

My own feeling is
that if people aren't carried away to heaven
I'm failing.

—La Monte Young

In less than a decade, La Monte Young has established himself as one of the most imaginative young composers in America by offering a succession of pieces which, while valid extensions of certain current practices, were absolutely novel. In 1960, at Berkeley, he presented a composition which consisted of turning loose a jar full of butterflies (they made a sound, however inaudible); the score of Composition 1960 #7 consists of an open-fifth chord (B and F#) followed by the hand-written instructions: "To be held for a long time." At a New York concert, some years later, he set fire to a violin; another time he performed a suggestive abstract design by Toshi Ichianagi by counting a bag-full of beans. Many of these early pieces are collected in *An Anthology* (1963), which he edited. In 1964, Young publicly initiated *The Tortoise, His Dreams and Journeys*, a mixed-means theatrical piece which is currently the only work he performs; with new sections introduced on each of many occasions, it is among the most admired works in the new theatre.

Young was born in a log cabin in 1935, in Bern, Idaho, where his father herded sheep; he lived in Idaho until the age of four, in Los

Angeles through the sixth grade, in Utah through junior-high school, and then his family settled permanently in the Los Angeles area. He attended John Marshall High School, Los Angeles City College, Los Angeles State College, and the University of California at Los Angeles, where he majored in music and received his B.A. in 1958. Throughout his youth, Young studied the saxophone, which he calls "my instrument of virtuosity," and he later studied composition with Leonard Stein (once an assistant to Arnold Schoenberg), as well as attended Karlheinz Stockhausen's seminar at Darmstadt in the summer of 1959. After graduating from U.C.L.A., he studied at Berkeley under a Woodrow Wilson Fellowship and served for two semesters as a Teaching Assistant in the Music Department. In 1960, he won the Alfred Hertz Memorial Traveling Scholarship, which took him to New York where he studied electronic music with Richard Maxfield; and he has lived there ever since. In 1966, he received grants from both the Foundation for Contemporary Performance Arts and the John Simon Guggenheim Memorial Foundation.

Although Young's earliest work as a serious composer was in the Schoenberg twelve-tone tradition, his use of sustained notes, sparse textures, and the exclusion of certain combinations of pitches suggested directions he has since pursued. His interest in classical Indian and Japanese Gagaku music, combined with his exposure to the work of Karlheinz Stockhausen, Richard Maxfield, and John Cage helped produce even more radical changes. Following his return from Darmstadt where he "discovered" Cage, he created numerous audacious performances which demonstrated the effects of his "discovery," and his work since has been increasingly original and idiosyncratic. In *The Tortoise, His Dreams and Journeys*, Young and three associates chant an open chord of intrinsically infinite duration, amplified to the threshold of aural pain. Public performances usually consist of two sessions, each nearly two hours in length, within a darkened room illuminated only by projections of pattern-art. Although music is the predominant force, the entire setting induces a multi-sensory involvement, and as the piece's time is open and its space is closed, I classify it as a kinetic environment.

Young is a small and slender man, strong in physique, who speaks with a decidedly far-western accent. He possesses the ability to talk

forever, in a tone at once passionate and professional, and he likes to laugh at his cleverness. He carries himself in an eccentric and commanding manner similar to that of his music. Disdainful of worldly realities, he once subscribed to a twenty-seven-hour day around the clock—eight for work, eight for play, eleven for sleeping—a regime that meshed with the rest of the world only a fraction of the time. He insists that other people who perform his work must pay in inverse proportion to a piece's length—three hundred dollars for seven minutes, twenty-five dollars for twenty-four hours.

Young lives with his wife, Marian Zazeela (a painter noted for her objectivist contemplative patterns, such as those used in the *Tortoise* piece), in a large loft filled with desks, boxes, tape and electronic apparatus. Here, his group, The Theatre of Eternal Music, rehearses every night for at least a month before a performance. Its membership consists of Young, Marian, Tony Conrad, Terry Riley, and, at different times, John Cale, Angus MacLise, Terry Jennings, and Dennis Johnson. Married in 1963, the Youngs share such common enthusiasms as turtle-keeping, yogurt-making, Far and Middle Eastern cooking, and organic vitamins. During the interview, conducted on a hot summer night in 1966, they often spoke simultaneously.

KOSTELANETZ — What was your first instrument?

YOUNG — The very first I ever played was the harmonica; however, at the age of two, this was soon followed by singing and guitar lessons from my Aunt Norma, who sang in the local high-school operettas. The songs I learned to sing at that time were cowboy songs.

KOSTELANETZ — Did you learn to read music then?

YOUNG — No, I did not learn to read music until I was seven. During that period, around the age of three, I also had tap-dancing lessons, and I developed a tap-dancing routine which was among my earlier stage experiences. I had also played my grandparents' piano a little bit and looked through the sheet music of cowboy songs that they had there, but I didn't have lessons in reading music at that time. When we moved to Los Angeles, my father one day brought home for me this old gray saxophone; he was my first saxophone teacher and he taught me to read music.

KOSTELANETZ — What do you consider your most important early experiences?

YOUNG — The very first sound that I recall hearing was the sound of the wind going through the chinks in the log cabin, and I've always considered this among my most important early experiences. It was very awesome and beautiful and mysterious; as I couldn't see it and didn't know what it was, I questioned my mother about it for long hours.

KOSTELANETZ — Do you remember this now?

YOUNG — Yes, quite vividly.

KOSTELANETZ — Were there any important high-school experiences?

YOUNG — The best thing about high school was the small intellectual community I fell into—artists, poets, philosophers, as well as other musicians. There was a boy, Gordo, who was the leader of the gangs in Toonerville at that time; but he was also a prize-winning trombonist of the Philharmonic and had already been on the road with Perez Prado's band. He came upon me one day practicing Charlie Parker's *Donna Lee* at a furious tempo and after that we often had jazz sessions together after school. In the first or second year of high school I began taking private saxophone lessons with William Green at the L.A. Conservatory. He is really a saxophonist's saxophonist, and put the finishing polish on my technique. I also enjoyed my high-school harmony classes. Otherwise, I did not like the social situation of high school. I thought it was fairly juvenile.

KOSTELANETZ — What would you rather have been doing?

YOUNG — Playing music all the time and associating with the people I liked. I didn't like being regimented. For instance, when I was chosen to play the saxophone solo at graduation I had to shave off my goatee and sideburns.

KOSTELANETZ — Where did you go to college?

YOUNG — I began at Los Angeles City College where I first studied with Leonard Stein, the pianist and theorist who was Schoenberg's assistant. I later studied counterpoint and composition privately with Stein. Then I went on to U.C.L.A., where the main influence upon my actual writing style was Dr. Robert Stevenson, with whom I studied both baroque and sixteenth-century counterpoint as well as keyboard harmony. Lukas Foss was very important in encouraging me to talk about my work at the various composers' symposia held at that time.

KOSTELANETZ — The earliest piece in your list of compositions is

dated 1955. Were you already a functioning composer at that time?
YOUNG — Oh yes. Of course, I had already started playing jazz in high school.

KOSTELANETZ — Professionally?

YOUNG — As professionally as I could play the kind that I was interested in playing. I never recorded, but I always went to the best and most exciting sessions at the clubs. When I got a few jobs at dances and so on, I used to hire all my friends, like Billy Higgins, Don Cherry, Dennis Budimir, and Tiger Echols. We rarely got hired back to those jobs, because we played jazz all night long. Billy and I had a group at Studio One, as it was called, downtown in L.A.

KOSTELANETZ — Are you still interested in jazz?

YOUNG — Only from a listening and speaking point of view.

KOSTELANETZ — Was it your original ambition to do something in jazz?

YOUNG — Yes, in high school, it was. The reason I discontinued my work in jazz was to progress into more serious composition. I found that I got into far-out areas that were not being appreciated except by a very small group. Most were complaining that my rhythmic style didn't out-and-out swing, because I used rhythmic configurations that weren't always right on the beat in the most obvious way. They confused the drummer. I was also interested in harmonic patterns that were beyond what the ordinary jazz musician was using. Jazz is a form, and I was interested in other forms.

