Transoniq Hacker

The Independent News Magazine for Ensoniq Users

An EPS/ASR Hackerpatch (Sort Of)

Tom Shear

It's no secret that buying third-party sounds can cost big. Even if you do just buy a few, the urge for *more* will eventually set in. If you're like me, however, you don't have a bottomless bank account and need to save your meager funds for more important things like beer and CDs. So here we are again wanting to score some new sounds with no money. Well, suppose you could create a brand-spanking-new sound on your EPS without ever plugging a sampling mic/line in or manipulating someone else's samples? It *can* be done easily and with minimum disk space. Here goes.

Once your EPS has booted up (sounds like a euphemism for vomiting...) press COMMAND-INSTRUMENT. Your display should now read CREATE NEW INSTRUMENT. Press YES. The EPS will ask SELECT UNUSED INST=1. Answer YES here as well. Now, select COMMAND-LAYER and answer YES once again. Your ever-friendly EPS should inform you that LAYER 1 has been CREATED. So far, so good. Next, you must press COMMAND WAVE so that the EPS says CREATE NEW WAVESAMPLE. Select "YES" and play a few notes on the keyboard. You should be hearing a very plain-vanilla squarewave. It is my understanding that the EPS was given this ability to allow users to have a point of reference when tuning their home made wavesamples. I've very rarely used it for this, but luckily, in the hacking spirit this magazine thrives on, we can use it for other, tastier purposes.

Now, as it is, this sound isn't all that interesting. Sure, if you're feeling nostalgic you could make it monophonic and put some glide on it, but who really uses that kind of sound nowadays? (Boy is that an invitation for some irate letters!)

Here are some interesting possibilities I've discovered using this technique:

1. If you really like the squarewave sound, try putting a string-like envelope on it with a long release, copying this to another layer, and detuning the second layer for a fat, chorused hollow pad.

2. Borrow someone's D-50, SQ-80, VFX, or any other synth with sampled attack transients on board and sample them. Now, simply by attaching these to your squarewave creations, you can make them a lot more interesting. Try adding a piano thump to the attack of a very slightly detuned instrument fed through the PIANO DECAY envelope for a sound that's a piano... but isn't. Try taking a tine or bell attack and sticking it on a chorused squarewave creation fed through the PERCUSSION envelope for pretty synth bells. Experiment with all sorts of different envelopes, tunings, and attack portions... the possibilities are staggering! From the "Strange and Slightly Pathetic But True" department, I once turned a sample of a

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very rude bodily noise into a cool digital synth sound by putting a single-page loop on it, detuning it a bit, and adding a D-50 attack transient! Oh, wouldn't my parents be proud!

3. Mess around with filtering. By toning things down a bit it's possible to get more mellow sounds vaguely approximating triangle and sine waves.

4. And for those of you who REALLY like to experiment, once you've created your basic wavesample, try pressing COMMAND-LFO and scrolling left until you see the SCALE DATA command. Press YES. Your EPS will ask for a START ADDR and an END ADDR. This is where the real fun comes in, but for now simply enter a START ADDR of 30 and an END ADDR of 70. Now you are asked for a SCALE START and SCALE END. Select 19.00 as your start and 43.00 as your END. Your EPS will ask for a SCALE DEPTH, just press YES to select the default of 3.0 dB. Your EPS will pause momentarily to think and then it will ask you KEEP = OLD/NEW. Try playing a few keys. WHOA! That doesn't sound like my old squarewave! You should be hearing something to the effect of a pulse wave... a more nasal, reedy sound, perhaps like a harpsichord or a clav. As you have probably guessed, messing around with different SCALE START and ENDS and different START ADDRs and END ADDRs, you can get different waveforms. I've been able to create everything from mellow bell tones to downright nasty metallic waves. With enough work, you should be able to create just about any basic type of sound. Combine it with the above technique of using sampled attack transients and the possibilities increase.

I haven't even discussed the best part of this technique. If you haven't already, take a look at the size of this instrument. If you've done everything right it should be awfully small... we're talking single digits in the block department here. When was the last time you saw that? You can use your imagination from here... this means you can save mucho instruments on a single disk *and* you can enjoy those quick load times without a hard drive. Oh joy! Praise Ensoniq! So anyway, you can all go about playing with this new trick and I better not hear you durn kids complaining about running out of sounds on yer EPS!!! ▬

Bio: Tom Shear has an annoying habit of choosing hobbies he can't afford, so he has therefore decided to become rich and famous.

Subscription Information

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RND (♪♪♪)

Ensoniq News

Ensoniq has just released a new keyboard, the **TS-12 Performance/Composition Synthesizer.** It combines the 76-key weighted action of the KS-32 with all the features found in the TS-10 for a very powerful and musical instrument.

The TS-12 introduces five new features that you should pay close attention to:

1) SoundFinder ™ — the ability to search for sounds by musical category. When you wish to change a sound in a sequence, or just look for all the choices of a given type of sound (all acoustic pianos, electric basses, synth leads etc.), the TS-12 can look for sounds that are only from that musical category. Simply press Replace Track Sound, and use the up arrow button; the TS-12 will locate to sounds of that type only, greatly simplifying looking through the 300 onboard sounds.

2) Auto-Load of sampled sounds — the TS-12 automatically prompts you to insert the needed disks to load sampled sounds, and it will load them automatically when you have SCSI installed (SP-4). When the TS-12 is first powered up, it will ask if you want to auto-load sampled sounds, which will restore the unit to the state it was in when it was turned off. Presets and Sequence/Song files that use sampled sounds can also save the Bank info about sampled sounds that were used, so when you reload the Preset/Sequence file it will automatically request the disks, or reload via SCSI. This intelligent feature makes working with sampled sounds simple, and is another sign of the type of ease-of-use that Ensoniq tries to put in all of their products.

3) Tempo Track — the sequencer can now support recording of variable tempo changes, for accelerandos and ritards and other musical effects. Track 24 is dedicated to tempo recording, and the TS supports editing of tempo values after recording. Older sequences can have a Tempo Track added to them with a simple command.

4) SCSI support — the TS-12 can load in sampled sound data via SCSI when the optional SP-4 interface is added (requires installation at an Authorized Ensoniq Repair Station). This feature makes Ensoniq's growing library of CD-ROMs the perfect addition. This read-only implementation allows users who currently have SCSI drives (for use with their Ensoniq sampler) to also access those drives with their TS-12.

5) Re-voiced Sounds and Presets — based on customer feedback and comments from users Ensoniq has improved the 300 Sounds and 300 Presets in the TS-12. ROM sounds have been improved but remain the same type of sound (for compatibility with previous sequence data), and the RAM includes many new and exciting sounds to show off the TS-12. The ROM Presets have been re-voiced to include many new performance setups that will better show the TS's capabilities.

The TS-12 has a suggested retail price of $2995 and is available immediately.

TS-10 Operating System — At the same time Ensoniq has released O.S. 2.0 for the TS-10, giving it the identical new software features of the TS-12. This ROM-based update is available for free from Authorized Ensoniq Repair Stations. There will be a small bench charge for installation.

KS-32 Operating System — There's a new Operating System for the KS-32 — Version 3.01. This new OS fixes the intermittant power up that some customers have reported. Although this problem is not fatal, some customers would have to turn their units on and off two or three times to get it to power up. There is no charge for the upgrade kit but there is for the installation. Contact your Ensoniq dealer.

Third-Party News

A sign of the times — Third-Party Patch pervader and occasional writer Jim Grote has gone into the business of producing short-run CDs for musicians. Check out his ad in the Classifieds.

TRANSONIQ-NET
HELP WITH QUESTIONS

All of the individuals listed below are *volunteers*! Please take that into consideration when calling. If you get a recording and leave a message, let 'em know if it's okay to call back collect (this will greatly increase your chances of getting a return call).

All Ensoniq Gear – Ensoniq Customer Service. 9:30 am to noon, 1:15 pm to 6:30 pm EST Monday to Friday. 215-647-3930.

All Ensoniq Gear – Electric Factory (Ensoniq's Australia distributor). Business hours – Victoria. (03) 480-5988.

Sampling – The International Samplers Cooperative, 310-455-2653 or via MusoBBS, 818-884-6799.

SD-1 Questions – Philip Magnotta, 401-467-4357, 4 pm – 12:30 EST.

VFX Sound Programming Questions – Dara Jones, Compuserve: 71055, 1113 or Midi-net & Fido-net. Local BBS: Nightfly, Dallas: 214-342-2286.

SD-1, DP/4 Questions – John Cox, 609-888-5519, (NJ) 6 – 8 pm EST.

SQ-80 Questions – Robert Romano, 607-533-7878. Any ol' time.

Hard Drives & Drive Systems, Studios, & Computers – Rob Feiner, Cinetunes. 914-963-5818. 11am–3pm EST. Compuserve: 71024,1255.

EPS, EPS-16 PLUS, & ASR-10 Questions – Garth Hjelte. Rubber Chicken Software. Call anytime. If message, 24-hour callback. (305) 963-1783. Compuserve: 72203,2303.

ESQ-1 AND SQ-80 Questions – Tom McCaffrey. ESQUPA. 215-830-0241, before 11 pm Eastern Time.
EPS/MIRAGE/ESQ/SQ-80 M.U.G. 24-Hour Hotline – 212-465-3430. Leave name, number, address. 24-hr Callback.

Sampling & Moving Samples – Jack Loesch, (908) 264-3512. Eastern Time (N.J.). Call after 6:00 pm.

MIDI Users – Eric Baragar, Canadian MIDI Users Group, (613) 392- 6296 during business hours, Eastern Time (Toronto, ONT) or call MIDILINE BBS at (613) 966-6823 24 hours.

Mirage Sampling – Mark Wyar, (216) 323-1205. Eastern time zone (OH). Calls between 6 pm and 11 pm.

SQ-1, KS-32, & SD-1 Questions – Pat Finnigan, 317-462-8446. 8:00 am to 10:00 pm EST.

ESQ-1, MIDI & Computers – Joe Slater, (404) 925-7929. EST.

HYPERSONIQ
NEW PRODUCTS

Syntaur Productions has just released *Soviet Synths*, a 4-disk collection of samples of Soviet-made analog synthesizers. The twenty sample files, for the EPS, EPS-16 Plus, and ASR-10, cover a range of sounds from three different Soviet keyboards — including the popular Aelita. These synthesizers were programmed and then sampled in Latvia by Gints Stankevics, keyboardist for the acclaimed group Svita. The sample programming was then done in Houston by Sam Mims, owner of Syntaur Productions. *Soviet Synths* is available as a four-disk set for $34.95. (Shipping: $3.) Syntaur has also just reissued a set of **Livewire Audio** samples for the Mirage. The Mirage, now nearly a decade old, still remains surprisingly popular but the family of third-party vendors hardly has anyone left. In response to this need, Syntaur has obtained the rights to the Livewire samples, has selected the best sounds from the library, re-edited the samples, reprogrammed the patch variations, removed the copy protection, and added several new samples to complete a collection of eleven disks. The samples range form classic synthesizers to real string sections to sound effects. *Mirage Disks 1* through *11* are available for $7.95 each, or as a complete set for $74.95. (Shipping: $3.) For further information: Syntaur Productions, 4241 W. Alabama #10, Houston, TX 77027. Phone: 713-965-9041 or 800-334-1288.

Watt Products has announced the *TC-100,* a Tempo Controller for the VFX-sd and SD-1. It's been a while since there's been any hardware hacking on Ensoniq equipment, but, here at last, Watt Products has released a new hardware application that provides you the ability to adjust the tempo throughout any sequenced production. Add subtle tempo changes to enhance your sequences, add a ritard to make your endings complete. Tempo changes are played in from the keyboard and recorded like any other track. The small, add-on PC board installs in less than 30 minutes. The unit comes with complete instructions, user's manual, and program disk and sells for $69.95. For further information, contact: Watt Products, PO Box 584, Bordentown, NJ 08505. Phone: 609-298-4421.

Eye & I Productions has just announced the release of their third Voice Crystal Sound Volume for the TS-10 and TS-12. The *VC3-TS10* contains 60 new programs, complete with patch select variations. Plus, Eye & I is including an extra disk of EPS-16/ASR-10 samples that can be loaded into a standard TS-10 unit. The entire *VC3-TS10* package will retail for $39.95. For further information, contact: Eye & I Productions, 930 Jungfrau Court, Milpitas, CA 95035. Phone: 408-945-0139.

Nightwind Sound announces the release of 11 new disks for the Classic EPS. Five new *Ethnic Disks* from Tibet, China, India and South America include: Dung Chen, Udu Drum, Pi'Pa, Rainstick, Er-Hu, Tabla, Cheng, and Sarod instruments. Five new *Synth/Percussion Disks* feature: Stacked Perc, Processed Kicks & Snares, Flexitone, Raindrum, Inner Kalimba, and Bongo + Udu Drum Loops. *The Whistle Collection* features 9 whistles from around the world including: Samba, Bermuda Taxi, Metro Police, Crow Call, 3-Tone Train and Bobbie's Whistle, plus — Nose Flutes! All instruments are programmed to the max with patch selects, pedal, pressure, etc. For further information, contact: Nighwind Sound, 170 Mar Monte Ave., La Selva, CA 95076. Phone: 408-684-1609.

Review: Music Magic Sequences

Steve Vincent

For: Reviewed for ESQ-1 but also available for SQ-80, EPSs, VFX-sd, and SD-1.
Product: Music Magic Sequences.
Price: $10.00 per song; $9.00 each for 50 or more.
From: Music Magic Sequences, 10541 Earl Ave., Bennington, NE 68007, (402) 238-2876.

Guess what. Just about everyone out there playing top 40 dance music in local clubs is playing to sequences at least part of the time. And most of them are doing it using Ensoniq keyboards, by my own poll. The reason is obvious if you go out there and listen. The sequence bands generally sound better. Another reason — it is very difficult to find good rock keyboardists who can play live in a wide variety of styles *and* who own their own gear! Our band went through five keyboardists in one year, before we finally gave up and decided to go with sequences. The only one complaining now is our drummer — he doesn't like the click-track (too bad!).

The Review

I reviewed three sequences for the ESQ-1. That's right, the ESQ-1. Music Magic sequences are also available for the SQ-80, EPSs, VFX-sd, and SDs, but for some reason Bill Pulte, the man behind Music Magic, didn't want to send me any EPS sequences. It could have been a *Hacker* first: a double product review! Oh well, I'd better not push it; my last review was for dust covers.

Cut to the chase. All three sequences sounded quite good. Bill sent me *"Love Shack"* by the B-52's, *"Something In Red"* by Lorrie Morgan, and the swingin' classic *"In The Mood"* by Glen Miller. I received the data in EPS SysEx format on a 3" disk, with two files per song: one file for the sequence data, and one for the ESQ-1 sound bank data. It all transferred flawlessly from my EPS to ESQ-1.

These sequences are virtually "plug-'n'-play" — the only tweak needed was to change the drum track MIDI channel from 15 to 2, which I use in my setup. The drum track was already mapped for my Alesis D4 drum module (how did Bill know?), so I just pushed "play" and started lisping along with the B-52's.

The Sequences

I was interested in how *"Love Shack"* would sound, since we cover this tune in my band, and I was pleased to discover that the sequence emulated the guitar parts well, using an electric

piano-ish patch called F-PENO instead of a phony-sounding guitar patch, and overall captured the spirit of the song, with some sensitive nuances (including some chords during the "Bang, Bang" section to help the singers pick the right notes!). The drum track had a good, natural feel.

The orchestration and arrangement in *"Something In Red"* was quite pretty, although the tempo felt a little stiff or unnatural, as if the piano track were quantized or the note durations a bit too short. But when the drums kicked in halfway through this slow ballad, it sounded really nice. Caught myself swaying with an imaginary partner in my arms (turned out to be a boom stand).

