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PERCUSSIONIST

F. Michael Combs, Editor
PERCUSSIVE NOTES
Music Department
University of Tennessee
Knoxville, TN 37916

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CONTENTS

The materials for this issue of the Percussionist were compiled by the New Instrumental Resources Committee of PAS, Ron George (chairman), Jonathan Glasier, and Will Parsons. This issue was edited by Ron George.

The Percussive Arts Society is a worldwide organization founded in 1963 and incorporated as a not-for-profit corporation under the laws of the State of Indiana and the State of Illinois. Its purpose is educational, promoting through its activities a wide range of musical knowledge, encompassing the young percussion student, the teacher, and the performer. Its mission is to facilitate great communication between all areas of the percussive arts. PAS accomplishes its goals through its bi-monthly publication Percussive Notes, its worldwide network of chapters, and its annual International Convention. Three issues of Percussive Notes are devoted to research, subtitled The Percussionist and contain no advertisement. Annual membership begins when the month dues are received and application processed. Eighty percent of dues are designated for subscription to Percussive Notes.

Percussive Notes is published six times a year: February, March, June, August, October and November. The March, August, and November issues subtitled Research Edition—The Percussionist, contain no advertisement.

Correspondence regarding change of address and membership should be directed to: Percussive Arts Society, 110 So. Race St., Rm. 205, Urbana, IL 61801.

THE PERCUSSIVE ARTS SOCIETY ANNOUNCES NEW PAS NATIONAL OFFICE AND STAFF

Not only has the PAS National Office been moved to a new location, it has been completely reorganized to better serve the membership!

Fred Fairchild, PAS Historian and long-time member of the society, has been appointed PAS Administrative Manager and is in charge of the affairs and operation of the office. Fred is a member of the faculty of the University of Illinois in Urbana.

Assisting with office operations is Tom Siwe, PAS 2nd Vice-President and a member of the University of Illinois faculty. Tom has been spending a great deal of time focusing on special areas such as sustaining and foreign membership and the use of computers in the PAS operation.

All further correspondence regarding membership or other business of the society should be directed to:

The Percussive Arts Society
Room 205
110 S. Race Street
Urbana, IL 61801

telephone 217 367-4098

Editorial materials and correspondence regarding the PAS magazines should continue to be directed to:

Mike Combs
Dept. of Music
University of Tennessee
Knoxville, TN 37916

PERCUSSIVE ARTS SOCIETY

The World Organization For Percussionists

PAS keeps its membership informed in six annual publications about important percussion events and developments: Drum Set, Timpani, Keyboard, Percussion on the March, new products, programs and reviews, and special clinic features.

PAS sponsors performances, composition contests, and research.

PAS organizes international conventions, chapter conferences and meetings.

Membership Dues

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	$13.00US	Student, Music Educator, Library
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THE PERCUSSIVE ARTS SOCIETY INTERNATIONAL CONVENTION 1981 Indianapolis, November 12-15

PERFORMANCE GROUPS

Equilibrum
Guatamala Marimba Ensemble
Memorial Ragtime Marimba Band
Nexus
Northern Illinois University Steel Band
Rhythmic Union
The Phantom Regiment Drum Line
The Percussion Group
Repercussion
Sonic Boom
Ball State University Percussion Ensemble
Butler University Percussion Ensemble
Depauw University Percussion Ensemble
Indiana State University Percussion Ensemble
Indiana University Percussion Ensemble

PERFORMERS/CLINICANS

Drum Set:
Harvey Mason
Carmine Appice
Peter Magadini
Bud Harner
Jim Ganduglia
Jack Gilfoy

Ethnic Percussion:
Airto
Ricardo Marrero
Dong Wook Park
Ramnad V. Raghavan

Marimba/Vibes:
Michael Rosen
Keiko Abe
Fernando Matus
Mike Mainieri
Gary Burton

Marching Percussion:
Rob Carson
Tom Float
Fred Sanford
Jay Wanamaker
Marty Hurley
Dan Spalding

Timpani/Orchestral Percussion:
Cloyd Duff
Richard Weiner

Other Areas of Percussion:
Erwin Mueller
Tom Siwe
David Woodhull
Michael Colgrass
Farrell Morris

REGISTRATION begins at 9:00 am on November 12th in the Indianapolis Convention Center. Registration for all sessions is $25 ($20 for students) and the Saturday night banquet is $12.

TOURS of Indiana University and the Indianapolis Motor Speedway are also available.

PREREGISTRATION for the banquet and the tours is necessary. For more details consult the Spring/Summer '81 PERCUSSIVE NOTES or write (or call) PASIC'81, 501 Kendall Road, Knoxville, TN 37919 (615-693-8974).

MOCK SYMPHONY AUDITIONS will be held during PASIC'81. Further information may be obtained from Erwin Mueller, School of Music, Ball State University, Muncie, IN 47306.

HOSTING PASIC'81 is Paul Berns of the Indianapolis Symphony. The host institution is Butler University.

HOUSING information is available from the Indianapolis Convention Bureau, 100 South Capitol Ave., Indianapolis, IN 46225.

NEW INSTRUMENTAL RESOURCES - A SURVEY OF THE PAST AND THE PRESENT FROM THE NEW INSTRUMENTAL RESOURCES COMMITTEE

Now, as in all periods of history, composers and performers are searching for new means of expression which will relate to the society in which they live. This search ultimately leads to new compositional and performance techniques, and to new instruments. Since 1960, electronic, acoustic, and electro/acoustic instrumental research and development has grown to enormous proportions. Because it is associated with academic institutions, research in electronic sound production is widely known. But, because of the lack of research funds, experimentation into new acoustic and electro/acoustic instruments has remained relatively unknown and undeveloped. Essentially this research has been supported by the individuals involved in such research.

It is important for this instrumental research to contiue and for the information generated to be available to performers and composers so that they may expand their resources. Instrumental research, composition, and performance are dependent upon one another for growth. Instrumental research generates new works and performance techniques, composition generates new instrumental research, etc. When this cycle is broken the development of the entire art of music is affected.

The new percussion instruments represented in this issue of the *Percussionist* are very much a part of this cycle, representing both a culmination and a renewal. These instruments have resulted from extensive compositional, technical and instrumental research and will generate new compositional, technical and instrumental research due to the new resources that will be available to composers and performers. We are in the midst of a renaissance of new acoustical instrument research and development somewhat analogous to the time of Hector Berlioz and Adolphe Sax (early 18th Century). This period saw the development of most instruments, except percussion, as we know them today. The only important development since that time has been in the area of percussion and this research and development has occured primarily in the present century.

The early 20th Century witnessed the beginning of percussion research and the development of percussion as an integral part of 20th Century Western music. This research and development has lead to new instrumental and timbral resources and has had an enormous influence upon composers and performers. The purpose of this issue of the *Percussionist* is to present an overview of past percussion research and development as well as to take a brief look at some of the current research ("Percussion Sound Sculpture" by Jean-Charles Francois) and through the transcription of "Barbs and Broadsides" by Harry Partch and the "New instrumental Panel Discussions," to become acquainted with some of the views of artists and musicians who have or are currently working in this area. Future issues will focus on specific areas of research such as multiple-percussion,

the vibraphone, and the development of the American Gamelan. Any person wishing to contribute to or having suggestions concerning future issues should contact:

Ron George
905 South Normandie
Los Angeles, CA 90006

AN OBSERVATION ON PRESENT DEVELOPMENTS IN THE VISUAL ARTS, DANCE AND MUSIC.

Researching the areas of new developments in the visual arts, dance, and music has led the New Instrumental Resources Committee to an interesting observation. A definite crossover is occuring in the visual arts, dance, and music and perhaps a new form of expression developing in which there is no separation between the various art forms that exist in our Western culture. We have, for example: visual artists creating sculptures that are not only beautiful sculptures but musical instruments as well, and musicians creating musical instruments which are also beautiful sculptures (Sound Sculpture); visual artists, dancers, and musicians collaborating to create works in which light, movement, and sound are one unified activity (perhaps Multi-Media or "Interart" are terms that can be used to describe this activity although neither is entirely accurate. Harry Partch's term "coporeality" is perhaps more accurate*); visual artists and musicians working individually and collaborating to produce musical instruments that can be played and enjoyed by anyone whether they are artists, musicians, non-musicians, etc. (found and sought object instruments); the important development of ethnic instruments (especially the American Gamelan) and alternate tuning systems that are being developed and incorporated into our Western culture by both artists and musicians. Perhaps in time there will be no separation between the many art forms. One can only hope that this trend will continue.

*For information on the term corporeality see *"Genesis of a Music"* (Da Capo Press, 1974) and *"Barbs and Broadsides"* (this issue) by Harry Partch and *"Percussion Sound Sculpture"* (this issue) by Jean-Charles Francois.

BARBS AND BROADSIDES

by Harry Partch
Transcribed by Danlee Mitchell
and Jonathan Glasier

Harry Partch: "American composer, librettist, philosopher, publisher, record distributor, teacher, satirist, instrument builder and designer, sculptor, instrument repairman and tuner, theorist, experimentalist, iconoclast, selftaught musician, percussionist, adapted violist, conductor, author, retired hobo, seaman, sewer cleaner, dishwasher and kitchen flunky, comedian, vagrant, member of the Percussive Arts Society Hall of Fame, and graffittist.

Until his death, Harry Partch had lived in San Diego and had been doing his own thing for more than half a century. Partch's own thing began with his rejection of the European Masters and the traditional bourgeois concert-hall performance"*. "Barbs and Broadsides" is an edited transcription of a series of lectures given by Harry Partch between 1950 and 1970. The tapes of these lectures are being collected and edited by Danlee Mitchell. The title "Barbs and Broadsides" was given to this series of lectures by Danlee Mitchell for a presentation at the Exhibition/Festival of New Instrumental Resources which was held at the Center for Music Experiment and Related Research, University of California at San Diego, in May of 1979.

Part I

RITUAL AND CORPOREALITY

1.

The creative person shows himself naked, and the more vigorous his creative act, the more naked he appears. Sometimes totally vulnerable, yet always invulnerable in the sense of his own integrity. I am now 69, as this is being said, and I have been doing my own thing for more than five and a half decades. This thing began with truth, and truth does exist.

For some hundreds of years, the truth of just intonation, which is defined in any good music dictionary, has been hidden. One could almost say maliciously, because truth always threatens the ruling hierarchy, or they think so. Nor does the spiritual corporeal nature of man fare any better. We are reduced to specialities, a theater of dialogue without music, for example, and a concert of music without drama: basic mutilations of ancient concept. My music is visual, it is corporeal, oral and visual.

*Numus-West; 6/74, Page 28.

Danlee Mitchell: Danlee Mitchell is currently on the faculty at San Diego State University and is a member of the San Diego Symphony Orchestra. Danlee had been associated with Harry Partch since 1956 and is President of the Harry Partch Foundation.

Harry Partch Playing the BOO, Whitney Museum, New York 1968

The direction in which I have been going for the past 44 years has much in common with the activities and actions of primitive man as I imagine him. Primitive man found magical sounds in the materials around him—in the reed, a piece of bamboo, a particular piece of wood held in a certain way, a skin stretched over a gourd, or a tortoise shell. . .some resonating body. He then proceeded to make the object, the vehicle, the instrument as visually beautiful as he could.

His last step was almost automatic: the metamophosis of the magical sounds and the visual beauty into something spiritual. They became fused with his everyday words and experiences: his ritual, drama, and religion, thus lending greater meaning to his life. These acts of primitive man become the trinity of my work: magical sounds, visual forms, beauty and experienced ritual.

2.

I use the words "ritual" and "corporeal" to describe music that is neither on the concert stage nor relegated to a pit. In ritual, the musicians are seen. Their meaningful movements are part of the act. Collaboration is automatic with everything else that goes on. How could it be otherwise?

The various specialists do not come from sealed spheres of maturity, pure art, pure music, pure theater, pure dance, pure film. As far as large involvements of music in this modern world are concerned, we have really only two choices: we have the pit or we have the obsessive formality of the concert stage.

On the theater stage with Virgil Thompson, and occasionally with others, there is something like a ritualistic approach, a corporeal approach to music that is an integrated part of theater. But the degradation of either the actual pit or the mental pit is the fate of music and nearly everything else.

I had begun to call my music "corporeal music" while I was playing the viola, and I'm sometimes pressed to really explain this. The best I can say is that "corporeal" to me involves the whole body, the whole person, the whole mind. It really takes an effective form when all the instruments are together and especially when the Marimba Eroica is included. Because of the nature of the Eroica's sound, the pulsations in the air, the rarefactions and condensations actually hit the belly, and some people say they feel it through their feet.

The vision of player and instrument together must be beautiful. Those who play the large instruments especially are very conspicuous in the studio or on the stage. Bends are frequently necessary in playing and should be at the knees. Footwork must be dexterous because of the large areas to cover. The musician must always present pictures of athletic grace.

This brings up another point that is very important in my musical concepts. That is, the spacial sense involved in placing instruments; it's true on the stage and it's true even in the studio. I am very, very aware of it. The spacial—call it the situation, the architecture of the studio or the architecture of the stage—the spacial thing is fantastically important and also the attitude of the players who are, who have now become actions. They aren't in a symphony orchestra where they're counting a hundred bars, of course. They never do this. They know the music so well, they don't have to do this. But they are very much in the limelight, and when I get to the small-handed instruments, I'll take a step further and try to get away from what I call the curse of specialization.

Specialization—a dancer is just a dancer; a musician is only a musician—is self-defeating because it denies fulfillment. I want my musicians, at least occasionally, to get out on the stage floor and become a moving playing course.

It has been said in public print that if my ideas were to become dominant in music schools, it would be the end of music as we know it. May I say it first, that the danger is singularly slight. All or beyond this, the implication is that music be monolithic—that whatever is decided by the majority or the most powerful must be adhered to by everyone. This idea is totally outside the thrust of western civilization which has prided itself for over 2,000 years, off and on, in the concept of allowing strong individualism without alienation.

Monoliths are just dandy in stone. They do not belong in the world of ideas, to be sure. They have their advantages because of the present musical monolith. It is possible for 20 or 30 musicians to get together in a recording studio and to create practically on site, a soundtrack for a film or a TV series. This is fine. Let the commercial people have their monoliths. I have seen some evidence of fissures in it even there. But for schools of higher education, it is an obstacle to strong creative thinking, and I prophesy that it will not be tolerated forever.

3.

Meaningfulness must have roots. It is not enough to feel that one's roots extend back only a decade or a century. It is my strong belief that the human race has known and abandoned magical sounds, visual beauty, and experienced ritual more meaningful than those now current. I must therefore decline to limit the dimensions of my rather intense beliefs by the modernly specialized word "music."

I believe devoutly that this speciality must become less specialized for the sake of its own survival. The experiential, ritualistic, dramatic area has constituted a very large part of my belief and work; and as for imaginative and scuptural forms of instruments, I have easily given as much time to this endeavor as to intonation.

4.

We are all frequently depressed by the state of the world. And we have reason to be. In some sense, civilization is a tragedy. The kind of tragedy that befell the Greek city states who defeated themselves. Alexander didn't defeat them. Rome didn't defeat them.

There's a work on the vanishing bushmen of the Kalahari desert in Southwest Africa, and there is a passage, a fragment, a prescript, perhaps, at the front of the book. I think of it in terms of our world, our civilization.

"I am the dreamer that remains, the man clear-cut against the last horizon."

I am sure there are dreamers. There are a lot of them probably. If there are enough of them, perhaps we will survive.

Part II

BUILDING INSTRUMENTS

1.

I had worked with conventional instruments for many years, from about the age of 5 until, well, about 1925. Somewhere in there. And I composed for them from the age of 14. The development of the adapted viola gave me a basis that I felt could carry me onward in the way I wanted to go. But at any rate, after the viola was almost finished, I took all the things that I had written before—many songs, a symphonic poem, part of a piano concerto, and I forget what else—I simply put them in a big potbellied stove and burned them. I called it an "auto da fe." And it gave me a great feeling of freedom, even though it was the destruction of, oh, how many years. . .not 20 years but almost 20 years of work.

The adapted viola was the result of previous experiments with paper fingerboard coverings on violas and violins. I realized very quickly that I had to have a longer fingerboard in order to do the sort of thing I wanted to do with the viola. I found it of great difficulty to put the new viola between my legs.

I had always been enchanted with the viola's quality of tone and, automatically, I went to that for many reasons. It's impossible to experiment with a piano. It's a rigid instrument, it has a steel heart. It's not thoroughly impossible, of course, but it certainly does not lend itself with latitude to the problems that I wanted to examine.

2.

Long ago I said to myself, I think life is too precious to spend it with important people. There are so many plays for status and selling; but one gets among a group of hobos, or among transient orchard workers and right away, there's a human contact. It doesn't mean that they always like each other, but there's a human contact without this fighting for place constantly. It's just a little sidelight on why I felt it necessary during the Depression to be a hobo and take a pack on my back.

When I was a hobo (in the 30's and early 40's), I began studying hobo speech. I had been studying the speech around me, and this is what I wanted to make it—the speech around me. Not this strange language that is sung by people in operas and on the concert stage. At any rate, these two ideas, the idea for a musical instrument and the idea of music for it, grew simultaneously. They always have. There's never been an exception to that.

As for the music itself, it is almost always a dramatic idea. I can't think of more than two, maybe three or four small things that I have done as studies. . .that is to say, a study just to use musical materials. There is always an idea. Perhaps only a mood, but usually a dramatic idea.

I have never in my life built an instrument or conducted an acoustical experiment simply for the purpose of solving a problem in acoustics or musical theory. Never. Everything grew together. That is to say, if I had an idea for an instrument, I also had an idea for music for that instrument.

3.

Eucalyptus is an extraordinarily beautiful wood, not so much in the sense of, say, for fine furniture, nothing like that, but it takes such fantastically beautiful shapes, and I had been observing these for many years, and I finally picked one up. I didn't know what I was going to do with it, but pretty soon, after looking at it for a few months, I knew. It became the gourd tree.

Harry Partch playing his *Gourd Tree* and *Cone Gongs;* University of California, San Diego, 1968

Part III

INTONATION

1.

Of what year is just intonation? It is an ancient truth, as ancient as the civilizations of China, Babylonia, Egypt, and of course, Greece which in the West was accoladed.

Basically, it is a philosophy of the idea of tone, this ancient truth based on the relationship of small numbers, small numbered parts of a string, as for example (or in modern terms) small member frequency ratios—which doesn't mean that if one uses just intonation, he has nothing but consonants.

The smaller the number, the greater the consonance, the larger the number of the two numbers of the frequency ratio, the greater the dissonance or the less the consonants. And this was true in the world prior to the advent of the piano, or let's say the keyboard scale, which has been a monolith for about 300 years, and in my opinion, a rather tyrannical monolith. Certainly some great things came out of it, yet it has its own truth. It's just not the truth that I happen to like.

I have been called the 43-tone man, which is (or I've called it,) a half-truth, or a quarter-truth. I suppose it is, but actually I have never set a number and said I'm going to stick to that number of tones because in an expanding tonal system one can't do that. Actually, in many of my works, I've tuned extra reeds and put them into the organ for a particular work, and so I could say that this 43-tone scale applies to instruments of fixed pitch and applies nowhere else. Now it is quite possible to play a 43-tone scale. It isn't always the one I use.

News stories and even reviews have almost consistently latched on to the number "43" as though this were somehow the touchstone of my life. It is not. It is, in fact, about the one-half truth of the one-fourth factor. It is totally misleading. Even on instruments of fixed pitch, I do not necessarily limit myself to "43" just monophonic tones.

One further word of introduction about the language of intonational theory. The only clear logical rational terms are numbers. The relationships of numbers, that is frequency ratios or the ratios of parts of sounding bodies.

Ancient peoples in many parts of the world knew musical numbers. Modern man, including modern American music schools, persist in not knowing musical numbers. On the contrary, through my lifetime, I have seen how they jealously guard their precious misconceptions and this, ironically, in a so-called scientific age. Part of the time, I shall translate the accurate language of numbers into the current nomenclature of mumbo-jumbo. Most of the time, I shall not.

