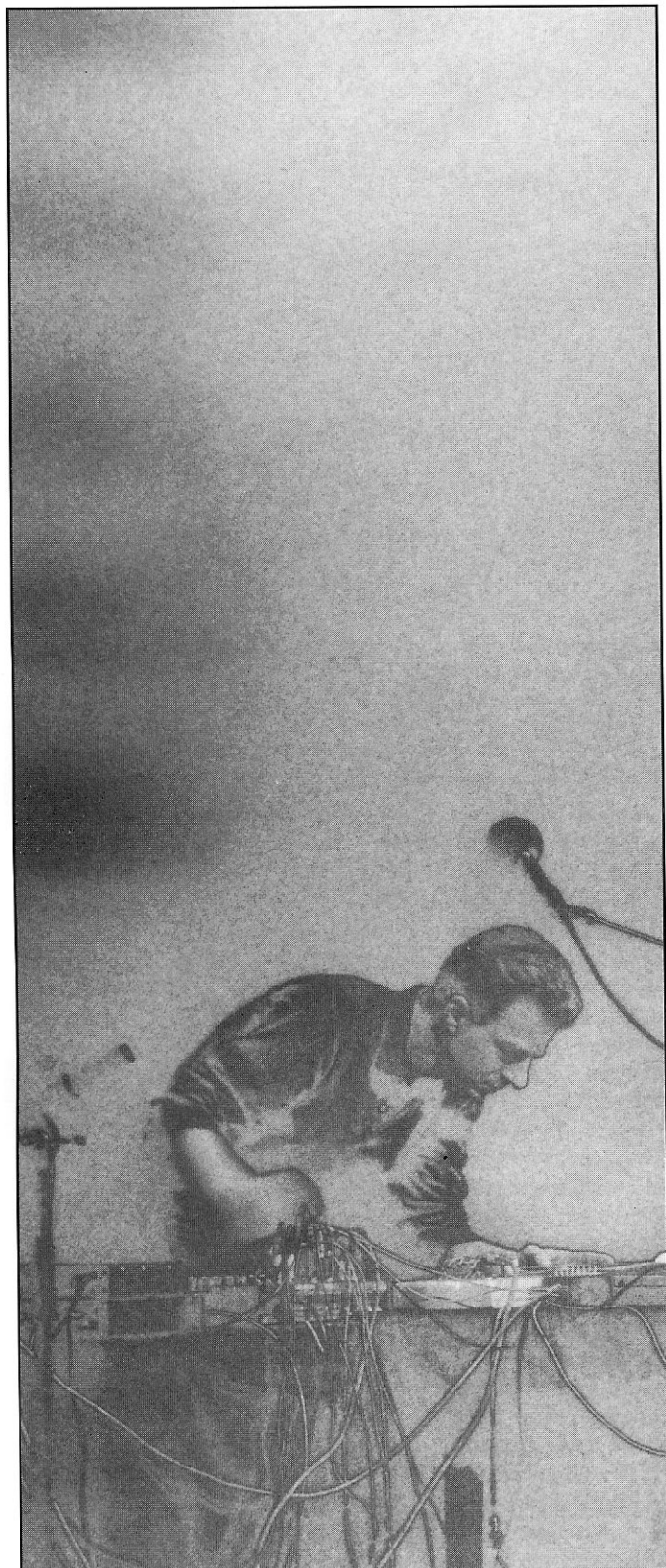


NICOLAS COLLINS

All This And Brains Too: Thirty Years of Howling Round



Nicolas Collins

THE OPENING “PWWWWAAAAA0000IIIIIIINNNNNNNNGGGGGGGG” OF The Beatles’s “I Feel Fine” says it all. How could something so wrong sound so right? John Lennon’s disruptive skid into George Martin’s otherwise carefully controlled production hinted at something that an E-chord alone could not convey. In 1964 feedback was more than just a cool sound, it was a sign that things were not going entirely according to plan. By the standards of a comfortable middle-class American kid, it was a revolutionary sound, a harbinger of more radical things to come: Hendrix and The Who, Psychedelia and Punk, Reich and Ashley. Forty years later, feedback’s rebel stance may seem anachronistic in pop music, but thanks to the laws of physics it remains a provocatively unstable and haunting musical material.

