MUSIC

La Monte Young / Marian Zazeela

Fundamentalism

BY KYLE GANN

The search for music through numbers is older than Plato, yet so new that the experimental work being done in it now may take generations to digest. If you'll indulge some tech talk, I'll give you a wild example.

Harmonics, or overtones, are pitches whose frequencies are multiples of those of a given tone. For example, a pitch vibrating at 200 cycles per second has harmonics of 400, 600, 800, 1000 cps, and so on. We hear them all the time without realizing it, because every pitched sound—except for pure sine waves—contains faintly perceptible harmonics along with its louder fundamental.

La Monte Young has devoted his life to harmonics. He plays them at home, up to months at a time, on his Rayna synthesizer (a computer gizmo designed by David Rayna to produce intervals accurate within a beat or two a year) to study the effects of living with certain groups of harmonics. Pop in for tea, and you might hear, say, the 12th, 17th, 18th, and 21st harmonics of a low drone humming in vibrant sostenuto. Why? Because wavelengths of related harmonics produce in the ear illusions of the lower tones they're related to, and because an increasing number of musicians believe that such perfect intervals are conducive to psychic health.

Young goes public with some of his more elaborately composed harmonic combinations, as in his installation *The Romantic Symmetry (over a 60 cycle base)* from *The Symmetries in Prime Time from 112 to 144 with 119*, currently running at the Dia Art Foundation's space at 548 West 22nd Street. (The piece runs through May, then again September to December.) It's a result of his special passion for the harmonics in the 7 to 9 region, that is, from 7 to 9 times a given fundamental pitch. The ratio 7 to 9 defines a slightly large major third, from (using C as your base) B-flat to D on the piano. Doubling a frequency raises it an octave, so the 7 to 9 region includes the same pitch area as the 14 to 18 region, the 28 to 36 region, and the 56 to 72 region (still with me?). In *Romantic Symmetry* Young's taken a long-awaited leap to a still higher octave, the 112 to 144 region, which means he's working with potentially 33 different tones, all between B-flat and D.

Young's especially fanatical about prime numbers, since the larger ones produce intervals music has never used before. Within the 112 to 144 range, then, he uses prime-numbered harmonics—113, 127, 131, 137, 139—and also numbers that represent octave transpositions of primes, such as 116 (4 x 29), 122 (2 x 61), etc. All told, he's found 17 pitches that fit the mathematical definitions he wanted to work with. (He debated with himself about including 119 [7 x 17], tried it, and decided it sounded perfect, which gives you a hint that Young hears harmony differently from ordinary mortals.) Seventeen pitches within a major third make an awfully dense chord, so Young transposed some up and some down symmetrically, and doubled some at the octave; and, since octave doubling is a common feature of romantic orchestration, he wryly called this schema "Romantic." What you ultimately hear is 22 sine waves (plus the 60-cycle drone) vibrating in ratios of 31 to 61 to 112 to 113 to 119 . . .

Now most people, Princeton's theory faculty aside, listen to music for the way it sounds, not for the chin-music that goes into its explanation, and if Young's installation didn't intrigue the ear, there'd be little point in reciting its numerical properties. As it turns out, its sound is much more than the sum of its numbers, though as with a lot of conceptual music, there's not much audible relation between them. As you walk in you hear an intense, heavy chord, shimmering and shifting and sparkling. Freeze in your tracks, however, and the shimmering suddenly stops: the chord is perfectly still. Then you notice that if you turn your head even slightly, you begin to hear different pitches, that a different combination is audible every few millimeters. While I was there, a teacher brought in a group of children, who waved their heads back and forth excitedly to hear the chord change. Pretty odd that a work of art so bizarrely conceptual could so immediately appeal to kids.

DOROTHY LOW

Young and Zazeela, sound and light

My understanding of the acoustics is vague, but since each of the 22 pitches has a different wavelength, each creates different nodal points in the room, points at which it reinforces itself or cancels itself out. In effect, the air molecules in the room are marshaled into a fine-grained, geometric pattern, and the moving ear intersects that pattern differently at every point, as though you're walking through a Vasarely painting rendered in incorporeal 3-D. The effect isn't only the aural equivalent of Op Art, though. That gripping chord relaxes the body at first, like an intangible massage. After about 75 minutes of lying and standing in various positions, however, one suddenly begins to desire to escape, as though the energy were becoming too oppressive.

Romantic Symmetry is half the installation, and the other half features *Time Light Symmetry* and sculptures from *Still Light* by Young's wife Marian Zazeela. Shining different-colored lights on simple vertical or curved objects, Zazeela works with the same subtleties in terms of light waves that Young does with tones, and both depend on sustained perception for their effect. The lights produce colored shadows that, if you stare at them awhile, burn with an intensity no pigment could produce. In the '60s, a lot of art aspired to individual perception, to allow each person to shape his or her own experience by moving through a work. Some of this was just fuzzy, love-bead talk, but Young and Zazeela were obviously tuned to a deeper wavelength. They nurtured that dream, and it's flowered into some of the strangest and most forward-looking art New York has to offer. ■