The word "octave," for example, is a palpable imprecision. I shall continue to use octave to describe a physical distance on the modern keyboard. I shall not use it to indicate that oral quantity but rather the correct term, the ratio 2:1.

The monophonic scale, if conceived as a scale, is not equal. There are no equal aural increments between successive degrees. This is not possible in any system of just intonation. The largest interval between degrees is indicated by fast beats, the smallest by slow beats.

An inexorable accident inheres within the scale—an absolutely true triad related 4, 5, 6 and a 12-tone equally tempered triad on the same fundamental. The

5-identity is, of course, true in the first triad, and in the second, it is 12-tone equal temperament with the falsity of less than a hundredth of a semi-tone which is probably more accurate than most pianos. The 3:2 is true in both triads. If the second triad were played on a piano, theoretically perfectly in tune, it would be false by about a 50th of a semitone.

The tempered triad is strangely uneasy, and no wonder. It wants nothing so much as to go away and sit down someplace. It wants nothing so much as resolution, and speaking of resolution, this is one from page 187 of my book, *Genesis of a Music.**

"Equal temperament is a current habit as is also the scope for modulation which it allows."** Composers can think only in equal temperament for just one reason. Because it is all they have got to think in. Music systems are made valid and workable by significant music, and I would add to this right now, that music systems that are not made valid by significant music are so many scraps of paper in a whirlwind.

I am more inclined to think in terms of what I call "tonal flux" rather than in the usual implications of progression or modulation. Here is an example diagrammed on page 189 of my book which I have used in at least two pieces of music: two triads with each voice moving by about 1/3rd of a semi-tone in one direction or the other—8/7, O-tonality, and 7/4 U-tonality.

This tonal flux is used in the letter, the studying of a letter from a hobo friend. "Cincinnati, Ohio, October 2nd, 1935; hello pal. Gee, I was glad to hear from you, believe it or not. Well, I just received your letter today." It is also used in the third chorus of *Oedipus,* but the progression from 7/4 U-tonality to 8/7 O-tonality and back is somewhat more complex.

I want to interject something here about tonal senses. It has been repeated for years, probably centuries by theorists who have never made an experiment in their entire lives, that just intonation is musically impractical because it does not allow a tone to be taken in more than one sense. This is sheer poppycock.

Again, from the same sequence, the Antiphony. . .female course voices sustained by the kithara hold a straight 1/1 while adaptive cello and string bass, both in other registers, play the sequence 8/7 O-tonality - 7/4 U-tonality - 16/9 O-tonality - 11/8 U-tonality - 16/11 O-tonality - 9/8 U-tonality. Every one of these six chords holds an 11 identity in these six different tonalities.

The tones that can be taken in several senses are rather obvious. 1/1 is the seventh identity, seventh is another tonality, 9th identity, 11th identity, 11th in another, and at the end, it is still another 9th identity, in that order.

2.

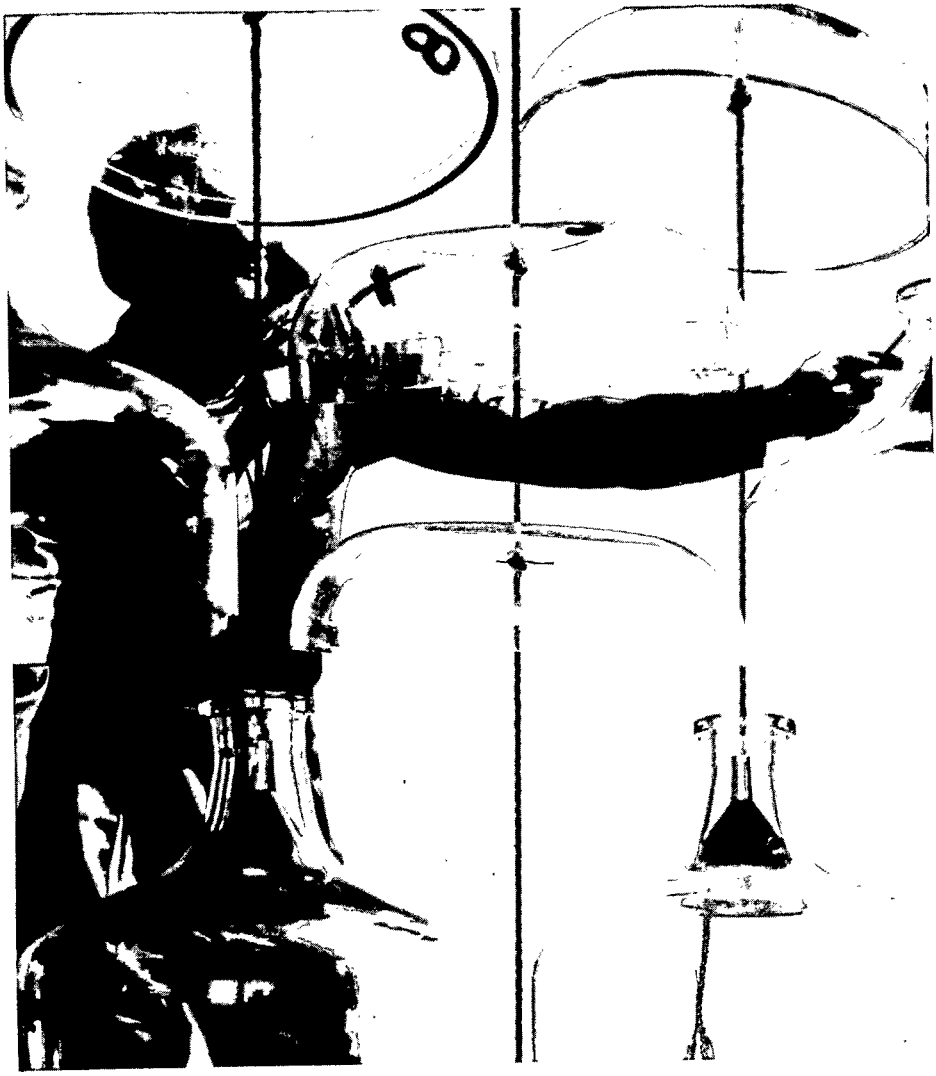
Underlying nearly all of the multiplicity of musical systems and philosophies in our libraries is the common basic assumption, namely, 12-tone equal temperament, the piano scale. And when we force acoustic intervals into the octave of 2:1, we falsify every interval involved. We effectively close all doors to any further adventures in consonance, and also amazingly, we close all doors to any meaningful adventures in dissonance.

Genesis of a Music. Da Capo Press, 1974.

**Quote from *Genesis of a Music,* Page 194.

A great deal has been said about quartertones, about cutting each from its own exactly in half creating 24 tones to the octave. This would not give us acoustic intervals. On the contrary, so far as I can see, it would simply provide material for a 24-tone row. And I feel that this is one thing the world can easily do without.

I have said many times, and I am by no means the first to say it. . .that 12-tone equal temperament not only slams doors against any further investigation of consonance, but it also slams doors in the entire balance of the temple against any further investigation of dissonance. Dissonance on the piano and dissonance in the monophonics systems of just intonation are entirely different servings of tapioca.



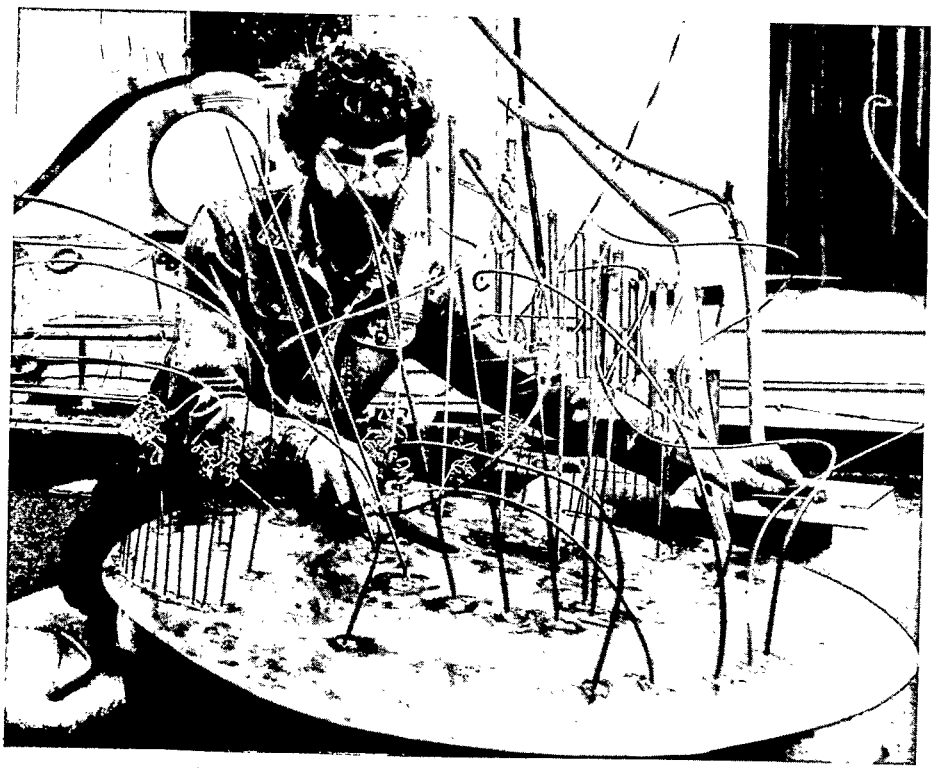
Harry Partch playing his *Cloud Chamber Bowls;* Sausalito, 1954

NEW INSTRUMENTAL RESOURCES PANEL DISCUSSIONS

The present text is an edited/transcription of panel discussions that took place at the *Exhibition/Festival of New Instrumental Resources* which was held at the Center for Music Experiment and Related Research (CME), University of California at San Diego in May of 1979. Five panels met during the festival. The present text is from three of these panels: "Building Sound Sculptures and Musical Instruments from Found Objects", "Expanding Percussion Resources—How do Percussionists and Composers Deal with Constantly Expanding Instrumental Resources?" and, "New Instrumental Resources—What are the Implications for the Present and Future?"

The purpose of the festival was to promote communication among instrument builders and designers, composers, performers, manufacturers, and educators. The festival featured exhibits of new and innovative musical instruments, concerts, panels, workshops, and improvisations. The co-directors of the festival were Will Parsons and Ron George, percussionists/composers/instrument builders and Fellows at CME. The event was sponsored by the Interval Foundation and CME.*

The dialogue that occured between the panel members and audience proved very informative. The Panel members were: Richard Dunlap and Bob Wilhite, visual and perfor-



Tom Nunn: Crustacean; Tom Nunn in performance

*A complete catalogue *"Catalogue for the Exhibition/Festival of New Instrumental Resources"* is published in *Interval/Exploring the Sonic Spectrum* (May 1979-80). This magazine is published by the Interval Foundation and can be obtained by writing: Interval Foundation, P.O. Box 8027, San Diego, CA 92102.

mance artists from the Los Angeles area; Arthur Frick, visual and performance artist and instrument builder from San Diego; Jonathan Glasier and Prent Rodgers, musicians and instrument builders from San Diego; Will Parsons, Ron George, Jean-Charles Francois, and Michael Udow, composers, percussionists, and designers of new and innovative percussion instruments; Paul Dresher and Robert Erickson, composers and instrument builders; Pauline Oliveros and Elliott Schwartz, composers.

The three day festival was summed up by Jonathan Glasier: "After all was said and heard, one thing was, I believe, agreed upon; We all agreed absolutely that we didn't agree absolutely.*

Part I

BUILDING SOUND SCULPTURES & MUSICAL INSTRUMENTS FROM FOUND OBJECTS

Edited and Transcribed by Ron George

Panel Moderator: Ron George.

Panel Members: Richard Dunlap; John Gibbon; Jonathan Glasier; Jeff Pressing, Prent Rodgers; Bob Wilhite.

Ron George: What does "found object" mean? What does it imply?

Bob Wilhite: I find objects at either the hardware store or the lumber yard. As long as you can find it somewhere, that constitutes a found object.

Jeff Pressing: I take objects and place them in a space near the performer so they may be hit or blown. You can use anything, like a bucket of sand, that could be a found object, or you can use objects which are not in the same space and put them together. These objects can then become new sound objects.

John Gibbon: There is an interesting possibility awaiting development. Stainless steel bowls, for example, are very beautiful but are difficult and expensive to produce. If one knew the exact frequencies in many standardized items, you could then use a central clearing house and take advantage of mass production. If someone would investigate all the frequencies in a particular mass-produced object, you could make selections accordingly. I would regard this as found object precisely because of the question of economy.

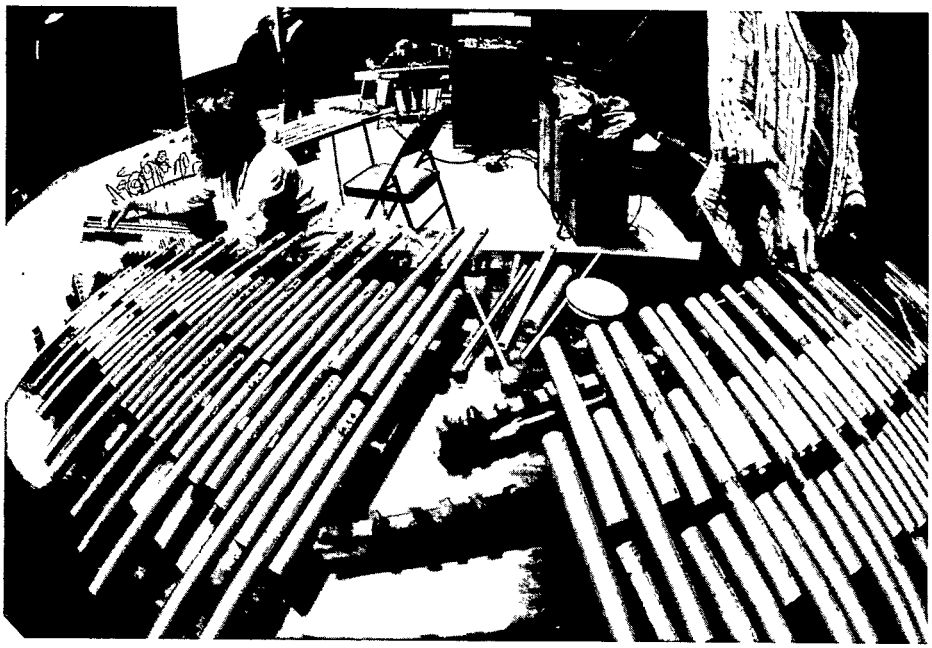
Bob: They can be made cheaply. It's one thing to buy objects that are already made and another to make them cheaply. I like the surprise of making something and then finding out what it's going to sound like. You don't know what it's going to sound like until it's played. There's a different element of control when you are making something as opposed to going out and finding it.

Jonathan Glasier: I would like to talk about found objects and their effect on people. Once you start playing found objects, it causes you to look at the objects differently than what you believe they are. Something inside you clicks, and you never quite perceive the world in the same way.

I have two basic experiences. Number one, I am co-founder of the ID Project (Improvisational Development Project) which is an improvisational group that has been together since 1974. The group began by exploring found objects and examining the differences between aluminum, stainless steel, titanium, etc. These are not just metal objects—they are incredible sound objects. The social ramifications of the ID Project were quite nice. On Sundays, we would set up our battery of mostly metal objects at the park. After playing for a while, we would slowly dissolve into the audience, and the audience would respond by beginning to play with us. Soon no one knew who was in the audience and who was in the group.

*Jonathan Glasier; *Interval/Exploring the Sonic Spectrum,* May 1979-80.

Prent Rodgers: When I became involved in the ID Project, our definition of a found object was something that could be found in a junkyard. Over the course of several years, we modified this definition because what is a found object. . .it's something you can find. If you are seeking something, then it's a "sought object". The instruments I build now are made from sought objects but have their genesis from found objects.



The ID Project; Jonathan Glasier and his Tubalong

The first instrument I built was a block of wood with paperclips and a contact microphone connected to it. The contact microphone amplified the sounds of the paperclips when they were struck. I became very excited about the micro sounds that the paperclips produced and started looking for other objects that would sound good in that type of system. These objects then became sought objects. It's important to start with found objects as it can open up new areas. You suddenly consider each object for what it can do and build from there.

Richard Dunlap: We're getting into the area of how to program yourself to find things. The few pieces I've made have come through casual searching. One piece was for rubber bands *(The Rubber Band)* which I found in a stationery store. At that time, I was working with a visual group—a video person, a sculptor, a potter, and myself. We would get together and set up situations for ourselves. With a Sony tape recorder, which had sound-on-sound, we would set up a feed-back loop and attach it to the rubber bands. This provided a source for visual people, a visual thinking. Visual artists can handle this more easily than becoming a percussionist and dealing with an object in an instrumental way. These were pieces for non-musicians.

ID Project; Tom Nunn Performing

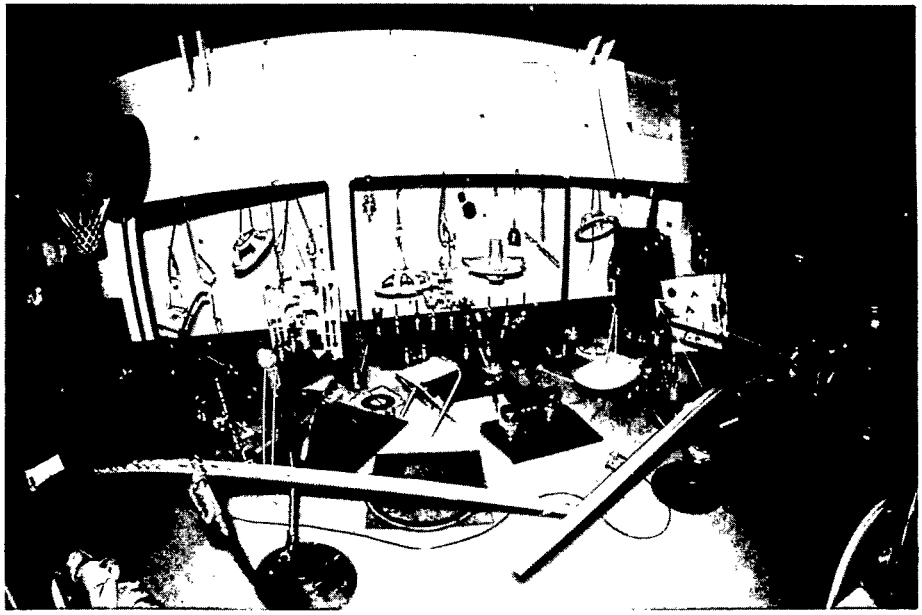
Prent: Non-musicians are often intimidated by traditional instruments. That's where found objects are valuable. They open up or eliminate this intimidation. At the park, with the ID Project, non-musicians would become fascinated with what we were doing, and the musicians would generally walk by. A few musicians did join, however, and after becoming involved, they would begin using their instruments in ways we use found object instruments.

One sound we used a long time ago was the "flutter-shutter". They were quarter-inch thick aluminum plates that spun when struck with a mallet. The sound they produced was unusual because you would hear different shutters louder than others as they spun. It sounded similar to computer music. Many computer music people are making sounds that are similar to what we make with found objects. That's what intrigued me about found objects. I knew I couldn't afford a computer, but I certainly could afford a flutter-shutter. It's an excellent way to become involved in experimental sounds and build an orchestra without spending much money.

Ron: This leads us to the idea of discovery, not only for the person finding the object but also for the person experiencing the object. Could we pursue this? I agree—to get musicians to experience something other than what they have been taught is difficult. Can we use found objects to help musicians listen differently, or is it necessary? Can it be helpful?

