

In CCRMA, karma will catch up with you, others

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When I arrive at the Knoll, the enormous stone edifice that houses Stanford's Center for Computer Research in Music and Acoustics (CCRMA), the first thing I find is a locked door. Once I get past that — using my considerable ingenuity and the combination printed next to the keypad — I find the first floor deserted. The halls are dark, the doors are shut. Some of the signs have been ripped away. A floor plan of the building is cryptic and unenlightening. Climbing the Gothic spiral staircase, I come to a conclusion — CCRMA must be hiding something.

Sure, the second floor puts up a good front. There's a comfy-looking lounge area with some couches and a foosball table. And in the ballroom, where I expect to find Mr. Boddy with a candlestick in his skull, there's only music Prof. Jonathan Berger.

Berger is involved in all three of CCRMA's main activities — teaching, research, and composing. When I arrive, he's decidedly un-sinister, chatting amiably with a student about an upcoming project. As soon as he starts his lecture, however, my suspicions return. This is Music 151, "Psychophysics and Cognitive Psychology for Musicians." Today's topic: subliminal messages.

To be fair, these messages are more properly called "figure-ground ambiguities." They're the musical equivalent of that popular optical illusion that can look like either two faces or a vase. Just as the vase might hide from us in the picture — because our brains perceive it as background — different melodies can hide within the same piece of music.

That's where the computer part comes in. It's not called CCRMA (and that's pronounced 'karma') for nothing. In addition to the traditional piano and parquet floor, this ballroom comes equipped with a desktop, a laptop, two monitors, a television and what appears to be an elaborate mixing station. Berger goes to town.

First he plays a piece that sounds a lot like a herald call in a royal robot court. Just like the faces and vases illusion, there are two "pictures" here — can we hear what they are? Those more musically inclined than I soon pick them out: "Twinkle Twinkle Little Star" and "Mary Had a Little Lamb."

But all those microprocessors aren't here for nursery rhymes. Now Berger plays a Bach prelude and asks his students to listen for melodic patterns. Here some CCRMA software comes into play. Using a MIDI player, Berger speeds the prelude up to a tempo of 200 beats per minute, making it easier for the students to hear melodic groupings in the music.

They soon find a four-measure pattern that appears to repeat throughout the piece. But on the final repetition, the fourth measure is missing. A mystery is afoot — but not for long. Playing the piece even faster, Berger reveals another four-measure pattern, hiding under the first like the vase in the picture. This one resolves nicely at the end rather than leaving the audience hanging. Bach snuck it in — it doesn't start until the fourth bar. But he must have known what he was doing; listening to the fugue he wrote as a companion to the prelude, we hear it repeated once again.

I ponder the mind-control possibilities of such

INSIDE THE CCRMA

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hidden musical codes, but Berger seems more interested what they say about our perception. Composers, he says, have always had some understanding the physical and psychological effects of their music. CCRMA's work can enhance this understanding. He mentions an ongoing project in which he and colleagues take electrocardiograms of subjects listening to music and then convert their changing heart patterns into sound signals. The conversion allows Berger to make music out of the very act of listening — at least as impressive as mind-control, if less nefarious.

After the lecture, Berger takes me on a tour of the building. Our first stop is the lounge, in which even the foosball table is a high-tech instrument. Wired with motion and location sensors, it can turn a game into a musical performance with a different sound attributed to each player. Lest I think CCRMA is all child's play, he next takes me to Studio D. Here a system of six speakers allows experiments with "ambisonics," or the locations of sound in physical space.

Then Berger leads me down to the dungeon that is the first floor. I remember all the closed doors, and my heart flutters a little at the prospect of a secret laboratory or a crypt for dead composers. Instead, Berger shows me Studios A and B. These are two rooms that, connected by audio hookup, constitute what he calls "a free-floating noise-free acoustical space." This space is what keeps CCRMA in the dilapidated Knoll. Or so Berger says.

Looking at the digital mixing board, with switches that can be controlled by mouse, and at the state-of-the-art recording equipment, I'm impressed but not convinced. Surely this old mansion has more to it than prelude patterns and a nice sound system. Perhaps a sound-controlled cold fusion reactor. Or a secret orchestra of evil robots.

Turns out CCRMA does have a bit of the sci-fi. Berger's currently working on a project to make cells sing. Using MATLAB, he hopes to map data about the state of a cell — its temperature, for instance — into "vocal-like sounds." Doctors will then be able to diagnose cancer by listening, just as a mechanic with her ear to the hood might notice the telltale flapping of a bad fan belt.

