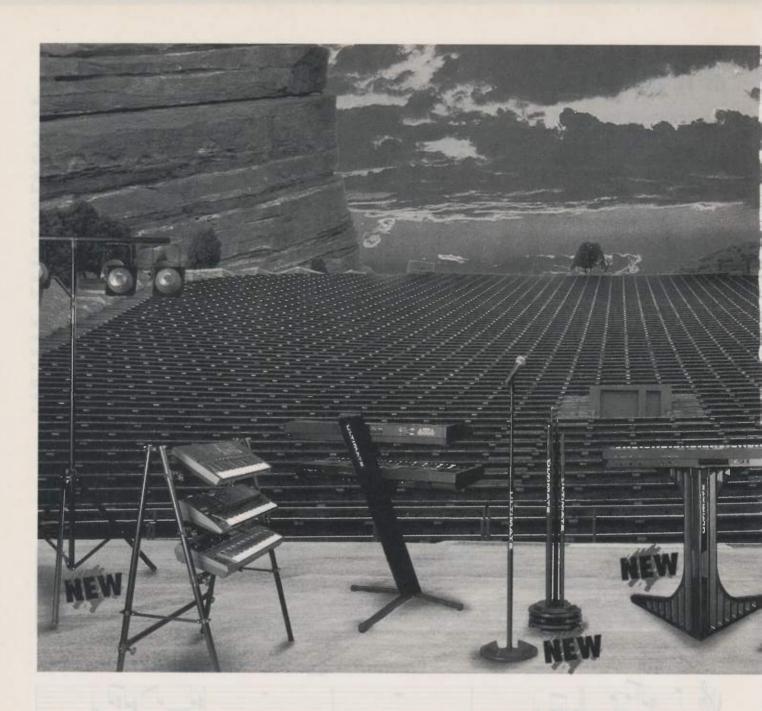
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In her performance of "Tromos" on Live in San Francisco, Crispell adheres closely to her own score during the first section, reproduced below, adding only a few notes and tempo changes before launching into freer levels of improvisation.



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Where careers in music begin.

MARILYN CRISPELL

Continued from page 51

tain notes; I just let them come in. I'll choose a general shape, and base what I play on that. I do tend to avoid traditional major/minor tonalities. When I was involved with classical music, I always had this urge to get away from the tonal system."

By the same token, Crispell professes an aversion to metrical regularity. "I'm not very interested in working within a time signature," she admits. "I'm interested in working *against* time signatures. It's just a perverse element in my nature. That's why, in general, I'm bored with standards. They're not where I'm coming from emotionally. That whole thing developed during a certain period of history that's not happening now. Things have changed, and the arts mirror changes in the world. I'd feel dishonest if I didn't do that in my music."

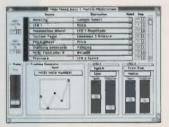
When she does play a chestnut, such as "When I Fall in Love," from Live in San Francisco, it's because that particular tune has taken on some significance at that point in her life. More permanent in her repertoire are tunes written by Thelonious Monk. "I like his approach," she says. "I recently heard an improvisation of his called 'Cordially.' It's just nine minutes of him fooling around, experimenting with different chords totally out of time. You can hear him practically thinking them out. Then he'll hit one. Generally, his compositions are very angular. They tend to extend the harmonies. I relate very much to his harmonic concept. There's an emotion about it that I like-beautiful but not saccharin."

Some of Crispell's work follows the kinds of severe, restrained lines one might expect from a Bachophile-turned-Monk devotee. "Tromos" offers an example. Inspired largely by Paul Bley, it's mainly a two-voice piece, economical and objective in contrast to her more passionate Taylor-influenced epics. Her performance of "Tromos" on *Live in San Francisco* adheres closely to her written score—page one is reproduced on page 51. Where she departs from her notation, it's with an air of discipline; there are no extraneous notes, no departures from her straight and narrow compositional vision.

Despite the contrasts between "Tromos" and such dabblings in chaos as "Gaia No. 1," from *Gaia* [Leo], Crispell maintains that there are no boundaries in her creation and execution of these pieces. "When I play standards, I do them freely. I'm not at all interested in playing traditionally. Whether I'm doing a Monk tune or a Coltrane tune or my own works, it doesn't feel different at all. I never play over the chord changes. I'm always looking for a basic energy that will move me. And I never veer from playing like myself."



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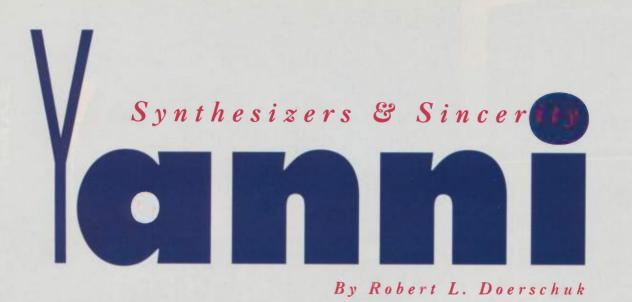
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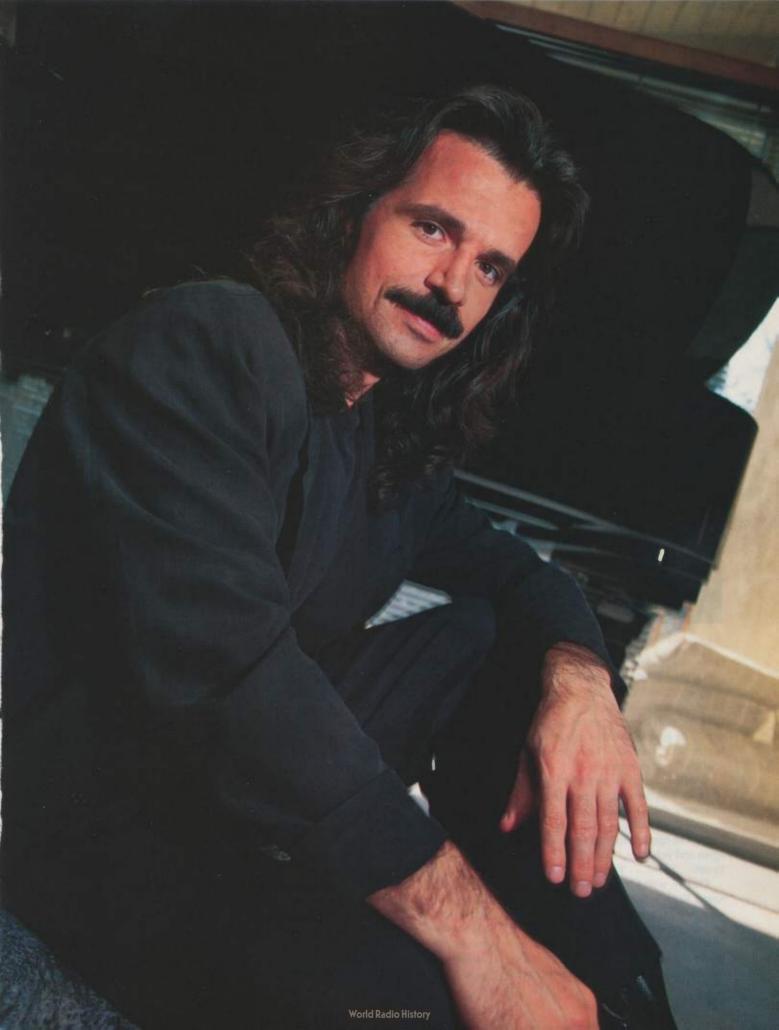
The most successful new age artist in the world sits at his dining room table, pen in hand. Strewn before him are scores of photos—black-

Oprah & Linda Evans Made Him An Instant Celebrity, But His Music Still Celebrates Life's Simple Passions and-white glossies bearing his own likeness—and piles of letters, clamoring for his attention, his friendship, a moment of his time. Like a swimmer poised on the lip of an oceanside cliff, he studies the scene laid out before him, and sees only his reflection staring back.

Sighing, he picks up the letter closest to him and reads. After a moment, he shakes his head. "Here's a grandmother who says that because of my music, she and her 17-year-old granddaughter went out and bought a keyboard. It's the first thing they've done together in years. And here's one from a kid who says he was going to commit suicide. He says he had no friends, that he was fat, that he had B.O. But then, while thinking about how to kill himself, he went by a record store, saw one of my albums, and decided to buy it."

He studies the urgent scrawl. "I hope

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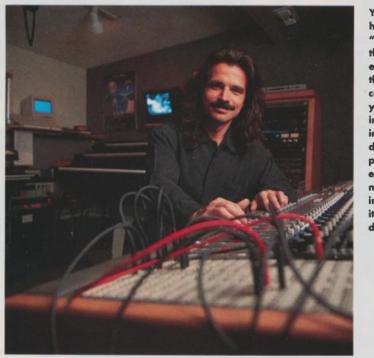


anni

that I can meet you someday," he reads aloud, in soft cadences that echo the inflections of his ancestral language. "But in case I can never tell you this in person, I want to tell you this: Now that I've heard your records, you have saved my life."

He returns the letter to its envelope, and holds it up against the light for a moment.

in the number one slot of *Billboard*'s New Age charts for a phenomenal 27 weeks as we went to press. Yet his legend has spread beyond the sprout and crystal crowd into mainstream America, thanks in no small part to a well-publicized romance with *Dynasty*'s Linda Evans. Thus fueled by the drool of voyeuristic *People* readers, Yanni's career exploded late last year. *Reflections of Passion* went gold almost literally overnight following his performance of three songs on *The*



Yanni in his home studio: "Hopefully, the better the equipment, the better you can express yourself. But in the end, in what we do as composers, the equipment means nothing. In fact, it can be dangerous."

"How can you read something like this and not cry?" he finally asks. "Unless you're already emotionally dead? That's why I always answer my mail—all of it. And even though I always bitch about having to sign all this stuff"—he gestures dismissively toward his jumble of P.R. portraits—"I don't mind doing it when the time comes."

With that, he grabs one picture, then another, looking down at this parade of sultry dark eyes, thick tumbling locks, jet black mustache, and hint of chest hair peeking through an open collar, and signs, again and again and yet again, "Love, Yanni... Yanni....."

Clearly, with Chryssolmallis as his surname, Yanni's decision to go by first name alone was prescient. Like his music, it flows smoothly and easily, with no hard edges. It lilts, like the liquid strings, intimate piano timbres, and plucked lead lines that animate his records. His latest album was anchored Oprah Winfrey Show. His latest album, a benefit for Antarctica, is scheduled for release in late March. Anne-Marie De Angelo, director of Mexico's Ballet de Monterey, is preparing to premiere a new production based entirely on Yanni's music this summer. In terms of music, image, and magnitude of success, Yanni has become this year's Richard Clayderman.

But Yanni is no mere pin-up pianist. In a series of solo albums dating back to his 1986 debut, *Keys to Imagination*, he has proven himself a facile master of electronic Romanticism. His works are animated by surging dynamics, as long consonant melodies ride tidal washes of synthesized and sampled strings like Argonauts skimming the Mediterranean. Yanni's ear is as clear as they come. There are no murky blurs, no moody mixes, in his works. Instead, colors sparkle and shimmer, as he evokes elements of Greek music in consonant modes and bouzoukilike lead lines. From the trumpeting fanfare of "After the Sunrise" to the uplifting minorto-major theme of "Quiet Man," Yanni broadcasts a nearly Stalinist affirmation of heroism and optimism.

All this threatens to reduce Yanni to something of a joke in "serious" circles of electronic music. His ship sails dangerously close to the reefs of triteness. For all the emphasis Yanni gives to melody, few of his melodies seem to linger. He indulges in virtually no harmonic experimentation, and even when he does concoct passages in 7/8 or other irregular meters, it's done with a slippery facility that lulls, rather than challenges, the listener.

But that, of course, is the point. Yanni's mission is not to defy convention, or win friends amongst the avant-garde. All he has ever done is to play what he feels, and as a child of Greece, where he was born 35 years ago, a taste for the epochal in music is as natural as a taste for *retsina* with *souvlaki*. If that's what it takes to satisfy the needs of thousands of Americans who have come to regard romance as an exotic dream, so be it.

Yanni grew up in Kalamata, where he began playing piano and spent his spare time developing into a swimmer proficient enough to break several national records. After moving to the States and graduating from the University of Minnesota with a psychology degree, he scuffled around the Midwest, playing keyboards with a group called Chameleon. When the synthesizer age set in, Yanni immediately shifted gears. From the start, he realized that their sonic resources offered him a range of self-expression that had always seemed beyond the reach of his self-taught technique.

In Yanni's case, the fusion of romantic temperament with technology produced an apparently paradoxical artistic aesthetic. While taking a page-by-page, featureby-feature approach to each new manual and machine, he maintained an improvisational method as a MIDI-based composer, deliberately not conceiving his music based on the capabilities of his instruments. For *Keyboard* readers who enjoy recounting their sequencing rituals, Yanni's reluctance to even discuss the nuts-andbolts aspects of his method seems, at best, an affectation, and possibly evidence of slipshod discipline.

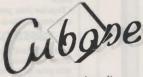
Whatever the reason behind this coy demurral, it is worth digging out the Aug. '82 issue of *Keyboard* and taking a look at that month's cover story on an artist whose sound, philosophy, and background follow interesting parallels to those of Yanni. In those

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anni

days, Vangelis was the flavor of the season. Like Yanni, he was enjoying tremendous popularity, thanks to *Chariots of Fire* and several other soundtracks. He, too, was known for his bracing, brilliant textures, his fealty to the spirit and sound of Greece, and—significantly—his evasiveness on questions of synth technique. "The problem is, I don't know what happens," he pleaded. "You see, there are people who know exactly what they are doing; they program this, think about that, and so on. With me, it just happens."

Like magic. Or, in contemporary terms, like Yanni's works. Behind the obvious comparisons, a more subtle thread connects these two artists. Both stand apart from the formulaic, cut-and-dried approach taken by many electronic artists. Like Vangelis, Yanni begins from a standpoint of instinct, of selective ignorance, and ends up with a music deliberately created in mystery.

Call it a scam. Call it what you will. The fact is, as far as Private Music, thousands of fans, and Yanni himself are concerned, it

works. We decided to find out why.

. . . .

In previous interviews, you've said that you enjoy reading manuals and getting to know new gear as thoroughly as possible. Yet you've also said that the actual equipment you use in doing your records isn't important.

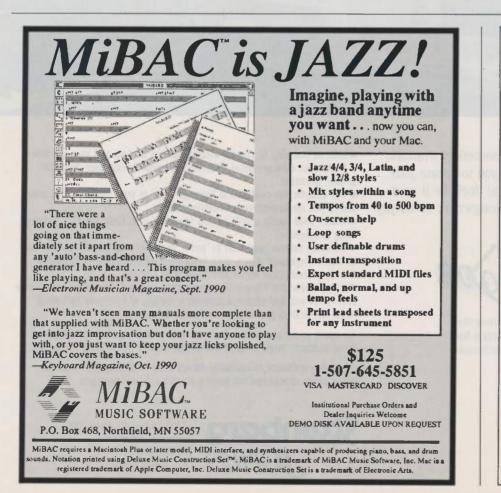
That's one of the things I wanted to explain. You see, the people who design musical equipment are brilliant. They had to solve many problems, and I have a lot of respect for them. But when it comes down to working in the studio, it's all just wires and keys-mere tools. Of course, it's important, because it allows us to express ourselves, and hopefully, the better the equipment, the better you can express yourself. But there is a point of diminishing returns. In the end, in what we do as composers, all of this equipment really means nothing. In fact, it can be dangerous. If you get infatuated with it, you end up with a lot of sound-oriented music, which may have been a novelty a few years ago. but now is completely meaningless because everybody has access to the same equipment. The difference, then, is in the human being.

You're saying that, for you, the most advanced musical tools on the market serve the same function that a pencil and paper served for Mozart.

Except it's a better pencil and paper because it allows you to read it easier, and you don't have to squint. But, you know, in the old days I used to listen to the music that the early synthesizer composers were doing, and I realized why it sounded so repetitive. If you try to compose with a sequencer that doesn't want to change, you'll end up turning it on and doing the same thing with it over and over again. It also forced you to make things go on a lot longer, because if you wanted to change the sequence to make it go from this chord to that chord, it was a major operation. It's not so anymore, but in the old days it was, which is why everything we were doing ended up being meditative. So I realized that once you achieve a certain quality with your equipment, to where it isn't a hindrance but a help, your attention is best shifted to composition. Pieces don't last through the ages because of the sound they have; they last because of how they're composed, how their melodies sound. A strong melody is the most important element in music.

When you compose, do you always begin with melody? Do you ever begin with a certain sound that inspires you?

I don't work from sounds to write my



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songs. Sometimes I dedicate days to doing nothing but sound, but looking for a sound in a keyboard makes me numb. You just sit there for an hour and a half, banging away, changing the envelopes and the filters. It's totally mechanical, and it has nothing to do with creativity. As you're working on a sound, you might say, "Wow, this would work very well in a song that would kind of go like this," so yes, you do have ideas. But basically, I create a bag of sounds over a period of a week or so, and then I put them away. I know where they are and what they're like, so I can get them when I need them.

Every sound I use is a combination of sounds, so that they don't sound so electronic. I know that this machine will give me a violin sound that sounds like you have your ear right next to the violin. In and of itself, that may sound obnoxious because it's so dry. But if you blend it with this or that keyboard, all of a sudden you start hearing new sounds. When I do one string sound, I may use five keyboards.

How do you create a good string sound? I would use my [Akai] S1000 for the primary sound, because it's got a good string

Name Card #

YANNI: A SELECTED DISCOGRAPHY

Keys to Imagination, Private Music. Niki Nana, Private Music. Optimystique, Varese Sarabande (13008 Saticoy St., N. Hollywood, CA 91605). Out of Silence, Private Music. Polar Shift, Private Music. Reflections of Passion, Private Music.

> sample. Then I would use the [E-mu] Proteus for the dirt and the bigness. If I wanted a smaller string section sound, I wouldn't use the Proteus, but for the depth it's really good because of its long sustain and smaller attack. See, you don't want to destroy the Akai attack, which is real clean; you don't want to put another sound with a junky attack on top of that. Then I'll use the [Ensonig] Mirage as a thickener, to get the kind of sounds I had on my first couple of albums when I play live. It's kind of junky, but if you take the Mirage

violin sound and bring it down an octave, that junkiness makes a very characteristic sound.

How about your horn sounds? I have some really good horn sounds on my [Sequential Prophet] VS and the S1000. Maybe I'd use the [Yamaha] DX7 too, although I don't really like the DX because it's so typical-sounding [i.e. overused]. But it does blend well. Sometimes, for the crack of a horn attack, I will use some percussion too. I only use the DX and the [Korg] M1 these days for plucked sounds, because they have good attacks. The M1 was bought to be used live. Now Luse it sometimes for filler, to create

part of a sound, but I don't let it become dominant in any sound, to where you'd recognize it as an M1.

What's your usual keyboard controller?

The Korg SG-1D, because of its piano sound. It's my favorite piano sound, other than the piano I have out in the living room [an Ibach concert grand]. In fact, when I play live, all the keyboard players in my band have one of these Korgs. I got one for each of them.

Where do you get most of your samples?



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From libraries, although I make all my own drum sounds. I'll spend four or five days recording drum sounds on DAT. Then I take the DAT recordings and transfer them to the \$1000.

On your earlier albums, you play some of the more prominent samples without a lot of attention to keyboard split points. The cello line on "The North Shore of Matsushima," from Keys to Imagination, really

changes in quality as it descends.

Oh, yeah. Keys to Imagination was recorded on a DX7, a Mirage, and I think a VS. That's all I had. It was a lot of work. I had to cover up a lot of the flaws and noises. But the compositions made it survive. My ASCAP checks show me that "Santorini" [from Keys] is still the most widely used of any song I've done.

Your saxophone lines on that album were . . .

Cheesy [laughs].

So why didn't you bring in a sax player? Was it important to do it all yourself?

At that time, yeah, it was. It was the first



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the beginning and downward at the end, that was my way of playing. I'd never heard anyone else do it before then. That doesn't mean that nobody else was doing it; it just means that I hadn't heard it. So it was very important for me to stay on a pure keyboard form, even though I had minimal equipment. Both of my first albums were mixed and recorded with a TAC Scorpion 32-channel board. Now I've got an automated, 50-channel Sound Workshop board. So the years go by and the money increases, the tools are getting better. They make my life easier. *So clearly, the tools you use* are *important*. To be honest, I thought at one point that

time I was demonstrating an attitude about

playing. When I bent my notes upward at

I might be wrong about this. I can't think of any other major art form that's as dependent on technological advancement as music. So now, if you want a great drum sound, boom, there it is. But what are you gonna do with it? The only thing that matters is how you use it. Not everybody who hears your music has a studio like mine, with Tannoy Gold monitors sitting at 45 degrees from your chair. So the subtleties that you hear in here are not perceived by the general public. Most listeners probably have cheaper speakers, and they're not sitting in the middle of the stereo field. The average listener doesn't say, "Wow, what a cool snare sound." There might be one point on an album where he or she says, "Now, that really sounds beautiful." But in general, you get 'em in the heart, or you don't have 'em at all. What I'm saying is that we shouldn't overestimate the importance of technology. Relying too much on technology sends out the wrong signal. This is not music generated by computers. It doesn't come from a machine where I punch program three and out come five songs that spell out love, or affection, or nostalgia, or whatever. Take a song like "Roxanne" by the Police. It's completely out of tune; the vocals are way out. But it's a hit. Why? Because it speaks. It communicates a story.

So as you complete your albums, you have to listen to the results on two levels: as a professional, and as a so-called typical listener.

Absolutely correct. In a sense, I'm trying to learn how to keep a part of myself *out* of the process. I'm focusing more on thinking in terms of music rather than playing it and hoping to stumble across something. When you do it that way [*i.e.*, composing on a keyboard], you don't come up with ideas that your fingers can't quite get. But when you do it all in your mind, there's no limit. You hear the best string sound. It's irrelevant whether you can get it; what counts is that you *hear* it. You know that it should have this

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sort of an attack, it should last this long, it should be this fat. You can play it back in your mind, like a tape. That way, you end up with a composition that you know will work wonderfully. And *then* the destruction begins, all the way down to where you materialize the music on tape.

Do you see this process as "destruction" because of the compromises you have to make in pursuing unattainable sounds? Yeah. It's an attempt to communicate what I know to the average person, who will end up putting it on a little cassette, and forgetting to put Dolby on even if the recording is Dolbyed, and playing it back through a pair of speakers that are out of phase. Right off the bat, all those sounds that you spent a hundred hours getting are destroyed. So from the time you hear a piece of music until you put it on tape so that the average person can perceive it, you're diminishing it. The idea is to diminish your music as little as possible.

In addition to clear timbral mixes, your works usually fall into clear structures.

Yeah, but they flow into each other. My



concept in those early years was, as long as I feel good going from this theme to that theme, it's okay. Nobody was writing music like that. They were writing verse, chorus, verse, chorus, bridge, guitar solo, chorus, chorus, chorus, lights out, good-bye. Before then, the classical composers were just writing *music*, with themes after themes after themes, in a natural evolution. I like music like that, so that's how I did my music.

Do you regret not having the kind of training that would have allowed you to transcend formal musical structures the way these composers did?

Actually, I don't know whether that would have been a help or a hindrance. Probably it's an asset that I wasn't trained, because that frees me. I write music as it comes out, and I write all the time. Music is an ongoing process. It's okay to be taught and to study, but we don't become complete until we take what we've learned or read and add it to something that nobody has taught us, that we've never read anywhere. That's when a human being is at his best. That's when we become more than the sum of our parts.

Do you have any specific examples of how an absence of formal music training has helped you creatively?

In the car coming home today, I was listening to "Acroyali," from Out of Silence. I was doing something on a couple of DXs with a very characteristic sound of mine-that plucked string sound. It was freeform, with the kind of rhythm you get when you bounce a ping-pong ball on a table. I was thinking, "How did I come up with that? How do you go about realizing that you can do something like that on a keyboard, and then allow yourself to do it?" It's easier if you don't have any training, because you're coming from the music point of view. You hear that sound in your mind, you decide you want to do it, and then you figure out that you can do it like this. [Yanni stiffens the third finger on his right hand and begins jabbing it, repeatedly and at quickening tempo, against a tabletop.] If you go to school and show your teacher you're doing this to a piano, he'll slap your hand and say, "Don't do that!" But you can allow yourself to try things that are not normal simply because they sound right to you.

Your frustrations with formal musical rules seems similar to attitudes of many musicians who work from a much more avant-garde perspective than you.

I've got a roomful of work tapes, all of them two hours long, on DAT. A lot of this music is intended for me. I don't feel that the public would appreciate it, or that I could communicate in that language. Obviously, since I've been doing this 14 hours a day for



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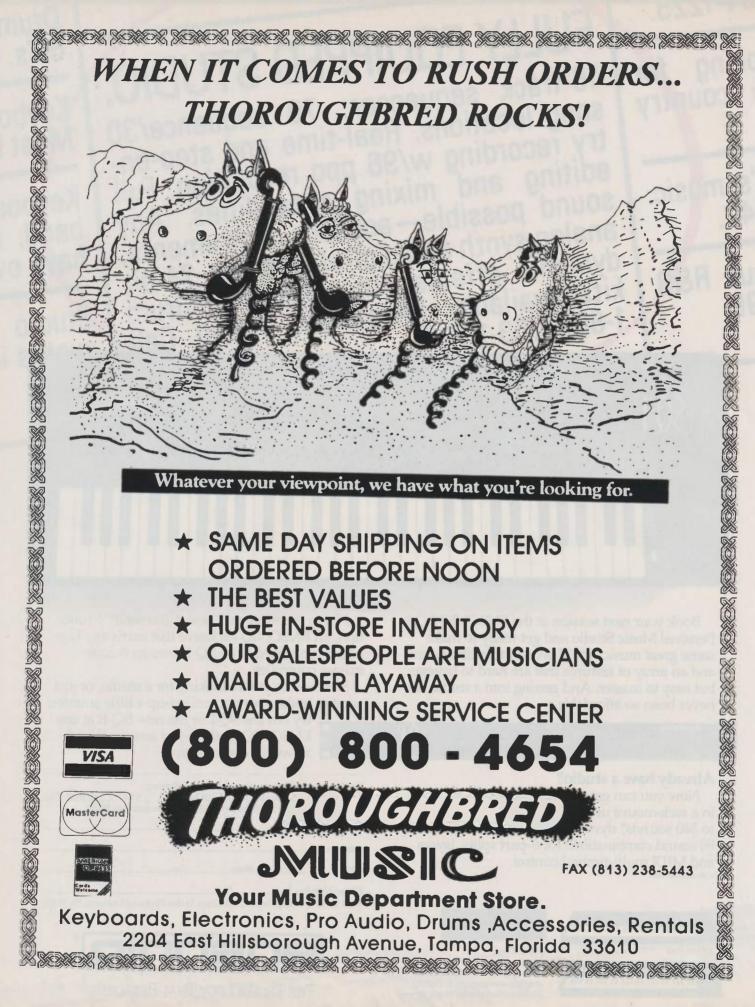
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20 years, my brain is developed to the point that I could do music that nobody could understand. I could speak in languages where nobody could know what I'm talking about. A lot of avant-garde people do that. And jazz does a lot of that; it goes over people's heads. But in the music I release to the public, I don't do that. If you look at my time signatures, I use a lot of 5/8, 7/8, 9/8. But the pieces themselves are not weird. My melodies are not determined by the time signatures. Other people do it backwards. That's why if you listen to something in 7/8 by other bands-I don't want to name names-it feels like something falls off every so often. They go, "We should write something in 5/4," instead of coming up with a melody that happens to be in 5/4 because it needs that extra beat. It's like the song I did for the U.S. Open; it's all in that time signature, but it doesn't have any pauses. It just flies.