As a composition student at university in the early 1970s, I was obsessed with feedback, and almost thirty years later I find myself returning to feedback in times of indecision. Having absorbed Cage’s maxim that “any sound can be a musical sound” by the age of 18, I found myself quite unable to choose any one sound over another. Feedback — the Zen-like infinite amplification of silence — became my pathway out of this stasis, and was central to a half-dozen pieces I produced while a student of Alvin Lucier. Feedback conveniently mapped the acoustical characteristics of any space (its resonant frequencies, reverberation time, frequency balance) into a sonic portrait, a site-specific raga — a fortuitous collusion between the methods of Cage and the concerns of Lucier. Turn up the volume and let physics do the rest.

Feedback, moreover, revealed links between electronics and acoustics, between circuitry and instruments, between structure and sound. The familiar, screeching, runaway gain of “positive feedback” manifests itself overtly as sound; but the concept of “negative feedback,” which is central to machine control (the governor on a steam engine), cybernetics (self-regulating systems) and audio electronics (compressors and limiters), can also be made musical. In “Nodalings” (1973) I used Sony TC152 portable cassette recorders as outdoor amplifiers, placing them inside dry culverts and wiggling microphones to “overblow” feedback harmonics of these architectonic trombones. The Sony recording limiter did a wonderful job of taming the feedback, transforming squeals into smooth, controllable sine waves — a lovely instance of negative feedback trying to keep positive feedback under control. For an indoor variation the culvert and air mike were replaced by a lunchroom table and contact mikes, and the four inch Sony speaker was supplemented by a full-size PA. The resulting feedback resonated different pitches as the contact mikes slid across the vibrating table top.

For “Feetback” (1975) I embedded small microphones in the mouthpieces of woodwind and brass instruments, and wired each to a different loudspeaker. Four performers gathered in the center of the space, and then proceeded to walk outward toward the speakers. The score instructed:

“At each step along the path try to prevent your channel from feeding back by finding fingerings or spatial orientations of the instruments that cancel feedback. You may only take a step when no-one is feeding back. Continue moving in this fashion until you can no longer sustain any silence.”

I was pleased with the Cagean twist in this piece: its sounds are unintentional, the result of trying to avoid feedback, rather

than articulate it; the players take on the role of a limiter trying to keep the gain under control.

The PA is replaced in "Q" (1975) by "speaker-instruments": mid-range loudspeaker horn drivers are affixed to the mouthpieces of a trombone and a saxophone. Each "microphone-instrument" is connected to a "speaker-instrument" via a simple synthesizer patch that adjusts the audio gain in response to key slaps on the microphone-instruments. Depending on the gain, the resulting feedback may take the form of a gentle, chime-like ringing, easily re-tuned by fingering or moving the instruments, or more aggressive, steady state feedback tones. As in "Feedback," much of the sound has a fleeting, spurious quality, and the players spend much of their time simply trying to suppress unwanted sounds.

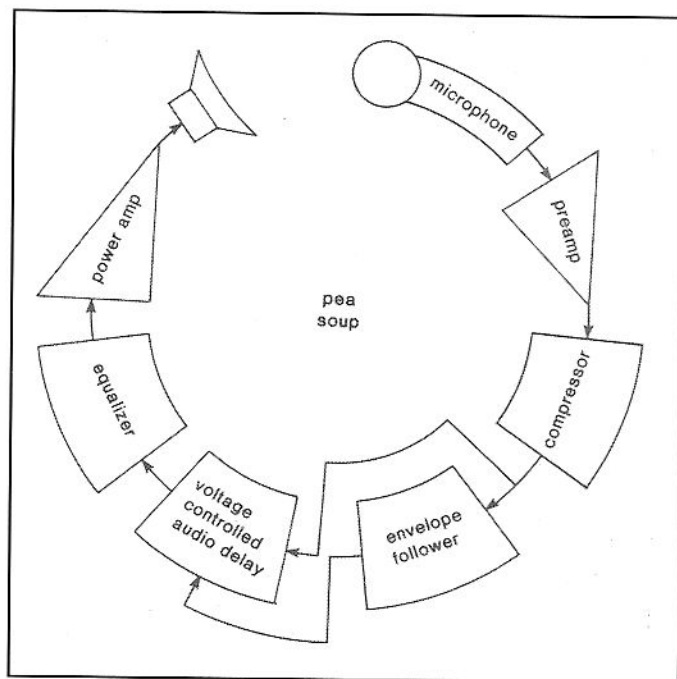
In "Pea Soup" (1974-76) my passion for unintentionality approached the sublime. With a limiter, an envelope follower and a Countryman phase shifter I assembled a simple electronic network that shifted the pitch of the feedback to a different resonant frequency of the performance space every time the feedback started to build — a clear example of a cybernetic self-stabilizing system. Feedback's typical steady shrill tone is replaced by patterns of pitches, and the specific pitches, shape and duration of this "architectural melody" are affected by the smallest of changes in the room. "Pea Soup" is equally suited to installation and concert realizations: the melodies can be manipulated by movement (dance or simply walking about), playing or singing, or even letting in a draft of cold air.