KOSTELANETZ — Did you object to the repetitiousness that tends to plague even the best jazz?

YOUNG — No, that wasn't it. I'm very interested in repetition, which is why I prefer the style of John Coltrane or Indian music. I am wildly interested in repetition, because I think it demonstrates control.

KOSTELANETZ — However, there are different kinds of repetition—repetition because the musician can't do anything else, and repetition as a very objective strategy to produce a subjective effect. Your own recent music exemplifies the second kind.

You told me once before that at college you knew the late Eric Dolphy, the jazz saxophonist.

YOUNG — He was at L.A. City College at the same time, and his playing was an example of repetition used in yet another inventive way. While John Coltrane constructed modes or sets of fixed fre-

quencies upon which he performed endlessly beautiful permutations, Eric Dolphy had an incredible set of licks—melodic fragments—that he would repeat in the most various and happy combinations at any frequency transposition that sounded right to him at the time.

KOSTELANETZ — After you gave up your jazz career, what was your next step?

YOUNG — While I was at City College, studying with Leonard Stein, I became quite interested in the work of Anton Webern. In fact, to this day his work stands out among my influences as one of the most important examples of clarity, which is a value of great interest to me.

KOSTELANETZ — What kind of clarity—his uncompromising precision in the use and extension of serial principles?

YOUNG — I think the clarity in every dimension of his work may be unprecedented in Western music. Schoenberg used row technique in a far more naive way—it was not as strictly, in an audible way, related to the musical result, as it is in the work of Webern. In Schoenberg's music, theme and content are separated from row technique, whereas in Webern row technique is very strictly coordinated with thematic and motivic materials.

Some of my favorite Schoenberg pieces are the Five Pieces for Orchestra, Opus 16, and of particular interest to me among these are the second, *Yesteryears*, and the third, *The Changing Chord—Summer Morning by a Lake—Colors*, which is a very static piece with extraordinarily subtle and delicate changes. It goes on and on with mirage-like motifs disappearing and reappearing over recurrent droning textures that are among the most gorgeous in orchestral sound. The *Summer Morning by a Lake* piece interests me because it involves stasis in contrast to climax.

I feel that in most music peculiar to the Western hemisphere since the thirteenth century, climax and directionality have been among the most important guiding factors, whereas music before that time, from the chants through organum and Machaut, used stasis as a point of structure a little bit more the way certain Eastern musical systems have. In *Summer Morning by a Lake*, as I say, stasis is used, although it wasn't as much in Schoenberg's other work. In Webern, however, stasis was very important, because not only was he involved with row technique but he also developed a technique for the repetition of pitches at the same octave placements throughout a section of a movement.

That is, each time C, A, or E_b comes back in the section of the movement, it is at the same octave placement. So, as you hear the movement through, you find this static concept of a small number of large chords reappearing throughout the entire movement.

KOSTELANETZ — Were you interested more in this static dimension than the serial language?

YOUNG — I was interested in both elements; for even though we can define serial technique as constant variation, we can also redefine it as stasis, because it uses the same form throughout the length of the piece.

KOSTELANETZ — How can the row be a static element if its manipulations are so various?

YOUNG — We have the same information repeated over and over and over again, in strictly permuted transpositions and forms, which recalls the thirteenth-century use of *cantus firmus*. The theme-and-variations technique depends as much upon the static repetition of the theme as upon its variations.

KOSTELANETZ — Of course, the theme or information of the piece is the row, which informs all the structures of notes; however, as the row is manipulated, we hear the row in continually different ways.

YOUNG — The “continually different ways” are so precisely related to the “original” form of the row that any one of the permutations is simply an aspect of the basic shape of the row which includes all of the permutations. Schoenberg based row technique on the belief that these “continually different ways” were related in such a way that they could be the unifying structure of a composition.

KOSTELANETZ — What you are saying, then, is that as the row informs every aspect in a controlling fashion, a serial piece therefore acquires, as information, an ultimately static quality.

YOUNG — Also, I might point out that I was predisposed to the twelve-tone technique, because my high-school harmony teacher had studied at U.C.L.A. with Schoenberg. Beginning in 1956 I enjoyed writing with serial technique for about three years, but by 1957–58 I was beginning to discover reasons for moving beyond the twelve-tone system. I felt that it was by no means the final word as far as structure is concerned. There are so many forms that structure can take, and so many structures that form can take—so many possible forms in art. In my Octet for Brass [1957], I began to introduce,

within the serial style, very long notes. In the middle section, there were notes sustained easily for three or four minutes, where nothing else would happen except other occasional long notes overlapping in time, and there would be rests for a minute or, at any rate, a few beats, and then another long note or chord would come in. This technique became more refined and perfected in the Trio for Strings [1958] which has pitches of longer duration and greater emphasis on harmony to the exclusion of almost any semblance of what had been generally known as melody. The permutations of serial technique imply possibilities of ordinal organization only. Ordinal organization applies to line or melody, whereas the increasing emphasis on concurrent frequencies or harmony in my work implied the possibility of the organization of the cardinal values both in regard to how many frequencies are concurrent and the relationships of the frequencies to each other.

KOSTELANETZ — Do you still listen to serial music?

YOUNG — If I happen to hear it. When I did work in it I listened to some pieces over a hundred times; nothing else would be going through my head. Now I listen to it if a composer brings a piece by or sends one to me. But otherwise I spend almost all my time working on my own music, as I have found other organizing factors which I feel are more interesting and pertinent to it.

KOSTELANETZ — How are these factors more interesting?

YOUNG — The longer notes make harmonic analysis by ear a reality and these integral relationships soon sound much more beautiful and harmonious and correct than their irrational equal-tempered approximations.

KOSTELANETZ — What else initiated your turning away from serial composition?

YOUNG — In the late fifties I had more opportunities to hear Indian classical and Japanese Gagaku music, partly because of the outstanding ethnomusic department at U.C.L.A., which had its own student Gagaku orchestra and Japanese instructors, and partly because of that famous early recording by Ali Akbar Khân and the late Chatur Lal of Râgas *Sind Bhairavi* and *Piloo* which essentially introduced the longest example then available of masterfully played Indian music. I literally flew to the record store when I first heard it on the radio.

I was also hearing recordings of plain chant and organum, and while at Berkeley I had the privilege of visiting a nearby Dominican monastery where I heard the monks sing plain chant. That was a beautiful experience. These examples of modal music, and particularly the systems of harmonic frequencies required by the continuous frequency drone of Indian music and the sustained harmonics of the *sho* in Gagaku, seemed to move me much more deeply than anything else I was hearing.

In contemporary European music after Webern, the work of Karlheinz Stockhausen had made a very powerful impression on me. In the summer of 1959 I traveled to the Darmstadt Festival for New Music to take his composition seminar. On my way there from Berkeley I met Richard Maxfield in New York, and heard his new electronic music for magnetic tape. I liked it so much that a year later I took his class in electronic music at the New School for Social Research.

In the seminar at Darmstadt, Stockhausen devoted much time to his own work in sound, and to the work of John Cage. The events at the festival also provided my first exposure to John Cage's lectures and the concert presentation of the recording of the David Tudor performance of the Concert for Piano and Orchestra played on an impressive sound system. After this sequence of refreshing experiences, meeting composers and hearing new work, I returned to Berkeley even more inspired to further explore extensions of the ideas related to the sustained frequencies I had presented in my Trio for Strings. The relevance of this work as a synthesis of particular Eastern and Western musical systems and a new point of departure for my work had become strikingly clear to me, and the cumulative effects of all of my exposures to music were at this point providing enough information that I began to think of serial technique as only one of many possible methods applicable to music composition.

KOSTELANETZ — Why had you not been exposed to John Cage's ideas previously?

YOUNG — In those days, there was no Cage on the West Coast, except on records. Dennis Johnson had played the recording of the Sonatas and Interludes for Prepared Piano for me maybe once, and Terry Jennings had a record of the String Quartet which we used to listen to, but I had to go to Europe to really discover Cage. When I got back

to Berkeley and started to perform Cage, everybody there still considered him an out-and-out charlatan. I really had to fight to get him on programs.