"In The Mood" got me, well, in the mood... to swing! I soon forgot I was listening to an ESQ-1 (although there's no mistaking that thin trumpet patch), and started jitterbugging with that same old boom stand (those ballroom dance classes last year paid off). This song truly swings! The rhythm section is good — no quantized feel at all, but laid-back and naturally swingy. There's some great piano comping during the trumpet solo; subtle and jazzy.

General Stuff

Two thumbs up on the drum tracks! The drum programming is consistently excellent in these sequences. Sequences for the ESQ-1 and SQ-80 have the drum track MIDI-ed out, set to channel 15 and mapped for the Alesis D4 (and, I suspect, a number of other drum modules following the same map). Sequences for the EPSs and VFX-sd/SDs use on-board drums. If you need to re-map your drum module, a handy chart is included in the instruction packet.

Each of the songs reviewed were one "sequence" in length, i.e., not a chain of sequences patched together into a "song." This makes, for example, *"Something In Red"* something like a 144-bar sequence. This is a disadvantage if you want to go in and rearrange the song a bit, say, repeating the trumpet solo section on *"In The Mood."* You can do it, but it will take a little cutting-and-pasting. However, the one-sequence- per-song is an advantage for live performance, because you can have more than one song ("sequence") loaded and ready to play. I estimate that, based on the size of these sequences, you could fit five or six songs on an expanded ESQ-1, so all the dancers won't leave the club waiting for you to fumble around loading each sequence.

The ESQ-1 sounds that came with these sequences didn't exactly make me want to do a patch review. Many tracks use factory patches, but there were a few new ones. They all work, but you might want to try some substitutions. For instance, I enjoyed substituting F-111 for HEVBRS on *"In The Mood"* — definitely changed the mood!

The instructions included with the disk were excellent. In addition to the drum kit chart, Bill includes step-by-step loading instructions that are format-specific. So not only do you not need to know how to play keyboards to be in a band, you also don't even need to know how to load a sequence and push "play." I mean, even your drummer could do it! (Since you don't need him to play drums anymore, it would be a good job for him.) Also included is a Music Magic Sequences catalog, listing hundreds of songs; I lost count at around 500. I lost count because the catalog is actually a collection of a number of different editions of his song lists, and it's dang confusing. Update the thing into one master list, Bill, and we'll call you blessed.

I just have to mention that when I saw the neon yellow label on the diskette, it piqued my curiosity, so I took the thing into a dark closet and shut the door to see if it indeed glowed in the dark. It did not. But what a great idea for those dark, smoky clubs! Are you listening, third-party developers?! (Reminds me of that scene in *"Skin Deep"*. . .)

The Shrink

Okay, so you thought this was just going to be a product review. Surprise; therapy time! Question: Do you need to pay for sequences? Here are some things to weigh:

- How many hours does it take you to program a song?
- What is your time worth to you?
- How much do you enjoy sequencing?
- How does your finished product sound?

If you love to sequence and the process is part of the payoff for you, and you have lots of time to do it, then you may not be in the market for pre-sequenced sequences, unless you also want some variety in your repertoire, or are hurting for something to spend your money on.

But if sequencing is a chore to you, or you don't do very well at it, or you don't have the time to do it yourself (or you've just got to know how they sequenced Sting — the audacity!), then 10 bucks doesn't seem like much to pay for a finished, ready-to-rock (or ready-to-swing) sequence.

If you've got an ESQ-1, Music Magic Sequences are worth checking out. ▬

Bio: Steve Vincent plays guitar and keyboards for The Noyz Toyz, produces demo tapes in his MIDI studio, and is a psychotherapist.

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Making BigBux Doing What You Do Best

Part V — Creative Mixing Techniques

Jeffrey P. Fisher

One problem we all face when preparing a soundtrack is how to mix the different elements together so they don't compete against one another. The most difficult is getting the music and voice track to work together.

The usual procedure when working with music and a voice track (be it narration or dialogue) is to reduce the volume of the music under the voice track. But when the voice track is silent, the music is usually too low in level. And if you increase its volume it can quickly obscure the voice track. You're forced to either ride-the-gain by constantly raising and lowering the music track or just set it and forget about it — hardly the most creative solution.

How do you prevent the music from stepping all over the voice track so you can understand all the words? Here's the secret. You must create a space for the voice track — a kind of hole in the soundtrack reserved for the voice track with the music surrounding but not enveloping it.

Here are five tricks you can use to create a strong, effective soundtrack. Two require a choice of music while the other three are electronic tricks you can do during mixing or editing.

First of all, certain instrument frequencies interfere with the human voice. That is, there are musical instruments that fight with the intelligibility of speech. For the male voice, the lower midrange instruments like acoustic guitar, tenor sax, and the middle of the piano are the culprit. For female voice, the upper range instruments like alto sax, flute, solo violin, and screaming guitar solos tend to cover up and mask intelligibility. Any music track that predominantly features one of these instruments will conflict with the associated male or female voice.

So if you compose your music without these interfering frequencies there's space for the voice track. Think of the voice track as another solo instrument and select appropriate music that allows you to predominantly feature it in front of the track.

Write music that is somewhat sparse

High-powered, high-density tracks work well for visual sequences, but they fight for space (and audience attention) when used under a voice track. In general, the less-is-more school of music is best. Choose music that is full range — tight low end and crisp highs — but with a somewhat reduced midrange. I've found this works quite well with voice tracks.

Use stereo balancing to create a hole

If you're working in stereo — and I mean stereo all the way through to exhibition (most corporate projects are played back in mono, *not* stereo) — make sure there is a hole in the middle of the stereo field for the voice track.

This mixing technique requires leaving solo and midrange instruments *out* of the stereo center and balancing them to either the left or right speakers. This way there is space in the middle for the voice track.

Use frequency controls to create space in mono

Though not as effective as the stereo trick above, you can create a hole by removing the troublesome midrange frequencies with an equalizer. The frequency band that most affects speech intelligibility (male and female) is between 3-4k Hertz. Reduce the music track by 2-4db at those frequencies and correspondingly boost the same frequencies by 2-4db on the voice track. This takes some experimentation to work exactly right, but a little knob diddling and careful listening will show you the way.

Use a ducker to mix voice and music together

By far the best way to make sure the music and voice track don't interfere is to use a ducker. A what? A ducker is an inexpensive special effects device, sort of a reverse compressor. Basically, a ducker lets you control the level of the background music in relation to the voice track.

With a ducker, whenever the voice track is heard, the music track is pushed down in level or "ducked" out of the way. When the voice track is silent, the music plays at full volume. You literally control the level of the music with the voice track — this device does it for you automatically. You get the perfect blend of voice and music.

I am making it my life's work to make sure everyone knows about the benefits of a good quality compressor and ducker. It is, by far, the most neglected — but the most useful — special effects device you can own. It can really help you clean up your audio tracks and solve other sonic problems. I would never put together a soundtrack without this indispensable and versatile tool. You shouldn't either.

The DP/4 has a ducker preset or two — another good reason

to own one. Otherwise, many compressors from other manufacturers can work for you. Be careful. Make sure it has the sidechain input necessary for ducking. And no you can't duck with a noise gate side chain. The Alesis 3630 is a cost-effective comp/limit/gate/ducker.

Use these five tricks of the trade to improve how you mix voice and music together and never again worry whether voice tracks are understandable or not. ▬

Next time: Marketing your soundtrack scoring business.

Bio: Jeffrey P. Fisher scores, jingles, and sound designs for documentary, drama, and business TV. He is the author of the book "How to Make Big Money Scoring Soundtracks — Your Complete Guide to Writing and Selling Original Music."

How Sounds Work

Part VI – Don't Fake the Funk!

Mark (Stone Funky) Clifton

This month I'm gonna depart from the usual imitative-synthesis theme of this series and instead address the problem of Bad Rap.

As the demand for Hip-Hop has grown in the media, so has the amount of mediocre, badly produced fluff being churned out by well-intentioned people who have no idea what they're doing. That said, off we go.

One of the biggest mistakes made in the production of Hip-Hop in is the choosing of the sounds. Often, factory programmed patches are too wimpy to capture listeners' interest. Hip-Hop is very much a producer/programmer medium and sonic originality is of great importance. The following are a couple of my favorite patches for Hip-Hop compositions. Try using them for a base for your own programs.

SQ-1/2 & KS-32 Prog:MAXIMUM MINI

By: Mark Clifton

WAVE	1	2	3
Select Voice	On	On	On
Wave Class	Wave	Wave	Wave
Wave	Sawtooth	Sawtooth	Sawtooth
Delay Time	000	000	000
Wave Direction	-	-	-
Start Index	-	-	-
MODSCR	-	-	-
MODAMT	-	-	-
Restrk Decay	00	00	00

PITCH	1	2	3
Octave	-1	-1	-1
Semitone	+00	+00	+00
Fine	+00	-06	+06
ENV1	+00	+00	+00
LFO	+07	+07	+06
MODSCR	Off	Off	Off
MODAMT	-	-	-
KBD Ptch Track	On	On	On
Glide	MiniMode	Mini	Mini
Glide Time	00	00	00

ENV1	1	2	3
Initial			
Peak			
Break			
Sustain			
Attack			
Decay 1			
Decay 2			
Release			
Vel-Level			
Vel-Attack			
Vel Curve			
Mode			
KBD Track			

LFO	1	2	3
LFO Speed	36	34	34
Noise Rate	00	00	00
Level	00	00	00
Delay	00	00	00
MODSRC	Wheel	Wheel	Wheel
Wave	Tri	Tri	Tri
Restart	On	On	On

FILTER	1	2	3
Filter 1	3Lo	3Lo	3Lo
Filter 2	1Lo	1Lo	1Lo
FC1 Cutoff	000	010	000
ENV 2	+52	+50	+50
FC1 KBD	+00	+43	+43
MODSCR	Off	Off	Off
MODAMT	-	-	-
FC2 Cutoff	000	010	010
ENV2	+45	+40	+40
FC2 KBD	+24	+24	+24
FC1MOD-FC2	Off	Off	Off

ENV2	1	2	3
Initial	99	99	99
Peak	99	99	99
Break	58	58	58
Sustain	50	50	50
Attack	00	00	00
Decay 1	23	23	23
Decay 2	42	42	42
Release	32	32	32
Vel-Level	00	00	00
Vel-Attack	00	00	00
Vel Curve	-	-	-
Mode	Norm	Norm	Norm
KBD Track	+00	+00	+00

AMP	1	2	3
Initial	99	99	99
Peak	99	99	99
Break	00	00	00
Sustain	00	00	00
Attack	87	87	87
Decay 1	72	72	72
Decay 2	00	00	00
Release	29	29	29
Vel-Level	00	00	00
Vel-Attack	00	00	00
Vel Curve	-	-	-
Mode	Norm	Norm	Norm
KBD Track	+00	+00	+00

OUTPUT	1	2	3
VOL	90	59	42
Boost	Off	Off	Off
MODSRC	Off	Off	Off
MODAMT	-	-	-
KBD Scale	+13	+00	+00
Key Range	C2-C7	-	-
Output Bus	FX1	FX1	FX1
Priority	Med	Med	Med
Pan	+00	+00	+00
Vel window	>000	>000	>000

CONCERT REVERB

FX-1	20
FX-2	30
Decay Time	19
Diffusion	65
Detune Rate	32
Detune Depth	12
HF Damping	72
HF Bandwidth	86
LF Decay	+12
MOD (Dest)	Nothing
BY (MODSRC)	-
MODAMT	-

"Maximum Mini" is an imitation of the hard Minimoog bass sound that is very popular in dance and Hip-Hop music today. Many keyboards feature waveforms that are supposed to imitate this kind of sound (such as the SQ+/SD-1 SYNTH BASS-3 wave), but I've found that the best way to construct a Moog bass patch is the authentic way-out of sawtooth waves. The three oscillators in this patch share nearly identical parameters, but with slight variations in the filter, LFO, and tuning sections. This creates a certain amount of complexity within the sound, keeping it from becoming too boring. The slight detuning of the oscillators' pitches creates a natural chorusing effect, a technique that was widely used on old analog synths. The Glide parameter in the Pitch section is set to MINI-MODE, which simulates the mono glide of the Minimoog, which was only capable of playing one note at a time. In the Effects section, the sound has been tinted with just a tiny amount of reverb, but is dry enough not to become muddied or buried in the mix. Overall, the programming in this patch is kept fairly simple, preserving the crude analog feel of the real thing. Too much clutter can kill a bass sound.

"Urban Kit*" is a collection of drum sounds that are used widely in Hip-Hop and is, as far as I know, the first *drum* Hackerpatch to ever appear in these pages. Oscillator 1 uses the LONG RAP KIK wave, which imitates the long sustained bass drum sound from the old Roland TR-808 drum machine. The 808's sound may seem rather cheap and synthy by today's standards, but it has a certain hard analog grunge to it that has made it a standard in Hip-Hop production over the years, though its popularity has been diminishing lately. Its sustained kick, though, is still in wide use. It is most often used as a reinforcement to the main kick track, playing on the stronger beats of the measure (usually 1 and 3) to add an extra anchoring punch to the groove. LONG RAP KIK is an expansion wave, but unexpanded SQ owners can get an interesting variation on its sound by instead using the 2 HARMONIC SAW wave tuned down three octaves with a filter cutoff of 85. Other substitute waveforms that will work are SINE, TRIANGLE and 1+2 HARMONICS. Also, if you're using an unexpanded SQ, change the waveform in OSC 2 to TIGHT KICK and OSC 16 to SPRAY CAN. Using these two basic patches (or your own variations) you should be able to create a strong base on which to build your Hip-Hop tracks.

Some Examples

Example 1 is a fairly fast (by Hip-Hop standards), simple beat of the kind popularized by Rap groups like Naughty by Nature in light-hearted party songs such as *"HIP-HOP Hooray."* This particular kind of beat lends itself well to shout choruses. I've used variations of it at school pep rallys to psych up the inmates. Notice that the drum track is fairly simple, sticking rigidly to the established pattern of eighth and sixteenth notes. This, coupled with the almost painfully simple bass line, propels the beat forward, creating the same near-hypnotic effect that House music often has. This does tend to draw attention away from the lyrics, though, so be careful when you use this kind of track.