In your live gigs, you usually work with two other keyboard players. Why?

Everything is performed live. No sequencing. No tapes. We just play. Sequencing and having a lot of things playing at the same time doesn't work for me. If it takes five keyboard players to get the sound out, that's what it takes. People know the difference. If the audience can perceive what it takes for you to play something, that changes how they perceive what you do. Like, if you change a sound on a keyboard from piano to strings, your technique would change, even though you'd be playing the same keyboard. You're always adapting your technique to the sound you're playing. Not everybody has the vision to do that, so if the people could see what we go through at a concert, and realize that we don't have some computer playing 90 percent of it, that's what I want.

Do your other keyboardists work with your sounds onstage?

I program a lot of their sounds; obviously, we have to get some characteristic sounds down. But I like to think I'm not that difficult to work with, even though I'm fussy about certain things. They come up with their own sounds too. Case in point: I'll tell John [Tesh, co-host of *Entertainment Tonight* and occasional touring keyboardist with Yanni], "I know you understand the music. You don't have to learn it note-for-note. I'm more interested in your interpretation. So here are the parts. You just need to get this section, because I want the sound to jump here; it shouldn't be very thick. But it doesn't make any real difference whether you switch the notes here and there." I never make Joyce [Imbesi] play the bass lines exactly as they are on record. Normally, I play all the main melodies. Sometimes I'll have eight or nine different keyboards onstage, and I'll use them all.

You prefer that to having a single controller and an offstage MIDI rack?

It's a lot easier. You can do a lot more with them. The [E-mu] Emulator is onstage, and the way I've got it MIDIed, it can all of a sudden be the master for three other keyboards. Then I go for the VS, which is to the right of the Emulator and is the master of two or three other keyboards, but the VS is slaved to the Emulator too. So [Yanni gestures] around an imaginary onstage setup], this keyboard is my thick strings, this is my wash, this is my piano, this is my whistle, this is my French horn, this is my string lead. When you're standing and mixing these things, it's much more visual then just sitting like this [*imitates typing on a single keyboard*]. Keyboard players tend to look boring. It's inherent in the medium. You try to jump around, but your hands have to be stationary. You put your hands down like this, but then if you move even slightly, look what happens.

You get pulled out of position. And you're in the wrong key. So some-Continued on page 70





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Continued from page 67

times I'll put my thumb down, so I can pivot on it and play with four fingers over a wider range. It lets me be expressive without losing my place.

Are you interested in branching beyond instrumental music and working with singers?

I have something like that in the works. If I connect with the right opportunity, you'll see me doing that a lot more in the future. But what I like about instrumental music is that you can't borrow somebody else's wisdom. Anybody can say, "I love you." Once you've put those three words together, you think you've communicated. In fact, you haven't. You have to tell your own story accurately, whatever it is. One of the advantages of instrumental music is that there is no gender, no male or female singing. Nobody says, "I love you. You left me. Where were you?" Everyday language stimulates a different part of your brain. When music is done correctly, when the melodies are strong and you're not noodling all over the place, when you're actually telling a story that the



listener can follow, that piece will last a lot longer than if there were words to it.

How do you "tell a story" through instrumental music?

What I don't do is describe what I see. I don't sit by the ocean, then try to go home and describe the waves. I describe the *emotion* I get by looking at the waves. To choose a silly example, a guy who's surfing here in California probably feels about the same excitement as someone who's downhill skiing in Minnesota. They're doing two different kinds of things, but they're having the same feeling. So you don't want to say, "This song is about surfing, or skiing, or my girlfriend." You just deal with emotions, and people will take that music and relate it to events in their lives that have produced similar emotions.

Is it important, then, that you keep a reasonable amount of non-music activity in your routine?

Absolutely, because if I've just been in the studio every day for 20 years, what are we gonna talk about? Wires and boards? Human beings don't do that. We live and work and love, so if you haven't been there too, there's no way you can come into their lives with a story that will make them feel better. So I'm looking for new experiences. I've done rock and roll. I played it, I ate it, I slept it. I've heard Deep Purple and Led Zeppelin and the Beatles and Black Sabbath, and I loved it. But now I'm done with it. I don't have a gland condition anymore. I don't want to run out to the clubs all night and take cocaine. I don't want to do rap. Rap should be left to the people who know what it is, who created it, who live it. There are people trying to do rap now who know nothing of its culture, who are only mimicking the culture. That's a waste of time. It should be left to the people who are honest about it and know what it means. So what am I gonna talk about? Whatever my life is like. In fact, I just decided a month ago that I was making my world too small.

Isn't that inevitable when fame closes in on you?

Absolutely, but you know, I don't go to record stores to see my pictures. I don't want this game to destroy me. I have a girlfriend who has been in this sort of situation for many years, and she always says that success is the greatest seductress of them all. So no, you can't lose yourself. You can't think you're something special. That moment is when you lose your life.

FOR FURTHER READING

Two of the artists mentioned in this article were interviewed in previous issues of *Keyboard*: John Tesh (Dec. '88) and Vangelis (Aug. '82). Our first Yanni interview ran in May '88.

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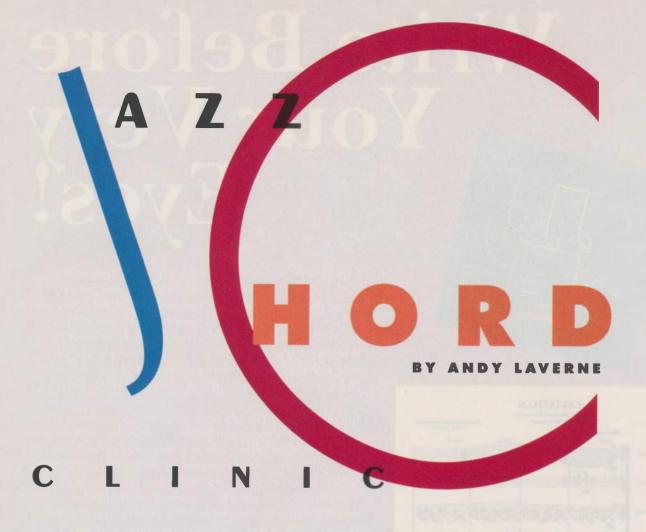
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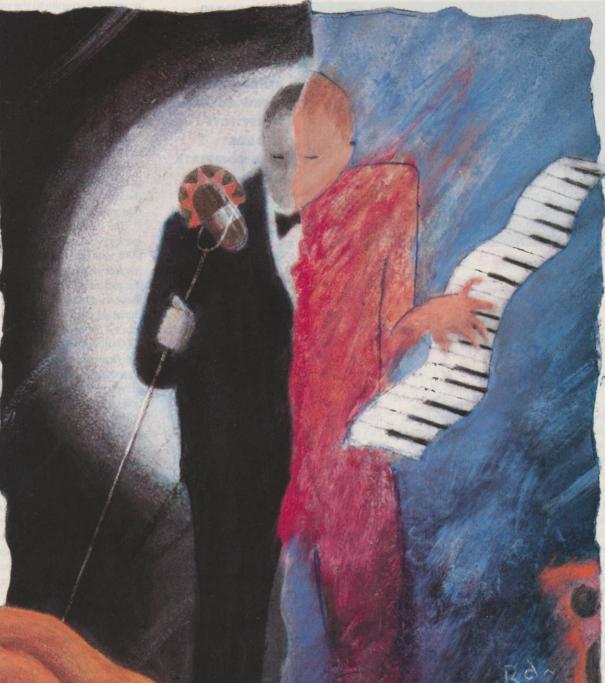


AN EXPERT SHOWS YOU HOW TO BREATHE NEW LIFE INTO STANDARD TUNES ow many times have you heard or played tunes like "All The Things You Are," "Green Dolphin Street," or "Autumn Leaves"? These are some of the most played and recorded of a group of tunes now known as "standards." Many standards were written in the Tin Pan Alley days (1920s-'40s). As musical trends and styles developed, the treatment of these old chestnuts has evolved as well. Listen to a Nat Cole version of "Autumn Leaves" and compare it to a Miles Davis version. Even though it's the same tune, it might hardly be recognizable from one recording to the next. That is probably why a tune becomes a standard in the first place: Its adaptability to various styles and contexts makes it appealing to a wide range of musicians and listeners.

One of the biggest challenges for a player is to make a personal statement in the context of this standard material. One way of doing this is through

Andy LaVerne is a New York-based jazz pianist and frequent contributor to Keyboard. His last article, "Jazz Licks," appeared in the Sept. '90 issue. His recent albums include Standard Eyes and Fountainhead on SteepleChase, Natural Living on Musidisc, and The Pleasure Seekers on Triloka. For further reading on the subject of this article, consult LaVerne's Handbook of Chord Substitutions, published by Ekay Publications [223 Katonah Ave., Katonah, NY 10536].

RUBEN DE LA FENA



manipulation of the harmonies. Reharmonizing can be accomplished in various stages, from a few choice substitute chords to a complete overhaul of a tune's harmonic structure. My new trio album *Standard Eyes*, with Steve LaSpina on bass and Anton Fig on drums, consists entirely of standard tunes. I made generous use of reharmonization. Some tunes contain just a smattering of substitute chords here or there, while others are draped with a totally new harmonic structure. Of the latter group, the mildest harmonic manipulation is found in our performance of "Green Dolphin Street" (see page 75). The tune begins over the traditional tonic pedal point, but the chords on top have been changed to give a different flavor to the melody. The technique of "constant structure/variable function" is used here to harmonize the melody: I took the structure under the melody and moved it in parallel motion (as a constant structure), disregarding the harmonic function (tension and resolution) of each re-



REHARMONI-ZATION CAN BE ACCOMPLISHED IN VARIOUS STAGES, FROM A FEW CHOICE SUBSTITUTE CHORDS TO A COMPLETE **OVERHAUL OF** A TUNE'S HARMONIC STRUCTURE.

for the dominant 7th that would ordinarily resolve to the F minor in the following measure. Tritone subsitution is a technique that replaces a chord with another chord whose root is a tritone (augmented fourth) away from that of the original chord. The altered P#7 in measure 5 is a tritone substitution for a C7. These tritone substitutions are usually dominant 7th chords, replacing other dominant 7th chords. Another interesting aspect of measure 5 is the minor 75 chord that precedes the dominant 7th. This technique of inserting chords (a IIm before a V7) can be very effective.

Other features found in this treatment are the descending bass lines (measures 5-8 and 9-10) and the ascending bass line (measures 27-31). Once again the overriding factor is the compatibility of the melody with the new chords. As you can see, altering the melody slightly to enhance the harmonic treatment is another device that can be used, sparingly.

"All The Things You Are" (page 76) keeps the melody pretty much intact. The chords, on the other hand, are greatly changed, particularly at the beginning of the tune. The first part of this reharmonization was done by guitarist John Abercrombie; I supplied the chords for the second half of the tune. This collaboration is documented on the duo recording that John and I did recently, Natural Living. A somewhat different version can be heard on my duo album with vibraphonist Dave Samuels, Fountainhead.

Notice that the first chord of the tune is actually the same quality as the original first chord (F minor), but a half step above. Luckily the melody was able to absorb this key change. Interestingly, the root movement to the second chord parallels that of the original chord movement. We then proceed with a descending bass line, whose chord qualities are adjusted to fit the melody. Measure 8 echoes the technique used in the first measure. Pedal point (measures 14-18) gives a

momentary respite to the rather active root movement so far.

Ironically, after all this harmonic manipulation, we end up in bar 35 with a resolution into the original key of Ab major! The problem then becomes how to get from Ab major to the first chord of F# minor. By retaining the fifth in the bass under the Ab tonic, we can use a chromatically descending bass line that ends with a C#7 variant (the dominant 7th of F# minor), guite a convenient way to resolve to the tonic minor. The thing to keep in mind here is to set a harmonic goal, then decide on an avenue that leads smoothly to that goal.

The last chord of the tune, Gb major (sus2), is the product of a deceptive cadence (II-V7-♭VII), with the ♭VII chord replacing the usual resolution of the progression to a I chord. On the recording with Dave Samuels, we kept these harmonies intact, but changed the time signature from 4/4 to 3/4-yet another way to alter the sound or feel of a tune.

Getting back to the trio recording, "Over The Rainbow" (page 78) features some other interesting devices. This tune is usually played employing a common reharmonization technique. The original harmony begins with an Eb major (tonic) chord, but most jazz versions begin with an Am7b5 chord. This substitution of a #IV half-diminished for a I chord works because of the common tones found between the two chords. Many times the melody note will fit well with this substitution. Although this produces a very beautiful sound, I opted for another approach in this instance. One of my favorite devices for reharmonization is to change chord qualities. "Chord quality" refers to the basic color (major, minor, dominant 7th, suspended 4th, diminished, augmented) of the chord. The first chord of "Over The Rainbow" is an Eb major. I replaced that with an Eb7sus4, and then changed the root from Eb to Bb, resulting in a Bbm11 chord. From there I incorporated "arbitrary root movement," where the chords can move in a non-functional manner. You'll notice some "dominant 7th approach" chords, as in the B7#9#13 resolving to the Bbm11 in measure 2. This can also be analyzed as a tritone substitution (B7#9#13 being a tritone substitution for F7).

Measures 3-4 consist mainly of dominant 7th chords moving down in minor thirds. This relationship comes from the diminished axis: C7, A7, Gb7, and Eb7 are all related, as their roots are all members of the same diminished 7th chord. Dominant 7th chords with this relationship can be used interchangeably. Moving on, there is use of functional harmony (IIm7b5, V13b9), stepwise chord movement, Continued on page 145

sulting chord. At measures 9-15, the chord qualities have all been changed to dominant 9sus4. The melody has been adjusted slightly to accommodate this change in harmonic color.

Measures 16-22 are an added section that eventually resolves nicely back to the tonic pedal. This augmentation of a single measure into a longer phrase can add a nice touch of unexpected space to breathe before restating the melody. Measures 24-25 incorporate the same pedal point and constant structure/variable function principles as the beginning of the tune. You will also find added measures at the end of the song, thus balancing out what was done to the end of the first section. Keep in mind that the melody (although slightly altered) fits well over these harmonies, and can be heard even when improvising on this new harmonic structure.

"Some Day My Prince Will Come" (page 77) contains a virtually new set of chords. I began by finding a new chord at the very beginning of the tune that would change the color and function of the original chord, while still fitting with the melody note. I actually substituted a IIIm chord for the original I chord. I found that by treating the melody note as a #9 of a dominant 7th chord, I could effect a more dramatic change in the harmonic color. I then proceeded by letting this new chord resolve naturally to its minor tonic. The melody accepted this well, and I continued with a fairly functional harmonic movement.

Measure 5 contains a tritone substitution

In addition to Andy LaVerne's reharmonized arrangements, we have provided lead sheets for the tunes he discusses. In each case, the basic changes are indicated by chord symbols above the melody line. Andy has also included some commonly used chord substitutions for each song, indicated in parentheses above the basic changes.

GREEN DOLPHIN STREET (LEAD SHEET)



SOMEDAY MY PRINCE WILL COME (LEAD SHEET)



Ses. GREEN DOLPHIN STREET (REHARMONIZATION)



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ALL THE THINGS YOU ARE (REHARMONIZATION)



"All The Things You Are" Music by Jerome Kern; Lyrics by Oscar Hammerstein II © 1939 (renewed) PolyGram International Publishing, Inc. International copyright secured. All rights reserved.

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ALL THE THINGS YOU ARE (LEAD SHEET)



KEYBOARD/APRIL 1991

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P O



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VES (LEAD SHEET)



EAVES (REHARMONIZATION) AUTUMN

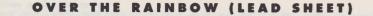


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CHESTNUTS (LEAD SHEET)



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BZ

Easyverb

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ALESIS

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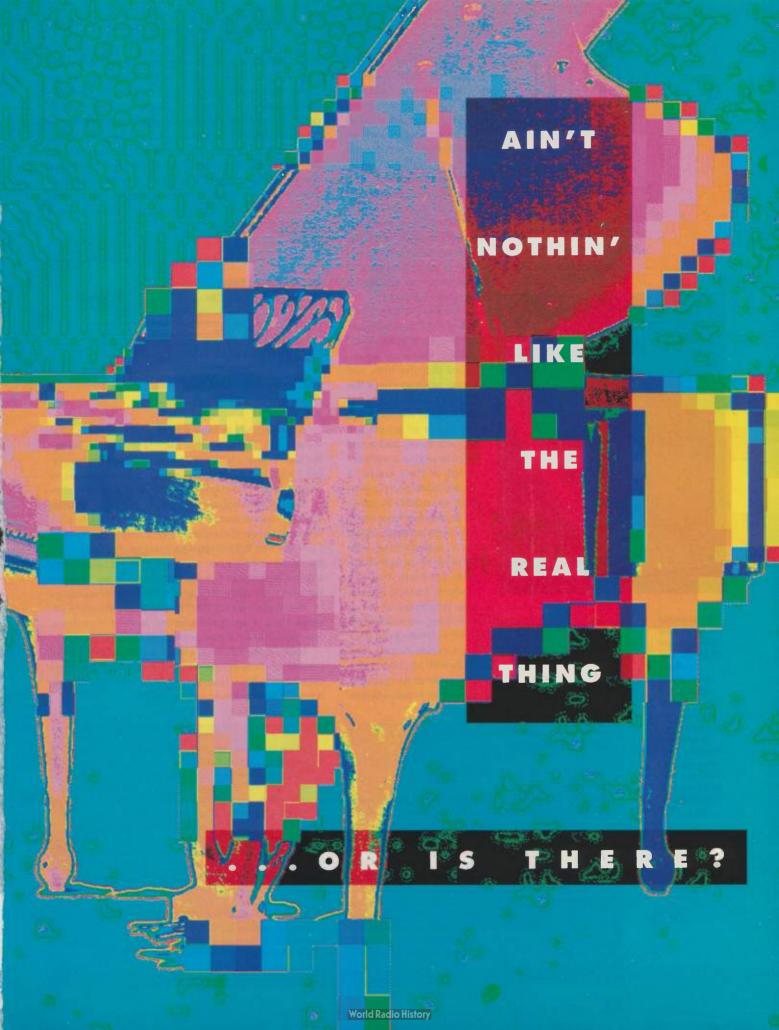
JGITAL DIANOS

t's no secret that every musician—and most non-musicians—would love to own a grand piano. Not only own one, but have it in their home. Trouble is, not everybody's home has the space. Or else the doors aren't big enough to bring a piano in. Or maybe "home" is an apartment with paper-thin walls and sensitive neighbors. So what's a wanna-have-a-piano person supposed to do?

Well, maybe you could compromise and settle for a digital piano. "Compromise" and "settle" are appropriate terms, because there's still no replacement for the acoustic piano, and there probably never will be.

There's room in this world for both acoustic and digital pianos. Most keyboard players will admit that sitting down at a good grand piano and playing is an experience that can't be duplicated with an electronic instrument playing through a stereo speaker system. The difference in sound is just too great. But if you absolutely need the real thing, be prepared to accept the terms and conditions that accompany an acoustic piano: the periodic tune-ups, the need for a spacious and suitably isolated environment, the hefty moving fee in case you have to relocate. If you can meet these obligations, then by all means go for it.

A digital piano should appeal to those who can't. But even though you have to make some compromises, digital pianos also offer benefits. They'll fit in a much



AGITAL PIANOS

smaller space. You can turn their volume up or down, or plug in headphones. You'll never need to hire a tuner. Practically every digital piano has MIDI connectors, so you can attach external sound generators and play them from the piano keyboard, or hook up a

personal computer with the appropriate interface box and MIDI software, so that you can digitally record, store, edit, and play back your performances. And even though typical home-oriented digital pianos weigh between 100 and 200 pounds, you probably won't need to hire a professional piano mover when you want to

We enjoyed the keyboard on the Roland HP-3700, and its piano sound fared well too. But the HP-3700 most resembles an acoustic piano in the sense that, once you put it somewhere, you'll want it to stay there. It's heavy. transport your instrument to a new location.

Back in the Aug. '88 issue of Keyboard, we looked at a number of digital pianos. This year, we decided that the time had come again to check the pulse of the digital piano industry, so we contacted a number of prominent manufacturers and asked them to send us a representation of their wares. It would have been logistically impossible to gather an instrument from every consumer-oriented digital piano manufacturer-the list of which includes Baldwin, Ensoniq, Lowrey, Rodgers, Samick, Suzuki, and Wurlitzer-so all of

them weren't represented. For one thing, we would have had to rent a gymnasium in which to conduct our tests. A couple of manufacturers that we tried to include, Akai and Kawai, were unable to comply with our request due to logistical problems. However, we were successful in rounding up a good representation of home-oriented digital pianos, ranging in price from \$2,995 to \$5,000.

To help in the evaluation of these instruments, we gathered a dozen keyboard players—from the *Keyboard* staff, as well as other lunatics who hang out here at GPI central—and asked them to rate each instrument in three categories: keyboard response, quality of the piano sound, and usefulness of the supplementary, non-piano sounds. With the results of these evaluations in hand, we delved deeper to appraise each instrument in terms of the hospitality of its front-panel layout and operating system, the extra features it offers, and the overall value that it gives for your money.

ROLAND HP-3700:

BEST KEYBOARD ACTION	BOGUS GINALA
KEYBOARD RESPONSE	•
REALITY CHECK: PIANO	•
REALITY CHECK: OTHER SOUNDS	•
DASHBOARD	•
BELLS & WHISTLES	
BANG FOR THE BUCK	

A heavyweight in more ways than one. The HP-3700 is listed at 182 lbs, but that's surely an underestimate. We didn't have a heavy-duty scale to verify the weight, but it took four burly guys, instead of the usual two, to lug this beast to and from our staff photographer's den.

Besides approaching a spinet in weight and winning the keyboard action award, the Roland did quite well in the piano sound category, second only to the Yamaha CLP-560. The Roland provides two grand piano sounds, the model of the second sound being based on a slightly smaller instrument that the first. Yes, we say "model" because, rather than playing samples (digital recordings) of an acoustic piano, the HP-3700 uses Roland's advanced S/A, or structured adaptive, method of synthesis. See page 100 for a more complete description.

Third on the HP-3700's list of sounds is honky-tonk, perfect for those boogie-woogie songs, and you don't even need to leave your upright unattended in the basement for six months to get the effect.

ROLAND HP-3700

Keyboard: 88-note spring-loaded, weighted action. Polyphony: 32 notes.

Features: Variable-depth chorus, variable-rate tremolo, three reverbs (room, stage, and hall, with variable reverb level), three velocityresponse curves, three stretch tunings, rear-panel tuning knob (±50 cents), three pedals (damper, soft, sostenuto), multi-level half-pedaling and sforzando-piano pedaling. Damper pedal activates simulation of resonating harp in acoustic piano. Selectable recall of all frontpanel settings when power turned on. Wooden music stand, sliding wooden keyboard cover. Optional piano bench.

MIDI Implementation: Sends and receives note, velocity, program change, charus on/off, tremolo an/off, volume (reflected only by notes received over MIDI, not those played on HP-3700 keyboard), system-exclusive (reverb, brilliance, and temperament settings), active sensing, and damper, sostenuto, and soft pedal data. Damper and soft pedals send continuous values from zero to 127 (resolution of approximately five steps). Separate MIDI transmission and reception channels, omni on/off, local on/off. Four-channel multitimbral mode: channels fixed to 1, 11, 12, and 13; sounds selected via incoming MIDI data; pedals, reverb, chorus, tremolo, and brilliance affect all channels identically. Transposed note values transmitted.

Memory: Six sounds (piano 1 and 2, honky-tonk, harpsichord, vibraphone, electric piano), seven preset temperaments (equal, Pythagorean, Just major, Just minor, Mean tone, Werckmeister, Kirnberger).

Speaker System: 30-watt stereo amplifier with six speakers. Interfacing: Left and right 1/4" line outputs, 1/4" stereo headphone

output, left/mono and right 1/4" line inputs, MIDI in/out/thru. Finish: Walnut wood.

Dimensions: 56.3" x 33.8" x 21.7". 182 lbs.

Suggested Retail Price: \$3,900 to \$4,900.

Contact: Roland Corporation US, 7200 Dominion Circle, Los Angeles, CA 90040-3647. (213) 685-5141. Fax (213) 722-0911.

Like many other digital pianos, the HP-3700's sound list is filled out with harpsichord, vibraphone, and electric piano. Perhaps since the name that made electric pianos famous-Rhodes-is now a division of Roland, the HP-

YAMAHA CLP-560

Keyboard: 88-note weighted, counter-balanced action. Polyphony: 32 notes

- Features: Three reverbs (pedal-controlled, room, hall), three brilliance settings (mellow, normal, bright), three velocity-response curves, two-sound layering, half-pedaling and sforzando-piano pedaling, transposition (±6 semitones), pitch control (±50 cents). Smokedplastic music stand, sliding smoked plastic/metal keyboard cover. Matching padded piano bench.
- MIDI Implementation: Sends and receives note, velocity, program change, active sensing, system-exclusive (bulk data dump of front-panel settings), and damper, sostenuto, and soft pedal data. Separate transmission and reception channels, omni on/off, local on/off, program-change enable/disable, pedal data send/receive enable/disable, three-channel multitimbral mode, keyboard splitting. Transposition internal only-transposed note values aren't transmitted.
- Memory: Eight sounds (piano 1 and 2, Clavinova Tone, electric piano, harpsichord, vibes, strings, organ).