At the end of the 1970s I began building flexible architectural spaces with the intention of physically manipulating interior acoustics. I hung large sailcloth tents from the ceilings of galleries, concert stages and public spaces, and adjusted their shape via ropes attached to a performer's body, in a sort of reverse-marionette configuration ("Niche," performance version, 1978); by means of computer-controlled winches ("Niche," installation version, 1979); and using water ballast and pumps ("Water Works", 1980). Feedback, and later some feedback-like computer programs, revealed in sound the acoustical changes that accompanied the morphing of the tents — room-sized spaces that could be played as musical instruments.

In the 1980s and 1990s I was more concerned with social interaction, the flow of narrative, flawed self-limiting systems of human behaviour. But feedback (and its accessories) continued in my work as a principle, if not as a recognizable voice. With my first microcomputer I experimented with processing feedback by modulating filters at very fast rates, producing rich sidebands and unstable shearing textures ("Second State", 1981).¹ In the late 1980s one of the speaker-instruments from "Q" became the armature for my "trombone-propelled electronics."² Feedback is part of the basic vocabulary of this instrument: open microphones, picking up my voice or other instruments, ring through the trombone, and the feedback is manipulated by both the computer and the slide and mute ("Charlotte Aux Poires," 1997, and "Strange Heaven," 1998.)³

A couple of years ago, after 21 years without a performance, "Pea Soup" was reconstructed for a concert with the Kammerensemble Neue Musik Berlin. Although I worked from a circuit diagram kindly provided by Carl Countryman himself (who had long since ceased production of his phase shifters), I was not entirely satisfied with my attempt at cloning his mid-1970s analog circuitry. This year I stumbled upon a Max/MSP implementation of the circuit's central mathematical transform, and have been able to create a convincing software realisation of the original work, as well as extend it with some variations more easily implemented in the digital domain.

Recently I have begun working with electromagnetic feedback that is not, in itself, audible ("Mortal Coil", 2001.) Six telephone



Excerpt from score of "Pea Soup" (1974-76), Nicolas Collins

taps affixed to my fingertips feed back with six relay coils mounted close to guitar strings. The electromagnetic field causes the strings to resonate (the principle is similar to that of the "E-bow"). Moving the telephone coils in and out from the guitar produce Theremin-like glissandi of electromagnetic feedback, which are not heard directly but only as they force the strings into various modes of vibration. The result is a kind of updated "Tromba Marina," the medieval bowed string instrument on which one played natural overtones, trumpet-like, of a single open string.

The tautological elegance of feedback has a primal charm. Before they could walk, both my children delighted in waving the microphone near the speaker of their My First Sony, chortling along to the ensuing squeals (really, would I ever ask them to turn it down?). My first experiments with feedback didn't display much more sophistication. The kids have matured, moved on to piano, violin, drums, chorus and school band. I, on the other hand, have retained my infantile obsession, and nurtured it into love. My initial infatuation with the beauty of feedback's skin and its risqué behaviour grew richer with my appreciation of its inner workings. The balance of responsiveness and independence, of implacable science and seductive invitation, is rife with metaphorical implications. It's a natural phenomenon with social overtones. It's not just flash. It's philosophy.

NOTES

1. Nicolas Collins and Ron Kuivila, *Going Out With Slow Smoke* (Lovely Music, 1982).

2. The slide's position is interpreted, mouse-like, to control a digital signal processor that plays back through the speaker on the mouthpiece. Movement of the slide and mute gives an acoustic quality to the electronic sounds. See Nicolas Collins, "Low Brass: The Evolution of Trombone-Propelled Electronics," *Leonardo Music Journal* 1 (1991).

3. Nicolas Collins, *Sound Without Picture* (Periplum Records, 1999).