KOSTELANETZ — What were your purposes in the pieces of your second year at Berkeley, the compositions of 1960, written after your encounter with Cage?

YOUNG — I was on my way to Mount Tamalpais, the biggest mountain in the Marin County area, and I started thinking about the butterfly. Alone, it made a very beautiful piece. Being very young, I could still take something so highly poetic and use it without the fear I would have now—that it would be trampled on. Now, I would offer something quite a bit more substantial than a butterfly or a fire—something that can't be so easily walked on. After all, a butterfly is only a butterfly. No matter how much I write about the fact that a butterfly does make a sound—that it is potentially a composition—anyone that wants to can say, "Well, it's only a butterfly."

KOSTELANETZ — Your point, then, in bringing into the concert situation a jar of butterflies and then releasing them, was that a butterfly makes a sound.

YOUNG — True. Another important point was that a person should listen to what he ordinarily just looks at, or look at things he would ordinarily just hear. In the fire piece, I definitely considered the sounds, although a fire is, to me, one of the outstanding visual images. I'm very fascinated by the form of fires, as I am fascinated by the form of the wind. In fact, during my entire Berkeley period, I was constantly talking to people about the form of the wind and the form of fires. Also, I was talking at that time about the sound of telephone poles, and I liked to quote these words from Debussy:

Listen to the words of no man,

Listen only to the sound of the winds and the waves of the sea.

I feel, in fact, that Debussy is among my most important influences.

KOSTELANETZ — What else were you doing at that time?

YOUNG — Some of the other important pieces involved the audience. Those grew out of a performance of *Vision* [1959], which I wrote immediately after my return from Darmstadt and the exposure to chance music and so on. I took thirteen minutes of time and organized that period with eleven sounds, the longest of which was over four

minutes. During the first performance, the audience carried on at such a rate of speed—at such a level—simply because I turned out the lights for the duration of the performance and they were involved with these weird sounds coming from strange spacings. In that period, I was really intrigued with the audience as a social situation. KOSTELANETZ — Were the sounds in *Vision* constant in pitch and amplitude?

YOUNG — No. However, textures and methods of performance were sometimes constant. The sounds were complex and changing. There was, for instance, a sound we called “Herd of Elephants” which was made by two or three bassoons playing a series of notes up in the falsetto range of the instrument at a rapid rate of speed. That would go on for the specified duration of a few minutes or less. These sounds were ancestors of the wild sounds—natural sounds, abstract sounds, interesting material juxtapositions such as metal on glass, metal on metal—that I later worked with extensively in 1959–60 when Terry Riley and I were doing the music for Ann Halprin. Terry and I started making incredible sounds; they were very long and very live, and we’d really go inside of them, because they filled up the entire room of the studio. However, we were working with very irrational timbres.

KOSTELANETZ — Were any of these sounds tape loops?

YOUNG — No, it was all live. I’ve released very few tape pieces for public performance. I did record and preserve three of the sounds from that period, two of which I have released as the tape composition *2 Sounds* [1960], which Merce Cunningham uses in his *Winterbranch*.

KOSTELANETZ — In *Vision*, were your musicians all in one place?

YOUNG — No, I had grouped them around the audience—up in the balcony, in the aisles, and all over the place. I never saw an audience carry on that way, except at some of my subsequent performances at which they sang *The Star Spangled Banner* and stood up and swore.

KOSTELANETZ — Did you mind this?

YOUNG — Well, at that time I felt it was the best they were capable of. I didn’t see what I could do about it, although I was quite upset that they did not sit and listen. I just hoped that in the future they would. Finally, now I think they do listen, as when Merce does the piece. Here’s the difference: With Merce they are also given something

to watch. I've noticed that a much greater part of the world is visually oriented and more capable of concentrating on visual stimuli than aural. Only a small percentage have learned how to concentrate on sound.

Some of the pieces of this period, then, were specifically related to the social situation. In one, someone announced the duration and told the audience that the lights would be out for the entire composition and that was all. Sure enough, plenty of people tore up their programs, and a few made other noises. Everybody thought I had programmed these events into the composition but I hadn't.

KOSTELANETZ — So it was, as a silent piece, very much like John Cage's 4' 33".

YOUNG — They are related, except that in John's you have a classic setting in which one sits at the piano and turns the pages for each movement—going through the motions of a classical form. In my piece, I just announced a block of time, which may be of any length. In the original manuscript, I said that, "When the lights are turned back on, the announcer may tell the audience that their activities have been the composition." This is not at all necessary, and I have never done it in that form.

KOSTELANETZ — Are these theatre pieces or music pieces?

YOUNG — Both categories apply. I divide my works into music pieces, and musical-theatre pieces. All my pieces, I feel, deal with music, even the butterflies and the fire. In every case, I was writing them as musical compositions to be played at musical performances. In fact, a certain amount of their impact relates to the fact that they are performed in a classical concert situation. Although there is no question but that my exposure to John Cage's work had an immediate impact on aspects of my Fall, 1959, and 1960 work, such as the use of random digits as a method for determining the inception and termination of the sounds in *Vision* and *Poem for Chairs, Tables, and Benches, Etc., or Other Sound Sources* [1960] and the presentation of what traditionally would have been considered a non- or semi-musical event in a classical concert setting, I felt that I was taking these ideas a step further. Since most of his pieces up to that time, like the early Futurist and Dadaist concerts and events which I became aware of shortly after my exposure to John's work, were generally realized as a complex of programmed sounds and activities over a prolonged period of time with

events coming and going, I was perhaps the first to concentrate on and delimit the work to be a single event or object in these less traditionally musical areas. This was a direct development of my application of the technique in my earlier, more strictly sound, compositions.

KOSTELANETZ — At this point, too, you developed that composition where you instruct the performer to hold an open fifth “for a long time.”

YOUNG — Another related to it was Composition 1960 #9 . . .

KOSTELANETZ — . . . which you published as a straight line on a three-by-five file card.

YOUNG — I have performed this work at one sustained pitch.

KOSTELANETZ — What is your purpose here?

YOUNG — This leads us from the old area of the Octet for Brass and the Trio for Strings, where I had sustained pitches in the context of other pitches, into the new area. I noticed about 1956 that I really seemed more interested in listening to chords than in listening to melodies. In other words, I was more interested in concurrency or simultaneity than in sequence.

KOSTELANETZ — That was your radical step.

YOUNG — Yes, that separated me from the rest of the world. I was really interested not only in a single note, but in chords, while other musical systems have placed great emphasis on melody and line or sequence.

KOSTELANETZ — Because the wind is a single note or chord.

YOUNG — The wind is a constant sound, the frequency of which at any given time is dependent on its surroundings or location, and therefore not always constant. Sometimes the frequency was fairly constant, during blizzards as the wind blew through the chinks in the log cabin, although even at those times the sound was characterized by that kind of increase and decrease in frequency with which we all associate the sound of a wind storm as the gusts would become stronger and then weaker. I really enjoyed it. I found it fantastic. It sounded great coming in like that—very calm, very peaceful, very meditative. During my childhood there were four different sound experiences of constant frequency that have influenced my musical ideas and development: the sounds of insects; the sounds of telephone poles and motors; sounds produced by steam escaping from such as my mother’s tea-kettle or train whistles; and resonance from the

natural characteristics of particular geographic areas such as valleys, lakes, and plains. Actually, the first sustained single note at a constant pitch, without a beginning or end, that I heard as a child that did not have a beginning or ending was the sound of telephone poles—the hum of the wires. This was a very important auditory influence upon the sparse sustained style of work of the genre of the Trio for Strings and Composition 1960 #7 (B and F# “To be held for a long time”).

KOSTELANETZ — At this time, did you go back and listen to telephone poles?

YOUNG — I did—and to this day, I’m also very fond of power plants. For instance, the step-down transformer up there on the telephone pole probably contributes to the hum. As the power hits intermediary stages, it has to go through transformations, and hums of various frequencies are generated. A great deal of electronics and machinery seems to generate series of partials. The partials of many of these series are related to each other as positive integers, and what is interesting is that the partials in the series produced by strings and pipes are also related in this way. When my refrigerator goes on again, or if I happen to turn on my little turtle motor, I can sing a few of the earlier harmonics for you.