Speaker System: 30-watt stereo amplifier with four speakers.

Interfacing: Left/mono and right 1/4" outputs, left and right RCA outputs and inputs, 1/4" stereo headphone output, MIDI in/out/thru.

Finish: Ebony wood, plastic, and metal.

Dimensions: 55.3" x 31.4" x 18.2". 123.5 lbs. Suggested Retail Price: \$2,995.

Contact: Yamaha Corp. of America, 6600 Orangethorpe Ave., Buena Park, CA 90620. (714) 522-9011. Fax (714) 527-5782.



3700 offers the best electric piano sound of the digital instruments inspected here. Overall, the HP-3700's alternate sounds were good enough to bring it a third-place finish in the other-sound category, just behind the Yamaha, with the Kurzweil breaking out the champagne.

Of course, the Roland is replete with the expected digital effects: chorus, tremolo, and three reverbs (room, stage, and hall-the same settings offered by most of the other digital pianos, except that the HP-3700 lets you adjust the reverb level). While the chosen reverb remains active when you select a different voice, the HP-3700 recalls whether you have tremolo and/or chorus activated for a sound whenever you reselect it, a thoughtful extra. In addition, should you prefer to keep these settings when you turn the instrument off, you can activate a backup feature that will do just that.

Yamaha's CLP- 560 had the best pigno sound, in our opinion. it's also one of the easiest instruments in this roundup to work with.

FOR THE NOVICE: COMING TO TERMS WITH THE TERMS

hen the time comes to purchase a digital piano, it's to your advantage to know some of the technical terms

intrinsic to the digital piano and electronic music industry.

Most common of these-and most important-is the acronym MIDI, the Musical Instrument Digital Interface, a digital language that allows two devices with MIDI connectors to communicate with each other. Using MIDI, you can run a cable from the MIDI out jack of a keyboard-based instrument to the MIDI in jack of a tone generator and play sounds from both devices at the same time from the keyboard.

The MIDI messages that make this possible aren't sounds but computer

commands. They can be captured, stored, edited (changes made to tempo, individual notes, etc.), and played back by a device known as a sequencer. A hardware sequencer can be a separate, dedicated device, or it can be built into a MIDI instrument. Sequencer software-ranging in power from very basic to incredibly complex and versatile—is also available for most popular computers. With all computers except the Atari ST/Mega series and the Yamaha C1, you'll need a MIDI interface in order to connect the computer to other MIDI devices.

Many MIDI messages, such as those that play notes, bend the pitch of a note, or adjust the output volume of the instrument playing the

note, exist on a specific MIDI channel. The MIDI Spec allows for 16 MIDI channels. When you connect two MIDI instruments, you must make sure that the receiving instrument is set to the same MIDI channel as the transmitting one in order for the first to respond to messages from the second. However, the Spec includes a special MIDI mode known as omni, which causes the receiving instrument to respond to incoming messages regardless of the channel they are transmitted on.

A number of the digital pianos in this roundup let you set independent MIDI send and receive channels. You make use of this capability in con-

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Continued on page 84

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AGITAL PIANOS

We also appreciate the fact that you can select a different HP-3700 sound while sustaining the previous one. This is a relatively new feature on homeoriented products; in the past, when you select a new sound, the previous one would be cut short. We much prefer this new

mode of operation, because it allows you to start a new section of a song, or a new song, without disrupting the end of the earlier section/song.

Even though the Roland took the best keyboard award, its action isn't unflawed. Two of our testers felt that it wasn't conducive to very light playing; in their perception, keys seemed to stick at the top of their travel, as if they were hesitant to move out of the uppermost position. As far as its MIDI implementation is concerned, the HP-3700 receives passing marks, with a few bonus points for extras like the transmission of damper and soft pedal controller data and the fact that, when you transpose its keyboard, the transposed note values are transmitted. A number of the instruments in this roundup can't claim the latter capability. In addition, the Roland offers a multitimbral mode. If this mode is switched on, you can play up to four different sounds (all of which will be processed by the same reverb and effects) from an external sequencer, over four MIDI channels—fixed to channels 1, 11, 12, and 13.

Because of the quality of its keyboard action and sounds, as well as its additional features, Roland's HP-3700 came very close to tying with the Yamaha CLP-560 and Kurzweil Mark IV for the bang-for-thebuck award.

DIGITALS FOR THE REST OF US

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igital pianos come in many forms besides the furniturelike consoles detailed in these pages. Maybe you're a pro looking for a realistic-sounding, reliable, portable digital piano for an upcoming tour. You don't need builtin speakers and amplifiers, but you want a weighted action. Roland has the widest range of products to serve your needs, starting with the Rhodes MK-60 (\$1,495), a 59-lb digital piano with a 64-note oil-damped keyboard. Also from Roland's Rhodes division is the MK-80 (76 lbs, \$2,795); it has the same keyboard as that found in the HP-3700 reviewed in this digital piano report. The Roland RD-250S (\$1,995) sports a 76-note oildamped keyboard. If you need 88 keys with oil damping, go for the RD-300S (\$2,395).

Over the last few years, one of the most popular digital pianos for the pro has been **Korg's** SGX-1D Sampling Grand (\$3,145). It features an 88-note weighted keyboard and weighs in at 92 lbs. Don't let its name fool you: The SGX-1D isn't a sampler; it plays samples of pianos.

Okay, you want portability in

your digital piano, but you'd also like a built-in sound system. In that case, you've got a much wider range of possibilities than the professional. **Baldwin** offers a pair of 61note portable digital pianos: the 14lb EP-10S (\$695) and 43-lb EP-20 (\$995). If you want a **Casio**, they provide the 61-note CPS-300 (\$599) and the 76-note, 23.7-lb CPS-700 (\$799).

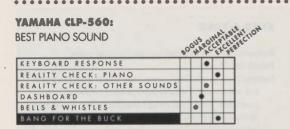
Roland is a strong presence in this category too. The EP-3 (\$450) has a 61-note keyboard and weighs 15 lbs. Also with 61 keys is the 16.5-lb EP-5 (\$675). You'll find a 76-note keyboard on the EP-7 (\$995), which also features reverb and chorus effects and weighs in at 24 lbs. Both the EP-5 and EP-7 have built-in sequencers.

Yamaha has four portable digital pianos, starting with the 61-key, 13.9-lb YPR-20 (\$399.95). The YPR-30 (\$599.95) also has 61 keys and weighs 14.6 lbs. Further up Yamaha's line are a pair of 76-key instruments, the YPP-50 (\$1,095) and the YFP-70 (about \$1,995, 51.8 lbs).

If price isn't so much of an issue, you can get portable versions of two

of the console-style digital pianos we reviewed here: the Kurzweil and the Bachmann. Kurzweil's Ensemble Grande Piano (about \$2,500) offers all the Mark IV sounds with a 76note weighted keyboard in a more portable size. Likewise, Bachmann's WS 2 has all the WS 400's bells and whistles with 61 keys in a 25-lb package that lists for about \$2,500. In this same category, Roland introduced a new 88-note portable digital piano, the FP-8 (\$2,695). In addition to its built-in reverb and chorus-and a sequencer-the FP-8 sports a hammer-action weighted keyboard and comes in suede gray, pearl white, or metallic red.

Finally, if you don't need the sound system or the keyboard, but you need a dynamite digital piano sound, we can suggest either the Proformance/1 (\$499) or Proformance/1 + (\$599) from E-mu. The former offers 15 stereo piano sounds, the latter 32 presets, including the same stereo piano sounds found in the Proformance/1. Through the right sound system, the Proformance can sound as good as any of the digital pianos in this roundup.



This isn't the flashiest of the group, but the CLP-560 is a solid performer that won the piano sound voting and tied with the Kurzweil for price/performance ratio. If it's a really good piano simulation that you're after, the CLP-560-which also happens to have the lowest estimated list price in this collection-could be a Best Buy.

The CLP-560 provides two pianos; they really don't sound very different, but piano 1 seems to have more stereo separation than piano 2. Besides these and the typical complement of electric piano, harpsichord, and vibes, the CLP-560 offers strings, organ, and the Clavinova Tone, a guite beautiful piano/sustained-voice layer.

Speaking of layering, the CLP-560 lets you play two sounds at once across the entire keyboard. Selecting the two voices is as simple as pressing the buttons for the sounds that you want. If you press both simultaneously, their volumes will be identical; press one before the other, and the volume of the first will be slightly greater than that of the second. As simple as it gets, and rewarding too. In fact, besides its gold award for the piano, the CLP-560 took a silver in the alternate sounds competition -definitely for the quality, rather than quantity, of these sounds. (The gold-winning Kurzweil has 100 total preset sounds, many of which are stunning.)

In the effects department, the CLP-560 is limited to three reverb and three brilliance settings. Sorry, no chorus. What it's got is simple, effective, and don't forget that Clavinova Tone.

One of the few places that the Yamaha disappointed was in the keyboard department. Coming from a company that makes some of the most playable acoustic pianos in the world, this is quite a shock. The CLP-560's keyboard action was labeled "spongy" by two of our 12 evaluators.

KURZWEIL ENSEMBLE GRANDE MARK IV

Keyboard: 88-note weighted, spring-loaded action. Polyphony: 24 notes.

- Features: Chorus, tremolo, and vibrato effects, pitch-bend wheel (±3 semitone range), mod wheel (up for vibrato, down for tremolo), volume slider, global tuning slider (±100 cents), global transpose slider (down to G, up to F#), programmable global transposition (±60 semitones), damper and switchable sostenuto/soft pedals, sforzando-piano pedaling, seven velocity-response curves, programmable note range, 16 x 2 backlit LCD. Smoked-plastic music stand, height-adjustable padded piano bench.
- MIDI Implementation: 16-channel multitimbral operation. Sends and receives note, velocity, pitch-bend, mod wheel up/down, chorus on/off, tremolo on/off, vibrato on/off, program change, damper, sostenuto, and soft pedal data. Program change enable/disable

Beefing up its **MIDI** implementation is a three-channel multitimbral mode. In addition, Yamaha has provided split-keyboard modes that allow you to play the CLP-560 on one side of the keyboard while sending notes to an external MIDI device on the other side.

You can download all the CLP-560's front-panel settings (including MIDI channels, sound selections, and reverb and brilliance settings) in the form of a system-exclusive dump, which can be stored and reloaded by any MIDI

storage device that accepts this kind of data.

Bottom line: The CLP-560 offers a sensible collection of features with winning piano and alternate sounds. If you want the sound quality without tons of bells and whistles, check this one out.

KURZWEIL ENSEMBLE GRANDE MARK IV: REST ALTERNATE SOLINDS

BEST ALTERNATE SOUNDS	BOGUSECHNATABLENT
KEYBOARD RESPONSE	
REALITY CHECK: PIANO	•
REALITY CHECK: OTHER SOUND	5
DASHBOARD	
BELLS & WHISTLES	•
BANG FOR THE BUCK	

Though its keyboard and piano sound waren't the best, the Kurzweil Ensemble **Grande Mark** IV gets extra mileage from 100 preset sounds, many of which are impressive.

Kurzweil introduced its pioneering piano sound in their K250 sampling keyboard in 1985. Since that time, people have taken sides: Some people don't like the

- separately for transmit and receive. Selectively responds to volume and all-notes-off data. Reportedly responds to aftertouch and systemexclusive data. Slider-transposed note values transmitted. Built-in MIDI data analyzer.
- Memory: 100 sounds (pianos, strings, choirs, vibes, basses, brass, woodwinds, organs, synths, drums, plus layered and split combinations).
- Selectable recall of multi-channel MIDI setups when power turned on. Speaker System: 100-watt biamped stereo amplifier with six speakers. Interfacing: Two 1/4" line inputs, two 1/4" line outputs (programmable
 - mono or left and right stereo), 1/4" stereo headphone output, MIDI in/out/thru.

Finish: Ebony wood, plastic, and metal.

- Dimensions: 56" x 31.1" x 20.5". 175 lbs.
- Suggested Retail Price: about \$4,000.
- Contact: Young Chang America, 13336 Alondra Blvd., Cerritos, CA 90701-2205. (213) 926-3200. Fax (213) 404-0748.

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AGITAL PIANOS

Kurzweil piano sound, but many absolutely love it. In this digital piano roundup, the Mark IV scored a bronze medal for its piano sound, barely ahead of the fourth-place finisher.

It's the "other sound" category where the Mark IV left its stamp. It was an overwhelming favorite, leaving all other com-

petitors in its dust. The Mark IV is essentially a preset sample-playback synthesizer in digital-piano clothing. ("My goodness, Margaret," Ernie cried. "It has pitch-bend and mod wheels! What's the world coming to?") Among its 100 preset sounds are some truly magnificent strings, woodwinds, acoustic basses, choirs, and synth sounds. Great as this sounds, all isn't peaches and cream in Mark IV land. It carries a collection of percussion and drum sounds that, frankly, set the electronic percussion world back about four years and eight bits. (In today's 16-bit sampled world, the Mark IV's drums sound as 8-bit as they come.) Even with that weight, the Kurzweil still took the alternate sound gold, thanks to an acceptable ratio of good-to-bad sounds.

The Kurzweil's biggest ball and chain is its keyboard, described by one evaluator as "feeling like its keys are pushing my fingers away" and another as "exhausting to play." Not that it's a sluggish keyboard; in fact, it's a very quick action. Too quick for its own good. We'd classify it somewhere between an acoustic piano and a pipe organ. But this action is polarizing, much like the Kurzweil sound, only here the ratio is skewed against it: While a few people quite liked the action, the majority put their thumbs down.

Back on the good side, the Mark IV has the most complete MIDI implementation of this roundup, even though its velocity output resolution is more stepped than those of its competitors, with fewer possible values (low velocities of 28 and 40, for example). It starts with 16-channel multitimbral operation, includes accurately transmitted note values when the keyboard is transposed, and continues through a built-in MIDI data analyzer. About the only thing to fuss about here is the fact that the Kurzweil can only generate 24 notes at a time, unlike some of its cohorts, which are capable of 32 notes. We can see

It may be three years old, but the Korg C-7000 is still going grand.



KORG C-7000

Keyboard: 88-note weighted, counter-balanced action. Polyphony: 16 notes.

- Features: Three reverbs (room, stage, hall), volume slider, two pedals (soft and damper), sforzando-piano pedaling, MIDI function/transpose button. Tuning (±40 cents), transposition (F# to F), and MIDI functions programmed using buttons and keyboard. Two velocityresponse curves. Flip-up smoked-plastic/metal keyboard cover/music stand. Piano bench optional.
- MIDI Implementation: Sends and receives note, velocity, program change, damper, sostenuto, and soft pedal data. Separate transmission and reception channels, omni on/off, local on/off, program-change enable/disable, pedal data send/receive enable/disable. Transposition internal only—transposed note values aren't transmitted.
- Memory: Five sounds (piano 1 and 2, electric piano, harpsichard, vibraphone).

Speaker System: 20-watt stereo amplifier with four speakers. Interfacing: Left and right RCA line inputs and outputs (2), MIDI in/out. Finish: Ebony plastic (wood stand).

Dimensions: 55" x 32" x 19". 119 lbs.

Suggested Retail Price: about \$3,150. Contact: Korg USA, 89 Frost St., Westbury, NY 11590. (516) 333-

9100. Fax (516) 333-9108.

those 16 channels eating up notes rather quickly.

The Mark IV is the only digital piano here that came with an adjustable-height piano bench, a nice bonus.

In spite of the Mark IV's sub-par keyboard and obnoxious drum sounds, we felt it deserved high enough points to tie with the Yamaha in the bang for the buck category. We confess: it's those sounds, those smashing sounds, that did it.

KORG C-7000:

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HONORABLE MENTION, KEYBOARD RESPONSE & PIANO SOUND

We've been swearing by the Korg C-7000 since the Aug. '88 roundup. At that time, it was the cream of the crop.

So, late last summer when the Korg folks called and said they were sending us their new top-of-the-line C-50 digital piano, we assumed we were in for a real treat. We assumed wrong.

Instead of sporting an improved sound, the C-50 was disappointing, particularly in the piano sound category. Yes, it has 16-bit strings and other sounds that might compare favorably with the Kurzweil, it can sound 32 notes at once, it has a built-in two-track sequencer, and it has multitimbral capability. But while the frequency response in the low and high range is quite good, at any but the

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hardest velocity levels the mids are absolutely lethargic, making the piano timbre as a whole unrealistically smooth. At first we blamed the C-50's speakers, which are apparently mounted inside the main supporting pod. However, we connected E-mu's Proformance/1+ piano module to the C-50's line inputs, and found that its midrange sounded fine at all playing levels. We were hard-pressed to distinguish the C-50 from the Proformance when we played either of them as hard as we could stand to strike the Korg's keyboard, but at lower velocities the Proformance had a lot more beef. So the blame lies solely with the C-50's piano samples. Thus returneth the C-7000. We felt it would do much better in this roundup, and Korg graciously complied with our request to send us a unit. Considering the C-7000 is at least 2-1/2 years old, its stereo piano sound is still respectable and viable.

In the unit we received, both of the piano sounds seemed to be exactly the same. On the unit that was here in '88, to the best of our recollection, there was a more obvious difference.

If the C-7000 were the ancestor of any instrument here, it would be the Yamaha. They look somewhat sim-Continued on page 91

DIGITAL PIANOS: ACTION & SOUND UPDATE

uccessfully designing a digital piano requires much more than simply combining a decent piano sound with a tolerable keyboard and a hi-fi stereo sound system. Here are some of the most important obstacles that digital piano manufacturers have to confront.

• The Keyboard. Just when we as-

sumed that a keyboard had to include wippens, jacks, regulating buttons, repetition levers, and felt-covered hammers—anything but springs and weights—in order for its action to feel like that of an acoustic piano, we get bamboozled by the Roland HP-3700's spring-loaded, oil-damped action. (No, there isn't a pan of oil inside that could spill; according to Roland literature, the rotary shaft on which each key pivots causes some braking in the key's movement, and the oil controls the amount of braking action.) The Roland came out on top in our Keyboard Feel competition. Then again, the Bachmann WS 400, which finished last,

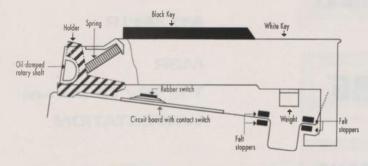


Fig. 1. Roland's HP-3700 uses springs and weights, but the design reasonably recreates the action of a piano. At least it felt so good that all but the uncompromising approved.

also uses springs. As does the Kurzweil, whose keyboard action isn't much more inspiring than the Bachmann's. The Casio, Korg, Technics, and Yamaha incorporate another common piano-action-simulating technique, counterbalanced and weighted levers.

It's important to understand that the inertia of the grand piano's key parts is what determines its distinctive feel. Digital piano manufacturers will obviously continue to devise various ways to simulate this phenomenon, with varying levels of success. Maybe someday, someone will happen onto the perfect solution . . . nach. Continued on page 98

Fig. 2. It's the real thing: The grand piano's action. An overhead view of the repetition lever is shown to the left. Fig. 3. Instead of springs that return keys to their original position, Yamaha's CLP-560 incorporates a counter-balanced, weighted lever beneath each key. That makes it more piano-like, but it still wasn't as KE1 popular as the Roland's action.

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	D10/D20/D5	D-502 D-121	45.	
	D110	D-122 D-131	45. 45.	
Roland		D-132	45.	
	M1/M1R	6-101 6-102	50. 50.	
	M3R	B-103 B-301 B-302	50. 50. 50.	
KORG	T1/T2/T3 (disk only)	B-401	45.	
	WAVESTATION	WS-601 WS-602	55.	
YAMAHA				
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SY55/TG55	K4/K4r D10/20/110	0/5 VFX/VF2		
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MUSIC TECHNOLOGY (UK) REVIEWS VALHALA PRODUCTS

VALHALA INTERNATIONAL GOLDTM M1/M1R ROM Cards

The truest test of a sound is this: if it inspires you. If it sends you running for your tane recorder, desperate to get an idea on tape before the inspiration deserts you - that's a damn good sound. Imagine you have never heard a piano before, what would your reaction be if someone then placed a 9 foot Bosendorfer in your living room? Wouldn't that kick the creative brain cells into life? So what's this got to do with M1 voice cards? Well, although no-one would claim that any of the programs (the M1 name for patches) on these VALHALA cards are going to change your life, or form the basis of 300 years of concertos, sonatas and etudes, they are good. Exceptionally good!

The sounds under the microscope here are the VALHALA INTERNATIONAL GOLD™ B101 and B102 cards. Firstly then, the B101. Primarily, this contains a fantastic range of floatly, ethereal textures. Names such as 'CREEPY', 'SUSPENSE', 'WATCHINGME', 'GRAVEYARD', WATCHINGME'. 'MOVIEMAKER', and 'IMAGEMAKER' give some idea of the underlying theme of the card. These are all classic sounds, and will undoubtedly show up pretty soon on television adverts the world over. There is also a great selection of warm pads, and delicates timres - 'EMULATOR 3', 'JMJ V 2.0'. 'ANGELSONG'. 'QUIREBOYS' 'MISTERE2ME', 'MIRRORROOM'... Fat analogue timbres are also in evidence using overdoses of reverb to hide the basic sterility of the digital sound. It's all enough to make you want to re-record OXYGENE using just your M1 and a bit of imagination. There is also a smattering of strings, bass patches, and an excellent rock organ. Sound effects are well catered for and are a lot more useful (and a fair bit more scary) than your average monosynth filter sweep or modulated white noise. All in all, very dramatic, very uplifting, very exciting.

The second card, B102 is no weaker than the first, although the emphasis is markedly different. Whereas B101 majors on textures and moody atmospherics, B102 adds pianos, strings, percussion, flutes, ('GALAWAYFLUT' - die for it), brasses 'SAX+TRUMPT' very bright), lead guitars, and some further sound effects. The lead sounds are particularly well represented. Ever wondered what a dead quitarist might sound like through an echo unit and rusty phaser? Try 'CUTTERLEAD' for size. LEADGUITAR', 'FEEDBACK', and OSCARLEAD' are pretty self-explanatory. and 'BACKWARDS' enables you to play

those reversed George Harrison guitar licks that you've always loved (haven't you?). That isn't to say that there are no typically M1 atmospherics on this card. Try 'ENYA' 'JMJ'S PAD', 'RELIGIOUS', 'DREAMY', and 'ATMOSEERIK' - there's something here for everyone! Power playing is also well catered for with 'ALBUMSTART', 'BIGMOVIE' 'BIGGEST M1', and many others supplying the business. Also, by way of fun, there are a small number of D50 rip-offs - similar name, same sound. And why not? Finally, the card also contains a number of timbres clearly inspired by other types of synth analogue, PD, and FM.

Experimenting with both cards sends song ideas leaping unbidden into your head. The sounds just reek of SMPTE and Film recording studios, and will undoubtedly find their way onto countless soundtracks, AV iingles, and videos. Perhaps the best way to differentiate between these programs and other synths' patches (and even other manufacturers' M1 sounds) is that VALHALA patches sound like Combinations in their own right - rich, textural, loadsa movement. The last time you heard sounds of this quality emanating from a single keyboard you were probably listening to an EMULA-TOR or a FAIRLIGHT.

If I had one critism of the collection it would be that there are a few too many atmospheric textures. But I won't. With 200 almost uniformly excellent patches to choose from, you really shouldn't mind a little self indulgence by the programmers. Speaking of the creators of this collection, it's good to see that the programmers can have a sense of humor (B101 patch 69, 'LOVE CHORD'). The dedication of the programming team seems to come across every time you experiment with the cards. Even using the moody or eerie sounds, vou get the impression that the people who were working on them were actually enjoying themselves.

In conclusion, these cards contain some of the most satisfying patches that I have heard in a long, long time. The jaded ears of this MT reviewer have now been titillated by timbres and effects that show just how powerful a synth the M1 still is - even in 1990. At only £45 per card, these patches will tempt you to make an M1 the major keyboard in your rig. If they don't, I honestly don't know what will. Now I'm off back to my M1R to have some more fun. I suggest that you do the same.

GORDON REID

VALHALA INTERNATIONAL GOLDTM D-50 ROM Cards

When it comes to programming ability, there is no company currently making a better name for itself than the American firm, VALHALA. Their highly respected range of INTERNATIONAL GOLDTM ROM cards, already available for the M1(R), M3R, T-Series, and VFX's has now been extended to include the Roland D5/10/110 & D20 synths. as well as the everareen D50. So now the spotlight falls on the INTERNATIONAL GOLDTM cards D-501 and D-502 for the D50 which, at £40 for 64 professional patches. already have a head-start on most of their rivals

There's no clear cut focus to the sounds on D-501, as the card is clearly intended to provide a broad palette of sounds for general use. There are nice fat patches ('Ring Modulated Pad', 'Christmas Strings', 'Cosmic Hugeness', 'String System'), digital ones ('Clicknology', 'Totally Etherial', 'Bright Synth Bells', 'I get Excited', 'Try an Arpeggio'), Organs, Voices ('Chapel Breathing') and obvious weirdos ('In a Horror Field', 'Sssh -Freddie's Home'). There are also a range of useful piano-ish percussive sounds, the inevitable basses, and the usual tentative ouitars. However, despite the high quality of all of these, only one patch stood out as totally innovative, the very aptly named 'House Kut'

Although D-501 is the weaker of the two cards, that certainly doesn't make it a poor buy. It's just that D-502 is better, and if that makes the second offering a truly great card, so be it. A great deal of attention has been paid to the sounds on this ROM, with especially good use made of reverb and intelligent use of the stereo output modes. The main thrust of the card is the sustain/pad type of sound, with a particular concentration on 'spectrum'-type patches. To list a few favourites; try the M1-ish 'Advertising Chords', 'Spectrum Pad', 'Slapback Heavenly', or 'Breathe'. For classic digital textures choose from (amongst others) 'Sakamoto in my D50', 'Ooh-Pick-Pad', the excellent 'Digitasia' and 'Across The Void', and 'Religion' (which sounds exactly like you always imagined a FAIRLIGHT in your bedroom would). There are rich pads ('Atlantic Travelling'), Analogue timbres ('Hold & Develop', 'Certainly not Tiny'), delicate textures ('Big as Star-Trek' - which is certainly isn't) ... The list, while not endless, is certainly impressive. Even if you're not into M1's, pads or analogues (what are you, a guitarist?), you'll still find something amongst the basses, guitars, acid synth patches, sub-TR808 drums, organs, brasses.

