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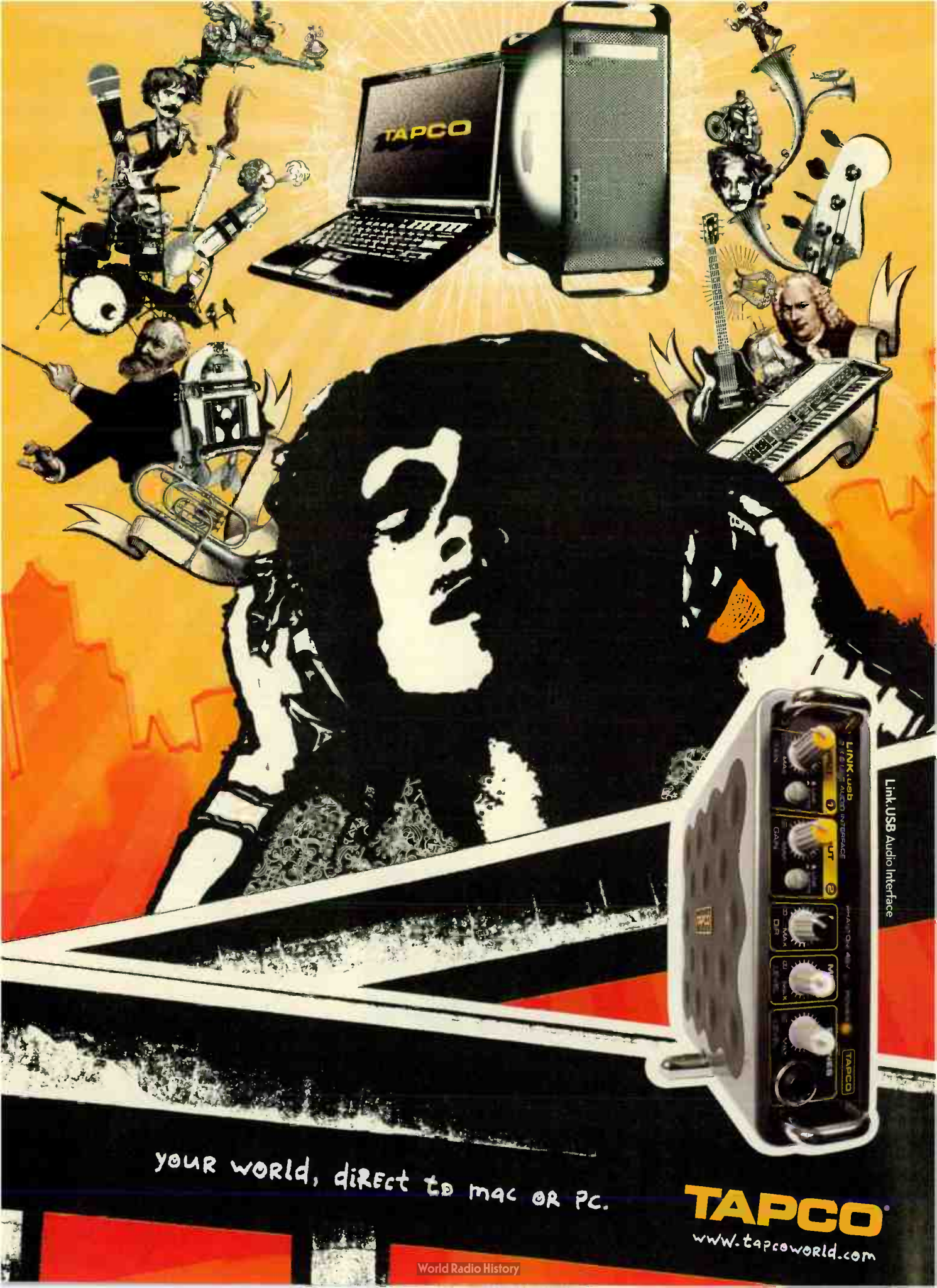
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# Talk Box



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## THE SOFTWARE PARADE

Winter NAMM. And the endless floor spreads long, wide, and far, and dancing in our heads is the riddle: How DO you do an issue devoted to software in any kind of a meaningful way that's more than a catalog and less than a textbook? Mics? Easy peasey. They've got dimension and measure. Next month's issue? Speakers? Same deal. But software? Is there a way to wrangle this beast to the floor and make it behave?

"Oh, that's simple." It was my man Tobias Thon from Native Instruments. "Just talk to the top guys in the field and see what THEY have to say about it."

And it was my Eureka moment.

"Eureka," said I. "I'm going to STEAL that idea from you, pass it off as my own, and accrue great social credits for having done so!" And Tobias, ever the gentleman, nodded in assent at my sudden burst of think tank level thinking: Talking to the players who ushered in the software revolution was stunning in its simplicity. How they did it, why they did it, what they did to change the entire face of modern music production is THE untold story.

So we got them to tell it. EVAN BROOKS, CHARLIE STEINBERG, ERNST NATHORST-BÖÖS, DAVE OPPENHEIM, STEPHAN SCHMITT, ERIC PERSING, and more, more, more. Candid and open and detailing as much as can be remembered about the days that changed the world, or at least our corner of it. Throw in a great Craig Anderton meditation on his ringside seat to the revolution, our NAMM software round up, and a GEARHEAD that covers software tips, tricks, and apps, as well as our usual beary bevy of exhaustively examined doodads and you've got an April that's in no way, shape, or form fit for fools of any kind.

And what's more we gotta introduce to you two new staffers with whom we are greatly pleased. MATT HARPER as Assistant Editor [he plays, he records, he ridicules] and the lovely and talented MARI DEETZ, she formerly of *EM*, on sales. So, enjoy, like it was meant to be enjoyed: intensely.

Cheers,



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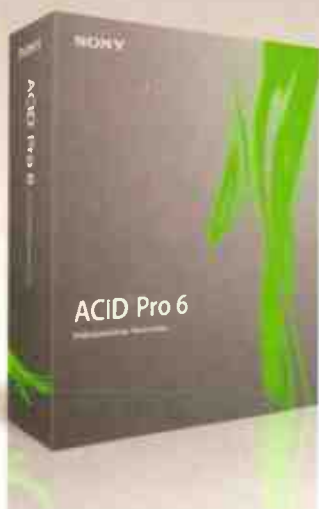




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# MATT STILL: RECORDING VOX

**PROJECT:** Recording Joss Stone and Elton John's vocals: *Elton John's Christmas Party*

**DATES OF RECORDING:** July 2005 – August 2005

**MOBILE STUDIO:** Matt Still's home studio ported out to The Colosseum at Caesars Palace (Las Vegas)

**RECORDING STUDIO:** Sanctuary Town House (London)

**LOCATION(S):** Las Vegas, NV, and London, England

**ALBUM:** *Elton John's Christmas Party*

**PRODUCER(S):** Elton John and Matt Still

**ENGINEER:** Matt Still

From Elton John's *Peachtree Road* to OutKast's *Speakerboxxx*, Grammy-winning engineer, mixer, and producer Matt Still has managed to etch his name straight across the industry by working from all spectrums of the recording world. After co-producing tracks with Elton in the past (as well as being commissioned to produce his upcoming release) Still was called in to record the Joss Stone/Elton John collaboration "Calling It Christmas" from *Elton John's Christmas Party*. Fresh off the tail of mixing the vocals of two of, arguably, the greatest singers alive, Still sat down with us and coughed up the details regarding the capturing and releasing of such critically acclaimed pipes.

## SIGNAL PATH

The vocal chain consisted of two different mics going through an Avalon AD2022 pre amp as well as a Universal Audio 1176LN compressor — feeding straight into Pro Tools at 96K. "I used Digidesign 192s clocked to an Apogee Big Ben, recording into a Power Mac

G4 Dual 1.25 and running Pro Tools 6.2 with a HD3 Accel card," says Still.

For Elton's vocals, he used a Telefunken 251 mic. "I've worked with Elton for 13 years now, and I've used a lot of vocal mics on him," he says. "The 251 is a great match for his voice, as it truly captures that silky midrange that helps his vocals sit down in a track just perfectly."

Still had never before worked with Joss, so he started the sessions with both a Neumann U47 and an AKG C12. "They are both great mics and will always give you a

great recording, provided they're well maintained. I ultimately decided on the U47 for Joss's tracks. It had a smoother presence that suited her voice."

## MIC POSITION

Still placed a pop filter about two inches away from the mic for both vocalists. "I had Elton positioned about eight inches from the mic and Joss about two to three inches," explains Still. "Elton has the most powerful voice I've ever recorded, so I normally put him a little farther away than the standard six inches. This project is the first chance I've had to work with Joss, so I started her out about six inches away. But after a few takes, I realized I had to move her in a little closer to capture all her vocal nuances."

## PROCESSING

To ensure a more even vocal capture, Still tweaked the gain while tracking. "The Avalon 2022 is a great pre for vocals," he says. "It's very clean and true. When I track

**"She belted out a line that was perfect and I told her, 'That's it, now let's record it,'" he says. "That's when I realized I was still recording — and that particular take was what ended up making the final mix."**

vocals, I like to ride the mic pre gain while recording — so a lot of the time, I'll have my left hand on record and my right hand riding the vocal."

Still applied the necessary reverbs from his TC System 6000. "I used an Eventide Eclipse to add a little doubling to a few tracks as well." He also used a little delay on the vocals, employing Line 6's Echo Farm. "It has a very gritty sound which I prefer to some of the other more clean sounding delays."

## TRACK NOTES

At the end of one of Joss' takes, Still and Joss tossed around the idea of having Joss laying adlibs onto the track. "She belted out a line that was perfect and I told her, 'That's it, now let's record it,'" he says. "That's when I realized I was still recording — and that particular take was what ended up making the final mix."

Still adds, "It was just luck that I accidentally recorded it." **EQ**

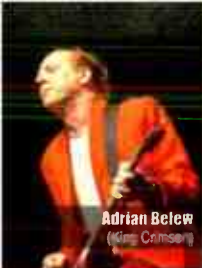
**Matt Still (with Ms. Stone) on the Avalon 2022 and ambidextrous multitasking. "It's very clean and true. When I track vocals, I like to ride the mic pre gain while recording—so a lot of the time, I'll have my left hand on record and my right hand riding the vocal."**





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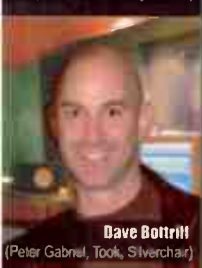
**Chick Corea**

Elektric band, Miles Davis



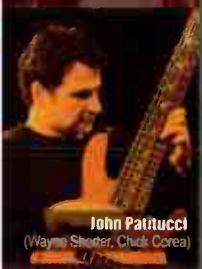
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(Phil Collins, Ricky Martin)



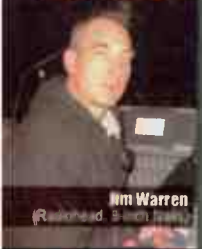
**Dave Dorrill**

(Peter Gabriel, Tool, Sverchok)



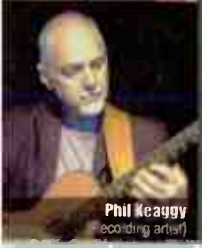
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## FEELING ROOM: HORSES

**PROJECT:** Tonal Achievement: Robert Stillman  
**DATES OF RECORDING:** December 2005  
**STUDIO:** Avast Studio  
**LOCATION:** Seattle, Washington  
**ALBUM TITLE:** *Horses*  
**PRODUCER/ENGINEER:** Robert Stillman/Troy Tietjen

I was inspired from reading about The Band crammed in together among baffles, mics, and consoles in Sammy Davis Junior's pool-house when recording their self-titled record, so I wanted everyone to track live in the same room, minus headphones, so we could get the feel of playing together as a group, and also to get the effect of the different sounds interacting with each other in the shared air-space. There was concern about bleed at first, but we placed baffles where they were needed and tried to work with the

bleed as opposed to against it. In a few cases during the mix we got the instrument sounds we wanted from a room mic that was set all the way across the room. During the first take of the session it became clear to everyone involved that this tactic was, sonically, the right

**I was inspired from reading about The Band crammed in together among baffles, mics, and consoles in Sammy Davis Junior's pool-house when recording their self-titled record.**

thing to do — since we had captured the feeling of our surroundings in addition to the audio.

Being somewhat familiar with Avast Studio I was wary of what the acoustic character of the live room would be — as the last record I worked on had been tracked there one instrument at a time. Upon listening to the playback of the first take, we were met with a sound

that was incredibly mysterious and dark in character — not the traditional wood and high-ceiling live room — it was intimate with an almost ethereal quality. To this ear, it seemed as if the sonic movement of the tones finding their way to each little corner of the room was being captured. With a few minor exceptions, all the reverb on the album was obtained naturally by placing mics to capture natural ambience.

Engineer Troy Tietjen's talent and wealth of knowledge made him an invaluable resource during the recording. Prior to the session, Troy and I conceptualized so that he could get a good sense of what equipment would be most appropriate. He suggested recording 16-track to 2-inch tape at 15 inches per second to give the recording that dark, saturated, classic sound and using old tube condensers and ribbon mics. Since the band entered the studio well rehearsed, we were able to use a majority of our time there getting good sounds — track a take and then make a few changes after playback, ad hominem, until we arrived at a sound we liked.

There were a few very different 'spaces' I wanted to open up in various songs — the circus big-top, the western saloon, huge mountain valleys, the feeling of fluttering and breathing in nature, and so on. Transposing these fairly abstract notions to specific sounds associated with different equipment and techniques was a strenuous yet exciting process, but Mel Detmer, the mixing engineer, did an amazing job of placing each sound we achieved, spatially and dynamically, in the mix — giving it a more clandestine feel.

I was lucky to have the access to such resources when recording this album. If the artifice they constructed is any good, then this should serve as a good example of how to translate idea into sensation all while using the tactics of the days of old. **EQ**







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# Punch In

TUNE IN, TURN ON, PUNCH OUT BY  
THE EQ STAFF

## HOW THE HELL THEY DID IT

"Making the album *Physical World* was a long and fractured experience," says Sylvia Gordon of urban new wave act Kudu. Along with beat master Deantoni Parks, Gordon has been shaking up the scene by combining hip-hop, electronica, jazz, and a hefty dose of neo-soul. To celebrate the release of *Death of the Party*, Kudu's newest full-length offering, *EQ* contacted Gordon to pose the question that, as of early March, everybody has been asking: "How the hell did you do it?"

"Well we knew that we wanted to do as much as possible on our own, as we didn't have much money," Gordon relays; a situation we are all, at one time or another, a little too familiar with. Parlaying dollars earned from the D./John Cale tour nearly a year prior into equipment, Kudu constructed the basis for what amounted to a bare bones operation. A laptop, a Pro Tools 002 rig, a decent mic for pre-production vocals, and a version of Reason made up the bulk of Kudu's arsenal. Given the money/time constraints, it was imperative that Kudu focus on pre-pro-

duction and assorted preparation while they had the luxury to do so. "Most of the base tracks were already written by D." Gordon says, "I just added the melody and lyrics as well as structured the tracks around my arrangements — with bits of detail being added later during the recording process."

The album is largely electronically based (composed in Reason) with the only live instrumentation you hear being an acoustic drum kit, various voices, horns on one track, and just a smidgeon of guitar on another. "The main advantage to using a portable studio is in that it lets D. create tracks anytime/anywhere," Gordon declares, "he actually wrote the track for 'Neon Graveyard' in Las Vegas while on a tour bus as I was writing the lyrics to it in New York, unbeknownst to either of us."

"I struggled along with the production process, as I'm not an engineer, but knowing what you want and having a basic working knowledge of Pro Tools is definitely helpful in shaving off time in the real studio. We were fortunate enough to have a friend, who is now head

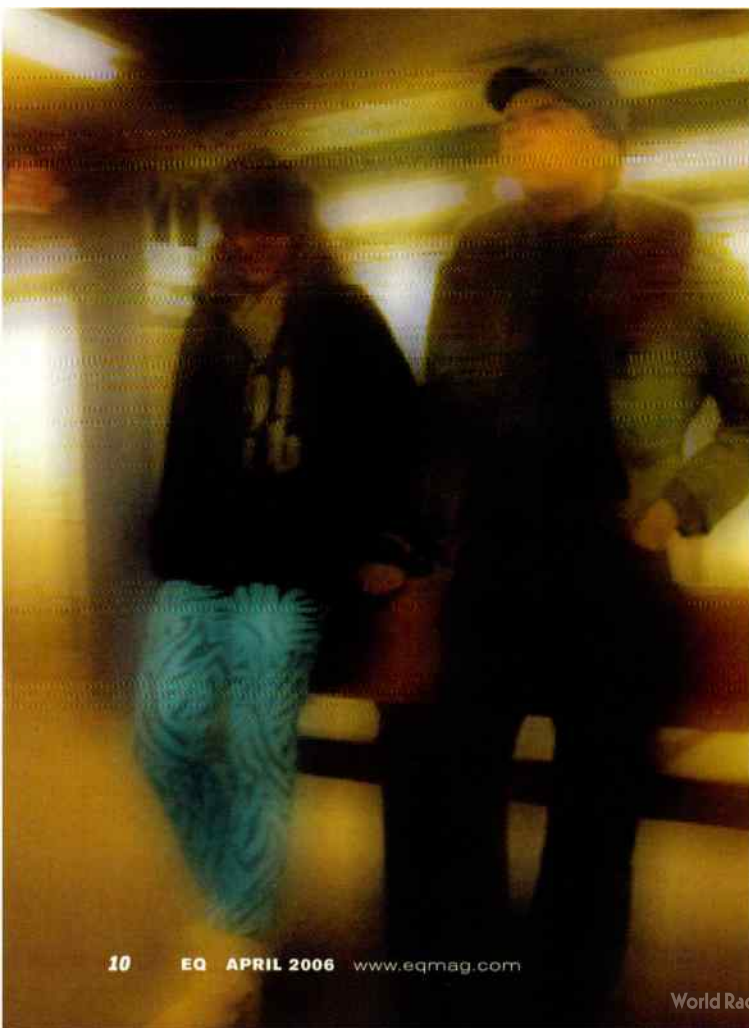
**"HALF OF THE ALBUM WAS RECORDED AND MIXED IN OUR NEIGHBORHOOD AT ISHLAB ON A VINTAGE MCI JH-636 — A 36-CHANNEL CONSOLE PREVIOUSLY OWNED AND USED BY ERIC B. AND RAKIM, KRS ONE, PUBLIC ENEMY, DJ PREMIER, AND SALT-N-PEPA.**

engineer at Chung King, give us the 'late night super special.' Of course, we would have to wait days, sometimes weeks, before time was available and, even then, we would sometimes get bumped for the big time customers with major label funding. It was frustrating, but cheap. When that deal began to wear on us, another generous friend stepped in and offered us a comparable rate at his own local studio where the equipment wasn't quite up to par, but was still quite an impressive place — especially for a guy not even out of school yet."

"Half of the album was recorded and mixed in our neighborhood at Ishlab on a vintage MCI JH-636 — a 36-channel console previously owned and used by Eric B. and Rakim, KRS One, Public Enemy, DJ Premier, and Salt-N-Pepa. In addition to that, we utilized an Avalon 737 preamp/compressor/limiter, API 3124 preamps, Drawmer DS 3201 dual noise gates, and a Neumann U87 mic. The other half of the album was recorded and mixed at Chung King in the Blue Room on a Custom Neve VRP72 with flying faders and total recall — all with the help of a bevy of high end compressors, pre-amps, and mics."

The sum of the parts is a warm, entrancing album that pushes the conventional boundaries of pop music with a production that succeeds in being consistent, as well as suitably dynamic and swelling with life. How the hell did they do it?

"With a little help from our friends."







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TIPPING ALLOWED

## THE SECRET OF RANDOM SWAP

Mark Jeffery, he who wrote *Beat Detective*, *Batch Crossfades*, and *Sound Replacer* into Pro Tools — as well as *Synchronic*, the beat-mangling software instrument for Pro Tools LE and TDM systems — has got some tips for you, and you are damn well going to listen.

"When using 'Random Swap' within *Synchronic*, remember that the majority of the feature set is dedicated to audio loop abuse of a most inhumane variety (in fact, the development name of the plug-in was 'Beat Mangler.'). However, there is in fact one feature in *Synchronic* that can actually 'humanize' a drum loop.

"In the 'Random Swap' setting, *Synchronic* can create continuously evolving variations that preserve the basic pulse and groove of the original loop. The results are similar to the natural variations that a live drummer adds while playing a drum pattern to make the pattern less repetitious.

"The feature works on the basic principle that within a one- or two-bar loop, there are 'sibling' positions that are good candidates for drum hit swapping. In a typical 'back beat' drum pattern, there are snare hits on the second and fourth quarter-notes of a bar. These snare hits, which can sound different from each other, are 'siblings,' and are interchangeable. Going a step further, any slice of a drum loop can be moved by a half-note (or multiple half-notes) and end up in a reasonable 'sibling' position. If this interchange is done randomly, then we can take a static drum loop and have it play back differently with each loop iteration.

"For example: Let's say we have a two bar loop with an open hi-hat on the '4 and' of the first bar. That open hat will sound odd to most people if it were moved to the beginning of the loop, yet it sounds very natural when moved to a sibling position such as the '4 and' position of the second bar, or to the '2 and' position of either bar.

"How you do it? Load a loop into *Synchronic*. Raise the 'Detection' slider up until the loop is properly sliced. Set the 'Order' parameter in the Playback module to 'Random Swap.' Start playback. Notice how the basic drum pattern is preserved — yet inflections change with each loop pass? See, just a little variation can go a long way sometimes."

—Mark Jeffery



## LOOK SEE TRAKTOR DJ STUDIO IGNITE!

Attention all burgeoning DJs:

It's likely that most of you are familiar with Native Instruments' increasingly popular *Traktor DJ Studio*; and if you are a hobbyist or just getting started with this software then RD White's step-by-step visual guide could very well give you the tutoring that you so desperately need.

*Traktor DJ Studio* isn't a particularly difficult program to navigate and use; but there are a lot of options to choose from and the screen layout, while effective, can be a bit of a sensory overload for the uninitiated — thus this easy-to-read visual guide (which allots a corresponding photo to nearly every step you will take on your journey to controlling the club floors) is quite handy; not to mention idiot proof in its presentation.

At nearly 300 pages, the tutorial can appear quite daunting, but the design is actually fairly minimal and the information presented quite palatable. In fact, my only real complaint lies in the mediocre quality of the screenshots contained herein; as they would benefit from a 20 percent size increase and/or being taken at a higher resolution, but if you eat your carrots daily you should be able to make it through without too much squinting.

Those terrible beats and lopsided mix you are pumping out? Yeah, now you only have yourself to blame; but we are only too eager to steer you on the right path to producing great house/hip-hop/electonica/etc. Your increasingly terrible fashion sense? Well, that's a fight you are going to have to win on your own.

## LISTEN HEAR



### **GUTBUCKET *Sludge Test (Cantaloupe)* Produced and mixed by Jay and Ian Pellici**

You want some hip taste in music? Gutbucket is a good name drop to memorize. Playing an at times serialist/at times jazz version of rock 'n' roll, Gutbucket (led by saxophonist Ken Thomson) is an exciting, if not sometimes unnerving, listen. Do you want a good idea to work off of for the next rock band that's going to bring a ghaytah into the session? Well, here is your preparatory spin.





GO AHEAD....

## ...PITCH ME!

You got a company? And a pitch? Well, let's hear it.

### THIS MONTH'S PITCH IS FROM . . . eJamming

With fast computers, great software sequencers, virtual instruments, and an array of MIDI devices, musicians today have the kind of freedom that they could only have dreamt of just 20 years ago. Maybe you're too young to remember, but I myself vividly recall the beginning of all this. Keyboard workstations and drum machines were commonplace and independence sought by musicians was beyond seductive. Keyboardists were learning how to make the most of electronics and digitization, and sadly, great drummers and bass players lost gigs left and right. Thinking of then and now, that gear was so primitive. Even so, musicians with ears and good chops took tight-lipped tools and made them sing. Man, have times changed.

Now, this independence is easily attained, and a broad spectrum of players are seizing it. A few bucks down and all the tools you need fit in your room in a nice, neat case, and you can play and program away. Whether you're a guitarist, a drummer, a keyboardist, or a woodwind player, you can design full-blown tracks with your software. It's you and only you filling the space with sonic self-satisfaction. Yup, MIDI's been a miracle in so many ways.

But we've paid a price, too. Though players still get together, more often than not it's about sending files and overdubbing ideas. The Internet has made that so easy, but the accrual of solitary moments has added up to one dimensional, maybe two dimensional creations. Good stuff, but who knows what would have happened if two, three, or four players got together at the same time and really interacted? To get that happening, though — in these overworked, traffic-laden days of a tight economy — is no small feat. So you start to think, where are we going with all this? Isn't music more than a conversation with yourself?

