

By David Battino and Kelli Richards

# This

Exploiting the creative tension between machine and human feel.

Some of the best art arises from collisions between different cultures. And it's no different in the epic partnership (some would say battle) between musicians and machines. We asked a group of visionary artists and producers how they harness the creative tension between quantized computer precision and swashbuckling human feel.

The panel included Glen Ballard, best known for producing Alanis Morissette's 33-million-seller *Jagged Little Pill* (Maverick/Reprise, 1995); Gerhard Behles and Robert Henke of Ableton software; Jack Blades, songwriter for Aerosmith, Journey, Night Ranger, and Styx; Bob Ezrin, producer for Alice Cooper, Jane's Addiction, and Pink Floyd; Jimmy Jam, who has produced and/or written for Janet Jackson, Mariah Carey, Mary J. Blige; drum-machine pioneer Roger Linn; composer and performer Amy X Neuburg; composer Steve Reich; Bob Rock, who has produced Metallica, Mötley Crüe, Skid Row; producer and guitarist Nile Rodgers, who has worked with Chic, David Bowie, Madonna; and game-music guru George "The Fat Man" Sanger.

**Today's software and groove boxes can automatically conform sampled beats to a common tempo. How can you maintain interest when everything is chugging along in sync?**

**Behles:** This friend of mine, Heinrich, has a really interesting two-man band. Their setup is simple: they each have a notebook with Ableton Live on it, and each of them has his own set of sounds. And their rule is that they have not prepared a set. So they have a huge bag of sounds, and the artistry is that they know them so well. Then they assemble the sounds on the fly.

I have tapes of hours of really cool performances that they did together. They have a question-and-response thing going on; one guy drops in something, and the other guy comes up with a response of some kind.

**Do they synchronize their computers?**

**Behles:** That was a good discussion I had with them. They said they tried both ways and concluded that it's much better without sync. Because computers nowadays are stable enough in terms of timing.

**Henke:** The tempo is in sync anyway, so what they can play with is the phase. If Machine A is at 130 bpm and Machine B is at 130 bpm and you, for a short moment, go up to 131 or down to 129, it changes the phase ratio between the two computers. So you can go from flanging to offbeat things by slightly changing the tempo for just a moment. And that is way more exciting than having sample-accurate sync.

**It's that wonderful randomness or imperfection creeping in.**

**Henke:** Well, it's the same as using an analog delay line, dub style, and adjusting it not per calculator and sample accuracy, but until it grooves. It's a more musical way of thinking.

**Ballard:** Most listeners nowadays are accustomed to metronomic time, and so the challenge for me is to take real acoustic playing of interesting instruments and put that up against a grid of metronomic time. Sometimes you can go too far doing that, but I think you have to, on some level, reconcile those rhythmic elements a bit, which means sometimes correcting stuff in the live performances. And I don't even mean correcting it, but just kind of morphing it into the more metronomic stuff without completely quantizing it.

Almost everything people hear now, certainly in America, is quantized. And so, if you put a real drummer on, sometimes people don't get that. They don't know how to listen to that alone



Antares Auto-Tune has been widely used (and abused) to correct pitches. Here, it's moving a flat vocal up to the desired pitch while maintaining the vibrato.

now. They need that extra little . . . “authority” of the regular time. So it's always how far you go with that, how far you take a conga part and turn it into a loop that's really locked down, or how much slop you allow.