OK. I admit it. I'm impressed.

Both cards, in common with other manufacturers' offerings for the D50, benefit enormously from a little tweeking. That doesn't mean that VALHALA has got it wrong, simply that you can't satisfy even one of the people all of the time. But, if the basic sounds are good, a bit of quick manipulation of the reverb and 'common' parameters can work wonders. Never settle for just what you get. Be adventurous. My favourite from both ROMs? Try the brassy A Slow Seven' on D-502, but edit out the Upper partials to leave a marvellous solo brass patch.

Here's an interesting discovery: if you do go to audition these cards try to play them from a six or seven-octave master keyboard - vou'll be pleasantly surprised. The extra range brings out additional textures, and makes using some of the sounds much more interesting. I wonder if VALHALA intended this, or whether it's a quirk of the programming?

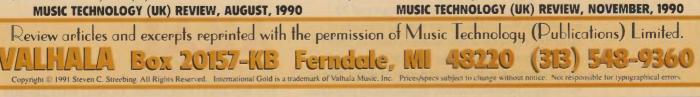
The ultimate question for any reader of a review is "should I be interested in these sounds?." If vou've got a D50 or D550 (why else would you be reading this?) vou've probably already gathered that you should! There are (inevitably) a few dogs among the 128 patches on offer, but there are also a number of absolute gems - the overall impression is one that firmly lives up to VALHALA's excellent reputation for quality.

It's tempting to conclude with some trite phrase such as, 'there's something here for everybody', but that's true for any collection of sounds provided there are enough of them. A better message would be that there is a breadth to VALHALA's sounds, a quality, that speaks for the programmers who understand what makes a patch valuable to us 'umble musicians. And at only £40 per 64-patch ROM you are, in effect, saving a tenner against the PA Decoder collections (128 patches for £99), and a full £60 against the Sound Source Unlimited 64-patch cards. On that basis quality plus value - what more do you want?

Gordon Reid



MUSIC TECHNOLOGY (UK) REVIEW, AUGUST, 1990



ANOTHER STAR HAS JOINED ARSENIO'S POSSE.

Starr Parodi, keyboardest for the Arsenio Hall Show, wants more than perfection. "I go more for the passion in music, and I want to communicate emotion to the audience", she says. "And any gear that can enhance that process is a valuable tool." That's where our new Akai S1100 prevails.

You see, we've taken the S1000, which is already the standard in digital sampling, and added technology that enhances musical creativity more than ever before. The new 64 time oversampling A/D convertors, and the floating D/A conversion process, provides the truest reproduction of your sounds. With a fully expanded memory of 32 megabytes, the S1100 allows over 12 minutes of sampling capacity. It also features built-in SMPTE with cue list programming and a SCSI port for direct connection to hard and optical disks. Not to mention, a built-in realtime digital signal processor.

Starr goes on to say, "We just did a new theme for the Arsenio Hall show, and we did fantastic things on the intro with the new Akai sampler. It wasn't a case of eliminating musicians, but of adding elements that we could only imagine before. Also, I am just finishing my first solo album in which I used the Akai sampler for a wide variety of instrumental, vocal and percussion tracks."

So, gather up your own posse, and see what this star will do for you. See the S1100 at your local authorized Akai Professional dealer today.



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ilar—moreso than any other two digital pianos—and the Yamaha's features appear to have evolved from the C-7000.

The C-7000 sports no distinctive bells and whistles; it's a workhorse digital piano. Associate editor Robert L. Doerschuk has performed on

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one at *Keyboard* advertisers' breakfasts at the last three NAMM shows. If you had your back turned, you'd swear

he was playing an acoustic.

CASIO CELVIANO AP-7: BEST DASHBOARD	· · ·	· ·	. Mert	t all	MI TION	•
KEYBOARD RESPONSE		•	Ē			
REALITY CHECK: PIANO						
REALITY CHECK: OTHER SOUNDS						
DASHBOARD			٠			
BELLS & WHISTLES				٠		
BANG FOR THE BUCK		•				

Dashboard? Well, "front panel" just doesn't sound as exotic. And really, the AP-7 is a fairly exotic instrument.

You may ask, "Where the heck does that 'Celviano' come from? And how do you pronounce it?" We asked. Ed Alstrom of Casio answered: "The 'C' stands for Casio, 'el' for electronic, 'v' for velocity, and 'iano' for piano." By this summation, you'd pronounce it "kelviano," but apparently that isn't so. "We here in New Jersey say 'selviano,' but they may call it 'chelviano' elsewhere in the world."

As a digital piano, the prototype AP-7 that Casio provided for our roundup falls back a bit due to its piano sound. The loops in low notes are unequivocally horrible; play a low *C* and you'll soon have a little twobeat rhythm going that's an absolute no-no in the sampling realm. Loops in a sample should be nearly undetectable. (We could hear bass-register loops in all of the pianos in this roundup, but none was as bad as this.) In addition, all of the sounds hiss. Alstrom tells us Casio's prototypes often suffer from audio problems such as these, and that sounds in the actual production models will be much improved.

Its keyboard, however, is another story. Although a number of people disliked the keyboard—perhaps basing their judgment on the instrument's sound quality— some found it quite good. In

fact, Doerschuk favored it over all the others. All evaluators' scores averaged together placed the AP-7 fourth in the keyboard response category.

But the Casio's breakthrough is totally unexpected: It has a built-in CD player. While it was quite welcome during the long hours during which we wrote this, the CD player also serves a noble purpose. Casio has released a series of educational, play-along CDs—in addition to accompanying music books—with the piano track panned to one side and other load instruments to the other. Using a front-panel button, you can mute either side, so that you can play along with selected instrumental tracks. The AP-7 will likewise play Jamey Aebersold and Music Minus One CDs, which are formatted—like those from Casio— with certain instruments panned to one side or the other of the stereo mix. Repeat functions allow *Continued on page 94* Put on your helmet, strap vourself behind the dashboard, pop in a CD, and play along on the mysteriously named Casio Celviano AP-7. In spite of appearances, it isn't simply a CD player with a built-in digital piano.

CASIO CELVIANO AP-7

Keyboard: 88-note weighted, balanced-fulcrum action. Polyphony: 16 notes.

Features: Three reverbs (room, stage, hall), chorus, tremolo, pan (low frequency notes to the left in the stereo mix, high notes to the right), pedal effect (reverb and chorus added when damper pedal depressed), brilliance and volume sliders, global tuning buttons (±50 cents), transposition (down to F#, up to F), and RAM/ROM card slot (one playback ROM included). Two-track sequencer with start/pause, stop, cue, review, track on/off, record, metronome, display-tempo, repeat, and song-select buttons. Built-in CD player with volume slider, three-band graphic EQ, start/pause, stop, cue, review, track-select, and repeat controls, and channel selecter/mute (left/right/center/stereo) button; track, programmed track section, or entire CD repeat (one playback CD included). Three pedals (default to soft, sostenuto, damper; programmable for sequencer control); multi-level half-pedaling and sforzando-piano pedaling. 16 x 2 backlit LCD, four-LED beat indicators. Sliding plastic keyboard cover, smoked-glass music stand.

- MIDI Implementation: Sends and receives note, velocity, program change, damper, sostenuto, and soft pedal data. (Damper pedal transmits and AP-7 receives via controller #64 five values from zero to 127.) Defaults to omni mode at power-up; available global channels 1-12. In multi-channel mode, sequencer tracks A and B and card parts A and B automatically assigned successive channels beyond global channel. Transposition internal only—transposed note values aren't transmitted.
- Memory: Eight sounds (piano 1 and 2, electric piano 1 and 2, harpsichard, vibraphone, acoustic guitar, pipe organ). Sequencer: about 5,600 notes.
- Speaker System: 30-watt stereo amplifier with four speakers.
- Interfacing: Left and right 1/4" line inputs and outputs, 1/4" mike input with level control, two 1/4" stereo headphone outputs, MIDI in/out/thru.

Dimensions: 57" x 33.3" x 21.5". 145.5 lbs.

Finish: Ebony plastic.

Projected Retail Price: \$3,500 to \$4,000.

Contact: Casio, 570 Mt. Pleasant Ave., Dover, NJ 07801. (201) 361-5400. Fax (201) 361-3819.

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SAMPLING COLLECTION 600

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SAMPLING COLLECTION 800

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you to play the entire CD, a single song, or a section of your choice within the song, over and over while you play along.

Perhaps most amazing of all is the Casio's ability to play CDs at any of five slower speeds— which automatically transposes the AP-7's voices to the proper pitch. Not only that,

but you can synchronize the AP-7's sequencer with the CD player. Wow!

Among the other features associated with the CD player is a three-band graphic equalizer, which allows



We were excited by the sound of the Technics SX-PX66 at last summer's NAMM show. Now we wonder if Chicago's smog affected our hearing.

you to boost or cut bass, midrange, and treble. (If only it also worked with the AP-7 sounds.) The CD player even has its own volume slider.

The AP-7 also features a built-in two-track sequencer—not very sophisticated, but a valuable educational tool nonetheless—and a card slot. Casio will market ROM cards with sequences that you can play along with, as well as RAM cards to store your own sequences. The final feature that stands out as an educational extra is the pair of headphone outputs, so that teacher and student can listen privately while creating minimal disturbance for others.

Physically speaking, we have a potentially major gripe with the AP-7 designers in regard to the underside of the instrument beneath the keyboard: It extends to just less than two feet from the floor, almost five inches beneath the plane of the keyboard. This is about two inches lower than most of the other digital pianos in our roundup. The point is, long-legged players—like editor Dominic Milano, who whacked his knee good—might have trouble finding a comfortable playing position from which they can reach the pedals. (Perhaps this is another sign that the AP-7 is an educationally oriented instrument.)

But what a dashboard! The AP-7 is an exotic instrument with plenty of potential. All things considered, it's a co-winner of the bells & whistles award.

TECHNICS SX-PX66: BIGGEST LETDOWN

BELLS & WHISTLES BANG FOR THE BUCK

Going into this exercise, we really thought the PX66 would be a contender for the overall title. Technics introduced it with a bang at last summer's NAMM show (see Sept. '90 *Keyboard*), demonstrating that the PX66's piano samples included the sound of the hammer striking the piano strings and the sympathetic vibrations of the piano's harp. Technics has labeled this technique Harmonics Source Sampling, or HSS for brevity. In the demonstration booth, the PX66 sounded superb. We anxiously awaited the opportunity to compare it with other digital pianos.

.

Talk about letdowns. To start with, the PX66's sound system over-emphasizes bass sounds, which in our opinion is detrimental to the entire piano sound. If we could, we'd graft the Casio AP-7's graphic equalizer into the PX66 and cut its bass as far back as possible.

Next, the acoustic resonance simulation. When you play notes from Middle *C* up, you'll hear a resonance

TECHNICS SX-PX66

Keyboard: 88-note weighted, leaf-spring/fulcrum-action. Polyphony: 32 notes.

- Features: Chorus, four reverbs (room, stage, hall, and pedal-controlled), hammer strike and harp resonance included in piano samples, sevenstep brilliance slider, transposition (down to G, up to F#), rear-panel tuning knob (±40 cents), three pedals (damper, soft, sostenuto), multilevel half-pedaling and sforzando-piano pedaling, two velocityresponse curves, equal-octave or stretch tuning, sliding (left and right) wooden music stand, sliding wooden keyboard cover, matching padded piano bench.
- MIDI Implementation: Sends and receives note, velocity, program change, chorus, damper, sostenuto, and soft pedal data. Damper pedal trans-

mits, and PX66 receives via controller #64, four values from zero to 127. Omni on/off. Transposition internal only—transposed note values aren't transmitted. All-notes-off message transmitted whenever all keys released.

Memory: Ten sounds (grand piano, upright piano, electric piano 1 and 2, electric grand, harpsichard, vibes, acoustic guitar, strings, pipe organ).

Speaker System: 50-watt stereo amplifier with six speakers.

Interfacing: Left and right/mono 1/4" inputs and outputs, 1/4" stereo headphone output, MIDI in/out/thru.

Finish: Simulated wood grain.

Dimensions: 56.1" x 33" x 19.9". 176 lbs.

Suggested Retail Price: \$4,199.95.

Contact: Technics, One Panasonic Way, Secaucus, NJ 07094. (201) 392-6140. Fax (201) 348-7954.

94

IT'S REAL. IT'S AFFORDABLE. AND IT'S AVAILABLE **RIGHT NOW.**

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Not another "me-too" addition to a product line, but a totally integrated 16-channel system from the company that specializes in mixers.

Greg Mackie set out to develop the most flexible, feature-packed, practical and expandable mixer ever. Those who already own CR-1604's tell us that he's succeeded and then some. Moreover, they say it SOUNDS superb.

They aren't mutually exclusive anymore. The CR-1604 gives you 90dB working S/N and 112dB dynamic range. In every circuit stage, we've concentrated on improving noise performance

... and then preserved these improvements through a new gain structure topology. At the same time, the CR-1604 also gives you two times more headroom than old-style mixers ---- where it counts, in the critical mix amp stage.

Because we so unflinchingly scrutinized "features" others take for granted, the CR-1604 delivers many un-typical but refreshingly useful differences. Like equalization centered where it's most musical: Bass at 80Hz

(not 100Hz), midrange at 2.5K (not 1K), and HF at 12K (not 10K). Small

touches, but indicative of the thinking behind every facet of the CR-1604.

You can simultaneously run a stage monitor mix, two reverbs, two digital delays AND a stereo recording mix, or . . . well, we're sure you can come up with your own uses for this many sends. To find out how we achieved this in such a compact design, get our detailed brochure.

Not just afterthought XLR's stuck on the back, but discrete, balanced microphone preamps as good as you get in a big console or one of those expensive separate boxes. Four conjugate-pair transistors with large emitter geometry reduce distortion at all levels, and deliver extremely low noise (our published spec – 128 dBM @150 ohms is real and verifiable). Attach our XLR10 module to add 10 more MIC preamps quickly and economically.

Our moveable "connector pod" attaches two ways and changes in two minutes. When rotated to the back, the CR-1604 becomes a 7-space rack-mount mixer.



All connections except headphones are on the rear. Turn the pod 90° and you have a table-top mixer with just the right slope and quick, convenient access to all inputs and outputs.

Because all input and output circuitry is contained in the CR-1604's pod, you'll be able to add specialized Mackie control modules later. Like a 16-ch. noise gate/MIDI mute, or perhaps full parametric EQ, automated MIDI mixing or 16-ch. noise reduction . . . Who knows? The mind boggles!

ED CONSTRUCTION AND

Greg Mackie brings 20 years of practical design and production experience to the CR-1604. So you can be sure it's no lightweight, physically or electronically. You get a steel chassis, built-in power supply, double-redundant parallel-wired dual pots

and environmentally-sealed rotary controls. It's reliable, roadable and backed by an unusually-lona, confident warranty.

The CR-1604's only flaw may be its price: Comments on warranty cards indicate some people think we're not charging enough for this much mixer. But then, Greg Mackie's philosophy is that with the right attention to detail, quality and performance don't have to cost more.

We've only touched on a few of the CR-1604's innovative features in this ad. For the whole story, call or write Doug Schauer for a detailed 6-page brochure

and the name of your nearest Mackie dealer. Then check out the CR-1604's sonic performance and features for yourself.

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similar to that of the harp in an acoustic piano. Trouble is, Technics' engineers went overboard and made the resonance louder than it should be. If it was more subtle, it would be eminently more effective. As it is, the resonance adds a buzz to the sound that we first thought was a hiss in the piano sample. Per-

haps cutting the high-frequency content with our graphic EQ would help. Actually, using the PX66's brilliance control, you can cut back the highs; however, this simply boosts the bass. So you're left with either obnoxiously boomy bass or annoyingly buzzy highs. That's



Love to have fun with auto accompaniments? Bachmann's WS 400 serves up enough rhythms to keep almost anybody happy— provided they can figure out how the thing works. But as a digital piano, it needs an image consultant.

a no-win situation.

There's also a problem in the MIDI realm. When you stop playing notes on the PX66, the instrument transmits an all-notes-off command over the currently chosen MIDI channel. This means that, if you're merging notes that

BACHMANN WS 400

Keyboard: 88-note spring-loaded action. Polyphony: 16 notes.

- Features: Five-way keyboard splits and layers, three selectable velocityresponse curves, two programmable effects per voice (one dedicated to reverb, the other providing delay, chorus, flanging, phasing, rotating-speaker simulation, and panning), five-track sequencer, three programmable footpedals, trackball pitch-bend/modulation controller, 40 x 2 backlit LCD with contrast control, 3-character LED tempo display. Transposition globally (±6 semitones) or sectionally (±24 semitones). Sliding smoked-plastic/metal keyboard cover, flip-up metal control panel lid/music stand. Optional disk drive, bass pedalboard, and volume pedal.
- MIDI Implementation: Sends and receives note, velocity, program change, pitch-bend, mod wheel, volume, damper, sostenuto, and soft pedal, increment/decrement, system-exclusive, song-select, clock, local on/off, all-notes-off, and active sensing data. Five separate transmit/receive channels (split sections/sequence tracks), separate receive channels for effects 1 and 2 (for changing the type of effect),

you play on the PX66 with sequenced data on the same MIDI channel to trigger an external MIDI synth, the module will shut down when you stop playing the PX66, even though it still might be receiving note data from the sequencer. Talk about headaches. . . .

One good thing we found about the PX66: It remembers all the reverb and effect settings you select for each sound, even when you turn it off. It's also a handsome digital piano from a furniture standpoint.

BACHMANN WS 400:

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AUTO-ACCOMPANIMENTS-R-US	°0	GUS M	ACC	ALABLEN EPTABLEN EXCELLER EX PERFE
KEYBOARD RESPONSE	•			
REALITY CHECK: PIANO				
REALITY CHECK: OTHER SOUNDS		•		
DASHBOARD				
BELLS & WHISTLES				•
BANG FOR THE BUCK				

Basically, the Bachmann WS 400 from Italian manufacturer Generalmusic suffers from an operating system that's too complicated for the typical home user. We could tell that right off the bat, because there's no volume control; you have to press a specific button before you can turn the dang thing's volume down. On the other hand, while the WS 400 provides flexibility in sound and effects programming that more demanding users may appreciate, its sound quality isn't very good.

To the left of the WS 400's keyboard is a trackball, a rubber-like globe that you move from side to side for pitch-bends and forward or backward to add vibrato to the sound. (Actually, this is more of a pseudo-trackball: Real trackballs turn without restriction and aren't springloaded; the rotation of this one is limited to about 10%.) To our knowledge, this is the first implementation of a trackball for such a purpose, and it ain't half bad.

Above the trackball is a circle of four pie-shaped Continued on page 140

and global transmit/receive channel (omni mode not supported). Input note, song-select, program change, and damper pedal data filtering; output note, song-select, program-change, and damper pedal data filtering. External/internal clock select. Local on/off for each of the five split keyboard sections. Globally transposed note values transmitted.

Memory: 128 preset sounds, 32 preset song patterns, 32 preset auto accompaniments (with intro, ending, fill, major, minor, and seventh patterns), 32 programmable sequences, 128 programmable global setups.

Speaker System: 40-watt stereo amplifier with six speakers.

Interfacing: Left and right RCA inputs and outputs, 1/4" stereo headphone output, 1/4" stereo speaker output, 1/4" volume pedal input, DIN pedalboard input (pedalboard optional), MIDI in/out/thru.

Finish: Ebony plastic and steel (wood stand).

Dimensions: 33.1" x 56.7" x 18.5". 160 lbs.

- Suggested Retail Price: about \$5,000. Optional 3.5" disk drive: about \$550
- Contact: Generalmusic, 1105 N. Ellis Ave., Bensenville, IL 60106. (708) 766-8230. Fax (708) 766-8281.

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PIANO ACTION & SOUND Continued from page 87

For your educational enjoyment, we've reproduced illustrations of the actions on the Roland and the Yamaha, as well as that of a standard grand piano. There isn't space here to describe in detail the sequence of events that take place when you play a note on a grand piano. For more information, see our bibliography at the end of this article.

• The Pedals. Some digital pianos provide a complete set of three pedals: the damper or sustain, the sostenuto (hold several notes when you depress it, and those notes will sustain when you play them, while all others will be damped normally when released), and the soft. Those instruments that offer only two pedals let you decide whether the left pedal should be soft or sostenuto. On the Casio, you can even assign the sostenuto pedal to start and pause sequencer, card, or CD playback, and the soft pedal to return to and play a predetermined section of a sequence, card, or CD song.

Four of the digital pianos in this roundup—the Casio, Roland, Technics, and Yamaha—respond to partial damper pedal depressions by somewhat lengthening notes releases. This technique is known as "halfpedaling." It gives you more precise control over the sustain quality of the notes that you play. Whereas the Yamaha only has a single level of half-pedaling, the other three offer multi-level half-pedaling, with the pedal position determining the degree of note damping. Roland's HP-3700 provides the most flexible half-pedaling control of the units reviewed here: Its damper pedal seemingly works in a continuous fashion, almost like a sweeping volume pedal.

Another pedal-based technique that every instrument here save the Bachmann supports is sometimes called "sforzando-piano." In this procedure, you play notes and depress the damper pedal as or just after you release them. The resulting effect sounds somewhat like the harmonics a guitar player produces by slightly damping and plucking his instrument's strings. Instead of the decaying sustained sound, it's quieter and generates softer fundamental frequencies.

Now, we'd like to give those diligent digital piano engineers a new assignment. This one has to do with the soft pedal. When you soft-pedal a grand, the sound not only gets quieter, it also changes in quality, because the keyboard mechanism is shifted sideways so that the hammers strike fewer strings per note. However, even though one string isn't



Jonathan Cain of The Babies, Journey & Bad English Album: "Bad English" [Epic] "Analog, Digital, to Special Effect; if you're looking for any sound Voice Crystal has them. Just listen to our #1 Bad English Album, Voice Crystal sounds are





Emerson, Lake & Palmer and "3" Album: "To the Power of 3" (Geffen) Violunt: To the rower of S (center) "Pioneening (the first portable?) Moog Synthesizer console in '69 proved a demanding feat. Towering to 7 feet, a ladder was sometimes necessary to change patchcords. It also weighed approx. 1 ton. The road crew hated me. I now carry a Voice Crystal in my top I now carry a voice crystal if the adder, and my road crew loves me." Cheers,

Russ Freeman "A lot of sounds out there are interest-The Rippingtons ing, but the bottom line is; can you make records with them. With Voice Crystal cartridges you can. I'll definitely be featuring some of the sounds on our next GRP Rippingtons Album, 'Welcome to the St. James Club.' Thanks for making synth programming easier!" 2055 FREEDUAT

Rob Mullins

Album: "Tokyo Nights" "Voice Crystals give the musician the best sounds for both the live and studio situations. It is simply the best sound library on the market. ROB MULLINS



John Lawry Keyboards for Petra Album: "Beyond Belief" (Word) olo Album:"Media Alert"[Word] "Great sounds for the working musician.

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Marc LeBrun Keyboardist/LA Session Player

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Marc LeBrun



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Kevin Gilbert Keyboardist for Giraffe

1988 Yamaha Sound Check Winner

Having a vast library of sounds

this good allows me to focus on

my songs." Kit Ant

Star Real



teaching, there just isn't time for programming, so I rely heavily on outside sources for sounds. Voice Crystal provides me with the sounds I need. The sounds are musical, contemporary and available for all my keyboards. Voice Crystal has truly become a powerful 'voice' for my music. Jom Cooks formerty of Santana



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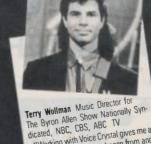
Bobby Lyle Album:"The Journey" "The new Voice Crystal cartridges give me a whole new array of dynamic sounds to color my music with. I'm looking forward to make ing them an intergral part of my 90's " Ryle sound for the 90's



Gene .

Stove Rold Producer/CBS Records The Rippingtons and Super Tramp "One of the most demanding things about producing is finding the right new sounds for each project. With Voice Crystals I've found an endless variety of tresh sound for my synths and samplers.

Keyboardist for Angela Bofill Album: "Angela Bofill/ Intuition" [Capitol] "I was given only a few weeks to prepare for the 1989 Good Friends National Tour. With no time for programming my own sounds, I turned to Eye & I Productions and Voice Crystal sounds. From Fat Analog sounds to complex Digital Timbres Voice Crystal really came through for ne. Thanks Guys." MIG St



"Working with Voice Crystal gives me a spectrum of sounds to choose from and leaves me free to compose and play music." Jerry Wollman

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Keyboardish for Sergio Mendez & RAVE'L Album: "Midnight Passion" (Polydor) "I use Voice Crystal because they bring new life to my synthesizers and samplers." Album release Inelie Rovel Jan. '91





PIANO ACTION & SOUND

struck, it still will vibrate in sympathy with its immediate neighbors that are struck, and will still play a part in producing the sound. None of the digital pianos duplicate this phenomenon, although the Roland reduces brightness slightly when notes are played so as to produce an equivalent volume.

• The Sound. For the most part, all the principals now realize that using sampled piano sounds—or some related process—is the best way to go. The most common label attached to sampled sounds is pulse code modulation (PCM). Yamaha prefers their own acronym, AWM, which stands for advanced wave memory, but it's essentially the same process.

Even though by 1988 many manufacturers had accepted the fact that sample-playback was the best sound source for digital piano simulation, some engineers still tried unsuccessfully to squeeze believable acoustic piano representations out of synthesis techniques like FM (frequency modulation). While FM is dandy for creating bell and electric piano sounds, among other things, we've yet to hear it generate a convincing acoustic piano sound.

One successful piano-synthesis technique is Roland's structured adaptive synthesis, or S/A. Instead of simply playing back sampled sounds, Roland's engineers employed a computer-assisted three-dimensional analysis process to determine the frequencies produced by an acoustic piano at 128 different velocities. The resulting S/A formula is used to simulate acoustic piano timbres by generating harmonic variations in the sound based on velocity, frequency, and time parameters.