My last stop, and final chance to uncover the CCRMA secret, is a trailer out back, where graduate students do much of their day-to-day work. Here I meet Roberto Segnini, a soft-spoken, decidedly non-robotic type who introduces me to CCRMA's fuzzier side — composing.

Of course, even the fuzzy stuff here isn't all that fuzzy. Segnini describes a recent project called the Sound Kitchen, in which he and two fellow stu-

dents created music from chemical reactions. Changes in an electrolyte solution produced changes in the voltage of a battery, which were picked up by a device called a microcontroller and translated into sound. What kind of sound? Well, to call it music would be a bit of a stretch. In its most euphonious moments, it sounds like the monster's theme from a fifties sci-fi soundtrack. And at its least, it sounds like that monster's roaring — played backwards.

This doesn't bother Segnini. For him, composition is about "connecting with the now, the time in which you live." That means taking advantage of all available technology, and "that may clash with perceptions of what is aesthetically pleasant." His next project: an interactive opera game in which players control the action with their voices. Such a game might, he admits "stretch the boundaries" of conventional listenability. "I also look at beauty," he says, "but it's a different way."

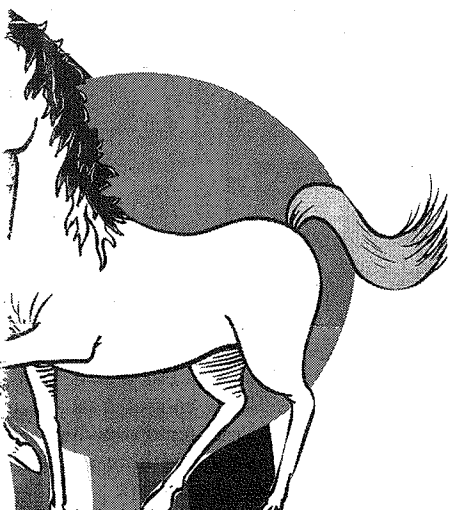
Leaving the trailers, I realize I've plumbed the depths of CCRMA without finding a single dead body, cache of contraband or top-secret lab. Perhaps I've misjudged; perhaps the Knoll is merely a place where top-notch faculty and students use state-of-the-art computing tools to explore the intersections between science and art.

Then I look up at the building one last time. I realize there's one place I haven't been — the third floor. Prof. Berger says it's condemned, rendered unsafe by the earthquake damage. Then he tells me Stanford's President Richard Lyman originally commissioned the building as his private residence. A decaying mansion, a condemned floor, a dead president — I can't help imagining Lyman's ghost wandering those darkened halls.

So next time you walk by the Knoll on a dark night, listen for the sounds of a departed soul. If you hear the strains of Bach wafting through the night air, he might be practicing a prelude. If the music sounds more electronic, maybe he's experimenting with the MIDI player. And if a strange assortment of beeps and whirrs emanates from the stone walls, don't be too alarmed — he's probably playing foosball.



This is not Prof. Jonathan Berger or Weird Al, but Music Prof. Mark Applebaum.



es. In their high-pitched and slightly nasal
alists deliver confessions such as: "I dove into
ea / with a parasite attached to me." Just FYI,
has a chorus! A deranged mouth organ

Overall, The Unicorns' use of toy organs and
boards is engaging but potentially tiring. "In-
ate the innocuous" (one of a series of terrible
g titles) is ominous in the same way that a
n is: by being too fucking cute. There is, how-
something particularly charming about
like "Somewhere in the asshole of my eye /
a muscle that relaxes as I cry" and even the
effect on your absence / genuflect in my pres-

unicorns' charm, however, lies in their sheer
e a disparaging clown comparison just a few
a let me introduce a minor difference: clowns
any, Unicorns — with their total ignorance of
inction — giggle. And the only way to deal
e're the unicorns / We're more than horses /
/ and we're people too" is to give in to their
at's exactly what the band does too, and I'd
pretension any day.

ou listen to the album, what you begin to real-
erated lack of choruses is actually a misnomer
ot one, not none, but *multiple choruses*. A
ave spread these melodies across several al-

es full circle with the Flaming Lips influenced
spite the lyrical warning ("Don't pardon me,
nings conclude"), the album's abrupt closure
s you feeling a little hollow in the gut.
an you do but just replay it? Honestly, I'm
The Unicorns continue drilling through my
th their mythical stubs.