**Rodgers:** Oh yeah-yeah-yeah! In other words, humans don't feel real now. I was pondering that just last night, listening to a record from an artist I want to sign. He'd given me nine

## SWINGING MACHINES: THE BIRTH OF QUANTIZATION

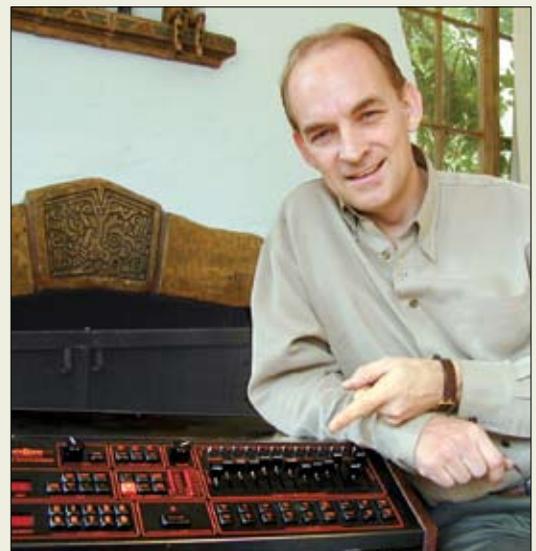
Roger Linn's discovery of quantization, or *timing correct*, as he called it on his instruments, was one of the pivotal happy accidents in popular music. Today, every sequencer and drum machine can automatically move the notes you play to the correct rhythmic position, producing quartz-accurate grooves. But Linn (see Fig. A) was also the first to implement *swing* quantization (which he initially called *shuffle*), which puts a big part of the human feel back in.

As he describes the quantization breakthrough, “Memory was very expensive back then, so I needed to use it sparingly. Recognizing that most drumbeats contained only 16th notes or 8th-note triplets, I initially created a real-time recording scheme that only allowed storage of 16th notes. When I tested it, I quickly discovered that everything I played was being moved onto the nearest 16th note, which had the cool effect of correcting my bad timing.

“Of course, the problem was that you

couldn't record triplets, 32nd notes, or exactly what you'd played. So I had to come up with a higher resolution. [He used 192nd notes, or 48 divisions per quarter note.] But then once I had that, I no longer had the effect of cleaning up 16th-note timing. So I ended up with high-resolution recording, plus a ‘funnel’ that would optionally move your played notes onto 16th notes, 8th-note triplets, or whatever timing value you wanted.”

Swing quantization was another stroke of luck. While searching for a way to convert between 16th notes and 16th-note triplets, Linn delayed the second note in each pair of 16ths so it fell on the subsequent triplet. But then he noticed that intermediate delay values produced a variety of interesting feels. So



COURTESY OF ROGER LINN

**FIG. A:** Roger Linn with his LM-1, the first programmable sampled-sound drum machine. It has six swing settings ranging from 50 to 70 percent.

he made that parameter accessible, and the rest is hip-hop history.



Amy X Neuburg

YOLANDA ACCINELLI

tracks. The first seven were played with his band and had a distinct quality to them. And the last two were sequenced and had a different quality. And this is really weird for me to say, but I sent him a message and said the only songs I was really into were the last two. Now, it could have been because of the composition, but a lot of it had to do with the feel. The feel of his band wasn't as good as the sequencer's. And that's

really interesting coming from me [laughs], because I'm all about live and groove.

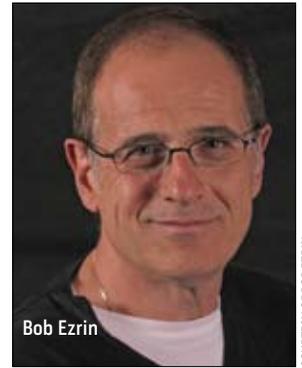
**Musically, I imagine you can really play with that tension between the metronomic and human rhythms.**

**Ballard:** No question about it. And that can be very satisfying. On some of the best records I've made, I didn't quantize those two elements, and it worked out fine. It's always sort of an innate sense of when I've gone too far. When it's stopped feeling as good as it did, you stop and go back.

**Blades:** Sometimes you become a slave to technology, and that takes the human, artistic, musician part out of it. It's good to have somebody like me who came from an analog world, who knows what feel is. Glen Ballard came from an analog world. Someone who hasn't come from the analog world simply doesn't know how good it can sound if you keep the humanistic tension and validity and volatility.