Several of the digital pianos in this roundup illustrate that engineers have made impressive strides in simulating some of the acoustic piano's inherent gualities. For example, when you keep repeating a bass note with the damper pedal depressed on the Yamaha and Roland instruments, different overtones appear at times along with the fundamental note, very much like what happens on an acoustic piano. Technics caught our ear at last summer's NAMM show when they demonstrated that their PX66 included the sounds of an acoustic piano's hammers striking its strings and the harp vibrating in sympathy with those strings. However, upon close scrutiny of the PX66, we discovered that going to such lengths may not pay off if the effect is overemphasized. Roland's HP-3700 more effectively simulates the acoustic piano's harp resonance when you depress the HP-3700's damper pedal. The effect is subtle, as it should be.

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Another very important aspect in the design of a digital piano is the number of notes that can sound at once. On any acoustic piano-for this exercise, preferably an old, cheap one-you could take a couple of twoby-fours, slam them down on the black and white keys, and all the notes-or at least those that work-will play. That kind of polyphony, or number of notes that can sound simultaneously, in a digital instrument would require more voices than would be economically feasible. Therefore, digital pianos-like most other electronic instruments-have a limited polyphony, typically 24 or 32 notes. When you tax the polyphonic limit of an instrument, the voice channels used by the notes that have been playing longest are reassigned to the notes that were most recently played. Fortunately, we didn't notice a voice-stealing problem while playing single sounds on any of these instruments. However, you can quickly reach the polyphonic limit on an instrument that provides multitimbral capability (in this group, the Kurzweil, Roland, Yamaha, and Bachmann) by accessing several different sounds from an external MIDI controller.

Finally, there are the issues of stereo imaging and sound source. On an acoustic piano, low notes come from the left side of the piano and high notes come from the right. If you're playing a grand piano, since your head is a foot or so above the plane of the sounding board, the sound seems to come out of the top of the instrument. If you're listening to someone else play, depending on your location, sounds may appear to come out of the top, bottom, or both, Sounds from an upright or spinet emanate from in front of you when you play. All the instruments reviewed here have stereo speaker systems, and all address the stereo-imaging issue similarly: low notes emanate from the left speaker, highs from the right, and notes in between are panned to appropriate points in the middle. (A front-panel button on the Casio allows you to disable this panning of notes in the stereo field.) Most of the instruments have their speakers mounted inside the same cabinet that contains the keyboard, with the bass speakers facing down and the tweeters facing either up or down. Both the Kurzweil and the Technics have a separate woofer cabinet mounted beneath the main cabinet, with the speakers facing toward the player. None of the configurations seem optimized for perfect acoustic piano simulation. Then again, having a wall of speakers in your face or a 4' square plank of plywood loaded with upward- and downward-facing speakers sticking out the back of your digital piano isn't a particularly aesthetic-sounding proposition.

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CRAIG ANDERTON

TEST SEQUENCES FOR PATCH MATCHING

F YOU JUST RECORD AND PLAY back music with your sequencer, you're not using it to its fullest capacity. A sequencer makes a splendid piece of MIDI test gear, and can help automate several boring studio tasks.

For instance, I'm a real tweaker when it comes to synth patches. Rather than keep a zillion patches stuffed in a librarian somewhere, I tend to fill up a synth's RAM (and cartridge, if possible) with a consistent set of patches that gets tweaked over time. Most of these are original patches, along with some public domain and factory patches. The advantage of this approach is that I get to know the patches real well, and upon discovering new programming techniques, can tweak older patches to give them a little more life.

However, this method of patch management often leads to inconsistencies between patches—different bend ranges, levels, controller assignments, and the like. This makes life difficult when doing patch substitutions for a sequence; the same sequence data that bends pitch a semitone in one patch might bend an octave in another patch.

This problem really hit home after some manufacturers asked me to create patch sets for their synths. Trying to reprogram all my patches into a consistent format became a major time sink until the light bulb went on over my head: Create test sequences designed specifically for patch tweaking.

Test Sequence for Volume Matching. This sequence has two tracks. The first track generates multiple notes over several octaves, at a velocity of 120. This group of notes is generated for each measure. The other track generates one program change per measure.

Feed the synth output into a mixer with LED peak-reading meters, then run the sequence. The sequence selects a program and plays the test notes, then increments to the next program and plays the test notes, and so on. Carefully monitor the LED meter and observe the peak levels; some patches will hit higher levels than other patches. When you encounter a "rogue" patch, mute the program change track so that the patch keeps getting hit with the test notes but doesn't change patches. Call up the synth's level parameter, and adjust until the peak reading is consistent. When that's done, save the patch, unmute the program change track, and move on to the next patch. Caution: For sounds with long attack times, you may

need need to slow down the sequence tempo to lengthen the test note durations.

Since some patches will distort with lots of notes or notes with high velocities, feed in at

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PATCHES THAT SOUND WONDERFUL BY THEMSELVES MAY NOT CUT IT IN THE CONTEXT OF PLAYING ALONG WITH OTHER INSTRUMENTS.

. . . .

least 8 or 9 simultaneous test notes at high velocity values. If the synth doesn't distort under those conditions, it almost assuredly won't distort with normal playing.

After balancing all patches in this manner, try a couple of additional tweaks. Bass and lead patches often need to be a bit louder since these usually play only one or two notes at a time. Pads, where you may be holding down lots of notes, often need to have their levels reduced.

The reward for all this will be evident the first time you start dialing up different patches for use with a particular sequenced line and don't have some patches blasting and others whispering.

Pitch-Bend Range Test Sequence. Some synthesizers have a global pitch bend range parameter, but others allow individual pitch-bend range settings for each patch. Although you can always scale sequencer bend data to accommodate a particular pitch-bend range, it's much easier to have consistent pitch-bend range settings at the synth itself.

This sequence adds another track to the previous sequence. The new track sends out a constant, maximum pitch-bend value for each measure, along with the test notes. Play the sequence, and each patch should be at the same pitch. If not, there's a mismatched pitch-bend range setting. Stop the sequencer and fix it.

Controllers, Anyone? Proper use of continuous controllers can make the difference between blah patches and truly expressive patches. In many cases, though, the same physical controller will alter different synth parameters. For example, although the mod wheel usually controls vibrato depth, it might just as easily crossfade between sounds, change filter timbre, or perform other functions in other patches.

Documenting patch sets used to mean punching buttons to find out which controllers

affected which parameters, but now you can just run a test sequence that generates several different controller messages, each of which goes from 0 to 127. For best results, program these sequentially—*i.e.*, a measure of controller 7 changes, a measure of controller 1 changes, a measure of controller 4 changes, pressure, and so on. Observe the effect(s) on the sound, and you'll find out which controllers affect which parameters.

Patch Tweaking in Context. Patches that sound wonderful by themselves may not cut it in the context of playing along with other instruments. For example, a bass patch that sounds perfectly fine in isolation may not survive when competing with a kick drum and left-hand piano part.

The test sequence remedy is to load in a piece of music that has tracks for drums, bass, lead, pads, etc. Loop the tracks and do your final patch tweaks in context with the other parts. You may find that opening up the filter on bass patches helps give them some bite, or pulling back on the release for long pads may result in a less mushy sound.

Velocity Sensing Test. While MIDI specifies a note velocity range from 1 to 127, not all modules are capable of responding at 127 discrete loudness levels. Older drum machines in particular may have only eight or 16 different levels. To find out how your machine responds, program a sequence with 127 equally spaced notes, one at each velocity level. As you play this sequence, listen for the staircase effect when the drum module jumps to its next higher level. This test sequence can also be used for testing the response range of a patch, especially one that has been programmed with a velocity curve.

Next month: Frustrated because you can't find software-based editors for your favorite signal processors? Well, your sequencer may have the secret talent of being an easy-to-use effects editing program. Catch you then.

Author/musician Craig Anderton lives his life surrounded by 3.5" diskettes. He is very glad they are not carnivorous and don't need to be housebroken.



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CARTER SCHOLZ

CONVENTIONAL WISDOM

SIZABLE MINORITY OF KEYBOARD readers are not computer-equipped. But quite a few of you (27% according to our latest reader survey) plan to lose your virtual virginity in the next year. For you, and for more weathered users as well, I'm going to recount some tried truisms I've learned in several years of tempestuous relations with silicon.

THERE IS NO GOOD TIME TO BUY EQUIP-MENT. This is as true of computers as it is of keyboards and effects. Whatever you buy now, next year (or next month) there'll be something snazzier, faster, better, for less money. It's a law of high technology—once you buy into the fast lane, perpetual regret is a way of life. The corollary is that you can wait forever for a dream machine and never get anything. From this dilemma there is no real escape. Only your wallet, immediate needs, and unbridled lust can decide for you.

THE SPENDING NEVER ENDS. Like an automobile, your computer will require periodic infusions of cash for non-sticker items like software, accessories, extra memory, cables, floppy disks, and more. This is a rude surprise to many first-time buyers. Be ready for it. Be ready, too, for obsolescence. The half-life of a new computer is about three years from its release date. After that, life with it gets harder and harder, as new software fails to run on it, or runs too slowly to use. This is relative; I'm sure some 12-year-old Apple IIs are still in use—but not many.

LET THE SOFTWARE DETERMINE THE COM-PUTER. This truism is getting threadbare. If you absolutely must have a particular program, and it only runs on Computer X, that obviously decides it. But your overall software needs-what are you going to use the machine for besides sequencing?-may be more of a determinant than any single application. The choice then comes down to price, performance, and support; and the greatest of these is support. If you have three friends with IBMs, and none with Macs, you have to be, well, adventurous to choose a Mac. If your friends are computerless or as inexperienced as yourself, buy from a good local dealer. "Good" means someone who respects your intelligence and needs, and is willing to give you sufficient time and personal consideration before the sale. If you find such a dealer, don't hesitate to pay a few hundred dollars extra. The first time you have problems-often the same day-you'll be glad you're talking to a human being.

Another factor is "user base": How many Brand X's are there in the world? The higher the number, the more attention it will get

from software, book, and magazine publishers. I think this level of support is less important than the local one-on-one kind—quantity of attention doesn't mean quality—but it's not inconsiderable.

YOU WILL HAVE PROBLEMS. A computer will complicate your life. No way around it. It will not make things easier, faster, more organized, or more productive, not in the short term. Not by magic. Once you learn how to use it, benefits will accrue; they may or may not be worth the trouble and expense. Really learning to use a computer is, oh, roughly as complicated as learning to drive a stick shift and change your oil, or learning to bake decent bread. The trick is not to get frustrated while you're learning, and not to have great expectations about how fast you'll learn. "Learning" is not so much knowing the ropes or memorizing commands as it is becoming comfortable with a new way of working. Unpopular but true: Some people simply don't need computers, and shouldn't go anywhere near them.

STAY OFF THE CUTTING EDGL. It used to be "never buy version 1.0." As software and operating systems become ever more complex, this advice should be broadened to read "approach *any* new software release with caution." More often than not, version 4.1 will be rapidly followed by 4.1.1, 4.11a, and 4.12 as the real-world bug reports come in and get fixed. Unless you have time to spare or absolutely can't do without the new functions, resist the temptation to keep utterly up to date, and always keep the previously stable version around. If it ain't broke...

DON'T COUNT ON UPGRADES. Software is a volatile field. Today's Golden Boy is tomorrow's Chapter 11. Even stable companies with excellent track records have been known to abandon a product, or sell it. The upgrade path can become an expensive one. So buy software for what it is; buy it believing that "what you see is what you get." On no account believe that "this feature is coming in the free upgrade to version 2.0 next month." That way, when the program *does* mature along normal lines, adding features and fixing bugs in a timely fashion, it's all gravy to you.

FIND A KNOWLEDGEABLE FRIEND. If you can't find one, join a user's group. You don't want your computer to take over your life, as seems to have happened to some people at user's group meetings. But when your printer stops working, or your screen starts flashing in Greek, or you see the "Hard disk error" message, it sure helps to be able to call someone competent. 90% of what goes wrong with computers has a five-minute fix. You can save a lot of time, money, and aggravation if you know where to find it.

BUY A HARD DISK. I don't care what kind of computer you have or are scoping out. These puppies are no longer a luxury. As software grows more complicated and bigger (Apple's System 7, Windows 3.0, etc.), they are all but mandatory. Get the biggest, fastest drive you can afford. If you're planning to store lots of sampled sounds, capacity and speed become even more important. By the way, file compression utilities, which can archive text and program files in 50% of their normal space, aren't nearly as efficient with sound files.

EACK UP YOUR HARD DISK. This is like fastening your seat belt. You tend to be a little cavalier about it until you have an accident. Then you become a zealot. Do it, folks. Hard disks are consumables. They die. It's not if, it's when. One of my drives lasted five years, while another croaked after three months. Some otherwise sane and rational people refuse to believe that a month's work can just disappear forever. It can. And a warranty won't replace it.

BE EDUCATED ABOUT VIRUSES AND TRO-JAN HORSES. If any material other than your own disks *ever* goes into your computer, use the most current virus protection you can find. Be especially wary of executable programs downloaded from bulletin boards. Believe it or not, there are a few sickos out there who think it's funny to write innocent-looking programs that will erase your hard disk.

MAIL ORDER IS OKAY. Local retailers can't match the prices of low-overhead high-volume warehouses. Twenty-four-hour delivery, moneyback guarantees, and no sales tax are enticements offered by the larger outfits. If you know exactly what you want, this is often the best way to go.

BUY BY CREDIT CARD. In case of problems, you can dispute the charge. The bank will side with you.

Well, that's it. As with any rules of thumb, your mileage may vary.

Carter Scholz is a frequent contributor to Keyboard. He has been through hard disk crashes and lived to tell the tale.



HE RETURN OF THE BOLLICKING

SAMPLED KALIMBA

NEW COL

HREE THINGS DECIDED ME TO START writing for Keyboard again. First, the occasion of my 40th birthday (aaargh) last year, arbitrary division of time though it might be, was a reminder that the Grim Reaper lurks in the wings and much is left unsaid. Second, a rather plaintive letter from reader Brian Simpson of Adrian, Michigan Ilan. '91], complaining that despite all the powerful equipment now on the market, creativity did not seem to be flourishing. Hmmmm. That thought, coupled with the depressing preponderance of software reviews on these pages, made me feel that someone ought to stand up and write something about music, so often the missing ingredient in today's music scene. And

third, when Keyboard rang to check my journalistic availability, a great bolt of

thunder and flash of lightning exploded from the sky, practically causing me to drop the phone. The omens were hard to ignore.

Some of you may recall my music columns of three or four years ago, wherein all manner of crackpot theories, eccentric musical viewpoints, and dubious attempts at humour were propounded. Since then, the music scene has gone through various bewildering changes, including the current fashion for people to talk rhythmically in rather cross voices instead of singing (I still don't get this) and the re-relegation of keyboards, at least in some quarters, back to the role of providing wimpy little sounds behind the front line of guitars. But the bad news is, though musical styles move on, I haven't changed. I'm still interested in what I would call the essence of music, which is what notes and sounds are being used, what chords, how the chords are voiced, what notes and rhythm the bass line uses, how the programmed tambourine part fits with the conga pattern, and so on down to the last detail. Some people scoff at this kind of thing, dismissing it as "the rules" (and thereby confusing insight with convention), but I find it endlessly fascinating. Maybe I'm a square (fade up Perry Como music), but I know a lot of you are in-

Continued on page 112

Dave Stewart and Barbara Gaskin have been working together since 1981, and are Rykodisc recording artists. Contact them via Broken Records, 18 Yeomen Way, Hainault, Ilford, Essex IG6 2RN, England.



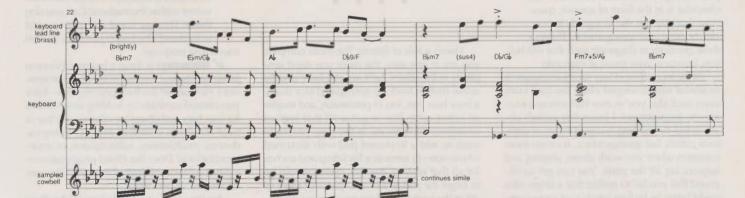


All crackpot theories, eccentric viewpoints, dubious attempts at humour, and especially music and lyrics, copyright © Dave Stewart/Budding Music 1991.













CHECKLIST FOR STRONG ARRANGEMENTS

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HEN YOU STARTED DELVING INTO the world of multi-keyboard arranging, you probably weren't aware of all the tools and techniques at your disposal. In your first few arrangements, you may have had a tendency to grab the first part or chord progression that sounded reasonable and lay it into the track. Do that five or six times and you've got a complete arrangement, right? But with each new arrangement, you'll discover more and more possibilities. And along with the possibilities come hard choices. No matter how much you like that bass line or drum fill, it may not be right for this tune. To grow as an arranger, you'll need to become flexible. Much of the craft of arranging involves rearranging-tearing your precious arrangement apart and putting it back together in an altered form.

For this month's column, I've compiled a checklist that should help you forge a path through this thicket of choices. The checklist is in the form of specific questions that you can use as a guide in trouble-shooting your arrangements. Think of these questions as diagnostic tools that will help you fine-tune your musical concepts.

At the foundation of any strong arrangement lie several well-developed ideas. You can't cram every cool idea you've ever had into one fourminute arrangement. I know this sounds obvious, but overwriting is one of the most common pitfalls that arrangers face. It's even more common when you work alone, playing and sequencing all the parts. You can get so obsessed that you fail to realize that a single idea could better be broken into two or more parts. This could be true of whole sections of a tune, or it could apply to a single line that would be more effective when played by two instruments alternating short phrases. If you're serious about arranging, you might want to start an "idea file" of bits and pieces that didn't work in past arrangements, plus sketches that haven't found their way into arrangements yet. You might keep a special sequencer disk with nothing but these fragments. If you do, be sure to annotate them thoroughly with patch names and drum note assignments!

The other side of the coin is that you do need at least two or three strong ideas to make a complete arrangement. No matter how cool your riff is, your listeners will quickly grow restless if you don't give them some fresh

experiences at key points in the tune. Especially in popular music, the arranger walks a fine line between being dull (through excessive repetition) and being confusing and chaotic (through overwriting).

IF EVERYTHING IS COMPLICATED OR BUSY, YOU LOSE THE LISTENER. FORCE YOURSELF TO PRIORITIZE BY CHOOSING ONLY THE MOST IMPORTANT IDEAS, AND DEVELOP THEM THOROUGHLY.

. . . .

Here's a rule of thumb: The more complex you are in one area, the more you need simplicity in the others. Let's say you have a really active rhythm track—a syncopated kick drum, a busy bass line, lots of percussion, and maybe an active synth line or guitar riff that implies or outlines the harmony. In this case, you might want to add a keyboard pad with sustained whole-notes to serve as a backdrop and anchor for all that activity. Another option would be to forget the pad and let the spaces or silences act as the backdrop. There may be enough musical information in the basic track.

If everything is complicated or busy, you lose the listener. It's that simple. Force yourself to prioritize by choosing only the most important ideas, and develop them thoroughly over the course of the arrangement. A piece of music with too many ideas lacks focus and direction, while one with undeveloped or trite ideas will lack impact.

An arrangement should have an overall feeling of simplicity or directness, no matter how complex any individual part might be. Think about how streamlined and slick a sports car looks. The overall look belies the complexity beneath the surface. Try applying some of these guidelines to your work. You may be surprised at how good your musical instincts are. At the very least, you'll be able to identify problems and start working toward effective solutions.

✓ Rinythm: Are there some unexpected accents—added or deleted beats to create tension? Is there a balance of longer and shorter phrases? Does the drum track provide a solid foundation?

Should certain drum sounds be advanced by a clock pulse or two to add excitement, or delayed by a clock or two so that the part will sit better?

Give the entire arrangement a rhythmic consistency test: Look for unintended clashes between downbeats and syncopation. Make sure all the parts that are supposed to hit together actually do. Start at the bottom with the kick drum and bass and work your way up.

Melody: Is there a balance between expected and surprise intervals and melodic directions? Do the melodic phrases contain interesting rhythmic variations (either planned or ad-lib)? Does the melody wander, or does it have a well-defined direction? Are the lines consistent within themselves? Can you sing them? Do they stand alone as musical statements? Does each part have its own sound and purpose?

✓ Harmony: Is there a balance between predictability and surprise in the chord progression? How about the harmonic rhythm—have you created contrasts by holding some chords for four bars and changing others every bar or two? Have you provided any interesting cadences, modulations, substitutions, or reharmonizations? Does the chord progression remain consistent and logical even with the variations you've provided?

Are the chord voicings balanced? Are there any big gaps within the voicings? Normally, the voicings should follow the harmonic series; that is, the bigger gaps and the notes lower in the harmonic series (fundamental/root, 5th, 3rd) should be at the bottom, with smaller gaps and higher harmonic functions in the middle and upper registers.

✓ **Sounds:** Does the piece display a variety of timbres? Does the blend of sounds hold the

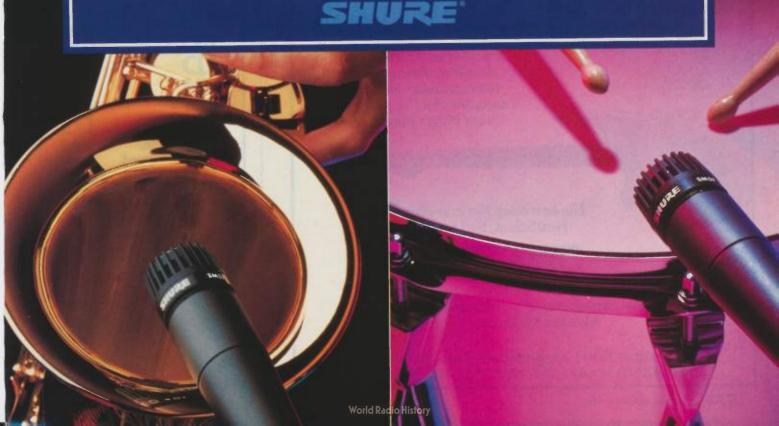
Eric Turkel is the author of Arranging Techniques for Synthesists (Amsco, dist. by Music Sales). He works as a composer, arranger, and producer in the New York area.

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ARRANGING

listener's attention? Is the choice of sounds compelling, or is it boring? Do the sounds complement one another, and do they reinforce the mood that the piece conveys?

Is there a balance between background and foreground parts, with enough parts in each area to provide depth and contrast? Is there enough contrast in sound between rhythmically active and sustained parts? Are the parts balanced in terms of loudness? Can you hear everything without straining? Are the parts panned and EQed in such a way as to give maximum definition? If you have doubled a part, can you justify it? There should be a good reason for any doubling, because it tends to reduce the sonic clarity.

✓ **Style:** Are the parts consistent with the style of music? Does that banjo solo work on your hip-hop track? It just might!

✓ Form: In many cases the style of music dictates the form. This is especially true for music aimed at contemporary hit radio. Still—have you made an effort to use the form to its best advantage to hold or surprise the listener? Have you planned the climax points in such a way as to hold the listener's attention? If a section seems to sag, try adding or deleting a few beats or measures. An odd-length phrase can add a subtle or powerful element of surprise to an otherwise predictable arrangement.

Where is the climax point? (It should prob-

ably be 2/3 to 3/4 of the way through.) Have you provided interludes or transition sections between particularly intense sections, to give your listeners a chance to absorb everything? Is there sufficient overlap in the orchestration to make smooth transitions between sections?

✓ Dynamics, articulation, phrasing: Have you given your music enough personality or character, or does it just plod along? Do the synthesized and sequenced parts sound as if they were played by a human, or are they rigid? (Rigidity can be desirable in some styles, but not in others.) Do all the parts sound and feel good at the actual tempo? With sequencers, it's easy to work on sections in isolation and slower than the final tempo. When working out difficult or complex parts, bring the tempo up to 100% and give your work a reality check.

✓ Parts: Do all the parts have breathing space within themselves? Concentrate on this! The human mind requires breathing space in music, or it becomes overwhelmed and tunes out.

Does the background support the melody, or does it obtrude and distract? Does the melody sit comfortably on top of the background? There should never be any question about what the focus is at any point in the arrangement. The listener tends to hear the rhythm track as "one big part." Beyond that, the listener can focus on two additional parts at most. The more complex your writing is, the more time you need to allow the listener to absorb it.

DAVE STEWART

Continued from page 108

terested in it too. There are a great number of musicians who, regardless of style, taste, or ability, have an interest in knowing how arrangements work-what sounds, harmonies, notes, and rhythms have gone into a piece of music. I'll be writing my articles every month with people like them in mind, hoping to stimulate their imaginations by offering some musical ideas and observations. To the rest, who hate the rules and wish to know nothing about music other than that the pink suit goes well with the white piano, I have only this to say: BLAAAAARGH. There are, no doubt, more eloquent arguments against self-imposed musical ignorance, but buggered if I can think of one right now.

One more word on the subject of equipment, before we get on to the actual music. I have been synthesizing furiously since 1978, so have had plenty of opportunity to observe the development of instrument design over the last 13 years. Some trends have been pretty stupid—what bastard decided we didn't need knobs on our synths, and why wasn't I consulted?—but some have been very welcome. Although I still cherish one or two antique keyboards (why is a violin considered priceless after 300 years, but a keyboard obsolete after ten?) and occasionally call upon their magical, prehistoric analogue powers in moments of



need, I am not so much a purist (or a masochist) that I don't appreciate a modern digital instrument that can offer 200 sampled waveforms, 30 stereo effects, and eight-way polyphonic multitimbrality over MIDI while still staying in tune. You wanna put the entire orchestra in a little 19-inch box? Fine, I'll play it and be grateful enough, as I gleefully add a celeste melody to my wind quintet, string section, and harp glissandi, to temporarily overlook the problem of a missing knob or two. But when you've played everything from a Wasp to a Wavestation, you start to realize it's not the equipment, but the music that counts. So don't feel inadequate if you don't own the latest gear, or your setup isn't as comprehensive as some rock star's in this month's Keyboard. Don't be buzzed by the buzzwords-if you've got a keyboard that makes some kind of noise, you can make music. All you need is a few ideas!

Before inflated preamble becomes novel or encyclopaedia, let's cut to the point of all this: some notated music for you to try out on your Refined Structured Adaptive Linear Arithmetic FM Subtractive Vector WorkstationsTM, *a.k.a.* keyboards. This is an extract from work in progress, a song I am about to record with my partner, vocalist Barbara Gaskin. Long-term readers may remember a few fragments from this being proffered in my last article, in March '88, but since then the tempo has slowed down (as does everything, with age) from J = 120 to J = 115, and the song has been polished off and paraded in front of a few North American audiences.