John: It's less intimidating for the non-musician to be faced with found objects. Somehow this puts them on the same footing as other musicians. Musicians are reluctant because they are not dealing with familiar scales and sounds. The musician is an expert and is floundering like everyone else. To close that gap and to make sounds of the *Bell Garden** more accessible to musicians, I have evolved a means which accurately represents timbre and frequency relationships in found objects using a microtonal type of reference point.

*The *Bell Garden* is a found object instrument built by John Gibbon.



John Gibbon: *Bell Garden*

Ron: Is this just for your instrument or can it be used for more traditional instruments?

John: Anything. It mutually represents the harmonic relationship of any timbre or group of frequencies of the same or of different objects. It reduces all the tonalities to a single line and then distributes these in a circle of 360 degrees, thus showing their basic relationship.**

While this system removes found objects further from the man in the street, it opens it up for a better understanding. You can take found objects to a more sophisticated level. The level I'd like to see is where you can match any object with any other object to achieve an acceptable interlocking. You can take two found objects and see what there is in common, and then draw your organized inventory of specific sound to pick out compatible frequences, thus elaborating their intrinsic qualities.

Prent: This sounds like a good way to analyze which sounds can be used together successfully. You can compare two sounds and match their similiarities in a way that's easier to understand than simply playing them next to one another.

Chris Forster (audience): This reminds me of my work with Harry Partch. There isn't a single instrument that he built that has an actual harmonic system that was planned. I don't see that this contradicts tuning to ratios in proportions. The fundamental is always tuned to ratios in proportions. The timbre of the instrument is the important contribution that Partch made. There is a real conflict between consonance versus dissonance, on the one hand—what you might like or dislike—and what the actual content of the musical material might be. The actual tuning of the fundamental frequency is always going to have a relationship to the harmonics.

Prent: That's true, but you have to have a balance between the fundamental and its over tones. If the overtones are too prominent, then you violate—

*For more information on this system, see John Gibbon's article: "Bell Garden-Tuned To What"? *Interval/Exploring the Sonic Spectrum,* Spring/Summer 1979.

Chris: Partch's *Cloud Chamber Bowls** are proof that this is not true. The partials in these instruments are very radical. It's a very complex tone, but he insisted on marking the bowls in frequencies like 11/8, 4/3, or 3/2 because that is what he heard as the fundamental.

Prent: That's true.

Jeff: The question is, where does the information come from? To what extent are the scales of groups of objects generated by the overtones. In our Western system, the overtones do seem to generate the most common scales, but in other musics of the world, this does not seem to be the case. This is not a natural thing in world music.

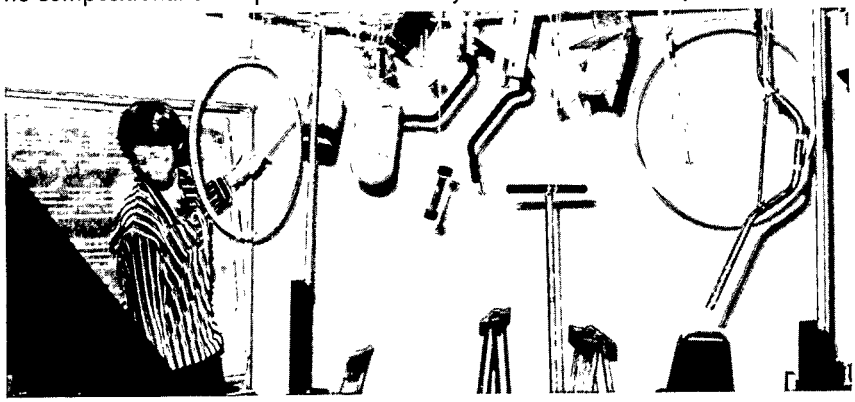
The factor that enters here is the intrinsic stability of something like the 5th which may be part of the internal system in the hearing apparatus of these cultures. In Japanese music, for example, the octave is tuned sharp—it's like stretch tuning on the piano. This seems to be the basic acoustical fact in all music. It's not apparent from a strictly mathematical idea. You have to look at the psychological representation of the mathematical equivalence, namely, the octave—is it in tune or stretched?

Ron: What we are experiencing here is an evolutionary process. We are beginning to analyze the found object instrument. Thus they are now becoming more specialized. What are we losing or gaining from this analytical process?

Jonathan: Found objects will teach us different lessons concerning timbre. Instruments that have been honed through the ages have specialized timbres. In the last few years, we have seen many new and different sounds being produced on traditional instruments. That's one thing. . .but with found objects, you have something that is out of the ordinary realm of music. The main point about found objects is that we are discovering new timbres through exploring these objects.

Jeff: There is the point that you made about it being a leveler. Anyone can bang on handle bars as there is no established method for playing them. That's a great leveling thing. The other fact that goes back to your distinction between found and sought objects, is that of seeking with some purpose behind it. For example, if you find one set of handle bars, you might then search out different types of handle bars and develop this into a new instrument.

That's one way of dealing with found objects, but then you are seeking when you complete this. If you do not choose to do this, then every object is unique and will produce a very special kind of orchestra. Almost no orchestra has only one of each object. With this type of orchestra, traditional Western compositional concepts don't work. The compositional concepts of the found object orchestra are unique because of this.



Jeff Pressing: Junkyard Gamelan;

*For a photograph of the *Cloud Chamber Bowls* see "Barbs & Broadsides" by Harry Partch this issue.

Will Parsons (audience): What we are talking about here is finding objects which are percussion instruments. This is similar to buying professional percussion instruments. Once you have bought these instruments, you must find out how they will work together.

A puzzling thing about found objects is the type of found objects that Arthur Frick* uses to develop his instruments, or Richard Dunlap uses in his *Concentrics.* A possible explanation is that of adding "musicness" to noise. Taking noise and learning to hear it as music.

Richard: I can talk about my own experience. For *Concentrics,* I used four "Push Chimes;;. These are a series of chimes that are struck eight times with a falling bar. I just accept that toy. I know it can be altered and perfected, but there's something essential written in that object that points back to something ancient. If it's altered, it loses something. I'm more interested in constructing situations for the toy as it exists so that it will function in a way that will bring out the notion of the idea that I felt when I initially found the object.

Bob: Arthur Frick is walking a fine line between the performance artist and an artist performer. His work is musical because he uses sounds and organizes them in a manner that has a musical context. He is more of a performance artist than a musician, and his theater really brings about that performance.

Audience: I would like to go back to what Jonathan Glasier said earlier about how, when you start collecting and playing found objects you hear sounds everywhere which change your concepts about music. This can make one very non-judgmental about sounds. I have played traditional music for years, and all of a sudden I find myself banging on things and listening to all these new sounds. It's a very healthy experience. It's like going back to zero and starting over again. You are not locked into a system where there is a right or wrong sound because obviously, there isn't. I get this from Arthur's thing also. That is, that they are all alright.

Bob: The one thing that Arthur is doing is putting sounds together that do not necessarily work together. Many artists at this symposium put objects together so that one object goes with another. What happens when you bring objects together that do not work well together? How can this work?

Audience: How do you know that they won't work together?

Bob: You don't. You just put them together and see if they will work in a certain context.

Audience: This brings up the idea of non-musicians as found objects. I am thinking of persons who like to listen to certain sounds but are not trained in a way that makes these sounds appear consonant or dissonant. For example, when these people get together and sing, a musician walking by would "whimp" and go "uh", but some real music may be going on.

Richard: I'm a firm believer in innocence. I have heard non-musicians do things that knock me out. The experienced musician tries too hard to get beyond patterned behavior. This takes time.

Anna Rubin (audience): One area that we are speaking to, in addition to new sounds and experiences, is a new social context. I'm interested in this area because it's crucial that we be conscious of the social context of what we do. Saying it's okay to listen to a number of things and that it's musical, is making a profound social comment. There are many political and social implications for a work depending on what we call ourselves. Are we musicians? Are we performers? Are these distinctions important? Are they

*Arthur Frick is a visual artist living in San Diego. See "Reinventing the Wheel" this issue, and *Interval* "Exploring the Sonic Spectrum", Fall 1979.

necessary? They are important and necessary when used in a certain context and perhaps do not function in others. It's not that they are not okay. One thing that excites me about the world of creativity is that people are being very sensitive to many different contexts in which to do work. I want to put attention on this area because it's implicit in everything that we are talking about.

Jeff: I'm not happy with the terms "musician" and "non-musician." I would rather say that this person has been subjected to a certain kind of training, and as a result, is excellent in that area but narrow in others. For example, training in virtuosity. Everyone is a musician, so it is a question of what training they have been subjected to.

Ron: I would like to come back to the question of found sound or found object.

Jeff: Sounds come from objects, so if you find an object, you find a sound.

Jonathan: The question of found sound or found object is very important because with some sounds, you would not or cannot take the object that produces the sound and put it in your battery of instruments. It's simply a sound that exists. We are so object oriented that it would be marvelous if we could get beyond the object and into the sound.

Jeff: Like the ocean. . .you would not bring that object into your instrument. It's just a sound that exists.

Jonathan: Right.

Rebecca Wilhite (audience): For Bob Wilhite, as an artist and not as a musician who makes instruments, the objects are not found objects. They are sought objects that are manipulated. The sounds from the objects are found because he does not approach it as a musician. The sounds are purely a surprise. It's not the most important thing to him, it's an off-shoot of the object. The object is created, and then the sound happens. It's a found sound and not a found object.

Richard: Your pieces are fairly pure geometry.

Bob: Right. I usually work out the shape and then decide what it's going to be—a wind instrument, a percussion instrument, etc.—and then I put it together. Generally, the sounds are good. At times, the sounds are not dynamic, but because of the structure of the object, the bad sounds and the good sounds sound better. If things are in tune, then when you play the instrument and miss a note, the note sounds bad.

If things are not in tune with one another, and you play them together, the bad notes sound good and the good notes sound good, and the others sound sort of in between. It's not mathematical, and it's not a tuning problem. It's just another problem you are dealing with.

Rebecca: Bob taught a class at the Los Angeles County Art Museum. The children in the class were told to just explore sound. It's not right or wrong, it's just sound. Don't make any judgements. The children made instruments and were told to play their instruments and simply show what they can do. This is a new way of looking at music.

An interesting analogy between a non-musician and a musician is that the non-musician does not have to unlearn the way a musician must.

Audience: A cycle is involved in an activity where you start with an intuitive field like children in which there is no right or wrong. We all started like this and then developed certain abilities and began making certain judgements, refinements, and contractions. From this, there comes a right and wrong. Found objects allow this to come back to the beginning.

Ron: What we are talking about is discovery, which is in all creative activity. What happens to many musicians, like symphony musicians, for example, who simply repeat something, is that they have lost this aspect of discovery in their playing. This could also

become true of found objects. With specialization, creativity and discovery could be lost. At this point in time, found objects can give a person the opportunity to throw old habits away because you do not know what it's going to sound like until you hit it. It's a real "found sound." From this beginning, you can discover new things.

Audience: Cornelius Cardew in England (Scratch Orchestra) has an interesting approach for dealing with planned found sounds. Everyone composes a piece, which may be simply writing a description or some directives. This is done before they come together. When the people get together, each person has a structure but doesn't know what other people are going to bring; what their intentions are. Everyone gathers together and from the moment of beginning, all the sounds, except what you are doing, are found sounds. You are not directed by Cornelius to make consonants of the sounds that you hear but just perform your structure. There is an organization that takes place in the group, without doing anything to make it so.

Bob: Your mind is always trying to unify things rather than just letting it take place. I did some plays in which all the props were truly abstract, just geometrical shapes. The dialogue went on and on and somehow it related to these shapes even though there were not any unifying factors. Sound can create this also.

Will: Connecting to that and also to Ron George's statement about orchestra musicians losing their creativity. . .when you hear a junior high school band, the best sound, to me, is before they start to play. Until they play, there are lots of wild things happening. If you could get the children to listen to what's going on and the sounds they are producing, that would be fantastic.

Ron: That process starts in the teaching system. Children are not taught to discover but are taught that if you do this and you do that, you will get this, and we want you to be able to play this piece. They are not allowed to discover the piece but simply to reproduce it. It's very rare to find students who know how to create with their instruments, and it's hard for them to do this.

Audience: Sound is a resource that is open to everyone to do with as they wish. That doesn't seem to be the basis of music education yet. You are only given things that have been done by others. This cuts off creativity at the source.

John: An ideal way to start young people is to have a just intonation modular vibraphone and give the children suggestions of various penatonic scales and let them choose which one they like. Before they know what is right or wrong, they would realize that there are different choices.

Audience: It would be a good way to encourage intuition in our educational system. We encourage the intellect but not intuition.

Brad Dow (audience): If you present children with a well-structured and highly thought out machine, they will want to know "What's the game?" There is an implicit game in an elaborately constructed presentation, and children, regardless of their culture, survive by learning the game and how things are organized. So I say, "Nay"! Let's go back to the absolute primacy of pitch and scale. That was the first step in music, and that's the big leap past some primordial relationship of sound.

Jonathan: Wouldn't it be wonderful if we could say that reading notes and such is just a game and teach it like that rather than the be-all and end-all?

Brad: Children aren't playful. . .they're in earnest. If they think something is a game, they won't play. They want to play something that's important, like handball.

Audience: You also have to consider how old the child is. There is a difference in the way a three-year-old approaches sound, and the way a sophisticated kid that's into a peer group thing and games would approach the same sound.

Audience: People learn in two ways. Talking about children, you can't put them in a category as a bulk product. Some people learn by acculturation, by just being put into the environment. Some of you, I'm sure, come from musical families surrounded by music and learned to be sensitive to sounds as you were sensitive to other things. Others need that structure and need to be put into an academic setting.

Audience: You were saying that kids like to know what the game is. We all want to know what the game is. This conference is a quest for some certainty about what's going on in the field of new instruments and techniques. A natural human occupation is to try and nail things down so we can play the game. On the other hand, once it's all nailed down, then it becomes rigid. If we could come up with solutions for games that would be vehicles for us to be able to get into these various realms—music, sound, etc.—and still not stop us from being able to find new games, this would be wonderful.

Ron: I think we should wrap it up. I would like to thank both the panel and the audience. It was very, very interesting. Thank you.

PART II

EXPANDING PERCUSSION RESOURCES— HOW DO PERCUSSIONISTS AND COMPOSERS DEAL WITH CONSTANTLY EXPANDING INSTRUMENTAL RESOURCES?

Transcribed by Will Parsons
Edited by Ron George

Panel Moderator: Will Parsons.
Panel Members: Paul Dresher; Jean-Charles Francoise; Ron George; Michael Udow.

Will Parsons: The question is: "Expanding percussion resources—How do percussionists and composers deal with constantly expanding instrumental resources?" We can deal with this from two aspects—as percussionists or as composers. Would the panel like to comment on this?

Paul Dresher: With percussion, the distinctions between composer, performer, and instrument builder is not as defined as it is with traditional instruments. Some musicians approach instrument building as performers and others as composers. I'm a performer and instrument builder. I approach instrument building primarily as a composer. Other composers may be more performance oriented.

The approach, the orientation, is reflected in the construction of our instruments, the kinds of sounds we use, and the aesthetics we apply to composition for these instruments. Many might consider these distinctions, or categories, reactionary. Perhaps so.

Will: You write in a fairly traditional manner, in the sense that you do not allow a great deal of freedom in your music. You like to control the sounds.

Paul: A performer-oriented instrument design, or a performer searching for new sounds on more traditional instruments, often produces music that is improvisational, or which has strong improvisational elements. As a composer, I know the music I want, and I try to develop instruments that will best realize the sounds I'm searching for. I may have improvisational sections which are textural and part of the compositional idea, but my approach is to seek limitations that will define and focus my ideas. I would put Harry Partch in the category of someone who has approached instrument building in this way. . .or Lou Harrison or Robert Erickson.

Paul Dresher: American Gamelan—An Instrument from the Gamelan, Jonathan Glasier performing

Will: When someone builds a basic orchestra, whatever it might be, they are in a different group than a person who deals with the whole spectrum of conventional percussion instruments. Both are, of course, expanding percussion resources. When these new resources expand to include instruments from other cultures which have a highly developed folk or unwritten tradition, these instruments become vulnerable to oversimplification in performance and composition. The berimbau or congas would fall into this category.

Jean-Charles Francois: There is a one-to-one relationship between the notational system used for percussion and the kind of percussion instruments that this notational system can accomodate. Notation that is phonetically oriented, where rhythm and pitch are the two axes that can be separated, needs a more or less homogeneous situation to work. A homogeneous situation, for example, would be a series of percussion instruments, or a percussion setup in which each instrument is played in only one manner. When details are introduced that are the special components of ethnic music or when a composer uses only one instrument to obtain a complex timbral organization, you get into incredibly difficult notational problems.

The solution might be to do as John Cage or Herbert Brun do. . .use indeterminacy. With this kind of system, there is a separation between the notation and the realization. Performers can create their own personal instrument and techniques, thus producing a very individual sound.

Will: Someone in the Black Earth Percussion Group—I can't remember who—thought that it would be useful for composers to describe the sound wanted rather than to specify what mallet to use.

Michael Udow: That was me. "An Acoustical Notational System For Percussively Generated Sounds."*

*"An Acoustical Notational System For Percussively Generated Sounds," by Michael Udow. Composer's manuscript.

Will: It makes sense. A composer could imagine "a heavy thud," followed by a high whine" which turns into "a screech" and just wait and see what happens.

Ron George: Many composers want more control than that. You need something that accomodates both.

Michael: I'd like to address Will Parson's point in a very specific way, which shows the notational problems between the composer and the performer.

Some time ago, I heard an old recording of the Philadelphia Orchestra with Eugene Ormandy conducting. They were doing Berlioz's *Symphonic Fantastic.* For the Glocken part in the "Dies Irae" the percussionist used huge bell plates. A really "fantastic" BONG-BONG-BONG. The following day, I heard a newer recording with George Solti conducting the Chicago Symphony Orchestra. The percussionist used what sounded like regular Musser chimes. A TANG-TING-PONG. The "Dies Irae" was a disaster, really cheap. What we are dealing with here, in these two very different versions of the "Dies Irae", is the realization of the composer's desires. . .how the performer interprets the work, and ultimately, how the listener perceives the work. That's the chain—composer, interpretation, and listener.

I bring this up in direct connection with the general description that a composer gives for a sound. Be it from the acoustical standpoint—the description of a sound being made up of an actuation (a mallet striking an instrument), the way it's actuated (striking, bowing, rubbing, etc.), the material used, the configuration of the resonance structure (the shape of the instrument), the position on the instrument, etc. All the things that make up a sound we produce whether you're playing a specific instrument or not. The important thing is how it's all interpreted by the performer.

Will: The composer frequently interferes with this process the more he specifies what to do. The compositions can easily become an obstacle course.

Paul: There are certain realms traditionally considered the performer's, and the composer rarely steps in. The composer tries to convey in the notation, the physical gestures required to create the desired sound, the instrument, the pitch, the relative dynamics, and perhaps the mallet, but it is extremely difficult to do.

Will: The percussionist is often in the position of looking like a nervous wreck. Either the mallet changes are not written (or considered) or if they are, the percussionist is required to leap around frantically so that you can't hear the music because there is so much physical activity.

Ron: There are ways to eliminate that kind of problem that most percussionists and composers are not aware of. For example, multiple-surface mallets.

Jean-Charles: When you're in a situation where the instrument or instruments are designed for a certain music—for example, the Harry Partch instruments or Robert Erickson's *Percussion Loops,** we have to ask ourselves, "Can other music be written for and be played on these instruments?" I believe the answer is no. This is also true with non-Western music. It's difficult to take an instrument out of its original context and compose in a traditional sense or have a publishable composition that can be played throughout the musical world.

Paul: Recordings can make up for that inability to publish.

Jean-Charles: Certainly, but then you are dealing with a certain performing group. Even in that context, writing makes no sense.

Paul: I disagree.