KOSTELANETZ — So, you observed that nature is full of constant sounds?

YOUNG — Actually, aside from the sound of groups of insects and natural geographic resonators, sounds of constant frequency are not easily found in nature before mechanization and electronics.

KOSTELANETZ — What about a waterfall?

YOUNG — That’s pretty constant. If it’s a large waterfall, it’s a pretty noisy sound, similar to white noise. It is very full—it has so many frequencies in it that one tends to hear it as a complex of sounds. Theoretically, white noise has every frequency within a given band, although a particular waterfall may or may not have all of these.

One place where we find a constant sound that has been with us for a few thousand years is the drone used in certain musical systems, such as those of India, Scotland, and Spain. The constant sound is also in organum, a form that grew out of chant, used in the ninth-century Catholic Church; in one style of organum various pitches were sustained, and a melody woven over them. After the first plain chant (which was just melody alone and very static, as I hear it and

analyze it), the next stage was parallel fifths and fourths. After that, a musician started holding one of these notes for a long time, while another one moved around over it.

KOSTELANETZ — Once you observed this tradition, did you want to recreate it?

YOUNG — I wanted to do more of it, because I felt there was all too little around. It made me feel very good to hear it, so I really wanted to hear a lot of it. In fact, my ideal is to have a number of machines playing a constant sound around the house.

KOSTELANETZ — You spoke once of "trying to get inside a sound." How does this process work?

YOUNG — There are several ways you can approach it. One is that someone concentrates so heavily upon a given sound—he gives himself over to it to such a degree—that what's happening is the sound. Even though I could be sitting here, all I am is an element of the sound. Another approach is to walk into an area in which the sound is so abundant that you actually are in a physical sound environment. This happens when someone walks into one of my concerts.

KOSTELANETZ — It's the same thing as walking into a noisy generator room.

YOUNG — Yes, it depends upon the level. If it were high enough, you could be enveloped.

KOSTELANETZ — Is this a valuable process?

YOUNG — I find that it does things to me unlike anything else.

KOSTELANETZ — If you walk into Grand Central Station, you're also enveloped by sound, but it consists of a different, dissonant quality.

YOUNG — The difference in which sound you would want to be enveloped depends upon whether you are John Cage or La Monte Young.

The harmonically related frequencies I'm interested in have so much to do with the way we hear and the way so many sounds are structured. These common characteristics reinforce each other. Alain Danielou points out in an article on sound in the *Psychedelic Review* #7 that he feels the mental mechanism permits us to analyze and recognize only those musical intervals which are harmonically related. This is an area in which I plan to do more work—what happens after the information carried by the sound passes the reception stage at the ear. It is highly likely, as I hear it, that what makes me like this sound

is more than just the way the ear receives information; the brain finds this kind of information congenial.

KOSTELANETZ — Let me go back to that earlier point. Why do you prefer the constant sound of the generator to the sound of Grand Central Station that Cage has always treasured so much?

YOUNG — I think it has more to do with how human beings have related to sound from history on end. Not only do the ears receive information this way, but the vocal chords are strings. The sound with which we are most familiar, the voice, is structured according to these principles.

KOSTELANETZ — So, in retrospect, we may trace two long-standing preoccupations that are reflected in your present work—the *Tortoise* piece—one was creating a social situation or environment in which all kinds of elements were used, another was the interest in the constant sound.

YOUNG — My recent work has led me away from the twelve-note equal-tempered system, which is necessarily a compromise of music and musical structure, if we are going to consider how sound is organized and how the ear hears. The twelve-note system divides the octave into twelve equal-tempered intervals, equidistant pitches. The interval between each consecutive frequency is an equal irrational proportion. An accepted standard allots one hundred cents to the distance between each consecutive semitone; so there are twelve hundred cents to the octave.

If we take the major scale, which is the Ur-scale, or scale of origin for many musical systems, we find that this scale is most rationally and musically represented in the octave 24 to 48 in the overtone series. The overtone series—the system of partials arising within a given sound—is one basic aspect of the area of music I'm involved with today. If we assume a fundamental, which can be a random note of any pitch, and subject it to the analysis which twentieth-century electronic instrumentation allows us, we find that most sounds consist of more than one frequency. These many other pitches are partials, also known as harmonics or overtones. In many sounds these partials exist in whole-number relationship to the fundamental. The frequencies of these partials relate to each other as integers. For example, if we have the fundamental one, which we will call the first partial, the

wave pattern of the second partial completes two cycles to each cycle of the fundamental.

KOSTELANETZ — Which is to say, the second partial has twice as many frequencies as the original; it is the octave.

YOUNG — Right. These partials exist in the frequency ratios of 2:1, 3:2, 3:1, 4:3, 4:2, 4:1, 5:4, 5:3, 5:2, and so on.

We distinguish the timbre, or characteristic sound, of one instrument from another by which overtones are present, which ones are louder and softer, and their phase relationships.

If we take the major scale as represented in the octave 24 to 48, the scale of frequency proportions is 24, 27, 30, 32, 36, 40, 48. Many cultures have been hearing and playing this scale. The twelve-note system of equal-temperament was a simplification developed to approximate the integral relationships found in the major scale, but since none of the adjacent rational intervals in the harmonic series (by which the major scale is represented) are equal, we are confronted with a compromise.

KOSTELANETZ — What kind of relationships does the serial scale have then—24, 26, 28, etc.?

YOUNG — No, it's just a division of the octave, the ratio of two to one, into twelve equal irrational fractions or intervals, each of which is separated from the other by an interval designated as the twelfth root of two over one ($\sqrt[12]{2/1}$) which, when written as a proportion, is an infinite non-repeating decimal, approximately 1.0594631/1. An array of composers, theoreticians, and scientists have been aware of, or written about, the problems of twelve-note equal-temperament; Helmholtz, Alain Danielou, Harry Partch. Lou Harrison, Narendra Kumar Bose, and C. Subrahmanya Ayyar are just a few of the investigators in the field. Some have recommended a division of the octave into the larger number of 53 equal-tempered intervals which allows a smallest interval that is very nearly the same size as 81/80 for the basic unit, and a lesser compromise for limited musical systems composed only of intervals expressible as powers of this smallest unit interval, whereas others have accepted no compromises whatsoever. But with our present system of tuning the piano, the only intervals that are rationally in tune are the octaves. None of the other intervals are harmonically in tune. If you play these other intervals for a long

time at a loud enough volume, there is no problem hearing how unharmonious they sound. In practice most of the time, however, they are underemphasized and rushed over. To compare some harmonic and inharmonic intervals, just listen to any piano quintet, any piano concerto with orchestra, any choral work in which the piano is out part of the time. Whenever the piano is not around, instrumentalists tend to play in tune with exact harmonic proportions. This is called "just intonation." There are two factors which lead musicians to do this if their instruments do not have equal-tempered limitations.

The first factor is that the frequencies of the harmonic components of the timbres of the classical instruments of the string and pipe families are defined by the multiplication operation. This means that these frequencies will all be integral multiples of the fundamental and that the performer, who is near the instrument is hearing these integral harmonic relationships or being influenced by them whenever the instrument is sounding.

The second factor is that the ear's characteristics as a non-linear receptor and transmitter of sound also include this operation of multiplication, as well as the operations of addition, and subtraction, in that it generates its own harmonics at integral multiples of the fundamental even when presented with sine waves which have no harmonic content, and sum and difference combination frequencies when at least two frequencies are present, if in each case the information is presented at a loud enough volume. It is a characteristic of the operations of multiplication, addition, and subtraction that as long as they are performed on integers they will always produce integers, and these of course will correspond to the integral structure of the harmonic components of the instrumental timbre.

KOSTELANETZ — Would I be able to hear this difference between harmonic and dissonant intervals?

