

# SCIENCE FRICTION

Modern recording offers amazing sonic possibilities—but does it really make for better music?

By Dan Daley

Ed Cherney shakes his head as he looks over an information sheet that lists more than 140 tracks for a mixing project he recently worked on. "It took three days just to sift through the tracks, let alone learn the song," says the Grammy-winning producer and engineer, who has recorded artists including Bonnie Raitt, Jackson Browne, the Rolling Stones and Sting. Three decades into the digital recording era, virtual tracks are literally limitless. As they were recording *Sgt. Pepper's Lonely Hearts Club Band* on a four-track analog recorder, the Beatles must surely have dreamed of such a luxury. But would they have really made a better album?

Cherney observes that while digital recording has freed music-makers of the constraints of two-inch analog tape, it also allows for tough choices to wait until the end of the recording process. Decisions get deferred: Which of 25 guitar solos to use? Should the harmonies be above or below the lead vocal? Which of 40-plus pieces of vocal comp to choose? Many producers and engineers now choose not to record effects as part of the track, adding that processing later and creating another slew of decisions. Plug-in processors—inexpensive digital clones of vintage or costly compressors and reverbs—offer vast temptations to the mixer.

All these hundreds of tracks ultimately must be reduced to a simple stereo pair before the music reaches the listener. That means compromises will be made, many at the last minute, with unfortunate results. "Years ago, working with Bonnie or Jackson, we could increase the number of tracks we had by syncing multitrack machines together," Cherney says. "And there were good reasons to do that, like to stack vocals or guitars and make them sound big. But there was still a limit to the ultimate number of tracks. You had to make critical decisions as you went along, and that kept you close to the song, close to the artistic vision." Cherney is reluctant to flat-out state that the infinite possibilities offered by modern recording technology has made music worse. "But it certainly hasn't made it better," he deadpans.

## THE REAL THING

The debate about the merits of digital processing has escalated over the last several years most obviously due to the prevalence of pitch correction programs like Auto-Tune. What in its original application was a subtle remedy for off-pitch vocals has come to dominate commercial pop music. Acts like T-Pain have built their sound around using pitch-correction software as a special effect to distort the voice, an idea first popularized a dozen years ago with Cher's heavily Auto-Tuned hit "Believe."

Just as reverb has been added to music

Vancouver's Columbia Academy, puts it, "It seems like in today's world, if you are not using some sort of tuning, your record might actually stand out as sounding different because almost everybody uses it."

One producer recalls having used Melodyne, pitch-correction software from German audio software developer Celemony, to fix minor pitch problems on a vocal track several years ago. The label chief came to the studio at one point to check out the mix, asking for it to be played back several times as he listened intently. "It sounds great," he said at last, "but it doesn't sound tuned."

He demanded that the vocals be reprocessed to make the pitch-change effect more apparent.

Pitch correction, of course, continues to have a legitimate purpose. Johnson was pregnant during the recording of her new album, *Love Rules*, and used the technology to tweak some vocals when she was simply too exhausted to continue singing lines again and again. "I was very anti-pitch correction and still am very proud of not using it," she says. "But I am actually very thankful for it this time around, because it did help me and save me time." While pundits argue endlessly over the artistic legitimacy of Auto-Tune, the reality is that pitch-correction software is simply the tip of an increasingly potent digital spear that's striking deep into the music production process.

## AUTHENTICALLY UNREAL

The argument has been made that the very act of recording music is a form of processing—at the very least it is time-shifting, making a performance accessible for listeners long after it occurs. Even the most basic equipment needed for recording changes the sound of the performance. Audio engineers can choose among countless microphones, for example, and each one makes a voice or instrument sound at least a little different from the others.

Still, reverb and tape delay were pretty much the only out-and-out processors available to most recordings until the late 1960s and early '70s. First came guitar distortion devices and ring modulators. Then came digital effects, beginning with Lexicon's Delta T-101, the world's first



The Beatles

**'The different technologies just keep feeding each other.'**

— Producer Mark Hornsby

for the last 60 years to make recordings done in small, airless rooms sound like they were recorded in a huge church, now pitch-correction processing has become a routine part of the making of contemporary pop music. In fact, its absence can be conspicuous. As singer-songwriter Carolyn Dawn Johnson, who studied engineering at

digital delay, in 1971. Synthesizers have existed in one form or another for more than a century, but in the 1980s they came to dominate popular music. Bob Moog's early monophonic designs quickly gave way to highly complex computerized musical instruments like the New England Digital Synclavier and Fairlight CMI. Japanese

of creation—any other sound could be substituted later on.

The transition from acoustic to synthesized keyboards actually came to affect other instruments. Pianos, guitars and horns have a "window" of what constitutes "in tune." The very slight differences in tuning from one



Jeff Kravitz

Jay-Z at Bonnaroo Music & Arts Festival 2010

companies like Yamaha, KORG and Roland rolled out generations of affordable, versatile keyboards capable of recreating strings, organs and—with their ability to sample sounds—just about anything else.