Ron: The Loops Console* is a one-instrument piece, but it is reproducible. Someone else

*For more information on *Percussion Loops & The Loops Console* see Jean-Charles' article in this issue "Percussion Sound Sculpture," and Ron George's article "Loops - The Instrument and the Music;" Center for Music Experiment Archives; (In progress).

could, if they took the time, build the instrument and play the piece.* But most important are the concepts behind the development of the instrument. Similarly, Harry Partch's instruments may not be reproducible or accessible to other composers, but their development has had an enormous influence on the development of other instruments and tuning systems.

The issue is: How can composers and performers take an instrument like the *Loops Console* and absorb the concepts into their own work? My commitment is to write about my work and what the concepts are. Partch's *Genesis of a Music*** serves the same function. His system is clearly outlined and whoever studies this book can learn a great deal about instrument construction and different tuning systems.

Paul: I think, though I am not certain, that Partch's instruments have the potential of being written for by other composers, though his intonational system would have to be understood.

Will: Another area of concern is the practicality of composing for mixed groups of specific, expensive, traditional instruments that necessitate a percussionist either being independently wealthy or institutionally sponsored. Perhaps an alternative would be for composers to work with abstract structures that can be realized on whatever instruments are available.

Michael: Manufacturers of percussion instruments are not different from manufacturers of synthesizers, tape recorders, cameras, etc. They plan obsolescence. Because of the interest in new timbral resources by composers, percussionists who want to play the available repertoire must align themselves with an institution of higher education. It's impossible for the percussionist to be able to play the repertoire without financial assistance. Composers have unknowningly aligned themselves with the manufacturers rather than with the percussionists.

Jean-Charles: There are two separate ways to go. There is the normal institutionalized set of percussion instruments that music departments can afford, and that you can find in standard orchestration books, and then there is the independent research composer/percussionist. Each of these areas will produce something incredibly different. There is, however, an ever-increasing separation between the institution and the independent research composer/percussionist.

Ron: I think this is very true and very unfortunate. There will be an increasing separation as new instruments develop and percussionists begin to specialize on these instruments. In time the new instruments will make the so-called "standard" percussion instruments a collection of antiques with percussionists specializing in only that style of performance. It's already beginning to happen.

Paul: When a composer writes for a percussion instrument that is not generally in the orchestral repertoire that instrument gradually moves in. The whole infusion of percussion has happened because composers wrote for the non-standard instruments.

Jean-Charles: It would have to be an instrument that is already homogenized enough so that it can be used. There are always problems in introducing new instruments, like the Tabla, that have been developed for a non-Western music into the Western orchestra.

Will: There is also the problem of the performer mastering the special techniques for these ethnic instruments.

Paul: Composers are generally not aware of the technical problems. They hear the instrument and write for it. You made the distinction between the institution and the independent research composer/percussionist. Where does the independent composer/percussionist obtain support?

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*It should be noted that since the time of this conferene (May 1979) other works have been written for a modified *Loops Console*.

**Harry Partch, *Genesis of a Music,* New York, Da Capo Press, 1974.

Jean-Charles: They should also be inside the institution. It is important for institutions to support research. What is unreasonable is to think that every school should duplicate these instruments and setups.

Paul: It would be excellent if institutions had people similarly occupied in assembling and researching a particular personalized instrument or set of instruments. In such a situation, general compositional structures would make more sense than written "notes" as such. There would be no need to write notes except for yourself.

Michael: Could we address ourselves to the problem of how percussionists and composers who choose to be a part of the institutionalized 20th Century musical political system can deal with the constantly expanding percussion resources?

Jean-Charles: I don't believe we are expanding. We are also in the process of discarding. Works of the early 1960s such as Karlheinz Stockhausen's *Zyklus* or Luciano Berio's *Circles,* are unreasonable and untransportable. Lately, setups have become more reduced. There is a tendency in composition to approach a work in terms of fewer instruments but more timbral variety on those instruments.

Michael: I find this true of the solo percussion repertoire, particularly the new interest in marimba technique. On the other hand, I find the percussion ensemble repertoire becoming more involved in quantity of instruments.

Ron: It's problems such as these that make percussion research important. Even though the *Loops Console* or the instruments of Harry Partch are difficult to reproduce, they may stimulate the creation of instruments that might become standardized and easy to reproduce. These new instruments could produce the variety and freedom that performers and composers are seeking through large setups.

Will: Many percussion works are naive physically. Udow's *Timbrack** concept—the keyboard arrangement of anything—forces a composer to come to terms with the physical distance between various individual percussion instruments.

Ron: Charles Wourinen's *Janissary Music*** is the ultimate in a large setup. What can we do, as performers and composers, to ensure that future composers and performers can achieve the same variety in a physically condensed setup that is more accessible to everyone?

Will: One solution would be for percussionists to consciously try to reduce the setup. A part for three tam-tams, for example, could be played on one tam-tam by striking it at three different places.

Ron: It's difficult to change existing works.

Jean-Charles: The piece would also be very different. A piece like *Janissary Music* is based on scales. This cannot be done with one instrument. The concept of three tam-tams is a scale of tam-tams.

Will: One way to reduce *Janissary Music* is to play it as a duet. It's fun, it's easy, and you have company setting up.

Ron: You could do *Janissary Music* with my racks,*** which would reduce the physical distance between individual percussion instruments and simplify the technique. The piece would probably sound quite different, though I don't know if it would be better or worse.

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*For more information on the *Timbrack,* see Jean-Charles Francois' article this issue "Percussion Sound Sculpture." & Michael Udow's article "Visual Correspondence Between Notation Systems and Instrument Configurations" *Percussionist,* Vol. 18, No. 2, 1981.

***Janissary Music,* Pub. C.F. Peters Co., 1967.

***For information on rack construction, see Ron George's article "Research into New Areas of Multiple-Percussion Performance and Composition," *Percussionist,* Vol. XII, No. 3, 1975.

Ron George: BALLAD CONSOLE

Michael: It would sound better because it would be more fluid. This discussion suggests that we, as percussionists, should begin to compile articles that address the problem of the general physiological and kinesthetic problems of multiple percussion setups. Thus the composer can begin to understand the physical limitations of the percussionist in a defined space.

Jean-Charles: The problem with this idea is that what interests percussionists is the diversity of technique which has to do with the way the instruments are set up. By standardizing the setup, you assume a standardized technique. To homogenize the setup, and as a result the technique, is to return to the 19th century.

Ron: I believe you're referring to a homogenization process like that which occured with the clarinet. Its specialization eliminated possibilites that still exist with instruments like the bass clarinet which has not been so highly developed.

Jeff Pressing (audience): There is a difference here. In the case of the clarinet, the instrument is built so that there is only one fingering for each note. That's an ossification that has gone quite a ways. In a percussion setup, the question is more one of design and space. They are physical facts—It's not good to cross the right hand and left hand from eight feet away.

Jean-Charles: Why not?

Jeff: It's not possible.

Jean-Charles: It is possible.

Jeff: It takes a lot more effort.

Jean-Charles: Who cares! It might give you another sound.

Jeff: The amount of physical work it takes to play something is an important factor in specifying things for humans to do. It would be good if there was a way to notate the physical motion so that a composer could know what that is.

Jean-Charles: If notation has any sense left, it is precisely to open new avenues and sounds that nobody can think of.

Michael: I'm opposed to standardization of both notation and instrumentation and to violations of the concept of efficiency of locomotion in space. An obvious example—when a composer inadvertently requires eight timpani for a part that should be for two timpani.

Jean-Charles: Would you say that a piece like Herbert Brun's *Plot for Percussion,** in which you're asked to perform a sound without attack or decay, is a bad composition? Or a composition which holds together musically, like *Janissary Music*—is it a bad composition because it does not take into account the physical aspects of performance? A good composition might be impossible to play.

Michael: It's a question of good or bad composition for the instrument based on an understanding of the instrument. Like writing for the harp the way you do for the piano.

Will: I'd like to take it one step further. "No Composer." McCoy Tyner's percussionist, Guilherme France, who is opposed to written music, advocates letting the instruments teach you how to play. For me that's a very realistic approach to the world of music outside of institutions where more often than not, there is no written music.

I'm afraid that we've run out of time. Thank you all for participating.

PART III

NEW INSTRUMENTAL RESOURCES— WHAT ARE THE IMPLICATIONS FOR THE PRESENT AND FUTURE?**

Edited and Transcribed by Ron George

Panel Moderator: Elliott Schwartz

Panel Members: Robert Erickson; Jean-Charles Francois; Arthur Frick; Pauline Oliveros.

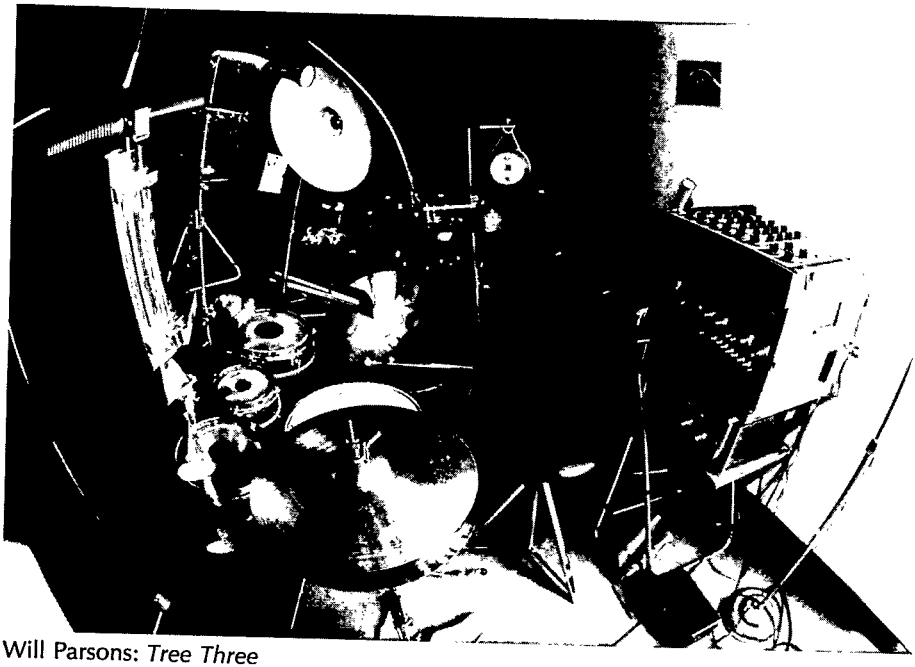
John Gibbon (audience): I find that percussionists are more receptive to my work than other musicians. Percussionists are more open to listening to the sounds they produce. In a way, they stand between the conventional and the microtonal musicians because, by not being confined within the conventions of tonality, their hearing has developed so that they know that there are more than 12 tones to the octave. They may not be using this knowledge in a very organized manner, but there is a feed-back mechanism that has developed so that a microtonal awareness can be easily developed. Other musicians often become confused because they do not have this kind of familiar landmark.

Jonathan Glasier (audience): Harry Partch always said that he had better luck with percussionists than with other instrumentalists.

Ron George (audience): There is a natural transition when a percussionist becomes aware that there is such a thing as a microtonal flavor. When the percussionist becomes aware of this possibility, it begins to affect what he is doing. Thus it becomes easy to begin working in this system.

*Plot for Percussion: Smith Publications.

**This text is a short excerpt from this panel.



Will Parsons: *Tree Three*

You start listening to the sounds of several wood blocks, for example, and realize that there is more than just a sound being produced when these instruments are played. In my own work, because of a microtonal awareness, I have found that, when combining instruments, I am very aware of the pitch relationships between these instruments. I am interested in the sound and the pitch, thus I create very different combinations of instruments.

Jeff Pressing (audience): I have a question—Why can't percussion be more open? For me it's difficult because percussion objects are of all shapes and sizes, and only objects of certain shapes will give you an overtone structure which will allow these instruments to be used in the Western orchestra. Objects with an overtone structure that is not defined cannot be used successfully to carry melodies in a Western orchestra. The only percussion instruments that are usable are those that are tunable in a particular system, like the xylophone, or instruments that can easily be varied, like timpani. Instruments with complex overtone structures are used occasionally, but cannot fit into the overall overtone structure of a Western orchestra.

Jean-Charles Francois: I disagree. Tunes have been done with barking dogs for commerical purposes, and the melodies are perfectly recognizable. There is absolutely no limit if you want to build a scale. You can take any object that you can see here in the exhibition hall and build a scale. They can be tuned precisely and will carry melodies. The limit, of course, is size and space. The idea of percussion as non-pitched is convenient because it's easier to have one bass drum than 24.

Jeff: You did not understand what I said about pitch. Pitch is very valuable. You can build scales based on 24 bass drums, but the overtone structure would be very complex in comparison to a clarinet or violin. If the overtone structure is very different, sufficiently different, then it normally is not used as a carrier of melodic motion. It doesn't have to be that way, but that's a historical fact. That is the way it has been treated in Western music.

Will: One thing that relates to what Jeff is saying is that with many percussion instruments, the pitch and timbre are a continuum. Rather than a sound having a pitch and timbre, it has a "pitchness," which includes both pitch and timbre. As the overtone structure becomes more complex, it becomes difficult to hear the pitch. The instruments become timbral objects.

I've used that setup over there (the *Tree Three,* a multiple percussion instrument with many similarities to a drum-set) with traditional harmony like jazz. I hear each instrument as part of the sound of the chord. Thus I am moving through the harmonic structure of very conventionally organized music, using instruments with an unclear pitch structure. It's very intuitive.

Elliott Schwartz: I believe that some people find it difficult to think of pitch and timbre as being separate. Timbre and pitch are part of another kind of continuum. People hear what they wish to hear. About a year ago, I spoke to a friend who is an electronic composer, a stick persuasive, a Princeton/Yale person. I suggested he read Bob Erickson's book on timbre.* He replied that there is no such thing as timbre. His comment was: You can't see timbre on the oscilloscope; frequency and amplitude, that's all there is.

I would like to bring up a sensitive question. There is, I would think, a continuum or a range of political implications in what an inventor does. That is, whether you regard your instrument as being in some way a Stradivarius. Putting in a lot of time and care and loving energy on something that perhaps takes 20 years to make.

There are, on the other hand, people who have an egalitarian sense that you are doing something that anyone can do, and that they encourage anyone to do. How do you regard this?

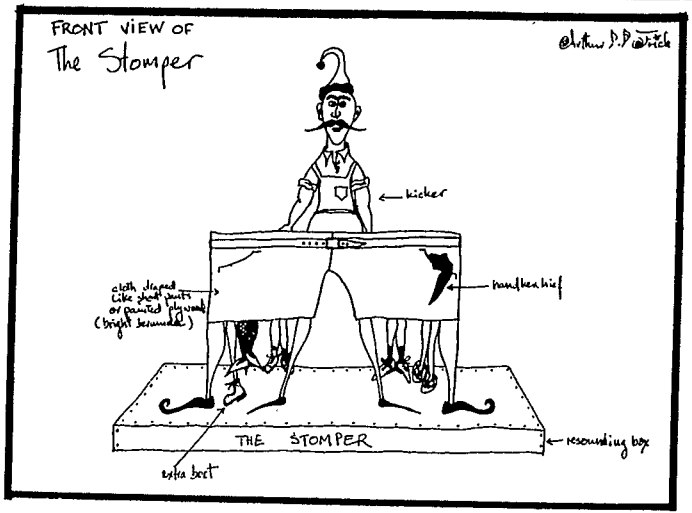
Will: Ron George has mentioned that building racks to make percussion instruments is like playing with an erector set. What a lot of percussionists are doing is just one step beyond what we did as kids. . .or maybe didn't do.

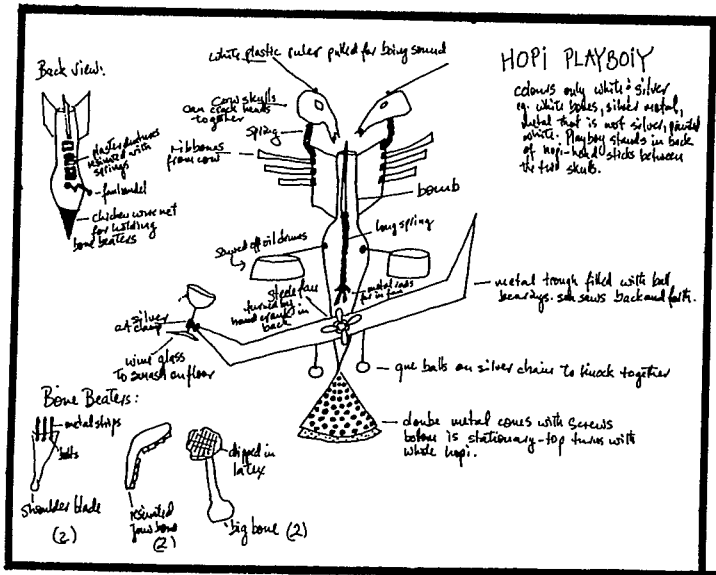
Ron: This question has always bothered me. Like my vibraphone research, for example. Instruments like these become very personal when you have spent so many years building them. Then all of a sudden, some commercial company hears the instrument, and they reproduce it. There are, however, always two sides to any coin. Money is always a problem in this area of research. If the instrument becomes commercialized, money might become more available which would allow research on the instrument to develop.

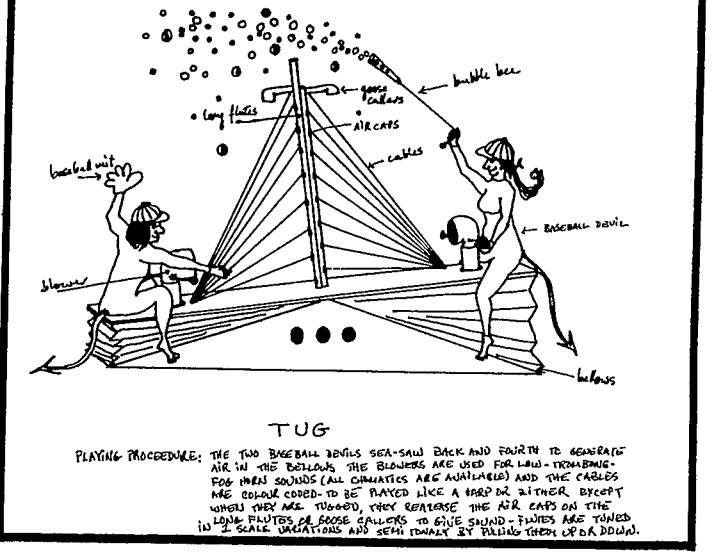
Elliott: I believe we should stop here. We would like to thank all the people on the panel and in the audience.

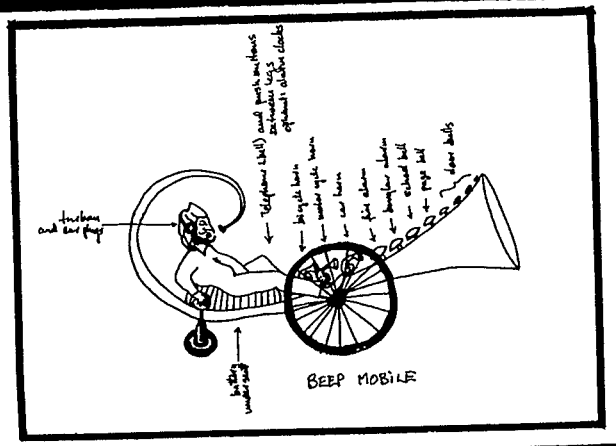
*Robert Erickson, *Sound Structure in Music.* Berkeley and Los Angeles, University of California Press, 1975.

Reinventing The Wheel





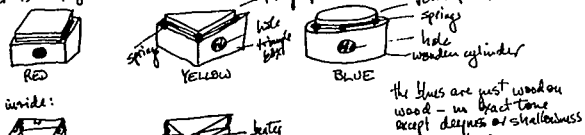




BEEP MOBILE

HOP BOXES

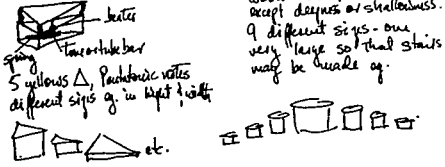
These are made to dance on. They may be scattered around the stage, arranged in patterns, piled up into small structures like stairs, towers, or the pile effect eg. Have them one dancer is to play these at once - tunes and rythms may be got it many ways. *



inside:

Small blocks of wood so that dancer may get double tocking sounds by moving foot back and forth from toe to heel

7 square boxes of different size and tone.
One big one for stairs.
See blocks.