YOUNG — If I put one against the other, you'd have no problem. The rational intervals sound beautiful and harmonic, as when the best string quartet plays a Beethoven quartet. The twelve-note system, in contrast, sounds like the piano that comes in out of tune in a Brahms concerto after the orchestra has been playing for so long. When Peter Yates gives his lecture on tuning, he'll play first an equal-tempered example and then one in just-intonation; an equal-tempered and then a Pythagorean; an equal-tempered and then one in mean-tone

tuning. I find it myself quite easy to hear the difference, as I think the audience does. On the simplest level, all you have to hear is whether or not it sounds like what we conventional people have always called harmonized, in-tune, beautiful, rather than just grinding and gratey. KOSTELANETZ — What you are saying, then, is that nature sounds in “just intonation.”

YOUNG — This is an example of a harmonic system that occurs naturally in the world of sound.

KOSTELANETZ — Aren't there some cultures that don't use this harmony?

YOUNG — Some cultures have very interesting different systems. In the music of Java, for instance, we know about *pelok* and *salendro*, which are scales of irrational intervals. The seven-note, heptatonic scale is also used in Cambodia. There is evidence for another kind of harmonic hearing, however, when we consider the fact that in Java they use plates and bells as resonating bodies. Plates and bells have irrational harmonic systems, whereas here and in Europe, as well as in India, China, and Japan, we use strings and pipes as our primary resonating bodies, and as the bases for determining the frequencies of our musical system.

One factor that shapes the use of the system of just-intonation and what the audience hears at my concerts is amplification. It happens that the audibility of harmonics can be a function of amplification—the louder a sound is, the more likely you are to hear the harmonics that sound makes, which is to say that they increase as the amplitude goes higher. At ordinary volumes they are so soft that you don't even hear most of the higher partials. In fact, if you listen closely to my singing voice without amplification, you will hear perhaps up to three. With amplification, the seventh harmonic in my voice and often the ninth harmonic in Marian's voice become clear and audible for everyone. That's only one reason we play the *Tortoise* piece so loud.

An important step in the history of just-intonation is the use of relationships that are multiples of integers greater than the number 5. That is, the entire major scale can be derived from proportions which are multiples of the integers 2, 3, and 5 only by themselves. Let me reduce the proportions: $27/24$ is a $9/8$ interval; $30/27$ is $10/9$; $32/30$ is $16/15$; $36/32$ is $9/8$; $40/36$ is $10/9$; $45/40$ is $9/8$;

48/45 is 16/15. There are only three kinds of consecutive intervals, each of which reduces to factors of 2, 3, and 5: 9 is 3 times 3; 8 is 2 times 2 times 2; 10 is 2 times 5; 16 is 2 times 2 times 2 times 2; 15 is 3 times 5. The music of South India forms an important basis of the theoretical work I have done. Not only do they use the number 7 but they also employ the numbers 11, 13, and simple multiples of these and, perhaps most important, these intervals are considered harmonically over the drone rather than only melodically. I refer to the book by the Indian theorist and violinist, C. Subrahmanya Ayyar, *The Grammar of South Indian (or Karnatic) Music*.

KOSTELANETZ — What does this give you?

YOUNG — An expanded vocabulary. It means that you are using pitch relationships which are not available in the Western system by any means, because of the fact that this system uses numbers only up to five.

KOSTELANETZ — How are you able to hear them, or even create them?

YOUNG — Very easily. That has a great deal to do with my work in long durations and the fact that I'm interested in harmony, not melody.

KOSTELANETZ — Some of your first pieces in New York were more or less theatrical events, such as counting the string beans.

YOUNG — I did that at my first performance of Toshi Ichiyanagi's *Mudai Number One*, during a series of concerts at Yoko Ono's loft that I directed. He had given me the score, which has been published since in my *Anthology*. It is an abstract pattern—a few calligraphic brush strokes on a white field—which give the impression of a half-dozen images. It is very sparse, very pretty—a few inkdrops, John Cage style, or, more appropriately, in the style of the Zen abstract calligraphers. This was given to me with no instructions, and *Mudai* means untitled. I had been thinking about the piece up to the moment of the concert, and I really hadn't come up with anything that was appropriate. Finally, when I passed a vegetable stand on the way to the concert, I decided I would buy thirty cents' worth of string beans. When I got there, I counted them. Most people who mention it never point out that I timed the counting with a stopwatch, so that I would find out how long it took me.

KOSTELANETZ — How long did it take you?

YOUNG — I forget.

KOSTELANETZ — Did you write it down?

YOUNG — I'm not even sure about that.

KOSTELANETZ — What good then did it do to time it?

YOUNG — The timing interested me then.

KOSTELANETZ — Was that "music"?

YOUNG — I think so. There was a score, and certainly it involved a duration of time, an element with which music has always been involved. Certainly, picking the pods out of the bag made a little rustle here and there. People were sitting and listening, and I was definitely performing. According to the definitions that I had exposed in my earlier 1960 pieces, I'd say it was certainly music.

KOSTELANETZ — Music being anything that makes a sound. Is anything not "music"?

YOUNG — There probably are very still things that do not make any sound. "Music" might also be defined as anything one listens to.

KOSTELANETZ — What happened in the piece where you burned a violin?

YOUNG — That was in a piece by Richard Maxfield performed at the Y.M.H.A. in New York. Even though it was Richard's piece, he gave me free rein, as he did in all his pieces; and this was one of the general conditions I often asked for my performance of the works of other composers and artists during that period. The piece was his Concert Suite from *Dromenon*, I believe. It involved a small orchestra, most of whom had far more rigid instructions than I did. I had my violin and my music stand, and I had carefully stuffed the violin with matches and lighter fluid ahead of time. I didn't tell anybody except Richard, who I thought should know, because I felt certain that they would not allow me to do it. Fortunately, they did not stop the performance; the instruments were playing, while the violin went blazing away.

KOSTELANETZ — Was this a theatre piece?

YOUNG — Both theatre and music. The definition of theatre can be expanded in much the same way we expanded the definition of music, and in many cases the two areas overlap.

KOSTELANETZ — Do you consider yourself the author of the visual element?

YOUNG — In this piece, yes. Particularly so, perhaps, because I was

performing an aspect of my Composition 1960 #2, which calls for a performer to build a fire where the audience can see it. Here the emphasis was displaced from the fire alone to the violin as combustible fuel for the fire.

KOSTELANETZ — Where does the piece in which you drew a line for an entire evening belong in your development?

YOUNG — As we have observed, I have been interested in the study of a singular event, in terms of both pitch and other kinds of sensory situations. I felt that a line was one of the more sparse, singular expressions of oneness, although it is certainly not the final expression. Somebody might choose a point. However, the line was interesting because it was continuous—it existed in time. A line is a potential of existing time. In graphs and scores one designates time as one dimension. Nonetheless, the actual drawing of the line did involve time, and it did involve a singular event—“Draw a straight line and follow it.”

In 1961, I became more and more interested in the idea of this sort of singular event, and I decided to polish off my entire output for 1961 in a singular manner. My book, *LY 1961*, published by Fluxus, reads Composition 1961 #1 (January 1), “Draw a straight line and follow it”; Composition 1961 #2 (January 14), “Draw a straight line and follow it”; Composition 1961 #3 (January 27), “Draw a straight line and follow it.”

KOSTELANETZ — Did you do that same piece on all those nights?

YOUNG — No, what I did was this. On January 6, 1961, I determined the concept. Then I took a yearly average of the number of pieces I had completed over a given period of time, and spaced that number equally throughout 1961, with one composition on the first day of the year, and one on the last day. It came out to one every thirteen days, and that night I quite coldly wrote out the dates.

KOSTELANETZ — Were they the 1960 pieces written over and over again?

YOUNG — It was Composition 1960 #10 written over and over again. What is also important historically is that I performed all of them in March, long before many of them had ever been written according to their dates of composition. I think that was interesting.

KOSTELANETZ — How did you actually perform it?

YOUNG — Well, it can be performed in many ways. At that time, I employed a style in which we used plumb lines. I sighted with them, and then drew along the floor with chalk.

KOSTELANETZ — As you were performing, did you announce each piece—to separate one from the other?