Once synths stopped being used to emulate existing instruments like strings or horns or guitars, they began to find their own "voice," so to speak. Keyboardist Larry Fast, who helped to popularize the synthesizer through a series of 1970s albums under the name Synergy, thinks the tipping point for the instrument into popular acceptance came with Gary Wright's synth-drenched hit "Dream Weaver" in 1976. "It was a good, solid pop song first, instead of the novelty of being electronic dominating the song itself," he says. "It was the first record that stepped over the line and opened the door for every mass market electronic pop record that followed." With the arrival of MIDI technology in 1982, the part that was played on a keyboard was no longer married to the sound that was played at the moment

instrument to another are responsible for much of the timbre of ensemble music performance. It's especially noticeable when non-fretted stringed instruments, such as violins and cellos, play together; the minute differences between instruments and fingering on a single note add huge

**'Processing can be used tastefully or it can be used badly.'**

**— Producer Ed Cherney**

amounts of color to the music. This is the reason double-tracking works. A vocalist re-sings the same part, note for note, on a separate track. No matter how good the singer is, he or she will never nail every note of the doubled track precisely the



Carolyn Dawn Johnson

same as on the original. Nor would you want them to—the whole point of double-tracking is to get the sound that comes from the slight inconsistencies of pitch between the two tracks.

But a virtual instrument can be tuned precisely, meaning that any imperfections in the vocal or other instrumentation becomes obvious against the perfection of the track. That's necessitating even more application of vocal pitch-correction. "The different technologies just keep feeding each other," sighs producer Mark Hornsby.

**CHANGING TASTES**

Much of the processing used on records over time began as technological solutions to real problems. The application of Auto-Tune as an effect, for example, is subsequent to its use as a remedy for pitch issues. The same can be said of effects like flanging—the use of two versions of

the same signal played with a very small time delay between them. Flanging was first developed as a way to save time and effort by virtually double-tracking vocals, and made its purported debut on the Beatles' "Tomorrow Never Knows," from 1966's

*Revolver*. The following year, the effect was the dominant sonic spice of the Small Faces' hit "Itchycoo Park"; the year after that, it's all over "Pictures of Matchstick Men" by Status Quo. Listening to "Itchycoo Park" or Jimi Hendrix's "Bold as Love" or any of hundreds of other period pieces from the era when flanging was popular instantly

are compressed ever more intensely, the overall level of the track gets distorted. The balance of the entire track begins to smear, a process exacerbated even further on the radio by broadcast compression. Louder records have long been perceived as giving songs an advantage over the competition. But many believe the one-upping of loudness

**BACK TO THE FUTURE**

The over-reliance on digital effects may be precipitating a backlash. John Mellencamp's new album *No Better Than This* was recorded using a single microphone and a vintage mono Ampex tape deck. When the Beatles catalog was reissued last year, a box set of all the group's mono recordings was simultaneously made available. Even Thomas Dolby, whose sound effects-heavy hit "She Blinded Me With Science" was a signature song of the synth-happy 1980s, is taking the opposite tack with his new records. "In 2010, the focus is on the song and I'm steering clear of that kind of



Courtesy Consequence

Thomas Dolby

evokes the tone of its time.

Flanging seemed to capture the psychedelic zeitgeist of the 1960s—but by the end of the '70s it was nearly abandoned. The tape-slap echo of 1950s rockabilly was passé by the late '60s and seemed almost kitschy when revived in the 1980s by the Stray Cats. These effects and others were novel in their early applications, became widespread and affordable thereafter, and ultimately were relegated to status as cheap commodities as digital plug-ins. The overuse of an effect hastens its relegation to the bottom of the audio toy box. Pitch correction will remain a useful tool in the recording studio, but will it continue to be a front-line sound effect? History seems to suggest not. Just a few months ago rapper Jay-Z released "D.O.A. (Death of Auto-Tune)," which takes artists to task for clinging to what he sees as a played-out effect whose time has come to an end. "You're T-Paining too much," he counseled.

A less obvious but no less insidious trend is the so-called "loudness war." As the natural recorded peaks and valleys of a song

has become an arms race, one in which the dynamic range of the CD—one of its remaining advantages over MP3—is being sacrificed.

"This might be the straw that broke the camel's back," observes Grammy-winning mixer Michael Brauer, who has worked with acts like John Mayer, Coldplay and Leonard Cohen.

