SYNTH HACKS #07
SWINEWAV
TEACHING A PIG TO SING

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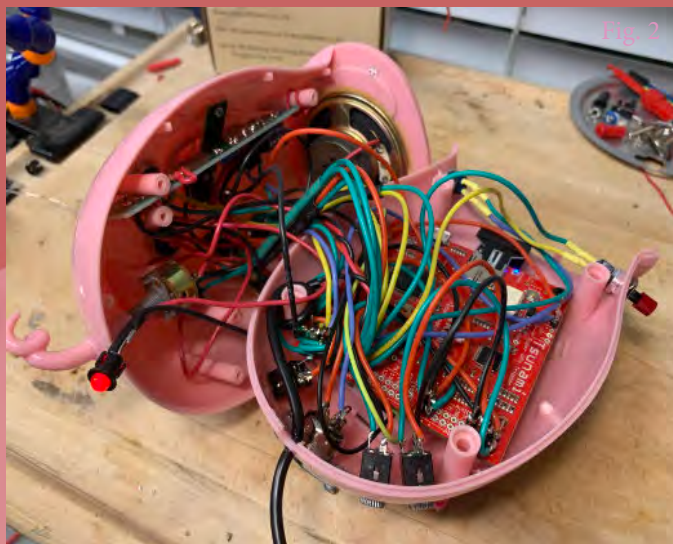

SwineWAV currently has nine trigger buttons, two stereo outputs, and MIDI. The upper circuit board is a bonus oscillator that squeals when you twist the tail.

Robin Williams' voice rings out

as I tap SwineWAV's left ear. "You a farm boy? You'll remember *this* sound — SQUEAL!"

This is the story of how I put a MIDI sample player in a pink plastic pig . . . and how you too can make unique instruments with just a handful of parts. Like many of my projects, SwineWAV started with the case. Originally it was a pig-shaped radio with ear buttons that changed the station. I pulled out the radio and popped in a SparkFun Tsunami Super WAV Trigger. Tsunami [$79.95; sparkfun.com] is a 3x3-inch circuit board that holds 4,096 stereo WAV files on a microSD card. Solder on a MIDI jack and up to eight audio jacks, plug in a USB cable for power, and you have a mini Mellotron or drum module you can fit almost anywhere. It plays 18 stereo WAVs at once or 32 mono ones.

Each incoming MIDI note triggers the correspondingly named WAV file. For example, Middle C [note 60] would trigger 060_farmboy.wav. There are 128 MIDI note numbers, so to select the next batch of 128 sounds, you send a MIDI program change. Tsunami also responds to velocity, pitch-bend, and continuous controllers for volume, sustain, attack, and release. By adding an "L" to a file name, you can make the sound loop. Add another number to specify the output jack.

In addition to MIDI, Tsunami has serial ports for Arduino control and 16 trigger inputs that respond to 3.3V pulses or simple buttons. I soldered the pig's ear buttons to the first two trigger inputs. In the companion software, I configured the left ear to play a series of sound bites about pigs and pork products, and the right ear to play random grunts and squeals.

Debuting SwineWAV at the Davis Arts Center's circuit-bending exhibition. See videos, tips, and construction notes at batmosphere.com/swinewav.

One especially cool thing about Tsunami is the wealth of trigger modes. I set SwineWAV's left eye to trigger random drum loops and the right eye to trigger random riffs and chords. Three more buttons start, pause, and restart text-to-speech recordings of spam emails [continuing the pork theme]. I'd long wanted a speech synth that would let me start and stop long phrases on the fly, so I was thrilled the system let me add buttons where they felt comfortable and decide later on what each one did.

I mentioned the eight outputs; in stereo mode, they're configured as four stereo pairs. I send drum loops to one pair and sound bites and melodies to another so I can add effects. Mono mode lets you address all eight outputs individually with sample-accurate sync, so you can play 5.1 and 7.1 surround material. The Nutella add-on kit [130€; tesseract-modular.com] turns Tsunami into a Euro-rack module.

Building instruments into amusing cases not only adds personality, it can inspire your audience. At my previous job, I tried for months to convince the company to add MIDI support to our software. When I brought in SwineWAV, the lead programmer got so delighted that he started adding MIDI right away. **Squeal!**
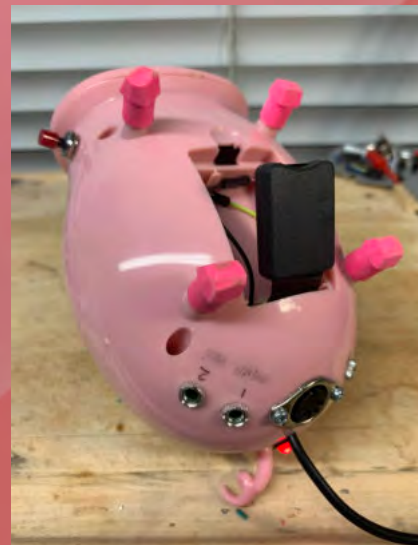
My proudest hack was extending Tsunami's microSD card slot to the hatch in the pig's belly for easy access.