Dirty Electronics: Skull Etching

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Very Brief Context …
Inspired by: Craig Anderton, Michel Waisvisz, the Crackle Box, David Tudor, Hue Davies, Scratch Orchestra, Nicolas Collins, Merzbow, Tom Bugs, Tristan Perich, Stanley Lunetta …

Features
Touch control
Two oscillators
Distortion
Feedback network
Filter
Interference/hum/radio …

Playing the Instrument
Find your own way to play the instrument.

Some tips: lick your fingers and touch the small skulls. Touching skulls A and B will complete the circuit of Oscillator 1. The moister the fingers and the greater pressure on the skulls the higher the pitch of the oscillator. Using one finger, instead of two, to touch skulls A and B produces a higher pitch. Oscillator 2 (skulls C and D) can be played using the same techniques.

Skulls E, F, G, and H primarily control the feedback network. To complete the feedback circuit touch skull G and either E or F. G is a shared skull. Used with H it acts as a filter control in some instances. Touching skulls E and F in isolation will produce earth hum and possibly radio interference.

All of the above can be combined to create interesting modulating results.

Try touching the skulls in different combinations to find new sounds.

Jack Socket
The jack socket also acts as a switch. Use a **mono** 3.5 mm jack plug to switch the instrument on properly; or re-wire a stereo jack plug connecting the ‘ring ‘to ‘sleeve’.

Reference
Anderton, Craig. *Electronic Projects for Musicians*. New York: AMSCO, 1980.
Brindley, Keith. *Starting Electronics*. Amsterdam: Elsevier/Newnes, 2005.
Collins, Nicolas. *Handmade Electronic Music: The Art of Hardware Hacking*. New York [etc.]: Routledge, 2006.
Lancaster, Don. *CMOS Cookbook*. Indianapolis: H.W. Sams, 1977
Richards, John. “Getting the Hands Dirty,” *Leonardo Music Journal* (18) 2008.
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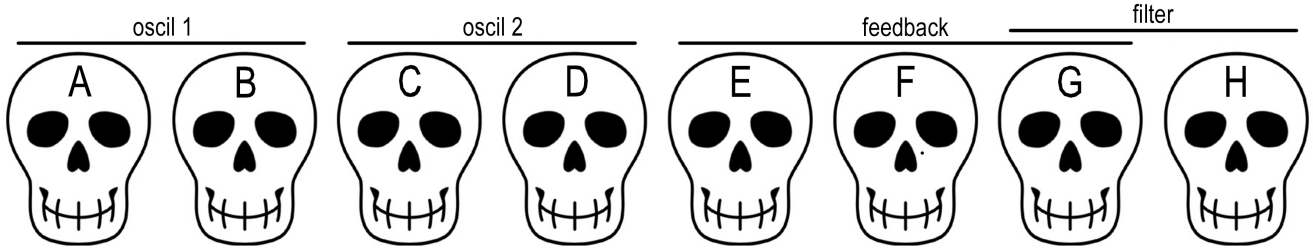
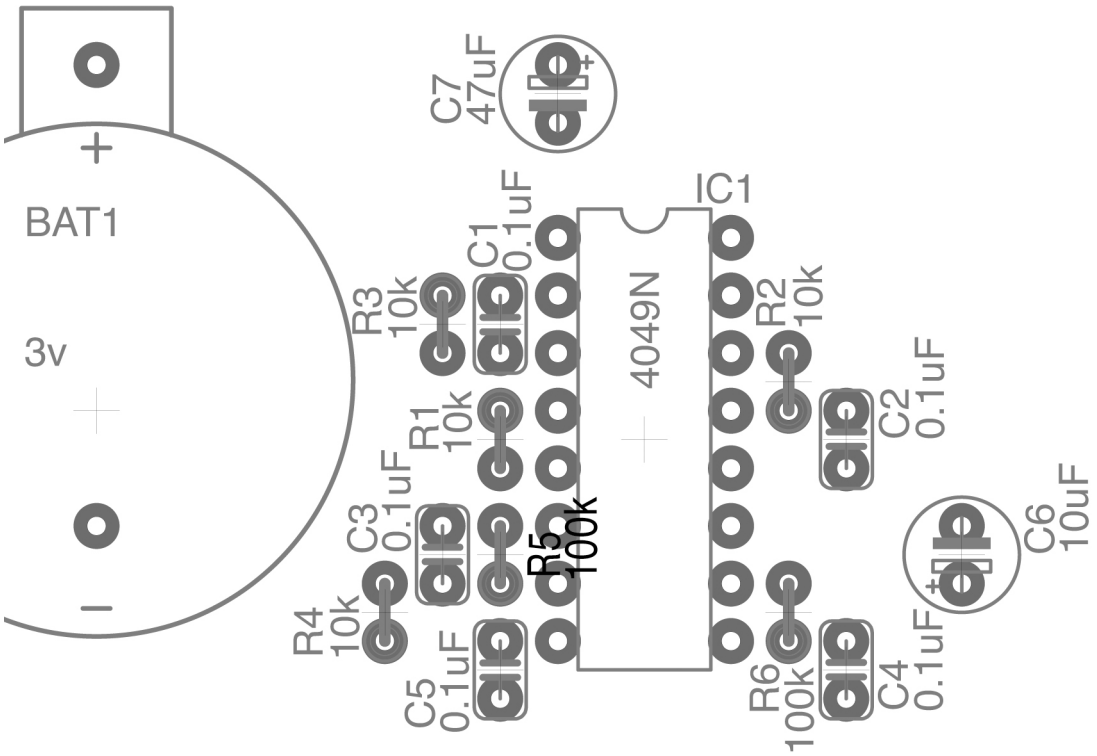
Touch Controls



Component Layout



Construction

Essential tools required: soldering iron (typically 12 – 25 watts with a fine tip), lead free solder, and wire cutters. Solder the DIL socket (notch facing upwards), resistors (R1 – R6), capacitors (C1 – C7) (watch polarity +/- of C6 and C7), audio-jack socket (off diagram) and battery holder. Take care that the audio-jack is flush (feet fully inserted) against the board (tight fit). Stick the rubber feet in the four corners on the back of the board. Insert IC1 (notch facing upwards) into DIL socket, and battery into holder. The copper etching will tarnish and oxidise and may be cleaned with metal polish.

Part List

C1	0.1uF	R2	10k
C2	0.1uF	R3	10k
C3	0.1uF	R4	10k
C4	0.1uF	R5	100k (br/blk/blk/org/br)
C5	0.1uF	R6	100k
C6	10uF		
C7	47uF		
IC1	4049N	PCB	skull etching PCB
DIL	DIL socket (16 pin)	CR2032	3v coin cell battery
AUDIO JACK	jack socket (3.5 mm)	BAT1	CR2032 battery holder
R1	10k (br/blk/blk/red/br)	FEET	rubber feet x4