5 syllows △, Pentatonic notes different sizes eg. in kept & with

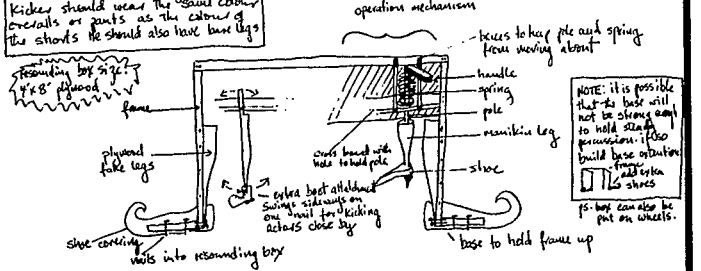
etc.

the tunes are just wood on wood - no exact tone except deepness or shallowness. 9 different sizes - one very large so that stairs may be made eg.

* ① Beat repetition on one hop box.
② hop scotches
③ leader chorus
④ hand and feet, hands and feet
⑤ "let take a walk ...." which way?"

BEHIND VIEW & DIAGRAMS OF The Stomper

NOTE: All types of shoes must be in pairs in order to produce consistent walking rythms. Tyes of shoes are: Tennis, hi-heel, man's street, cloppers, boots and the shoes the kicker is wearing are whatever is in style. Kicker should wear the same colour overalls or pants as the colour of the shoes he should also have bare legs



PLAYING PROCEEDURE: Handles are slammed down wards and shoes stomp on the resounding box "kicker" (the player) beats out different rythms using different pairs of shoes. Kicker has 3 poles available: one for pressing down all the handles at once, and two shorter ones for pressing down groups of handles at different times.

FROGBOY
DANCER

El-ASSASIN COSTUME

* SWEAT GUARANTEED.

(So It Will Fly)

THE SYSTEM

The tightrope walker looked up at the stars.
They were random.
There was not the same number
on either side of the rope.
And when she looked down to earth
she fell and broke like a soft apple.
The rope kept vibrating, a low note,
and cut the stars in two: above and below.

—Arthur Frick

POSTSCRIPT*

Question: Do you have an audience in mind when you are making new instruments and sounds? Also, what receptivity do you have for this kind of music and instruments?

Elliott: Would anyone like to answer that.

Arthur: Usually you are looking in the mirror.

Audience: Making new friends here you might meet a Martian.

Arthur: Sometimes I see myself sitting in the audience watching a catastrophe.

Pauline: I've been thinking a lot about extra-terrestial.

Audience: Vistors who would show their credentials.

Pauline: They would show up making these sounds. We could also play our music for dolphins and whales. I really like dogs also. Dogs are very, very attentive. They like my concerts a lot. They come to my concerts quite often.

Elliott: No Comment.

** An actual excerpt from the panel "New Instrumental Resources - What are the Implications for the Present and Future?" "Reinventing the Wheel" is used with the permission of the Interval Foundation.*

PERCUSSION SOUND SCULPTURE

by Jean-Charles Francois

Jean-Charles Francois is currently an Associate Professor of Music and Director of the Center for Music Experiment and Related Research at the University of California, San Diego. He has served as the co-director for the Center de Musique and the American Center for Students and Artists in Paris, and as principle percussionist with the Melbourne Symphony Orchestra. He has had extensive experience as a percussion soloist and composer in France, England, Italy, Germany, Australia and the United States and is a founding member of the performance ensemble KIVA. The present article, "Percussion Sound Sculpture," is Chapter 6 from his forth coming book ***Aspects of Contemporary Percussion*** *which will be published by the University of California Press later this year. "Percussion Sound Sculpture" has been edited for this publication.*

Gamelans

In our outbursts of enthusiasm for a renewed romantic naturalism (in ecology-minded California!), we often think of this fabulous exotic place, this last "resort" of a well-balanced society, we dream nostalgically of the islands of Bali and Java. Indeed for a percussionist from the West to discover the existence, somewhere in the world, of a society whose music is entirely dominated by percussion instrumentation and percussion associations and clubs, what a satisfying perspective, what a thrilling experience! Furthermore, as many people, faced with the interlocking complexities and seemingly arbitrary, mammoth apparatus of the global village machinery, are striving after a more reasonable political and economic management of their lives on a small scale and at a local level, it is refreshing to see a music completely produced—from the manufacture of its instruments to the performance production—at the village level.

To be sure (considering Bali for example), we are in the presence of an extremely traditional society with very old and well-established general pitch systems, standardized instrumental morphology and organization, common formal playing procedures and common mythological traditions. But within this traditional network each village can freely express its particularism—especially in the building and tuning of the instruments of its gamelan. Each gamelan for each village displays a characteristic autonomous sound world.

The particularism and autonomy of each gamelan is not only determined by the scale tuning, but also by certain timbral features of some instruments. For example the Javanese large gongs have the following properties according to Japp Kunst:

> The large gongs are distinguished and graded—apart of course from their beauty of sound, their size and weight—also according to the number and nature of their sound-beats (*ombak*= wave). A gong is most beautiful to the taste of the people of the Principalities when, on being beaten, its sounds 12 or 13 of these ombacks.[1]

This rich diversity of local particularisms within a single stylistic body of music, within a very lively culture, could be compared to certain European dialects which, within a single language (German, Celtic, or "Langue d'Oc"), display from village to village, region to region, vast diversities that are determined by the oral nature of their verbal communication. The recent strong re-emergence, culturally and politically speaking, of the question of the existence of national minorities traditionally suppressed by some dominant language and culture, and more generally recent demands for the recognition of a multitude of minority points of view would explain the appeal a Balinese-type society and culture exerts on the sensibility of Westerners.[2] Imported gamelans are thriving handsomely in the United States especially around the San Francisco Bay area. They are attractive educational tools, allowing the comparatively easy participation of ordinary citizens in a congenial family atmosphere.

I also see some strong connections between the gamelans of Indonesia and *Ionisation* (apart from anagrammatical ones!): in the first place obviously in terms of the type of instrumentation and its general structural organization (of layers resulting in a sound totality) and secondly in terms, more subtly but probably more significantly of the formal and timbral implications, namely a contemporary musical space created by the abundance of particularities and differentiations among small groups and individualities.

But what Balinese music really teaches us is that the conditions for the self-determination and self-management of music at the local level lie principally in the control by the artist of the manufacture of the musical instruments, and in the related preoccupations with highly personalized and varying tuning systems. The possibilities offered to the contemporary musician, are on the one hand to vary ad infinitum for each separate piece, the number and timbral scope of standard percussion instruments commercially available so as to create certain specific relations. But, on the other hand, it is also possible to make a direct and careful choice of the raw sound-producing material, to assemble it in some fashion, and to specify precisely its particular tuning independently of the pitch determination or indetermination of the commercial instruments, in short to create in this way a very original and personalized sound object.

We will now leave the exotic utopia of Bali and Java to see how such ideas can in reality function in our "post-industrial" society, and how the conceptual realization of sound sculptures, music with found objects, sound gardens, micro-intonation systems, performance electronics, traditional instrument modifications and ameliorations, is pertinent to the field of contemporary percussion.

The Early Percussion Practices of John Cage

Influenced by Varèse and to some extent by Oriental music and the gamelan-institution, John Cage and Lou Harrison became involved in intensive activity (between 1933 and 1950) as composers and per-

formers in the production of percussion ensemble music.[3] For John Cage, in this never ending quest for an expanded musical field of sounds, percussion was only a transitional stage between traditional "keyboard-oriented" instruments and an all-including sound universe, and more specifically a live electronic music[4]. Going far beyond the timbral world of *Ionisation,* John Cage and Lou Harrison, in their early dealings with percussion ensembles, greatly extended the scope of the percussion family by including anything they could think of, any sound materials that were available to them at that time. This was of course partly the result of a pragmatic approach, in view of their lack of means, their poverty, their incapacity to pay for performances involving traditional instruments. So these resourceful poor, but very perceptive musicians went about collecting the waste of industrial society, the noises of their immediate home environment, any found objects, toys, sound effects, etc., with which to experiment in their percussion orchestra.

The procedures are very simple: ordinary objects, that have been built for purposes other than that of musical production, having some interesting sound component (but *any* sound is interesting says Cage!) are collected and simply set up in the best possible conditions for their sound to be projected, and fully resonating. The techniques employed in achieving this are: to suspend the materials on frames, or to just put them down on some soft substance (cloth, foam, felt). And the instrumental heritage of this heroic period for percussion includes a series of flower pots, tin cans, metal pipes, automobile brake drums, pieces of scrap metal, washtubs, thunder sheets, old clock chimes, coils, etc. . . , all of which have entered the realm of *legitimate* percussion music.[5]

This musical pragmatism, in the face of meager economical means, which consists of using whatever utensil that one might have on hand, is reminiscent of some aspects of Latin American music. Here too, simple objects of daily life are often used for musical purposes or are transformed into musical instruments: for example throughout America one can find musical instruments such as frying pans, mortar and pestles, spoons and bottles, barrels, grates, hoes, bones, ass' jaws, pod rattles, primitive rattles, brake drums, piece of iron, metal rings, whistles, claves and bamboo sticks.[6] The reason for this proliferation of simple instruments could be explained by the necessity, in many of these musics, for the greatest diversity of herterogeneous layers of single instruments and to provide for the participation of the greatest possible number of people in the spirit of the moment and with whatever objects that could be found. But one of the main reasons lies in many cases and until very recent time, in the banning of drums by religious or political authorities imposed on slave, black, or native populations.

In the early years of his career, John Cage was clearly not confronted with a ban on drums or a ban on anything musical, but in a sense in order for him to produce his music at all costs, he was forced to adopt the same kind of activism and to collect the only musical devices he could afford at that particular time. But we should not reduce too hastily the early percussion music of John

Cage to a mere practical opportunism or to a "miserabilism." Very soon, as he recently stated, other preoccupations stepped in, in addition to this mere musical pragmatism:

> When I was introduced to [Oscar von Fishinger, maker of abstract films], he talked about the spirit which is included in all the objects of this world. Now, in order to liberate this spirit, he told me, it is enough to stroke the object lightly, to draw a sound from it. This was the idea that led me to percussion. During all the years that followed—until the war—I never stopped examining things, making them sound and resonate, discovering what sounds they contained. Everywhere I went, whatever the place, I listened to objects attentively.[7]

If this "spirit" inherent in objects is to be projected without inhibition, it should not be masked by rhetoric, it only needs to be displayed in its pure natural state. "Plain and simple sounds" says John Cage[8]—contrary to Varèse who organizes timbral/pitch relationships between objects. For Cage, the relating aspects that the objects might have are either ignored or more often *denied:*

> In writing (. . .) for percussion instruments alone, the composer is dealing with material that does not fit into the orthodox scales and harmonies. It is therefore necessary to find some other organizing means than those in use for symphonic instruments. The sounds cannot be organized through reference to an underlying fundamental tone since such a tone *does not exist.* Each sound must be considered as essentially different from and independent of every other sound.[9]

This un-binding concept of the isolation of sounds (music "un-bounded" rather than liberated!) means that all the composer should be worried about is the collection by every possible means of the most unlikely sounds for concert purposes, assembling them and projecting them shamelessly through some form of *time* organization. It is thus sufficient to find a rhythmic structure for the sounds to exist. The time organization can be completely independent of the nature of the sounds, the same rhythmic structure can carry different sounds.

Henry Cowell described John Cage's conception of sound as consisting of discrete "events" which have nothing to do with "conventional planned rhythmic melodic and harmonic successions," which have nothing to do with traditional time organization.

So that the Cagean generation of rhythm has not much to do with periodicity or repetition of elements but as Cage said with "the fact that something is happening, something that is unexpected, *irrelevant.*"[10] Are the sounds extra-musical, too complex, contextually irrelevant, "uncontrollable"? Let them live and die in their own time without external intervention. What interests Cage, "is the fact that the things *are* the way they are."[11]

The premises on which Cage's music is based in order to produce this cool and objective, non-committed fulguration of singular un-bounded events, depend necessarily on the continuous renewal of the sound material at the level of compositional indeterminacy, superimposition of pieces, experimental performance techniques and varied sound producing sources. Each performance is a discrete, arbitrary experiment in sound assemblage, a separate aural experience whose poetic content remains specifically dependent on its first time

happening: to repeat anything is to unmask the process, re-bound the sound components, to re-establish relations and patterns, to discover the structures of the unstructured. Cage then is a traveling musician going about the global village scattering his amiable conflagrations, his smiling bombshells and his dynamic vital philosophy of quiet contemplation, in a series of continuously changing musical environments.

The Micro-Intonalists

Lou Harrison who collaborated with Cage in his early experiments with new percussive devices, with gamelans composed of found objects, chose, instead of going all over the world, to stay in California[12] and to carry on his research in the small local private environment of friends, colleagues and students. A traveling musician would typically use a universal method for constantly changing the environment, while the musician who stays home would rather affirm a fixed originality, locally confined to certain particularities. In order to avoid the inconveniences of an undifferentiated sound space that repeats itself, the geographical and instrumental *fixation* necessitates a very thorough examination of the sounds in the environment beyond the mere poetry of their existence. It necessitates the determination of a singular sound world, the careful selection of a context that will engender a unique experience, one music among many other different ones.

Not surprisingly a local musician like Lou Harrison is interested in a number of essential determinating factors for the generation of his music.

(1) First and foremost are the considerations about tuning systems with a special interest in the one that can best determine individualistic sound color: "Just intonation is the best intonation"[13].
(2) The local musician has to clean his/her ear of the pollution and deformations of the rational "surd" and "ab/surd"[14] industrial world.
(3) The instruments are special, localized, preferably owned by the composer.
(4) The instruments are made by the musicians themselves and therefore the timbral universe of the music is determined from the lowest level of sound material, each "artisanal" instrument having its own personality.
(5) Music at the local level does not contradict the electronic fact of communications on the planetary scale, it allows on the contrary, subtle hybrid forms that are neither geographically nor chronologically based, but can draw their inspiration and materials from a diversity of places anywhere in the world (and from a diversity of times throughout musical history).

Using industrial products easily available in their area[15], a pragmatic approach inherited from the early days of collaboration with John Cage, William Colvig and Lou Harrison built a "Western Gamelan" which has been described in detail by Colvig himself in *Sound Sculpture,* a collection of essays by artists compiled and edited by John Grayson[16]. This gamelan is based on the traditional features of Javanese or Balinese gamelans, but is not by any means an exact copy "for the sake of authenticity"[17]. Rather it is designed for the sake of a particular kind of music that the builders had in mind. It is for this purpose that they selected a very precise tuning system for the gamelan:

The tuning of an instrument is determined by its use. In this case, our instrument was built to be composed for by a composer so its tuning was specified by that composer (Lou Harrison).[18]

It might be that percussion offers a more fruitful exploratory field for the Western composer, essentially because it has not been exploited in the past, particularly in the context of pitch systems. To collect a variety of raw materials, that were musically isolated or that had not bee.. used in music, to organize them in series reinforced very often by coupling resonators and to tune them to specific pitch scales seemed to be the most interesting and convenient procedures at hand for the micro-tonal sound sculptor. There is no limit to the number of materials you can beat (all sorts of wood, all sorts of metal alloys, animal skins, glass, synthetic materials, gourds, etc.), and no restriction on the type of shapes that can be infinitely varied (bars, tubes, balls, bowls, blocks, etc.).

One of the essential reasons why recent instrument builders have chosen percussion as an important arena for their activity is the sculptural, visual aspect that many percussion instruments project. They are generally much larger objects than other sound producers, and their multiplication in series of different sizes is absolutely spectacular especially when low pitches are included (i.e. large instruments). Harry Partch went into battle all his life against the Abstract, dominant artistic form in the West, and endeavored to establish what he called "Corporealism":

For the essentially vocal and verbal music of the individual (. . .) the word Corporeal may be used since it is a music that is vital to a time and place, a here and now.[19]

Corporealism is characterized by a localized and limited manifestation of body energizing experiences. As such it refuses to be categorized by the restrictive, exclusively specialized, modern definition of music, but it should embody drama, dance, and visual arts as integral parts of its field of activities ("visual, aural, verbal"). The instruments of Harry Partch, and prominently his percussion instruments, tuned according to probably the most sophisticated Just Intonation system (called "Monophony" by Harry Partch) ever devised, built with beautiful materials as musical sculptures, constitute the center of the stage, the theatrical sets, the musical supports, the gestural energies, and all these at once as part of a general, integrated Drama[20].

The special features of Partch's instruments are well-known: fantastic wooden pieces of sculpture of the marimba family remarkable for their sizes (Bass Marimba, Marimba Eroica), their unusual non-linear shapes and interesting singular musical structures (Diamond Marimba, Quadrangularis Reversum). Again we find the same idea of recycling industrial objects (bottles, glass bowls, light bulbs, shell casings, airplane gas tanks, hub caps), but this time with much elaboration, precise tuning, and beautiful visual lay-out (Cloud Chamber Bowls, Spoil of War, Zymo-Xyl, Mazda Marimba, Cone Gongs). Vegetable sculptures (i.e. Gourd Tree), a series of unusual bamboo instruments and diverse small instruments complete this rich percussion instrumentarium. For more details I will refer the reader to *Genesis of A Music,* chapter 13.

The Partch instruments, good looking sculptures as they are, do not really belong to the art gallery (i.e. exclusively as visual art objects) for all that, they need to be heard as much as seen, on some stage. Not to use them in music/drama situations would certainly ensure their rapid decay, and the certain

disappearance of a tradition into complete oblivion. These instruments need to be played, but their fragility and irreplaceable value require constant devoted care by people intimately involved in the music, experienced in the tuning system and techniques of the instrument building. A solution would be to duplicate them, but it would be very difficult to realize an exact copy not only because the material and conditions have changed so much in time, but mainly because these instruments imply a living tradition in a state of constant variation, evolution and change. The authenticity of Partch's music and visual drama lies in the very objects he has conceived and moulded, they are the depository of his style which can be identified by these trunks, these gourds, these bamboo tongues and none others. They are frozen in their historicity, their geographical confinement and if varied and creative duplication means resuscitation, it also implies a necessary variant in the musical tradition.

The intimate relations, the identifications that exist between the instruments and the music of Partch[21], between the timbral world defined by the choice of raw material, its morphology, its intonation and the way the music is articulated seriously question the possibility of anyone else writing a piece of music for these instruments. And yet if nothing is written for them, if nothing new is developed, how can we speak of a living tradition? The point is that the Partch instruments cannot afford a museum situation of pure preservation because it would defeat the aesthetic ideas they represent and for which they were built. But can they also afford the irremediable loss of the inimitable stage *presence* and *voice* of Harry Partch himself? These types of difficult dilemmas point to the kinds of problems facing the artistic philosophy of an endeavor that is localized in place and time, self-determining and self-managing, stressing its basic *ephemeral* quality. After all it has been a long time since a music died with its author.

Set-ups, Frames, Consoles

We have underlined the originality of the percussion instrumental situation: percussion consists in grouping a multitude of instruments in diverse and variable combinations instead of being embodied in a single identifiable object to be played at a given time. Each composition has its own set of instruments in the percussion section varying in size and timbral scope. To organize this set-up, to decide which instruments to include is already a compositional decision of importance for the whole timbral character of the piece. It is not difficult to see that in spite of all the variations that can be realized in building percussion set-ups, there might be common grounds and a certain number of distinctive approaches by percussionists towards this problem. We shall look therefore at attempts by certain percussionists or designers to introduce some rationalization of the instrumental space without relinquishing the composer's freedom to choose a particular set of instruments.