YOUNG — No, I distributed programs in which each one was listed, and it was up to the audience to keep track of which one I was doing.

KOSTELANETZ — Did you erase each line after you drew it?

YOUNG — No, I didn't erase. I drew over the same line each time, and each time it invariably came out differently. The technique I was using at the time was not good enough.

KOSTELANETZ — Did you fix duration at the commencement of the piece?

YOUNG — No.

KOSTELANETZ — How, then, did you decide to terminate it?

YOUNG — After I had completed the last line, which was Composition 1961 #29 (December 31).

KOSTELANETZ — How long did it take to draw each line?

YOUNG — It must have been a few minutes—I forget exactly; but a whole performance must have taken a few hours.

KOSTELANETZ — Weren't there times when nobody was in the audience—you and your assistant were performing merely for yourselves?

YOUNG — That's very possible. People came and went and came back again.

KOSTELANETZ — Would you call this a successful piece?

YOUNG — I did enjoy it very much, because I like becoming involved in a singular event.

KOSTELANETZ — Is your desire to concentrate upon one thing influenced by Eastern philosophy?

YOUNG — It's both an influence and a parallel, because at the time I started to do this I was becoming aware of various concepts of mysticism. I've been interested in Taoism since the time I became acquainted with it, which was about the same time I began to become aware of these areas of my experience. I had already started reading *haiku* in high school, for instance.

KOSTELANETZ — What other steps did you take before the *Tortoise* piece?

YOUNG — There is the “dream chord,” which I used to hear in the telephone poles, which is the basis for the Trio for Strings. It is, for instance, G, C, C-sharp, D.

KOSTELANETZ — Which is one to four, to four-sharp to five.

YOUNG — Let’s think of it in the key of C, in which case it is five, to one, to two-flat or one-sharp, to two. The entire work, *The Second Dream of the High-Tension Line Step-Down Transformer* (1962), which Lukas Foss’s group from Buffalo played at Carnegie Recital Hall in January, 1965, consists of this chord. It is one of the few pieces of the genre notated in frequency ratios that I have released in score form. In the most primitive form, I think of the ratios as 12, 16, 17, 18, which represent the intervals for G, C, C-sharp, D. However, in the version I gave them, I suggested 24, 32, 35, 36, because I was interested in the smaller interval of 35/36, which I felt was a ratio I may have been hearing all along.

This then leads us to the fact that in the *Tortoise* we have an incredibly large vocabulary of pitches available to us, each of which is related by very simple mathematical proportions.

KOSTELANETZ — This increase occurs basically because, whereas your ratios are fixed, your pitches aren’t.

YOUNG — You mean, whereas the ratios are fixed, the number of notes is infinite. I haven’t taken a count; but just glancing over at Tony Conrad’s chart on the wall here, I can see, roughly, in *O*-tonalities we have used about twenty-seven frequencies to the octave, which is more than double the number used in the twelve-note system. Of course, there is no limit upon the number we can eventually squeeze into an octave, because we don’t necessarily hear them as one coming after another, filling up an octave. We hear them as various relationships to a pitch we have established very clearly in our ears and minds. We approach each new pitch, which then provides another identification point in an octave, from some very simply established interval. That is, every new pitch very simply relates to the previous point of departure. Let’s say that we begin with one, which will be the fundamental; and let’s say that we put a drone sound on one.

KOSTELANETZ — Can one be arbitrarily established?

YOUNG — It can be any frequency. Given a fundamental, which we call one, only the frequencies thereafter must be precisely derived—

must be in precise relationship to the fundamental. In theory, however, these other pitches can exist at any frequency.

KOSTELANETZ — Therefore, as soon as you establish a fundamental pitch, you thereby also establish, metaphorically, a row of possibilities for the entire piece.

YOUNG — If we establish a fundamental frequency represented by the number one, all of the other frequencies considered for use are related to this fundamental as positive integers, exactly as established in the overtone series of strings, pipes, and certain electronic instruments. From one we proceed to two, which is twice as great a frequency, or twice as many impulses per unit of time; this is perceived by the ear as what we call an octave.

KOSTELANETZ — Can the human ear hear an octave of notes which are not duplicable on a piano?

YOUNG — Yes, the octave consists of frequencies in the relationship of two to one, and it doesn't matter where the one is.

Then in going up to three we have the simple relationships of three to two and three to one. If we call the fundamental one C, then two is C an octave higher, and three is G a perfect fifth above two. Four, a C, is a perfect fourth above three; five is a major third above four; six is the octave above three, or two times three. Then, with seven, we introduce a new frequency which is not a factor of the C-major scale, and consequently has no name in the European classical system. It is not the same B-flat found on the piano, but lower, some 31. odd cents lower, or 231. odd cents below eight, which is two to the third power (2^3) or C again. Nine is three times three, and is a major second above eight, of the type represented by the interval between D and C in a C-major scale; it is called a major tone in just-intonation. Ten is two times five, and is a major second above nine of the type represented by the interval between E and D in a C-major scale; it is called a minor tone in just-intonation. Eleven is another new frequency that is not a factor of the C-major scale as it would fall between F and F-sharp; it is approximately 150 cents below twelve, which is three times two to the second power (3×2^2), or two octaves above our first G. Thirteen, like seven and eleven, is not a factor of the C-major scale, as it would fall between A-flat and A at 138. odd cents above G, and 128. odd cents below fourteen, which

is two times seven. Fifteen is five times three, or B a major third above G. Sixteen is two to the fourth power (2^4) or C. Seventeen is very close to the equal-tempered C-sharp on the piano. We can go on infinitely in one dimension with these numbers.

KOSTELANETZ — Won't you go out of the range of hearing?

YOUNG — How quickly we go out of the range of hearing depends upon where we start, but we will eventually go out of the range of hearing. Theoretically, you can still plot where all these other notes are; this is demonstrated in Alain Danielou's book *Tableau Comparatif des Intervalles Musicaux*.

KOSTELANETZ — Haven't we always been conscious of these harmonic relationships?

YOUNG — I do think that certain instrumentalists and singers have. These pitches are available to the singer and the violin player, because the latter has no frets to predetermine his frequencies. He doesn't have to put his finger down on either five or six, because he can play any of the points between. That's one of the reasons I stopped playing saxophone and began singing. The blues singer does use flat sevens, which are real seventh harmonics, occasionally. I referred to the use of harmonic intervals in South Indian music earlier. Also, many reputable Western classical musicians play their major thirds beautifully in tune, whereas on the piano they are, as I said, very seriously out of tune. If you sustain these on a piano or particularly on an equal-tempered organ, they sound terrible.

One of the structural bases I have established for the *Tortoise* is that the most frequently used numbers are one, two, three, and seven, and certain other prime numbers, and multiples of these numbers by two, three, and seven, and the chosen primes. By the mathematical processes I have outlined, then, we get to a larger number like 63, and we can have a relationship of 63 to 64. 63 is a very interesting pitch; it is just below 64 by 27.27 cents, which is a very small interval, just a little larger than an eighth of a tone. 64 is the fifth power of two, and 63 is achieved in several ways: as nine times seven, and as three times 21.

KOSTELANETZ — Is this an *a priori* system?

YOUNG — No, I determined all of this by ear, before I decided I would use certain numbers. In fact, I always work by ear first, and later, by number, I analyze what I've done. Of course, as I become

more sophisticated about what I'm doing, I start plotting and making devious schemes and plans.

KOSTELANETZ — In sum, then, how do the musical elements of the *Tortoise* piece function?

YOUNG — In advance, we determine which frequencies we are going to use and which combinations of frequencies we are going to allow. At this point enters the only element of improvisation in the work we are doing right now.

KOSTELANETZ — How do your musicians divide the task?

YOUNG — In the past, we were using one viola, one violin, and two voices. The violist, John Cale, used a flat bridge that he had especially designed to allow three strings to be bowed simultaneously. Tony Conrad used double-stop technique on the violin, giving us five pitches. Each of the voices, of course, can sing only one note at a time; in sum, we had seven frequencies. Right now, The Theatre of Eternal Music consists of three voices—Terry Riley, Marian, and myself. Tony has two pitches, which makes five. We now use an audio-frequency generator at one pitch (210 Hertz *), and a turtle motor, which also has a pitch. Again we have seven. The motor is now the primary drone at 120 Hertz, which is twice the 60 Hertz we get off the house current.