Some notes on the score: The lead vocal part is written in concert pitch. The bass line has been omitted, but is much the same as the left-hand keyboard part. Bars 1-8 are specimen verse music, 9-21 bridge and chorus music, 22-29 a keyboard solo over a variant of the verse music. In the complete arrangement, the actual verses of the song are longer, and though retaining a Bb minor tonality, go through more chord variations. The rollicking sampled kalimba line you see was, I think, originally played with two hands, but in performance is played by a sequencer to save some poor soul-me, probably-the sweat of having to remember it. Yes, it is quantized, and no, I do not feel guilty about this, though I am subtly aware of a faint aroma of purism that tells me I should be. Begone, Luddite thoughts. The kalimba line becomes a cowbell line by the simple means of sending a program change command from the sequencer to the sampler. The kalimba I used was multisampled, six or so notes from a small kalimba I own, but the cowbell sound is a single sample from a big, alpine-style bell that, in its natural state, emits a rather pure note of Db an octave plus a semitone above Middle C. It was recorded in a very live room, so rings on into loud ambient decay if a note is sustained. With some sounds (notably toms and cymbals), I would use an envelope that allows the whole sample-ambience and all-to sound whether the note played was long or short, but in this case I used a fairly short decay envelope to avoid sonic mayhem.

As you will observe, the cowbell melody line (sounds absurd, doesn't it?) has a repeated rhythm, with one or two minor note variations. The variations continue throughout the bridge and chorus, most notably in bar 16 where the keyboards briefly change key to *C* major, at which point the cowbell adapts its line to embrace a clutch of white notes. I haven't bothered to notate this, as the cowbell rhythm remains resolutely the same throughout, and you can invent your own melodic variations as I did. The small changes are not crucial to the mood of the piece.

The keyboard brass line at bar 22 (played live on a Korg T3) is a written solo that started

out improvised but ended up fixed because I liked the tune so much. I do not approve of licks, but must grudgingly confess that the descending run in bar 29 is one of mine. (It dates back as far as 1970, and was used with both Hatfield & The North and National Health-old British progressive bands I used to play with-as a signal that I had reached the end of my solo. Here it is again. Hey, seguencers and drum machine, I've finished my solo!) When I asked Barbara Gaskin what parts of the song I should feature in this column, she-aware of keyboard players' fatal weakness for widdly bits-insisted I include this solo. "Go on, put it in," she said grimly, "they'll love it."

So get widdling.

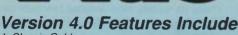
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DRUM MACHINE Programming



NEW COLUMN

ELCOME TO A NEW DRUM PROGRAMMING COLUMN. Drum programming plays an integral part in today's electronic music studio, yet many non-drumming musicians lack confidence in this area. We're here for ya, folks!

This column will explore many different aspects of drum programming. We'll investigate time-tested grooves along with the newest drumming styles. You'll read hints and specialized techniques that will give your drum programming more life. And we'll keep you posted on creative ideas for making the most music with your maracas. But this column will go much deeper than simply presenting patterns and fills for you to punch into your machine or sequencer. We'll discuss how drums and percussion instruments operate within the musical fabric, and we'll let you peek inside a drummer's brain to see what (if anything) makes it tick.

The majority of drum programming tends to imitate a live drummer's playing style. In other words, the kick, snare, toms, and cymbals have specific functions that relate to the music, and to a drummer's ability to strike these instruments with four limbs. Currently, there are three main concepts or

Ex.1a.

Ex.1b.

Ex.2a.

approaches to playing patterns and grooves on an acoustic drum kit. All three transfer beautifully to drum programming.

One structural approach to playing drum beats is the *vertical* pattern. In vertical playing, the hi-hat or ride cymbal sets up a consistent quarter-, eighth-, or sixteenth-note ostinato. Under this skeleton, the kick and snare play notes that, for the most part, reinforce the cymbal's persistent rhythm.

In Example 1a, the cymbal pattern is a series of eighth-notes on a closed hi-hat. Notice how almost every snare

and kick note is layered with the cymbal. In Example 1b, an energetic hi-hat ostinato creates a more interesting rhythm. In this example, the kick and snare have a little more freedom, yet most notes still fall with the cymbals.

Vertical drumming has been around for many years—from the earliest Dixieland to the heaviest metal—and a majority of today's grooves are still based upon the concept of the cymbal ostinato. When programming patterns using this approach, start by entering the cymbal pattern (on hi-hat or ride cymbal), and then add the kick and snare to provide punch and pulse.

A more recent playing concept is that of *linear* drumming. In linear patterns, a distinctive rhythmic phrase is "drumestrated"

Norman Weinberg teaches percussion and electronic music at Del Mar College in Corpus Christi, Texas. His latest book, The Electronic Drummer, is distributed by Hal Leonard Publishing.

VERTICAL, LINEAR, & INDEPENDENT DRUMMING

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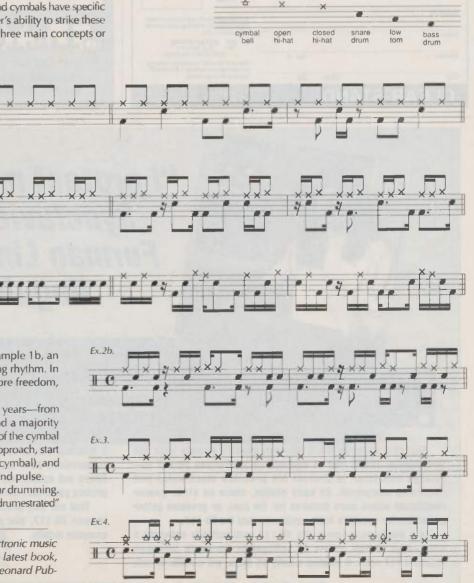
across the various instruments in the kit. In Example 2a, a pattern of eighthand sixteenth-notes sets up a driving motion, yet no two instruments play at the same time. This creates a linear melodic line composed of drum timbres instead of pitches.

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Example 2b demonstrates a thicker and busier texture. Here, the same rhythmic phrase is placed across the hi-hats and snare drum, while the kick drum lends rhythmic support. Perhaps the easiest way to program linear patterns is to write down the basic rhythm first; then voice the rhythms *Continued on page 118*



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Ex. 2. Grace notes can fall into several different configurations on the keyboard. Here are some examples

of (a) white-key to white-key grace notes, (b) white-key to black-key grace notes, (c) chromatic groups

MA

HAMMER-

O YOU LOOK FORWARD EAGERLY to soloing? Or do you get sweaty palms dreading the moment when the guitarist turns and nods to you? Most keyboardists tend to spend more time learning chords and how to comp than they spend learning to solo. This is only natural, since our instrument often provides the main orchestral and harmonic backdrop for horns and vocalists, who can only play one note at a time. They, in turn, naturally tend to be better soloists, since they focus most of their energy on melodic devices. For a thorough study of soloing, I would urge you to listen to a wide range of instrumental as well as vocal solos, concentrating on musicians who play the style of music that you want to learn. In response to letters from several of you, we'll spend the next couple of months in this column

discussing techniques and devices you can use to enhance your soloing.

No discussion of soloing would be complete without some examination of grace notes. Singers, horn players, and guitarists have techniques for inflecting the main melody notes by sliding up (or, less often, down) to them. These bent notes are an expressive device, and are used to create excitement or a feeling of soulfulness. In the United States, blues vocalists were experimenting with this technique at a time when the musical establishment was locked into a European tradition from which most such ornaments had been banished.

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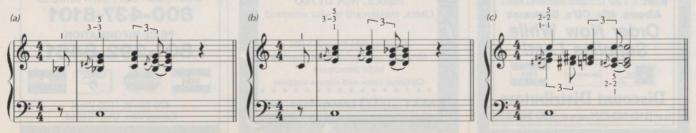
OTES

Mark Stich has studied at Berklee, worked for Sequential, and played with Ronnie Montrose and Angela Bofill. Currently he teaches keyboards at Showcase Music Institute in San Jose, California.

Ex. 1. A basic hammer-on grace note lick. Play both the D# and the E with the same finger.



Ex. 4. Hammer-ons are often used in chords in blues styles. Even though the grace note is notated before the chord, it **thisu**ld be played at the same moment as the notes above and/or below it. The target note should fall slightly after the beat in this case.



STREET SMARTS

Until the advent of **the** pitch-bender, notebending was not available to pianists and organists. But inventive players learned to imitate singers' grace notes by sliding a finger from a black key up or down to the neighboring white key. I call these slides "hammer-ons," after the guitar technique in which the player picks one note and then snaps a second finger down onto the fretboard, causing an unpicked note to ring out.

Keyboard hammer-ons work most naturally when you're playing in the keys of C, F, and G, because the black keys in these keys are mostly chromatic rather than diatonic (scale) notes. Typically, you would hammer-on from D# to E to inflect the 3rd of the C major triad, creating a "blue" 3rd. In more distant keys, hammer-ons can be used to inflect other steps of the scale. For example, in B, the G#-to-A hammer-on provides a grace note below the flat 7th of the tonic 7 chord. In each key the arrangement of black keys makes different hammer-ons possible or impossible. If you can't hammer-on to get the desired musical effect, you will have to play the grace notes with other fingers.

When practicing hammer-ons, concentrate on playing smoothly. Try to get an idea in your mind of how you want the melody to sound, and then aim at creating that sound with your hands. As with any technique that you're learning, be careful not to overdo it. I had one ambitious beginning student get so excited about the sound of hammer-ons that she practiced them too much and sprained her finger! You may find that hammer-ons feel more natural if you keep your wrist loose and use hand motion to brush the finger sideways across the black key.

For a good example of hammer-ons and other grace notes, take a good listen to Bruce Hornsby's solo in his hit song "The Way It Is."

Grace notes come in many flavors; a few of the possibilities are shown in our examples. They're always written with small note-heads and slashes through the stems, while the main melodic note is written normally. This main note, the target or destination of the grace note, should occur in its usual rhythmic place or slightly later, while the grace note occurs on the beat or a split second before. The two may overlap slightly. (If they are played entirely together, they're called a "split note." This is another type of inflection, heard more in jazz.)

If the main note is part of a chord, the grace note will usually be played at the same time as the other notes in the chord, while the target note will fall a little later. This is *not* how such grace notes are usually written in sheet music; it looks as if the grace note comes before the chord. In this case, written notation doesn't provide a perfect way of showing what is played.

DRUM MACHINE PROGRAMMING

Continued from page 115

to the instruments using step-time.

Linear drumming has its roots in the world of funk and fusion. But lately, drummers have been sneaking linear concepts into predominantly vertical styles. Example 3 shows how to mix linear drumming's rhythmic diversity within vertical drumming's simple framework.

Drummers have yet a third approach for playing patterns. This might be called the *independent* concept. In an independent groove, the drummer thinks of each instrument in the kit as a separate voice that contributes its own ingredient to the rhythmic mix.

Independent groove programming is illustrated by Example 4, a Latin groove in which the standard drum-kit sounds are used to imitate the traditional instruments in *conjunto* music. For this pattern, the bell of the ride cymbal replaces the *cascara* (shell) rhythm normally played on the timbales. The snare drum plays a variation on the "3:2 clave" part, and the low tom (accenting beats two and four) replaces the surdo. Add the closed hi-hat to give the impression of a cowbell and the bass drum to provide an image of the conga part.

Programming independent grooves on a drum machine or sequencer is easy. Try entering one voice at a time and using rhythms that sound complete (but not too busy) when heard by themselves.



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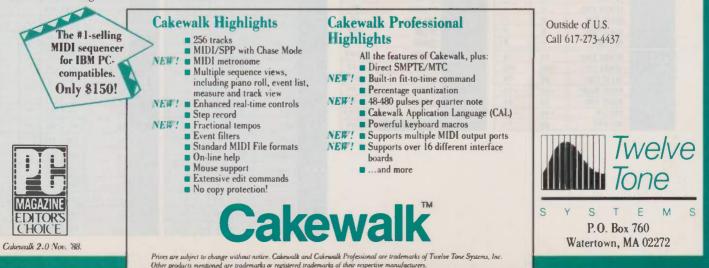
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FROM THERE AND THERE

OUNDS ARE BUSTIN' OUT ALL over. This month's column has an international flavor-or, rather, flavors. From Henrik Schafer of Albertslund, Denmark, we have "Cumulus," a Korg M1 program he created for new age music. As

you play this patch, see what happens when you use different velocities and different timings to articulate chords and melody lines.

Francis Belzile, from Montréal, Québec, sent us his "Accordéan de Paris" patch for the Roland D-110, D-10, or D-20. (To accommodate the D-110's 10-character limit for names, we retitled the patch "ACCdePARIS.") Fran-

cis reports that "this accordion sounds just like the ones you hear in the streets of Paris. That is why I use this sound a lot when I play at Le bistrot in Montréal."

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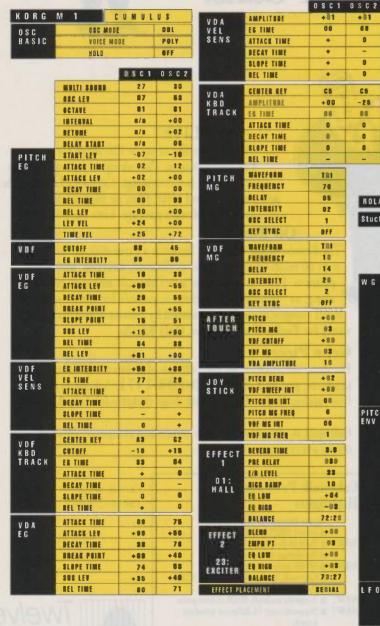
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SERIAL

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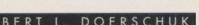
an intelligent tape synchronization function, a Super-MRP Performance system for chaining songs together for live performance, an operating system in internal ROM so there's no boot-up time, and 40,000 notes in Internal memory.

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Study Slide's rent-party touch carefully; we'll have a lot to say about it next month.

Robert L. Doerschuk is on the lookout for Slide Davis 78s. Any leads?

by Meade "Lux" Lewis

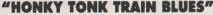








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By Jim Aikin

FIOWNED STOCK IN NEW ENGland Digital, Digidesign's new Sample-Cell system would be making me a little nervous. NED's Synclavier has always boasted two unbeatable advantages for high-end users: no-compromise 16-bit digital audio, and an integrated working environment. For those who think nothing of dropping a quarter of a million dollars on a musical instrument, these factors more than make up for the fact that its sequencing environment isn't state-of-the-art.

Digidesign is not exactly going head-to-head with NED. Instead, they're offering a system that offers the same kind of music power at a tiny fraction of the price. For several years now, they've been developing various aspects of their Macintosh-based audio workstation—first Sound Designer waveform editing software, and more recently their Sound Tools (Keyboard Report, Sept. '89) and Audiomedia (Keyboard Report, Nov. '90) A-to-D/D-to-A boards, which allow for direct-to-hard-disk recording.

SampleCell is the key ingredient that ties the system together and allows the Mac to start to look like a full-featured music workstation. Basically, SampleCell is a playback-only 16-voice sampler on a card. Up to four of these cards can be installed in a Macintosh II-class machine, provided you've got enough free slots. (With an expansion chassis, you can pile on even more cards; the operating software will address them



intelligently.) Each card can have up to 8Mb of on-board sound RAM.

So let's say you've got a contract to score half a dozen low-budget horror films, and you want to pick up a SampleCell system. How might the numbers might stack up? (Okay, guys, we're going to give some street prices here. Please note: Street prices are subject to wide swings depending on dealer overhead, what part of the country you live in, and other factors, like the salesman needing to pay his rent in the middle of a recession so he can still be working there next week when you phone him to ask for help in making your system run. Do us a favor: Please don't wave this magazine in the salesman's face and say, "They said in Keyboard that I could get it for \$2,500!" We didn't say anything of the sort. Okay? Now back to the product review.) Here's a possible shopping list: A Mac IIci (\$4,000), a 600Mb hard drive (\$2,500), a DAT deck for backup (\$1,000), two SampleCell cards (\$4,000 each fully loaded with third-party RAM), a Sound Tools card for sampling and hard-disk recording (\$3,000), a CD-ROM drive (\$700), a MIDI interface (\$400), sequencer software (\$500), and a master MIDI keyboard (\$1,500). We'll assume you plan to use your existing mixer and effects processors. The total bill: \$17,600. Still not cheap-but by way of comparison, NED charges \$127,000 for a basic 32-voice Synclavier with no direct-to-hard-disk recording. Even a fully

SAMPLECELL

Description: 16-voice sample-playback card for the Macintosh, with associated operating software. **Version Reviewed:** 1.1.

System Requirements: Mac II, system 6.0.5 or higher, hard disk. MIDI keyboard, sequencer software, MIDI interface, and CD-ROM drive highly recommended.

Features: Up to four cards can be installed. Up to 8Mb sound RAM per card. 16-bit linear sample playback. On-screen clipping indicators. Shipped with Sound Designer II waveform editing software and CD-ROM with 630Mb of pre-looped samples and instrument parameters. Up to 32 instrument definitions resident in memory at a time. Up to 20 keygroups per instrument, up to three velocity-switched samples per keygroup.

Voice Architecture: Three envelopes, two LFOs, tracking generator, ramp generator, random generator. Matrix modulation with up to 16 routings per voice; sources include two definable MIDI controllers, release velocity, destinations include panning, individual envelope segments, and effects sends. Modulation can be gated by key-on/off. Sample loop fine-tune, equal frequency detuning. Three-way velocity cross-switching.

Interfacing: Eight polyphonic outputs (four stereo 1/4" phone jacks) per card.

Copy Protection: Software not copy-protected; requires installed hardware card to run.

Suggested Retail Price: With no installed RAM, \$1,995 per card (software and CD-ROM included). Card fully loaded with 8Mb RAM, \$2,995.

Contact: Digidesign, 1360 Willow Rd. #101, Menlo Park, CA 94025. (415) 327-8811. Fax (415) 327-0777.

loaded 64-voice SampleCell system with a Mac IIfx and all the bells and whistles isn't likely to run more than \$35,000.

Is your mouth watering yet? Ours sure were. So we plugged a SampleCell card into our lab's IIcx and took it out for a spin.

Overview. The SampleCell playback card is not entirely new technology. While the D/A converter has been changed, the sound chip itself is the same one that was used on

the Dynacord ADS sampler (see Keyboard Report, Oct. '89). This sampler had a beautiful sound and some great features, but Dynacord wasn't in a position to support it effectively. To add to its woes, it was released at the same time as several 16-bit samplers that offered niceties like real-time digital filtering, which the ADS lacked. As a result, it was quickly orphaned.

Like the original instrument, SampleCell sports eight audio outputs. These are configured as four stereo pairs, and are routed through four stereo 1/4" jacks at the rear of the card. Okay, okay—Synclavier fans will tell you that 1/4" jacks aren't as good as balanced XLR connectors. You want to pay an extra hundred grand for XLR connectors? In its standard form, the card is shipped with no RAM installed, because Digidesign assumes that you'll want to buy off-the-shelf SIMMs chips at the nearest computer bargain center.

Putting the voice-editing controls of the ADS onto a computer screen definitely makes life easier: Everything is displayed in five basic windows, which are sensibly laid out and have plenty of pop-up submenus and utility commands. The card can hold up to 32 "instruments," each of which has its own sample or samples.

Since SampleCell only runs under MultiFinder, the natural thing is to have a sequencer of your choice running at the same time. Using Opcode's EZ Vision, we recorded a phrase, set it to loop, and then jumped over to the SampleCell editor to tweak the sound while listening

> to the phrase. You can do the same thing with any MIDI sequencer and tone module, of course, but it's neat to see it all running on the same screen at the same time.

We were hoping to be able to do the same kind of multitasking while editing waveforms in Sound Designer-but no such luck. While SampleCell is being shipped with a special "SC" version of Sound Designer, the compatibility between the two programs is very limited. Sound Designer can indeed use the SampleCell card for playback, which can be a great convenience: There's no need to transmit the soundfile to an external sampler in order to hear it in all of its 16-bit glory. But that's just about the only aspect of the program that. reflects an integrated system concept. It's not only that you can't edit samples while listening to a sequencer play them back. If you want to edit one of the soundfiles that's already

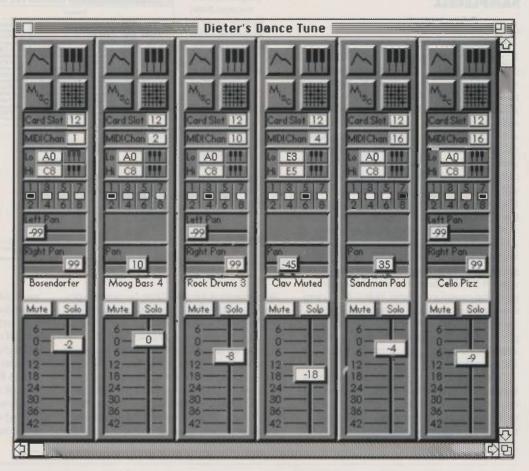
resident in SampleCell's on-board RAM, you'll have to reload it from disk, because SD SC can't access the RAM. Once you've edited the file, you can't send it to SampleCell's RAM either; SampleCell isn't one of the samplers listed under the Mac-to-sampler menu. Instead, you have to save it to disk and then reload it into SampleCell in order to play it from the keyboard. This extra step could actually be looked at as a plus: In the event of power failure, your file is always going to be stored on disk. But it's odd that Sound Designer SC talks to external samplers more readily than it talks to SampleCell. (On the other hand, how many other samplers are shipped with a free copy of Sound Designer?)

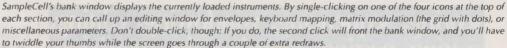
Sounds. SampleCell is shipped with a CD-ROM that contains a large and varied library of useful materials. We listened to only a few of them, but we were impressed. The percussion had lots of presence and punch, and the synth hybrid sounds were luscious. A number of files are given in both longer and shorter versions, from which you can choose depending on your memory requirements. Since very few of us do our own sampling, it's nice to know that compatible CD-ROMs from several other companies are also available, or shortly will be. The

companies include East-West Communications, Greytsounds, Metalanguage, OMI, and Prosonus.

The Sound Engine. The twin strengths of SampleCell as a tone generator are its sound quality, which sparkles, and its generous set of modulation routings. Other plusses include a five-stage tracking generator for mapping and scaling modulation values, fine-tune controls for sustain and release loops, equal Hz detuning (to create the same frequency of beating between two voices no matter where you play on the keyboard), and two auxiliary send levels per instrument. The sends can be routed to any of the card's eight outputs; they let you do neat tricks like control reverb amount from a real-time controller. Each instrument can be given a voice priority rating, as well as an overlap amount for controlling the response of instruments like cymbals, where one MIDI note triggers the sound repeatedly.

Modulation sources include MIDI note number, velocity, release velocity, pressure, pitch and mod wheels, sustain pedal, three envelopes, two LFOs, a ramp generator, a tracking generator, a random generator, and two MIDI controllers of





your choice. Destinations include panning, volume, auxiliary send volumes, sample select, sample start point, any segment of any envelope, and

PROS & CONS

Pros: Integrated systems concept: audio playback, sampling, sequencing, and hard-disk recording within a single computer environment. Shipped with 630Mb of sounds.

Cons: Only 16 instruments with envelopes and modulation routings can be on-board at a time. All samples within an instrument share envelopes. No real-time editing of waveforms while listening to a sequence.

LFO rates and amplitudes. Each instrument can include up to 16 modulation routings. The "sample select" destination is limited by the threeway velocity zoning built into the instrument definitions. SampleCell offers no easy way to build velocity zones more than three deep, because each instrument by definition covers the entire velocity range. You could have a couple of instruments play a null sample for parts of their velocity range, but this would use up extra voices. One curious omission: The tracking generator

is displayed only graphically, with no numerical values to edit.

The envelopes are standard ADSRs with an extra sustain/decay parameter. The attack parameter gives a finer degree of control over fast attacks than you'll find on some samplers, and of course individual segments can be modulated, which lets you track the keyboard or program a velocity response just about any way you'd like. What's disappointing is that the same envelope(s) must be used for all of the samples in an instrument. What if the instrument is a drum kit with 60 different samples in it? Most samplers can assign separate envelopes

to each sample, but SampleCell can't. This is especially galling when you consider the limit of 16 multi-sample instruments per bank. The assumption seems to be that most of the time you'll be using SampleCell to trigger unaltered realistic recordings of other instruments, and won't need to perform too many radical tricks. Certain radical tricks it will perform with ease;

SAMPLECELL

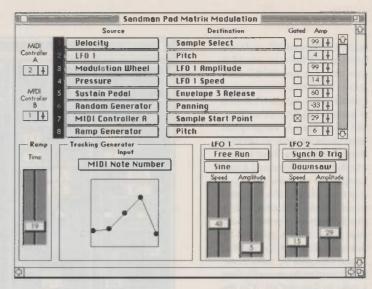
others it won't.

Performance. When it comes to playing music from a sequence generated inside the computer, SampleCell performs extremely well. We were able to fire 16-voice chords at a rapid tempo without hearing the slightest slop. Adding a second card didn't slow the response down, either. In the utility department, it's equipped with a neat little monitor window that shows the amount of memory remaining on the card, and also highlights a box when any of the outputs clips. Another utility lets you audition each sample as it's being loaded from disk, which is a handy way of confirming that you're loading the right sample.

On the other hand, the operating system as a whole rates no better than a B in our grading. We've already mentioned the lack of full compatibility between SampleCell and Sound Designer II SC. We also encountered a mysterious glitch that caused a very brief, high-volume chirp to burst out of our speakers on a couple of occasions when we switched back into the SampleCell editor from Sound Designer. And there were several crashes. (You think the Synclavier never crashes?)

The performance of a multi-card SampleCell system will depend to a considerable extent on which Mac II you're using. With a stock II or lix, you probably won't be able to run multiple cards, sequencer playback, and a hard-

SampleCell's matrix modulation window. Up to 16 source/destination pairs can be specified; click on at item and a pop-up list appears. The switches in the "gated" column can be used to shut off modulation when the key is lifted. The tracking generator accepts any modulation input and maps values to the output using a five-stage programmable curve.



disk recorder at the same time, because the processor won't be able to handle that much traffic. We've heard anecdotes about users running SampleCell on one computer and their sequencer on another, but we can't tell you which computers they were using. Anyway, with an outboard sequencer, MIDI Manager and MIDI itself are still potential sources of timing logiams. Opcode has just released something called Open MIDI System (rather a misnomer, since it only works with Opcode sequencers and the

protocol hasn't yet been released to other software developers), which bypasses MIDI Manager and intelligently addresses multiple SampleCell cards as separate devices, providing 16 MIDI channels for each card and a reported improvement in timing performance. Digidesign tells us that on a fast computer they've run SampleCell in conjunction with Deck without any problems—Deck playing back audio and a MIDI file and recording SampleCell's output as a new audio track. This type of application is awfully

scoring, sequencing, windowing, editing, pasting, zooming, dot matrixing, ring, transposing, beaming, tracking, filtering, looping and saving. And costing only \$295.00. beaming, tracking

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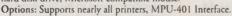
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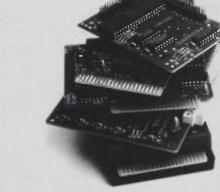
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SAMPLECELL

timing-intensive, though; if you plan on making SampleCell the hub of your music production system, we'd suggest that you get a demo in which all the components are in place before committing yourself to a major cash outlay.