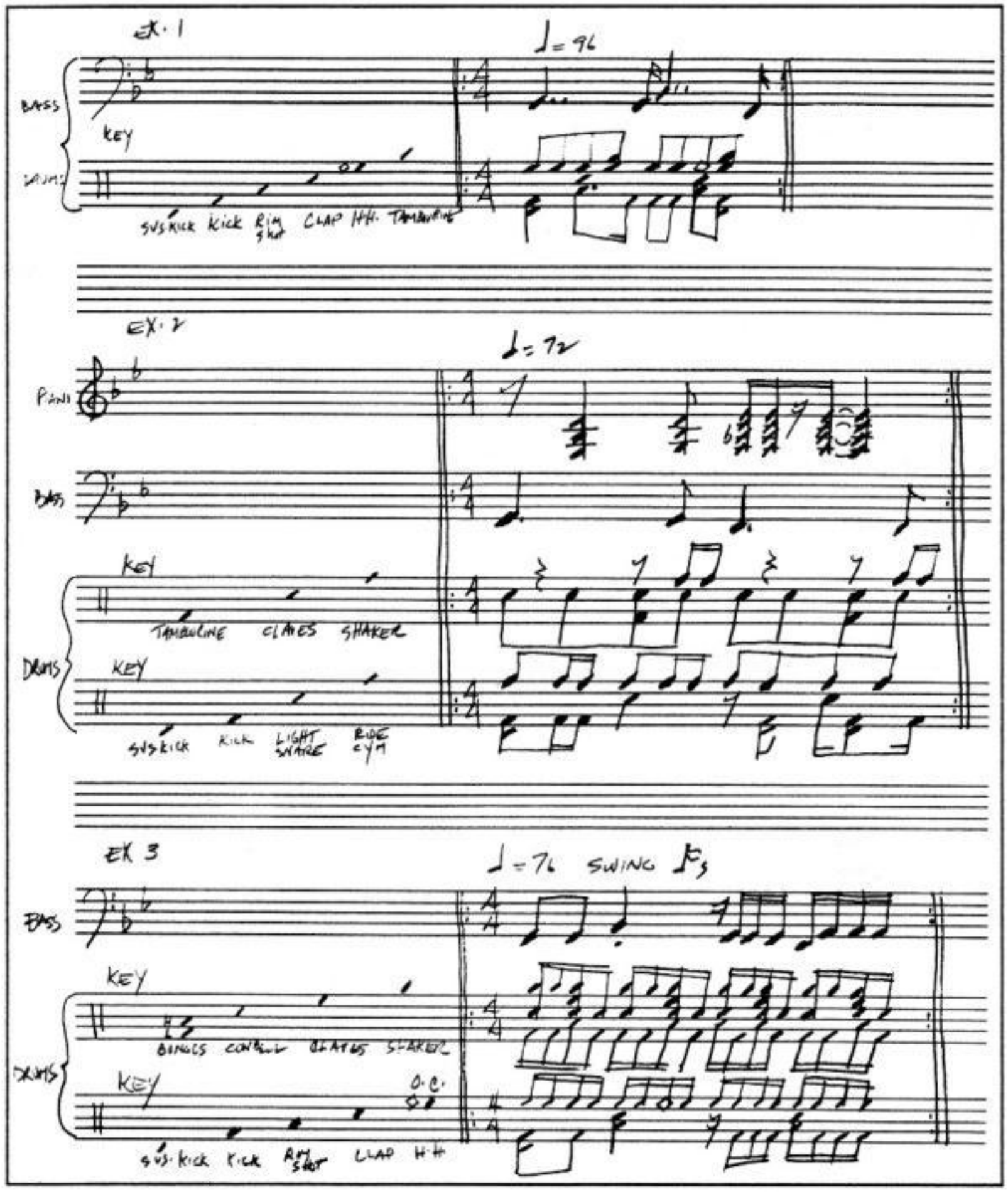
URBAN KIT* *by Mark Clifton*

Note: Shares the same FX as "MAXIMUM MINI."

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WAVE																	
Key	C2:E2	F2:G#2	A#2:B2	B2:D#3	E3:F3	F#3:G3	G#3:A3	A#3:D4	D#4:G#4	A4:D#5	E5:B5	C6:C#6	D6:E6	F6:F#6	G6:G#6	A6:A#6	B6:C7
Wave Class	Expan	Expan	Drum	Drum	Drum	Drum	Drum	Drum	Drum	Drum	Perc	Perc	Perc	Perc	Perc	Expan	Perc
Wave	LngRapKik	HipHopKik1	SynSnare	RimShot	ClHH2	OpHH	PedHH	RideCym	CrashCym	DryTomLow	Timbale	Cowbell	Bongos	Claps	Tambourine	Shaker	Claves
Direction	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd	Fwd
PITCH																	
Oct	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0	+0
Semi	+00	+00	+00	+00	+00	+00	+00	+00	-02	+00	-03	+00	-01	+00	+00	+00	+00
Fine	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
KPT	Off	Off	Off	Off	Off	Off	Off	On	On	On	On	Off	On	Off	Off	Off	Off
FILTER																	
FC Cutoff	127	127	102	102	110	127	102	093	093	102	093	102	093	110	119	102	102
LevV	00	00	40	40	13	00	19	19	26	19	19	19	26	13	06	19	19
AMP																	
Gate Time	15	06	04	06	20	59	20	32	20	08	08	03	02	14	04	02	20
Release	65	35	54	64	20	05	20	64	64	23	36	33	17	00	48	09	20
LevV	26	26	33	33	33	33	33	40	40	33	40	33	40	26	33	33	40
Mode	Fin	Fin	Fin	Fin	Fin	Norm	Fin	Fin	Fin	Fin	Fin	Fin	Fin	Fin	Fin	Fin	Fin
OUTPUT																	
Vol	99	99	99	99	99	87	91	96	99	93	93	93	90	99	99	97	93
Boost	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On
Pan	+00	+00	+00	+00	+28	+28	+28	-28	+42	-28	+28	+56	-56	+00	-42	+70	-70
Output	Dry	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX2	FX1	FX2	FX2	FX2	FX2	FX2	FX2	FX2
VelCurve	Lin	Lin	Lin	Lin	Lin	Lin	Conv	Lin	Lin	Lin	Lin	Lin	Lin	Lin	Lin	Lin	Lin

Example 2 is a slower, more laid back track in the smooth, almost ballad-like style that is gaining popularity in West Coast hardcore Rap. The West Coast sound tends to be rather hard and dry, drawing much of its influences from '70s funk and Motown music, with even a bit of '60s Surf Rock thrown in. The slower tempo allows the drum track to be a bit busier with more ornamentation, though it still remains rather restrained by most standards. In addition to the drum and bass tracks, a simple rhythmic piano line reinforces the song's two-chord motif while interacting subtly with the drums, adding to the overall "jazziness" of the sound. Another complement to this example would be a funky wha-wha guitar line — either sampled from a record or created from scratch.

Example 3 displays more of an East Coast style, with a funky swing rhythm, lots of ornamentation and a more animated bass line. This sound tends to be generally lighter than that of the West.



On top of these basic examples you can add anything you feel will complement the song and its message. Samples have always been big in Hip- Hop and often the entire rhythm track can use them exclusively. One of the biggest sounds right now is sampled grooves from '70s Funk and Motown tracks, usually from old LPs. If you like this sound — slap bass, wha-wha guitar, analog filter sweeps — but would rather compose your own, add some sampled pops and scratches from a record player, looped and superimposed over your tracks. This should eliminate some of the digital cleanliness of the music, giving it an air of, ahem, greater authenticity.

To complete the grungy feel, EQ out the lower frequencies of your tracks (except the drums, which should be kept heavy), imitating vinyl's crummy bass response. You should now have a convincingly fake sample from an old '70s Funk LP. DJ scratches can also be sampled and layered over your tracks, but be sure to do a study of turntable technique before you try this. Like certain other instruments, turntables have a very organic sound and playing style and don't take easily to sampling. And be sure to get the proper clearance before using sounds sampled from commercial sources.

So happy hacking until next time when I'll attempt to show you how to add a little class to your brass. ▬

Bio: Mark Clifton is a composer, writer, synthesist and occasional high school student who hangs out in the northern Virginia/Washington DC area. His latest project, Volume 1 of his SQ-1 Hardwire sound collection has just been released by Latter Sound Productions.

Using the DP/4 with a MIDI Controller Keyboard — Part 1

Steve Byhurst

The DP/4 is ideal for musicians like myself who love putting sounds through weird and wonderful combinations of effects. Even those of us who have synths with on-board processors yearn for more power and flexibility, and here the DP/4 certainly delivers. The combination of a keyboard like the VFX-sd working with a DP/4 broadens your musical horizons.

Amongst the sort of things you can do with this setup are: split separate outputs from the synth and add effects to dry or processed sounds; send any one or a combination of synth outputs through one or more of the DP/4's units; control effects parameters in real-time from the keyboard; choose effects from the keyboard's control panel; and automate selection of effects from the sequencer.

This article concentrates on the sort of uses I make of this combination of equipment with the aim of making the DP/4 an extension of my controller keyboard. I use a VFX-sd and therefore the synth details are based around using an SD, although many of the comments will also apply to using other keyboards.

Basic Connections

Before we consider how to configure the SD and the DP/4 to work with one another, let's begin with the basics — MIDI and signal connections. MIDI-wise, as the synth will be doing all the controlling, we simply need to connect the MIDI Out of the keyboard to the MIDI In of the DP/4, perhaps via a MIDI patchbay or MIDI thru unit.

Signal routings can be configured in many different ways according to your own particular setup, but I shall describe my own as an example. I send all four of the main and aux synth outputs to four separate channels of a mixer, and then route four mixer auxiliary sends to the four DP/4 inputs. This gives me the flexibility to send any of the four SD outputs (and any other mixer inputs) to any of the four DP/4 inputs. Signal levels should be set using the guidelines in your manuals.

SD MIDI Configuration

There are a few SD parameters which need to be checked, and these are found on the System MIDI Control page. The first sub-page features the SEND-CHAN parameter, and this should be set to TRACK. On the second sub-page is CNTRLS, which should be turned ON, and PROG-CHG, which should be ON or NEW. This will make sure that the SD can send controller and program change data to the DP/4 from each track of a preset or sequence. Other controller keyboards should offer similar MIDI parameters.

DP/4 MIDI Configuration

The DP/4 has a comprehensive MIDI implementation which means it can be difficult to decide how to set it up. Here I'll describe a basic configuration to use as a good starting point, but remember that there are usually several ways of accomplishing the same result with the DP/4 due to its inherent flexibility.

There are a number of parameters specific to each effects unit and we shall look at those soon, but first of all let's check out the global parameters. Press the System MIDI button and go to parameter 35. This specifies the channel number of the Control Channel which is the only one able to receive modulation controllers. Give it a number and use parameter 36 to enable it.

Parameters 37-44 specify the eight system controllers you can use as modulation sources. Each effect algorithm allows you to use two of these possible eight to control modulation of any two effect parameters. The controller data is received by the channel defined in parameter 35. Choose the eight controllers you think you would use most when modulating effects from your keyboard. Remember that you may want to keep those you regularly use for synth performance, like velocity and pitch bend, separate from effects controllers. In some cases however, using the same one for both purposes can give useful results (velocity controlling reverb depth on a piano sound for example).

Finally, go to parameter 53. This acts as a master switch for program change reception and we need to turn this ON.

Now the unit specific commands. The System MIDI button accesses five sets of identical parameters, one for each of the four effects units A, B, C, and D, and one for config presets. You can quickly get to the first parameter of each these by pressing the relevant unit or config button. The parameters we are most interested in are the first three in each set. MIDI Channel is the first. If you have them free give each unit a different channel, otherwise give them all the same one. Allocate configs the same number as the control channel, but make sure that this number is different from the number(s) you have given to the four units. Set the second parameter, MIDI Enable, to ENABLED, and the third, Program Changes, to RECEIVED. We will consider the remaining unit parameters, and how to use MIDI control of the individual units, in part two.

Configs

Configs provide the key to getting the most out of the DP/4. Each one stores everything the DP/4 needs to know about which inputs to use and whether they are mono or stereo, how those inputs are connected to each of its four effects units, which effect algorithm is used in each unit, how the units are connected to each other, and which outputs are used. Phew! As one simple program change command from your keyboard can trigger an entirely different DP/4 setup, you can see how powerful a feature this is.

Which config we choose is crucial to what will happen to our sounds once they are received by the DP/4. Let's review the dif-

ferent types and see what they can do for us: —

1 Source: Useful if we want to give one sound a really complex effect as all four units will be used. We would have to use this type if we wanted to use the Vocoder as it is a ganged 4U effect. Any other sounds would have to be dry, use on-board effects, or use other effects processors. We could also set up alternative algorithms in each unit and use the bypass commands to select different effects and combinations of effects. Input 1 is used for mono signals, Inputs 1 and 2 for stereo.

2 Source: This config could be used to put the SD stereo main outs through units A and B whilst sending the stereo aux outs through C and D, giving us two-unit processing for each pair. Useful if both pairs have stereo sounds which need to be processed separately. Also good if 2U effects like the 3.3 second delay are required. All four inputs are used if configured for stereo, Inputs 1 and 3 for two mono sources.

3 Source: With this one we could send separate dry mono signals from Aux Left and Aux Right outputs to be processed by A and B respectively, and send the stereo signals from the main outs to C and D for stereo processing. Inputs 1 and 2 are mono, 3 and 4 are the stereo pair inputs.

4 Source: This is really suited to giving each of four mono signals different effects and can be a really powerful setup. Remember that although the four inputs are mono, the outputs can be a combination of four stereo signals. Also, this config could be used in a similar way to a 3 Source by sending a stereo signal to any two units sharing the same effect algorithm.

The DP/4 comes with config templates (presets 53-60) featuring all the various alternative uses of sources, inputs and outputs already programmed, and these can be used to create configs which particularly suit your own way of working. It is a good idea to program a few configs of your own from scratch, rather than just editing presets, as you then gain a better idea of how they work.

Output Routing

Now that we have a basic configuration, let's start to look at the sort of things we can do, from first of all just processing sounds played from the keyboard, to remote control of the DP/4 from the SD, and then on to automation of that control from the sequencer.

First of all, check where voice outputs are being sent. SD programs usually send all six voices to the main outs via the on-board processor. If we want dry sounds, and/or need to use the aux outputs, we have to edit the program. The SD has four outputs configured as two stereo pairs. Main Out L&R can send dry and/or effected sounds, but Aux L&R can only send dry signals. Each of the six voices in a program can be directed to any of the four outputs using commands on the Output page within the programming section.

The second Output sub-page has the DESTINATION BUS parameter which chooses where stereo bus signals go and whether they are dry or not. Select FX1 or FX2 and a wet signal will use the main outs for that voice. DRY will route a non-effected signal to the main outs, or select AUX to send a dry signal to the aux outs. We can use the PAN parameter on the same sub-page to send signals for mono processing. A value of 00 will send the voice to the left, 99 to the right. By using these commands we can choose the effect content and routing of sounds before directing them through the mixer to the DP/4.

Preset Control

We can now examine some different methods of controlling DP/4 parameters from the keyboard via MIDI. Let's start by looking at SD presets.

The advantage of using presets rather than individual programs is that there is no need to edit originals for separate output use, and therefore you can keep your favourites intact. Also, we can make full use of the performance parameters which presets supply. Select a preset and press the EFFECTS button in the performance section.

The first EFFECTS sub-page gives us the FX BUS OVERRIDE parameter for each track. CNTRL is the default which leaves all output routings as programmed in the Output page, but you can force all voices to DRY, AUX or FX1/FX2 if you wish. Note that if you do this you lose separate processing for each voice. Subsequent sub-pages allow you to change the algorithm and its parameters. The PAN page lets you keep the original routing by programming VOI, or you can change it using the same settings the Output page provides.

Make one of the tracks dry and press the performance MIDI button. This provides three parameters which we can use to control the DP/4. Set STAT to BOTH and CHAN to your chosen config/control channel number. If the mixer is set up correctly, we can now play that sound and hear it processed by the DP/4. The third parameter, PROG, can be used to select different configs until we find something suitable. SD users should note that program numbers 001-100 access DP/4 preset numbers 00-99, so the two displays will always be out by one.

Apart from using MIDI to change configs, we can use controllers like the modulation wheel to alter effect parameters as we play. This is possible because the config and control channels share the same number, and so both types of MIDI data can be received. We can choose what effect the controller information has by using each unit's modulation parameters. Once the SD preset is saved, the chosen config will be loaded every time it is selected.

Presets give us the ability to remotely control the DP/4, but there are many more possibilities to explore if we use sequencer control, and that is exactly what we will do in Part Deux. See you then! ▬

Bio: Steve Byhurst is a British composer of electronic-based instrumental music. He is an aspiring soundtrack writer who would love to achieve the seemingly impossible — to make a living from the results of using his (mainly USA-made!) gear. You can write to him at 1 Oaklands, Oakhill Road, Horsham, West Sussex, RH13 5LG, U.K.