On the other hand, I know guys who are like, "I don't want to do it to grid [record to a metronome]. I love doing it to grid because you have the capability to fly parts around everywhere. But if you find that fine balance, that's the key. Sometimes when you double-track your voice [record the same part twice to thicken it], it's great to Auto-Tune one track completely and leave the other one the way it is. It just makes it really cool. It's there, but a little bit off.

**Reich:** In live performance pieces where you're synced up with a tape, you'd think the musicians would be playing the same way every night. My opera *Three Tales* is for a string quartet, four percussionists,



Bob Ezrin

COURTESY OF BOB EZRIN

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two pianos, three tenors, two sopranos, and prerecorded sound. There is a click track, but every night is different. Whether you're pushing against that tempo, sliding back from that tempo, or locked onto that tempo, all these things are musical realities. And with good players, once they get comfortable with what they're doing, the way they play determines how the performance feels. They'll try different kinds of accenting, different kinds of tuning, different kinds of rhythmic stress. It makes a huge difference.

**Roger, computer sequencers have many more quantization options than your original drum machines did. Have you played much with parameters like sensitivity, strength, randomness, and duration?**

**Linn:** Yes, and I didn't find them to be that helpful. In my earlier products, I narrowed it down to what I thought were the most important things. I found that the most useful way to quantize keyboard parts is to quantize the attacks and maintain the durations of the notes. I didn't see as much need for quantize strength. And getting some of the less-useful settings out of the way made the product easier to use.

**Jam:** I was working on a track the other day, and I told the programmer, 'Just set up some drum sounds for me in an Akai/Linn MPC3000. I'm just going to record this, and then you can fix it later. [Laughs.] You can grid it, you can put it in Pro Tools, and all that.' But I just wanted to record the way I did in the old days, where I just put up a bunch of tracks, I recorded them, and that was it—I was done.

And when he walked into the room to transfer everything to Pro Tools, he said, "Wow. This sounds like something from '88." And I said, "Good. That's what it's supposed to sound like."

**Amy, you said you once tried to improve a track by compulsively snipping out all the breaths between your vocal phrases, and ended up sounding like a singing cadaver. What are some other ways you've managed to kill a track?**

**Neuburg:** [Laughs.] Well, there was a particular song on my record *Utechma*—by Amy X Neuburg & Men [Racer Records, 1995]—that was about somebody who was dying. And I took the breaths out purposefully, to give the listener, without realizing it, a sense of breathlessness. There's this long, flowing line of vocal that didn't have any breaths to it, and

whenever I listened to it, I felt like I was suffocating.

So I did that intentionally, but there were plenty of things like that. If the Men's vocals didn't line up perfectly, I'd move them over so they'd be in perfect sync. That adds that lovely, unified, produced sound, but then the kind of beer-drinking, sloshed sound that we have on stage is gone. And there's something to be said for that raw energy.

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Robert Henke

COURTESY OF ROBERT HENKE

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# algorithmic composition software