Well, we have a new technology. The eJamming Station. Lets you play together over the Internet. To keep it simple, eJamming puts milliseconds of delay on the sounding of your instrument until you receive the other players' incoming note triggers, and they're played where they're supposed to be, either on your tone generator or the soundset inside eJamming. And when you record the session, any late or dropped notes caused by Internet traffic are placed perfectly on playback because each note is time stamped and synchronized. eJamming can even connect people thousands of miles apart.

With eJamming, you can connect with musicians thousands of miles away via a cable or DSL Internet connection, effectively adding that third dimension to musical collaboration. So, when you're sitting in your room trying to think of the right fill, you now have access to an online community of musicians who can help out. Go to [eJamming.com](http://eJamming.com) for a free trial.

## LISTEN HEAR



### **SHE WANTS REVENGE a/t (Flawless/Geffen) Produced by She Wants Revenge Mixed by Michael Patterson**

Joy Division worship ala Interpol? Yes, but not nearly as good as their predecessors. Worship bands are only good for one generation's worth of displacement — but if that is what you seek then their mimicry is spot-on. Recorded at Perfect Kiss Studios in L.A., the sound is stellar — though the e-drums are placed in too traditional of a space and could use a bit of EQ to curb the subsequent annoyance that arises from listening to this at an audible level.

## LISTEN HEAR



### **CAPRICORNS Ruder Forms Survive (Rise Above) Produced by Mark**

**Bihler/Capricorns Mixed by Mark Bihler/Vitaliano Zurlo**  
Pensive and foreboding, *Ruder Forms Survive* benefits from a thick, bottom-heavy production that manages to preserve a dark atmosphere as well as a large dynamic range. Reminiscent of other modern heavy rock bands such as Cavity and Pelican, Capricorns manage to avoid all the "post" nonsense, unabashedly injecting a healthy dose of Sabbath when fit. Largely instrumental (minus a guest appearance from EQ's own Eugene Robinson), this album deserves a spin from the audio community for the wonderful hi-hat sound if nothing else.

## BETH ORTON

by Lily Moayeri

For those who have never met her, the general perception of Beth Orton is that she is an embodiment of all the sadness the human spirit can muster. Or at least that's what comes across on her albums, now numbering at four, hence the nicknames "the comedown queen" and "the queen of heartbreak." Though Orton's life is not at all devoid of unhappiness — much like anyone else's — she assures us that misery is not the defining characteristic.

Prior to her most recent full-length, *Comfort of Strangers*, Orton was flattened by a couple of life's tragedies. These events hit her hard enough to raise doubts about whether she would even make another record. The resultant action was that Orton started doing what she does best — writing songs to spare her own sanity, the process of which yielded a vantage point into a woman being perhaps more honest with herself than ever before.

"If you spend a year writing a song, it becomes like speaking to yourself," says Orton. "I answer my own questions and, within that, find solutions. Once the solutions are found, I go back and re-write until they become coded. I hope that through the course of writing, the songs become universal. It becomes a more rounded piece of work rather than the ramblings of a madwoman screaming into the void."

Working in an acoustic environment this time around allows Orton's hollow, hoarse tones to be brought to the forefront, becoming ever more soul-baring than before. Part of this can be attributed to the actual environment in which she was recording — two weeks at Sear Sound in New York City — and whom she was recording with: Sonic Youth's Jim O'Rourke, drummer Tim Barnes, and accompanied by engineer TJ Doherty.

"It was understood that it was me at my most honest and vulnerable, and a space was created," says Orton. "It was just so safe . . . and fun, as well. I could go in and sing something really beautiful, give it all the emotion I had, but at the same time come out and really laugh, crack some irreverent joke, and it would be beautiful. Musically it's really honest. The sound is honest, an honesty that goes beyond the words, and an openness that goes through everything."

O'Rourke and Doherty managed to capture Orton's tangible vulnerability on *Comfort* utilizing a Shure SM-57 microphone for her voice, which — along with all the instruments — are recorded in analog. This is primarily what Doherty attributes the overwhelmingly acoustic nature of *Comfort* to. "Her musicality was there, and she performed with such integrity that it was simple to record her honestly," he says. "We had great respect for her musical ideas and she listened to us when we made suggestions."

"There wasn't a thing we didn't discuss," Orton concurs. "At the same time, we didn't discuss too much. It was very spontaneous and instinctual. I never felt it was taken out of my hands. It never went to this other place I didn't understand. For the first time, I had a producer I had ultimate confidence in. It was easier in that sense because I totally trusted his vision."



This sense of trust is new for Orton who, in the past, had a tendency to bring in musicians to fill in the gaps she couldn't manage on her own. On *Comfort*, Orton takes on the primary guitar playing duties — this is after extensive weekly lessons with legendary guitarist Burt Yanch. These lessons have had an effect, not only on Orton's improved playing, but also in opening up her style, which has taken on a bit of an American country rock quality.

To capture this particular vibe, Orton used an acoustic guitar miked with a Neumann U47 and a Beyer M160. O'Rourke complements Orton using a Gibson EB2 bass guitar played through an Ampeg B12 and AKG C12 bass amplifier. Barnes joins them using a kit assembled from pieces generated in the '60s from Slingerland. His kit is meticulously miked with Coles 4038s on the overheads, a Sennheiser 421 and an AKG D12 E on the kick, a Shure SM57 ribbon on the top and bottom of the snare, a Sennheiser 441 dynamic on the hi-hat, AKG C12As on the toms, and an AKG C24 for the drum room. These are compressed with a Fairchild 670, as well as two compressors built by Bob Fine, military compressors, an RCA BA-6A limiting amplifier simplified schematic, and two Teletronics LA-2A tube compressor/limiters.

What is missing, but not missed, is any effects or processing on the recorded material. Focusing more on miking, Doherty shares one particular tip that is exclusive to his sessions. "The Sennheiser 441 is pointed completely off-axis, about eight inches away from the edge of the hat facing the

back of the kit. The hi-hat sounds more like a sample because there is nothing there other than a hi-hat. No snare, no room, no kit."

Once recording is completed, O'Rourke steps up to the console for the mix, but does so with the philosophy that the music comes first. Doherty explains, "[O'Rourke] may be one of the only engineers I have seen that mix for the music. Other mix engineers have all the bus compressors and inserts and effects dialed in before they have even plugged in the Firewire drive into the G5."

He continues, "[O'Rourke] brings up all the faders and listens to the song. Then he moves the faders around until he gets the most musical result, after which I print it. Sometimes a hair of top was added because we were working with 15 IPS. Mixing had the very occasional roll of 22 or 27Hz. Many of the songs were tracked and mixed with no EQ, and the bulk of the songs at mastering required no EQ. I thought that was extraordinary."

"I needed the trust [in O'Rourke]," Orton admits. "It's been tough for years. I had been drowning. I went into this downward spiral. I stopped writing for months, then becoming really inspired. I didn't stop writing. I'd literally have to force myself to sleep at one in the afternoon after writing all night. They were written without being for anyone but me. To a degree, you could call that confessional, which is a word I've always balked at. I have nothing to hide in that way any more. If that's what I do, that's what I do."



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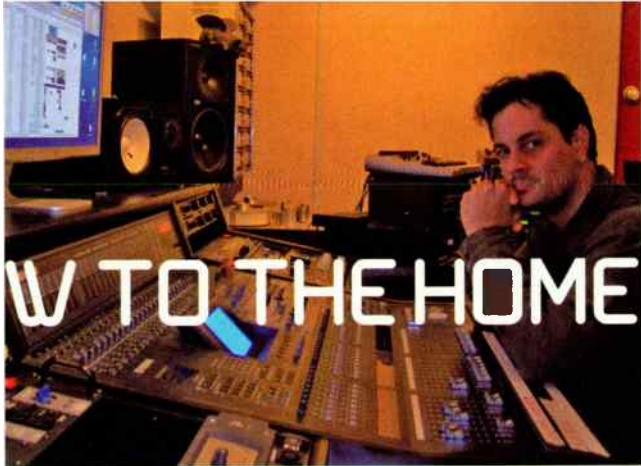
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World Radio History

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## TAKING THE SHOW TO THE HOME



The scenario is one that is tragically familiar to most of us: a slightly (or not so slightly) intoxicated converser pulling out a copy of *Live at the Leeds*, *Get Yer Ya Yás Out*, or — precariously enough — At Folsom Prison, only to slur nostalgic about their attendance at said event(s). The problem? Besides their breath being an assault on all things olfactory in nature; the aforementioned assailant is only 25 years of age — and lest we toss arithmetic to the wayside, we must sit there in pensive amusement as we are bombarded by vanity lie after vanity lie.

Such was an unavoidable occupational hazard for those of us foolish enough to talk music, let alone live recording, with imperfect strangers in the dark hours of the night. Or so was the case until Eric Welsh, Jake Walker, and Jim Coudal of The Show ([theshowlive.com](http://theshowlive.com)) decided to take guerilla recording to the next level of marketability and hit the road with acts such as The Pixies and Dead Can Dance, capturing every unique performance and offering well-packaged, professional “bootlegs” to rabid fans interested in reliving that special night where Frank Black crooned “Debaser” just for them.

Started with a mere few days notice when The Pixies commissioned them to overtake the task of recording their last 12 concerts of 2004, The Show has since immortalized numerous live performances in both North America and Europe. Their setup is fairly simple, according to Welsh who also co-owns and operates Chillhouse Studios in Boston, MA ([chillhousestudios.com](http://chillhousestudios.com)). Three PreSonus DigiMAX 96k units, patched via XLR audio splits, covered the 20 input channels used by The Pixies — which were then sent out optical/ADAT into the Alesis HD24. The remaining four mic pre’s were used for ambient microphones (Shure KSM32s); two on stage and two near the front of the house.

The positioning of said ambient/crowd mics can pose quite a challenge, Welsh informs us. “I make it a point to place them in the best areas

I have available, and keep them in phase with each other when setting up a stereo pair. Simple things like wind and rain can ruin the recording if you are not careful; and putting a microphone next to the overzealous fan that can clap with the strength of Bigfoot, or yell louder than your grandmother, is generally not the best idea.”

The gear is connected to a backup battery system in case of power failure. “You’d be surprised how often power can go out during these big festival dates where 10,000 generators are feeding power to everything,” Welsh remarks. “Once the concert is recorded to the removable hard drive, a backup copy is made. After the tour is over, I take the hard drives to Chillhouse and begin mixing with the Yamaha DM2000.”

But why use this particular set-up? Isn’t it a bit, dare we say, archaic, given the relative ease and convenience of computer based recording? “I have used Pro Tools-based systems on past tours,” Welsh says, “and though nothing is wrong at all with that approach, I feel more comfortable with a system that does not require a computer or leaves itself open to the many technical issues that can go wrong while on the road. Equipment gets tossed around a lot when shipping to other countries, and it is also more cost effective and a safer option, in my opinion, to have multiple HDR units as opposed to a computer setup for the type of work I am involved with. Simple and powerful is what I am after.”

Concerning the DigiMAX 96k, Welsh explains, “The DigiMAX 96k’s offers exactly what I need — clean sounding mic pre’s and limiters that I have found very useful. Once audio hits the DigiMAX 96k’s, the path remains digital all the way to the final mastered and mixed CD. I can record a nice

hot signal and adjust the limiter so that it will only engage if the audio signal peaks; thus, no matter how hard the kick is played, I will never clip into the red on the HDR. If I see that the limiter is getting hit too often, I simply turn the gain down a little. This is perfect for a band like The Pixies, who do not sound check. After a good line check with the crew, I have my basic settings; and after about a minute of the first song I’ll have maximum levels eating up all 24 bits.”

Though the business model isn’t new per se, The Show’s approach is undoubtedly different from what other “on the fly” companies offer. Where other companies offered the final product directly after the concert, The Show manually flyer gigs (as well as working with the merchandising companies) and sell vouchers that are redeemable online or at one of their provided on-site computers. Within a few weeks, the CD is then shipped to the customer, who then ends up possessing a high-quality, live recording complete with unique packaging consisting of pictures and a setlist.

And this approach may help save that part of the world inhabited by those of us who simply have neither the time nor the desire to listen to another intricately woven, faux narrative consisting of “that one time Gene Simmons pointed at me during ‘Black Diamond’ while they recorded *Alive*. Can’t you see me in the liner photos? Row ZZZ, dead in the middle? The one with the long hair?”

... or it could be responsible for quite the opposite; and please help us if that’s the case.

—Matt Harper

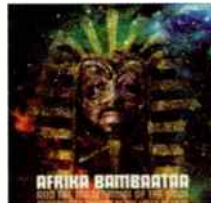
### LISTEN HEAR



**KEANE *Hopes and Fears* (Interscope)**  
Produced by Andy Green/James Sanger  
Mixed by Mike Stent

Not a brand-spanking-new album (or a very solid one), *Hopes and Fears* is nonetheless getting a lot of play in adult alternative circles. Keane belongs to the same sub-category as bands like Coldplay, yet is remarkably different in that they are comprised of only voice/piano/bass/percussion — which makes, from a production standpoint, for an interesting listen, as the mix is similar to many alternative bands, but the piano occupies the space generally reserved for guitars. Plus, you can get sad over past girls to this. We sure did.

### LISTEN HEAR



**AFRIKA BAMBAATA *Dark Matter***  
**Moving at the Speed of Life (Tommy Boy)**  
Produced by everyone Mixed by everyone + 5

*Afrika Bambaata* is a hip-hop legend . . . and there are plenty of good reasons for that. Always the innovator (while retaining a sense of retro charm and celebrating the roots of the genre he helped create), *Dark Matter* manages to merge old-school hip-hop with a bit of funk/psychedelia (think 2 Live Crew meets Parliament). Wielding an incredibly balanced and lively sound, this album allows the listener the opportunity to focus on every nuance, as opposed to simply crushing the backing music with the vocal tracks. Are you producing a real hip-hop album? Here is your blueprint.



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# THE MUSIC SOFTWARE REVOLUTION, THE REVOLUTIONARIES, + HOW IT CHANGED

BY JOHN PAYNE

# EVERYTHING

All you kids out there might be surprised to hear about this, but there once was a time, and not too long ago, when musicians, recording engineers, and record producers relied on magnetic tape, splicing blocks, and knob-laden consoles to compose, record, edit, mix, and apply effects to the sounds they were making. Sound incredible? But it's true. The development of software for audio application — variations of which are now commonly bundled with any basic Mac or PC, and which your little sister is right now using to master her underground dance jams compilation — was initially a slow one, the hardware and software worlds grudgingly coming to terms with each other's potential cooperative progress, and yet when the ball got rolling, it really snowballed, eventually changing everything we thought we knew about the art and craft of composing and recording music. Here, in the words of the major creative minds behind audio software design, is how the story unfolds. As we shall see, it rarely had much to do with "visionary" genius, and a whole lot to do with concurrent advances made in hardware technology, enlightenment gleaned from like-minded but independent-spirited musicians and technicians in the field of audio engineering, a lot of grit, desire — and sheer luck. . . .

## EVAN BROOKS, DIGIDESIGN

I started out as a musician and technologist, studying electrical engineering and computer science at Berkeley. I've been playing in bands since I was 13 or 14; Peter, who I started Digidesign with, we've been playing together in bands since high school. Still do, in fact.

Back in high school, we would record ourselves on whatever reel-to-reel tape machines our parents had, and then we invested in one of the first TEAC four-track machines — remember that thing? Of course, once you got a four track, with overdubbing and synchronizing, and everything was edited to two track masters, you'd do splices with the razor blade and grease pencil. We used pencil [laughs]. I also did some rewiring and hacking of existing gear to fix it. Sometimes it was done in sport, sometimes to improve something or take care of a badly designed product. Or I'd make some sort of a patch, or build kit synthesizers or synths from scratch where you just sort of make it up yourself.

The earliest work that we did at the company came out of a number of years of just playing around with electronics and electronic music. We had built a recording studio basically from scratch; Peter had gone to college for recording arts. He bought a Drumulator one day — he's a drummer himself — and he said, "We can certainly change these sounds on it." And I had no friggin' idea how to change the sounds on that machine. So I said "sure," and we just learned how to do that. We went to the company and asked, "How do you change the sounds on the Drumulator?" They said, "A lot of people have asked us how to do it, and we're happy to tell you but nobody's ever actually done anything with this information." I said I'd guarantee them that if they told me what it takes, I'd do it.

He explained the process. So, of course, we had to sample these sounds, and back then you couldn't just go out and sample sounds; the only samplers back then were the Emulators. So we hacked into the Emulator to use its digital output; Peter wrote some custom software



that would let us take sound out. Then we had to make a computer, and we had to design some interface parts that would sample into this computer.

Over time these drum machines got to have higher and higher quality sounds, and suddenly the Emulator's recording wasn't quite good enough. Remember the Sony PCM? That was the high-quality sampling machine of its time; actually it's still pretty good. So Dana Massie [fact check] over at E-mu shared this information with us.

We wanted a card with a digital output that records things on the PCM and then brings them over to this computer. But we were still getting ASCII gibberish on the screen when it was time to edit it, because when you'd record a drum sound, these drum chips were really tiny and the capacity was really low. At that time it was: how do you fit a very long decaying sound onto this really short chip? You have to use a lot of compression, and a lot of really brutal editing. And it turned out that doing editing like that was really difficult — you could never do it on tape, it just doesn't work; but doing it onscreen with a bunch of ASCII characters was ridiculous. So it occurred to me that if only I could see the sound, I could make qualified decisions about where to edit things.

This was at the time that the Macintosh came out, and suddenly, when I created a bit-mapped illustration on it, the first thing that came to my mind was, "Oh my god, I'd be able to see the sounds that I was trying to edit on the screen." So it'd be great if I could take the sound out of this \$100 hobbyist computer we had made, and transfer it out over to the Macintosh.

The Emulator II had come out at that time, and so we worked with E-mu to actually write the software we needed using the Emulator II as the sampling part. The idea was, you'd sample yourself on the Emulator II, just download it to the digital interface that was included with the Macintosh, where you could then edit the sound, and then you'd play them in the Macintosh. But if you could edit them, you could



## The idea behind recording and editing digitally was out there, and it'd been put together by people who had an enormous amount of money — but they could never sell the thing.

also do signal processing, because suddenly you had a computer that had a serious crunch to it, relatively speaking for that time. You could edit the sounds, manipulate the sounds, and then you would send them back. From there, you could move all the parameters of the edit of a complex instrument.

### MOTIVATION

A lot of people look back in hindsight and proclaim people to be visionaries, and in fact I think we're all pretty short-sighted. Motivation is the key ingredient. I'm mostly motivated by my own needs, and what it is that I need at that point in time. Back in the early '80s, I couldn't meet my needs with the money I had available. Back then, if you wanted to do digital recording you had to buy a Synclavier for a couple hundred thousand dollars each, right?

The idea behind recording and editing digitally was out there, and it'd been put together by people who had an enormous amount of money — but they could never sell the thing. People over at Lucas were doing state of the art things; they had money and the time, and they had the expertise to develop custom systems that were doing all the audio and video editing, and they had the processing power. But people like us would look at that and go, "Yeah, that's really cool, but I'll never get one of these things in my lifetime."

But what you do is, you say, "Wouldn't it be neat if...?" Then you turn your attention to your basic needs, like "How am I going to edit this?" So for me, having all the experience with the technology and the computers, it was a no-brainer to me that our music was moving into the digital realm, because we were working with sampled sounds. I needed something visual to be able to edit it with, something accurate, something reproducible, and for God sakes, something that you could undo, because I was not a good editor, and you make a mistake with a razor blade, and it's just over. So for my needs, I needed something where I could just say "undo." And when that concept was presented to the guys at Macintosh, it was kind of the obvious answer to the particular problem of what we were doing at the time. In that sense, I guess it's visionary in that I really believed that this is the way to go. Was I thinking about 32 channels of multitrack recording and all sorts of DSP? No, I wasn't, because it was not what I was doing at that time, and it was just so far out in the future.

Once you're editing, though, you want to be able to hear what you're editing, right? If you're editing this nice 16-bit audio, but the Macintosh you're editing it on has 8-bit playback, you can't make any subtle changes and actually hear it, because the sound quality is so crappy. So I said to myself, "How do I improve this situation? Where am I going to get better audio output?"

I started looking at the interfaces to the Mac, how to get high-quality audio in or out of this thing, and that's when we came out with an interface for that machine that had high-quality A-to-D jacks on it. From there I plugged a Mac into it and I could see what I was doing, but gosh, whatever I was doing sure took an awful long time. I could sit there and type in some numbers and do a lot of crunch, and then I have to listen to it, and if I don't like it I have to go back and type in some more numbers and let it crunch and listen to it again.

And you start comparing that experience with the experience you

had on an analog console, where you can just reach out and grab something and turn it and adjust it, and you start to realize that the thing that's missing from the experience is that the modified listen cycle is all wrong for the digital purpose: When you're adjusting something, it's a continuous loop between your hands making the adjustment and your brain listening to it, and you can't just turn it from here to there; it's an interactive process. It's a loop. And you don't really notice it because you're used to doing it all the time, but when suddenly you have to slow down and do it piece by piece, and there's a big gap between each piece of the movement, you realize that it is a big loop and it's performed over and over. And when you make it take a long time, it grows from being ordinary to tedious.

So that was the next big thing that was missing from the picture. Our focus started to become "How do we speed up this process?" And there were several ways you could do it: You could get more clever with your coding to make things go fast, or how they do it with some Photoshop types of filters where it will render only a portion of the picture you're working on. Or you can try to accelerate that process in some fashion. And our answer to that came in the guise of the Macintosh II; not only was it faster than the original Macintosh, but, lo and behold, it had card slots, and suddenly you could fit things into this machine.

So the first thing that occurred to me was what can we do about our problem here, our modified listen cycle? A good friend of mine who used to be at E-mu, a guy named Terry Schott, was working for Motorola at that time, and he said they'd been working on this digital signal processing chip that would be well adapted to audio. Terry got us an early prototype of this thing, and the very first thing I did was design a card with a circuit board, put on some high-quality digital-analog converters, and then we wanted our Sound Designer software to take advantage of it, so that all the EQs and whatnot that you could do in Sound Designer would actually run on this board. The digital signal processor would run in real time on this audio, then pump it out as analog output in 16-bit. And you could tweak the parameters on the screen — and suddenly, everything was in real time, and it was like night and day.

We took this board to the NAMM show, just to get some feedback from people, and we were just inundated. People thought right away, "Oh my god, this is amazing." We figured out that we were gonna have to add some analog inputs to this thing — that version we showed at NAMM we had made in, like, two weeks, staying up all night at Apple, who was working with us real closely at that time, to make this thing work in time for the trade shows. It was only monophonic at that juncture, but we came back and we tricked it out and came up with what eventually became the Sound Accelerator.

Having solved the modified listen problem, the next thing that became apparent was that the biggest limitation of editing in the Mac was that you had to fit everything into memory if you wanted to hear it; using a floppy was ludicrous, and if you did have a hard disk, it was excruciatingly slow, you couldn't actually play audio back in real time. So when the Mac II came out, the technology again had advanced by that point that the hard drives were just barely fast enough to play two channels of 16-bit audio at 44kHz. What was happening was that these drives, as you'd use them, would start getting hotter and hotter, and the metal

Analog. Amen. Arguably the most tweaked data archiving standard in history. . . . Digital. Dang. What the heck happened to the warm-groovy-big-fat-in-your-face sound?

inside would start expanding, and the drive every so often would have to recalibrate itself, trying to figure out where all the tracks were on the disc, because the size of the disc was changing. So every N number of minutes, the drive would shut down and it would rescan the disk and figure out where everything was again. And if you didn't do this, then you got a bunch of drive errors.

This was a huge problem. You'd be recording to hard disk, and you'd get a glitch in the middle of it because the drive had basically gone offline for a tenth of second, half a second, whatever it was. And by then you'd be screwed. I brought in a little device that would play the audio from the hard disk and sure enough it worked. So we built that, and suddenly Sound Designer went from being really a kind of sample-editing tool to being a real two-track full-length audio production console. That was a huge shift. And again, it was this beautiful perfect storm of the technology being there and a need being had at the same time.

The visionary part is being able to recognize that the technology that's there is going to be able to meet your needs, and then you further saying, "Now that my needs are met, what new things can we do that we couldn't do before?" Sometimes you couldn't do something just because the technology wasn't available; or the technology was available, but you just couldn't afford it.

This technology was so much more useful and efficient to us [as recording musicians and technologists] than the analog technology, that we figured other people would be driven by that also. And suddenly we realized that the technology was out there to make essentially a direct-to-disk Synclavier for a small percentage of the cost. You could bring these tools that are eminently useful into the vocabulary, because now everybody would be able to afford to use it.