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TS-10/12 Programming

Starting From Slightly Below the Ground Up

Brad Kaufman

Assuming you diddled with the last installment of this column, you now have several expressive woodwind instruments residing on your TS-10 disk. If you also mutated last month's TS-10 sound according to instructions, you may also have a fat bass, an accordion, a lead synth and a coupla other sounds as well. But for you new programmers who feel a little lost, come with me down the dark alleyway of explicit steps involved in programming a TS-10 voice.

The Edit Buffer

In order to program a sound, part of memory is activated when any change is made in an existing program. A green LED lights up over the COMPARE button. This light should stay on once the first change is made in the program straight through until the program is stored to disk or user RAM memory. If the light is off, you are not listening to the sound you're programming and you will lose your work if any further changes are made.

Okay, grab this month's Hackerpatch sheet and here we go.

First, load up the 120-bank "user banks" sounds from the TSD-100 disk. Press the SOUNDS button then the BankSet button until "U1-" appears in the left-hand corner. Push the "0" bank button and "U1-0" will appear. Press the screen button on the lower right and "WHALES" will be underlined. We'll use this as the launching pad to program FUNKY GUITAR — simply because voices 5 and 6 aren't occupied by a hyperwave, drum list or custom pitch table.

The Patch Select Buttons

Now hit the SELECT VOICE button — the Grand Central Station of TS-10 programs. The left corner says "SELV," reminding you you're on the SELECT VOICE page. Below SELV is "00," meaning the patch select buttons aren't being held down. There are also six wave names for the six voices in the program. VOICE 1, XWAVE-EE, has no brackets and is active for 00 patch select status. VOICE 2, XWAVE-AY is also active. VOICE 3, [SPINNER-2,] is bracketed and inactive — it won't make any sound for patch select 00. But if you hold down the left patch select button the 00 will change to *0 and the SPINNER-2 is activated — the brackets are gone and the voice is now heard. So the patch select buttons can be used to change the sound by mixing different sonic ingredients together. In WHALES voices 1, 2, and 4 are active in the 00 patch select.

To begin *our* program, we'll set up the patch select status — which voices will be active with the four different patch select combinations.

Every TS-10 programming screen will have something underlined. The underlined value is the thing that can be changed with the data entry slider or the UP/DOWN buttons. Push the upper left screen soft button to underline VOICE 1. Now press the DOWN button. Notice that the green LED under the COMPARE button has lit and there are now brackets around VOICE 1 — [XWAVE-EE]. The voice is inactive and a new program is in the edit buffer. Push the UP button once, and the brackets are gone. Push it again and VOICE 1 is soloed. This lets you hear only the voice you're working on at the moment. When you're finished programming a voice, use the UP/DOWN buttons to restore the voice to its intended status.

Looking at the FUNKY-GITAR Hackerpatch we can see that in the upper right hand corner the SELECT VOICE box indicates that patch select 00 uses voices 1, 2, and 3. Underline VOICE 1 and use the UP/DOWN arrows to activate the voice. VOICE 2 is already active. Press the screen button on the upper right to underline VOICE 3 — [SPINNER-2] and push the UP button to remove the brackets and activate this voice. Since in the 00 patch select voices 4, 5, and 6 are inactive, VOICE 4 — TEXTURE-2 — must be shut off. Underline and bracket it. VOICES 5 and 6 are already bracketed.

Now on to patch select 0*. Push the right patch select button and you will now see VOICES 1, 2, and 3 are active for WHALES. But FUNKY-GITAR has 0* using VOICES 2 and 4 only. While holding down the right patch select button, use the above directions to to shut off voices 1 and 3 and activate (un-bracket) voice 4. WHALES patch select *0 used VOICES 3, 5, and 6. While holding down the left patch select button activate VOICE 2 and silence VOICE 5. Now voices 2, 3, and 6 are active. WHALES patch select ** (both patch select buttons depressed) has voices 5 and 6 active, while FUNKY-GITAR has voices 1, 3, and 4 on. You know what to do.

Finally, Programming VOICE 1!

Compared with programming the patch select buttons, this is a piece of cake. Return to the SELECT VOICE page, and underline VOICE 1. If VOICE 1 isn't underlined, you're programming the wrong voice! Now press the WAVE button *once only*. Look on the Hackerpatch sheet at the column under the 1 — this column has all the VOICE 1 parameters.

Remember, every screen ("page") on the TS-10 has something underlined — the underlined parameter is what you are programming. Be sure you are changing what you intend to change.

Now, on the first WAVE page, use the screen button to underline the middle upper parameter (wave class). This says, "TRANSWAVE." Use the DOWN button (8 presses) to scroll to the BASS wave category. The TS-10 will pick the first BASS wave, "EL-BASS 1." Press the left upper screen button to underline EL-BASS 1 and use the Up button (4 presses) to scroll

to PICK BASS. The DELAY and SAMPLE SHIFT are already 0 and need no change. "Modamt" on the patch sheet says "N/A" and is not applicable to this wave. Now, press the WAVE button once to get to the second wave page. Underline the SAMPLE START parameter by pressing any upper screen button and use the data slider or UP/DOWN buttons to move this value from 00 to 18. Underline START MODSRC and use the slider/ arrows to change from *OFF* to VELOCITY. Finally, underline MODAMT and change the value from 00 to -18.

In the MOD MIXER section, only Voices 1, 3 and 5 use the mixer. There is only one page on the screen. Press the Mod Mixer button and underline SRC-1. Use the UP/ DOWN buttons to scroll to WHEEL. Then underline

TS-10/12 Prog: FUNKY-GITAR

By:Brad Kaufman

WAVES	1	2	3	4	5	6
Wave	PickBass	ElBass2	MuteBas	NylonGuit	-	NylonHarm
Wave Class	Bass	Bass	Bass	String		String
Delay	0	00	00	00		00
Shift/Index	0	00	00	00		00
Direc/Modsrc	For	For	For	For		For
Modamt	N/A	N/A	N/A	N/A		N/A
Sample Start	18	00	18	00		18
Start Modsrc	Veloc	-	Veloc	-		Veloc
Modamt	-18	00	-36	00		-36

MOD MIXER	1	2	3	4	5	6
Src-1	Wheel		Like			Like
Src-2	Vel		Voice 1			Voice 3
Src-2 Scale	1.0					
Shape	Linear					

PITCH	1	2	3	4	5	6
Octave	0	0	0	0		Like
Semitone	0	0	0	00		Voice 3
Fine	0	-03	+03	+01		
Glidemode	No	No	No	No		
Glidetime	0	0	0	0		

PITCH MODS	1	2	3	4	5	6
Modsrc	Timbr	Timbr	Timbr	-		Like
Modamt	-10	-06	+06	00		Voice 3
Bend	Sys	Sys	Sys	Sys		
PitchTbl	Sys	Sys	Sys	Sys		
Env1	0	+38	00	00		
LFO	+23	+11	+22	+26		

FILTER 1	1	2	3	4	5	6
Mode	LP2	LP3	Like	LP2		Like
Cutoff	000*	000*	Voice 1	022*		Voice 3
Kbd	0	+22		00		
Modsrc	Mixer	-		00		
Modamt	+30	0		00		
Env2	+65	+99		+99		

FILTER 2	1	2	3	4	5	6
Mode	LP2	LP1	Like	LP2		Like
Cutoff	000*	000*	Voice 1	060*		Voice 3
Kbd	0	+40		00		
Modsrc	Mixer	-		Timbr		
Modamt	+80	00		+18		
Env2	+72	+99		+99		

OUTPUT	1	2	3	4	5	6
Kbd Scale	00	+02	00	00		Like
Lo/Hi Key	A0/C8	A0/C8	A0/C8	A0/C8		Voice 3
Vol (db)	+06	+05	-02	+09		
Modsrc	-	-	-	-		
Modamt	00	00	00	00		
Dest Bus	FX1	FX1	FX1	FX1		
Pan	00	00	00	00		
Modsrc	-	-	-	-		
Modamt	00	00	00	00		
Voice Prior	Med	Med	Med	Med		
Vel-Window	-	-	-	-		
Lo	064	000	000	000		
Hi	127	127	127	127		

LFO	1	2	3	4	5	6
Rate	43*	43*	Like	43*		Like
Modsrc	Press	Press	Voice 1	WL+PR		Voice 3
Modamt	+40	+40		+43		
Depth	00	00		00		
Modsrc	Press	Press		Press		
Modamt	+30	+30		+07		
Waveshape	Sine	Sine		Tri		
Restr Mode	On	On		On		
Phase	00	00		00		
Delay	00	00		00		
Noise Rate	00	00		00		

SELECT VOICE

00	1	2	3			
0*		2		4		
*0		2	3			6
**	1		3	4		

ENV1	1	2	3	4	5	6
Attack		00				
Decay		00				
Decay 2		00				
Decay 3		00				
Release		99				
Peak		00				
Break 1		00				
Break 2		99				
Sustain		99				
Vel-Level		00				
Mode		Nor				
Vel Curve		QR				
Kbd Track		00				
Vel-Attack		00				
Vel-Rels		00				

ENV2	1	2	3	4	5	6
Attack	00*	02*	00	00*		Like
Decay	08	35	08	12		Voice 3
Decay 2	21	21	21	21		
Decay 3	43	33	43	43		
Release	20*	10*	18*	00*		
Peak	99	80	99	99		
Break 1	80	60	80	75		
Break 2	75	60	75	75		
Sustain	75	50	75	75		
Vel-Level	00	29	00	45		
Mode	Nor	Nor	Nor	Nor		
Vel Curve	CV-1	CV-1	CV-1	CV-1		
Kbd Track	00	00	00	00		
Vel-Attack	00	03	00	00		
Vel-Rels	00	00	00	00		

ENV3	1	2	3	4	5	6
Attack	00*	00*	00*	00*		Like
Decay	50	20	60	19		Voice 3
Decay 2	00	20	34	30		
Decay 3	00	20	00	44		
Release	20*	10*	20*	28*		
Peak	99	99	99	99		
Break 1	00	99	85	80		
Break 2	00	99	85	60		
Sustain	00	99	85	00		
Vel-Level	25	21	25	33		
Mode	Nor	Nor	Nor	Nor		
Vel Curve	CV-1	CV-1	CV-1	CV-1		
Kbd Track	00	00	00	+16		
Vel-Attack	00	00	00	00		
Vel-Rels	00	00	00	00		

PGM CONTROL (Page 1)

Type	Guitars
Option	None
Press	Chan
Patch	Held
Restrike	00

PGM CONTROL (Pages 2 & 3)

Atck	0	V1	0
Rels	0	V2	0
Bright	0	V3	0
Timbre	008	V4	0
Rate	0	V5	0
XCtrl	0	V6	0

EFFECTS

Effect #	6
Variation #	1 or 15

SRC-2 and scroll to VELOCITY. Now underline SRC-2 SCALE and scroll to "1.0." Finally, underline SHAPE and scroll through the choices until you find LINEAR.

Etc., Etc., Etc...

If you haven't got the hang of this yet, you have a promising future as a proprietary and third-party sound consumer, so save those bucks. But if you want some good freebie sounds, hang in there — you're on your way!

Instead of going through each dreary box on the Hackerpatch, I'll highlight some features you'll need to know when plugging in the rest of Voices 1 to 6:

FILTERS 1 and 2: The * next to the CUTOFF value can be added or removed (FUNKY-GITAR has the * present in every FILTER of every voice) by pressing the screen button nearest to the CUTOFF parameter 1 or 2 times until the space to the right of the numeral digits ("000") is underlined. Then the UP/DOWN buttons will make the * appear or disappear as necessary. The * allows the filter cutoff to be adjusted from the preset or sequencer/track section, a nifty feature.

OUTPUT page 1: KBD SCALE has a hidden value — scroll down to -99, then use the DOWN button to go below -99. ZON is now underlined. ZON is the way to make a keyboard zone. A voice can be made to play only on the lowest key, or the upper octave only, etc. If ZON is selected, the ZONE is defined by the "LO-HI" on the same page. For example, underline the LO KEY by pushing the upper right screen button and scroll to C6. Underline the HI KEY (push the upper right button once more) and scroll to C7. *Before playing any key*, push the upper right screen button a third time to remove the underline from HI-KEY. If you don't, the key you hit will reset the HI-KEY value. You have now programmed VOICE 1 to play only in the upper octave of the TS-10. Now return KBD SCALE for VOICE 1 to 00, the Hackerpatch value for FUNKY-GITAR.

OUTPUT page 3: VOICE 1 has a commonly-used feature where the voice will sound only when the key is hit with a certain velocity. After entering OUTPUT page 3 for VOICE 1, you will notice there is *no sound* unless you hit the keys with moderate force. See how this affects patch selects 00 and ** later, when the patch is fully programmed.

LFO page 1: The * can be made to appear or disappear just like the * on the FILTER pages by underlining the RATE parameter and pushing the nearest screen button to underline the *, which can then be toggled on or off with the UP/DOWN buttons. The * lets the LFO rate be adjusted from the PERFORMANCE/TRACK/SEQUENCER functions *and* can make HYPERWAVE rhythm loops speed up or slow down!

ENVELOPES 1, 2, and 3 also have a * which can be toggled on or off to allow ATTACK times to be adjusted in the sequencer and performance/preset modes. Cool.

You should have no trouble finishing VOICE 1. At this point, you can save your work to disk or finish the patch by plugging in VOICES 2, 3, 4, and 6. VOICE 5 isn't used.

A few more tips. Since VOICE 5 is not used, you can leave it alone and not program it. Any place the patch sheet says "Like 1" or "Like 3," read the parameters in the same box under the 1 or 3 and program them into the new location. For example, VOICE 6 is an exact copy of VOICE 3 except for the WAVES pages — see last month's article for instructions on how to make voice copies. Or simply return to the SELECT VOICE page, underline VOICE 6, enter the WAVES information listed under VOICE 6 and then, reading down the column under "3," plug in all the remaining values (MOD MIXER, PITCH, etc.) into the VOICE 6 location.

Any blank areas on the patch sheet mean that the parameters are not being used.

The Finishing Touches

Don't forget the two Program Control pages. "Patch= HELD" lets you continue to play *0, 0*, ** after you've let go of the buttons. Also, the very important EFFECTS page will add to the realism of the sound — try effect 6, variations 1, 4, 5, or 15.

Save Your Work

The easy option is to save to disk — read the manual to see how to save to USER RAM banks. When the program is finished or if you want to stop after programming VOICE 1 and resume some other time, press the WRITE program button. The WRITE PROGRAM page says WHALES but is now, in fact, FUNKY-GITAR. Use the lower middle and right screen buttons to move the cursor to the left and use the UP button 'til you get to "F." Now move the cursor one space to the right and using the UP/DOWN buttons, scroll to the "U." Finish spelling FUNKY-GITAR and press the lower left button, "EXIT." Now, load a formatted TS-10 disk, press the STORAGE button, then underline DISK. Now underline SAVE, then TYPE= and scroll down to "1 PROGRAM." Now push the screen button over YES and the screen will say "SAVE FILE" and FUNKY-GITAR is displayed. The green COMPARE LED should remain lit throughout this process. Press the screen button over YES and the sound will be saved to disk.

When you recall the sound from disk (LOAD), the sound will be sent to the EDIT PROGRAM BUFFER and the green COMPARE LED will glow. See the manual ("WRITE PROGRAM page" at the very end of Section 9) to transfer this sound to your USER RAM banks.

Next time we'll plug in some different values for the ENV1 ATTACK and DECAY 2 parameters to slow down this envelope and see how it works. Meanwhile, solo any of the five Voices in the FUNKY-GITAR patch (underline any voice on the SELECT VOICE page and press the UP button 1 or 2 times) to get an idea of how each voice contributes to the overall sound.

