CHIP TUNES

Random

Glomag

Bit-Shifter

Covox

nullsleep

Herbert Wixelbaum

Psilodump

bubblyfish

David E. Sugar

A new wave of "8-bit" musicians have turned old-school video games into new musical instruments

Artists in a new electronic music sub-genre—known by names like chip tunes, Nintendocore, and bitpop—are programming the 8-bit sound cards from old video gaming systems like Nintendo's Game Boy and N64 to create sounds that hearken back to the days of Super Mario Bros.

"This gear from just a couple decades ago now sounds really ancient," says Brooklyn, New York's Chris Burke, (also known as "Glomag"). "Those Mario Bros. cartridges have that really bleepy sound. Even people in their twenties appreciate that sound because they were probably five when they first heard it." At some point, Burke explains, people started making original music that utilized the sounds from the games they loved. "They enjoyed the sound of these old consoles."

The new artists working with this old technology aren't just playing the songs that were featured in the games. A new album called *8-bit Operators*—which pays tribute to Kraftwerk, a German band that popularized the "machine music" idea in the 1970s—showcases how diverse and creative these musicians can be. The Robots' "Bacalao" shakes and shimmies over a hyper funk beat. Glomag's "Pocket Calculator" is mechanical and jerky, like something from a black and white sci-fi movie. Covox's "Computer Love" operates in a pure dream state; David Sugar's "Radioactivity" is utter madness; Receptors' "Trans-Europe Express" coughs up sputtering techno fairy tales. Then there's Anamanguchi's "Helix Nebula," which sounds like the house music at a disco in outer space.

The genre was born when German and Swedish techies Oliver Wittchow (of Nanoloop.com) and Johan Kotlinski (of LittleSoundDJ.com), started reprogramming the cartridges (carts) of their favorite gaming systems. They learned to write in the games' code and then reprogrammed the chips in

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the carts with new material. Nanoloop and Little Sound DJ are two of the most common software programs used with the video game consoles to produce chip tunes.

But how does one actually make music from one of these modified video game consoles? First, some background: To create the sounds in old video games, "the programmers would send instructions to the sound chip regarding tempo, note selection, and duration of note," explains Receptors' Jeremy Kolosine from Roanoke, Virginia. "They had to program a tool to write music. Some game consoles were little computers." 8-bit musicians use a variation of these programming techniques today.

"Every console is different, as are the carts," Burke says. "The Game Boy uses a 'D pad' [*a four-way button operating up, down, left, and right functions*] and four buttons: Two big red buttons labeled A and B, and two smaller buttons, for start and select. With the reprogrammed carts installed in the game system, you use all of those buttons in different combinations to write music."

8-bit programming uses a method called *sequencing*, which dates back to the earliest days of electronic music. A sequencer is a device that records commands, and then uses these commands to trigger notes and other "events" such as modulation, pitch bends, and the like. This was the basis for early drum machines and the synthesizer music pioneered by Kraftwerk. Today's computer-based recorders continue to use sequencing, but it's far more complex than the technology used 20 to 30 years ago. The 8-bit movement is a way of stepping back into that old technology.

The program Little Sound DJ organizes commands into an *event list* that allows 16 steps, for sixteen 16th notes in a measure. The artist can insert note events, which then trigger the sounds built into the game's chip.

"The software lets you control the notes: the pitch, duration and volume of the notes, all viewed on the small Game Boy

Receptors

Hey Kid Nice Robot!

8-bit Weapon

screen," Burke explains. "With Little Sound DJ there is a series of windows you can cycle through: the Phrase screen where you organize the initial steps or notes; the Chain screen where you make a melody and bass line; and the Song screen where you sequence the chains into verse or chorus." 8-bit, however, isn't only for programmers. "You can do this in real time," Burke continues, "which allows live performance."

The technology is relatively affordable and available. "You can find controllers on the Internet for 20 bucks," Kolosine says, "and Nanoloop and Little Sound DJ will set you back $100 apiece. The best way to get started is to use any Game Boy with a Nanoloop cartridge. The best-sounding Game Boys are the old gray ones. They are louder, and those are actually four-bit!"

Some 8-bit musicians link Game Boys together (one for melody, another for rhythm, for example) and improvise on the fly while others preprogram their game systems. As with any *avant-garde* movement, people are constantly innovating.

The chip tunes community comes together once a year at the annual Blip Festival (held last November in New York), and the Internet is alive with chip tunes information, with sites like 8bitcollective.org and 8bitops.com offering free music and plenty of info. It's a shared community where modifications abound and the underground rules. [Log on to InTuneMonthly.com for exclusive coverage from this year's festival.]

Despite its electronic nature, this music has an emotional pull. "People's memory of these sounds will always be tied to their first video game experience," Kolosine says. "It's a deeply rooted nostalgia that is more than just watching a movie; it's the first interactive entertainment system that existed for many people. And as a musician, chip tunes makes you write music differently. No one has ever really done this before. There are no rules. In that way, it is kind of punk." But regardless of the sonic innovations, 8-bit is not all that different from other sounds of music. "This is a return to melody and song structure," Kolosine says. "It's about the song." **T**