When we started the company, we decided to make a purposeful move into hardware. And that was a very different step, because it had been so expensive. We didn't have experience contracting out to make circuit boards and purchasing electronics parts, testing, etc., so it was a really big deal. Originally I was the hardware designer, but it became clear to me that there were people who do this kind of thing for a living day in and day out who'd do a much better job than me — people who were doing parts buying for electronics, people who understand the whole process of circuit board design — and as we got into the more advanced Pro Tools system, we had specialists in communications, as there was a need for developing techniques to include people who'd use the product.

**THE MUSICIAN OF THE FUTURE**

I think of myself primarily as a musician. That's what I sit down and do everyday; I'm a piano player. It's certainly an indelible part of me; it affects how I think, how I look at the world, and how I think about problems and how I solve problems. Being a musician, I was making products for myself. I can see the utility of the future as it applies to music and musicmaking, because that's my job. That's what I do.

Digital audio is pretty much a mature industry at this point. People like to talk about evolution vs.

revolution, like at the beginning of the life cycle of a technology you tend to go through a revolution, with big changes in the big picture. The last kind of major sea change that we all saw, and we're still on the tail end of, is the migration along the lines of duty of these workstations that have dedicated hardware to drive the software. There are workstations that don't require external signal processors or external boxes; a lot of computers now come with high-quality converters built in, hard drives that are large enough and that literally can do anything straight out of the box.

As it turns out, what has happened is that people's needs and desires have grown to keep pace with the capabilities of computers. What people were doing with Pro Tools 10 years ago you could probably do entirely in software now, but the fact is that people are doing a whole lot more than they were 10 years ago, and they have a whole lot more things that they want to do, so they're still pushing the limits.

But that move toward software only is kind of the last big thing; every so often you see people come out with new ideas, but mostly now it's incremental — taking more functions and putting them strictly on software, making it work more reliably together.

People coming out with things like synthetic singing, for example, things that you can't do yet. Well it all comes back to that old category of "What can't you do?" Software that literally can understand enough music to take polyphonic music and pull it apart, and you can edit it after it's been mixed. These are the kinds of things that people will say, "Wow," about at some point in the future. I don't think they're anything that people are particularly missing right now, 'cause just about everybody's needs have been met, but people keep pushing that envelope and coming out with new ideas. As the processing power grows, so does people's ingenuity.

**COLIN McDOWELL, McDSP**



Analog. Amen. Arguably the most tweaked data archiving standard in history. There were many technical and objective criteria, both of which would change as the music industry grew. Many thanks to the brilliant folks who have gone before us to give us this Holy Grail.

Digital. Dang. What the heck happened to the warm-groovy-big-fat-in-your-face sound? Computers have a funny way of doing exactly what we tell them, not what we want them to do. Ditto when it comes to processing and saving our audio data.

And so the digital revolution begins.

Where was I? Like most of



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## OK is this part of the revolution? Industry pros with analog-

you, I'm just another foot soldier in the professional audio space, trying to figure out what to do next. So this will be kind of like embedded reporting.

### PAST

After many joyful suit-wearing years at IBM, I started at Digidesign in 1995. TDM was fairly new. Plug-ins were in modest supply. Analog angst was in full swing. The sound of any DAW was regarded as lifeless, without character, punch, or warmth.

Digital signal processing products of the day went for flexibility, but with the exactness only a computer could achieve. So while a user could now precisely carve out frequencies, or set up a compressor on every track, the end product was still fairly sterile.

I was tasked to improve the sound of the Digidesign EQ and Dynamics plug-ins, while making the algorithms as efficient as possible. The EQ II and Dynamics II plug-ins were done in 1996. During this time I also created a 4-band EQ config called the GQ (it was green, get it?). It used the same algorithm from the EQ II, just different filter shapes. Dave Lebolt, then the Director of Product Strategy, was (still is)

experienced ears giving a sonic nod to, holy crap, a software plug-in?

pretty anal when it comes to the sound of things, so I figured he'd give me some tips on how to make it better. We went to a local studio where he and Eric Valentine (Third Eye Blind, Smash Mouth) checked it out. After 20 minutes of tweaking, to which I assumed both would say "this sucks," it was instead received warmly (no pun intended).

OK is this part of the revolution? Industry pros with analog-experienced ears giving a sonic nod to, holy crap, a software plug-in? Never mind it was a single precision, extremely minimal algorithm. It had a sound that met some subjective criteria known only to folks who spend way too much time in dark rooms with mixing consoles and big speakers.

So was it right then, to design products in the spirit of "as many as possible on a single DSP chip," or would it have been better to put the sound quality above all other design criteria, and worry about how many channels of audio it could process later?

If one considers all the over-design that goes into analog gear, I think you come to the same conclusion.

And so lesson number one was learned. It's the sound, dummy!

## NAMM 2006

# 10 + 1 COOL THINGS YOU MIGHT HAVE MISSED

The powers on up said they were sending me to NAMM. The ubiquitous "they" always say that the first tour of duty is always the hardest, but still. . . . It didn't calm my nerves any when my pharmacist said there was no such thing as Agent Orange repellent. So I packed my bags, said goodbye to my loved ones, and checked the list.

Bowie knife: check. Digital audio recorder: check. Earplugs: check. Garotte: check. Pool ball in a sock: check. Digital camera: check.

Ready to roll.

It turns out that it wasn't really all that horrific. OK, shell shock can affect you to the extent that you'll find yourself saying "what?" a lot during

conversations at the end of each conference day (refer to item #3 on our checklist). That and your knees will never forgive you. But I came back in one piece, although I'll always hit the deck when I hear someone do a rapid roll on a snare.

And while you might not have been brave enough, bold enough, or even otherwise able to attend the 2006 NAMM convention in Anaheim, here's a helpful list of music software products that you might have missed.

**M-AUDIO PRO TOOLS M-POWERED 7**  
OK, so it's an update, but if you've already got version 6, you can get the newer version for free, and

perhaps enjoy features like how the software can combine audio and MIDI capabilities on one channel, and how it's now compatible with ACID and REX file formats. Newcomers still pay around \$250.

### SIBELIUS 4

Even though the software comes packaged in what appears to be a box of tampons, we were



pretty excited about this product. Sibelius 4 saves composers a ton of time and lessens human error by automatically revising all desired parts in a score at once, or changing all the parts in a score when altering one specific part (violins, for example). The 1,700+ ready-to-use worksheets are then ready to print. Expect to pay around \$435.

You can also get just the sample library in Sibelius 4, named the Garritan Personal Orchestra, for around \$210.





When a user finds something they can use, it will be their first call. It doesn't matter if it can do 128 audio channels on the head of a pin, or does a mere two channels once it completes its required 24-hour warm up cycle. Audio engineers need tools that sound good. All other matters are secondary. Just look at how many folks thought splicing tape was a good way to work!

As my tenure at Digidesign continued, I began to note how the Pro Tools application grew, and yet the signal processing aspects of it (the plug-ins) were largely unchanged, or at least very low on the engineering queue of work. The GQ never saw the light of day.

Well, I liked the signal processing part of it all, and later moved on to Dolby Laboratories. We did DSP all day long. Life was good. Dolby E was fun (I still say it should have been "Dolby G" and green).

I read all about how Dolby started, the first set of products, and so on. It looked like even more fun. I figured if the dot-com folks could do it, then so could I. My wife had a license to kill me in my sleep if all did not go well. McDSP was born.

## NEARLY PRESENT

McDSP's first product, FilterBank had (has!) the highest level of sound quality I could spec out — zero noise floor, no sample delay, flexibility beyond any competing products, and sounded amazing (IMHO).

It could adapt to a variety of user criteria for "good sounding EQ."

Our first trade show was AES in San Francisco in 1998. I had the entire company on a dolly — one CPU and monitor, a box of lit, free slinkies and product demos. I met our first customer, the very excitable Rob Barrett Jr. I crashed and burned demonstrating to Jerry Harrison. My wife asked Rhett Lawrence if he used Pro Tools. In short, it was awesome.

With each demo, I learned a little more. Every bit of potential customer feedback gave me more insight into what folks wanted sonically out of EQ (and later, compression), and every dang one of those passionate comments somehow made its way into the final version that shipped in early 1999. I have been asked many times how I came up with FilterBank's sound. The answer is simple — I didn't, our customers did.

Let's call that lesson number two. It's the customers, dummy! Folks in the pro audio space expect gear to sound amazing and work forever. Why does a Neve 1081, a Manley SLAM, an API 550 command such industry respect (and high retail price)? They are as reliable as they are sonically superb. And when something goes wrong, there's a human on the phone in about 30 seconds to explain how it can get fixed (or how to download the update). Minimizing periodic update charges isn't a bad idea either.

I expect many other "old" plug-in companies had the same kind of

BY ROBERTO MARTINELLI

## MOTU DIGITAL PERFORMER 4.5

Yeah, it's an update, but it's got new features like Beat Detection, automatic delay compensation, retooled EQ features, and Apple Loop support.

## ADOBE AUDITION 2.0

The new version of this program features a new, low-latency mixing engine, features 50 audio effects and DSP tools, 5.1 surround sound support, and new mixing and mastering tools, amongst others... a hot ticket item, fo' sho. Buy the full one for \$350, or upgrade for \$130.

## MOTU MACH 5

This plug-in sampler supports every major production platform on Mac or Windows, and allows you to load samples from every major sampler format. It also supports 24-bit, 192kHz audio. Mac users get screwed, though, and have to pay \$70 more than the \$300 Windows users will.

## MOTU SYMPHONIC INSTRUMENT

For \$280, you get MOTU's 8GB library of orchestra sounds that can be loaded into a maximum of 16 different instruments per instance.

## BIAS PEAK PRO XT 5

For about a cool grand, you can get this Mac-only audio editing software, whose new features include

BIAS Freq v. 2.0 4-band parametric EQ, a new compressor/limiter plug-in, and unlimited undo/redo.

## MOTU MX4

With all these MOTU items in the list, you might be raising an eyebrow. Well, it's partially because this is the most METAL (my specialty) company in this report. I mean, "MOTU" *does* stand for "Mark of the Unicorn." Wow! Makes you expect Dio and Kai Hansen to team up and bust through your door as soon as you install the Mac-only MX4 MultiSynth with unlimited voices, polyphony, and instantiations. Is \$280 a lot to pay for just another song about horned horses? Haha, no.

## SYNFLUL ORCHESTRA

According to Synful, the Orchestra plug-in is a revolutionary program that goes beyond acoustic instrument sampling or synthesis — the sounds in the program's library are all recorded phrases that can be manipulated to levels unheard of in the realm of simulated acoustic performance. Another purportedly unique aspect is how 10 virtual players will divide the notes played amongst themselves, rather than all playing the same notes, as other programs would have them do. Can we get a copy? Pleassssee?

## TASCAM GVI GIGASTUDIO PLUG-IN

According to TASCAM, this plug-in shares many of the same attributes as the GS3, like 96kHz/24-bit sample support, unlimited polyphony and embedded GigaPulse convolution, but in plug-in form, that should work with your Windows-based workstation software.

## TC-HELICON HARMONY4

This little plug-in allows you Pro Tools HD and TC Power Core users to add one- to four-part harmonies to vocals, even after the singer is long gone. MSRP for this item is \$745. We have a feeling you'll pay less in the real world.



experiences. Users wanted to integrate every aspect of their work into a DAW session file, and yet found the need for outboard gear continuing, if not increasing with the complexity of new sessions.

And so the plug-in industry grew. As more digital audio workstations found their way into every day use, digital signal processing (plug-ins) became a permanent part of the studio.

McDSP grew from the extra bedroom in the house, to the dining room, to real office with employees and cubicles. Heck, I think we're a real company now.

## PRESENT

Now the digital audio workstation market is huge (have you been to Hall A at Winter NAMM lately?). Many options exist, not just Pro Tools. Even some of the big analog hold-outs (Neve, SSL) have joined the ranks of plug-in developers.

There are tools both flexible and one-trick-pony-like. Emulations and innovations abound in EQ, compression, virtual instruments, reverb, and guitar amp simulations. It would be very hard to make a "bad recording" these days.

And yet is this a good place?

We are over-run with plug-ins of every conceivable format, type, make, and brand. Some are great. Some are not so great. How is the user supposed to parse through all the information? Let's go back to the days of a few manufacturers with good reputations and know the gear we're going to buy will be around at least as long as we are.

You could say the digital revolution has led us into digital anarchy. Few file standards, many competing platforms, computers, and software updated at such frequent intervals you wonder when you're going to get back to making, what'd they call it, music?

Fortunately, we all have the same facilities that allowed us to make choices in the "good old analog days" — our ears and the space between them. Does it sound good? Can you use this feature? Do you like the color green? It all comes right back to the customer and the customer's needs will continue to drive the industry forward.

## FUTURE

Like the giants that have come before us — Neve, SSL, API, and many others — innovation, dedication to customer base, and reliability will determine who among us will be around in the next 20 years. Oh yeah, and it's gotta sound "warm." Here's to hoping it's green too."

## STEVE BERKLEY, BIAS, INC.

The story of BIAS, Inc. begins with Peak 1.0. I originally wrote Peak in 1995 because I used the audio editing tools of the day and found them limiting. My perspective was, and still is, that of a composer, sound designer, and keyboardist. Digidesign's Sound Designer and Passport's Alchemy were great tools at the time, but I became frustrated with some of their limitations, and that was my muse.

Sound Designer was slow when working on large files. Alchemy was super fast but had to hold the entire sample in RAM (remember when RAM was expensive?). Sound Designer was destructive —

Fortunately, we all have the same facilities that allowed us to make choices in the "good old analog days" — our ears and the space between them. Does it sound good? Can you use this feature? Do you like the color green?

with only one level of undo, I always felt I was one edit away from messing up my source file. Another drawback: Sound Designer required hardware.

When Apple began to ship the first Power PC Macs in the early 1990s, I realized that there was an exciting future for native audio software. So I decided to write a dedicated sample-editing application that had the best of both worlds (fast and non-destructive) without requiring extra audio hardware (native).

So the result was Peak 1.0 — a fusion of an audio editor and a DAW. The editing engine under the hood in Peak is essentially a DAW-like EDL-based system but with a 2-track audio-editor-style view of the EDL. This makes editing fast and non-destructive, and gives you an unlimited undo/redo capability so you can always try something out and go back later. As a composer who likes to write my own sound design tools, I also got to add many interesting sound design tools into Peak, such as Convolution, ImpulseVerb, Harmonic Rotate, and

Rappify.

My wife Christine and I took Peak 1.0 to the NAMM show in 1996, hopeful that a few people might also

find Peak interesting enough to use. To our surprise, it was a huge hit. There was a void in the market for sample editing, so it was good timing. That's how BIAS got started, and for the first year we operated out of our rented condominium in Sausalito, California. Several other talented people joined our cause, each of us working as a "distributed company" out of our own homes in the San Francisco Bay Area. Soon BIAS outgrew the home-operated infrastructure and it came time for us to open our first office in 1998. We're still a very small company relative to others in the MI, just 20 people, mostly musicians like me who believe passionately in our products and end-users.

## ON NATIVE AUDIO SOFTWARE AND THE EVOLUTION OF SOFTWARE PLUG-INS

We've always placed a great deal of importance on supporting third-party plug-ins. Allowing other companies to extend your product via plug-ins is an extremely successful model I've observed other companies like Digidesign and Autodesk use to build a large third-party developer base, and keep their own products exciting by leveraging and co-marketing with one another.

When Peak 1.0 first came out, processors had only recently become fast enough to mix and apply gain to audio. As a result, plug-in formats were all offline, except for the ones that used a 56k chip on a dedicated hardware card. OSC was supporting Adobe Premiere's audio filter plug-ins in Deck, so I decided to add this to Peak 1.0.

This ended up being a great thing, especially for SFX Machine, a sound effects monster that was once published by BIAS. We really pushed the envelope with Premiere plug-ins, even allowing them to be used in real time at one point (commonplace for plug-ins now, but very innovative in its day).



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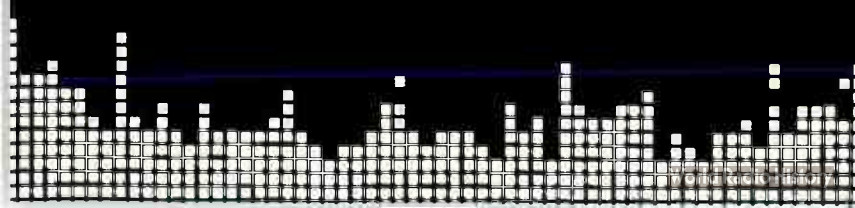
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Later, we added support for Digidesign DAE and TDM plug-ins in Peak 2.0. It was becoming clear that processors were headed toward exponential speed increases, and by the time Peak 2.5 shipped we had added support for what had quickly become the dominant native plug-in format, Steinberg's VST. Peak Pro 5 now also supports virtual instruments (VSTi), as well as Apple's AudioUnits plug-ins for real-time effects processing and instruments.

#### ON THE EVOLUTION OF THE MAC OS

OS transitions are hard, period. And nobody likes them. But we have to do them. After going through the months of work that was involved going from 68k to PowerPC, from Toolbox to Carbon, from CFM to Mach-O, and now working on IBM to Intel, I'd say I'm now ready for a little break from transitions. But I think Mac OS X is a great OS for audio and has a bright future.

#### ON AUDIO EDITING INNOVATION

Some features people may not realize were original Peak innovations: Blending, Unlimited Undo/Redo with audio, Threshold, the Recording Notepad, editing during playback, "Loop Surfing" to move loops points alone or together in realtime during playback, Dynamic Scrubbing, native third-party audio plug-ins running in real time. . . .

Dynamic Scrubbing is a feature that grew out of a sound effect I used while working on some compositions I was writing using an Ensoniq EPS-16+. Basically you could make a very small loop, and then assign the loop position to a controller like the mod wheel. The effect was very coarse, but it was exciting because you could "play" through a sound at any speed, forward or backward, without shifting the pitch. When I implemented this in Peak, I was able to refine it by applying an envelope to the sound snippet to eliminate any crackling.

The Playlist, which first appeared in Peak 2.0, was based on the old Sound Designer Playlist, but with some novel ideas. First, it didn't require all the regions to reside in one audio file — you could use regions from multiple files. Also, we put native realtime effects plug-ins on each individual plug-in event. The Playlist went basically unchanged for a while, until recently. The Playlist in Peak Pro 5 has a graphic view, unlimited undo/redo, and direct support for CD-burning with CD-TEXT, PQ-subcodes, ISRC, audio-in-pause, and so on.

#### ON THE FUTURE OF AUDIO SOFTWARE

As Peak was successful enough for us to grow the company with it, we've been able to add engineers that have been working on new products for us like SoundSoap & SoundSoap Pro (Noise Reduction) and the Master Perfection Suite (Sqweez, Reveal, Repli-Q, Gate-X, and PitchCraft). We've developed a nice collection of mastering plug-ins, with beautiful user interfaces that complement the editing and mastering tools available in Peak.

Peak has evolved into a robust product, an industry-standard for editing audio on the Mac, with a large and devoted user base. It's

Software samplers already existed (I remember the now defunct Bitheadz Unity), but there was no strong integration between software, sounds, and DSP.

not been easy, but we're doing great. Our SoundSoap noise reduction products have been very successful because we listened to users' requests for easy-to-use noise reduction. Peak's users and beta testers have been invaluable, providing lots of feedback over the years that has literally shaped the feature set of the product, yet we've managed to keep the product as simple to use as a text editor.

The music software industry was originally created and sustained by a group of innovative companies with visionary ideas. Into the future, the industry must continue to be seeded with more people who have interesting ideas. Great products are created by people who can think of unique approaches to solving problems, new ways of processing sound, and are willing to take bold risks to try new things.

There are a lot of exciting technologies I expect we'll start seeing more of in the next few years, and I would also expect to see native processing power continue to increase, with more distributed processing capabilities, and better audio quality as a result."

#### ENRICO IORI, IK MULTIMEDIA

I have an electronics educational background, but I started studying music when I was 10 years old and then began playing the guitar. Then I moved onto learning everything I could about traditional recording and production with my first experience in digital music in the late '80s and early '90s, first with NeXT (anybody remember this Steve Jobs adventure?) and then with the Macintosh, where I was able to work on digital audio, making musical productions in dance and other styles.

I had been always passionate for computer music, back to the early days of MIDI sequencing with a Yamaha MX computer, one of the first examples of a music-dedicated computer that was in retrospect perhaps ahead of its time.

My first true digital audio-MIDI system was a Macintosh Quadra 840 doing eight audio digital tracks on Deck II (when it was made by OSC) syncing MIDI with Metro. Then I moved to Pro Tools with Session 8 and the SampleCell card. There were no plug-ins back then, apart from the first suite from Waves (L1, C1, etc.) running on Pro Tools NuBus cards. Later I worked on Opcode Studio Vision that appeared as the first truly integrated audio-MIDI sequencer working fully natively on the CPU, and later Digital Performer with its off-line pitch- and time-stretching capabilities, and then Cubase.

In the beginning of the '90s the sample market was in its early stages, with very few titles on the market. I actually had the idea for our first software product from working with sample products such as those from companies like Spectrasonics. It was by the late '90s that I envisioned a huge potential in developing software instruments and effects for the newly forming computer music market.

My musical background has been a great help in designing software. IK was founded in '96 by myself and one of my main partners, Davide Barbi, an audio engineer with a strong background in electronics, who also happens to be a bass/guitar/keyboard player. Davide is our R&D director today and the "ear" behind many IK products. We started as



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World Radio History

## Usually there was so much room for improvements in the synthesis engines of the instruments, and I was always

a multimedia company with a focus on audio production, and by '97 we had designed our first software called AXE, a preliminary version of what became our first successfully sold product worldwide: GrooveMaker, a loop-remixing tool with included sample content.

Initially the goal was to develop instruments that didn't exist in the hardware domain, using the new possibilities offered by the computer. When I went to Winter NAMM in '97 with our first version of GrooveMaker, I was demonstrating it on a Pentium I laptop, 75MHz, and our remixing software was offered with sample content

in both 44kHz 16-bit but also 22kHz/8-bit in order to be able to run on a low-power CPU at that time. But hardware power has made tremendous steps, quickly passing through to Pentium II and III and the Macintosh Power PC, that was an opportunity for us to enter into the development of realtime effect processing and the realization of completely native software, which we did in '98 with T-RackS, developing an all-in-one mastering station for every user. This opened the possibility of having a high-end tool with a studio-quality sound for the masses, with a price that anyone could afford. T-RackS was then able to set a sort of standard in analog-modeled mastering using computer.

The T-RackS 24 pioneered analog modeling with the computer and was very well received by many musicians and engineers. For us T-RackS was developed as an initial step toward the development of a series of technologies that started with the analog modeling of hardware for emulating EQs, compressors, and limiters and modeling analog sound in general. Actually, there are some extremely rare circuits modeled in T-RackS, for example the EQ was modeled on an analog console at Abbey Road studios in the '70s.

SampleTank appeared in 2001 and it offered for the first time an integrated plug-in instrument with thousands of high-quality sounds with built-in effects. Software samplers already existed (I remember the now defunct Bitheadz Unity), but there was no strong integration between software, sounds, and DSP. But you'll hear SampleTank, Sonik Synth, and Miroslav Philharmonik being used all the time on records, such as Eminem's "Lose Yourself" from the *8-Mile* soundtrack.

In 2002 we also developed a completely integrated guitar amp and effects rig as a plug-in for all platforms. Here too there was already one example on the market, but with limited functionality and platform support. Our idea was to include everything the guitarist needed all in one plug-in, from stumps to amp, cabinet, microphone, and rack effects. We added AmpliTube for separate modeling of the various components of the amplifier, offering thousands of new amps from different combinations of the elements. It allowed the guitarist to use the software like a custom amp creation tool. In 2003 we released SampleTank 2, and in 2006 we are releasing AmpliTube 2, the sequels to our products in virtual instruments and guitar and effect modeling plug-ins.

With the launch of our first two hardware products at the 2006 Winter NAMM show, for us the future is leaning toward a stronger integration between hardware and software for the ultimate exploitation of the computer as a super-powerful musical instrument.

disappointed that this was not used by the manufacturers in the following product generations. The user interfaces of most digital instruments seemed also completely unacceptable to me.

### STEPHAN SCHMITT, NATIVE INSTRUMENTS

"I studied electrical engineering and worked as a developer of electronic equipment (e.g., communication systems), where I got my original theoretical background in analog and digital signal processing. As a musician I am mainly self-taught.

I started experimenting with electronic circuits in my youth, and the most fascinating aspect for me was to create and manipulate sounds with it. At the same time I had a big interest in music and got some education on flute and piano. So it was quite natural for me to become involved with the technical aspects of music. I was fascinated by being creative in both the technical and musical domain and it was sometimes hard to decide between both, even though today I would recommend musicians not to let the technology distract them from their music.