'Til next time — happy hacking. ▬

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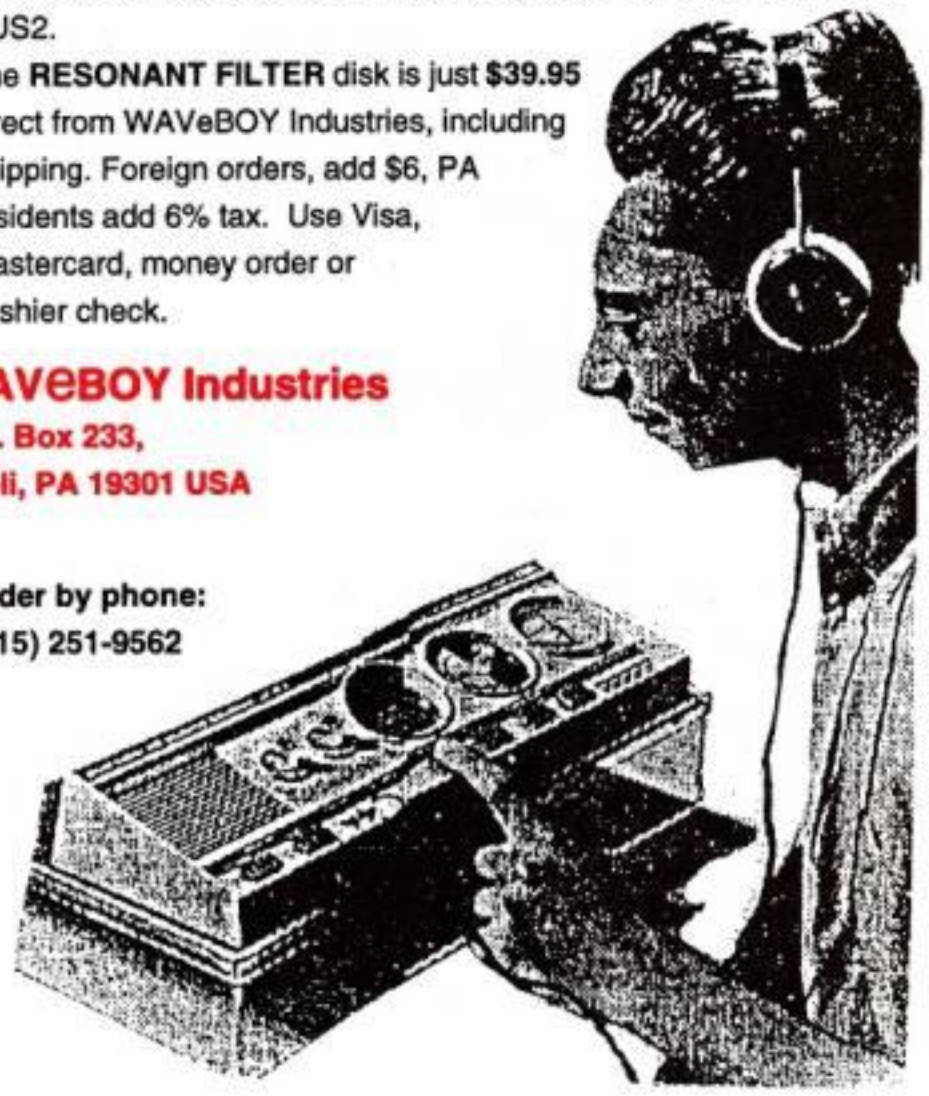

"Granular" Textures on EPSs/ASRs

Dennis Burke

As with many other composer/sound designers one of my ongoing interests has been in exploring new, unique timbres. This voyage has taken me through the full spectrum of synthesis techniques — subtractive, additive, FM, AM, and sampling. Through this exploration it has been my experience that the most effective and evocative sounds I have created rely on some sort of acoustic model for their realization. Without some connection to the acoustic world listeners tend to be less engaged, experiencing new sounds as simply "strange" or as a novelty.

It was with this thought in mind that I was drawn to and intrigued by the sounds of granular synthesis. The concept of granular synthesis was first suggested by Yannis Xenakis in 1971, although I first heard these sounds through the work of Barry Truax (Director of the Sonic Research Studio and Professor of acoustic communication and electro-acoustic composition at Simon Fraser University in Vancouver B.C.), most notably *Riverrun* (1986), *The Wings of Nike* (1987), and *Pacifica* (1990). (See note *.)

Briefly Barry describes this method: *"...small units or grains of sound are produced, usually with very high densities (100 — 2000 grains per second) with each grain having a separately defined duration and position within the original sound sample."* These small grains of sound he then combines and layers (in real time) to produce gestures and timbres with remarkable results. Because of the density and complexity of the information involved, a high-end computer is needed to produce these sounds.

I was so interested in these new timbres that I set out to see if I could replicate some of these ideas on my EPS. As it turned out I was pleasantly surprised how close I came to the granular sound and how flexible this method was when performed on the EPS.

The first step is to sample a sound "event," something longer than 4 seconds works best. This event should have changing activity within it, a phrase of dialogue, a series of acoustic sounds, or a musical gesture. As a way to "granularize" this sample the next step is to create a short loop within this sample. The length of this loop depends on your overall sample length and the nature of your material. For this example, it was around 8k bits or about 5% of the sample. I found that a bi-directional loop worked best in this instance.

If you play the sound now you simply get a short bit of the sample looping, not very interesting. Somehow we still want to access the entire sample. This is where we take advantage of the EPS's ability to modulate the loop position. First, go to WAVE MOD page — set it to LOOP and set the source to ENVELOPE 1 (other sources can also work but for now we will use a custom envelope that we will set up later). Now go to the next page, MOD AMT — set to +99 and set the range to 512k.

What we have done at this point is we've created a situation where this short loop is moving through the sample at a rate determined by our envelope. For this to occur relatively slow set your Envelope 1 parameters to:

Hard Levels	0	24	0	66	62
Times	99	99	99	99	99
Mode	CYCLE				

The final touch to this "granular patch" is to set the pitch table (Edit Layer Page) to NO PITCH and adjust the root key so that it plays the root note on every key. Now with your foot on the hold pedal slowly run your finger up or down the keyboard. What you should hear is a thick, rich wash of sound made up of "grains" of your sample, slowly moving through the entire sample length. The sound "event" is slowed down with no change in pitch, while each loop (or grain) focuses closely on the sound as we pass through the overall event.

This is the general principle of emulating granular textures, and with a little bit of experimenting I found many variations that work. Controllable time expansion/contraction can be achieved by using the Mod Wheel or CV Pedal as a source for loop modulation. The MOD RANGE parameter determines how far into the sample you can move and the Wheel or CV Pedal movement determines the speed and direction. (Also try an LFO as a modulator, POS SINE works best.)

This is sometimes a very touchy procedure, the loop length, MOD AMT, and MOD SOURCE all have to be adjusted in relation to each other, a small tweaking in one may require a large change in another. After a while you start to get a feel for what works best for each situation. It takes some time and patience but it is worth it. Try it out and good luck. ▬

*Note: These are available on 2 CDs from Cambridge Street Records: *Digital Soundscapes* (contains *Riverrun*) and *Pacific Rim* (contains *The Wings of Nike and Pacifica*). They can each be purchased directly from Barry for $24 Can. ($20 US). Cambridge Street Records, 4346 Cambridge Street, Burnaby, B.C., Canada V5C-1H4.

Bio: Dennis Burke is a composer and sound designer with over 20 film scores to his credit. He is also an instructor in the Film/Video department at Emily Carr College of Art and Design in Vancouver, B.C. as well as an active jazz drummer.

VFX Meets VOX

Part One: The Continental

Kirk Slinkard

Well, it seems that I've caught a bug that's been going around recently. Its symptoms involve an obsession with portable organs made in the sixties and seventies. At one local music store for example, a collection of vintage Vox equipment is on display right next to *"The Voxmobile"* — a custom car designed by George Barris in the sixties, made with Vox amps and speakers, and featuring a double-keyboard Vox organ on the back (a lot like its big brother *"The Raiders' Coach"* — another George Barris custom car of the sixties). And on and on.

I got to thinking that it might be fun to see if I could get my Ensoniq boards to sound like them. So I hooked everything up to the same amp so that I could do some nit-picking A/B comparisons resulting in the patches included here and in Part II. Part I is about synthesizing the single-manual Continental, and Part II covers the dual-manual Super Continental. Lamentably, these sounds can't be fully copied on an ESQ or SQ-80. These patches use up to nine oscillators layered together. The ESQ and SQ-80 can only layer a maximum of six, so I have not included patches for these synths. Fortunately, these organ patches are very simple — but if you translate to another type of Ensoniq board, things you may have to watch out for are:

1. Voices 5 and 6 of "VOXC 16+8+4" are not used in Part I of this article, so turn them off or eliminate them for now.
2. Set all pan values to the center.
3. All amplitude envelope levels to maximum.
4. All amplitude envelope times to zero.
5. All envelope velocity values to zero.
6. All velocity windows to zero (off).
7. All output volume settings are about 3/4 of maximum.
8. Pulse transwaves might have a different name on some Ensoniq synthesizers.
9. Set any unlisted performance or program control values to zero.
10. Individual voice restrike decay values should all be zero.
11. Newer SQ types (not the SQ-80) will have to divide these two patches into four patches. You might run into layering problems.

Since these are simple, authentic-type organ patches, it doesn't even matter how many stages your envelopes have. All other parameters used on these patches should be pretty much the same on other types of Ensoniq synthesizers.

Vox Organs

I have personally encountered four basic kinds of Vox organs: the Jaguar, the Continental, the Super Continental (also called the Continental II), and the Continental Baroque.

Since I haven't had access to a Jaguar in a few decades, and didn't do much with it then, this paragraph is based mostly on hearsay twice removed (reader comments would be welcomed). The Jaguar is basically a less expensive version of the Continental. Instead of the Hammond-style drawbars of the Continentals, it has some voice switches. The number of pitches available isn't quite as extensive as on the Continental, always using combined 16', 8', and 4' voices on the upper octaves. It does, however have a monophonic bass voice on the lowest octave or two. From what I understand, the "VOXC 16+8+4" patch should give a pretty good imitation of at least one of the Jaguar's sounds.

The Continental Baroque has two five-octave keyboards, the lower of which uses drawbars similar to the Continental. I'm afraid that I don't remember what the specific ranks are but I do remember that the upper keyboard has just preset voices that include: piano, harpsichord, banjo, vibes, celeste, and organ. This last preset copies a Vox drawbar setting. The Continental Baroque has a larger orange top section to accommodate two small amplified speakers. All the sounds that this organ can produce can be imitated well enough on Ensoniqs, but I don't have a Continental Baroque to work with, so there is no part three to this article.

The Continental

This is the organ that gives its distinctive sound to *"In-A-Gadda-Da-Vidda"* and *"Light My Fire."* It can be found in recordings and on stages even today. It gets its sound by generating an octave of high-pitched square waves (with analog circuits, this is the easiest waveform to produce) and using frequency divider circuits to derive lower octaves, which also come out as square waves. Some of these are wired up to the keys offset by a few notes to get fifths or thirds on some of the higher-pitched voices. Reverting back to both Hammond and pipe organ terminology (covered in past *Hacker* articles), the Continental has four 9-position drawbars that act as individual volume controls for the different "footages," "ranks," or pitches that are available. These are actually multi-position switches and not slider potentiometers. Going left-to-right on the Continental's control panel, these include 16', 8', 4', IV. That last drawbar (IV) controls a four-rank mixture which includes 2 2/3' (a fifth), 2', 1 3/5' (a major third), 1'.

That's seven out of the nine ranks found on the Hammond B3. Here, the "VOXC 16+8+4" patch has the functions of the first three drawbars, and the "VOXC IV MIX" patch duplicates the function of just the mixture (IV) drawbar. On a lot of more complex organs, both pipe and electronic, when a higher pitched rank, like 1' for example, approaches the top end of the keyboard, the highest notes are lowered an octave to avoid excessively high pitched notes (perhaps this isn't done on organs made for dogs). On the Continental, since these higher pitched

ranks (specifically 1 3/5' and 1') are part of a mixture, the top few notes are simply not wired in. So these notes will sound only the 2 2/3' and 2' pitches in the mixture. On the mixture patch here ("VOXC IV MIX"), I left the appropriate notes off by using the ZONE parameter in the output section. You will no doubt notice as you play these patches that all the voices are zoned within the bottom four octaves. I did this because the Continental has only a four octave keyboard.

SD & VFX Prog: VOXC 16+8+4

By:Kirk Slinkard

NOTES: VOX Continental 16', 8', and 4' voices

	16'	8'	4'			
WAVES	**1**	**2**	**3**	**4**	**5**	**6**
Wave	Square	Square	Square		Square	Pulse.1-X
Wave Class	Waveform	Waveform	Waveform		Waveform	Transwave
Delay	000	000	000		000	000
Start						25
MODSCR						"Off"
MODAMT						-

PITCH	**1**	**2**	**3**	**4**	**5**	**6**
Octave	+0	+1	+2		+0	-1
Semitone	+00	+00	+00		+00	+00
Fine	+00	+00	+00		+00	+00
Pitch Table	System	System	System		System	System

PITCH MODS	**1**	**2**	**3**	**4**	**5**	**6**
MODSRC	"Off"	"Off"	"Off"		"Off"	"Off"
MODAMT	-	-	-		-	-
Glide	None	None	None		Mono	Mono
ENV1	+00	+00	+00		+00	+00
LFO1	+01	+01	+01		+01	+01

FILTER 1	**1**	**2**	**3**	**4**	**5**	**6**
Mode	LP/2	LP/2	LP/2		LP/2	LP/2
Cutoff	075	075	070		127	127
KBD	+38	+38	+99		+00	+00
MODSRC	"Off"	"Off"	"Off"		"Off"	"Off"
MODAMT	-	-	-		-	-
ENV2	+00	+00	+00		+00	+00

FILTER 2	**1**	**2**	**3**	**4**	**5**	**6**
Mode	HP/2	HP/2	HP/2		HP/2	HP/2
Cutoff	000	000	000		013	000
KBD	+00	+00	+00		+00	+00
MODSRC	"Off"	"Off"	"Off"		"Off"	"Off"
MODAMT	-	-	-		-	-
ENV2	+00	+00	+00		+00	+00

OUTPUT	**1**	**2**	**3**	**4**	**5**	**6**
VOL	75	75	75		68	78
MODSRC	"Off"	"Off"	"Off"		"Off"	"Off"
MODAMT	-	-	-		-	-
KBD Scale	Zon	Zon	Zon		Zon	Zon
LO/HI Key	C2-C6	C2-C6	C2-C6		C2-C3	C2-C3
Dest Bus	Dry	Dry	Dry		Dry	Dry
Pan	50	50	50		50	50
MODSRC	"Off"	"Off"	"Off"		"Off"	"Off"
MODAMT	-	-	-		-	-
Pre-Gain	Off	Off	Off		On	On
Voice Prior	Med	Med	Med		Med	Med
Vel Thresh	+000	+000	+000		+000	+000

LFO	**1**	**2**	**3**	**4**	**5**	**6**
Rate	37	37	37		37	37
MODSRC	"Off"	"Off"	"Off"		"Off"	"Off"
MODAMT	-	-	-		-	-
Level	00	00	00		00	00
MODSRC	Wheel	Wheel	Wheel		Wheel	Wheel
Delay	00	00	00		00	00
Waveshape	Triangle	Triangle	Triangle		Triangle	Triangle
Restart	On	On	On		On	On
Noise SRC RT	-	-	-		-	-

You can get different combinations of the different ranks by changing the master volume of each voice on its output page. On the "VOXC 16+8+4" patch, voice one is the 16' pitch, voice two is the 8' pitch, and voice three is the 4' pitch. But keep in mind that on a Continental, all the ranks that are imitated in the "VOXC IV MIX" patch are adjusted from just one drawbar. This mixture at full volume sounds a bit too loud in the mix for my taste, so on this patch, I made the timber slider to work basically the same as the Continental's "IV" drawbar. If the slider is all the way toward you (like having the drawbar all the way out), the mixture is at full volume. If the slider is all the way away from you (like having the "IV" drawbar all the way in), the mixture is essentially off. To use this feature properly, you have to select the "VOXC IV MIX" patch, and then double-click the "VOXC 16+8+4" patch. If you reverse the order, it won't work. Although, one of the most popular Continental sounds uses the 16', 8', and 4' drawbars out all the way with no mixture (the stock "VOXC 16+8+4" patch all by itself).