These attempts are interesting in so far as they try to render the set-ups more manageable, more compact, and as they propose structures that could be eventually adopted by any institution or performer. The solutions suggested have to do with a general physical framework on which instruments could be attached in different combinations, according to a proper context, a particular piece.

The Polish artist Krzisztof Wodiczko, as part of his thesis Diploma designed, with the collaboration of American percussionist Michael Ranta, an "Instrument - Percussion Instrument." This instrumental structure "has been commissioned by Mr. Joseph Patkowski, Manager of the Polish Radio Experimental Studio"[22]. It "was initially termed an *all-purpose percussion stand*"[23]. For Krzisztof Wodiczko, the usual approach to percussion set-ups consists in using the means available through commercial firms and a certain ingenuity in taking advantage of surrounding resources. This approach cannot fully satisfy musicians dreaming about infinite sound combinations:

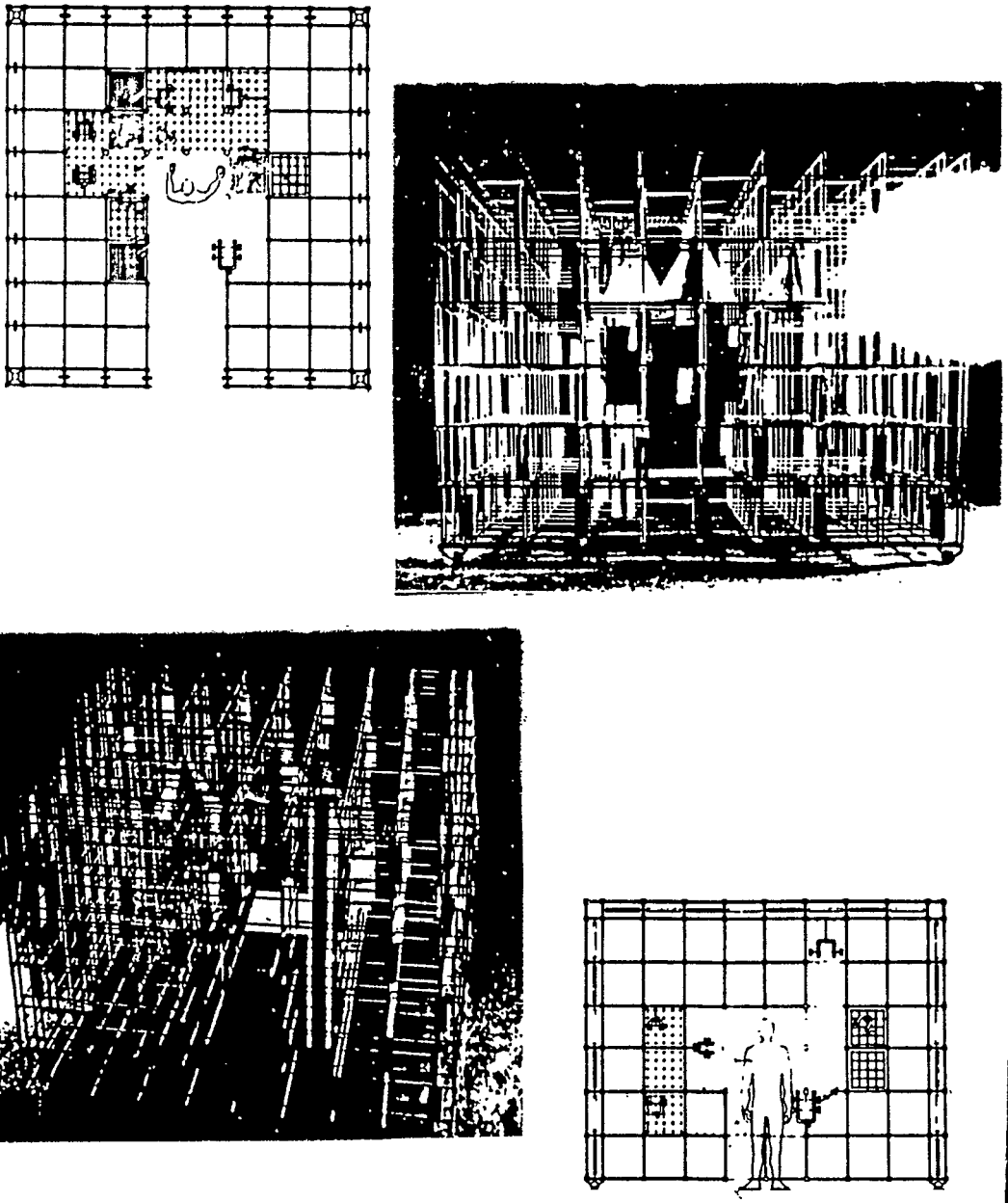
> Musicians dream about combining [percussion sources] freely, replacing with one another, concentrating, distributing and operating within a given space according to their wish and requirement. However, experimental studios (. . .) offer nothing to help these dreams come true. For that reason the range of available sources of sound is rather limited and one can hardly speak about free creative search, while accidental technical facilities /wooden hangers, racks, tables with vices, etc./ will only add to general chaos in which both the musician and the source of sound are lost.[24]

The task for Wodiczko is to design an architectural frame flexible enough to accommodate this general dream of creating and juxtaposing "new sources of sound"[25], allowing their proper projection in the acoustical space. At the same time, this architectural frame should (a) accommodate realistically the needs and possibilities of musical institutions (studios, concert halls); (b) take into consideration the different sound productions embodied in percussion ("excitation, damping, amplification"); (c) consider the acoustical properties of percussion instruments; (d) offer "desirable provision for visual arrangements"[26]. Two particular requirements are of special importance for Wodiczko:

(1) The possibility that should be given to the user to vary continuously the instrumental set-up by replacing, adding or subtracting instruments.
(2) All the "methods of fixation" of percussion instruments should be taken into consideration ("hanging", "solid fixation", "suspension", "support"). The emphasis is on the user's needs and imagination rather than on the architectural object itself which should serve a main musical and explorative artistic endeavor.

The frame structure is made of rods forming a series of modular squares of 45 centimeters. The overall dimensions of the frame are 396 x 396 x 288 cm delimited by "five side walls[27]. Rods can be removed from the frame structure and the task of the musician is to clear a working space, a "corridor" "inside the sculpture". The particular shape of this working space can be determined in any way possible by the user and can be easily modified at will. Grips of different sizes are provided to suspend or fix instruments; "specially designed flat grids can be fixed to the rods" in order to provide the player with tighter fixing or suspending units; "working planes" can also be "fixed to the rods" thus providing tables. The frame is equipped with a lighting unit and can accommodate

the presence of electrical instruments and amplification by microphones. (See Example 1).



Example 1
Wodiczko Frames

Similar considerations on the need to work out fixed compact structures that can accommodate variable percussion set-ups have led percussionist-designer Ron George to carry out since 1970, extended *Research into New Areas of Multiple-Percussion Performance and Composition*[28]. In Ron George's approach to the building of his "percussion console" one can find interesting considerations more specifically related to the actual physical playing techniques of the instruments. His concept of the percussion console differs fundamentally from the traditional set-ups by extending considerably the actual area of playing, and at the same time organizing a much more compact and economical use of the instrumental space:

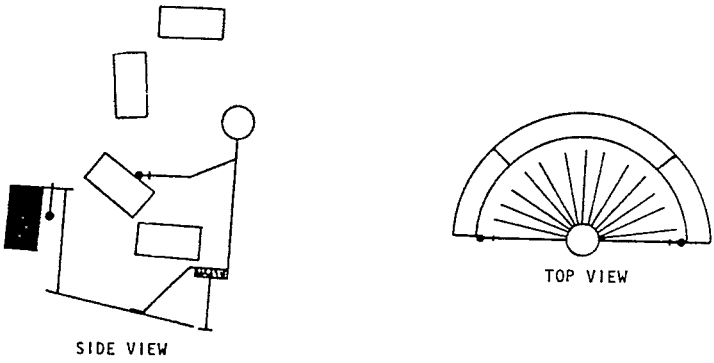
(1) The instruments are mounted in racks and on heavy adjustable stands which enables the player to use not only the normal playing area but also the area directly in front of the player as well as the area directly above the head.
(2) The individual instruments, when mounted in racks and on the heavy adjustable stands are extremely compact allowing the performer much more control over a large number of individual instruments than has previously been possible.[29]

The basic concept of Ron George's percussion console consists in building for each particular set-up an appropriate metallic frame made of "Steel Galvanized or Aluminum pipes", "structural Fittings", and "Laboratory Clamps"[30]. Instruments are mounted or suspended on this frame using "structural fittings", "aluminum pipes", "chemical clamps", "steel rods", and ropes. While in the Wodiczko structure the user like a mouse in a cheese, subtracts elements to provide an adequate working space (inside the frame), here with Ron George on the contrary, one assembles piping systems into a particular shape to fit the situation required by the piece in question.

While in traditional multiple percussion set-ups one is dealing generally with no more than two (sometimes three) horizontal layers of instruments, the solid metallic frame of Ron George's console allows the player to deal with five discrete horizontal levels on which instruments can be fixed:

(1) Floor level for pedal actions.
(2) Normal playing area: waist height.
(3) Slightly above and behind the normal playing area.
(4) At head height.
(5) Above the head.

These horizontal levels can be extended to the sides of the player and even behind him if necessary, allowing a great number of instruments to be accommodated. For Ron George, each horizontal layer can be thought of as an autonomous "keyboard" which he defines as a particular instrumental grouping, scalar, timbral, by size or otherwise. Basic techniques of sound production usually designed for playing on horizontal surfaces, can be adapted to fit other angles and especially instruments on level (4) and (5) generally oriented vertically, or even on level (5) instruments that are attacked from below (horizontally oriented instruments but above the head and reversed). (See Example 2)[31].



Example 2
Percussion Console Playing Area

When one thinks of all the trouble percussionists have in trying to solve physically all the problems of complex set-ups with the poor means generally provided in many instances, and dispersed assemblages of various devices, the solutions offered by Krzisztof Wodiczko and Ron George, unifying the instruments within a single frame, are especially ingenious and attractive. By extending the available space around and above the player and therefore the number of possible spatial arrangements of the instruments they have opened up vast new fields of exploration for multiple percussion composition.

Are these new instrumental concepts adapted to the universally repeated conditions of the traditional concert situation? One problem they have in common is that, with these compact frames, drastic set-up modifications cannot be easily achieved in a very short time span thus rendering even more difficult the already cumbersome changes between contrasting pieces. At least with non-fixed instruments, changes of positions can be achieved in a reasonable time. Frame structures often require different frame combinations for different pieces and sometimes unreasonable multiplication of instruments. Several examples of set-ups from the repertoire are given in the article by Ron George and are indeed very elegant, but the most interesting factors of his concepts seem to me to allow an increasing exploration of sound possibilities outside a rigid fixed environment. He himself stresses the openness of the console structure, suggesting collaboration between the composer and a particular player in order to work out a particular meaningful set-up and the direct involvement of creative musicians in the physical placements of the instruments. We shall later describe an example of this kind of collaborative effort resulting in the original creation of a specific sound space. Wodiczko also seems to recognize the experimental and individualized character of his project at the expense of its immediate universal

applications: according to him the first purpose of design has to do with "research on creating new sources of sound" and the "realization of sound projection resulting from above research." The subject of his project is a single creative musician, a user searching for interesting sound combinations. He concludes his abstract:

> The final solution although apparently a "maximum" one [in terms of the relative importance of the stand] is a functional definite space which emphasizes its subject: the musician and his sources of sound.[32]

Heterogeneous Timbral Spaces

Let us now examine some examples of instrumental set-ups that deal with the kind of sound organization that we have described in connection with Varése's *Ionisation*. Contrary to Cage these examples attempt to organize a basically non-homogeneous space around some kind of aural relationships.

Robert Erickson has been involved in specially designing and building a certain number of percussion instruments for specific pieces: a set of travertine marble chimes, brass stroke rods, plastic sewer-pipe tube drums with metal heads, and in collaboration with San Diego engineer and instrument designer Ed Hujsak, a series of tunable (by changing the length of the resonators) plastic drums.[33].

Of special interest for our exposition is the more recent solo percussion piece *Loops* and its particular sculptural set-up built by Ron George. The piece was generated from a series of experiments conducted by Erickson to investigate the ambiguities and aural confusions that can exist when heterogeneous timbral matters interfere with the clear perception of melodic lines. If each note in a given pattern has a different timbre, is played by a different instrument, or if each timbral quality recurs periodically but in the midst of widely divergent timbres, the clear separation between horizontal and vertical structures, between separate contrapuntal lines and the total effect of their superimposition, one pitch and its linear succession, tends to be blurred, and to create other surprising types of linearities[34]. The purpose is to find out how the listener *channels* linear information under these ambiguous conditions, or in more musical terms how heterogeneous discrete timbral objects relate to each other (by pitch, duration envelope, timbral quality?). The percussion *Loops* project started as an informal experimentation "with fast changes of timbre played by a single percussionist."[35] The Loops Console grew from these initial experiments and after about eight months of research the first version of the instrument was completed and the piece, *Loops* was written.

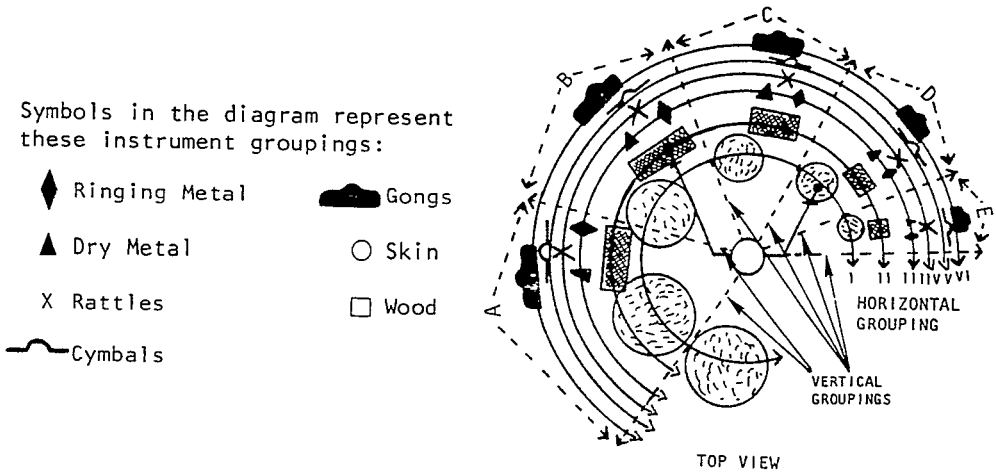
Since the console is a collection of standard percussion instruments assembled together on a series of tubular metal racks, it could be simply considered in the usual context of contemporary composition for percussion, rather than in the context of musical sculpture per se. Indeed, since percussion instruments are mostly scattered elements, the contemporary composer always has the possibility to choose carefully the particular set-up that will best fit a particular piece. He can in fact "sculpt" the timbral space by the simple juxtaposition of a selection of instruments, that can vary greatly in number and in the amount of timbral diversity from composition to composition.

However here we are also in the presence of a very special features that allow the *Loops* console to be considered as an authentic original sound entity.

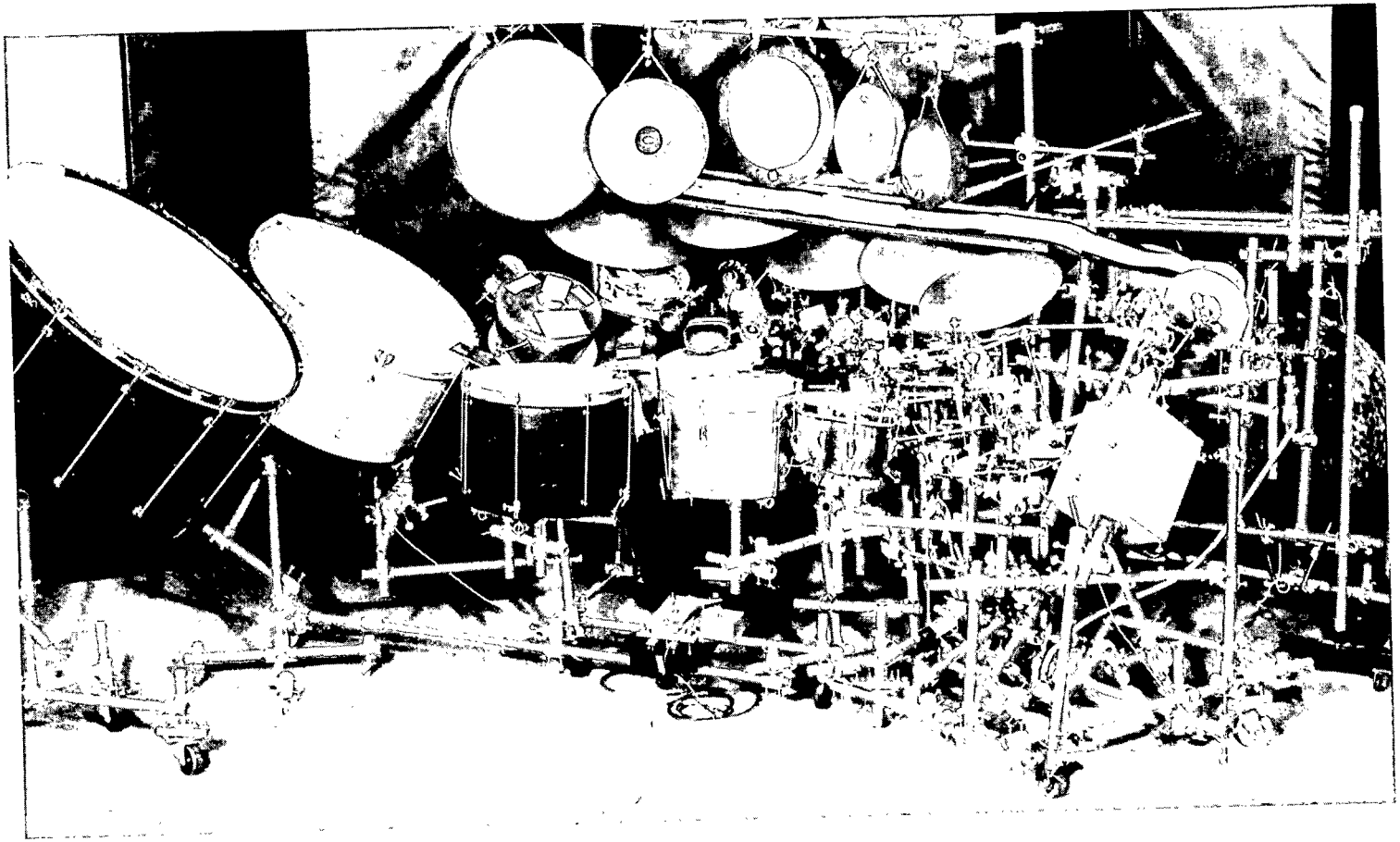
a) The concept of the *Loops* console is directly and intimately connected with Ron George's personal research on his multiple percussion console which we have discussed above, and to the playing techniques he has developed to fit his particular instrumental ideas.

b) Instruments selected from Ron George's artistic collection, the result of many years of looking in the market for old and beautiful instruments, and consequently we are in the presence of a unique set of instruments of mixed origins and therefore of unrelated manufacturers.

c) The instrumental requirements of the piece grew little by little to include thirty-nine instruments all of which had to be very easily accessible at any one time so that Ron George had to devise a certain number of constructions (combinations of tubular racks) and mechanical devices in order to render this possible: hydraulic pedals for the gongs and tamtam, motor for the ratchet, indirect manipulation for triangle and maracas, etc., and. . . an automatic sliding score actioned by an electric motor so as to avoid page turns. So clearly, we are dealing with a "closed" instrumental object, that can certainly not be duplicated with ease and whose main reason to exist is directly related to the specific piece *Loops,* and to the specific percussionist Ron George.