KOSTELANETZ — Do you make the turtle motor the fundamental, or one?

YOUNG — These days, we are interpreting the drone as three, or the dominant, and playing in the mode of the dominant much of the time, and occasionally modulating back to the real fundamental.

KOSTELANETZ — What you have then, in the metaphor of the Western scale, are the notes C and G playing constantly.

YOUNG — If we call the fundamental, one C, then the notes you are referring to are G and D in the dominant, or six and nine. In the most recent concert you heard [the Midsummer concert in Amagansett, N.Y.] the only pitch that was being sustained at all times during the music was six, played by the motor. Other pitches were used as drones above the G in addition to D, but no one of them was sounding at all times.

KOSTELANETZ — What is the turtle motor?

YOUNG — It's just a little tiny vibrator which is used to run an

* Cycles per second.

aquarium filter. I started using this motor because it was conveniently around the house and I knew it sounded pretty good as a constant frequency source.

KOSTELANETZ — What do the rest of the people do?

YOUNG — They play frequencies in agreed-upon combinations.

KOSTELANETZ — Such as?

YOUNG — Eight, seven, six, four.

KOSTELANETZ — In relation to one, by the system we outlined before.

YOUNG — Right. If we happen to play it over the drone three and transpose it . . .

KOSTELANETZ — How do you transpose?

YOUNG — Very easily. It's just by multiplying by the number of the key or frequency to which we wish to transpose. If we've already established that the turtle motor sings on three, I can either sustain this chord, for instance, by going eight, seven, six, four, while the turtle motor is a drone on three. Or, if we modulate temporarily to the key of three, which is to say the key of the dominant, we can have the same complex at 24, 21, 18, 12.

KOSTELANETZ — If you arbitrarily decide to make the turtle motor not one but three, then you can use these arrangements of multiples. What does that sound like?

YOUNG — In this case it sounds like a modulation to the dominant.

KOSTELANETZ — On the piano, the equivalent is the shift from a C-chord to a G-chord.

YOUNG — Or, on the piano, the equivalent of going from C, G, (B-flat), C, to G, D, (F), G—from a C-seventh chord with no third to a G-seventh chord with no third.

If we have already determined in advance the frequencies that we are going to use and we allow only certain frequency combinations—certain chords which we have determined are harmonious to our ears—then we find that as soon as one or two people have started playing, the choices left are greatly reduced and limited; so that each performer must be extremely responsible. He must know exactly what everyone else is playing; he must hear at all times every other frequency that is being played and know what it is. This is the assumption on which we perform. That's why we rehearse every day.

KOSTELANETZ — In what terms do you hear so exactly?

YOUNG — Familiar frequency-pitch-interval relationships.

KOSTELANETZ — If you sang a note now and I sang a note in relation to yours, you could tell at once the frequency relationship.

YOUNG — Yes. That's what I've spent my life learning to do. Even though Marian had no previous musical training, in the last year she has learned to hear and sing two new pitches, giving her a total of three pitches.

KOSTELANETZ — That makes Marian basically a drone voice, while you, Terry, and Tony shift tones.

YOUNG — Right. We move quite a bit. In our present format, the turtle motor and the generator are constant, and Marian is fairly constant in that she moves around only in three notes. We've given her a little ostinato that, over a long period of time, she goes over and over again.

KOSTELANETZ — In terms of timbre, what kinds of sounds do you make?

YOUNG — We make throat tones and nose tones.

KOSTELANETZ — The latter is a kind of humming.

YOUNG — Well, nose tones are humming, but they become more interesting when you use a microphone. You can direct a more concise and, consequently, louder stream of air at the microphone, because the air comes from a smaller enclosure than a throat tone. However, you get a different timbre, because whereas the throat tone resonates harmonics, the nose tones are much closer to a simple wave structure that has less harmonics. When you use the mouth, you have a resonating chamber which, like that of violins and guitars, can emphasize a tone. For instance, we've developed a technique through which we can emphasize the seventh harmonic by using a certain syllable, "uh."

KOSTELANETZ — When I hear the *Tortoise* piece, the timbre of the sound continually changes, and I notice that certain timbral textures seem to go and return. Is this because one voice is dominant?

YOUNG — One voice or another might predominate at different times. Basically, we are interested in the blend, as we are working with timbre at many levels. The whole complex is a form of timbre, from its definition, which is various emphases of phase relationships, number, and amplitude of the different harmonics. Not only do we have individual timbres, but we also have a cumulative timbre, which cor-

responds to the component partials of an assumed lowest fundamental frequency one.

KOSTELANETZ — Then you send out the blend at an extremely loud amplitude, almost at the pitch of aural pain.

YOUNG — It's getting up there. To me it is not painful, but to a newcomer it often is. This is a threshold of sensitivity that is developed. One learns, I believe, to hear loud sounds without feeling pain. I don't think that I have lost much hearing over the past few years. When I worked with Ann Halprin and heard loud sounds from close up, I often did not regain my normal hearing until a few hours later. Currently, I don't get that effect. I find that I can still hear up to 17,500 Hertz, which is probably as high as I've ever been able to hear. Although I have no way of proving that I can hear something very soft as easily as I used to be able to, my assumption is that my ears are not deteriorating.

There are two very important reasons for my interest in sounds at levels of 120 and 130 decibels. One, we know from studies of the Fletcher-Munson curve that the ear does not hear bass at lower amplitude as loudly in proportion to treble. In other words, if we take a given sound situation that has basses and highs and middle-range tones and it's not too loud, the ear really doesn't perceive all the bass that is there. It can't pick it up as easily. We find, however, that at louder amplitudes the ear hears bass more in proportion to the way it is actually being produced. This gives you a fuller chord. Secondly, combination-tones, particularly difference-tones, are more audible. The least frequent, or lowest of these at frequencies below 15 Hertz, are called beats and can be very valuable in helping the musician tune intervals to a very fine tolerance, and they only become audible at the loudest levels.

KOSTELANETZ — The louder the volume is, the more difference-tones you can hear.

YOUNG — And the greater the intonation-precision potential, as well as the richer the complex.

KOSTELANETZ — What do these difference-tones sound like?

YOUNG — Well, they add these tubas, trombones, double basses, and cellos that, you notice, we don't have in the group but whose sounds are apparent on the speakers.

KOSTELANETZ — How would you characterize the result I hear?

YOUNG — By the time someone walks into our environment, the sound is extremely complex. We've got seven fundamentals going. This means a large number of combination-tones.

KOSTELANETZ — Why isn't there any dissonance?

YOUNG — Everything functions in whole-number relationships. There can never be any dissonance in this system, unless things get out of hand—somebody wavers, somebody misses his pitch, the machinery goes haywire. If one or another of the fundamentals are off pitch from the established drone, then the difference-tone will not appear in tune. Therefore, if you have two fundamentals, there is no way in the world to know, except by what your ear tells you, if they are in any particular ratio to each other; but if you have a third sound—a third point on your plumb line—then you can talk about a fixed series of ratios.

KOSTELANETZ — Thus, because the fundamental one is constant, if you deviate from the correct seventh, you can hear the difference-tone out of tune.

The sound I used to hear in your piece was absolutely unfluctuating—it wasn't interrupted by any beats or rhythms; but now that you've introduced the generator, there is a kind of beat.

YOUNG — One of the things happening now is that we get the piece going with such precise synchronization at such a high level, that we hear every little impulse more clearly, because we are really concentrating on them. When you get down into the bass range, these impulses are slowed down to such a rate of speed that one starts to hear them as rhythms. Once you get down to 30 Hertz, you can almost distinguish individual sounds; and by the time you get down to 10 Hertz, or three, you don't hear a constant pitch any longer but a rapid succession of pulses or rhythms, which are precisely related to the over-all complex. The other pulse situation comes from beats, which occur when you play closely related intervals. If the pitches are up high, the difference-tone will be so low that you will hear little pulses instead of a resonating tone. This relates rhythm to frequencies, because the frequencies are actually in positive integral relationship to the rhythms.