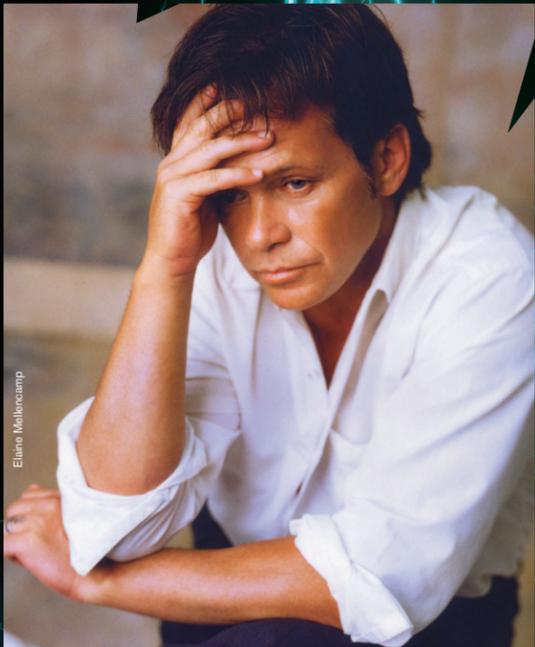
"I've been fighting the level war for years." Brauer says he once threatened to take his name off a record he felt had crossed the line from loud to distorted, and the artist agreed to have it remastered. But he says the pressure to pursue higher volume continues to come from many sources, including the artists, their managers, record labels and even some mixers.



Jimi Hendrix

processing," he says, calling Auto-Tune "a fashion accessory whose day will pass."

So has more than a half century of aural wizardry helped or hindered the evolution of pop music? Or would pop music not have evolved at all had it not been in constant pursuit of the next offbeat sonic parlor trick? Do we now have, after all the well-meaning innovation and invention, too many choices?



Eliano Mellencamp

John Mellencamp

Recalling his early years working in Westlake Sound studios in Los Angeles, Ed Cherney remembers a studio space filled with every new piece of gear available. "And I felt like I had to use every bit of it," he says with a laugh. "I knew I was done adding stuff when I ran out of patch cords." However, he figured out pretty quickly that all that stuff was cluttering up some pretty good music. Compression, reverb, delays, special effects—use them too much and suddenly they were competing with the song instead of supporting it.

Cherney credits his understanding of that principle to years of working alongside master record makers. That's what he feels might be missing now: the kind of mentoring that comes with apprenticeship rather than the rote knowledge of a textbook or classroom. "We're in the middle of the second generation now that didn't learn to make records through traditional recording studios, sitting behind a great engineer or producer," he asserts. "They learned using Logic or Pro Tools on a laptop."

Processing will always have its place. But no one's yet developed a plug-in for taste; that's something that remains an acquired skill. "Processing can be used tastefully or it can be used badly," says Cherney. "So it's not processing that's the problem, just like it's not the car that causes the accident. It's the nut behind the wheel!" **M**

## TUNING OUT

Singer-songwriter Allison Moorer's 2002 album *Miss Fortune* sported a sticker declaring, "Absolutely no vocal tuning or pitch-correction was used in the making of this record." She is among the front ranks of singers who continue to resist the lure of effects like Auto-Tune. We spoke with Moorer—whose latest album, *Crows*, was made without pitch correction software—about her decision to keep it natural.

### Why do you dislike pitch correction?

I think it sounds bad, and it's not real. I'm not completely opposed to tuning something if it's a great performance and there are one or two notes that are bad and need fixing. I still don't personally use that tool, but I get it. I think when you go into the studio with tweezers and tune every note, what's the point? Why don't we just get robots to sing?

### Yet the industry accepts it as the norm.

Oh, they do. Is that what young kids today think a real voice sounds like? When they hear an untuned vocal performance, do they think, "Oh, that sounds bad, that person can't sing"? I wonder what they think when they listen to a Willie Nelson or a Billie Holiday recording. Dinah Washington, one of the best singers who ever

walked, sometimes sang a little above pitch. That was her style, that's part of the reason she was great and so recognizable. What if they tuned her?

### Does something have to be authentic to sound authentic?

I don't think you can throw a blanket over anything. People have said, 'Oh, they use Pro Tools, it sucks the life out of music.' No it doesn't! It's about who's using it. If the song is great and the performance is great, it doesn't suck the life out of anything. If it had no life to begin with, sure, it can be done. It's got to be good to begin with.

### Does recording digitally ever offer too many choices?

You can get into a situation where if you've got 144 tracks you want to use all 144. I always say, just because there are 88 keys on a piano doesn't mean you have to use every one. Sometimes you want to stay within two octaves. There's a time and a place for everything. At the end of the day, you just have to have some taste.

—Chris Neal



Angela Kohler

Allison Moorer

MICHAEL FRANTI | SQUEEZE | AEROSMITH | TEGAN AND SARA



THE BLACK CROWES  
Fight or flight

INDIGO GIRLS  
Keep it live

TOM JONES  
Strips down

**SHERYL CROW**  
Finding fresh new sizzle in classic sounds



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