Example 3
Loops: Keyboard Configuration



Ron George: Loops Console

It is interesting to compare this one-man-orchestra console with the extraordinary theatrical set of the *Zwei-Mann-Orchester* (1971-73) by Mauricio Kagel. Here we have a hodge-podge of dusty old collections of musical instruments - of which percussion is but one ingredient - purchased in all flea-markets, junkyards, garage sales, bazaars, "souks"[36], "potlatches" auction-rooms of the world. Here we find esoteric and bizarre objects of trade, industry, cult, domesticity transformed into sound-producing devices; this pot-pourri of instruments and objects is actioned through complicated mechanical systems of strings, cables, wheels, machines and all sorts of body extensions, prothesis, protusions, protuberances, etc. . . The result of this diabolical assortment of about 250 constructions is an intricate and complex piece of machinery, a machine, a machination controlled by and controlling two pathetic "Ueber-marionettes," stringed puppets.

One has by now guessed that while Erickson is interested in a sophisticated sound alchemy, Kagel's universe has to do with an oniric theatre of cruelty of which sound is only one possible expression. Mauricio Kagel (a musician working in Europe, unfortunately not very well-known in the United States), in insisting in building a special visual set for each of his numerous theatre/music pieces himself, has designed over the years a remarkable rich and imaginative percussion instrumentarium of which here are a few specimens: set of twelve giant graduated castanets, dancer dressed up in frame drums, cradle bass-drum with hair brush, double giant bass drum, water drum machine (plastic water tank dripping water onto a series of objects, metal drums, cymbals, etc.), giant guiro (six meters long), large reels machine, wooden clogs, wooden furniture as percussive device, etc., etc., etc.[37]

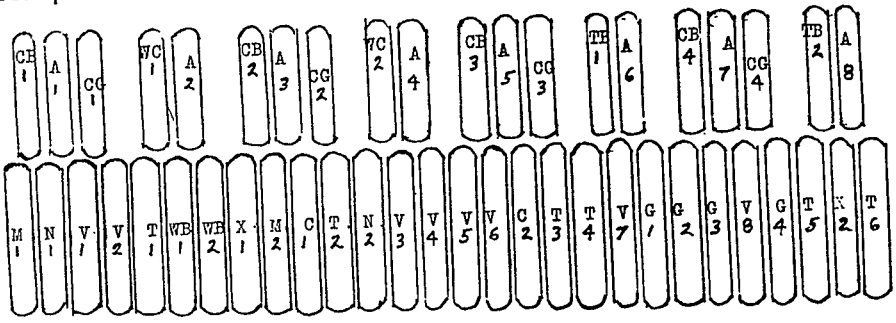
Another example of an "artisanal" instrument that assembles disjunctive timbres in a discontinuous manner is the *Timbrack,* built by percussionist Michael Udow (with the collaboration of Peter Spenlove at the Premier Drum Company, Ltd. England) for his "personal use"[38]. Using the frame concept of a four-octave Marimba, Udow laid out in a traditional keyboard fashion, but not with the traditional corresponding pitches, a series of pitched and non-pitched idiophones consisting "of a variety of metallic and wooden objects constructed in the shape of bars, rods, tubes and bells."[39] Each pitched object is coupled with a resonator corresponding to its fundamental pitch, and there is a systematic pitch-association between the objects: the duplicated placement of the objects in each "octave" of F#, G#, A#, C#, D#, gives symmetry to the console keyboard configuration (see Example 4). Thirteen different timbral elements are duplicated at various pitch levels in various number of duplications in diverse places on the keyboard rack (see Example 4). The special interest of this instrument lies in its portability well-suited to the purpose of this nomadic musician, and the possibility it affords of using traditional notation because of the usual keyboard disposition (not in terms of pitch/action, but in terms of timbral object/action). This composite of universal features and very personalized organization of sounds allows Michael Udow to perform

a) pieces he and his friends have written specially for the *Timbrack;*
b) pieces from the general repertoire which combine traditional percussion

instruments with unspecified categories of sound (i.e. *King of Denmark* by Morton Feldman);

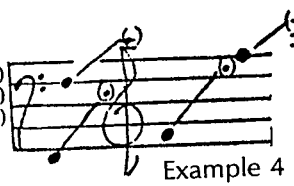
c) pieces from the general repertoire that can be adapted to the available sounds (as in *Knocking Piece* by Ben Johnston), or because the details of the instrumentation can be determined by the performer himself (i.e. *Stalks And Trees And Drops And Clouds* by Herbert Brun, a piece that relates most directly to the configuration of the console)[40].

For the author of *Timbrack* one of the most important concepts behind the instrument is the shaping of the disposition of the objects into a keyboard configuration. Although no pitch corresponds to the usual place on the keyboard, it allows the composer to write for this instrument using traditional notation. The performer can realize with ease what he/she reads using the normal spatial gestures normally associated with pitch levels on keyboard instruments. This concept of course could be extended to include many set-up configurations thus facilitating communication between composers and performers, and performance practices. It would be an attempt to standardize somewhat percussive set-ups that are difficult to deal with because of their diversities.



Wooden elements

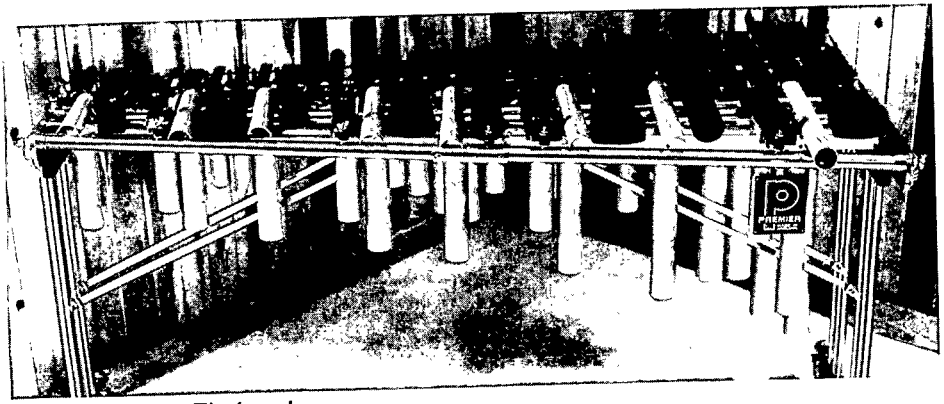
M. marimba bar (pitched)
N. nabimba bar (pitched)
X. xylophone bar (pitched)
C. clave
WB. wood block
TB. temple block
WC. wood cylinder (semi-pitched)



Metalic elements

V. vibraphone bar (pitched)
G. glockenspiel bar (pitched)
A. angklang tube
T. tubophone cylinder
CB. cowbell (semi-pitched)
CG. clock gong

Example 4 Udow: *Timbrack* Keyboard Configuration



Michael Udow: *Timbrack*

Performance Electronics and An Example of a Non-Instrument.

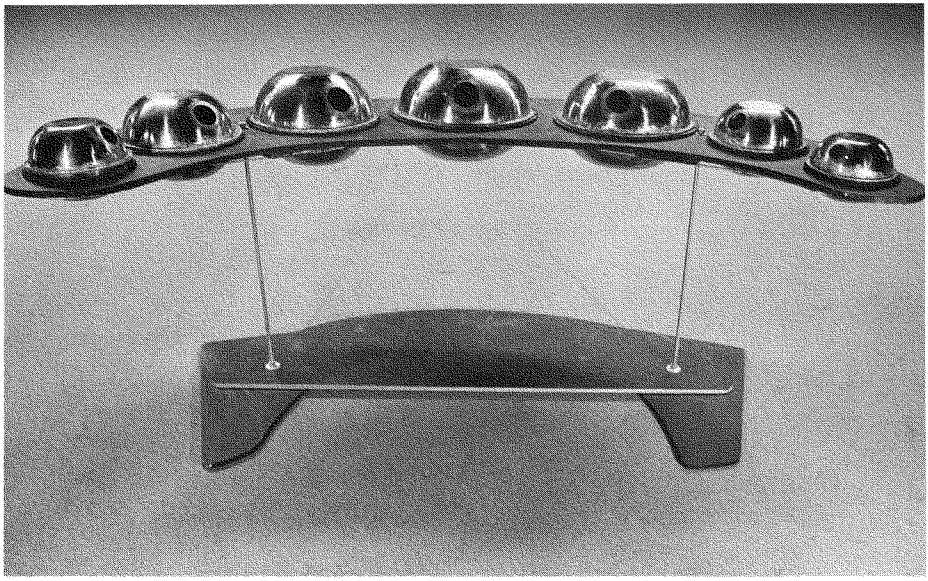
In live electronic music one finds that same kind of extreme diversity and system variability as in the percussion designs we have studied so far. Each piece, each group, each studio represents a different approach to the assemblage of modular electronic and acoustical objects. The composite treatment of electronic devices with percussion is particularly interesting and has been the basis of the particular set-up that I have slowly designed for KIVA, a group in residence since the fall of 1975 at the Center for Music Experiment (UCSD), created by the trombonist John Silber and devoted to music in non-written forms.

The KIVA percussion set-up is based on five principal ideas that intimately associate percussive acoustical materials with some simple electronic treatments:

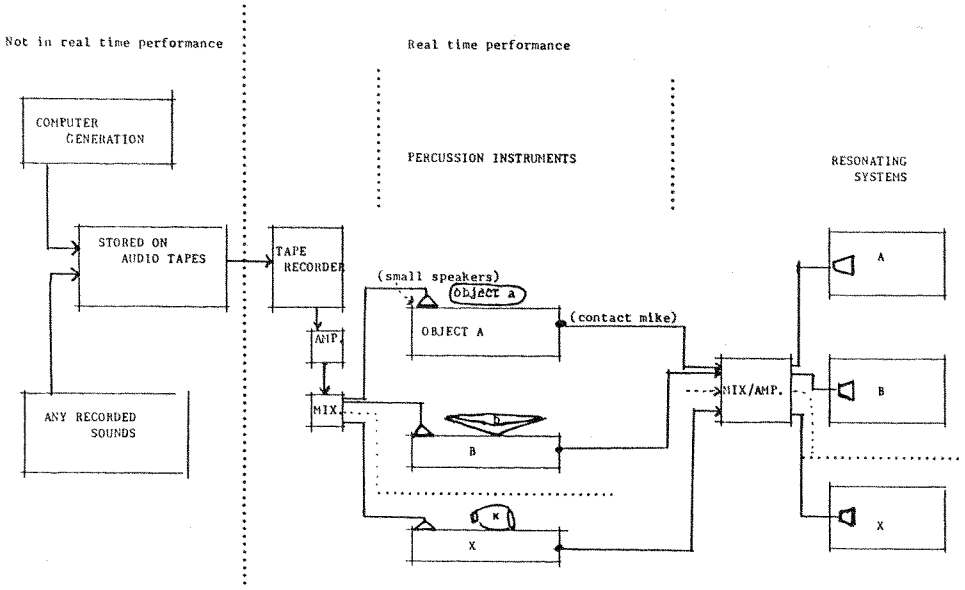
(1) The exploration of the greatest number of sound possibilities on a single sound object.
(2) The projection of these various sounds through amplification with contact microphones.
(3) The use of contact microphones and the transformation of acoustic sounds into electronic signals in order to send these sounds into other resonating devices.
(4) The use of small instruments resonating on the surface of larger sound objects and the creation of complex resonating chains.
(5) The use of computer generated sounds resonating into percussive objects through small loudspeakers.

Example 5 shows the schematic representation of the KIVA instrumental concept as it exists now. This figure represents a framework, a process rather than an enclosed fixed instrument. The set-up consists of a series of tables with stretched strings (designed and built by Kim Hujsak) that are provided to receive any material that could fit on them, any percussive objects that are part of a personal collection in constant evolution. The material or instrumental combination of the set-up can therefore be modified at will from one day to the next according to the particular performing context. The materials at the moment include some pottery gongs built by Gary Knievella (Del Mar, California), some scrap metals of outlandish alloys which in this instance came from the local (Californian) aeroplane industry, some *Corelle* kitchenware made of particularly unbreakable synthesized material, a series of Water-gongs specially designed by the San Francisco based sound sculptor Richard Waters, and miscellaneous traditional percussion instruments of diverse origin.

Each of the percussive devices on the series of tables is amplified by a contact microphone (up to eight devices can be amplified). The amplified percussive sounds can be sent either to so-called "high-fidelity" loudspeakers, that is, speakers with a frequency resonating response as neutral as possible (one that does not reinforce certain pitches at the expense of others); or they can be sent to loudspeakers enclosed in long plastic corrugated tube resonators (sewer pipes) tuned to certain fundamental pitches; and also to small transducers attached to some resonating body such as a piano sounding board whose strings are tuned on the harmonic series of some fundamental, or to other more com-

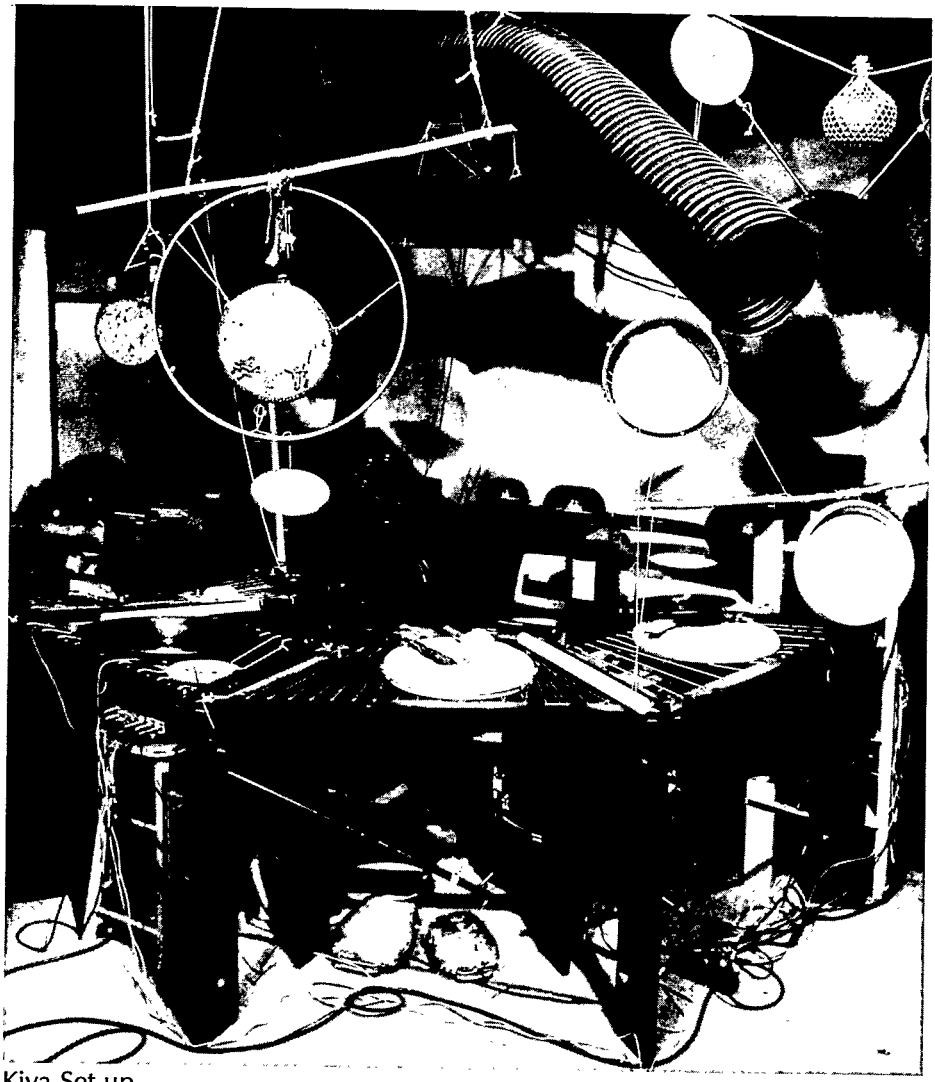


Richard Waters: Watergongs from Kiva Set-up



Example 5

Kiva Set-up Schematic



Kiva Set-up

plex percussion instruments. The particular resonator into which the sound is sent can be thought as the extension of the single percussive device and will serve as a filter, reinforcing certain partials of the original sound at the expense of others. Therefore the coupling of the percussion object with a resonating body is heard as a single sound entity. This entity does not differ greatly from the percussion object by itself in "high fidelity", only certain properties of the sound source are slightly modified by the resonator. However, it is possible to vary the quality of the sound by sending it into another resonating device.

Smaller instruments can be placed on the surface of the main amplified larger objects on the tables. If the amplified surface is soft (i.e. membrane) or if a piece of felt is put in between the two objects the sound result is the vibration of the first percussion resonated and filtered by the amplified surface of the second

percussion whose signal in turn is sent to a secondary resonating device. Or in other words we have a chain of events:
[percussion instrument]----- [amplified surface]----- [(secondary) resonator].

This chain can be heard as a whole from which the properties of the first element (the percussive sound source) are most prominent. If two hard surfaces of percussion objects are in direct contact, it results in a complex composite of the two sound individualities (additionally filtered through a resonating system) and articulating a particular timbre/pitch relationship. Diverse interesting interactions between the two objects can be experimented with by continuously changing the angle that exists between them, by rubbing or striking one against another, and by combining these actions with diverse mallet techniques.

Finally it is possible to play tapes through unmounted loudspeakers of different sizes placed on the amplified surface of a percussion instrument. The size and quality of the particular loudspeaker is already a filtering device for the tape sounds and can be modified by switching to another loudspeaker. The amplified percussion plays the role of an acoustic filter to the tape sounds and the amount of filtering and sound modification can be controlled by balancing the respective sound levels of the tape and the amplified material. If the amplified material level is increased at the expense of the tape level, there comes a moment when the sounds of the tape cannot be recognized as such, but act as a vibratory stimulation for the percussive material which takes over as the main sound source. At this particular moment the unmounted speaker vibrating against the surface of the instrument can be considered as some sort of automatic *mallet* playing all by itself according to the rhythmic envelopes of the tape sounds. The sounds on the tapes have been computer generated at the Center for Music Experiment (UCSD) (1975-78) and at I.R.C.A.M. in Paris (1980) using sound-wave synthesis programs.[41]. The filtration of these "clean" electronic sounds through cheap speakers and "dirty" acoustic percussive objects renders these sounds almost "human", certainly gives a touch of life. And the type of control that the computer can provide for the generation of the tape sounds, allows me (and will increasingly allow me) to synthesize precise electronic signals that excite the speaker cones in some meaningful way so as to result in interesting percussive vibrations on the surface of the acoustical objects. Future research in this context will include the special "preparation" of the loudspeaker-mallets with diverse materials, the building of loudspeakers specially designed for this context, and the real-time processing of acoustical percussion sounds through a computer system designed as a resonating synthesis program whose specifications can be continuously modified.

Just as the music by the group KIVA, in its non-written form, cannot be reduced to a "piece", but is a particular musical universe, a particular process, a particular "sound", the KIVA instrumental set-up cannot be thought of as an instrument enclosed in certain boundaries, but rather as a general idea that can evolve continuously without end, some concept of *non-instrument*. The KIVA (non-)instrumental combination is at a given "frozen" moment, part of the global expression of a sound entity precisely localized in time and space, never again exactly repeated but yet continuously the same, or evolving very, very slowly.

Diverse Examples of Sound Sculptures

Four general attitudes toward sound in percussion sculptural design can be distinguished from the material we have discussed:

a) continuously changing.
b) The concentration is on pitch scales and tuning.
c) The heterogeneous scattered percussive sounds are organized in some way.
d) representing a timbre/pitch/harmonic world by themselves. A wide interest in the theatrical and visual aspects of the instruments coincides with a general attitude tending toward closing the gap between diverse artistic disciplines.

Before attempting to relate all this instrumental research to the "real" world of standard percussion instrument manufacture, we must complete our general exposition on sound sculpture with a brief evocation of a certain number of projects of notable interest which will greatly reinforce the impression of the rich multiplicity of activities that are taking place in this field.