The Continental also has two tone drawbars, one of which is labeled "M," and the other is labeled with a sine wave. The latter one is the master volume for all the pitch drawbars sent through a two-pole passive lowpass filter which filters the square waves almost into sine waves, resulting in something not too far removed from the Hammond B3 sound. The "M" drawbar is the master volume control for all the pitch drawbars sent through with much less filtering, resulting in something closer to the original square waves — more "hollow" or "reedy" (does anybody know what "M" stands for?). This is the characteristic Vox sound that people usually identify with the brand. The two enclosed patches are set up to have this sound, with the "M" drawbar all the way out and the "Sine" drawbar all the way in (off), but they can be modified by the user. If

SELECT VOICE					
00	1	2	3		
0*	1	2	3	5	
*0	1	2	3	5	
**	1	2	3		6

ENV3	**1**	**2**	**3**	**4**	**5**	**6**
Initial	99	99	99		75	75
Peak	99	99	99		99	99
Break 1	99	99	99		99	99
Break 2	99	99	99		99	99
Sustain	99	99	99		99	99
Attack	00	00	00		02	02
Decay 1	00	00	00		00	00
Decay 2	00	00	00		00	00
Decay 3	00	00	00		00	00
Release	00	00	00		00*	00*
KBD Track	+00	+00	+00		+00	+00
Vel Curve	-	-	-		-	-
Mode	Normal	Normal	Normal		Normal	Normal
Vel-Level	00	00	00		00	00
Vel-Attack	00	00	00		00	00

PGM CONTROL	
Pitch Table	"Off"
Bend Range	00
Delay	X1
Restrike	00
Glide Time	00

PERFORMANCE	
Timbre	00
Release	00 to 55

you change the waveforms of all the VFX voices to SINE, it sounds like the Continental with its "Sine" drawbar out and its "M" drawbar in. If you change all the VFX patch voices to the TRIANGLE, is sounds like a mix of both of the Vox's tone drawbars. Here is one of the areas where the VFX imitation is more versatile than the original Continental. You can have different waveforms on different ranks, where the Continental controls them globally for all ranks at the same time.

SD & VFX Prog: VOXC IV MIX

By:Kirk Slinkard

NOTES: VOX Continental 4-rank mixture voice.

	2-2/3'	2'	1-3/5'	1'		
WAVES	**1**	**2**	**3**	**4**	**5**	**6**
Wave	Square	Square	Square	Square		
Wave Class	Waveform	Waveform	Waveform	Waveform		
Delay	000	000	000	000		
Start						

PITCH	**1**	**2**	**3**	**4**	**5**	**6**
Octave	+2	+3	+3	+4		
Semitone	+07	+00	+04	+00		
Fine	+00	+00	+00	+00		
Pitch Table	System	System	System	System		

PITCH MODS	**1**	**2**	**3**	**4**	**5**	**6**
MODSRC	*Off*	*Off*	*Off*	*Off*		
MODAMT	-	-	-	-		
Glide	None	None	None	None		
ENV1	+00	+00	+00	+00		
LFO1	+01	+01	+01	+01		

FILTER 1	**1**	**2**	**3**	**4**	**5**	**6**
Mode	LP/2	LP/2	LP/2	LP/2		
Cutoff	056	056	056	056		
KBD	+99	+99	+99	+99		
MODSRC	*Off*	*Off*	*Off*	*Off*		
MODAMT	-	-	-	-		
ENV2	+00	+00	+00	+00		

FILTER 2	**1**	**2**	**3**	**4**	**5**	**6**
Mode	HP/2	HP/2	HP/2	HP/2		
Cutoff	000	000	000	000		
KBD	+00	+00	+00	+00		
MODSRC	*Off*	*Off*	*Off*	*Off*		
MODAMT	-	-	-	-		
ENV2	+00	+00	+00	+00		

OUTPUT	**1**	**2**	**3**	**4**	**5**	**6**
VOL	75	75	75	75		
MODSRC	Timbr	Timbr	Timbr	Timbr		
MODAMT	-40	-40	-40	-40		
KBD Scale	Zon	Zon	Zon	Zon		
LO/HI Key	C2-C6	C2-C6	C2-G5	C2-C5		
Dest Bus	Dry	Dry	Dry	Dry		
Pan	50	50	50	50		
MODSRC	*Off*	*Off*	*Off*	*Off*		
MODAMT	-	-	-	-		
Pre-Gain	Off	Off	Off	Off		
Voice Prior	Med	Med	Med	Med		
Vel Thresh	+000	+000	+000	+000		

LFO	**1**	**2**	**3**	**4**	**5**	**6**
Rate	37	37	37	37		
MODSRC	*Off*	*Off*	*Off*	*Off*		
MODAMT	-	-	-	-		
Level	00	00	00	00		
MODSRC	Wheel	Wheel	Wheel	Wheel		
Delay	00	00	00	00		
Waveshape	Triangle	Triangle	Triangle	Triangle		
Restart	On	On	On	On		
Noise SRC RT	-	-	-	-		

The Continental is equipped with a vibrato switch that just turns the vibrato on or off. The speed and amplitude adjustments can only be done from trimmer potentiometers on a circuit board inside the organ. On the VFX, think of the mod wheel as a switch — all the way on turns the vibrato on, and all the way toward you turns it off.

The Bad News

All Ensoniq synthesizers use a multi-sampling technique, even on traditional analog waveforms such as sawtooth and square. This way, they can limit the high-frequency content of the higher samples. If they didn't do this, there would be nasty digital distortions going on among the higher notes due to the limitations of the digital resolution used in these synths. This causes the higher notes to be less bright than the Vox's analog square waves.

On the Vox, as on most electronic organs, all the oscillators are free-running (running even when no keys are depressed) and synchronized globally together — two functions not available on the VFXs (you can set the ESQs and SQ-80 to have free-running oscillators, though). With free-running oscillators, when you hit a key, you never know where you are going to be in the cycle of the oscillator. If you hit it right at the beginning of the cycle, it will sound pretty much like the VFX, but if you hit it somewhere else in its cycle (the usual case), you will get an unpredictable amount of "key click" as only some fraction of the first cycle is played. This also occurs in a similar fashion upon release of the note. This gives a random attack to the notes on both key down and key up that we can't accurately get without using more oscillators, and these patches hog the polyphony enough by themselves. And because each VFX oscillator always starts at the same point in its cycle, independent of all the other oscillators

SELECT VOICE

00	1	2	3	4
0*	1	2	3	4
*0	1	2	3	4
**	1	2	3	4

ENV3	**1**	**2**	**3**	**4**	**5**	**6**
Initial	99	99	99	99		
Peak	99	99	99	99		
Break 1	99	99	99	99		
Break 2	99	99	99	99		
Sustain	99	99	99	99		
Attack	00	00	00	00		
Decay 1	00	00	00	00		
Decay 2	00	00	00	00		
Decay 3	00	00	00	00		
Release	00	00	00	00		
KBD Track	+00	+00	+00	+00		
Vel Curve	-	-	-	-		
Mode	Normal	Normal	Normal	Normal		
Vel-Level	00	00	00	00		
Vel-Attack	00	00	00	00		

PGM CONTROL

Pitch Table	*Off*
Bend Range	00
Delay	X1
Restrike	00
Glide Time	00

PERFORMANCE

Timbre	00
Release	00

(at least in the waveform family), you can sometimes get awkward phase cancellations between different notes sounding at the same time. This problem also exists for the vibrato. Since there is no global LFO available for vibrato on the VFX, each key can have its own out-of-sync vibrato. You can set up a flanger or chorus effect to give global vibrato, though, but due to the differences in effects between the various Ensoniqs, I didn't include that here. If I were a teacher, this would be your homework assignment.

But all these problems are really just subtleties that I've noticed during my A/B comparisons, and hopefully will not detract much, if at all, from your Voxing.

Epilogue

For another authentic touch, you might set up your foot pedal to function as a volume control. Keep in mind that these patches are the sound of an unmodified Vox Continental with no equalization or effects. Vox organs were often sent through Vox amplifiers with a midrange and/or a treble boost. If you set all the voices to have SINE waveforms, they might sound nifty through a rotospeaker effect. I've also heard the Continental sent through overdrive distortion on several recordings. Reverb is also frequently used.

If you have been wondering about voices five and six in the "VOXC 16+8+4" patch, they aren't used on the Continental — they are reserved for part two of this article. So next time we will take a close look at the dual-manual Vox Super Continental.

Mod you later. ▬

Bio: Kirk Slinkard hangs out near Denver, plays synthesizer, and collects and restores vintage rock stuff. His favorite color is ultraviolet and he's the same age as Marcia Brady (a year older than Kevin Arnold).

Classifieds

EQUIPMENT

Ensoniq VFX-sd w/road case. $1000. Ensoniq DP/4: $950. 510-658-2705.

EPS w/SCSI-able 4x expander, flight case, all documentation and 110 disks. $1,350 or trade considered for SD-1 or hard drive. Steve: 904-744-3950, ext 7360.

Wanted: EPS Output Expander and 4x Expander. 617-447-3739.

SQ-80 like new condition. Never out of my house. Manual, 2 cartridges, 3 disks with 1000 sounds. No reasonable offer refused. Will ship. Call Mike after noon PA time: 215-253-3794.

Wanted: I desperately need a Maartists SCSI Expander for an EPS-16+. The PS Systems SCSI Expander and Ensoniq's SCSI Expander are NOT compatible with the Maartists Memory Expander. So I need to buy a Maartists SCSI Expander from somebody, or trade my Maartists Memory Expander for a PS Systems Memory Expander or Ensoniq Memory Expander. Call (818) 718-7827 if you can help !

Wanted: an SD-1/32 or a VFX-sd with the 32 voice update. 904-893-8873, Andrae.

SAMPLES

HELP! Poor West Coast band, painfully new at the sample/sequence thing, desperately seeks industrial/factory/machinery type sounds for our ASR-10. Also unbiased info on hard drives, SIMMs and other products. Please call or write: (415) 634-9765, Terminus, PO Box 1553, Pacifica, CA 94044.

Tom Shear announces 2 new volumes to his library of 16-bit synth samples for the EPS/ASR series samplers: the Korg 01/W and Yamaha SY sets! Both contain beautiful, ethereal timbres comprised of big layers of spectacular digital sound. If you need some expensive-sounding contemporary synth sounds, this is it! Korg 01/W – 4 disks: $20 + $3 s/h. Yamaha SY – 3 disks: $15 + $3 s/h. Send SASE for a free catalog of all my other great sounds too!. Tom Shear, 255 Small Road, Syracuse, NY 13210.

The *Hacker's* Jack Tolin presents CrossWave Sounds: The classic drums of the HR-16 (2-disk set; 49 sounds); SYNTH-BITS! – turn your EPS-16+ or ASR-10 into a synthesizer with these low-memory samples – M1 Series (5-disk set; 50 sounds). All disks are $5 each (foreign s/h – add $5.) To: Jack Tolin, 8405 E 91st St., Kansas City, MO 64138, phone: (816) 761-1128.

PATCHES/SOUNDS

Voice Crystal carts for VFX, VFX-sd, SD-1. Original set of 3 cartridges. $50 for set. Near new, will be discontinued soon. Literature included. Call Dana at 303-530-7617.

KS-32 Patches! Have many patches in Galaxy format and would like to swap same with others. Contact Shep at 314-725-2663 or email: shep@informatics.wustl.edu

60 VFX-sd (SD-1) patches created by Jim Grote. Wide variety of sounds with complete documentation. Call for free Information Packet, or send $30 for VFX-sd disk to: Jim Grote, 3721 Frances Ave., Cincinnati, OH 45211. Phone: (513) 661-8885.

ESQ-1 ROMs and 80-voice EEPROM carts in stock. **VFX, VFX-sd, SD-1 ROMs** too. Last call, limited supply, get 'em now or never. Cesium Sound. (510) 548-6193.

Studio-Ready SD-1 Patches from composer Eric Olsen. A cut above the others, these sounds are designed to be used by the real musician. 4 Volumes at $25.00 each. Check/M.O. to: Pegasus Sounds, 6050 Adaway Ct., Grand Rapids, MI 49546.

Zapf! Crunch! Bang! Pow! SD-1 owners, we're fighting for you. 90 patches, 7 demos, 8 pages documentation. These sounds have definitely helped me. Now yours for $20. Crush! Slam! Send today. Steve Mugglin, 110 Grant Ave, Deal NJ 07723.

RECORDING

COMPACT DISC RECORDING: Any recording of yours can be transferred to CD. All you need to do is supply a tape recording of music, (preferably DAT). Imagine YOUR music on Compact Disc! Excellent for demos or archiving. Perfect for low production runs. $50 for one CD, $40 for each additional. Call for information -> Jim Grote. (513) 661-8885 (eves).

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M.U.G. will provide Out-of-Print issues for cost of materials and postage. M.U.G. Hotline: 212-465- 3430 or write: G-4 Productions, PO Box 615TH, Yonkers, NY 10703. Attn: TH Back Issues. Phone: (212) 465-3430. * * * Photocopies of out-of-print past issues of the *Hacker* can be obtained by calling Jack Loesch, 908-264- 3512 after 6 pm EST. * * * Folks in the New York City area can get copies of unavailable back issues of the *Hacker* – call Jordan Scott, 718-983-2400.

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Well – within limits. We're offering free classified advertising (up to 40 words) for your sampled sounds or patches. Additional words, or ads for other products or services, are 25 cents per word per issue (**BOLD** type: 45 cents per word). Unless renewed, freebie ads are removed after 2 issues. While you're welcome to resell copyrighted sounds and programs that you no longer have any use for, ads for *copies* of copyrighted material will not be accepted. Sorry – we can't take ad dictation over the phone!