One wall that you hit when running multiple real-time applications is the screen redraw time. In our first experiments, it took ungodly amounts of time to switch from one program to the other while the music was playing, because the computer naturally has to give a lower priority to graphics than to MIDI and sound output. When we switched our Radius two-page display to black-and-white mode and sized the windows small enough that they didn't overlap, the switching process was speeded up greatly. We did note, even so, that the SampleCell editor program insists on doing a full screen redraw of the bank window (a window loaded with details) even when it doesn't need to-like before opening a dialog box for a file load. The code could probably be streamlined here.

Both SampleCell and Sound Designer handle CD-ROM files in a slightly quirky manner. Each time you want to add a sample to an existing instrument within a bank, SampleCell assumes you want to load it from disk. There is no command that says, "Grab a sample from this other instrument over here." If the required sample is already in memory, it "loads" in no time, because the machine is smart enough to

realize that the file is already in memory-but with a CD-ROM, which can hold thousands of files, you'll still have to figure out which folder that pesky sample is hiding in, and go through several extra mouse-clicks. For its part, Sound Designer loads files from CD-ROM in a "readonly" format that doesn't allow them to be edited. The edit commands are grayed out in the menu. In order to work on the file, you have to save it to your hard disk, close the file, and then load it again. This only takes a few seconds, but it's rather silly.

Loading from a CD-ROM is slower than

loading from a hard disk by a factor of three or so. Loading a 2.5Mb bank required nearly two minutes, and there is no way to automate this process by sending program change or load commands from a sequencer. Nor is a faster computer going to speed the process up appreciably, because the main bottleneck is imposed by the CD drive itself. The good news is that if you have created your own instruments or banks using samples on the CD-

ROM, you don't have to use up hard disk space on the samples in order to store your parameter data (unless you want to in order to speed up loading). SampleCell can find the samples associated with your banks and instruments, even if they're on a different disk, and load them into the proper cards.

Although SampleCell can hold up to 32 instruments in a bank, we quickly bumped our head against the ceiling when attempting to load instruments. With eight or nine instruments onboard, the menu items "Open Instrument" and "New Instrument" were grayed out! What gives?



SampleCell's keyboard mapping window. Velocity zones (maximum of three) are shown as vertical stacks. When you play your MIDI keyboard, the screen keyboard will show the note in inverse video. The screen keyboard can also be used to trigger playback.



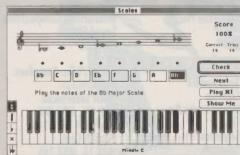
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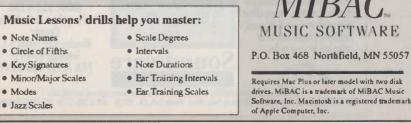
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SAMPLECELL

It turns out that the hardware allows only 16 single-sample instruments and 16 multi-sample instruments to be loaded onto a card at a time. A stereo instrument is defined as a single instrument on the computer screen, but it takes up two of the slots. So with eight stereo multisample instruments open, you can only load single-sample instruments. The latter are intended for sound effects applications, and have no envelopes or modulation routings. While multiple banks can be open on-screen at the same time, the total number of instruments for all banks can't exceed this limit. In addition, there's an intermittent bug in version 1.1 that causes the menu items to be graved out even if you haven't used the single-sample instrument memory yet.

What makes life a bit easier is that a single bank can hold instruments that reside on two or more cards. This lets you use banks to organize your music without having to worry about which card is actually in use. Once you've saved the bank, SampleCell will send all the sounds and instruments to the proper cards when the bank is loaded.

A small oversight: The modulation editing window can't be scrolled. It can be sized with the sizing box, but at this point you'll only get to see and work with the parameters in the upper left-hand corner of the window, because the scroll-bars, while present, are non-functional. The same thing is true for the vertical scroll-bar



in the miscellaneous parameters window.

Working with version 1.0, we encountered a glitch that caused SampleCell to garble our bass line by sending certain notes to the wrong output at high volume. We were unable to reproduce this problem when running version 1.1, and Digidesign assures us it has been cleared up.

One aspect of SampleCell's performance has to do with the Macintosh itself. On one occasion, Apple's still-buggy MIDI Manager 2.0 simply refused to accept any input. It took us only a minute or two to figure out how to coax it back to life, but there's nothing more frustrating than fighting with a confused computer. And we're betting that the majority of the crashes were bred somewhere in the foetid morass of Macintosh models, systems, inits, and desk accessories. (If this computer was any more powerful, it wouldn't work at all.) When you encounter mysterious troubles with any Mac music system, the first thing to do is get rid of whatever inits you don't actually need for the current job. Even after we did this, though, we still ran into a new crash less than two hours later. Go figure.

Conclusions. I suspect that if I had a SampleCell system in my studio, I'd be raving to anybody who would listen about how wonderful it was. Not that it couldn't be improved. you understand; both the hardware and the software feel a little constricted-the hardware because of the upper limit of 16 multi-sample instruments per card, and the software because you can't edit waveforms and hear your edits being played through SampleCell's voice architecture in real time. Still, that constricted feeling comes from a sort of blue-sky equipment reviewer's perspective (like, "Hey, why can't this do everything???") that may not have much to do with the real world of get-it-done-by-Thursday-and-make-sure-it-sounds-great recording. The real-world workarounds in SampleCell are not especially burdensome, and should let you do almost anything with very little fuss. The occasional crashes are more annoying, but us computer music types have learned to live with crashes, stoically if not happily.

There are lots of ways to go these days if you want to get into 16-bit sampling, and each option has its own tradeoffs. If you want the powerful voice parameters of the Ensonig EPS 16" Plus, you'll have to put up with an instrument that can't be expanded beyond 2Mb of RAM. If you want the dynamic digital filters on the Emu Emax II, you'll have to put up with an instrument in which buying memory expansion from anybody but E-mu voids the warranty. If you want the built-in screen editing of the Roland S-770, you'll have to put up with an instrument that won't do dynamic panning. And of course, with SampleCell you have to buy not only a computer but a MIDI keyboard. Already got both? Then sample-playback-on-a-card could be an ideal way to expand your timbral palette. (If nothing else, this instrument takes up no rack space!) On balance, for those who need a digital audio workstation with power to spare, SampleCell looks awfully good.

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		K ORPHE Nova	Jezz Swing	0	(1 -6	i4)+3
5 Am7/E 9 Dm7 13 Bm755 17 Am7 21 Em755 0 m7 29 Bm755 4m 87 Am 87 Am 87 Am 53 Em755 53 Em755 54 Am7 55 Em755 54 Am7 55 Em755 56 Am755 57 Dm	Am9 Dm7/C Dm/C	2 8m71 6 Dm7 10 07 14 E739 18 9m7 22 A755 26 9m7t 30 E759 34 9m7t 36 Dm7 46 E759 50 9m7t 54 A755 58 8m7t 62 E759	Country 12/8 country 4/4 Roves/anon Ethnik Biues Shuffle Biues Even Wartz 3/4 (ald) Pop Ballad Shuffle Aock Light Rock Medium Rock Miemi Pop Millig Pop Funk Jazz Waltz Bhumbo	70	4 8m7b5 8 C*4m 12 FHAJ7 16 8m7b5 20 8m7b5 24 F*m87 28 FHAJ7 32 8m7b5 36 8m7b5 40 C*3m 44 FHAJ7 36 8m7b5 32 8m7b5 35 8m7b5 36 60 FHAJ7 64	E7b9 A7b9 E7b9 E7b9 Em7 A7 E7b9 E7b9 E7b9 E7b9 E7b9 E7b9 E7b9



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OPCODE MAX INTERACTIVE GRAPHIC PROGRAM-MING ENVIRONMENT (MACINTOSH)

By Carter Scholz

VERY YEAR AT NAMM TIME COMES a parade of music products trailing extravagant banners of hype. It does jade one. But once in a while the claims prove out.

Max is simply the most exciting MIDI technology I've seen this year-or any other. Compared to what, you ask. Sequencers? The player pianos of the 1980s. Samplers? Glorified tape loops. Automated mixers? Well, they're ... automated mixers. No, these "innovations" are old wine in new bottles: tools for the production of well-established commodities, not for the exploration of new territory; Max is something else again.

What is Max? It's a construction set for MIDI toolmaking and experimental composition. It is, in the tired phrase, programming "for the rest of us." With Max,

you can construct something as simple as a realtime rechannelizer or note delay line, turn your mod wheel into a volume controller, or construct a harmonization module that will output a different chord for every key on your keyboard. At the outer limits—well, in this case it may not be an unforgivable exaggeration to say that Max is limited only by your imagination. If it's MIDI data, Max can process it in any way

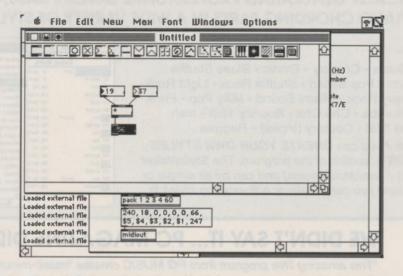
you might think of. (And not just MIDI, either; the program can also address onboard DSP cards in the Macintosh for real-time digital audio manipulation, and address the Mac's serial port.)

Originally written by Miller Puckette at IRCAM, the Paris computer music facility, Max is named for computer music pioneer Max V. Mathews (who himself wrote one of the first real-time interactive computer music systems, Groove, at Bell Labs in 1968). To four years of real-world development at IRCAM, Opcode has added the programming expertise and polish of David Zicarelli, the man who brought us M and Jam Factory.

Of course Max is far from being the first experimental music software [see "Computer-Aided Composition" in the Nov. '90 Keyboard]. Max follows some powerful predecessors, including HMSL, Formula, Keynote, and Ravel, to name



Fig. 1. A Max "patcher" window showing a simple addition patch. The palette of tools is visible at the top of the window.



just a few of the more recent MIDI-capable languages [see "MIDI Programming Languages," Nov. '88]. But to varying degrees, past music languages have been idiosyncratic, tough to learn, unstable, lacking in polish, and/or vexatious to use. Max is similar in power to its textbased forebears, and similar in appearance to David Levitt's HookUp! [Keyboard Report, April '90]. But, to use Guy Kawasaki's desiderata for

MAX

Description: Interactive, graphic programming language for MIDI.

- Hardware requirements: Mac Plus or higher. Hard disk and 2Mb RAM strongly recommended.
- Features: Iconic interface for patching together modular functions to make complex, high-level music applications. Over 150 built-in objects: arithmetic, data storage, timing, MIDI I/O handling, user interface, and others. Fully extensible; user can write external objects in the C programming language. MIDI Manager support. Basic animation capabilities. Serial port driver, laserdisc player driver.

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Contact: Opcode Systems, 3641 Haven Drive, Ste. A, Menlo Park, CA 94025-1010. (415) 369-8131. Fax (415) 369-1747. software, Max is alone in being deep, indulgent, complete, and elegant.

Make no mistake: Using Max is still a form of computer programming. But it's programming with about the friendliest face anyone could put on it. Not only are the tools reliable and efficient, they're fun to work with, and will amply reward your learning time. The one disadvantage of learning to program with Max, as opposed

to learning a language like C, is that in the nearest bookstore you'll find dozens of reference works on C programming. With Max, you only have access to Opcode's technical support hotline and the tutorials supplied with the program.

To give you an idea of Max's versatility, let me tell you a few things I've made with it. Editor/librarians for two effects units. An interactive two-keyboard composition that computes a realtime accompaniment to two live performers. A mapper that changes continuous controller data into system-exclusive streams. A multiple MIDI delay line with delay times that adapt to a rhythmic input. Some of these took a couple of days to write; some took a couple of

hours; some just a couple of minutes.

The Basics. Select "New Patcher" from Max's File menu, and a blank screen appears with a palette across the top, as in a drawing program. The palette holds 20 types of objects (see Figure 1).

Suppose you want to add two numbers: click on the "object" icon at the far left; the cursor turns into a copy of the icon. Click on-screen

where you want to put the object; an empty box appears. Type into it what sort of object you want it to be (or choose from a pop-up list); typing "+" makes it an addition object. The box now has two "inlets" and one "outlet," which are visible as darker lines on its top and bottom. That's your adder. Now click the "number box" icon in the palette and click on-screen to put a pair of boxes above and one box below the adder. Click and drag from a number box's outlet to the adder's inlet; a patch cord is drawn between them. Repeat for the other inlet, and draw a patch cord from the adder's outlet to the last number box's inlet. You can type values into a number box, or just drag the mouse over it to scroll its value up or down. Whenever the number into the left inlet changes, the sum of the left and right inlets appears in the number

box connected to the adder's outlet.

So you can add two numbers—big deal, huh? Well, not all of Max's objects are so simple. Take "seq": That's a little self-contained note sequencer. And "mtr" is a 32-track multi-channel MIDI recorder. "Follow" compares MIDI input to a stored score. "Midiparse" sorts incoming MIDI messages by type, and "Borax" performs analysis and voice allocation on incoming notes. There are over a hundred different objects; see the sidebar for a complete list. Getting interested? Let's look closer.

Modular Lives! Remember modular synths? A repertoire of standard modules like VCOs, VCAs, and VCFs could be interconnected with patch cords. Max is like that. Instead of modules, Max has objects: black boxes that process inputs (numbers) and produce outputs (other numbers). When a MIDI input object is connected to a MIDI output object by way of a group of other modules, Max turns into a powerful, user-configurable MIDI processor.

Various modular synths had at least a couple of signal types, voltages and triggers; triggers sometimes had a different sort of patch cord. Max, too, has different signal types. The "patch cords" are all one sort, but Max sends various things along them.

The simplest Max thing is a *bang*. It's like a trigger; a Max object responds to a bang by doing something (for instance, a counter increments). Then there's a *number*, which can be an "int" (integer) or a "float" (decimal); conversion between the two types is automatic, as needed. A *list* is two or more numbers packaged together. (Max has objects for creating lists from numbers and vice-versa, which is handy for ensuring that grouped numbers, like note numbers and velocities, stick together.) There are also *symbols*; some objects respond to keywords like "start," "stop," "clear," and "set." A *message* is the most generic Max thing; it can be any combination of the above. As with modular synths, one type of signal can be turned into another.

Objects fall into several categories: arithmetic/logic, MIDI in/out, user interface (sliders, buttons, menus), timing, graphics, and control. A bunch of objects wired together is called a *patcher*.

Once you start building moderately complex patchers, especially on a 9-inch Mac screen, you'll notice they're a mess. Patch cords run over objects and obscure other patch cords (see Figure 2a). It gets hard to see what you're doing real fast. Uh-oh. Is this Max's fatal flaw? Hardly.

Indulgence. The many solutions to the rat'snest problem illustrate Max's thoughtfulness. First, when you drag a patch cord anywhere near an inlet, the inlet thickens and identifies itself: In the lower border of the window appears the object's name, and a short description of the inlet—condensed help which saves a *lot* of manual thumbing, and mitigates the visual clutter as well (see Figure 3). And you don't have to hit the inlet exactly to connect; release the mouse button while the inlet is highlighted, and you're there.

Again: You can right-angle patch cords around objects; it takes a bit more clicking, but it's worth it for the tidy-minded. You can even

PROS & CONS

Pros: Powerful, innovative, user-extensible programming environment. Excellent interface.

Cons: Copy-protected, run-time-only version not yet available.

select a group of existing cords, pull down "Align" from the menu, and—within simple limits—the cords tidy themselves. *That's* indulgent.

Further: You can "hide" objects or patch cords at any point, so you needn't peer through a maze to use a patch. Everything is always visible when you're editing and debugging, but when you "lock" the patcher for use, it shows only what you want to see (see Figure 2b). With the various user interface objects you can design a front panel that keeps all the wiring out of sight.

Depth. But the best solution to the rat's nest reveals Max's full depth: Any patcher can become an object. Example: I wrote a patcher to send system-exclusive tuning changes to a DX7 · with E! It filled a screen (see Figure 3). I added inlets for note number and frequency, and saved the whole mess as a patcher called "etune."

I then opened a new window, and typed "etune" into an empty object. My sys-ex tuner

> appeared as a standard, tiny Max object, with the appropriate inlets. Now I could build another patcher around it. And I could save that screen and use *it* as a unit in another patcher. This doesn't just neaten things up and save screen space, it lets you build a library of personal tools that can be used and re-used in any patcher as if they were part of Max.

There's another way to circumvent the rat's nest: put a subpatcher within

a patcher window. When you double-click on the subpatcher, it opens its own window. This is similar to the previous approach, but allows you to get at the subpatcher more easily if you should need to modify it.

And yet one more way: Max objects communicate via messages. The "send" object can name a message, and all "receive" objects with the same name will act as if connected to "send" by patch cords, even if they're not in the same window.

Completeness. The deeper I got into Max, the more I asked of it. "Can it do this? What about that?" Overwhelmingly the answer was

Fig. 2a. An extreme example of the rat's-nest effect.

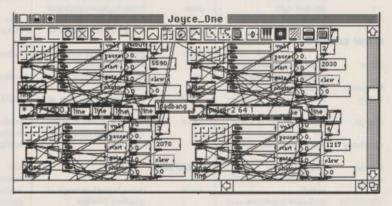
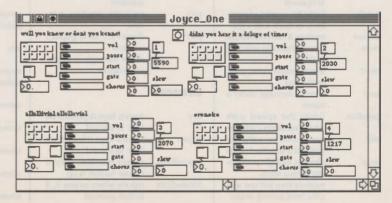


Fig. 2b. The same patcher, with most objects and cords hidden.



MAX

yes; within the constraints of MIDI, Max does it all: receives or sends any kind of MIDI data; syncs to SMPTE time code; reads and writes MIDI files; communicates with other real-time programs. So any music created with Max can either be recorded into a sequencer (using MIDI Manager and MultiFinder), or saved directly as a MIDI file.

In addition to common arithmetic, logic, and comparison functions, Max's "expr" object will evaluate just about any valid C math expression. Figure 4 shows a patcher that illustrates FM synthesis. The FM equation is typed into an "expr" object, with arguments (\$i1, \$f2, etc.) replaced by values from sliders and number boxes. The calculated waveshape is sent to a "table" object for display in a separate window. Tables can be scrolled, resized, drawn in, saved, cut, pasted, and a lot more. (By the way, it took

MAX OBJECTS

It's impossible to cover all the features of even a well-understood application like a sequencer in a review, so what's a poor journalist to do with the sui generis Max? Just to give you some idea of its depth, here's a complete list of Max's "objects," the building blocks from which you make applications, with a terse description of what they do.

ARITHMETIC/LOGIC		TogEdge reports zero/nonzero tran- sitions		numkey reads numbers typed on Mac keyboard		sends release-velocity notes
not equal to	trigger	sends a number to many			Contraction in the local distance	
modulo		places, in order	LISTS		PATCH EDI	TING
logical AND					A since the	
multiply	DATA STO	RAGE	append	adds something to the end	lib	script-driven patch librar-
add	and states		tainen bes causen	of a list		ian
	bag		iter		libfrom	gets data from a stored
			and an and an			synth patch
	bucket		match			edits a new synth patch
	THE CO. LOCAL		ri itou can li		libto	sends changed data to
	capture		pack		And the second second	patch librarian
	1000		units a catch. 5			
0			prepend		TIMING	
	coll		and the second	0 0		the second second second
			thresh		clocker	sends elapsed time at reg-
	decode		e of her how nove			ular intervals
			Luser Hileford		delay	delays a bang by some in-
			unpack		100 100 100 E	terval
			Ind off half	to several outlets	metro	sends bang at regular in-
					And the second sec	tervals
	histo		MIDI		rtin	gets real-time data from
	and public		Contract of the second	a the others and the set		MIDI Manager
				• •	tempo	outputs numbers at a giv-
	line				In parent	en tempo
			borax		timein	gets time-code from MIDI
	peak			0	man if success	Manager
bitwise OR				0	timeout	sends time-code or real-
	pipe		ctlout		11000	time data to MIDI Man-
NTROL						ager
	table		follow		timer	records elapsed time be-
		0 / 1			too off reside	tween two events
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				,	USER INTE	RFACE
	trough		midiformat			
				0	button	bangs when you click it
	value		and the second se		comment	non-functional box that
ber	1000				Contraction of	displays text
		objects	midiparse		dial	rotary control
					ggate	graphic "gate"
	GRAPHIC		mtr		gswitch	graphic "switch"
						resizable horizontal slider
	frame				inlet	provides inlet for use in a
						subpatcher
0				1 0 0	keyslider	on-screen piano clavier
	oval		poly			that outputs numbers
					led	blinks in color like a LED
	pics				message box	sends message when
	-		polyout			banged
	pict			touch	number box	displays and outputs a
			seq		A DOM OF STREET	number
	rect				outlet	provides outlet for use in
		ICS WINDOW				a subpatcher
			sustain		preset	stores and recalls settings
v	CONSOLE					of other user objects
name		the second second second	sxformat		toggle	switches between on and
	key					off
			sysexin		ubutton	transparent resizable but-
	keyup				Continue and the se	ton .
outside) a specified range		Mac keyboard	xbendin	gets double-precision	umenu	user-defined pop-up menu
changes left/right position-	mousefilter	passes numbers only if		pitch-bend	uslider	resizable vertical slider
ing of two inlets receives from just one spe-	MouseState	mouse button is up reports where mouse is, if	xbendout	sends double-precision pitch-bend		
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IF YOU'RE THRILLED WITH THE FACTO **DUR NEW SYN** S IN Y IN TO THIS AD FOR 30 DAYS OR S

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MAX

just ten minutes to construct this patcher.)

One set of objects lets you move bitmapped graphics around an animation window. This could be whiz-bang for multimedia, though I won't pretend to have any interest or experience in animation or multimedia.

A Max patcher can be saved as a text file.

Etune

Even complex patchers make small files. I foresee a lot of swapping of Max patchers via computer BBSes because of this.

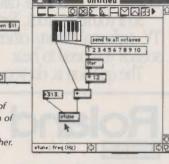
If you just can't figure out how to patch Max objects together to reach a desired end, you can expand Max by writing "external" objects in the C programming language, a process very much like writing Hypercard XCMDs. This takes you back to programming in the traditional

sense, of course. But it does provide Max with something that any complete language must have: user extensibility.

To write external objects you'll need Symantec's Think C compiler, and C programming experience. Opcode provides all the necessary

takes frequency (Hz) and MIDE note number as input; sets that MIDI note to that freq in DX7/E 国区 8.176 Howest C 8 61440 Untitled >> 8 >> 12 send to all octaves 240, 18, 0, 0, 0, 0, 66, \$5, \$4, \$3, \$2, \$1, 247 2345678910 hslider : Outputs Value When Slider is Changed KS 313. Fig. 3. A Max patcher. The lower margin of

the window shows the name and function of whatever you point to. At right, the same patcher used as an object in another patcher.



#include and header files, sample source code for eight different kinds of objects, and full documentation. You compile your object as a code resource, then drop the resulting file into the Max startup folder. At that point, as far as Max is concerned, your object is one of the family.

Let me repeat this to make it clear: you don't have to program in C to create your own Max objects. They can be made by patching together standard Max objects. The only time you have to use C is if you want to do something that Max's native objects can't do. So far there have been just two things I wanted to do that existing Max objects wouldn't do directly: control Macintosh local sound, and write numeric data to a binary, as opposed to a text, file.

Elegance. Every object has detailed onscreen help. If you want a tutorial explanation of anything, option-click on it. A new patcher window opens, containing a functioning, interactive demo of the object, along with explanatory text. This is the most elegant help system l've ever seen.

One object is so immediately useful it deserves special mention. Opcode writes spiffy patch editor/librarians, and they're sharing some of that juice with Max users. The "lib" object looks for a script that you've written describing your synth's system-exclusive data format, and then puts up an Opcode patch librarian window. (Since most MIDI equipment uses some kind of compression scheme for sys-ex data, "lib" has the four most common ones built-in.



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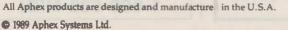
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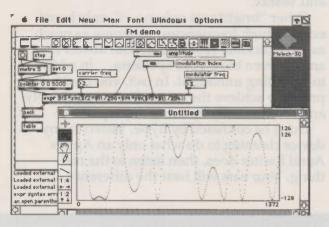
MAX

You can program others in C.) The "libto" and "libfrom" objects let you connect sliders and number boxes to "lib," providing an interface for the editing of patches.

The elegant user interface is what makes Max so immediately attractive. Buttons, sliders, and number boxes can be any size; maximum and minimum values for sliders and number boxes can be set. Number boxes can display their data in any type font or size—as decimal, hex, or MIDI note numbers. There's a transparent button you can overlay with any graphic of your creation for slick-looking custom buttons. It's a snap to program pop-up menus. The "preset" object can store and recall settings of any or all interface objects in much the way that an automated mixer stores "scenes" or "snapshots." In conjunction with "timer" and "line" objects, I used this to automate entire compositions.

After the Spartan functionality of some other

Fig. 4. This patcher illustrates FM synthesis, using the "table" object to display the waveform generated by sine-wave oscillators and other Max objects.



Inctionality of some other music programming environments, Max's interface is almost decadent, like driving a new Mercedes after years in a VW. You don't *need* all that style to get where you're going, but it's not hard to take.

Performance. The crux of any real-time software is, of course, timing. Max is tight. Under normal conditions its response is as good as instantaneous. But Max invites you to dance near the edge, so I obliged with a few sadistic steps. I made it stutter by jamming 8 continuous controllers at it all at once; it got all the data, but with a half-second lag. I patched together ten software LFOs all calculating floating-point sine waves and simultaneously pumped out 8 channels of non-stop note data; that made Max wallow, but it kept chugging.

The bottom line is that I was able to run long, computation-intensive pieces in a live performance using both MIDI ports without fretting about Max's response. If you need even more edge, the "overdrive" mode gives MIDI in/out highest priority; use this with care, since it can lock out mouse and keyboard input.