I was always looking for unusual sounds, and for new ways to express myself with an instrument. Sounds can be a source of inspiration, especially when you can improvise with them. I always saw it as an interesting challenge to explore the complex behavior of electronic sound sources like synthesizers. In my youth I read magazines on electronic engineering to study schematics of oscillators, filters, mixers, and so on. I then combined them in a small modular system. Guitars, distortion, amps, and speakers were another field where I began experimenting early on. The first keyboard instruments that I bought were the Rhodes and the Korg CX3, because I was playing in rock bands. When the Prophet 2000 came out, it became my first sampler and I experimented a lot with it while creating music for a theater project.

With all of those instruments I felt serious limitations after a certain time. I tried to modify them, which was hard due to the highly integrated digital devices. Usually there was so much room for improvement in the synthesis engines of the instruments, and I was always disappointed that this was not used by the manufacturers in the following product generations. The user interfaces of most digital instruments seemed also completely unacceptable to me. We had to learn to realize real-time audio processing in the environment of operating systems like Windows. Limited processor power made intensive code optimization necessary. The latencies of the available soundcards made it hard to make playable software instruments. Therefore Generator, our first modular synth, was bundled with a low-latency soundcard that we developed ourselves.

I was always fascinated by the expressive potential of acoustic instruments, when played by good musicians, and one of my goals is to make electronic instruments as playable and responsive as acoustic instruments. You can get a dramatic range of dynamics and expression from a synthesizer. Generator was my first software project. Before that,



# Then meets now.



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The only one endorsed by ARP founder Alan R. Perlman

"[The TimewARP 2600 is an] awe-inspiringly true emulation of the original... doesn't sound like a plug-in; sounds like an analog synth."

—Keyboard Magazine, March 2005

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Introduced in 1970, the ARP 2600 was one of the first commercially available synthesizers. Its fat analog sound was popularized by music pioneers such as The Who, Weather Report, Stevie Wonder and Herbie Hancock. Featuring three voltage-controlled oscillators, envelope follower, sample-and-hold, ring modulator, resonant filter and more, it was an extremely flexible modular synthesizer where musicians could use patch cords to override "normalled" connections defining the default signal path. While sounding killer, it pre-dated MIDI, lacked memory, was only monophonic and became difficult to maintain.



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## They had originally conceived it as a way to make better realistic sounds — what's funny now is that they don't sound realistic at all.

I developed circuits for mixing consoles and similar hardware.

In the '90s it became clear that the future of audio would be nearly completely digital, and when I saw the chance to implement one of the first software synthesizers, I teamed up with a programmer and transferred my experience with circuit design into the digital domain."

### ERIC PERSING, SPECTRASONICS

I've done many things, and being a musician is a very important part of it. I'm coming from a completely creative standpoint, very much the point of view of the user. But I've worked with engineers for many years to realize Sound Tools and these kinds of instruments. A lot of times when companies have been driven by technical people, those companies fail. I think you need to know who you're making the product for and why, and what is it you're trying to do musically. Those are the most important questions.

Since I was a kid, I was really enthusiastic about this concept of making synthesizers and things that make noise. I would draw diagrams

of synths that I would love to make someday. So it's amazing to me that now I actually have the ability to do that, and it was such a great experience for me being at work with Roland. They considered me kind of the voice of the American musician, and so I had this great gig where I would go to Japan and they would show me all the things they were working on, and I would give them my opinion of what musicians would think of it. I started with them right at the beginning of MIDI; I was one of the only people who knew how to use a MIDI sequencer, so I was really fortunate in the timing of my work with Roland.

That whole process of working with engineers and explaining my ideas and enjoying the process of seeing an instrument come to life — and getting to see my ideas show up in an instrument like the D-50 or the Jupiter series synthesizers — it was an exciting time to be doing all of that. But what was even more exciting was when software came along, and I realized that I could actually realize my dream instruments and some of the things that I wanted to do myself directly, and I could do that with my own company, without hundred-million-dollar factories and a thousand employees, and that kind of structure that was necessary in the hardware world. That's really the revolution, I think, being able to implement your ideas in a very direct way. So times have changed dramatically just because of that. We used to work a year to two years on a synthesizer at Roland, and there would be maybe one or two synthesizers introduced a year by a major manufacturer. And now literally there's at least one new synth introduced every day, so it's a completely different situation now.

I'd always been interested in sound recording, from when I got my first reel to reel, playing with my dad's tape deck and that sort of thing, and I got interested in feedback and when I'd patch things together and they would freak out everything, and just unique sounds you could make. And then when I played my first synth, a Minimoog, it was all over. I still enjoy that process of discovering the personality of a machine.

But the challenge now is that there's so much of it, so it's a little more difficult in a way, because there's so much to sift through. With Spectrasonics we put a lot of emphasis on trying to help show



people how the product can be used, like we've done with video tutorials. I think that part's just as important as the innovation, because if you only have innovation but you don't have the education behind it, the application of it, it's kinda pointless.

The first thing I wanted to do with the synth was to be able to turn it off [laughs]. The first synth I had didn't have presets, and it was very easy if you didn't know what you were doing to just end up with an infinite sustained sound, and it was very frustrating to me. I thought when I was using those machines, too, that there was so much there — of

course I had some ideas I'd always wanted to try; particularly in the early days, it was such a feeling of there being no end to all the things you could do with sound. I'm kind of always searching, trying to get myself back to that place, because it's so important that you push yourself to expand your creative thinking.

I went into a recording engineering program, to expand my knowledge, but at the time there wasn't the kind of education structure that there is now; I remember we had a recording engineering class and a production class, and a songwriting class, and there was a contest and the songwriting winner would get to be recorded by the recording winner and produced by the producing winner. And I ended up winning in those categories, and they couldn't accept

the idea that somebody would produce their own songs, and then they almost kicked me out of school because I wanted to do it with electronic instruments [laughs]. They said, "No one graduating here will ever record a drum machine." And for the last, what, 15 years no one has recorded anything *but* drum machines.

### ON THE DEVELOPMENT OF THE D-50

There was a large team of people involved, and I was fortunate to be in there right at the beginning of the creation of it. It was Roland's first all-digital synth, and they had been working quite a while to get that together because they were kind of running behind the DX7, and so they wanted to do something different. The first idea was to have the sample attacks, like the clarinet attacks or cello attacks, but when I and some of the other sound designers got ahold of it, what freaked us out was some of the quirkier things you could do with it. We ended up putting a lot of strange samples in it, and then that really became the personality of the D-50 — it was the unique sounds it could make, not trying to imitate clarinets. They had originally conceived it as a way to make better realistic sounds — what's funny now is that they don't sound realistic at all. But the Digital Native Dance patch that I did for it, and which became famous, was based on a joke that the engineer did, because we thought it was funny that we had a little sequencer that had a PCM attack and figured out a way to play around with the processor in the D-50. We said, "No, don't take it out, that's great!" Then of course that was the element of it that really made that synth unique.

### FLYING SOLO

I'd done a lot of work with re-creating real instruments, and that certainly has its place. But where the really interesting territory lies is in creating new sounds, and that's what software allows us to do. After developing sample banks for Roland and others, I decided to develop my own software, and the first thing we would do was create sample libraries for all the different hardware samplers that were out there. We



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## But for the big picture, not much has changed from the urge to replace the \$1,000,000 studio with something more affordable.

did that for quite a while, and that was frustrating because we were always limited by the technology of the hardware company or whoever was making the sampler.

That was very frustrating, because of what we wanted to do in the development of sounds and instruments. We made the shift in 2002 to doing software instruments exclusively, and then we were not only able to be involved with the development of the sounds but also development of the technology that played those sounds. And so we were one of the first companies that developed virtual instruments, large sample-based virtual instruments. It's now pretty commonplace, but at the time that was a novel idea. Then in 2004 we made the shift completely into our own technology, and we've got all of our software development in-house. So we've evolved from a sound company into a music software company.

### EARS AND EYES OPEN

I always have my finger on what we're doing in the industry, and I look at the shareware developers and freeware developers and find out who's doing what. We don't have a huge team, we have basically a small team, but that team is very powerful, and very experienced. And that lets us go with the direction that the industry is going, to respond to changes that are happening in the business, which is very important — you had companies like New England Digital or Fairlight that didn't survive because they weren't flexible enough to keep up with changes in the industry.

The big change was when we went to virtual instruments. I put together these virtual instrument platforms because we'd already designed the engine to work hand in hand with the sounds, so then the instruments would work on all the different platforms, like VST, etc., that way you can sell one product and everybody can use it, instead of what I was doing before, which was you'd have to make the same product over and over again for each of these samplers.

We've seen some of our ideas get incorporated into hardware instruments. It's been an interesting reversal, but it's all good, it's all part of the process of things moving forward. People get inspired by what other people are doing, and that's one thing I like about this business, it keeps you sharp. What you did a couple of years ago, it doesn't matter. It's what you have coming next. And it's not only what you're doing, it's what other people are doing, too.

So there is a progression to the whole thing — but a lot of times, the older ideas I've had as a studio musician and arranger and producer, I still use those techniques all the time. So I draw on that — it's just the habit of working on music, and that's a really important thing. This led indirectly, for example, to the development of a rhythm program called Chaos Designer, contained in the Groove Control software, where you can interface with your own playing in an improvisatory way. It's getting to the idea of people understanding that they need other musicians' input; it's great to be able to realize an idea, but when you're playing in a band or interacting with another musician, there's that spontaneity, there's surprise — something can go wrong, but it might be cool. Chaos Designer introduces an element of controllable instability, and the ability to capture it.

The initial idea with the Distorted Reality series was, I just wanted to make some weird sounds [laughs]. I just pushed myself to use anything and everything I could find to create new sounds, and taking a lot of those same techniques and ideas but bringing them into the

virtual instruments themselves so the end user could bring their own spin to it. It's no longer just about selling a library of sounds; those sounds are the basis of the core of what we're gonna do, and then we encourage the creativity of the end user to really take this and customize it and take it to where they want to go with it.

In coming up with new sounds, one of my secrets is that I'll just do a whole lot of crazy things, and I won't put many limitations on myself, I'll just try a bunch of stuff, and

I'm just *constantly* recording. In the process of doing these experimentation sessions, invariably I come up with something really excellent, and then I do as many variations of that as I can 'til I'm sick of that, then I'll try some other things. Then I put that away and I come back to it maybe a couple of months later, and then when I listen to it from that point of view, I'm being an editor, I'm really critical and listening purely from the point of view of "Let's find only the good nuggets here, get rid of everything else."

I've created so many sounds now, I'm pretty harsh on myself, and also there are people who I work with a lot, sound designers, and we inspire each other, we criticize each other, and that's a really important part of the process now. The coolest thing is that when we have an idea for something that doesn't work as an instrument, we actually implement that into the virtual instrument so that it's not only the sound itself, but it's the control of the sound, the generation of the sound. Instead of only capturing or sampling the sound, we can actually capture the process of making a sound.

For me, the key is that we're in the musical instrument business, we're not in the software business, even if software is the tool that we use to realize our ideas. I think that any company that really understands that is going to do well; companies that make technology for technology's sake or don't really understand how the process can actually be used, they're not going to do as well.

I'm constantly challenging myself to remember to make it musical, and the experience of the product and the experience of what we sell is in many ways an experience; it is virtual, you know, there's not a physical thing that you hold or strum, but the experience is very important, and we're doing all we can to enhance that experience in every respect. But what's exciting about this software evolution is being able to do that directly, and not having to ask a hardware company if they can produce a watered-down version of my idea; I can actually do the real thing now, and it's just a matter of time, and patience and resources. But it's a great time.

### CHARLIE STEINBERG, STEINBERG

#### Were you schooled in electronic music or audio engineering?

**Charlie Steinberg:** I had no schooling like that. I studied music at a conservatory in Münster, Germany, with the main instrument being guitar. I then worked several years in various studios in and around Hamburg as a freelance audio engineer prior to founding the company. But my motivations came from electronics in general. I used to develop and build electronic circuits like analog synthesizers and step-sequencers.

#### What was it about electronic music and/or audio software that initially intrigued you?



**CS:** When I discovered the potential of computers as “soldering without the soldering-iron,” I started to evaluate the possibilities of computers regarding music creation. But I was into analog synths and any available gear that would be able to control these devices. I remember a first, which was Davolusint ([synthmuseum.com/davoli/davolusint01.html](http://synthmuseum.com/davoli/davolusint01.html)). It had an interesting, huge lever for controlling pitch-bend. The first serious unit I owned was a Micromoog. Did I learn from it? Well, I spent countless hours finding possible modulation routing and parameters . . . but devices like the Moogs were very exciting. I just definitely felt that computers had much more potential than what was achievable initially.

#### What was the first step in your development of new software?

**CS:** Figuring out hardware issues. There were MIDI interfaces for the C-64, but there was no Internet or the like to easily find out how to control this hardware as a programmer. The next step was how to describe timing information. The first sequencer we did (Multitrack Recorder on the C-64) had a storage format that was almost identical to what ended up as the MIDI File Format. . . . But the very main problems were memory issues. We squeezed the sequencer, score editor, drum editor, and key editor into 64 kilobytes. We had much less because there had to be space for storing the recorded data and so on and it was just 64KB altogether. In order to even access some parts of that memory one would have to switch several memory layers. There were no comments in the code because that would have eaten way too much precious memory. . . .

My partner Manfred Ruerup, though, was into new gear, as he sold keyboards in a music store, so we learned a lot from using E-mu-2, Synergy, GS II, DX7, step-sequencers and the like, which we used in the studio. That was on the user-level; technically, I bought electronic magazines for information and eventually developed some synths on my own before computers appeared. Because of the modular nature of analog synths, there was never any lack of vision as to how to expand sound generation, modulation, or filtering.

But take Cubase, for example. Early in the company history, Werner Kracht, another very smart programmer, came in. He already had a program on the C-64: He introduced the “locators” (the left/right locators, found on the arrange page of Cubase) things like that. When the Atari came out (1040st), that was when he started to make a program that was much more elaborate and that became “pro24” and predated Cubase. The pro24, it had a panel, so it was kind of like a tape machine and one problem with it was that you couldn’t really see your musical structure. That’s why we sat down and tried to think of how to make it become visible. And that’s how Cubase was born. We really thought about it, because the Atari (like the Mac) let us use a graphical user interface to make the events visible and playable.

**When shopping for software, users commonly now see terms such as meta synthesis, physical modeling, transform multiplication, enharmonic and cellular morphing, sonic dispersion, convolution, transwave cycling, phase vocoding, harmonic stretching, virtual analog synthesis. Has the process been one of one idea leading to another? Is it somewhat like a detective story, where one development makes the big picture clearer, makes it possible to imagine further what might be accomplished?**

**CS:** It is somewhat like detective work. But for the big picture, not much has changed from the urge to replace the \$1,000,000 studio with something more affordable. If I look back that way, the evolution of DAWs was “foretold” 25 years ago: MIDI as a starting point, a realtime

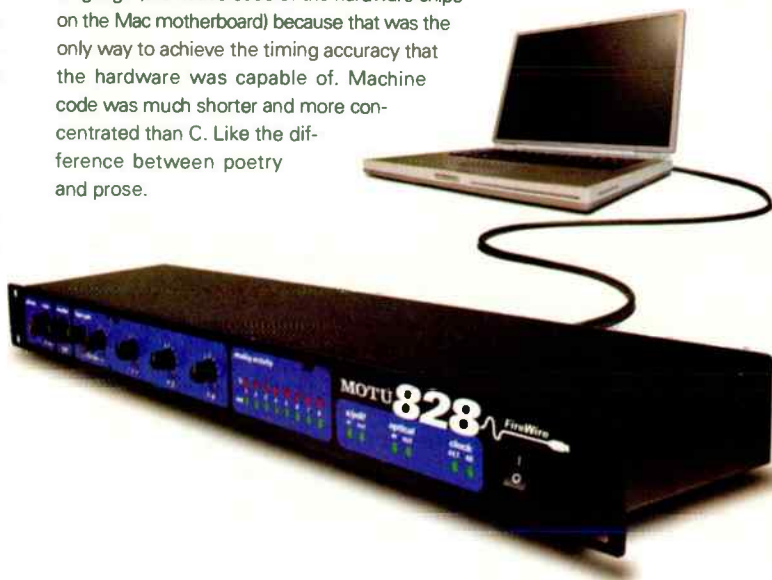
engine to cope with timing issues (the “deck”), hard disk recording (the “tape”), the virtual mixing desk, virtual effects, and virtual instruments, with more to come. Developing new synthesis/modeling techniques is still a process of putting things together in a unique way. This starts with looking from a user’s point and imagining what could be done, for instance by combining algorithms in a unique way. Implementation has become much easier today, but at the same time some areas have expanded to a remarkable complexity, like time stretch algorithms. But sound generation will certainly continue to be evolving as more innovative algorithms are being developed.

#### JIM COOPER, MOTU

In the early 1980s, when Apple Computer gave birth to the Lisa, the computer predecessor to the Mac, MOTU engineers took one look at it and said, “Now that’s a computer musicians could relate to.” More specifically, the Lisa’s graphical user interface allowed notes to be displayed on the screen in what-you-see-is-what-you-get fashion. This was incredibly exciting stuff. And work quickly began on a music software program called Professional Composer, one of the first commercially available music engraving programs. Programming was done in Pascal. Yes, the same programming language used by legions of Programming 101 students in the ‘80s.

As work on Professional Composer progressed, there was another technological development: Musical Instrument Digital Interface. Once the MIDI spec was ratified, right around the time that the Mac became commercially available (1984–1985), work quickly began on a MIDI sequencer software application for the Mac: Performer.

Performer was an entirely different ball game than Professional Composer from an engineering standpoint because of the realtime performance considerations. Programming was done largely in both C and native machine code, because of the importance of accurate realtime performance tolerances. Timing had to be tight because musicians would categorically reject computers in the studio if it wasn’t. As a result, most of the first 10 years of Performer and Digital Performer programming centered around ways of getting around all of the obstacles in the Mac hardware and software architecture that prevented accurate realtime performance. Performer Version 1, and many subsequent versions, went directly to the Mac motherboard’s timing crystal, completely bypassing the clock provided by the Mac system. Originally, much of Performer was written in machine language (the native code of the hardware chips on the Mac motherboard) because that was the only way to achieve the timing accuracy that the hardware was capable of. Machine code was much shorter and more concentrated than C. Like the difference between poetry and prose.





By June of 1987, we were already gearing up for Performer Version 2. This upgrade was going to have a mind-boggling array of new features including a Conductor track (what the heck is that?) and (gasp!) meter changes and tempo changes. For Performer users, who could barely figure out how to insert their Performer floppy disc into their \$5,000 512K "fat" Mac, Performer 2 represented a breakthrough in what could be done in a recording studio. I still remember talking to one hapless customer, new to computers, who dutifully reported, "I peeled the hard plastic cover off the floppy disc and inserted it into the computer, but nothing happens."

But we had enormous interface design challenges, as well. How could we possibly package all of this functionality in a comprehensible and intuitive design? We were breaking ground, and the early user interface conventions we designed in Performer, such as the transport controls and the event list, still reverberate today in just about every piece of music software you can find. Early on, we decided that the most probable road to success was to base the software design on

the standard, familiar recording hardware of the time: tape recorders and mixing consoles. Plus, we threw in an overall graphic design that built on the conventions being established by the Mac System software (scroll bars, etc.). We added artistic headers to dialog boxes that Performer users overwhelmingly appreciated. Here

was a computer not acting and looking like a computer, but instead acting more like a familiar — and cool-looking — recording device.

## FRÉDÉRIC BRUN, ARTURIA

**Paris, January 1998** It was a rainy day and I decided to take the Metro from the Saint-Paul station to the Bastille. The train was almost empty and I immediately found a seat. While opening my book, I noticed that two eyes were fixed upon me from the other side of the coach, and in some way his face looked familiar. After a moment of reflection, I said to myself "I've seen those side-burns before." But would I go and talk with him or would I stay seated, enjoying my book and pretending I had *not* seen him?

I didn't spend too much time mulling this over before my inner-interrogation was halted by a smiling face moving in my direction. So I stood up to shake hands with Mr. Gilles Pommereuil, a man I had met in Grenoble three years before. Gilles was the conductor for the University's orchestra where I had played the violin, but we had only rehearsed

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together a few times since I had left shortly after he had taken over. In 10 minutes, Gilles explained to me that he was currently doing a Master with Ircam, a French laboratory dedicated to the research of music. As a software engineer, he'd also recently started a personal project called Continuo, consisting of a software workshop that connected sound modules (very much in the Reaktor style). I was personally trying to get my own company off the ground (international trading) while finishing my law studies at the Pantheon-Sorbonne University. Gilles was thinking of creating a business around Continuo and was

looking for external advice. We decided to meet again a few days later, in a café called *Les Trois Maillets*: about 200 meters from Notre Dame and one of the few places where you can hear good music while drinking wine.

**January 2000** — Launched in France two months before, Storm Music Studio, Arturia's first product, was officially introduced to the international community at NAMM. In the basement of the Downtown L.A. Convention Center, our small stand displayed the very arrogant slogan:

"Time for a new paradigm." I remember that a lot of people came to the booth and asked "what do you mean exactly by 'paradigm'?"

It was the same year Reason was introduced, on the Steinberg booth, upper floor. We went to look at it and immediately saw that it would be a great piece of software. The approach we had taken for Storm had actually been quite influenced by another Propellerhead product: ReBirth. A year and half before this NAMM show, we had agreed on the fact that Continuo was far too complex. So, we had decided to use it as a development tool for a new software product that lets you make music in an easy and gratifying way.

By looking at ReBirth and Sonic Foundry Acid, we had come to the conclusion that a pattern-oriented virtual music studio, offering a way to time-stretch samples while using sound synthesis, could be a very good entry in the music production world. I remember we were very much concerned by the complexity of music software, ranging from Cubase to Kobo instruments. We had in mind to do things differently; Gilles was particularly keen on creating some sort of new user experience. Storm 1.0 did not come with menus and offered, for example, a nice trash-bin to get rid of useless samples. No need to say, Storm 1.5 was a victory of realism over idealism.

**January 2002** — At NAMM yet again, we had our first meeting with Dr. Robert Moog. Nearly a year before, one of us had started working on an advanced algorithm for the digital emulation of analog circuits audio characteristics. Since results were very encouraging, we had decided to make a dedicated virtual instrument and our choice was to recreate the Moog Modular.

Bob Moog was not so enthusiastic about software synthesizers at first, but he was open-minded and came by our booth at NAMM to see a very early prototype of what would become the Moog Modular V. We met him again at Musikmesse a couple of months later, and he expressed more interest in the project. For a long time, a drawing Bob had made at our Musikmesse meeting, hung in our office. It shows the importance of soft-clipping, something he was very keen on finding in our re-creation.



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In October the same year, I went to Asheville where I introduced the beta version of the Moog Modular V. Bob asked for other evolutions and we finally secured his endorsement at NAMM 2003 after he really was finally satisfied with what he heard. This was a strong push for us and, along with the quality of the audio algorithms (that we ended up marketing as TAE), it helped the Moog Modular V stand out in the crowd of software synths.

## ERNST NATHORST-BÖÖS, PROPELLERHEAD

So, you wanted to hear how Reason was conceived? Sure, but I'm not entirely convinced it's such an exciting story. As often with these things it was 1% inspiration and 99% transpiration.

Reason was Propellerhead Software's third product. After two pretty successful attempts with the smaller scale programs ReCycle and ReBirth, we felt that in 1998 it was time for us to take a stab at a major application.

We're in this business because we love music, computers, synths, and studio equipment, so there was never any question of which direction to take. We already had ReBirth and that simplified the process decision-making further. In a way you could say that Reason is the program we actually wanted to create when we designed ReBirth. We made some prototypes in 1998 that are evidence of that.

In 1996, when we did ReBirth, computers weren't fast enough for an application like Reason, and we were too small a team to pull off a hubris project. This led to ReBirth being limited to two monophonic synths with pattern programming, but when the Reason project started in 1998, we felt that both the world, and us, were ready for polyphony, realtime playing, and more advanced instruments and effects.

We — in this context — are the three founders of Propellerhead Software, Marcus Zetterquist, Peter Jubel, and myself, Ernst Nathorst-Böös. We are all still active in the company, in the roles of development manager, DSP specialist, and CEO, respectively. As you might understand there were a lot of other people involved even in the Reason 1.0 project, people working on coding, designing graphics, creating sounds, etc., but the core design was made by the three of us. To this day that is how we work, we basically lock ourselves into a room and battle it out. It can be pretty fierce at times. . . .

The two things in the design that people usually ask about are the rack and devices and the cables. The idea of creating devices that resembled physical counterparts came fairly easily, since we had already that type of design in ReBirth. What took more time to settle upon was the metaphor of the 19" rack, but being gearheads ourselves, the idea of a never-ending studio rack seemed appealing. The idea to use 'real' cables for patching audio and control signals between the instruments came from Marcus. It took him a while to convince Peter and me about it. It was quite a bit of work to get them to work as naturally as they do, but it paid off both in usability and in carrying the metaphor all the way.