Prog: Chiffy B

By: Jeff Rhoads

WAVE	1	2	3
Select Voice	On	On	On
Wave Class	Expan	Waveform	Breath
Wave	PercOrgan	OrgVar2	ChiffFlute
Delay Time	000	000	000
Wave Direction	For	-	For
Start Index	00	-	00
MODSCR	Off	-	Off
MODAMT	00	-	00
Restrk Decay	25	25	25

PITCH	1	2	3
Octave	+0	+0	+0
Semitone	00	00	00
Fine	00	-06	+06
ENV1	00	00	+05
LFO	00	+01	+01
MODSCR	Off	LFO	LFO
MODAMT	00	-03	+04
KBD Ptch Track	On	On	On
Glide	Off	Off	Off
Glide Time	00	00	00

ENV1	1	2	3
Initial			50
Peak			65
Break			00
Sustain			00
Attack			05
Decay 1			10
Decay 2			00
Release			00
Vel-Level			33
Vel-Attack			46
Vel Curve			Quikrise
Mode			Normal
KBD Track			+28

LFO	1	2	3
LFO Speed	00	28	30
Noise Rate	00	00	00
Level	00	03	40
Delay	00	00	00
MODSRC	Off	Wheel	Wheel
Wave	Tri	Tri	Sine
Restart	Off	Off	Off

FILTER	1	2	3
Filter 1	3Lo	3Lo	3Lo
Filter 2	1Hi	1Hi	3Hi
FC1 Cutoff	064	041	088
ENV 2	+48	+50	+50
FC1 KBD	+99	+50	+75
MODSCR	Wheel	Wheel	Wheel
MODAMT	+44	+10	+20
FC2 Cutoff	046	100	00
ENV2	00	-10	00
FC2 KBD	00	00	00
FC1MOD-FC2	On	On	On

ENV2	1	2	3
Initial			99
Peak			99
Break			75
Sustain			55
Attack			99
Decay 1			35
Decay 2			54
Release			48
Vel-Level			33
Vel-Attack			40
Vel Curve			Linear
Mode			Normal
KBD Track			-28

AMP	1	2	3
Initial			99
Peak			45
Break			86
Sustain			85
Attack			14
Decay 1			20
Decay 2			30
Release			20
Vel-Level			26
Vel-Attack			59
Vel Curve			Linear
Mode			Normal
KBD Track			-28

OUTPUT	1	2	3
VOL	62	91	75
Boost	Off	Off	Off
MODSRC	Off	Off	Off
MODAMT	00	00	00
KBD Scale	-	-	-
Key Range	A0-C8	A0-C8	A0-C8
Output Bus	FX1	FX1	FX1
Priority	High	Low	Med
Pan	-56	+42	00
Vel window	000	000	000

EFFECTS — ROTERY SPEAKER & VERB

FX-1	35
FX-2	20
Decay Time	30
HF Damping	40
Slow Speed	06
Fast Speed	80
Roter Center	58
Roter Depth	43
Speed Mode	Switch
MODSRC	Modwheel

Here's one of my own sounds that's a bit of a twist on the venerable Hammond B3. The tone-wheel driven organ seems very comfortable with the delicate and hollow "pan" flute. Could a rock & roll staple now be ready to mix with more gracious company? Do you care?

But what gives with all those "blank" envelopes? Well, they're not really blank. If the envelope parameters aren't filled in it means a preset (or default) envelope is being used. If we press an Envelope Bank button 4 times, the message, "press ENTER to select defaults" appears. If you don't like building envelopes (and not everyone does) there are plenty of pre-constructed ones to choose from. The very *first* default is, conveniently enough, FULL ON — the very mundane *Organ Envelope*.

Is the Hack a lazy bum? Absolutely. But, I made sure that for this patch the accent was on *simplicity*. Take a look at Voices 1 and 2: In addition to using default envelopes, modulation routings *all* end up at the Wheel (including the Filter Kbd's). Why? Why not? It works just fine. Only Voice 3, the Chiff Flute, calls for more detailed envelopes. (Note: Voice 1 uses an Expansion Wave, PERC ORGAN. For those with early, original SQs, select WAVEFORM: ORG VARIATION2. Go to the Amp Envelope and call up the defaults. Select TRANSIENT, press Enter. This sets up the precussive "attack." Go to the Output Section and adjust VOL accordingly.)

Try substituting the intriguing Wood Flute for Voice 3; it's got a stronger, more Oriental flavor. Also, if you'd rather the flute *not* be affected by the Leslie, in the Output Section for that voice change the Output Bus to FX2.

So, what's the point to all of this first-grade stuff? Take the easy programming road when it's offered. It gives you more time to make music.

Jeffrey Rhoads has been a keyboardist/composer on the Philadelphia Jazz and R & B scene for a period of time resembling forever. Jeff still believes in magic and longs for city lights.

Hackerpatch is intended to be a place where patch vendors can show their wares and musicians can share their goodies and impress their friends. Once something's published here, it's free for all. Please don't submit patches that you know to be minor tweaks of copyrighted commercial patches unless you have permission from the copyright owner. All submitted patches are subject to consideration for mutilation and comments by Sam Mims and Jeffrey Rhoads — our resident patch analysts. If you send in a patch, *please* include your phone number. Requests for particular patches are also very welcome.

Pending Hacker-Requests: **SQ-1/2** – An "Elton John" Oberheim Bass patch — like in *Rocket Man*.
SQ-1/2 – Good Electric guitar — similar to Wah-wah on the Korg 01/W.
SD/VFX – A sitar patch.

ESQ & SQ-80 Hackerpatch

Guest Hacker: Charles R. Fischer

SQ-80 PROG: CAROSL — **By: Charles Fischer**

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	+2	00	01	PLINK	KBD	+01	-	-
OSC 2	+0	00	02	TRIANG	LFO1	+02	-	-
OSC 3	-1	11	31	TRIANG	LFO2	+02	-	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	42	ON	VEL-X	+14	KBD2	-06
DCA 2	51	ON				
DCA 3	50	ON				

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	071	00	08	ENV3	+14	LFO3	+08

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	36	08	LFO3	+54

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	21	OFF	ON	TRI	00	00	-	PRESS
LFO 2	22	OFF	ON	TRI	00	00	-	PRESS
LFO 3	16	OFF	ON	TRI	00	01	20	WHEEL

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	+63	+50	+00	30L	00	00	02	18	24	12
ENV 4	+63	+52	+58	16L	17	04	30	40	30	04

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	00	ON	OFF	OFF	OFF

SPLIT/LAYER	S/L PRG	LAYER	L PRG	SPLIT	S PRG	SPLIT KEY
OFF	-	OFF	-	OFF	-	-

The Patch/Hack:

by Charles R. Fischer

CAROSL is a airy little digital sound for those doing New-Age and other non-threatening styles. OSC1 adds a bright, plucked, attack, while OSCs 2 and 3 add a woodwind-cum-flute timbre. Aftertouch brings in vibrato, while the modwheel adds filter modulation and autopanning.

If possible, use a little Aphex Exciter & Reverb with your SQ-80.

Bio: Charles R. Fischer works as a test technician for AKG Acoustics, Inc. He has written more than 70 articles on electronics and music technology for a variety of magazines, designs custom MIDI controllers, and has played keyboards and synthesizers professionally.

The Interface

Letters for The Interface may be sent to any of the following addresses:
U.S. Mail - The Interface, Transoniq Hacker, 1402 SW Upland Dr., Portland, OR 97221
Electronic mail - GEnie Network: TRANSONIQ, CompuServe: 73260,3353, Internet (via CS): 73260.3353@compuserve.com.
This is probably one of the most open forums in the music industry. Letter writers are asked to please keep the vitriol to a minimum. Readers are reminded to take everything with a grain of salt. Resident answer-man is Clark Salisbury (CS). Letter publication is subject to space considerations.

Dear Transoniq,

As a proud owner of my **SQ-2 32-voice** for about 8 months now, I must say this keyboard is dynamite and was very easy to learn. I still am surprised by some of the things I'm finding out it can do.

However, after thoroughly reading the manual from cover to cover several times, I would still like someone to explain the differences between the Expansion Waves, Transwaves and Multi-Waves. What kinds of sounds or effects can be derived from these three different wave classes?

Can you achieve the same type of wave motion you can get from a Korg Wavestation?

Marvin E. Bowser
CS: 73150,2114

[CS – The expansion waves are newer 16-bit waves that have been added to the ROM since the original wave ROM was designed for the first SQ-based products; as such, they can be used in exactly the same way as any of the other waves. The Transwaves are specially designed synthetic waveforms whose harmonic content differs from one section of the wave to the next. The short loop that's placed within the wave can be moved to different positions (under control of the "Start Index" parameter) within the wave, yielding a variety of different sounds. This loop can also be "swept" through the data (by an LFO, envelope, or other modulator) to create sounds with an animation difficult to achieve using other synthesis techniques. The Multiwave is basically a giant wave that plays back each of the individual waves within the SQ one after another. Wave loop start and end points can be altered, so that smaller bits of the Multiwave can be excerpted. The Multiwave is most often used for sound effects, musical effects (such as clicker and bell loops for blending with other sounds, a la Korg M1), and jam loops.

As far as achieving highly animated sounds, as on the Wavestation, I believe it is possible to a large degree. Check out EX-3, the latest SQ/KS series card from Ensoniq; it contains a number of sounds in which the focus is on animation, both subtle and dramatic.]

[Ensoniq – Our SQ voice architecture does not directly implement a wave-sequencing type of programming method, as found in our TS-10 and TS-12. Since the final result of that type of programming involves either rhythmic patterns or crossfades between oscillators you can successfully approximate that sound with either dynamic modulation of the volume of different oscillators or delayed entrances of waves from creative envelope shaping or the wave delay parameter. Sounds like a good article for Clark, Sam, or one of the other creative Hackers out there.]

To: Transoniq Hacker

I realize this system is no longer current production, but I was wondering about a couple of things.

First of all, I noticed in the MIDI support chart that the module version supports all notes off, but the keyboard doesn't. I can't understand why Ensoniq would not support that function on the keyboard – it would sure make life a lot easier when the thing starts droning due to a lost byte in the MIDI loop.

Second, here on MIDILINK, someone made the "discovery" of the ability to modify the amplitude of entire layers if no wavesample is selected. It seems to me this sort of global edit occurs for other functions as well, but I also often get a "no wavesample selected" message which would imply other commands require a specific wavesample be selected. Is there some logic behind which functions map to the contained wavesamples?

David Steigerwald
MIDILink Musicians' Network
Washington MIDI User's Group

[CS – Edit operations, as I'm sure you know, can be applied at one of three levels in the EPS/ASR series of instruments: at the wavesample level, at the layer level, or at the instrument level. Some operations, such as making changes to volume or filtering, can be applied at any of the levels. For example, you might want to bring down the overall volume of a multisampled instrument, but then make the volume of one of the instrument's individual wavesamples a bit louder (in relation to the other samples). In other cases edit operations can be applied at only one of these levels. Such is the case with the "Layer Delay" function, for example – obviously, it makes no sense to apply a layer delay to an entire instrument. Other operations, such as setting wavesample loop start point, are purposely limited to a single level; it would be difficult to imagine a case where it would be desirable to change more than one wavesample loop start point (or loop mode, or loop position, etc.) at the same time. And the results of inadvertently changing the loop start of a number of wavesamples at once could be injurious to the sanity of most normal users.]

[Ensoniq – You don't mention which product you are talking about in your letter so it is difficult to answer. Many of our older instruments do not support All Notes Off commands, but we are implementing it in current designs.]

Subj: ASR-10 upgrades

I was working with my **ASR-10** and was using some of the same files from the day before and was really missing the Flash Bank feature of the EPS-16+. Just think, if the ASR-10 could support an 8 Meg E-PROM, you could just turn it on and go. And also it would be nice for an upgrade that would allow you to do visual editing like the old S-50. Looking at the numbers all the time gets to be (well you know). So far, I have a workaround – I usually play the sample with the lowest root note possible so that I can fine tune the sample start point then change the root back to the original...D'noski.

W.DEAN4
INTERNET:w.dean4@genie.geis.com

[Ensoniq – Unfortunately, flash memory is still far too expensive to be viable for most of our users. Very few people bought the FB-1 and FB-2 upgrades – they only sold when it came in the Turbo version of the EPS-16 Plus. Most of our customers told us that they would rather have more RAM memory, so we chose to implement that in the place of flash support. As PCMCIA becomes more of an accepted and implemented standard perhaps we can return to flash memory in the future.

As we've mentioned before in this forum, there's a cost difficulty in implementing a video interface (especially as an upgrade to an existing product – which is impossible).]

Questions for the Hacker,

Does resampling on the **ASR-10** cause some

loss of fidelity? And are the A/D converters in the ASR-10 as good as a DAT machine would have?

John Adams
Elmhurst, Ill

[CS – Resampling happens entirely in the digital domain, so if you are worried about introducing noise via A/D, D/A conversion, put your fears to rest. If, for example, you resample a wavesample dry (without effects), the ASR-10 will make a digital copy of the wavesample, which is for all intents and purposes an exact duplicate of the original.

While the ASR-10 effects are, for the most part, exceptionally clean and quiet, some of the effects can introduce a bit of noise, or accentuate noise that's already present in the wavesample – particularly effects that mess with wavesample volume (such as the amp and speaker simulators, which purposely introduce distortion, and the compressors/expanders, which can raise the volume of the noise inherent in most samples). The bottom line is, if you've got a sound put together on the ASR-10 that you like, resampling it will introduce no additional noise or degradation.

I can't answer the question about A/D conversion in technical terms, but I can tell you that samples I've made on the ASR sound every bit as good, to my ear, as recordings I make on any of several digital recording devices I own.]

[Ensoniq – Actually the A/D in the ASR-10 is better than the A/D's in many DAT machines (especially the earlier DATs). The A/D is a stereo, 64-times oversampling, 18-bit linear phase converter.]

Dear Transoceanic Hacker,

I'm sending a letter from across the ocean to ask you a couple of questions.

How can I reset or erase all memory contents on the **EPS-16+**? I use a MIDI-Sysex recorder and it displays "Waiting," I push "Cancel." Is there any *direct* command?

I use a Maxtor 213 MB hard drive. When trying different instruments in a track, I load one, play a little, load another, play, etc. Sometimes the display says "Insert Disk 000: Push Enter." Hey, it's not a floppy. I'm loading from hard disk. If I press "No" and load again, I can try at least two times more, but if at the third try it's not loaded, then I have to push "System," go to the root directory and load the macro again to go to the last directory I was in. Then at the first try the loading is successful. Any ideas?

And the last question is I saved an instrument on the hard drive in the same place, name and blocks. This usually works. But once I got a "BAD FAT ALLOCATION" and now I can't resave, load or erase that instrument. Is the only cure to format the entire hard drive?

What would happen if you changed the 68000 for a 68010? I did it on an Amiga computer and it still works.

Thanks,
Gabriel Diaz
Barcelona, Spain

*[CS – Your method for erasing all EPS memory seems like a good one; the only alternatives are to a) re-boot; b) use EPS "DELETE" commands (press Command/Seq*Song/7 to call up the ERASE SONG + ALL SEQS command; press Command/Instrument/2 to call up the DELETE INSTRUMENT command).*

BAD FAT stands for Bad File Allocation Table, and it means that your hard drive has some garbled data – which could possibly be related to the problem of having the EPS-16 PLUS ask for a floppy disk when it's supposed to be loading a file from the hard drive. You could try backing up your drive to floppy disks and re-formatting, but this may not help. You may want to give Ensoniq Customer Service (215-647-3930) a call; they've had a lot of experience with hard drive problems and tell me they may be able to help you out.

And as far as the microprocessor swap goes, it won't work. The 68010 requires a different set of instructions than what the EPS-16 PLUS is designed for.]

[Ensoniq – The main difference between the 6800 and the 68010 are virtual memory functions, which are not implemented in our code and therefore would not be of any value. These functions are more for use in a general purpose computer with multiple application programs.]

Dear Hackerpatch Hackers,

I own a very modified, out of warranty, **VFX-sd**, version II. Since its birth on my keyboard stand in 1990, I have installed two new switchcraft output jacks in that small space between the output jacks and the edge of the board. The original jack simply wore out (hard road use). Also installed, on the right hand side of the keyboard, is a key switch (on/off) type with an actual key that

sits on my keychain in my pocket at every gig. Boy, let me tell you, it has saved me. How? you ask. It is wired between the NICAD battery and the main board to, in effect, purge the keyboard when needed. And, in the VFX tradition, it is needed now and again. Especially during outdoor festivals when the VFX is being run on a set of generators chugging away. The display blinks in time to rides across the way. It's a riot!

Anyway, the keyboard gets very uptight about such things after a while, and needs *HARD* rebooting – cold, dead, reboot. We're talking more than just pressing Preset and the top-middle Display button. Oddly enough, I'm in the habit of "purging" about once a month as a preventive measure, and the sound of the instrument perks up nicely. These repairs and my purgings keep me happy with my VFX-sd II. After all, what fool would expect a computer to operate under road conditions like the above without being somewhat sassy!