Overall stability is excellent. I encountered one or two mysterious crashes that I was unable to reproduce, and one bug (the "int" object sometimes reverts to an older beta version) that is being fixed. Once or twice a data loop ran out of control and locked up the computer—the result of a user error that Max usually fields more gracefully.

Under the Hood. If you've had programming experience, you'll find your way around Max quickly. Under its graphical surface, it's much like any other language, with a strong object-oriented flavor. You might look in vain for certain conventional programming constructs, but there's nearly always another way to do what you need.

One unnerving aspect, at first, is Max's apparent tendency to do everything at once. In some ways building a Max patcher is more like breadboarding hardware than writing a pro-





7515 Chapel Avenue Ft. Worth TX 76116 Office 817-560-1912 FAX 817-560-9745 ECTRONICS Call TOLL FREE 1-800-533-MIDI gram. You can spend a lot of time trying to figure out the traffic flow in that rat's nest of patch cords. There are rules: in general, data moves from right to left. An object receives right-hand inlets before left-hand inlets, and sends righthand outlets before left-hand outlets. If two objects are side by side, the right-most one goes first. Easy to learn-and easy to forget! You have to be careful prettifying a working patcher; it can stop working if you change its topography. Also, most objects don't send data out until the left-hand inlet changes; changing the right-hand number in Figure 1 does nothing. This keeps feedback loops from running out of control, but it takes some getting used to. Hooking extra number boxes to the outputs of your objects is highly recommended as a way of debugging: These boxes display the current output values, so you can see how the signal flow is being affected by your input.

One powerful and unusual data storage object is worth a mention: "coll," which stores a collection of messages. A message can be, among other things, a list of numbers of any length, so "coll" is effectively a dynamically assigned array, each element of which has its own dimensionality.

Tomorrow, the World. Would-be humorists talk about MIDI-controlled toasters. Well, the "cd" object can remotely control a CD player, using Apple's CD-ROM driver. While this seems about as pointless as a MIDI toaster, it demonstrates an important point: Max's extensibility goes beyond MIDI.

At UC Berkeley's CNMAT (Center for New Music and Audio Technologies), Adrian Freed and Keith Gordon have written a Max DSP (digital signal processing) driver to control Freed's 56000-based Reson8 synthesis system. It also controls Digidesign's Sound Accelerator and Audiomedia boards. Using Max to modify sound-processing algorithms in real time opens the door to types of music quite impossible using MIDI alone. (For information on the Max DSP Driver, contact the Office of Technology Licensing, University of California, 2150 Shattuck Avenue, Suite 510, Berkeley CA 94704-1318, [415] 643-7201.)

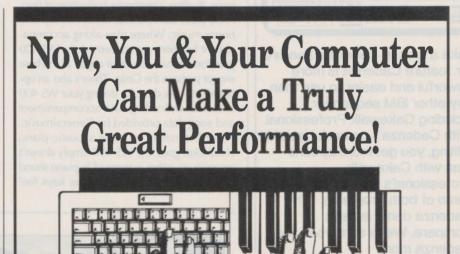
Docs. The manual is generous and well-written, over 500 pages in all. The first 25 pages give an overview of Max; the next 175 are devoted to 40 tutorial lessons. The next 63 pages go into greater depth about Max programming concepts, including efficiency and debugging tips. There's a 215-page reference section, where each of Max's 100-plus objects is fully described. Finally, there are 86 pages on writing external objects in C. Included on the three disks are a dozen sample patchers, from effects editors to algorithmic composers, all 40 tutorials, and the interface files for writing external objects.

Conclusions. If you've felt frustrated and confined by conventional MIDI applications like sequencers, but haven't had the will or desire to tackle a programming language, Max is what you've been waiting for. MIDI programming isn't going to get much easier than this. Because Max was in use at IRCAM for four years before its commercial release, it's a remarkably mature and stable system.

There are a few things Opcode could do to improve Max. First, copy protection is especially unwelcome in a development environment, which Max is. Second, like Hypercard, Max is an interpreter-Max patchers won't run without it. As yet there's no way to make standalone Max "applications." That's no problem for those who want to program in Max for their own use, but the price is steep (remember, Hypercard is free) for users who might want it only as an engine to run third-party patchers. There has been talk about a less expensive run-timeonly version, but Opcode hasn't made any announcement yet. [Ed. Note: We've been told that Opcode is still hammering out the details of an equitable licensing arrangement that will

let Max developers sell a run-time-only version to their customers. They tell us that such an arrangement will definitely become a reality.]

All things considered, Max is the friendliest computer music language yet devised. Anyone who really wants to unleash their Mac's full musical power without the pain of programming will embrace it—experimental composers, MIDI consultants, niche programmers, adventurous hobbyists. End users will come along when a run-time version or compiler makes third-party products possible. Opcode should be proud. By bringing experimentation into the mainstream of commercial music software, they've done the right thing. And by making Max as complete and accessible as it is, they've done it the right way.



If you're a musician with less than average keyboard skills, your MIDI performance options are limited. You can use a scoring program to produce a beautiful score, but conventional music notation just doesn't give you access to the expressive tools MIDI has to offer.

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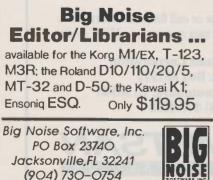
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DIGITAL PIANOS

Continued from page 96

switches, labeled Start/Stop, Intro/End, Sync/Continue, and Fill In. Aha! If you're familiar with current portable keyboards, then you know these are for controlling preset rhythm accompaniment patterns. Perhaps there is a market for this thing: portable keyboard fanatics who don't mind if their "portable" weighs 160 lbs and stays in the den. (If not, they could opt for the WS 400's little brother, the WS 2, which lists for around \$2,500 and provides most of the same features in a smaller, lighter package with a 61note synth-style keyboard.) This indeed is the WS 400's strong point: its preset rhythm patterns. It offers a generous collection of pop, rock, jazz, Latin, disco, and even rap and house music. Where play-along accompaniment functions are concerned, the WS 400 goes further than any other digital piano here except perhaps the Casio. There's also an optional 3.5" disk drive for storing your WS 400 data or downloading auto-accompaniment and song data provided by Generalmusic.

Unfortunately, as far as acoustic-piano simulation goes, the WS 400 simply doesn't measure up, either in terms of its piano sound or the feel of its keyboard. The keys feel springy, almost as if they're pushing your fingers away as you release notes. You might be able to get used to this, but dyed-in-thewool piano players like Doerschuk and Darter complained of a fatigued feeling in their hands after playing the Bachmann.

The WS 400's piano sound suffers from a somewhat muffled quality, as if the hammers on the source piano were covered with fur. Whether the problem stems from the original piano samples or the unit's speaker system is unknown. We listened to a beefed-up, mini-baby-grand version of the WS 400, the GWS 400, at the recent NAMM show in Anaheim (see page 30). The \$10,000 GWS 400 features the same sound-generation circuitry and controller components-except a joystick instead of the trackball-as the WS 400. However, where the WS 400 sports a six-speaker audio system, the GWS 400 offers four speakers in combination with a baffled port arrangement inside the digital piano's cabinet. To our ears, its piano sounded much improved over the WS 400. The GWS 400's keyboard felt much more like an acoustic piano as well. A spokesperson for Generalmusic tells us that all current 88-note Bachmann products will feature this improved keyboard. They couldn't, however, tell us



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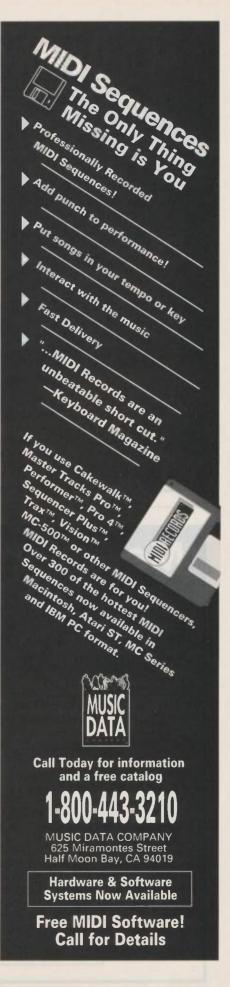
the manufacturer's serial numbers when the changeover will occur.

Generalmusic also showed a simplified version of the WS 400, the PS 2000, at the NAMM show. Had it been available, the PS 2000 (about \$2,600) might have faired much better than the WS 400 in our digital piano roundup. The PS 2000 offers 16 sounds, 24 presets, and the improved keyboard. Its piano sound also seemed better than the WS 400 we looked at. Missing from the PS 2000's repertoire are the WS 400's auto accompaniments. The PS 2000 will also be available in a "grand" style cabinet as the GPS 2000, expected to list for around \$5,000. Since the WS 400 is quite a complex instrument, it stands to reason that it offers a fairly decent MIDI implementation. For example, each of the five split zones across the keyboard can be set to an independent send/receive MIDI channel and you can selectively filter incoming or outgoing data. However, a potential problem: The WS 400 is the only MIDI device we've ever encountered that transmits a system-reset message when you turn it off.

In the end, the Bachmann WS 400 offers an impressive-enough complement of bells and whistles to tie with the Casio AP-7 for that award. From what we saw at last year's *Continued on page 151*



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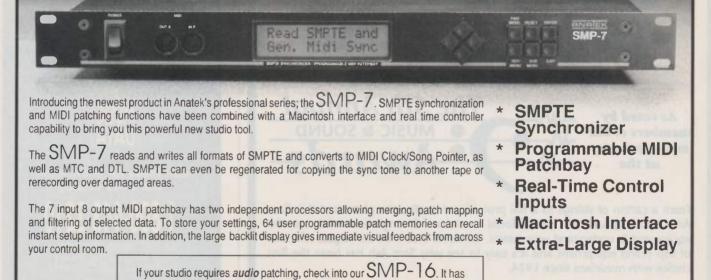
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VOCE DMI-64 MARK II DIGITAL ORGAN MODULE

Voce DMI-64 Mark II: \$795.00. Voce Inc., 111 Tenth St., Wood-Ridge, NJ 07075. (201) 939-0052.

Pros: Very good organ sounds in a portable box. Decent MIDI implementation.

Cons: Limited front panel, poor documentation, no volume knob.

F YOU'VE EVER PLAYED A TONEwheel organ, you've probably had mixed feelings. On the one hand, it sounded great—with either clean or dirty tone colors, with chorusing, with acoustic "modulation" provided by a rotating speaker. On the other hand, it weighed a ton, and was not terribly roadworthy. Sometimes you got so angry, you probably wanted to stick a knife in the thing (well, actually, that has been done); or maybe spin it around and knock it over (that's been done too). "Oh, Toto," you might have said, "if only some wizard could come along and put all of these great sounds in a box so I could take it anywhere!"

Well, the wizards at Voce have granted your request. The Voce DMI-64 Mark II is essentially an organ in a box, and it comes complete with all of the advantages and disadvantages you would expect from that description.

The DMI-64 Mark II is a one-space rack-mount digital tone module with 64 digital (sampled) waveforms, eight of which are user-programmable. There are also several user-programmable effects, such as vibrato, chorus, rotating speaker (in mono or stereo), key click, analog distortion, and percussion. Once programmed, these effects can be turned on or off via programmable MIDI control functions. All of these features are combined into 99 user-programmable presets.

So how does it sound? In a word, terrific. Most of the presets are usable, and they offer a wide range of classic tone-wheel, combo, and other organ sounds. The manufacturer reports that 48kHz samples were used, with "22-bit effective linear coded" audio output, but the *actual* number of bits used for sampling has to be less than 22, because the noise floor is reported to be about 70dB below maximum signal level (22-bit sampling would lead to a theoreatical signal-to-noise ratio of around 130dB). At any rate, the unit sounds fine.

Some original organ sounds, such as those Keith Emerson used in ELP, might have had more punch, but many of those sounds in-



volved double-tracking and other things, many of which could be approximated in the DMI-64 Mark II's multitimbral mode. A different preset can be assigned to each of the 16 MIDI channels, and since each preset can be a split sound, you could have as many as 32 different sounds available at once (within the unit's 64note maximum polyphony). According to the manual it is also possible to load any of the eight user-programmable waveforms via MIDI sample dump, but the manual's instructions on this are so sketchy that we couldn't figure out how to make it work; we were able to download samples successfully from the DMI-64 to an E-mu Emulator Three.

Clearly, the MIDI implementation is good. It is, however, an *organ* implementation: Although the unit does respond to pitch-bend messages, it does not respond to velocity. Since it is an organ module, this doesn't seem headphone jack would have been much more convenient.

Edit mode also has some annoying features. There are 77 edit parameters, numbered from 00-76; the owner's manual lists only 75, (00-74) but two others have been added—keyclick (75) and hum (76). You enter edit mode easily, by pressing both of the right data-entry buttons simultaneously, but getting out of edit mode is not so easy: In

order to exit, you must return to edit parameter 00 (exit) and press the right increment button. If you're up around parameter 74 or so, you have to hold the left decrement for quite a while to get back down to 00. Too bad the parameter numbers don't wrap around.

The limited display can also be confusing: Some parameters, like semitone offset (06), have negative and positive values, but since the display only shows positive numbers, the value range is as follows: 00 equals -32 semitones, 32 equals 0 semitones, and 64 equals +32 semitones. Here's another: Parameters 44 through 53 allow you to set a value range for harmonic generation of the user-programmable waveforms. Each parameter corresponds to one of the nine drawbars found on tone-wheel organs, and, like those drawbars, the actual value range is 0-8; but the DMI-64's displayed value range is 00-09.

The owner's manual is a prime example of technospeak: all the parameters are listed and



PAUL HAGGARD

like a problem.

There are some problems, though. The front panel is very limited. It includes two pairs of data-entry buttons—one pair for presets and parameters, the other for edit values. The LCD includes four seven-segment number readouts, two associated with each set of data-entry buttons. A "COM" LED shows what mode the unit is in (green for preset, red for edit) and also indicates MIDI communication (by flashing the color that is the opposite of the mode color).

There is no volume knob, and no master volume parameter, though volume can be set for each preset. And there is no headphone jack. It is possible to get a summed monophonic feed into both sides of a pair of stereo headphones by plugging them halfway into the channel 1/mix jack on the back panel, but a front-panel all of the value ranges are shown, but you are never told how the parameters work together to control the unit's sounds. This is particularly irksome in the area of the special effects and MIDI controllers: There are eleven programmable MIDI control functions for each preset, many of which can involve continuous controllers, but they function only as virtual switches, and they can interact in many ways with the parameters controlling chorusing, percussion, rotating speaker effect, and the like. It would have been nice if the manual had at least walked the user through one preset, showing why the parameter values were set as they are. A lot of thought has obviously gone into the parameter layout and the MIDI implementation, but the owner's manual doesn't clue the Continued on page 146



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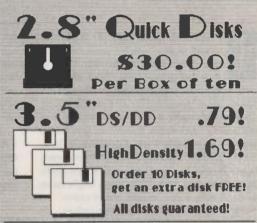
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JAZZ CHORD CLINIC

Continued from page 74

more half-step approaches, and minor-third root relationships. The bridge (measures 10-17) slows the harmonic rhythm, and the melody reflects this with longer note values. It all settles at the end into the original key with a final resolution to $E_{\rm b}$ major.

To further whet your appetite, I offer the first eight bars of "Autumn Leaves" (page 77). To set the mood, I wrote an introduction that became part of the tune, to be played each time through the form. An intro that can be used as an interlude adds a personal facet to the structure, and can be fun to improvise on. For the tune itself, once again I begin with a chord whose root is a halfstep higher than that of the original chord. It is also a different quality chord (dominant 7th instead of minor). This is followed by a descending bass line, containing mostly dominant 7th chord qualities. The alterations give color to the progression, and also to accommodate the melody notes. The G13sus4 in measure 15 (bar 7 of the theme) moves down a minor third to an E13#9 (on the diminished axis), and it in turn resolves back to the Db13 in the same fashion. This might be a good time to try your hand at reharmonizing. See what you can come up

with for the rest of the tune.

My final example is "Chestnuts" (page 78), a tune from my newest recorded venture, The Pleasure Seekers, with John Patitucci on bass, Dave Weckl on drums, and Bob Sheppard on sax. This original tune has a harmonic structure based on the standard changes of "All the Things You Are." I have kept the original root movements intact, but have changed chord qualities, mostly substituting dominant 7th(sus4) chords. Pedal point is employed in the bridge. The rhythmic feel has also been changed from swing 4/4 to a Brazilian 2/4 feel. In order to make the tune my own, I have created a new melody over the changes. This is a technique used often in the bebop era.

One other point of interest is the interlude at the end of the tune. The insertion of new sections for harmonic, rhythmic, or melodic contrast and relief can be a valuable tool for both reharmonizing and composition. As you can see from the examples cited, there is sometimes a fine line between these two, and very often one can lead to the other. I find that lately I am reharmonizing some of my original tunes. Thus we've come full circle!

Reharmonization can be a cyclic process in many ways: After you play reharmonized tunes for a while, when you go back to the original changes, they sound fresh and new.





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SHORT TAKES

Continued from page 143

user in about what that thought might be.

We get the feeling that this unit was designed based on feedback from the high-end pro market: after all, it does sound great. The lack of a volume knob is no problem if the DMI-64 Mark II is safely mounted in an off-stage rack; the lack of documentation that explains how to use the unit is no problem if you have a keyboard technician whose job it is to figure all of this stuff out; and the limited front-panel access is no problem if you have an IBM-compatible computer and a MIDI interface so you can run the DMI Soft Control software that comes with the unit.

What makes all this so frustrating is that the instrument seems to be very well thoughtout. If the people who designed it had just explained their thinking a little bit in the manual, they might have made it much more accessible to the average musician. Still, the unit probably will reward those who take the time to figure out how all of those parameters interact.

For those who just want a tone-wheel organ in a box that they don't have to worry about, you can stay on the left side of the front panel and enjoy yourself—the majority of the 99 presets are impressive. If you explore further, you may want to throw the manual across the room occasionally, but you'll never get the urge to stick a knife in the thing. —Tom Darter

JL COOPER FADERMASTER REMOTE MIDI CONTROLLER

JL Cooper FaderMaster: \$299.00. Optional programming software (Macintosh or Atari

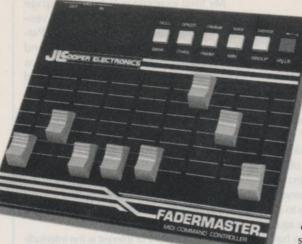
ST): \$29.95. JL Cooper Electronics, 13478 Beach Ave., Marina Del Rey, CA 90292. (213) 306-4131.

Pros: Factory presets for various MIDI gear, eight programmable data sliders, versatile merging functions.

Cons: Limited two-digit LED display.

ONGING FOR THE GOOD OLD DAYS when synthesizer front panels were replete with knobs? Thankfully, as far as controller-hungry MIDIacs are concerned, system-excusive commands can be used to manipulate parameters within a synth. Furthermore, a few manufacturers got the bright idea of putting sliders on a box to hook up with your MIDI gear. One such device is JL Cooper's FaderMaster.

Out of the box, the eight-slider FaderMaster



provides 59 preset,

nine user-programmable, and one system-exclusive controller configurations. Among the factory presets are setups for controlling MIDI volume or pan position over eight MIDI channels—1 to 8 or 9 to 16, though rechannelizing is a snap—as well as setups for addressing a variety of parameters on specific synths, samplers, and other MIDI devices.

The sidebar lists all the MIDI gear addressed by FaderMaster's presets. Eight of these are dedicated to controlling global, oscillator, and envelope parameters on Yamaha's DX7, DX7II, and TX802 synths. Among other instrumentspecific parameters that FaderMaster addresses: equalization and effect settings on the Roland D-50/550; the Korg M1's filter, amplitude, oscillator, and effects parameters; primary and secondary instrument, volume, tuning, envelope, delay, chorus, crossfade, and samplestart settings on E-mu's Proteus 1 and 2; and reverb, pan, and effect parameters on the Lexicon LXP-5.

Not every MIDI synth will be perfectly amenable to having certain parameters jerked around in real time. For example, when you adjust envelope and LFO parameters on an Oberheim Matrix 1000, the synth takes a moment or two to catch up if it's playing notes at the same time, often resulting in a stuck note.

Besides using FaderMaster to transmit sysex messages, you can individually program its sliders to send continuous-controller data, such as pitchbends, modulation, and aftertouch, as well as MIDI notes and program changes—although sliders aren't the most accurate means of entering such events. You use six pushbuttons across the top of FaderMaster's front panel to program slider functions. You'll need optional software for the Macintosh or Atari ST to program sysex applications on FaderMaster; the software also makes programming in general a bit more convenient.

You can program sliders 1 through 7 to delay individual MIDI notes or controller data by up to 15 milliseconds; slider 8 can likewise delay MIDI clocks. This feature allows you to play with the feel of a MIDI rhythm track.

In multi-device systems, FaderMaster works best in conjunction with a MIDI patchbay, so that you can selectively route controller data to one or more devices simultaneously. Fader-Master normally merges incoming MIDI messages with data generated when its sliders are moved, so you can insert it between your master controller and external modules without disrupting standard operation.

You can disable the merge function, or you can program individual sliders so that data they generate replaces identical incoming data. For example, say you've recorded a near-perfect synth solo into your sequencer; the only problem is a pitch-bend on a note at the climax. Perhaps your sequencer lets you edit pitch-bends, but you'd rather play them live. With Fader-Master's merge-conditional mode, existing data will pass through unaffected as long as the fader isn't moved. By re-recording the solo to another track, you can selectively replace the offending pitch-bend data by moving the fader at the appropriate time-not a simple task, given all the variables, but the capability exists if you're willing to slog through it.

FaderMaster is sized just right (7-1/2" x 6-1/2" x 2-1/16") to fit on the top of some synths and samplers without obscuring front-panel buttons or displays. If only its display showed more than two characters at a time. — Mark Vail

MIDI DEVICES ADDRESSED BY FADERMASTER FACTORY PRESETS

- E-mu Proteus 1/2/XR Ensoniq VFX
- Kawai K1/m/r/ll Kawai K4
- Korg M1/R
- Korg M3R
- Korg T1/2/3
- Korg Wavestation
- Lexicon LXP-1/5
- Oberheim Matrix-6/1000

Peavey DPM 3 Roland D-10/20/110 Roland D-50/550 Roland D-70 Roland MT-32 Roland U-20/220 Yamaha DX7II/TX802 Yamaha SY55/TG55 Yamaha SY77/TG77 Yamaha TX81Z

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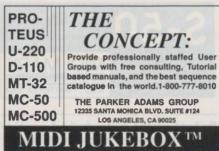
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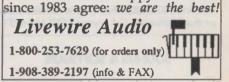
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Continued from page 141

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FOR FURTHER READING

For a closer look at acoustic piano keyboard actions, check out Joseph A. Meehan's excellent article on grands, uprights, and spinets in the Apr. '77 Keyboard. If you really want to delve into the subject, we have a list of suggestions: The Piano Book, Second Edition, by Larry Fine (Brookside Press, Boston, MA, 1990); Piano Servicing, Tuning, & Rebuilding, by Arthur A. Reblitz (Vestal Press, Vestal, New York, 1976); Pianos and their Makers, by Alfred Dolge (Dover Publications, New York, 1972); The Piano: Its Story, from Zither to Grand, by David S. Grover (Charles Scribner's Sons, New York, 1978); The Piano Handbook, by Ian McCombie (Charles Scribner's Sons, New York, 1980); Theory and Practice of Piano Construction, by William B. White (Dover Publications, New York, 1975); The Piano Hammer, by Walter Pfeiffer (Verlag Das Musikinstrument, Frankfurt, Germany, 1978); Piano Tuning, Repair, & Rebuilding, by Floyd A. Stevens, Ph.D. (Nelson-Hall Company, Chicago, 1972); The Piano: A History, by Cyril Ehrlich (J. M. Dent & Sons, London, England, 1976); The Lives of the Piano, edited by James R. Gaines (Holt, Rinehart, and Winston, New York, 1981); and Five Lectures on the Acoustics of the Piano, edited by Anders Askenfelt (Royal Swedish Academy of Music, Stockholm, 1990).

In the past, we've reviewed a number of digital pianos and modules: Ensoniq's SDP-1 (Sept. '86), Roland's HP-5600, RD-1000, and MKS-20 (Aug. '86), Technics SX-PX5, SX-PX7, and SX-PX9 (Aug. '86), Kawai's 250 and 150 (Mar. '87), Yamaha's TX1P (July '88), the Korg P3 (Sept. '88), Yamaha's EMT-10 (Feb. '89), the Roland HP-5000S (June '89), the Rhodes MK-80 (May '90), and E-mu's Proformance/1+ (Nov. '90).

If you'd like to read a somewhat premature harbinger on the death of the acoustic piano, check out the cover story in the Dec. '85 Keyboard.

Finally, not to be missed is our Special Issue on the piano, Aug. '88, in which we conducted our original digital piano roundup.

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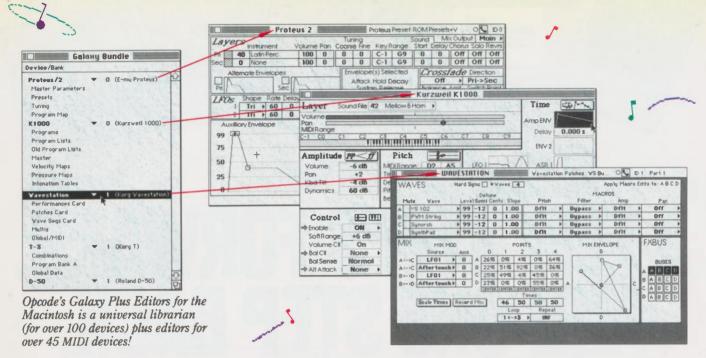
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Editor Compatibility

E-mu: Proteus 1/2/XR Ensonia: ESQ-1SQ-80 Kawai: K1 Korg: M1, M1R, M1EX, M1REX, M3R, T1, T2, T3 Wavestation Kurzweil: K1000 (SE, SE II, Extended, 1000 PX, HX, SX, GX, PX Plus, AX Plus, K1200, Pro1, Pro2, Pro3) Roland: D-50/D-550 D-5/D-10/D-110/D-20/MT-32 Yamaha: DX7/DX7II/TX7/TX816/TX802 TX81Z, DX11, DX21, DX27, DX100 REV5 Reverb SPX90/SPX 90II Effects

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