Another major design decision we had to make was regarding the sequencer; surprisingly not how it should work, but whether to include it at all. At the time, Steinberg distributed our products and the worries were that the sequencer would make Reason too much of a competitor to Cubase. What tipped the scale was — again — the experiences from ReBirth; we really wanted to create a self-contained environment where people could create complete pieces of music, without using any other software.

The same thinking goes behind our decision not to include plug-in support. We feel that one aspect of what makes the program so appealing is that everyone has exactly the same setup, that all settings are stored with your song, and that you can easily share songs with others, without the risk of incompatibility problems. There's no audio in the program simply since we think it would kill the focus and appeal of the application, besides there are so many great audio recording apps out there and it's super-simple to integrate them with Reason via ReWire. Every now and then a rumor appears that we don't do audio recording because of some deal with Steinberg, but there's absolutely no truth in that.

Reason 1.0 saw the day of light in December 1999. Development time was actually surprisingly short, eight months once all the design was done and development started full throttle. Since then, we have updated it three times to address various needs and shortcomings: to make the instrument selection complete, to make sure all devices are up to the standards of the most professional applications, and to make sure Reason delivers regardless of what musical style you're in, dance, techno, hip-hop, R'n'B, whatever. Last, with 3.0, we tore down the last barrier between our hardware counterparts and us. There is now absolutely no rational reason to choose a hardware piece over Reason."

## JIM HEINTZ: HOW THE ARP 2600 CHANGED MY LIFE

What makes a person drop everything in their life and decide to create a software ARP 2600 in an already crowded soft-synth market? A



From left to right: Alan R. Pearlman, (author Heintz), and David Friend had not seen each other since the fall of ARP instruments, until Berklee College's David Mash, and I got them together over lunch. It was great to hear the stories of the old days, and to hear these old friends reminisce without fighting, even.

combination of two things: a long time desire to own a hard-to-find perfect working condition ARP 2600, and the belief that current software synths could be improved upon greatly with a bit of hard work. Turns out it was a lot of hard work, but we're getting ahead of ourselves.

It was 1983 when I fell in love with the original ARP 2600 synthesizer while taking an Electronic Music class at Santa Barbara City College. Even then I was frustrated by the small amount of time I got to spend with this amazing machine during the class labs. I wanted one of my own, but the price tag of about \$2,600 was daunting to a starving student.

At the same time, while studying



# HSI was ahead of their time, which combined with their poor hardware platform choice, caused the company to promptly fail. However, the seed was set in my 18-year old mind for what I wanted to do in the future.

Computer programming, I worked for a start up company in Studio City called Home Studio Inc. (HSI) with the lofty goal of allowing average people to have a studio in their own home (go figure . . . who'd ever want one of those?). We worked on an early MIDI sequencing and patch librarian system based on the Apple II computer. In order to keep development funded, we repaired synthesizers and amplifiers on the side. This experience was the perfect chance for me to get my hands on some great gear, and also the schematics and repair manuals (including

those for the ARP 2600) that allowed me to understand how the hardware worked.

HSI was ahead of their time, which combined with their poor hardware platform choice, caused the company to promptly fail. However, the seed was set in my 18-year old mind for what I wanted to do in the future.

By October 2003, all those memories had enough time to completely stew in my brain, and the project was completely obvious: an ARP 2600 emulation so precise that even side-by-side comparison could not tell

## HISTORY 101

# OPCODE: LEST WE FORGET

BY PAUL DE BENEDICTIS

Back in 1984 I happened to meet a fellow named Ray Spears who had just written the manual for the yet to be released Opcode MIDIMAC Sequencer for the Macintosh that his partner Dave Oppenheim had written. It turned out to be the first commercially available music sequencer for the Macintosh (although Southworth Music Systems' Total Music was very close to shipping too). The "MIDIMAC Interface" was also the first widely commercial MIDI interface available too. We used to sit around Dave Oppenheim's kitchen table and put the MIDI interfaces together by hand, one by one, and try to avoid getting peanut butter on them. Throughout the rest of the 1980s and 1990s Opcode continued to make a number of major innovations.

One afternoon Dave Oppenheim suggested that the industry needed a standard format to pass sequencer files between programs, he ended up creating the MIDI File — today an industry standard format. When MIDI became more complex (with sometimes hundreds of channels needing instant access), Doug Wyatt, with help from Dave Oppenheim, invented the Open Music System (OMS) also widely adopted by the music industry on the Macintosh as the standard for MIDI setup until Apple's OS X came along.

One of Opcode's many artist connections was Bryan Bell of SynthBank, an engineer, producer and computer savvy technician whose clients always needed the most complete setups possible. Bryan suggested that we combine all of our MIDIMAC Patch Librarians together in one bundle, even if it cost him \$1,000 it was worth it. After selling several copies, then getting requests for the product, it formally became

Galaxy The Universal Librarian, and soon after, "Galaxy Plus Editors" the first universal (or close to it!) editor/librarian for the Macintosh.

In 1990 Opcode came up with the idea to add digital audio into its "Vision" sequencer for the Macintosh. First introduced as "Audio Vision," the concept of the MIDI and Audio sequencer is



now taken for granted, thanks to Opcode's wildly popular Studio Vision; another Opcode first in music software.

Remember when everyone had two (or more!) huge racks of synths and multiple keyboards as well? These were Opcode customers and they needed a MIDI connectivity and routing solution: enter the Studio 5 MIDI Interface with 30 MIDI ports each and a network-system of 6 per Macintosh for control of 90 separate instruments. And the accompanying OMS+Patches software is still unrivaled today; technician Bob Rice set up Lyle Mays with an "old" Macintosh and Studio 5 system so he could play The Pat Metheny Group's latest 68-minute non-stop opus "The Way Up."

Today Opcode's innovators are scattered across the MI field from Digidesign to Apple.

## DAVE OPPENHEIM ON OPCODE AND BEFORE...

"I've always been building little things to make music with and I never really spent enough on getting quality parts. I was always debugging my projects. When I saw the Apple Macintosh computer, I realized: why not let them spend all the money on parts and I'll do the rest in software. Turning 30 years old was one of the reasons I stopped working for other people and started my own company too."

"When I looked at the Macintosh I liked it because it had fewer chips in it, so I thought it would be simpler to work with compared to a PC at the time in 1984. It turned out that the Mac was easier for musicians to learn and use too, since most musicians at the time were not computer oriented."

"Before there was MIDI, I had built a custom board with a processor on it and connected it to the inside of my Oberheim OB XA. My processor board intercepted the information of what key was played and what program was selected. It basically was a sequencer in a hardware box. It worked, but I had to constantly debug it."

"I thought it would be interesting to write a software-based sequencer. When MIDI was introduced and then the Mac was released, I called Apple and asked if it was feasible that the serial port could support MIDI, which has a weird baud rate. When Apple said 'yes the serial port would support MIDI,' I started working on a MIDI Interface and writing a software sequencer that later became Opcode's MIDIMAC Sequencer."

## I started out working on the core design of the Way Out Ware TimewARP 2600 on the side, and after about three months,

them apart (something not achieved by any other emulations that I had heard), with an interface that brings the user as close to the original product as can be done in software while still offering the best features of today's digital synth environments.

I started out working on the core design of the Way Out Ware TimewARP 2600 on the side, and after about three months, there was a glimmer of hope. Finally after all those years away from the ARP 2600, I was able to begin sensing and feeling it again, although in a completely new and different way. I decided it was time to jump in head first, and make this project my full-time obsession rather than just a part-time hobby. Now came the hard part . . . convincing my wife that I was not about to dump our future down the drain on a pipe dream. Happily, she understood and supported this new endeavor.

Having developed many different products for many different people over the prior 20 years, I knew what I needed to do in order to get a high quality product to market in a timely fashion. I also know what it takes to fail, and I would not let that happen to my own dream.

Locating a working ARP 2600 was essential, but this proved difficult and expensive in today's used market and on eBay. I contacted Santa Barbara City College and as luck would have it, they still had the ARP

there was a glimmer of hope. Finally after all those years away from the ARP 2600, I was able to begin sensing and feeling it again, although in a completely new and different way.

2600 I used as a student buried in the back corner of their class/studio. They were kind enough to let me visit it and take as many measurements and photos as I needed. After a couple of visits, they decided that I was serious, and lent me the ARP 2600 long enough to complete the project. This was a middle-era grey-faced ARP 2600 with several broken sliders, a keyboard that barely worked and, in general, it needed a lot of help. I decided to bring this machine to my friend from the HSI days, Rich Diemer of Diemer Keyboards and Amps in Studio City, California, to see if we could restore it to its past glory. Thanks to his great talents, Rich was able to make this ARP 2600 sing like it was new, and now Way Out Ware had access to a great ARP 2600 to make our emulation as accurate as possible.

Being a musician myself, and also a perfectionist, I wasn't content with producing a so-so emulation of the venerable ARP 2600. In order to have my name in the credits, it had to be both a perfect emulation, and

also as controllable as possible so musicians could truly express themselves with it.

To achieve the sound quality goal required re-inventing the state of the art for software oscillators and filters, and also digital signal routing. To model the oscillators and filter, we enlisted the help of a Stanford University CCRMA grad named David Lowenfels who is a genius with DSP. I had already produced oscillators and filters that

### GETTING THE BUSINESS

## JOEL STONER, STUDIO SUITE

Studio Suite got its start innocently enough. I purchased my first computer in '89, along with an application called FileMaker Pro. I had no idea what FileMaker was, but I started playing with it. Soon I discovered I could make a database of all of my contacts. I got immersed, and realized that I could also use it to create invoices for my engineering work. I thought it was so cool that from my newly created Invoicing module, I could just select the client's name from a popup menu, and their address and phone number would auto-fill into the invoice — I didn't have to type it twice. We take that stuff for granted now, but it seemed remarkable back then.

Being a recording engineer, my first thoughts were how could I use this in the studio. That spawned a Tape Library module, which would keep track of not only all of the tapes I was working on, but print labels for different tape formats too. The Tape Library linked to a



separate Songs module, which kept track of each song on each tape, and included a track sheet. I added bells and whistles, like delay and time code calculators, lyric comp sheets, production status, etc.

It grew from there. Studios have tons of equipment. Each piece has a bunch of details — brand, model, price, date of purchase, serial numbers, etc. The Equipment module was linked to the Rooms module, so each room knew what equipment was inside it. Equipment

needed maintenance, so the Maintenance module was born. The spiral had started: I was addicted to creating slots for every little detail in the studio ecosystem, and finding ways to link those slots to other slots. This allowed you to look up a client in the Contacts module, and have all of their related Projects, Invoices, and Tapes at your fingertips. The modules multiplied. I was staying up all night programming, and when I finally went to sleep, I'd have detailed dreams of what came next.

Parallel to that time, there was no standard "studio management" software for the industry, so when employees moved to a new studio, they had to learn a whole new system — at best a mish-mash of separate applications that didn't talk to each other, and at worst, a dog-eared, smudged-up, calendar book with an explosion of post-it notes. I didn't fully realize at the time, but I was building the future of studio management software (and a whole new career) in my spare bedroom.





# The John Lennon

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sounded really good, but really good was not good enough for my desires. They had to be exactly perfect. With David's help, we achieved our goal on the sound quality from the filter and oscillators. One of the extreme goals for it was to accurately model the use of an audio signal as a modulator, which is the Achilles' heel of the other software emulations on the market, and also the source of many of the most interesting and useful sounds created by modular synths. I created the signal routing algorithms that could accomplish this along with everything else in the TimewARP 2600 using extreme care, spectrum analyzers, scopes, and a very sensitive set of ears. Don't take my word. Try it for yourself.

To achieve the controllability goal required taking MIDI controller mapping to a new level as well. Being a violinist, I understand what a musician wants in terms of expressive control, so we provide the ability to set individual ranges and sensitivity curves on each of the 72 sliders, knobs, and switches. Also, a single MIDI controller or velocity, aftertouch, or modulation wheel can be assigned to control groups of sliders, knobs, and switches, each with its own range and sensitivity to provide an un-paralleled level of expressive control. Way Out Ware's TimewARP 2600 also supports micro-tunings for composers that require other than the standard equi-tempered 12-note scale.

To make the TimewARP even more accurate, we needed access to information regarding the design and creation of the original instrument. I began researching the original team that built the ARP 2600, and, of course, wanted to contact Alan R. Pearlman (ARP), Philip Dodds, David Friend, and anyone else involved with its creation to better answer questions about the ARP 2600's behavior that were not easily measured, or in the schematics. We were also interested in supplying the best possible users' manual with the TimewARP 2600.

The original manual is a classic, which worked as a tutorial about synthesis in general, as well as guide to the ARP 2600.

My break came when I found Jim Michmerhuizen on the Internet and approached him regarding re-doing the original ARP 2600 manual for the TimewARP 2600. He was very skeptical at first since he was aware of the flaws in other software modular synthesizers, and was less than enthusiastic about the idea. Basically, we had to prove to him that the TimewARP 2600 was different. Way Out Ware had already overcome many of the flaws present in other software synths, and were up to Jim's challenge. I flew back to Boston and met with Jim, and also, as chance would have it, he was still in touch with Alan R. Pearlman. After he got to hear my emulation, he arranged a lunch with Alan, and I got to meet my idol and demonstrate TimewARP 2600 to him.

I asked Alan everything unknown about the original ARP 2600. I also got to see the very lab that Alan developed the first circuits for the ARP 2500 and ARP 2600 in. Alan, being quite computer literate has been using the TimewARP 2600 since shortly after that visit. Since that visit, Alan has become quite a supporter of Way Out Ware and continues to offer insight and encouragement on our product development plans.

Needless to say, Jim Michmerhuizen signed on to produce the manual, and also got me in touch with Philip Dodds, who provided answers to some of the toughest questions about the emulatioin. Between these fantastic resources (especially Jim), Way Out Ware was able to get the first version of the TimewARP 2600 to market, and achieved the quality (sound and otherwise) and controllability goals we had set out for ourselves.

Since then, some pretty interesting things have been happening. Mostly people realizing that a software emulation of a classic analog synthesizer can in fact sound very, very good.

## THE RECORDING REVOLUTION RETROSPECTIVE

**You can get here from there, because we did . . .  
but wait'll you see where we're going.**

by Craig Anderton

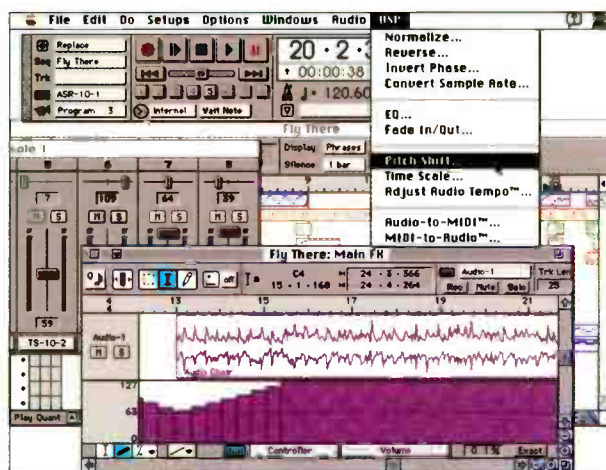
Winter NAMM, Anaheim, California, 1990. I was in a darkened hotel room with a few other people where Opcode's StudioVision, the artist formerly known as a MIDI sequencer, was running on the Mac *du jour*.

It was all as expected, except for one thing: Next to it was a hard drive, its little LED winking knowingly, as it played back two tracks of digital audio. But the audio wasn't only in sync with the MIDI data; *it was living in the same environment*. Snuggled in with the MIDI tracks were two more tracks, with waveforms instead of piano roll data.

At that moment, the MIDI+digital audio revolution fired the first shot — and I guess one of the first casualties was my head exploding.

Of course, digital audio wasn't new. It had insinuated its way into our musical lives in many ways. But StudioVision was profoundly different: Two formerly isolated worlds had collided. Instead of destroying each other, though, they morphed into a much, much bigger world.

But what kind of a world has been created? We know about the technology, the innovations . . . when Steinberg introduced their world-changing Virtual Studio Technology, when hard drives became cheaper per Gigabyte than ADAT tape, when DAT breathed its last as CD- and DVD-ROMs put a few more nails in tape's coffin. Yet . . . are we better off?



Opcode's StudioVision integrated MIDI and digital audio for the first time, and the world of recording was never the same.



## Sure, a high-end, superbly maintained analog system

Is the new boss the same as the old boss? What price have we paid for the revolution, and what has it paid us in return for our loyalty to — and fascination with — zeroes and ones?

### THE DEMOCRATIZATION OF RECORDING

Some would say this happened when TEAC introduced the 3340 4-track tape recorder in the early '70s. And they'd be right, because recording became accessible to many more people. But it was only a piece of the puzzle. Mastering was still totally out of reach, signal processors were expensive pieces of hardware, "cloning" a tape to back it up was impossible, and cheap mixers sounded, well, cheap. Besides, hitchhiking along with every recording was hiss, modulation noise, distortion, ever-diminishing high frequency response, head wear, and stretching tape.

Even those who romanticize the era of analog recording probably wouldn't want to live there full-time. Sure, a high-end, superbly maintained analog system has a certain sound quality that digital can't touch. But we're talking about the highest of the high end. For anything less, digital knocks analog to the floor. And for those to whom money is no object,

has a certain sound quality that digital can't touch. But we're talking about the highest of the high end. For anything less, digital knocks analog to the floor.

and can indeed afford to own and maintain the finest analog systems on the planet, "analog" recording often means capturing to tape in order to use it as a signal processor — then immediately bouncing it to digital to preserve the "analog" quality.

So more people than ever can record. But is this necessarily a good thing? Yes, but . . .

### THE "LOOK AND FEEL" OF MUSIC

Perhaps the most dangerous digital dilemma is the ability to create music that sounds flawless, but has none of the magic we want from music. What is it about digital that sucks the life out of music?

The answer is simple: *There's nothing about digital that sucks the life out of music.* Digital doesn't kill music, people do. It's the people who quantize notes to 100% strength, and use pitch correction not as a creative tool, but as a quick fix that substitutes for getting a good vocal in the first place. It's those who record one take and figure they'll edit it into shape, rather than say to the artist "I think you can do better." It's the people who create "Frankenparts"

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— *Rolling Stone Magazine*

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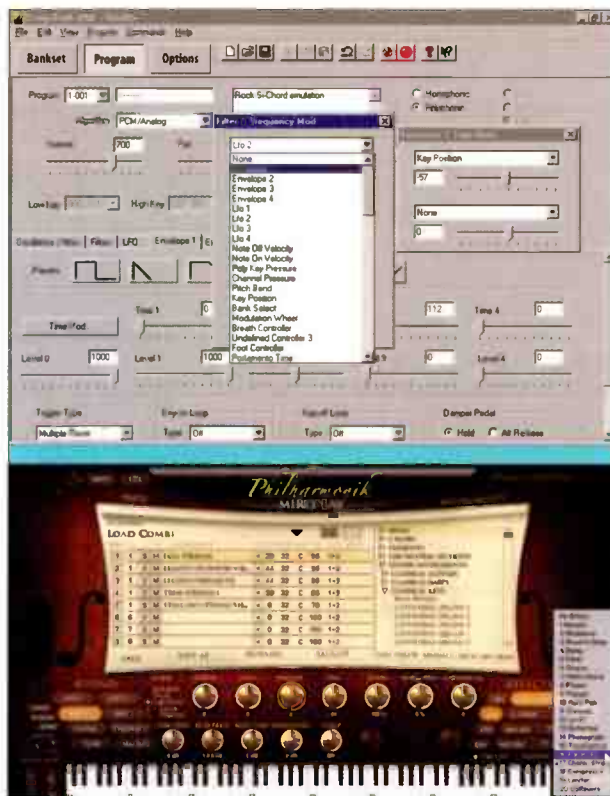
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by cutting and pasting elements that never existed as sequential events in order to create a "perfect" take — which seems about as "real" as a high-priced call girl who spends half her income going to Mexico for plastic surgery.

A scarier consequence is the image of "recording," meaning one person, sitting in a room, staring at a computer monitor and spending more time editing than creating. Until the digital age, with very few exceptions, music was a social event — with all the interpersonal messiness, arguments, support, controversy, love, compromise, and resolution that entailed. Sometimes, great albums resulted from great conflicts. For the solo recordist, the only conflicts are system conflicts from drivers that haven't been updated. Yes, we've even outsourced our conflicts to technology.

Friction creates heat, and because many of today's recordings lack friction, they lack heat. It's not a generational thing, because the under-30 generation is what keeps the Led Zepplin and Pink Floyd back catalogs humming along. Prince is the exception who proves the rule: He records entire CDs by himself, and they kick butt. But he spends huge amounts of time playing with others, testing out ideas, and interacting. When he goes into the studio, it's informed with the live experience.

And as mentioned in the December 2004 issue, this trend goes against genetic hard-wiring that makes our brain work the way it does. For details check out the article, but suffice it to say that the "right-brain" creative thinking you'd use in songwriting, and the "left-brain" linear thinking that you'd use in engineering, are two different activities that use different parts of your brain. Trying to do the linear thinking will



Compare the "left-brain" graphics of Seer Systems' Reality, one of the very earliest soft synths, with the more flowing and creative interface of the recently-released Miroslav Philharmonik from IK Multimedia. We've come a long way, baby.

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The Peavey PC-1600 was a pioneer controller, but today we have a ton of choices, including modular, expandable systems (e.g., Mackie Control)

tend to shut down the creative part of your brain, and vice-versa.

Of course, plenty of people still record as groups, whether to analog or digital. But those who don't could learn something by getting social, or at least, playing out in front of an audience. One of the missed opportunities of digital is the ability to facilitate the recording of groups. Portable recording rigs with great fidelity can be set up just about anywhere; computer-based hosts can load templates designed to let a group start recording with a couple mouse clicks. (Try that with an analog recorder, unless the assistant engineer did all the alignment work and rewound the tape the night before.)

On the plus side, the composer now has more power than ever in realizing ideas; Bach would likely have written even more material had sequencing been available. Overall, though, digital has changed the dynamic of recording irreversibly — sometimes for better, sometimes for worse. It's our responsibility not to be so seduced by the power of digital editing that we forget it's the *take* that matters, not how thoroughly you can edit it.

with moving faders and LCDs that spell out the parameters you're controlling. And Reason 3.0 introduced a protocol called Remote, that allows control surfaces to support Reason with pinpoint precision.

GOING "NATIVE"

When Steinberg introduced Virtual Studio Technology in 1995 (now up to version 2.4, with provisions for Mac/Intel machines and native 64-bit processing), it was ahead of its time. Computers of that era had typical processor speeds in the sub-100MHz range, memory was expensive, and hard drive costs — while diving downward — had a long way to go before they reached bottom. Still, the ability to say "goodbye" to external hardware meant the handwriting was on the wall: Software, not hardware, was the future.

Shortly thereafter Propellerhead Software shifted the virtual instrument movement into high gear by introducing ReBirth, a stunningly realistic re-creation of the long-defunct Roland TB-303 Bassline and TR-808 drum machine. This is also where the trend of virtualizing vintage gear in software began, and to Roland's eternal credit, they had no problem with what was clearly a tribute from a bunch of very clever

synth fanatics. It wasn't long before the flood of virtual Minimoogs and other classic synths began.

Putting everything inside the computer brought new opportunities and also, new limitations. Gone was a musician-friendly control



It wasn't just another piece of software; ReBirth kicked off the "vintage virtualization" trend that continues unabated.



surface, replaced by a single mouse and some QWERTY keyboard equivalents. To be fair, this was a trend that had been going on for quite some time; digital synthesizers had previously shrunk the usual forest of knobs and switches to a few buttons, a data wheel, and a cryptic LCD. Paradoxically, the only relief from this was a computer-based editor/librarian.

In response, we got control surfaces. The Peavey PC-1600 was a pioneer controller, but today we have a ton of choices, including modular, expandable systems (e.g., Mackie Control) with moving faders and LCDs that spell out the parameters you're controlling. And Reason 3.0 introduced a protocol called Remote, that allows control surfaces to support Reason with pinpoint precision.

At the Winter 2006 NAMM, Native Instruments announced Kore, their "unified field theory" of how to deal with software synths. Kore is a hardware/software system with a controller that's optimized for use with software synthesizers. Rather than have to deal with different interfaces, you can use a single controller as an entry point to all your soft synths. Furthermore, a database tagging system allows finding patches in a far more convenient way.

So score a major plus for digital: We've gone from having to write down knob settings on patch sheets, to balky cassette interfaces that saved and played back patches, to editor/librarians that finally put things on a computer, to a system designed to streamline the process of patch selection, make it easier to play soft synths, and provide a common interface so gestures learned on it can be applied to any synth.