Roy Bertucci,
Lafayette, LA

[CS – If only you'd asked! You can perform the same "purging" of the VFX-sd II (and other Ensoniq synthesizers) without modifying the machine. Turn the power switch on and off seven times, at about one second intervals.]

[Ensoniq – If the display is flickering, power to the unit is really questionable. You should consider getting line conditioning and other protection.]

Dear Clark,

I wish to express my gratitude for Robby Berman's article on envelopes. That is the kind of info I subscribe to the Hacker for. In fact, I was puzzled by ENV 1 ever since I tried to emulate the famous M1 sound "Universe" with my VFX. Thank you, Robby.

Robert Schulze Lutum
Berlin, Germany

Dear Hacker,

I wrote a letter to you describing a problem I had with Ensoniq Customer Service (published October '93). As was mentioned in their reply, "Mr. Tomasiello seems satisfied and said he planned on mailing a follow-up letter... regarding Ensoniq's prompt and efficient response to his problem." Well, this is it.

Ensoniq called me long before this letter was published. In fact, they had my keyboard repaired and returned to me long before the letter was published. Let me explain the repair part. Between the time I had written the letter and Ensoniq's call, I had answered the question of modulating loop position myself, only to trade that problem in for a real problem. I have an Ensoniq Mirage, an **EPS**, and an **EPS-16+**. I use a Mac running Performer 4.2. The EPS would transpose the MIDI note values during playback one-half-step all by itself, and not consistently either. I was unable to play along with a pre-recorded sequence because it would be one-half-step out of tune. Ensoniq representative Joe Paschall called me and expressed his concern for my past problems. I explained that I had been in contact with Ensoniq (as well as Mark of the Unicorn) about my current problem, and Ensoniq was still not calling me back. He transferred me to Steve Coscia, who helped me troubleshoot the problem. Once we were sure the problem was the EPS, I made plans to have it repaired. After I got off the phone with Steve Coscia, Joe Paschall called back. He offered to repair the unit free of charge, providing that I ship it to them for the repair instead of using an authorized repair center. I sent the unit in, and they not only fixed the unit, it looked cleaner when I got it back. Weird. Both Joe Paschall and Steve Coscia were very helpful and knowledgeable.

I have recently noticed a few quirks in my '16+. I will try to load Waveboy's rez filter algorithm from disk. I press load, then effects; the file shows "rez filter." I press enter, and then the '16+ reads "Command Complete" – but it never retrieved the algorithm from the disk. The disk activity light does not light. There is no way to work around it either, even when re-booting. This has happened in the past a few times, but it has been happening consistently for the past week or so, and is really aggravating me now. Side note: when I load Waveboy's rex mini moog sample, which has the rez filter saved as part of the sample, it will load in the sample and algorithm. Also, I noticed (back when I could load the effect in) that if I scrolled through pages quickly back and forth, sometimes the first letter of a title would change. For example, if the display read "rezonan filter," and I flipped through some pages and then back, it would read "jeason filter." This happened with other pages in the '16+, not just this third-party extra. Any feedback would be greatly appreciated.

Aside from using my Ensoniq equipment to write experimental electronic music, I am a student a Rutgers University with an independent research study at UMDNJ. A psychiatrist, another student, and myself test human subjects using music to elicit and manipulate physiological response, as well as create moods and atmospheres using sounds, rhythms, textures and biofeedback. We use Ensoniq keyboards exclusively.

Again, I would like to thank Joe Paschall and Steve Coscia for their help and Ensoniq for their understanding. Also, thanks to the *Hacker* for keeping me informed.

Thanks,
John P. Tomasiello
Matawan, NJ

[Waveboy – An Effect that won't load is usually a corrupted disk file. The quirk is that the EPS won't give an error message when it can't load an Effect file. We have sent Mr. Tomasiello a replacement disk at no charge.]

Sirs,

I bought a **KS-32** keyboard a few months ago and would like to make several comments and ask a few questions.

First:

• The keyboard has the best feel I have found with the weighted action hardware.

• Keep it with 76 notes only. It's already heavy and large enough.

• The sounds and the modulation possibilities are very good.

• The sequencer is easy to use.

About MIDI control:

• It is unbelievable that such a sophisticated system should not respond to "All Notes Off" message. First I thought it was a mistake on my part, but I checked the MIDI implementation chart. They dared! Don't you think that we have enough problems trying to make music? We don't like running around each and every synth in the studio to find which one is guilty of this continuous noise.

• Why does the KS-32 not display the MIDI controls it receives, such as volume (on the track corresponding to the MIDI channel)?

• Why does the touch of a track button cancel the MIDI controls received and restore the initial track parameters (such as volume)? These two points make the MIDI setting of a song particularly difficult from an external software.

• The manual says that to change banks, you have to send special program changes, when actually the right thing to do is to use the bank select MIDI message (control 0 and control 32). But what about loading a sound with its effect? The manual speaks about program 123, but it doesn't work. And I haven't heard about MIDI "effect change" message So?

• Tracks with LOCAL MIDI status react nonetheless to the MIDI notes coming in. There actually is no difference between LOCAL and BOTH. I tried to reinitialize the system – it still acts the same.

• How come you can use 16 tracks on 16 channels with the inboard sequencer (using the 8 first channels with the preset tracks and the 8 others with the song tracks) and that only 8 are available for MIDI?

Some functions that I would like to see:

• Controlling the effects via MIDI with the control 91 (Reverb), control 93 (Chorus) and so on.

• What about controlling the send volume for each track to the effect module instead of the "Dry-FX1-FX2" limited choice? For example, if you want to use two different ROM sounds on two different tracks, there is no way you can limit the effect amount except going totally dry, since you cannot edit the effect just on the ROM sounds. Please don't tell me to copy the ROM sounds to the RAM and then edit their effect's parameters: what would be the use of the ROM in that case?

• The timbre parameter can be used to send control 71 messages which can usefully be assigned to some control of the sound of an expander. But why do you need to go into EDIT TRACK to get this function? It would be great if the data entry slider would do the same just when the track is selected with some kind of "timbre send" parameter on.

• The sustain pedal is an ON-OFF device, meaning that there is no middle point between no sustain and total sustain. Is there any way to change the release time of a sound with this pedal varying with the amount of pressure as on a real piano?

• Why is there no delay effect?

Thank you for your answers.

Yours,
Gregoire Marechal
Vanves, France

[CS – The KS-32 track display is showing mix volume, *not MIDI volume. The idea is that the actual track volume is determined by both the mix volume and the MIDI volume. In other words, if mix volume is set to 127 and the track receives a MIDI volume message of 64, the actual volume for the track will be 64. However, if the mix volume is set to 63 (half up) and the track receives a MIDI volume message of 63, the actual track volume will be 31 (one-quarter up). This allows you to create complicated fades and volume changes on an external sequencer, but still be able to control the overall volume of the track by setting its mix volume. This would not be possible if mix volume and MIDI volume were the same.*

As far as the resetting of track parameters after selecting the track, I'm not sure I'm understanding the question. For example, if you define a track with a specific sound and volume, then send a MIDI volume message (CC#7) to change the volume of the track, then select the track by pressing its button, the track will sound at the new volume (as determined by the setting for mix level and the incoming MIDI volume message). The track does not reset to its previous level. My only conclusion is that I'm not getting it; write again and tell me your specific situation, or try contacting Ensoniq Customer Service (215-647-3930) directly.

To load a sound along with its effect, send the KS-32 program change #123, then the program change number that corresponds to the number of the sound you wish to load. Note that some sequencers number programs from 0-127, while others number from 1-128. If your sequencer is among the latter category, send it a program change #124, then the number for the program you wish to load.

*It is true that tracks set to LOCAL will receive MIDI data; the difference between LOCAL and BOTH is that tracks set to LOCAL can be used to play internal KS-32 sounds, without sending any data from that track over MIDI. Tracks set to BOTH will play both internal KS-32 sounds, as well as sending data over MIDI, allowing you to stack internal and external sound sources. If you wish to stop a track from receiving MIDI data, set its status to *EXT*.*

There are 8 MIDI channels available for sequence tracks, and another 8 for song tracks. This means that the KS-32 can send on 16 MIDI channels at a time. You are correct that it will only receive on 8 channels at once, though; either the 8 sequence track channels, or the 8 song track channels.

As far as effects routing in the sequencer, I'm sure you're aware that selecting a sound and setting its effects bus assignment to DRY, FX1, or FX2 will override its pre-programmed effects setting, regardless of whether the sound is from ROM or Internal memory, so there shouldn't be any reason you'd need to write ROM sounds to internal memory (with the exception of drumkits, that is, where you may want to control the routing for individual drum sounds). For example, if you want to use a bass sound with no reverb, a piano sound with a little reverb, and a flute sound with a lot of reverb, route the bass to DRY, the piano to FX1, and the flute to FX2. Select the reverb program you wish to use, and set FX1 up (on the first page of the effects menu) for a little 'verb, and FX2 for a lot.

While it's true that there is no delay effect per se in the KS-32, the chorus algorithm can produce some short delay effects. Select the 8-VOICE CHORUS effect, and set Chorus Depth to 00. Set Chorus Center to 99 for the longest delay times, and use the Feedback parameter to control the number of repeats.]

[Ensoniq – 1) Actually what you describe would be transmitting All Notes Off, if you wish to be able to clear the status of your receiving modules. We started implementing that with our TS-10 and now TS-12, and intend to continue supporting it in future designs.

2) Displaying the incoming MIDI controller values separate from the intended transmission value would make significant demand on the processor. Given the smaller display we also don't feel that you would get a very friendly interface. We will certainly consider this type of feature for applicable future products.

3) The system is designed around using the KS-32 as a master, and using its own internal sequencer. If you are sequencing from an external device you should set up all those values from the computer, so they can be saved with each sequence file.

4) Clark addressed the main issue, but we'd like to add that you only need to use the two program change method when you are in a Preset. When you are in regular sound mode each new program change already selects the sound with its associated effect.

Regarding the functions you suggest – in general we can only thank you for the comments and will consider them seriously for future products.

Regarding the Timbre controller specifically, we do implement on the VFX/SD/TS family of synths the ability to globally set the Data Entry slider to send that controller. It was not implemented in the SQ/KS family due to more limited processor headroom and code space.

You are correct, the sustain pedal and the MIDI controller value as defined in the MIDI spec is based on being an On/Off controller, so there is no way to offer the half-pedaling technique you describe.

The SQ and KS products don't have any dedicated delay effects algorithms due to limited memory for the signal processor to produce any significant delay effects. Clark is correct in offering the Chorus idea, since chorusing, phasing and flanging are all based on digital delay, with very short delay times.]

Dear Hacker,

Two things. Through the *Hacker* I'd like to say thank you to Ensoniq for inventing the **ASR-10**. Yes, it's only the very intelligent, creative, tool-laden grandson of my EPS, but it's going to make my creative life even a bigger joy than its grandfather did and I can't wait to own it. I recently attended an Ensoniq clinic here in Miami (hosted by Ricky) and it was fun and enlightening at the same time. The **DP/4** is incredible! I urge all you users of any products in this family of tools to attend one of these seminars or clinics as you will learn things you never knew were possible – maybe exactly the things you were looking for.

At the clinic we were told that once Ensoniq discontinues a product, they (the engineers) can only go forward. Understandable, but lamentable for those of us still financially incapable of moving up. So I say that a third-party developer should fill this void in turbo-charging SD-1s, EPSs and VFXs. I want my PPQ doubled to 96! I want 16-bit playback! Oh well, it's probably impossible and/or cost-ineffective, right?

I finally got music on the air, six days a week on WPBI, channel 2, Miami to Key West and up to Vero Beach. It's four renditions of *"Happy Birthday"* for 5-to-8-year-olds and it was completely produced on my EPS classic. All sounds used were from the Ensoniq libraries. In two years the royalties will pay for the board, the expansion and the libraries and they say the pieces should remain airborne for 4-6 years. The hell with KARPY Q – up with Ensoniq.

I thank all of you who have written requesting tapes and information since Daniel Mandel's very nice review of my work in Hacker #98. I've taken his advice about splitting my tunes into collections, under the headings of Jazz, Rock, New-Age and "STC." If you are interested, please write me at the address below.

Paul Santa Maria
PO Box 2822
Miami, Fla. 33165

[Ensoniq – While your ideas are not technically impossible, with the highly integrated designs and custom circuits in our systems and the custom software, it's a major effort. We don't think it's the type of project that can be hacked by an outside resource.]

Dear TH,

Good news for all of you **EPS Classic** owners with a Maartist's 4X expander who want to go SCSI, but can't find a Maartist's SCSI interface: The Ensoniq SCSI interface works with the Maartist 4X expander! Yes it does. Don't let anyone tell you it doesn't. At least don't tell my EPS, which at this moment is accessing a Seagate SCSI drive via this happy Maartist/Ensoniq marriage.

But don't expect your authorized Ensoniq service tech to make this work without a little bit of coaxing and encouragement, because it does require some minor surgery: specifically, cutting down the plastic brace that holds the SCSI card, and cutting a hole in the expander cover plate for the 25-pin port to go through. But, thanks to advice from John Lansig in Alabama, his personal authorized service tech, Adam, and Kevin at Ron's Organ in Tacoma, you can now SCSI up (for a mere $250.00, of course). Who knows, maybe there will be a *Hacker* article about the modification in the future...

And, except for the cost of the SCSI card, it doesn't necessarily have to cost a lot to get up and running with a hard drive. For live gigs, I'm using a Seagate 20MB drive, which I got complete with case, cable and power supply (all brand new), for... ten bucks at a swap meet. No typo.

Here's a SCSI question: Is there any way to load MIDI (sysex) files from floppy disk, and then save that data to the SCSI drive, like you can with sounds, sequences, and banks? The problem is, once you've loaded a MIDI file from floppy disk, the EPS won't let you "change storage devices" or execute any other command, but will stubbornly prompt you to "CANCEL=QUIT, ENTER=SEND," and if you attempt to use a macro to change to the SCSI drive, the EPS shows its impatience by flashing you with "HIT ENTER OR CANCEL." The nerve. Is my only recourse to re-dump all my sysex data to the EPS from the various modules, unit by unit, and save it directly to SCSI drive? Please tell me there's another way!

Lastly, does anyone out there have the documentation for Stephen Fox's Leaping Lizards "Iguana" program for the Mirage? Or OS 3.d? If you do, I would be most grateful for a photocopy of it. I'll pay for the copies, postage, and phone call. Call me, or mail to:

Steve Vincent
3615 66th Ave W
Tacoma, WA 98466
(206) 565-4701

[CS – Unfortunately, there is currently no way to change the storage device once you're into the EPS/ASR SysEx recorder functions. The only way to get SysEx files onto a hard drive is to have the hard drive selected as the storage device before sending the SysEx file in the first place. Oh well.

And as far as the Iguana program goes, Stephen Fox has long since left for parts unknown. Maybe (but probably not) someone else out there in Hackerland will have some info. Ensoniq can probably help you out with documentation relating to any Mirage OS's they've released. Give them a call at (215) 647-3930.]

[Ensoniq – We must add that when you mix and match accessory items like this there can be problems if you ever need service. If you send us your EPS with a problem, we cannot check or repair that Maartist expander – since it is not our design. We can only remove it and then diagnose your unit. If you have a SCSI problem it gets even more complicated. We have recently reduced the price of our ME2 to $349.95 and recommend you try to stay with the same brand expander and SCSI interface.]

[TH – We're also going to send you good ol' Dick Lord's phone number. He did a lot of hacking on the Mirage in its early days. Now, he's more into high-tech trains, but nevertheless he's awaiting your call.]

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Kirk —

Wonderful article! Need part II — (photo!)

Happy Thanksgiving

Jane

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