KOSTELANETZ — How do you use your electronic apparatus?

YOUNG — Much time and care have gone into the selection of what we feel is some of the best equipment available for our purposes.

Each of the performers' sounds is picked up with a microphone. The violin uses a magnetic pick-up which Tony has installed himself, and the voices use two Sennheiser MKH 405 and one PML EC 61 condenser microphones. These connect to custom mixing equipment which directs the information through the Marantz 7T stereo pre-amp and through the Futterman Model H, 100 watts RMS at 16 ohms per channel, power amplifier which drives four Argus-X Custom 450 speaker systems on one channel and six Leak Mark II Sandwich speaker systems on the other. We use a large number of speakers now because at the levels we are interested in, a lesser number will break down. Even so, we drive our speakers at peak power.

KOSTELANETZ — Why does *The Tortoise, His Dreams and Journeys* have a different title each time I hear it?

YOUNG — Each section has its own title, which is a way of characterizing one particular area of time, in which we are doing one kind of work, in the over-all duration of the piece. Although the piece may sound pretty much the same each time, each performance is basically quite different.

KOSTELANETZ — Recently, you've substituted Terry Riley's voice for John Cale's three-string drone and, after that, added the turtle motor and the generator. Aside from this change in instrumentation, how is the piece different?

YOUNG — It's partly timbral, partly a difference in the availability of other types of pitches. With generators and motors, I have the most sustained pitches I've had to date. Also, a third voice offers a less sustained pitch than John Cale could produce with a bow on his three-string drone. With two male voices, I can produce certain timbral blends impossible with one male and one female voice. Similarly, Tony Conrad on the violin doesn't have as much to relate to, now that John Cale has gone.

Also, at the Film-Makers' Cinematheque, in December of 1965, we were using 80 Hertz as a constant drone; at a recent concert, we put our primary drone on 120 Hertz, which put the concert in the mode of the dominant.

KOSTELANETZ — Why give each concert a different subtitle?

YOUNG — I feel that since each concert does represent work in different areas it is very important to have a method of categorizing each concert. A library likes to have a name or a number for some-

thing. This becomes a means for referring to an area of work I did at a particular time.

KOSTELANETZ — Do you expect to devote your whole life to this piece?

YOUNG — I suspect that I might easily, because it seems to become more and more inclusive. I'm trying to include many of the areas I'm interested in, and the steps from one area to another seem to be gradual, as I gradually leave one emphasis and move on to another.

KOSTELANETZ — Such as . . .

YOUNG — Now I've become more interested in controlling which harmonics are present at any given time. This is not easy to do with conventional instruments and voices, but I have developed a technique that allows me to emphasize, for instance, the seventh harmonic or the third harmonic, or, quite possibly, some other harmonics. With the use of electronic equipment, I should be able to set up situations in which I can have precisely, and only, the seventh harmonic or the ninth harmonic as they are required. In other words I'm really interested in a very precisely articulated situation—I always have been. I'm interested in the most clear and sparse sounds—in control and in knowing what I'm doing.

KOSTELANETZ — In traditional terms, how do you classify *The Tortoise, His Dreams and Journeys*?

YOUNG — Music and theatre. The music might dominate, but it does so in a theatrical situation.

KOSTELANETZ — What is the design you project on yourselves and the wall behind you?

MARIAN ZAZEELA — I designed it as a cut-out which, although it exists originally on cut paper, was intended to have light either behind it, or projected through it. Then the slides were made from the design. There are two patterns; one is a development of the other. They are both used in their negative and positive forms, and there is some variation within the negative form itself. The black-and-white patterns have been treated with colored theatrical gells. The colors are in ranges of either pink or green, as are the lights that project upon us. I have found that my interest in these particular colors has extended into my work in light, which is natural as they are two of the three primaries of the light media. In different superimpositions they produce or suggest nearly every other color.

The designs themselves are symmetrical, derived from calligraphic forms. Part of the projection falls upon us as we play and re-programs us, or actually re-costumes us visually into the larger pattern, which is intended as a mode for visual concentration—as votive image.

KOSTELANETZ — Objective elements intended to inspire subjective responses—this is a strategy aesthetically similar to your music.

YOUNG — The areas we are working with in light are the earlier stages of development toward directions that may relate to some of the things we're trying with the music. I feel there are parallels already. This concentration on the light images does not distract the mind from the music but rather gives the eyes something to rest on and become absorbed in, as the ears have the sound to become absorbed in.

KOSTELANETZ — What theatre tradition do you consider yourself in, if any?

YOUNG — Although my present work with The Theatre of Eternal Music is establishing a tradition of its own, just as did my earlier work in The Theatre of the Singular Event, it will be informative to consider some of the kinds of theatre I have been aware of over the years: Theatre as Ritual; Theatre as Ceremony; Theatre as Trance (such as Temiar Dream Music); Gagaku; Bugaku; Chinese Opera; Classical Indian Dancing; Indonesian Theatre; Total Awareness; Cage accepting as theatrical whatever occurs; Audience Participation; Dada; Futurism; Surrealism; Artaud; Total Theatre; Theatre as Environment. It is interesting to note that although the scope of the two periods, that of The Theatre of Eternal Music and that of The Theatre of the Singular Event appears divergent, they both relate to some of the same theatre traditions. For instance, *The Tortoise, His Dreams and Journeys* and my Compositions 1961 have some relation to Theatre as Ritual.

KOSTELANETZ — Do you like to work as theatre?

YOUNG — Yes, but I would prefer Dreamhouses or truly Eternal Theatres with a more permanent installation, which would allow us to perform in one location for longer periods—weeks, months, and hopefully, in time, years—without having to move on like traveling musicians to the next concert site. Constant moving about interrupts the continuity of the work and prevents the realization of its full potential as a living organism with a life and tradition of its own.

KOSTELANETZ — That remark about life and tradition applies to your audience as well. Why did you choose the title *The Tortoise, His Dreams and Journeys*?

YOUNG — "Tortoises have been tortoises for two hundred million years, which is 199 million years longer than people have been people." I refer you to a very nice book on turtles by Robert J. Church, which I'm very fond of not only because he treats the subject with love and precision, but also because each line of every caption is precisely centered under the picture. He points out that while other creatures over the years have been changing, tortoises and turtles remain essentially the same. I'm interested in this, because I'm interested in long durations. I'm interested in stasis, and in things that stay the same although they change in detail.

KOSTELANETZ — Are you perhaps developing a turtle aesthetic for human art?

YOUNG — I'm going in this direction because of my own natural tendencies. There still is considerable variation in the piece, because variation is such an unavoidable factor of life that nothing exists without it. No matter how exact you try to be, no matter how many times you try to draw the line exactly the same, things will always be different. This is one of the inherent characteristics of my work.

KOSTELANETZ — What kind of time does the *Tortoise* piece create?

YOUNG — Its own time, which is determined by and measured in terms of the frequencies we are sustaining.

KOSTELANETZ — Could someone find the *Tortoise* piece boring?

YOUNG — Somebody certainly could. I feel that the audience must be free to come and go as they choose. I do not like to impose limitations on people, but I am interested in organization and precision—in controlling a situation to a considerable degree.

KOSTELANETZ — Should the piece induce in the audience a particular psychological state?

YOUNG — The tradition of modal music has always been concerned with the repetition of limited groups of specific frequencies called modes throughout a single work and, as a rule, the assignation of a particular mood or psychological state to each of the modes. There is evidence that each time a particular frequency is repeated it is transmitted through the same parts of our auditory system. When these frequencies are continuous, as in my music, we can conceive even

more easily how, if part of our circuitry is performing the same operation continuously, this could be considered to be or to simulate a psychological state. My own feeling has always been that if people just aren't carried away to heaven I'm failing. They should be moved to strong spiritual feeling.

KOSTELANETZ — Does your theatre have a therapeutic value?

YOUNG — I suppose it could. People have said that they have come in depressed and left fantastically elated.