Reason 1.0 packaged the new world of the virtual studio into a familiar context, with synths, mixers, processors, sequencers — and even virtual patch cords.



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## Anything that seems out of reach now to the average musician — ultra-high sample rates, video recording your band

### STUDIO TOTAL

Reason wasn't the first "virtual studio" piece of software — Arturia's Storm preceded it. But Reason was the virtual studio that captured the imagination of the musical world. With its whimsical graphics, built-in sequencer (which almost didn't make it into the product, but that's another story for another time), ease of use, and great sounds, Reason hit a home run the millisecond it was introduced.

And why not? It was truly a complete soft studio, a self-contained world with the brilliant addition of ReWire, a protocol that allowed coupling Reason with other digital recording software. In a sense, Reason used digital technology to resurrect the modular synthesizer

concept, where you weren't locked into a technological straightjacket. But it also was a "best of both worlds" situation: Although you could do your own patching, and get pretty eccentric if that was your thing, Reason's little digital brain could also "auto-patch" modules with reasonable intelligence.

On the hardware front, though, the "virtualizing a studio" award would have to go to Creamware. Their SCOPE system (introduced in 1998) put enough DSP power on a card to virtualize serious mixers, processors, and instruments — then included both software I/O to hook into your host sequencer, and hardware I/O for connecting with the real world.

With both these systems, digital went from replacing your multitrack to replacing your *studio*. It shrunk hardware into ones and zeroes, decimating the cost of entry and forever changing the definition of "recording studio."



**Creamware's Scope system took the concept of hardware assistance to a new level: The hardware didn't just speed up operation, but allowed integrating almost all the traditional elements of a hardware studio with software hosts.**

### WHERE DO WE GO FROM HERE?

Changes in technology are no longer smooth crossfades, as the ADAT multitrack tape recorder proved. It sold for longer than anyone expected, then crashed to nothing. DAT? Same thing: a good run in pro studios, then it caved. MIDI sequencers? When the MIDI + digital audio

in high-def, terabytes  
of RAM, hard disk arrays  
that make data loss just  
about impossible, the end  
of moving parts — they're  
all part of the very  
near future.

sequencer appeared, MIDI-only sequencers became as irrelevant as yesterday's disposable pop hit.

It's ironic that digital, which finally allows a way to preserve sound virtually forever by cloning to new storage media, is becoming synonymous with "disposable." You can still buy strings for a guitar made in the '40s, but just try to run a program that ran on a Mac Plus on today's far superior Mac OS X operating system. Music has gone from an "albums" market to a "singles" market, with artists appearing and disappearing as quickly as flowers after a spring rain. Life cycles for technology

get shorter and shorter; the CD had a run of almost two decades before it started to fade, but the DVD is about to be eclipsed by newer variations not that long after it was the darling of the consumer electronics world.

The next revolutionary trend is having live performance become as digitized as the studio, while blurring the line between the two. Think of a product like the Open Labs Neko, Muse Receptor, or Manifold Labs Plugzilla: all of them host plug-ins — which were meant to virtualize hardware and put them into a software-based studio — in a hardware device optimized for live performance. How's that for a twist?

Guitarists are using plug-ins live instead of carrying around a pile of amps and guitars, and digital mixers allow not just recall, but even automated venue tuning. The Variax 700 digital acoustic guitar from Line 6 gives an acoustic sound without feedback, while artists like Shania Twain run a sequencer to mute mics when no one's singing into them.

Software-wise, the program that defines this live/studio crossover is Ableton's Live. Is it a DAW? A musical instrument? A new way to compose? Something that's part jazz, part rock, and part techno? The answers are yes, yes, yes, and yes.

Another trend is "order out of chaos." Kore, mentioned above, is one example. Reason devising a standardized control interface is another. Apple casting its lot with Intel and Unix is yet another. But we'll see digital used more and more in the future to unite rather than divide: more commonality of file formats, more seamless file translations, better restoration of analog thanks to digital, and more powerful emulations of analog-based technology.

And the sleeping giant in all this is video. It seems few musicians realize that the digital revolution has affected video as well; it's now as approachable as digital audio. As mentioned, a technological changing of the guard seems to happen these days as suddenly as a meteor hitting and wiping out the dinosaurs. Soon, the idea of producing "audio only" media will seem as antiquated as producing TV shows in black and white. Musicians will need to learn about video, or partner with people who already know the ropes. Anything that seems out of reach now to the average musician — ultra-high sample rates, video recording your band in high-def, terabytes of RAM, hard disk arrays that make data loss just about impossible, the end of moving parts — they're all part of the very near future.

The revolution may or may not be televised, but it certainly has been digitized. What's really interesting is that even though some might think the revolution is over, the new establishment created by that revolution is just beginning. **EQ**



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# Gearhead

CRAZY LIKE A FOX

# TOP 10 TERRIBLE SOFTWARE TRICKS

G'head. Push it. We dare you.

by Craig Anderton

Yes, you can use a digital audio editor for digital audio editing. But why not use it to create a beatbox? Or emulate variable tape speed controls? Or to find more tax deductions?

Okay, so it doesn't really do the bit about taxes. But today's software often does a lot more than advertised. Want proof? Keep reading.

## 1. VARIABLE SPEED ANALOG TAPE IN A DIGITAL WORLD

Back in the days when rock was young, payola was rampant, and anything a groupie gave you could be cured by a shot, a common hitmaking trick was to speed up the tape by a percent or two (or in the case of Gary Glitter's "Rock and Roll Part 2," considerably more). It tightened the timing, brightened up the timbre, and made the vocalist sound a bit more youthful.

Today's host programs don't have a variable speed control any more, but two-track editors like Audition and Wavelab do — it's just disguised. Go right past the elaborate time-stretch/pitch-stretch algorithms, and dial in "bend pitch" (Figure 1). This provides the effect we want: raises pitch without preserving duration. Bump it up a percent or two, and recreate that fabulous hit sound of yesteryear.

## 2. SUPER BANDPASS RESPONSE

Remember those telephone-type effects you'd hear on vocals? Today's parametrics are a thing of beauty, but there's a problem with the bandpass response: It rises out of a flat response, so the bass and treble are still there. What do you do if you want a bandpass response with a roll off that just doesn't know when to stop?

You can throw in some high and low pass filtering to trim the highs and lows . . . but there's an easier way. Adjust the EQ on the track you want to "bandpassify" for an approximation of the desired effect. Now clone that track. Make sure EQ is disabled for both tracks, then throw one of the tracks out of phase. Adjust the levels so that the tracks cancel. Now enable the bandpass filter on *one* of the tracks (Figure 2). You'll hear the highs and lows magically melt away, leaving only the bandpass peak.

## 3. THE REX FILE DATA SCRAMBLE

REX files slice up a digital audio waveform into little pieces, then plays these slices back sequentially. Why? So you can stretch tempo: Slow down the tempo and the slices play further apart, speed up the tempo and they play closer together.



Fig. 1: The Pitchbend function in Adobe Audition.

Fig. 2: Note how the copied track on the right is out of phase, with the level adjusted for complete cancellation — aside from the bandpass peak in the original channel, which comes through loud and clear.

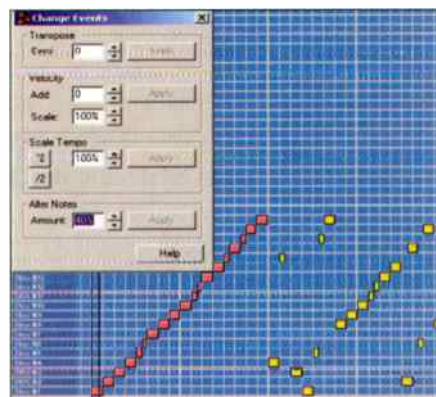
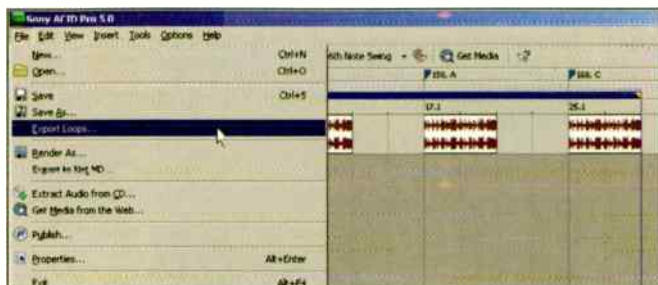


Fig. 3: In Reason, the first two measures are an unmodified MIDI file feeding a REX file playing back through the Dr. Rex device. The second two measures (notes shown in yellow for clarity) have had their notes scrambled with Reason's "Alter Notes" function in the Change Events dialog. Hear an example at eqmag.com.

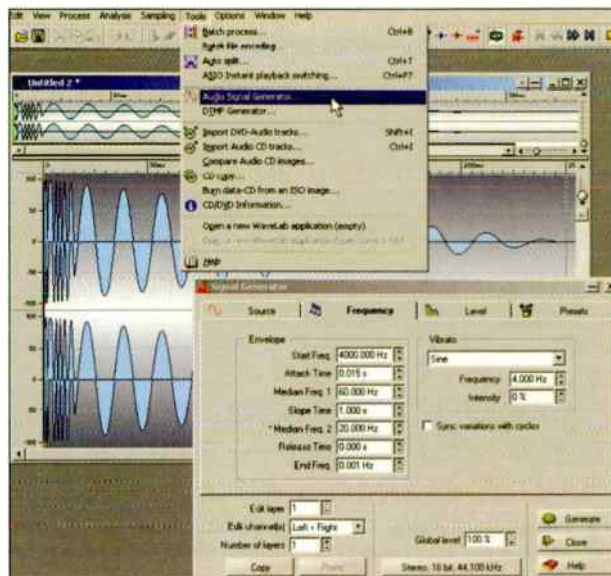




**Fig. 4:** Sony Acid Pro lets you change one loop into many, all at different base tempos and keys.



**Fig. 6:** The upper Combinator uses the standard skin; the lower one has been customized for both looks and ego gratification.



**Fig. 5:** Wavelab's signal generator was set up to make a wicked kick with a sharp attack transient and a bit of a decay.

What triggers these slices is a companion MIDI file. But hey, it's just MIDI data, so we can move pieces around, copy data and stack it, apply randomization algorithms, or whatever we damn well feel like doing (Figure 3). If nothing else, this is one way to remove the boredom element out of using loops: Each iteration can sound slightly different. It takes a little work to associate which MIDI note triggers which slice, but once you have that figured out, you're golden.

#### 4. THE LOOP FACTORY

We all know how cool acidized files are. Well, most of us do. Some still struggle with programs that aren't really that adept at handling acidized loops. Sure, they'll load okay — but you can't edit them, which is often crucial because a lot of commercially-available loop CDs are pretty sloppy about acidizing a loop (the end result: try to stretch 'em, and they sound horrible). So if you want to create loop files that work at different tempos or keys, you're hosed. Or are you? Not if you have Sony Acid Pro.

Load the loop into an Acid project (I find it most convenient to load it into a single track), then if needed, use Acid's toolset to edit the loop points for the best stretching characteristics.

Next, copy the loop multiple times on the same track. Insert a tempo change for the desired tempo before each loop, and/or a key change if you want to change keys. Then go *Edit > Export Loops* (Figure 4), which saves each loop into the folder of your choice as a WAV file at the desired tempo and

key (and the loops are acidized, too). Now you can import these into your acidizationally-challenged host, and rock on.

#### 5. MAKE YOUR OWN BEATBOX WITH A WAVEFORM EDITOR

The raw materials for those old analog beatboxes were damped sine waves and noise, with transient envelopes. As it so happens, some digital audio waveform editors (e.g., Wavelab, Audition, and Sound Forge) can synthesize those exact types of sounds. Of these, Wavelab is my fave. Go *Tools > Audio Signal Generator* and you'll find waveforms galore, as well as the means to shape frequency, level, and vibrato (Figure 5). Check out a clicky analog-sounding kick drum sample at [egmag.com](http://egmag.com).

#### 6. CUSTOMIZE YOUR REASON COMBINATORS

You can create your own skins for Reason's Combinator device. Why bother, you might ask? Because Combinators are really cool, so much so that I use a lot of them . . . and when you're scrolling around the rack, having distinctive skins makes it easy to parse which one you want.

When you load a skin, all that remains of the Combinator are the knobs, buttons, wheels, and whatever names you gave them. The rest is up to you (Fig. 6).

All you need to do is right-click (people of the Macintosh tribe should Ctrl-click) on the Combinator, choose *Select Backdrop*, navigate to the nearest suitable 758 x 134 JPEG or Photoshop graphic, and load it. Done!

#### 7. TURN RECYCLE INTO THE PERCUSSIVATOR

I sure like pulsing, rhythmic effects. Give me a vocoder and drum machine for a modulator, and I'm a happy guy. But sometimes you have sounds that refuse to be rhythmic, like a power chord, or held organ note. Yes, you can process it through gating or vocoding to impart synchro-sonic, rhythmic characteristics, but with ReCycle, you can build rhythmic characteristics into the sample itself.

Just load the sample into ReCycle, and place slices that create a rhythm. For example, you could place a slice every eighth note for a constant eighth note rhythm — but we can get more creative than that, like adding a flurry of 16th-note divisions at the end of a power chord, or syncopations (Figure 7).

Set the attack and decay parameters (decay would typically be a few hundred milliseconds) to give the desired amount of percussification, then save it as a REX file if your host supports REX files. Or, set the tempo to that of your host's project, and export it as a WAV or AIFF file you can import directly into the host (remember to first go *Process > Export as One Sample*, or you'll save each slice individually). Check out the audio example at [egmag.com](http://egmag.com) to hear what a power chord can sound like when it decides to get some rhythm.

#### 8. SET UP YOUR GUITAR IN SONAR

Sonar has a chromatic tuner built-in — see for yourself by right-clicking on an effects bin and going *Audio Effects > Cakewalk > Tuner*

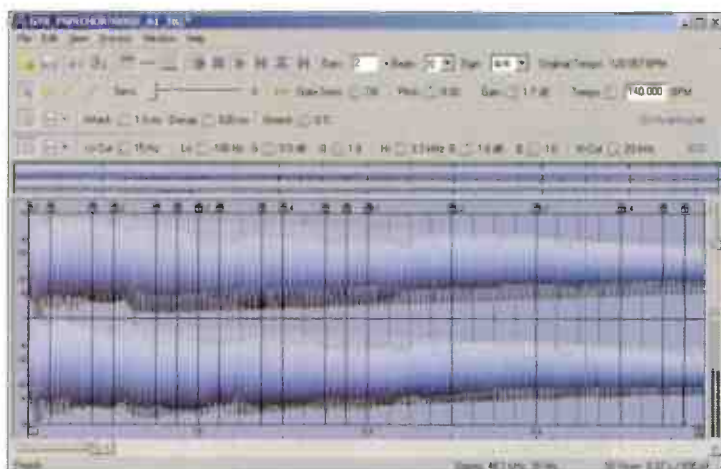


Fig. 7: Using Propellerhead Software's ReCycle to place "slices" in continuous sounds, then adding a decay time, turns just about anything into percussion.

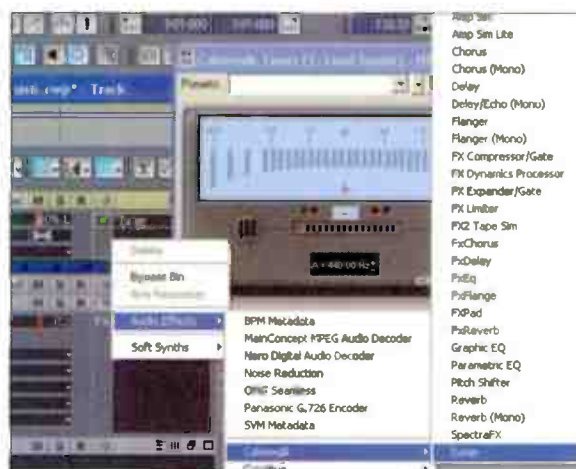


Fig. 8: Tune your guitar with a DAW . . . sure, why not?

(Figure 8). You can, of course, use it to tune your strings, but it's also handy for setting intonation.

While you're at it, play each string and check for levels on Sonar's meters. If the bass strings or treble strings predominate, slant the pickup until everything's matched. If

individual notes need a little boost or cut, adjust the pole pieces. There! Doesn't your guitar sound better now?

**9. MASTER YOUR TUNES IN REASON**  
Of course you like those MClass mastering

effects introduced in Reason 3.0. Now if only Reason had an external input so you could process your files through the effects. . . .

It doesn't, but here's the next best thing. Treat the tune as a single sample, and load it into the NN-XT sampler (note that the NN-XT

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**Format:** 1 DVD-ROM with Kontakt 2/EXS-24 libraries, REX files  
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This isn't John Cage "prepared piano," but rather, reminds me conceptually of the sample CD that was every possible permutation of sound you could derive from an automobile, including hitting it with a sledgehammer. This does pretty much the same thing for piano. Format-wise, you get 210 EXS24 patches, 274 Kontakt 2 patches, 411 Logic Channel Strip presets, "BPM" rhythmic patches, and 157 REX files. I tested it with Kontakt 2; the programming is excellent, which

bodes well for the EXS24 version

Cute concept, but is it useable? If you're doing Southern rock, probably not. But for anything else, you get truly original textures and beats. This is not a standard piano sample library, strings are plucked, brushed, threatened, struck, thwacked, and mated with alien beings. The results range from otherworldly (as in "heaven") to otherworldly (as in "hell"). There are some ace percussion sounds, multis, atmospheric drones, semi-melodic sounds, fx, whack basses, and much more. The "copy protection" is reward-based. When you register, you can download free content (currently 21 REX phrases).

Piano Attack isn't cheap, but obviously, a ton of work went into creating it. I'm going to get a lot of mileage out of this library — and if you appreciate "esoteric-yet-nighly useful," you will too. —CA

**PROPELLERHEAD**  
**REASON DRUM KITS 2.0**

**Contact:** Propellerhead Software, [propellerheads.se](http://propellerheads.se)  
**Format:** 1 DVD-ROM with 16- and 24-bit (otherwise identical) Reason Refills  
**Price:** \$129.00



**RDK gives Reason 3 owners uncannily realistic, yet highly affordable, drum sounds. Way cool.**



Drum samples. Yawn. Like we really need more? Copy over the ReFill. Load into Reason. Hit a few Trigger Finger pads.

*Whaa! These sound fantastic!!*

Building on the original Reason Drums refill, this one is for Reason 3 only because the 58 kits depend on the new Combinator module's features. Thus, the 13 Producer kits include not just the drums, but EQ and other processing that gives the name producers their particular "sound." There are also 20 Combinator "Style" kits, some new preset kits, and for good measure, two more snare drum samples. It's accessorized with ReDrum sets, MIDI files, style templates, and other goodies.

But what makes RDK2 really magic is the multisampling (typically 70 samples per drum). Even if you do several hits in a row with the same velocity, there will be slight variations in the sound — you never get the "machine gun drum samples" effect. Furthermore, several mics were used; in the full-blown NN-XT presets with separate outs, you can tweak the levels of the close, overhead, and ambience mics for individual drums. In a hurry? Use the pre-mixed, stereo presets.

Bottom line: Sound quality that leaps out of your speakers, ease of use, versatility (from indie rock to vintage soul) — RDK2 is the perfect drum companion to Reason 3. This is something special. —CA





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doesn't stream from disk, so any sample has to be able to fit into the available RAM). Now create a one-note sequence (draw the note at C3) that triggers the sample for as long as the tune lasts, and feed the NN-XT output into the MClass processors (Figure 9). Once you have the sound exactly as desired, render to disk using the *File > Export Song As Audio File* command.

## 10. CREATE NASTY VINYL SCRATCHES AND NOISE WITH A DIGITAL AUDIO EDITOR

You gotta love some of those hip-hop drum samples that were taken from funky old vinyl. But what if you have a pristine sample and want to mess it up?

There are plug-ins that do vinyl effects, with one of the best ones (because it's free!) being iZotope's Vinyl. But you can create the precise type of noise and scratchiness you want with Wavelab or other digital audio editors. Basically, use the program's signal generating options (see tip #5 above) to throw in some noise, a low-level 60Hz sine wave if you want some

hum, some heavily low-pass filtered noise for rumble, and for the crowning touch, draw in some scratches with the pencil tool. Drawing a scratch is easy: Just create a spike where you want a scratch (Figure 10). And for a really authentic sound, have a scratch repeat every 446 ms if your "virtual record" is spinning at 33.3 RPM. This simulates the effect of a scratch that goes across multiple grooves. Go ahead and download a sick synthetic hiss sample at [eqmag.com](http://eqmag.com).

Are we having fun yet?

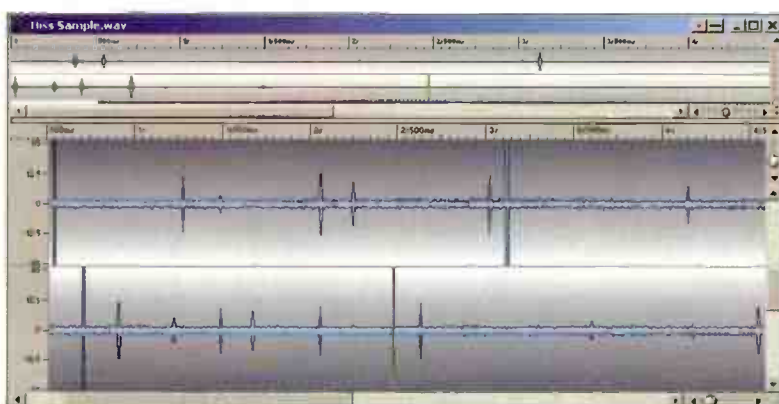


Fig. 10: No one ever said digital audio was pretty, and this vinyl simulation file certainly isn't.

Fig. 9: This mastering setup in Reason combines an NN-XT to playback the file, and a suite of Reason's MClass mastering processors. Note the one-note sequence that plays back the file.

## NOT-SO-QUICK PICKS CAKEWALK PROJECT5 VERSION 2

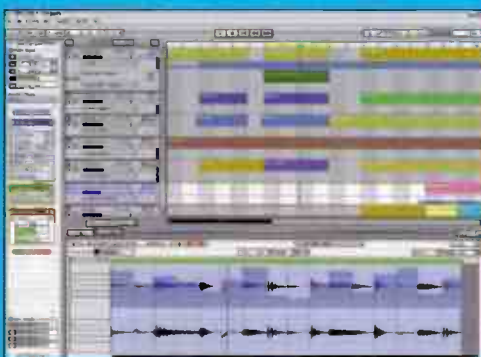
[\$299, [cakewalk.com](http://cakewalk.com)]

Cakewalk's original release of Project5 provided a decent array of virtual instruments, but as enthusiasts go, it wasn't impressive and was even a bit frustrating. Increased functionality and an improved user interface make Project5 v2 a well-liked DAW. The primary improvement is in recording, as Vers 2 can now record and playback audio sources. But Cakewalk certainly hasn't let the strengths of the original version slide. Version 2 also has improved editing capabilities, ReWire client/hosting capability, and a total of seven virtual instruments. If the acronym of the original version allowed it to be characterized as Sonar Extra-Lite, this new version has shaken off that characterization. After a month of recording and editing with this software, I can say that Project5 has come of age.

While Project5 remains distinct from Sonar in many ways, it's also complementary. Although the ReWire compatibility is nice to have,

it's easier to plug the virtual instruments directly into Sonar. For one thing, this makes for a total of 10 virtual instruments, which is just a hell of a lot of fun. This also works well if you are doing lots of straight recording from external sources as well, since Sonar is still much more capable for that. For more electronic musical styles, however, Project5 can operate on its own as a very powerful software synthesizer and sequencer, just like the original.

The new user interface is definitely an improvement over the original, and makes life a lot easier for those of us who don't always absorb everything in the manual right away. It's not completely translucent, however, and I found it a little annoying that there is no display of project properties like bit rate and sample rate. I found myself wasting a lot of time either checking the track properties manually or using trial and error on the audio interface settings. Once the system is set up properly, however, projects run smoothly and sound great as long as there's enough processing power.





## QUICK PICK

### THE APHEX 230 MASTER VOICE CHANNEL

[\$699, [aphex.com/](http://aphex.com/)]

The Aphex 230 Master Voice Channel sure packs a lot into a one space rack unit. Aphex likes to call this device the "Complete Voice Processing System." The 230 is ideally suited for voice-overs, ADR, Foley, on-air live programs, TV news/production, lecturing, live stage productions, houses of worship, and certain music apps.

The nuts? And bolts? Well, the 230 features: tube (12AT7/ECC81 dual triode) mic preamp, compressor, de-esser, noise gate, parametric equalizer (240Hz to 8kHz), aural exciter, phase flip switch, phase rotator, 24/96 A/D converter, +4 balanced and -10 unbalanced outputs, bass enhancer, AES, SPDIF and optical outputs, low jitter word clock output, word clock input, cough switch (soft mute), 48 volts phantom power, low-cut filter, 20dB input pad, peak or gain reduction meter, and rear insert jack.