MANUFACTURER	PRODUCT	VERSION	MINIMUM SYSTEM REQUIREMENTS	STANDALONE OR PLUG-IN	ARCHITECTURE	# OF MODULES	SUPPORTS USER-CREATED MODULES	AUDIO SUPPORT	POLYPHONY	RANDOM OR DETERMINISTIC	READS BITMAPS	SPECIAL FEATURES	PRICE
Cycling 74	M	2.6	Mac OS X, 32 MB RAM	Standalone	Predefined	24	No	No	128	Random	No		\$74
H.G. Fortune	X-Wheel of Fortune Pro	1.2b	Win 98/ME/XP, VST-Host	Plug-in	Predefined	5	No	No	N/A	Deterministic	No	Algorithmic Music System with five parts including percussion	\$44
Karma Lab	KARMA MW (for Korg Karma)	1.3	Win 98/ME/NT/2000/XP, PIII; Mac OS 9/X, G3, 64 MB RAM, MIDI	Standalone	Predefined	N/A	No	No	N/A	Random	No	Generates phrases, grooves, effects. Editor/Expander for the KARMA algorithmic function	\$149
Karma Lab	KARMA Triton (for Korg Triton Series)	1.3	Win 98/ME/NT/2000/XP, PIII; Mac OS 9/X, G3, 64 MB RAM, MIDI	Standalone	Predefined	N/A	No	No	N/A	Random	No	Generates phrases, grooves, effects. Includes 768 progs/combis, 1192 GEs from Korg Karma	\$199
Pirkle & Associates	Pirkle's Music Composition Studio	4.0.2	Win 95/98/NT/XP, 8 MB RAM	Standalone	Predefined	N/A	No	Yes	32	Deterministic	No	Generates classical (symphony, concerto, piano), jazz, blues, reggae. User involvement optional.	\$99
SoundTrek	JAMMER Live	1.0	Win 95/98/2000/XP	Standalone	Predefined	N/A	No	No	N/A	Random	No	Real-time interactive back-up band software	\$60
SoundTrek	JAMMER Professional	6.0	Win 95/98/ME/2000/XP	Standalone	Predefined	N/A	No	No	N/A	Random	No	Song-creation software	\$129

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How else do I overwork? I used to put in gratuitous production effects that were just *cool*, like moving things from right to left for no particular reason. Or making all the pitches in a song absolutely perfect, which took some of the reality out of it.

I've been listening to Björk a lot and realizing that she doesn't do that at all. She'll double herself and be way off, or she'll breathe and be about to deliver a line and realize, "Oh, wait; there's no line here," and just keep the breath in. Or the pitch sinks into nothing and turns crackly. And it sounds like a person is singing into your ear and meaning what she says. I'm realizing for the first time how powerful it is to have those mistakes in there; in the past, I took those out. And I'm going to try not to do that anymore.

**Producer Scotch Ralston** was lamenting how the audio production process has become so visual. He described how bands will huddle around the computer monitor and say, "Uh-oh. My kick drum was a little bit off the grid right there. Can you shift it 10 milliseconds to the left?" He said he often wishes he could pull a sock over the screen and get them to listen again.

**Rock:** [Sighs.] Yeah. The thing is, the general public is being fed music that is being fixed up, that is being homogenized, so when they hear something that isn't, it sounds odd to them. Most people don't even know why. Everybody's just got to lighten up on the grids and the Auto-Tune. That's why the White Stripes or



Bob Rock

MARK LEIALOHA

the Strokes or even Metallica's *St. Anger* CD are so abrasive to people. Because they're not actually that abrasive. Those kinds of records have been around forever. It's just now, when everything is perfectly in time and perfectly in tune, that's what people expect. So . . . turn off the monitors. [Laughs.]

**Ezrin:** I completely and utterly agree with that. I hate having the Pro Tools in the control room. The refined manipulation shouldn't be happening at the point of performance, because they're mutually exclusive. That's why I prefer to work with artists who have developed the material completely before we ever get into the studio. You *can* manufacture performance; we do it all the time. But the difference between a manufactured performance and a real one is palpable.

The music industry has hurt itself enormously by trying to manufacture too much, by not allowing enough stuff to happen and grow naturally. Manufacturing is by definition artificial. And the audience isn't stupid; after a while they start to hear it.

**The Fat Man:** Joe McDermott [Team Fat composer and children's music performer] just did a children's song where he individually Auto-Tuned every note of a 5-minute, a cappella, 8-part piece. It feels fantastic. Everyone in my circle is singing this "Baby Kangaroo" song now. And all the time he was working on it, I was yelling at him, "You are serving your computer! You are doing this wrong!" I thought he was serving Auto-Tune, but he was putting it where he needed it to do something that was on his mind. **CMPG**

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