When I opened up the box and looked at the Master Voice Channel, I immediately thought I should try this on something other than a voice. I was booked for a guitar session that night and I brought along this unit.

I initially used the 230 with a Shure 57 on a cranked Marshall cabinet driven by a Peavey 5150 and a Les Paul. This sound didn't do it for me, so I put the 230 on a Neumann U87 that was used as a room mic for the Marshall cabinet. I used the pad and the mic pre and turned everything else off. It took me a while to get a handle on the gain structure of the machine, but in the end, the 230 worked pretty damn well in this situation.

A buddy of mine (Dana) was also wanting to make a voiceover demo for a while. The Aphex 230 master voice channel is the excuse to start this demo. I set up several mics including a Shure 555, an AKG D 1000 E, and a 1960s Sennheiser broadcast mic. As he warmed up I got more familiar with the 230. Out of the three mics



available, the AKG D 1000 E was the fullest and brightest. Dana has a deep booming voice and I engaged the compressor button and turned up the mic pre gain, which acts as the compressor drive adjustment, and varied the compressor release knob and the overall output gain for an appropriate setting.

This particular mic brought out a lot of sibilance in his voice, so I adjusted the de-esser to get the least annoying sound out of his voice but couldn't quite get rid of all the sibilance. With a little dip in the right frequency with the equalizer I minimized the sibilance without changing the character of his voice. I noticed an elevated noise floor and decided to use the noise gate to quiet things down. In the end? This unit helped us accomplish what we needed to do.

The cough switch mute is something else I'd have never thought of putting in a unit but it is really useful. The talent can mute (you must provide foot pedal/hand switch) themselves when coughing or sneezing or whatever during, or in between, a performance. The phase rotator is another unique feature to the 230. When activated, the phase rotator reduces the amplitude of asymmetric peaks making the signal more symmetrical allowing the signal to ride through compressors and limiters louder.

I think under more delicate situations specialty devices such as separate mic pres, limiters, equalizers, etc. would be more appropriate, particularly in some musical applications. It really is difficult to do so many things flawlessly in a one-rack space unit. But the Aphex 230 is a toolbox for processing the voice. This is a really nice "all in one" box. —Barry Conley

Speaking of processing power, Project5's apparent preponderance of floating-point calculations eats CPUs for breakfast, so don't be surprised if you have to struggle a bit with the latency settings. A good soundcard can help keep slower computers running at low latency, but don't expect to get below 3ms with anything less than a Pentium IV. That said, Version 2's new user interface works better with notebook systems than before, thanks to a more streamlined display, and I did manage to get the program working well on two different laptops. A burlier processor, such as a dual core, or even better, a dual dual-core like the AMD dual Opteron (reviewed on page 64) will, of course, make life much easier when trying to use the full capability of Project5 v2, especially when using it in conjunction with other programs like Sonar or ACID.

And on the subject of ACID, there probably won't be much need to run it with Project5, as the programs are very similar. The fact that Version 2 has added compatibility with ACID files adds to this similarity and seems to indicate that Cakewalk is positioning Project5 to compete with Sony's loop-based DAW. As a long-time ACID-head, I can say that Sony has a lot to worry about. ACID still has an edge when dealing with loop-based material, but the GrooveMatrix added in Version 2 gives Project5 a boost in this realm. In short, the Matrix provides a quick and easy way to trigger "Groove Clips" (aka loops).

This allows Project5 users more variety and spontaneity in live situations than ACID. The editing features are still a little cumbersome, however, so ACID remains atop the heap of loop-based studio applications in this regard.

Regardless, Project5 now has way more capability for creating music from the ground up. A large part of this capability lies in the virtual instruments, especially the Dimension sampling synthesizer. New for Version 2, this sample-playback synthesizer uses both wavetable and physical modeling synthesis to create an incredible array of sounds. The virtual instruments from the original version are pretty amazing as well, but the Dimension sampling synthesizer adds a lot more spice to the stew, as it were.

In conclusion, Project5 has blossomed from its original form as a virtual instrument sequencer into a full-fledged DAW for Version 2. The strengths of the original have not been compromised in the slightest for the new release, but rather, Cakewalk has improved on those qualities while adding new ones. ACID users will likely be tempted by these additions and improvements, while Sonar users will find the added instruments and capabilities to be quite complementary to their current work habits. I'll be using this application more and more in the future, I can tell, and I'll definitely be looking forward to Version 3. —Sam Wheeler

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ADL600

The boys at Jam Free Studios mix, match, mix and match and match and mix and wonder if the ADL/Presonus unit is all it's cracked up to be.

by Jay Matheson

Like everyone else I'm always interested when a promising new mic preamp hits the market, especially a class A tube preamp built in the USA. When I found out that our next door neighbor, Front End Audio had a demo unit available of the Presonus/Anthony DeMaria Labs collaboration ADL600 2-channel mic pre/DI, I couldn't pass up the opportunity to try it out. We were so impressed by this unique piece that we decided to have a proper shootout with some of our tried and true "go to" preamps.

Over the years I've seen lots of ADL gear in studios and for sale, but I've never gotten my hands on any. And I'd previously not had any experience with Presonus gear either so this was going to be my first experience with both companies. When the Front End guys dropped off the unit, the first thing I noticed was how hefty it was. It seemed to be built like a tank. The top of the unit is vented, which allows a look inside where the six tubes and neatly designed circuits reside. The chassis is sturdy and the thick front panel is covered with heavy-duty switches for pad, polarity reverse, HP filter, and 48v phantom power.

The unit has large aluminum knobs for gain and trim with smaller ones for selection of HP filter frequencies and input impedance/front panel instrument input/line input switch. The knobs feel nice and sturdy and look quite nice to boot. The metering on the unit is especially nice with both VU and blue LED meters. The blue lights over each switch were a nice aesthetic touch. They were strangely calming in contrast to the traditional red lights blazing everywhere else in the control room. ADL/Presonus went out of their way to make

a classy looking front panel for this unit. When I put it in my rack it made some of the other gear appear cheap.

The pre's main features are its 73dB of gain, class A with no ICs in the signal path, selectable microphone impedance, and switchable HP filter. The rest of the specs are available on the manufacturer's site. There's no need to reprint them all here since what we all really want to know is "How Does It Sound?"

For our test setup we brought in a studio drummer, bassist, vocalist, and guitarist. We used our Daking 52 270H and a borrowed Millennia HV3C preamp for comparison to the ADL600. We ran the output of the preamps into our Digi 192 interface and monitored through a Bryston 4B and a pair of Tannoy DMT 10ls. A total of four engineers were present to listen to the results.

Our first test was with drum overheads using a pair of Neumann KM100s and a rock drummer with a standard 4-piece Ludwig kit.

The ADL600 delivers a very "big" sound. The low end was so well represented that a kick mic could have been optional here. The cymbals are smooth in response with no frequencies standing out as being accented. The detail is much better than what most people shopping for a tube preamp might expect. Transient response is very natural sounding, not overly fast or slow. The ADL delivers a deep, 3D sound on overheads.

**By Comparison:** The Millennia delivered a bit more detail overall than the ADL600. The depth was comparable, but the low end was definitely not there. Also, the Millennia



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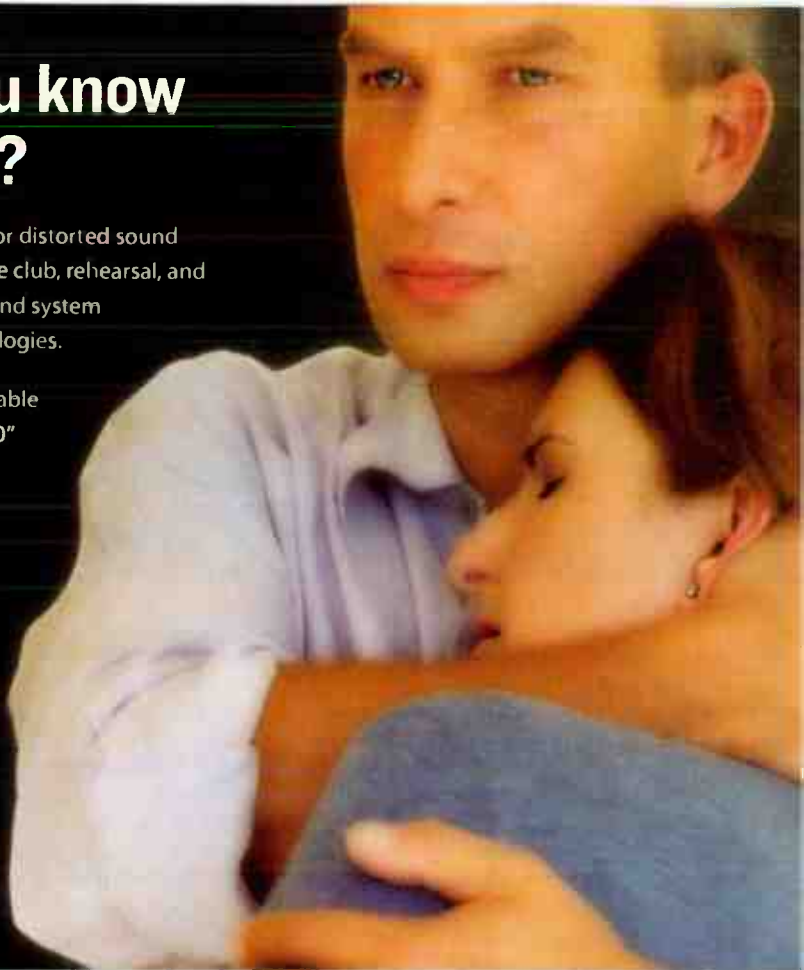
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seemed a bit boxy by comparison.

The Daking delivered a bright and present sound, excellent transient response, and good "cut." It was a bit 2D by comparison, keeping more of the high and upper mid response up top more than the others. The low-end response was not as full as the ADL600.

On a kick drum using a D112 during the same session, all three preamps delivered varying results consistent with our overhead tests. The ADL600 was huge sounding again with a slightly smoothed attack, the Millennia with good transient detail and less low-end response and somewhat boxy, and the Daking for the accent on "cut" and sounding more aggressive and present.

On a snare drum using an SM57 on top, the ADL600 exhibited a slightly smoothed out attack, same large image and depth. The Millennia was very midrange present and detailed with a somewhat faster transient response, while the Daking delivered cut and presence for days and accented that upper mid/high end response.

**Our second test was on an acoustic guitar, with a vintage KMi84 pointed where the neck meets the body from about 12" out.**

The ADL600 again delivered a big 3D image in the monitors, extended low end and smooth midrange, with good detail and harmonic content. The highs were somewhat sparkly in

this application; overall, if acoustic guitar were featured in a song and required a large sound, the ADL600 will easily get the job done.

**By Comparison:** The Millennia came in with the most detail, very decent harmonic content as well, and again a slightly boxy sound in the low/low-mids.

The Daking again gives us that aggressive cut, very present high end and accentuated attack sound, and is 2D by comparison. It's a great track if you need cut in a dense mix.

**Our third test was with vocals, a local rock/blues based session singer on a Neumann U87 from about 8" out using a pop filter.**

The ADL600 was described by all in the room as "warm" or robust sounding, capable of delivering a full low end without being woofy. The cut and presence was nice too, again with no noticeable peaks in frequency response and a natural big image. For a featured vocal track where size matters, the ADL600 will get the gig every time.

**By Comparison:** The Millennia staggered. It delivered a sort of flattened out, nasally sound. There was definitely some more mid presence in an area that would require some EQ adjustment during a mix on this singer.

The Daking preamp again proved that it's the call for cut and bright response. It was a little "essy" in the high end with this singer. With all of that upper end response rising to the top the image was again somewhat 2D.

**Our fourth test was using the DI section of the ADL600 on a bass guitar, a Fender P played up and down the scale.**

The ADL600 is again a good box to call on for deep lows, even response throughout the frequency spectrum, and a somewhat smoothed out response. Playing up and down the scale we heard an extremely even response no matter how high or low we reached. The ADL600 is giving back everything you give it, and effortlessly rolling out low end for a huge bass track. There was a ton of gain available as well, and turning down the output of the ADL600 and cranking up the input a bit could net some more flavorful results if desired and harmonic content driving the tubes a bit.

We were not able to compare the DI to the Millennia and Daking as they do not possess dedicated DI sections.

**In conclusion:** We were quite impressed by the performance of the unit overall. It performed well on overheads, kick, snare, electric bass, male vocals, and acoustic guitar. Since the test I've also used the unit during sessions for electric guitar and female vocals with excellent results. It's become my go-to drum overhead pre. Turning down the output and using hotter gain settings can net some nice subtle drive from the tubes and pushed harmonic content. The unit also has separate line level inputs, allowing warming of digital sources if desired. It looks like I'm going to have to sell off one of my other tube preamps because after trying this one out for a month there's no way they'll ever get it back from me. The ADL600 delivers on many sonic levels from detailed to 3D, and when I need a BIG track there's a new sheriff in town. **EQ**





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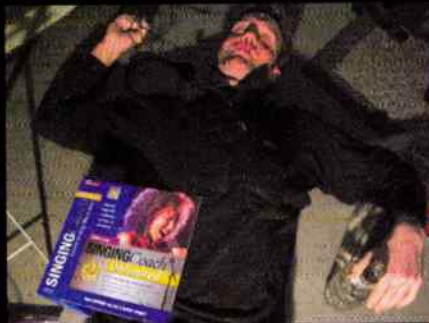
## CARRY-A-TUNE SINGING COACH UNLIMITED SOFTWARE

[\$99.95, [carryatune.com/](http://carryatune.com/)]

I'm usually not a big fan of negative reinforcement, but sometimes it really works. Take the Singing Coach Unlimited software, for example. It really helped me improve my singing voice, but the effect was entirely negative. I'd like to say something good about this software, like the fact that it is a very effective training tool for singers of all levels and that it makes good use of the available technology. Unfortunately, I just can't get past all the hideous flaws. For starters, the photos

on the box are so hilarious that I almost couldn't bring myself to open the thing. At first, I thought I was having a flashback to *Solid Gold* (or maybe the *Gong Show*). When I finally got past the packaging, I discovered that the "deluxe headset" was already broken (saves me the trouble, I guess). I got some real headphones and got plugged in and set up with a minimum of hassle, but then the nightmare really started to unfold. The animated movies that go along with the lesson had me screaming threats at my computer after only five minutes. Another five minutes and I was attempting to strangle myself with the cord from the broken headset.

When I regained consciousness, some awful animated creature with an Italian accent was laboriously discussing the concept of vocal range with a stereotyped German scientist. I felt like I was being forced to repeat a grade school music class for the third time. I reached for a bottle of scotch. The Italian creature was not improved



by scotch. A string of expletives helped to distract me from the grating and demeaning instruction emerging from the headphones, but soon my brain went on holiday, refusing to be bothered with any of this pedantic crap anymore.

Three days later, I found myself laying down the best vocal tracks I've ever done. My improvement can be attributed to Singing Coach Unlimited, but only indirectly, because of the fear that I might ever have to use that software again.

Negative reinforcement really does work, sometimes. Using hypnotic techniques, a psychiatrist was able to recover memories from my brief coma and determined that the software, although effective, moves far too slow for anyone with any musical experience and then you are stuck practicing on the 10,000 Carry-a-Tune approved songs, of which only five or so actually have any real musical appeal (and all of which cost money to download). If you have any vocal talent that you really want to alienate, this is a good product to do it with, but any professional vocalist who needs this software is in the wrong line of work.

**Pros:** Easy to use, artwork is good for a few laughs.

**Cons:** Headset is worthless, instructional movies are way too basic and vaguely offensive, may cause suicidal behavior, alcoholism, coma.

—Sam Wheeler

## WHAT'S THE WORD?

CRANE SONG IBIS  
STEREO DISCRETE  
CLASS-A EQ

by Garrett Haines

Crane Song has been busy making high-end equipment at their Wisconsin facility for more than a decade. Founder David Hill's designs have a reputation for sonic excellence, first-class build-quality, and strange monikers (not to mention their ubiquitous teal control knobs). For most of the planet, an ibis is a medium-sized, long-legged, long-necked wading bird, but to Mr. Hill these stick-legged

creatures stir dreams of frequency shaping. Thus, Crane Song's IBIS is a stereo discrete class-A equalizer designed for recording and mastering applications.

## WHAT YOU GET

Each channel has independent controls and is divided into three processing sections: a low-cut filter, four EQ bands, and a "color"

feature. The controls flow left to right, creating a logical spectrum of frequency control. The low-cut filter is stepped in 12 positions that range from 20Hz to 150Hz. Its slope can be set at either 12 or 24dB via push-button. The equalizer bands, labeled 1 through 4, are fully parametric, with bands 1 and 4 able to do double duty as shelves. Sweepable Q values start at a narrow two-tenths of an octave and spread to 4 octaves. Users are given a generous boost or cut range of 12dB via smooth rotation knobs. Worried about setting a band to zero? Don't. As long as the control is in a small area to the left or right of the zero point, the gain will be inactive. Finally, each channel has its own bypass switch, enabling users to avoid the signal chain altogether.

What's most interesting about the IBIS is how it approaches the frequencies of each band. Instead of frequency values, Crane Song focuses on corresponding musical notes. Thus, the bands cover musical-step intervals from 32Hz C to 22.35kHz F. Its



four overlapping bands are labeled with note names and (some) frequencies. According to the manufacturer, this creates a bridge "between musician-speak and engineer-jargon." Each frequency band has a "+1 Step" button, which effectively shifts the affected frequency higher by one whole tone. Crane Song publishes a full-color reference chart showing the 77 frequencies covered by the IBIS. Visit [cranesong.com/ibis.html](http://cranesong.com/ibis.html) for a link to this PDF download.

The color function can add or subtract second and third order harmonic distortion. This effect can be applied to either the entire audio path or to a single individual frequency band. Each channel has a color gain knob that controls the amount of this effect to be applied.

The rear panel features balanced inputs and outputs by way of XLR jacks. For added flexibility, a "Side Chain" port (via DB15 connectors) allows users to access individual bands, or send each to an external compressor. If you had the resources, an IBIS and four high-end stereo compressors could make an analog multi-band compressor that would put plug-ins to shame.

#### HOW YOU GET IT

So far we know there's a mad scientist freezing in Wisconsin and harboring a Miami Vice/Wild Kingdom fetish (the sad thing is, I don't even know if this qualifies as "weird" by music industry standards). But the important thing about gear isn't the mental state of its maker, but its real world performance.

I've used the IBIS in my mastering chain for quite a while and I still find it difficult to qualify the sound. In some respects, it has the transparency of a Weiss or Massenberg Design Works digital EQ, but it also harbors the musicality of a Manley. In particular, band 4 can add an airy quality that I've only heard from the very best hand-made equalizers. The low-cut filters are smooth, reducing low-end crud and rumble without undue phase shift issues. The four frequency bands are flexible and powerful. I have some EQs that are great for cutting, and some good for boosting, but the IBIS is at home doing either. (I don't want to start a rumor about one-way EQs; it's just my thing. Leave Eugene's mailbox alone.) I've already mentioned the merits of band 4 on the high-end but all of the bands can be used broad brush or surgical-style. I've had particular success playing seek and destroy with sibilant vocalists. For such precision operations, having the

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## Beinhorn Says



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"I used to avoid using ribbons on drums, but the SF-24 changed that the first time I used it. It attacks in the perfect place and interacts beautifully with the other mics on the kit. It adds power and richness to the drum tracks and seems to smooth out the other mics. Royers have become an indispensable part of how I record music."

**Michael Beinhorn**  
(Producer - Soundgarden,  
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# Gearhead Gearhead Gearhead



+1 Step feature is a real blessing. Conversely, I've been able to enhance the crack of a snare, the attack of a lead guitar solo, or the fundamental of a background vocal with small boosts of narrow areas.

With the standard IBIS, all knobs are full-range, with the low-cut filters, frequency selectors, and color band selectors being stepped. A mastering version, comprised of stepped controls for every function, can be special-ordered for a premium. Originally, I was interested in such a model since documentation and recall are much easier. However, I've come to appreciate the value of having full range gain and Q controls. There have been many times when I would close my eyes and just sweep a parameter until I found that "sweet spot." That experience can be lost with stepped controls. Of course, this is ultimately a personal preference, but potential IBIS buyers should not feel compelled to order the mastering version without trying the standard configuration first.

Speaking of documentation, one of my only complaints about the IBIS is the frequency labeling. The note names are not unique per band. For example, band 1 has four E notes, band 2 has four Fs, band 3 has four Ds, and band 4 has four Bs. I often find myself jotting things down like "band 3, +1 @ D above A# 932. . . ." Maybe someday I'll know the note frequency values by heart, but for now, I muddle through this exercise every time I use the IBIS.

Other than documentation, I have no objections to the note-centric frequency labels. Why? First, we should equalize with our ears. I really don't care if the numbers say hamburger, lettuce, or pickle (but again, only one hamburger per band, please). Second, it has improved my ability to correlate fre-

quency build up among instruments with song keys. And finally, it provides a lot of fun tongue-in-cheek fodder on the Web discussion groups (Brad Blackwood is rubbing off on me).

A little IBIS can go a long way in mastering. In fact, I've almost never used more than 2.5dB of gain or cut. However,

I've come to appreciate the value of having full range gain and Q controls. There have been many times when I would close my eyes and just sweep a parameter until I found that "sweet spot."

the extended range can yield tremendous flexibility in a tracking situation. I've found that sculpting acoustic and electric guitar mid-range with the IBIS to be a new experience in control. Moreover, you can chain one channel into the other and do some radical comb filter techniques for beat and groove production. For urban and hip-hop, the color feature can bring life to stock beat loops, and the fine tuning

of the frequency bands can really help to feather a kick in with a bass.

The color control seems to be a love it or leave it feature depending on the source material. Those wondering if this is a mere repeat of the "Triode," "Pentode," and "Tape," enhancers found on Crane Song's HEDD units should rest assured that the IBIS color is a different type of sound. I find that boosting color in very small (say less than 1.5) amounts can add a subtle thickness to a mix, while major color boosts (especially in mid bands) approaches API-land. Again, this is definitely not a control that you leave on for everything, but it's an added tool for taking your client's work to the next level when other methods fail.

### THE DEAL

The IBIS is a splendid unit. It's well built, great sounding, and supported by the nearly 24 x 7 availability of the Crane Song staff (via phone or email). Mastering engineers will appreciate a tool that is transparent but not



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sterile. Mix and tracking engineers will benefit from the immense sculpting power of the four frequency bands.

I don't like to prognosticate, but I'm willing to bet that Crane Song gear will be the classics of tomorrow. Just like the current rage over Fairchild, Neve, and Pultec, people will attribute mythical powers to these boxes. It's clear that Dave Hill puts hours of thought and planning into these devices — let alone months of applied testing at his Inland Sea

Recording studio. This combination of design and refinement is evident in every element of the IBIS. So, instead of waiting for the "vintage" Crane Song rush, grab a demo unit and hear what this stuff can do today.

**Strengths:** Exquisite sound that is both transparent and musical, build quality. The color feature can be the icing on the cake (in the right circumstances).

**Limitations:** Note/Frequency labeling can

be difficult to document, no formal manual, priced beyond the budget of most project studios (\$4,500; \$8,000, for a fully-stepped mastering version). **EQ**

Garrett Haines is co-owner of Treelady Studios ([treelady.com](http://treelady.com)) and is working on a line of rack gear that will not only be named after a hamburger, but will look like one from a distance when you rack all six units in the proper sequence.

## NOT-SO-QUICK PICKS

### AMD DUAL OPTERON DAW

[\$5,500, [amd.com](http://amd.com)]

I'm mostly a mobile workstation kind of guy, but the opportunity to play with the latest and greatest in consumer CPUs was too tempting, so I agreed to receive a dual dual core workstation into my home studio for the holidays. The 50+ pound rackmount unit that I found on my doorstep did not put my mind at ease, however. As soon as I picked it up I knew this thing was serious. When I pulled it out of the box, I had a minor breakdown. It seems the bulk of the weight is due to the ridiculously overbuilt pcAudioLabs case this thing is housed in.

I'm not sure who decided that audio computers have to have gigantic steel cases with locked gates, but it's not high on my list of priorities for a workstation. Regardless, the first challenge was finding a place to put this behemoth. At this weight, it would crush my SKB racks, even if they were deep enough to contain this beast, which they're not. A weekend woodshop session resulted in a piece of furniture suitable for the dual-dual and I was off to the races.

Powering up is a mystical experience, similar to that scene in Frankenstein when Herr Doctor throws the giant switch to bring the creature to life. My hair was raised in anticipation as the machine's many fans kicked in. Given that I have a one-room studio, the sound proved to be a problem. It's LOUD, and the foam-lined gate on the overbuilt case does nothing to quiet it down. This unit was clearly designed for a production studio with a separate equipment room, but for most project studios and home setups, this thing might be a bit much. Nonetheless, remote operation is a relatively easy thing to accomplish these days. If nothing else, a small baffled-foam soundproofing setup will clear up the worst of it for monitoring. Close miking and low-noise ambient recordings are still best done in a separate room, though.

I must admit that the first thing I did was load in Unreal Tournament and slap on a pair of headphones to use with the onboard nVidia nForce soundcard. The Dual Opteron rocked it all at maximum speed. The nForce is actually a pretty nice sounding card, way better than a SoundBlaster, for sure, but I knew I would need more than the 1/8" I/Os when I got to the real work. Latency was also an issue with the nVidia, so I brought in an RME HDSP PC card with a Multiface II interface and got down to business.

Oh my, oh my! This thing is *faaast!* After running some of the fastest laptops around, I thought I had an inkling of what this thing might do, but I still haven't seen anything like a dual-dual core before. I plugged in the RME, opened ACID, and ran it at 24-bit/96kHz while playing Unreal Tournament. It didn't even blink. Loading Cakewalk's Project5 on top of all that did result in a slight increase in fan speed, but installation was hassle-free and the program ran with no noticeable performance reduction or increased laten-

cy. Over the next few days, I loaded as many effects as I could and eventually I did need to close the video game while I was working. The AMD was still capable of some rather extreme multi-tasking, though, with ACID, Project5, and a dozen VST effects going at once.

Video games aside, this unit certainly provided the best digital audio that this home-studio hack has ever worked with.

I did run some benchmark utilities on

the unit, just to see what the numbers were. This proved to be pointless for comparison because the dual Opteron is the benchmark. The unit actually came with some over-clocking software, too. I didn't have time to use it, anyway, but frankly, I was a little scared to try. I mentally compared it to putting a nitrous injector in a Dodge Viper. Sure, it'll accelerate that much faster, but can I control it? That is a question best left to more intrepid souls than myself, however.

The AMD's generous 2GB of RAM provides plenty of room for those I-need-it-now files with no noticeable decrease in performance, even on large projects. There's also an 80GB primary hard drive, giving one plenty of room to load in, say, an entire laptop hard drive, if so inclined. The 320GB RAID drive provides generous, reliable storage as well. If that's not enough, there's room in the case for another hard drive, and even another couple small drives (provided you can figure out how to open the case). Given all this, my usual collection of USB and FireWire drives seem positively glacial in comparison, but the unit has two USB ports on the front panel, and four more on the back, with one FireWire port on the back. That and the array of PCI slots (both 64-bit and 32-bit) make for plenty of connectivity.

Overall, the unit's performance more than makes up for any of my petty complaints. Probably most impressive, however, is the list price of \$5,500. That's not pocket change. I know, but it's well within reach of many home and project studio users, and well worth the money. Unfortunately, that doesn't include installation, but it does include high-powered digital production performance. Keep your eyes peeled for dual-core AMD laptops, too. Rumor has it we'll be seeing them any day now. In the meantime, I'll be saving my box tops. —Sam Wheeler

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## THE VERB THAT LIVES

ROUNDING UP  
THE REVERB

by Rich Tozzoli

The use of reverbs in a mix can easily be associated with the art of gourmet cooking. Just like it takes many ingredients to produce a four-star meal, you typically need various types of reverbs to take a song to a higher level. Whether it's a vintage plate for guitars, a wooden room for snares or a concert hall for vocals, today's software reverbs can be broken down into two distinct categories — modeled and sampled.

Modeled reverbs use mathematical algorithms to create artificial acoustic spaces. This type tends to be extremely flexible, offering many parameters such as Diffusion, Virtual Room Shape, Reflection Control, Decorrelation, Variable Absorption Control, and so on. Virtually all modeled reverbs have useful preset folders available, so you can quickly call up different types of sounds and tailor them to your acoustic needs.

Sampled reverbs are not models of rooms, halls, or plates — they are actual "recordings" of each. Also referred to as Impulse Response Reverbs, they are produced using a technology called convolution and are created with either a "spike" of sound (a cap gun for example), or a full-frequency sweep tone. Using a microphone array (typically with varying setups), the Impulse Response (IR) of the actual space is recorded. By using a convolution engine combined with an Impulse Response, you have "real" reverb at your fingertips. The mathematical calculations involved in creating good convolution-based Impulse Responses are massive, which is why they have only been around for a few years now. Some of them run using the computers power and some run off chips on process cards. Unlike earlier versions, most of today's Impulse Response reverbs can also be tweaked to

customize the sound for your mix.

Here's a brief look at some select choice verbs in each category.

IMPULSE RESPONSE/SAMPLED  
REVERBS

**Audio Ease Altiverb.** The first IR reverb to hit our computers several years ago, Altiverb V5 is now tweaked to run via AU, RTAS, VST, and HTDM. It features a four-band EQ, Stage Positioning Control, snapshot presets and seriously increased CPU performance.



Aside from offering an extensive library of free IRs online ([impulse-Response.com](http://impulse-Response.com)), Altiverb also includes software and instructions allowing you to create your own acoustic samples. You can even sample hardware reverbs, providing they have a digital input for a "spike" to actually capture it with. Also on the website is a cool section called User Submitted IRs (self-explanatory), and the company will help make your IRs for you if you ask.

**Waves IR-1 V2.** The IR-1 V2 works on both the PC and MAC platforms (up to 96kHz), running with RTAS, AudioSuite, VST, Direct X (Win), and Audio Units (Mac). Users have control over reverb parameters including Size, Decay Envelope, Density, Resonance, and EQ, among others. There is also a cool Reverse button that can be used for some great sounding effects and the ability to select different miking options. It does come with pre-loaded Factory Presets and two CDs

full of Impulses. It also features Convolution Start Control, which lets you trim the beginning of the IR to eliminate pre-delay, as well as a full set of tools to capture your own IRs.

**Waves IR-1 L.** Same as the IR-1 V2, but with fewer controls — therefore lightening the processor load. Make sure to check out [acoustics.net](http://acoustics.net), which is the official source of Impulse Response Samples for all Waves convolution reverbs.

**TASCAM GigaPulse.** This is TASCAM's Convolution Reverb Processor for VST. It also has a cool microphone-modeling feature, which lets you either control the character of the effect, or emulate other microphones. There's a unique cascading feature, which allows you to combine two or more impulse responses to create a totally new sound. In addition, it has user-controlled placement in a virtual room so the "source" can be moved around relative to the mic position.

**Apple Space Designer.** For Logic Pro 7 users, Space Designer ships with over 1,000 Impulse Responses. It also lets you create high-quality synthetic reverbs by using specially designed volume, filter and density envelopes. It also has 6 or 12dB low pass, band pass and high pass filters, and will support sample rates up to 192kHz. You can also produce your own IRs with Space Designer and load them right into the plug-in.

**Trillium Labs TL Space.** A bit unusual in that this is a TDM Impulse Response reverb (hence it runs on the process card chips and not the CPU), it features a fairly extensive library of spaces and effects. It can actually use up to eight Pro Tools HD DSP engines (in parallel), providing a 32-bit block floating point process (a.k.a., damn good sound).



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**Wave IR-360.** Another Waves release, this one is extra cool in that it is a true Surround Impulse Response Reverb. You can choose mono to 5-channel using 4 or 5 convolutions (individual samples), stereo to 5 channel discrete, Efficient stereo to 5 channel discrete, Mono to 5 channel using 3 convolutions or Full Stereo to 5 channel using 6 convolutions. What all this means is that when working in surround with the IR-360, it sounds damn close to actually being in the room.

**Voxengo Pristine Space.** I recently discovered this gem, and it's a native audio plug-in with an 8-channel convolution processor. Currently at V.1.5, you can run true stereo (requiring 4 convolution channels), and it works directly with Voxengo's Impulse Modeler so you can create your own IRs. Check out [noisevault.com](http://noisevault.com) as a cool source of impulses.

**McDSP Revolver.** This convolution reverb runs via AudioSuite and RTAS on Macs, and

provides a fairly comprehensive set of controls for sonic customizing. There's a unique stereo field control, positive and negative pre-delay, and a split delay feature that lets you create an image shift of up to 50ms between the left and right speakers. Note that Pro Tools 7X and higher are needed for TDM, LE, and M-Powered systems.

## MODELED REVERBS



**Sony Oxford.** Several years ago, Sony actually released one of the first "affordable" Impulse Response hardware units, the DRE S-777. However, with this plug-in they changed gears and went with a reverb modeling release that focuses on maximum control and sonic performance. Sounds range from rooms and halls to dry reflection ambiences, sound effects, and wide-open reverberant spaces — with extra attention paid to the Reverb Tail section. Running on Pro Tools HD Accel, HD, and LE systems, it provides real-time continuous control over virtually all the parameters.

**Digidesign ReVibe.** This is a Digidesign release geared exclusively toward HD/Accel users. It's mono, stereo, and surround capable and has over 200 early room reflection/coloration models. It features 96kHz support using the 321 DSP chips on the company's HD Accel card, and has an easy to use interactive display for EQ, Decay Color, Early Reflections, and Reverb Shape. Its little brother is the Digidesign Reverb One plug-in,

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EQ0410





which is similar in character and runs on all TDM systems.

**Apple Platinum Verb.** A Logic reverb that is kind to your CPU, it features a "dual-band" concept that takes full advantage of natural room characteristics. There are additional parameters to tweak, and a cool GUI to view while doing so. Also, Apple's Enverb plug-in features control over the envelope of a diffused reverb, a wild

reverse effect, and the ability to gate through use of delays.

**Princeton Digital 2016.** Some software reverbs, such as this one, are modeled after their hardware counterparts. This is a TDM release that has three plug-ins within it; Stereo Room, Room Reverb, and High-density Plate. There's support up to 96kHz on HD Accel rigs, but you'll need Pro Tools 6.0 on a Mac OSX 10.2.4 or later systems.

**Eventide Reverb.** Another TDM reverb that uses algorithms from a hardware unit, in this case their popular Orville hardware processor. Aside of pre- and post-stereo three-band EQ, reverb contour (for tone shaping), and snapshot features, it's a bit unique in that it features a pair of delays, a decent compressor, and a cool Lo-Fi effect.

**TC Electronic VSS3.** This is the Stereo Source Reverb plug-in taken directly from the System 6000. Divided into four main pages (Main, Early Reflection, Reverb Tail,

Modulation), this TDM release gives you almost 800 parameters to tweak. There's more than 500 presets provided and the built-in preset converter lets you import VSS3 presets from the System 6000. The "Focus Fields" on the bottom of GUI let you easily select and tweak the most important parameters.

**Waves R360 Surround Reverb.** Unlike the IR-360, this is a modeled reverb for 5.0 and 5.1 mixing environments. Working up to 96kHz, it has six channels of perfectly de-correlated reverb with controls for front and rear sound. It works with Nuendo 3, Cubase SX 3, Pro Tools Mix, and HD systems.

**Waves True Verb.** A room emulator for Native and TDM systems, it combines two different modules — a Reverb and an Early Reflections simulator. You can alter the room size, frequency response, and even the distance beyond the speakers to the sound source. As with all other Waves plug-ins, there is a comprehensive library of presets. **EQ**



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## NOT-SO-QUICK PICKS

### JOEMEER sixQ MIC PRE

[\$599.99, [joemeek.com](http://joemeek.com)]

If I told you this was a review of another mic pre, you'd probably just yawn. If I told you it was a mic pre, optical compressor, and EQ, you'd probably pay some attention. Then if I told you it was a Joemeek product, you'd say, "What's that son?" Well, that's what it is. It's a single Joemeek channel strip.

The sixQ has an XLR mic and 1/4" line input. The output is in the same configuration with a +4 or -10 option. There's even an insert for effects and an instrument on the front panel! All standard channel strip functions are included like phantom power, phase reversal, pad and bass roll off switch. There's one switch that is baffling though. It's labeled IRON. The manual says it's a transformer coupler. I suppose it has to do with the different impedances that a mic could be at. Not sure. Not enough information is available, but when you push it, the mic sounds different. So you choose the one that sounds best and use that? Is this like the loudness button or the quadralizer or the ambience button or any of the other cryptic buttons that have shown up on audio gear throughout the ages? It's not that cryptic really. I just told you what it does, but you won't know what it *really* does until you hear it yourself. Then you'll say, "it sounds . . . different!"

I recorded the drums, the piano, the guitars, the bass, the voice, and the cat with this and they all sound like what I hear in the room. That's a really good thing out of a mic pre. I would venture to say it almost has no character whatsoever. Very transparent.

By engaging the compressor, you lose all transparency and shoot down a tunnel while the BBC Radiophonic Workshop plays a familiar electronic composition and BOOM, your police box lands right in the early '60s. I can't say I love this compressor. I can only say that it has a very specific purpose. I did a few vocals through it and had a really hard time setting the compression so I could feel the results but not hear the compressor working. I was either not hearing much compression at all or really hearing the hammer come down. The gain reduction meter would say -2 or -4, but it always sounded like a lot more with no middle ground. The attack was fairly strange too. It was either

not fast enough or too slow depending on the application (yeah, I know, is the glass half full or half empty?).

Then I plugged in the bass! All of a sudden I realized that this compressor was actually a time machine that transported me back. The slow attack (even in the quickest setting) made the bass sound like crap when played by itself, but put it in the mix with some psychedelic pop masterpiece and that was the sound you were looking for all along. I then gained a new appreciation for this compressor because I figured out what it did best. The manual even points out that the compression ratio is variable based on the amount of signal present above the threshold. That means you get a small amount of compression

if you just pop above the threshold for a short period of time. You get the dialed in compression if the signal really hovers above the threshold for long periods of time. Very clever indeed!

The EQ section of this channel strip is amazing. All bands have a fixed Q of .9. The low frequency is sweepable from 40Hz-650Hz, the mid from 300Hz-5kHz, and the highs are fixed at either 6kHz or 12kHz. What I like

the most is the return to the classic EQ where more than 12dB of total EQ was too much. This is the biggest point where digital and analog EQs differ. An analog, 3dB boost really is an acoustic 3dB boost where digitally it's much lower. This EQ is also very musical like an old British console.

However this channel strip has a digital out! Capable of spitting out 44.1, 48, 88.2, or 96kHz. The manual doesn't say the bit rate, but the website states it to be 24-bit. You have a choice of S/PDIF optical or electrical. There is also a jack on the back to send any line level stuff on the other channel of the digital stream. In essence you could use this mic pre to overdub yourself like we did with two boomboxes (but at a far better quality I can assure you).

So the best application for this channel strip would be in any pro studio as another alternate to your board pres or in the home-based project studio for a very fancy, all in one, quality overdubbing interface. This would surely improve the sound of even line-in keyboards. The compressor is very stylized and will take some getting used to, but the EQ will make your life much easier.

Take two and call me in the morning. —Scott Colburn

Then I plugged in the bass! All of a sudden I realized that this compressor was actually a time machine that transported me back. The slow attack (even in the quickest setting) made the bass sound like crap when played by itself, but put it in the mix with some psychedelic pop masterpiece and that was the sound you were looking for all along.





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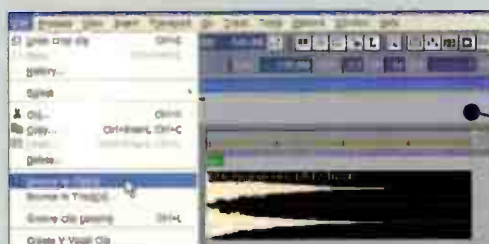
# Power App Alley by Craig Anderton

## CAKEWALK SONAR

There's a right way to acidize, and a wrong way — this is definitely the wrong way

**OBJECTIVE:** Use the Loop Construction window not so much to acidize, but as a "step sequencer" to add synchronized level-altering effects.

**BACKGROUND:** Sonar can time-stretch files by adding markers at transients, then using DSP to extend or shorten the duration of each slice delineated by these markers. But it's also possible to add markers at arbitrary rhythmic points, and use gain envelopes to vary each slice's level.



### steps

1. Drag a file, such as a sustained guitar power chord or pad, into an audio track.

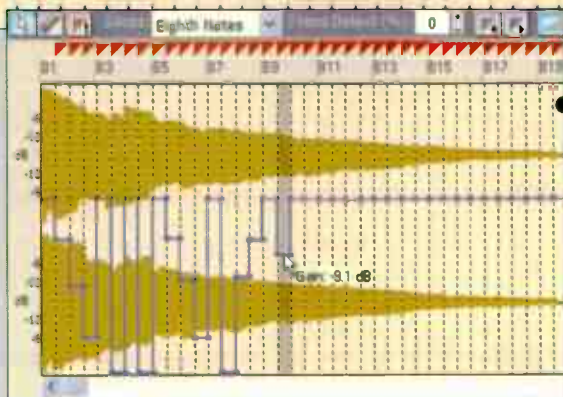
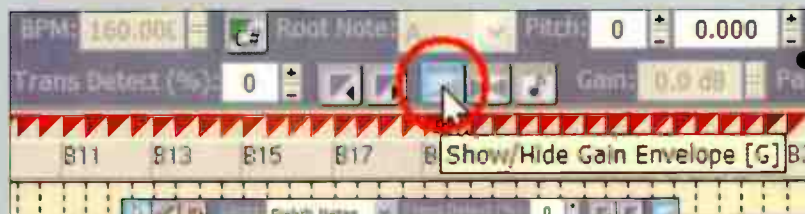
2. Trim the clip length to a measure boundary by slip editing the left edge, then click on the clip and go Edit > Bounce to Clip(s). This "fixes" the clip length at the measure boundary.

3. Double-click on the clip to open up the Loop Construction window.

4. Enter the clip's duration in beats in the "Beats in Clip" field. Under "Slices," select Eighth Notes (for an eighth-note rhythm) from the drop-down menu, and set "Trans Detect" to 0.

5. Click on the Gain Envelope icon.

6. Drag the gain envelope as desired for each slice to create a "level step sequence."



### tips

- Because the level transitions are abrupt, you may hear clicks at the transitions. Use a lowpass filter to trim off the very highest frequencies, or better yet, a "click eliminator" plug-in (as used to clean up vinyl records).
- There are also pan and pitch envelopes for each slice. Using step-sequenced panning along with step-sequenced level can be really wild.
- For the best fidelity, try to import a file whose duration falls naturally on a measure boundary. However, note that Sonar doesn't require that loops be a specific number of measures — only a specific number of beats.

In step 4, select 16th Notes for a 16th-note pattern. Or select "No Slicing" and simply draw in markers as desired to create arbitrary slice lengths.





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# Power App Alley by Craig Anderton

## PROPELLERHEAD RECYCLE

Use ReCycle to mangle your REX format loops beyond recognition

**OBJECTIVE:** Create "wrong" variations on a loop to end up with new, and sometimes very cool (or at least perverse), alternatives.

**BACKGROUND:** ReCycle can do more than just stretch rhythmic loops faster or slower — it can help create totally new variations on a loop. Normally, you do this by rearranging the MIDI data in your host program that drives the ReCycle audio slices, but the following method uses an "all-digital audio" approach. The key is to export each slice as its own WAV or AIFF file, then rearrange the order of these slices in your host program. (Note: This assumes you've already used ReCycle to "slice" your file properly in the REX format.)

### steps

**Step 1:** Make sure that "Export as One Sample" is unchecked in the Process menu.

**Step 2:** Select "Export" from the File menu, navigate to the folder where you want to save each slice as a sample, choose the file format, then click on "Save."

**Step 3:** Choose the desired sample rate and bit depth for the slice files, then click on "OK."

**Step 4:** Each slice has been exported as a separate file to the folder you specified in step 2.

**Step 5:** Open your host, and drag the slices into a track (assuming your host supports drag-and-drop; otherwise, import them).

**Step 6:** Let the games begin! Rearrange slices on the same track, or as shown here, drag slices to a different track in whatever order you want. Repeat slices, overlap them, reverse them . . . whatever. You get the idea.

### tips

- The exported slices include a number that represents the order in the original file. For example, "filename" 001 is the first slice, "filename" 002 the second slice, and so on.
- The tempo you set in ReCycle is irrelevant; slices are saved so their durations fit the "native" tempo of the original loop file.
- Set a "snap to" grid in your host if you want the slices to line up rhythmically as you drag them in.



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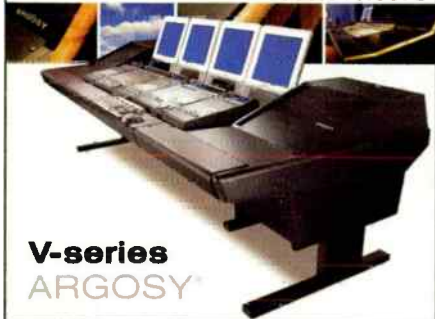
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# Room with a VU

by Matt Harper

**STUDIO NAME:** Sound Logic LLC  
**CONTACT:** [www.lafayettestudio.com](http://www.lafayettestudio.com)  
**LOCATION:** Lafayette, IN  
**KEY CREW:** Jeff Anderson, Scott Rottler  
**DIMENSIONS:** Control Room: 18 x 20; ISO Booth: 6 x 8; Live Room: 36 x 20; Lobby: 12 x 18; Reverb Room: 6 x 18  
**CONSOLE:** Neve 8108 w/ custom Beamish routing comp.  
**RECORDING FORMATS:** Alesis Masterlink, Digidesign M-Box with G5 Powerbook LT, Digidesign Pro Tools Mix System 32 IO's, Otari MTR-10, Panasonic 3500 DAT, TASCAM 112 mkII  
**MONITORS:** Alesis Point 7, JBL Studio Series Custom, Mackie HR824, Tannoy PBM 6.5, Yamaha NS10  
**MICROPHONES:** AKG 414 BULS, AKG 451, AKG C2000B, AT 4033, AT 4041, AT drum mic kits, Blue Ball, Neumann U47, Neumann U87i, Rode NT-2, SE Z2200, Sennheiser 421, Sennheiser 604, Sennheiser 609, Shure SM-57, Shure SM-81  
**COMPRESSORS/EQ:** Altec 1712A Compressor, Aphex Aural Exciter Type C, Aphex Studio Dominator, dbx 160A, dbx 160 VU, dbx 180 A (Mod), dbx 266 Compressor, EL8 Distressor, Neotek Series 1 Ch. Strips Racked, Orban 516 EC De-Esser, Orban 621 B Parametric EQ, Rauland Spectrum Master, Rebis Gates, Shure Voice Master Gates, TC Electronic Finalizer, Universal Audio LA2A, Unisync Limiters, Unisync Trooper Series EQ, Urei 1176  
**TIME BASED EFFECTS:** Alesis Quadraverbs, Brick Audio 4' by 4' Plate Reverb, Eventide 3500 DFX Sampling, Eventide H949, Fairchild 659A, Lexicon 110, Lexicon LXP-15, TC Electronics M300  
**COMPUTERS:** Macintosh G4 Quicksilvers  
**STUDIO NOTES:** Located in a rather inconspicuous converted barn, miles away from any stoplights or crosswalks, Soundlogic is a virtual beacon of light in what amounts to a rather dark

artistic vacuum. If it weren't for strong mutual ties to the area and a general disdain for the politics of Hollywood and Nashville shared by Sound Logic's key players, it would be fair to assume that the proverbial shop would have been set up anywhere but Lafayette, IN. While a \$2 million dollar studio seated catty-corner from a grazing pasture and the occasional heap of cow dung may not appear to be a prime locale for such a facility, upon parting the doors and stepping into the pristine live-room — only to come face to face with a Neumann U47 and the modified Brick by Brick 4' x 4' plate reverb — any myths about non-geographically specific studios being sub-par or of novel utility are quickly dismissed.

"We just jacked all of our ideas from other studios that we admired and worked in; all the places where we worked from L.A. to Nashville," engineer Scott Rottler confesses, "and it shows." From the architectural mimicry of the live room (designed to correlate with the opened Baby Grand piano) to the recording artifacts procured (Neumann's labeled "property of Ric Ocasek"), it's evident that Sound Logic is much more than a simple project studio.

"The clientele that we've worked with in the past pretty much covers the spectrum — from FEMA to Bela Fleck," Jeff Anderson states. "We both grew disillusioned by the politics of working in the field — always dealing with an A&R representative standing over your shoulder and interfering with the process — so we decided to drop out and open our own studio and focus on what we love to do on our own terms: recording music."

In addition to the above, Sound Logic also offers creative licensing packages as well as instructional workshops, so check them out if you happen to be in the area. You'll be glad that you did.

**HEY, EQ READERS. WANT US TO FEATURE YOUR STUDIO? SEND PICS AND INFO TO [eq@musicplayer.com](mailto:eq@musicplayer.com).**



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