The Canadian sound sculptor John Grayson along with composer Douglas Walker and a very active group of artists in Vancouver (British Columbia) have been involved in building integrated musical and visual environments featuring percussion prominently and oriented towards sound education and public participation. They emphasize simple non-expressive musical sculptures that anyone can build and play, environmental spaces in which participants can move freely, and in so doing discover poetically, trigger accidentally, or activate willingly a series of specially designed objects. For them

> environment of Musical Sculpture (. . .) introduces an individual or a group to an environment in itself offers means for dialogue between the composed formalized expression on the one hand, and immediate personal creation on the other. (. . .) Musical Sculptures serve as primary tool for the growth of musical dynamism, since their acoustic, visual and physical properties have been explicitly designed to demand an integrated, wholistic approach from the music-maker.[42]

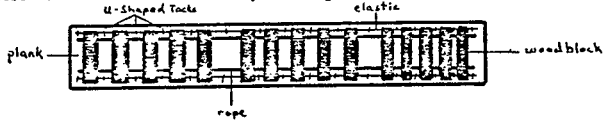
Sound Sculptures can be conceived in many forms: musical objects displayed in space, with the general public invited to play and experiment freely with them; automatic machines that play by themselves with mechanical motors, electrical systems or clockwork mechanisms; Audio-kinetic pieces of art based on elaborate technological apparatus; self-generating process/music through sensing devices distributed in space; outdoor sculptures whose sounds are generated by natural phenomena like wind and rain; small transportable instruments for the exclusive use of one individual; etc., etc.

We should mention in particular the *Structures Sonores* by Francois and Bernard Baschet who, working in Paris, pioneers in the field of musical sculpture, became interested in producing a hybrid "musical-sculpture-object" that can be "considered either as a musical instrument, as an instrument easy to play, as a 'sculpture-object' for which sound is only complementary, or even a starting point for working materials.[43] Their *Sonorous Sculptures* therefore can be presented in concerts, or in art galleries, or used in educational situations.

In the score of *182 Norwood* (1974), David Gibson requires the percussionist to build for the performance a wooden instrument very precisely described in terms of material to be used, dimensions and outlook (Example 6). Michael Udow in *Acoustic Composition #1* for 1-5 Percussionists and Monophonic Tape (1973) designed a "qualitative" *notational system* that describes in general terms (and with corresponding musical concepts) the acoustical characteristics and morphology of sound-producing devices that can be chosen from standard, manufactured percussion instruments, from environmental objects available, or that can be specially built according to these particular notational/acoustical definitions. Having defined his notational system in which "sound may be defin-

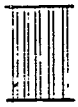
Construction of the Instruments

1. The 20 woodblocks are made from an assortment of solid hardwoods (maple, cherry, mahaghony, oak, rosewood, etc.). They are cut into blocks of lengths from 5" to 9", thicknesses from 3/4" to 1 1/2" and widths from 3/4" to 3". The above dimensions are approximate and the performer is encouraged to experiment until timbres are found which meet his own preferences. 15 of these woodblocks (▬) are placed on 2 lengths of 1/2" rope which are laid on a wooden plank large enough to accomodate all 15 blocks. The performer will probably need to anchor the blocks to the rope in order to prevent the blocks from shifting out of position during fortissimo playing: if a U-shaped tack is driven into the plank between each block, near the ends of the block, and a strip of elastic is threaded first under the tack and then over the end of the block, the problem is nicely solved.



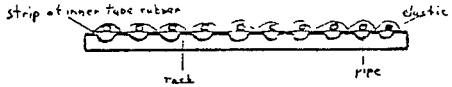
Care should be taken that the elastic is not so tight as to suppress resonance. The additional 5 woodblocks (▭) should be placed on a very soft surface.

2. The wood harp (▥) is made from 5 hardwood dowels about 12" long and of varying diameters, from ca. 1/4" to 1". Each end of the dowels is inserted into a piece of wood in which holes of appropriate sizes have been drilled, and the whole assembly is glued together. The finished instrument should resemble:



The instrument is laid flat and is played by striking the dowels.

3. The steel pipes (⬭) are made from 10 black steel pipes. The shortest pipe is 10 1/4" and the remaining pipes are cut progressively 3/16" longer. A rack will have to be constructed in order to mount the pipes in "keyboard" fashion.



Example 6

David Gibson: Instrumental Construction for *182 Norwood*

ed in terms of six variables'' (pitch, timbre, duration, attack and decay, vibrato and intensity) (see Example 7), Michael Udow gives an example of a specific instrumental sound having the following characteristics:

a) middle pitch register;
b) membranophone with animal skin; ''a tone with non-harmonic, a semi-definite pitch'';
c) duration of four seconds;
d) the instrument should be struck and rubbed at the same time;
e) ''the vibrato possibilities should include glissando and tremolo.'' Michael Udow concludes:

The resultant instrument could be interpreted as a Yoruba hour-glass drum, an Indian baya, a Western tomtom, or a new instrument. That new instrument could be a large, metal-framed hour-glass - structured shell with one thick membrane of pig skin or ox hide and another thinner membrane of calf skin with the following dimensions: (Example 8).

ACOUSTIC CONCEPT IN RELATION TO NOTATIONAL CONSIDERATIONS

Sound may be defined in terms of six variables:

I. pitch II. timbre III. duration

IV. attack and decay V. vibrato VI. intensity

I. Pitch
- A. low
- B. middle-low
- C. middle
- D. middle-high
- E. high

II. Timbre
- A. Material
  - 1. membranophone
    - a. skin
    - b. plastic
  - 2. cordophone
    - a. metal
    - b. gut
    - c. plastic
  - 3. idiophone
    - a. metal
    - b. wood
    - c. glass
    - d. ceramic
    - e. stone
    - f. synthetic
    - g. (other)
- B. Spectrum
  - 1. definite pitch
  - 2. semi-definite pitch
  - 3. noise
  - 4. harmonic

III. Duration Potential

IV. Attack and Decay
- A. Technique of Actuation
  - 1. bow
  - 2. pluck
  - 3. strike
  - 4. rub
  - 5. shake
  - 6. scrape
  - 7. sympathetic vibration
- B. Implement for Actuation
  - 1. hard mallet
  - 2. medium mallet
  - 3. soft mallet
  - 4. brush
  - 5. bow
  - 6. the body (hands, fingers, body, etc.)

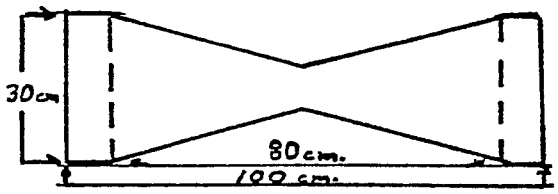
V. Vibrato
- A. trill
- B. glissando
- C. tremolo

VI. Intensity of the sound as perceived by the audience

Example 7

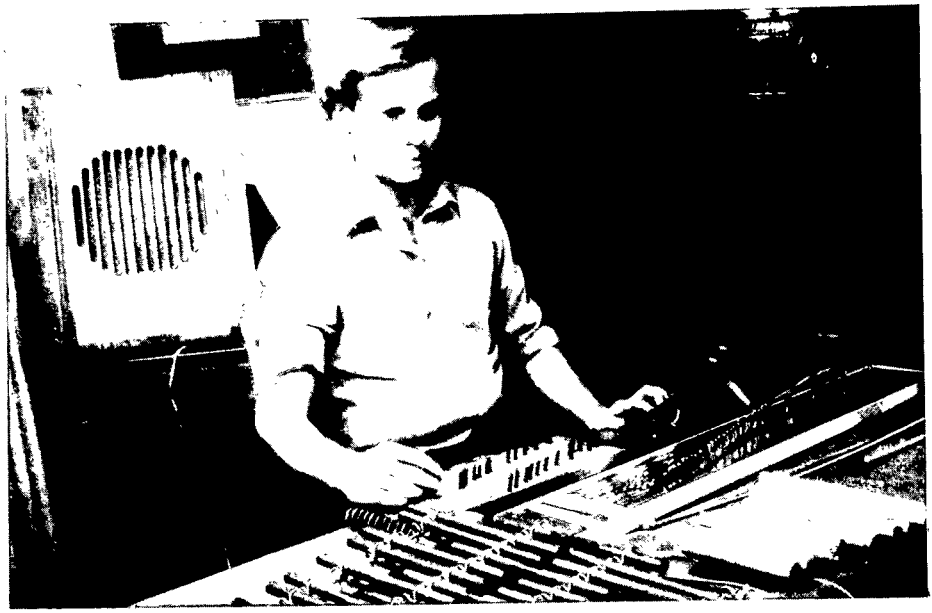
Udow: Instructions For *Acoustic Composition* #1.

Earl Brown wrote a percussion quartet whose score is a Calder mobile (specially built by Alexander Calder for this piece) on which sounds are also produced.



Example 8
Udow: *Hour Glass*

Instrument designer and composer Prent Rogers, built (in San Diego) a series of percussion instruments electronically amplified by electro-magnetic transducers. Their special interest lies in their surprising miniature size in comparison to the number of sounds available on a single instrument and, thanks to electronics, this is not at all at the expense of limited register or thin and skimpy sound quality[44]. It is an elegant answer to the difficult problem of untransportability of numerous percussive musical sculptures.

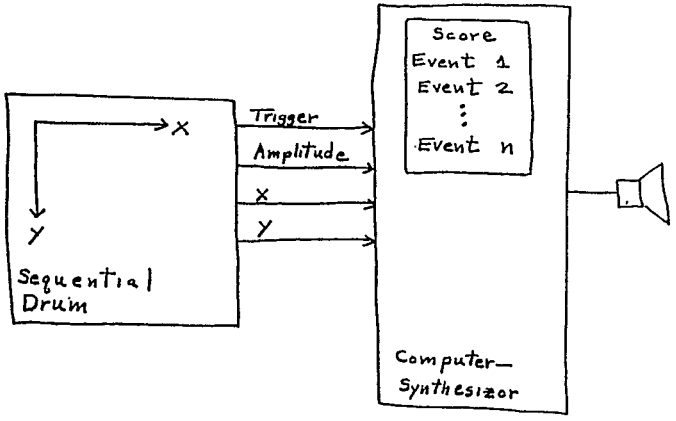


Prent Rodgers

Max V. Mathews who developed the first program for sound wave synthesis by computer, has designed at Bell Laboratory a *Sequential Drum*. It consists of a sensor mechanism that serves as an input to a digital sound synthesizer. "The drum itself is a rectangular surface which is hit with the hand or a stick."[45] The sensor mechanism itself does not produce any sound, only the synthesizer does.

Prent Rodgers

The x and y axes of the rectangular surface control two independent timbral qualities to be determined by the user and which can be changed easily at will. The amplitude is controlled by the particular force of the impact of the stick or hand on the sensor surface. Additionally the attacks on the sensor mechanism trigger a process that retrieves sequentially organized pitch information from a computer memory (Example 9). The first implementations of the *Sequential Drum* were realized at I.R.C.A.M. on the 4C sound synthesizer in May 1980, including the first musical examples.



Example 9

Max Mathews: Sequential Drum

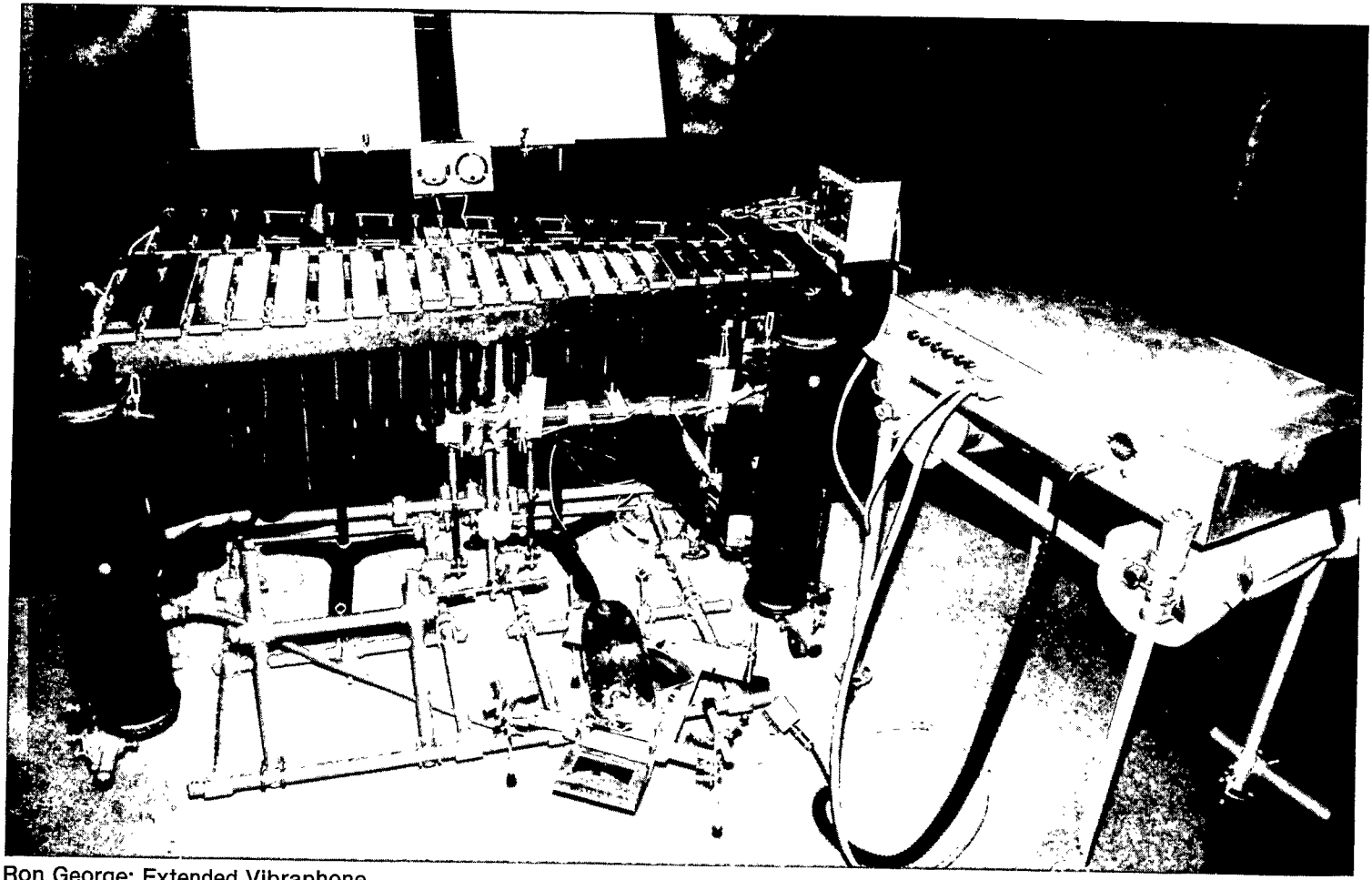
Finally we should mention research efforts focused on the development, improvement or variant of already existing standard percussion instruments. For example Ron George (already mentioned in this chapter) is currently working on a *Two-Manual Vibraphone*[45] which will feature a pitch range of 5 1/2 octaves, interchangeable sets of bars of different materials, adjustable tuning plugs, banks of independent vibrato rates with electronic control system, extended range of vibrato rates, dual-control vibrato pedals and hydraulic damper-pedal system. Two models of extended vibraphones have been built by Ron George. The first one allowed expanded vibrato rates from ca. 8 pulsations per second (pps) to 21 pps. The second model currently in use, features a sophisticated vibrato-control pedal allowing the pulsation rate to vary from 0.3 to 100 pps. There are four separate banks of pulsators with two independent pulsation rates possible at one time.

All the examples to which I have referred in this chapter are necessarily small in comparison with the probable richness (impossible to access exactly) of the new and available percussion resources that are being created in the world today. It is, however, easy to see that despite the wide differences of approach, a common ground exists among all these instrumental sculptors. There is a general tendency for the musicians to focus all their attention towards the *sound matter,* in its raw manifestation, its overall complexity, rather than to concentrate on the rhetorical aspects of traditional music composition which structures already homogenized sounds into quasi-linguistic formulations. Even if this kind of musician becomes very interested in the structural relationships that exist between sound objects, it is more often for the purpose of defining a particular, narrow, closed timbral network which would constitute an integrated whole, than for finding interesting musical languages that would expose these relationships in some original way.

Once the instruments or systems, or networks have been built let them assume their original and complex identities through fairly simple manifestations whose degree of organization can be very, very loose. . .

Two Worlds of Sound

Facing this local world of artists who want to take sound *matters* into their own hands, we have now to consider the powerful universe of predetermined, predictable and reproducible instruments that can be found throughout the world in institutionalized musical organizations. What are the compulsive servitudes of the manufacturers of standard percussion equipment? They have to ensure that the size and weight of the instruments they are building are reasonable. In other words that they correspond to the demands of the traveling musician or to the demands of most institutions that require a certain mobility within a single locality. The instruments by necessity have to be tuned to a universal system that will serve most situations (the twelve-tone tempered scale) or alternatively, as instruments artificially recognized for their ineptitude to carry



Ron George: Extended Vibraphone

pitch characteristics, left in a state of completely arbitrary indeterminate tuning. They have to serve the purposes of educational institutions as well as professional artistic ones and consequently manufacturers have to emphasize solidity and durability under shock treatments, rather than the sound quality of the instruments. They have to conform to a standardization of range and morphology in order to comply with certain universals found in orchestration books, or implied by the traditional system of notation.

When issuing a series of instruments of the same family (of different sizes), it is always more rational to take one referent instrument and vary only one physical element of that referent: for example if you have a cylindrical drum, you can increase or decrease the diameter of the drum, or you can increase or decrease the length of the cylindrical resonator.

When duplicating instruments for the purpose of building a precisely tuned pitch scale, the manufacturer looks for a referent material that will ensure a maximum clarity of pitch at the expense of striking and "living" individuality of sound.

The number of instruments that any institution can realistically afford (and the percussionist carry!) has to be limited, the scaling of many materials or instruments in many different sizes has to be restricted to a reasonable compass. And a reasonable number of users have to be interested for a product to stay on the market for an extended period of time.

One should not accuse the percussion manufacturer of refusing to carry out research, or of not being in tune with the innovative demands of many sectors of musical life. In his article on the history of the vibraphone[47]. Harold Howland demonstrates clearly that many research projects have been carried out especially concerning bar alloys, pitch ranges, damper pedals, piano keyboard mechanisms for actioning the bars, special arrangements of the instrument for bowing, electronic amplification, etc. . . What is remarkable is that despite a certain confusion and many peripheral attempts well described by Harold Howland, the present form of the vibraphone was achieved at a very early stage, has remained stable, and will probably continue to do so for a long time. The reason for this state of affairs is that musicians of the international scene interested in the development of sophisticated instrumental techniques and expressions need a certain stability, a certain neutrality from the sound material they are using over the years, a sort of resistance, an inertia on the part of the material to be mastered.

What a musician has to project is what he/she is made of in spite of the limitations of the instrument; the magic art comes out of nothing or very little, from a limited but well-managed economy of means, from an "anonymous" universal system-object that everyone automatically takes for granted. This also applies to the composer writing for standard instrumental groups. It is important that the instrumental characteristics remain within the limits of a same, predictable, and consequently malleable middle-of-the-road timbral position. Otherwise the composer would have to take the risk of very soon becoming a sorcerer's apprentice, incapable of mastering the sound material.

One can now clearly see the wide gap that exists between the two instrumental strategies, between the musicians who determine their contextuality in writ-

ten form and those who prefer that contextuality be determined primarily by a singular instrumentarium. And one can see how difficult it is to cross over the line between these two worlds. The musicians of the first, in order to express their individualism freely need an instrumental space that is neutral, universal, and multi-national. The second ones seek a multi-disciplinary space, localized and original in its instrumental manifestation, a "Tower of Babel"(!) that emphasizes anonymity, tribal community and participation. Only Cage happily evolves shamelessly from one to the other, from one place to the next.

Pierre Boulez is well aware of the dilemma and the contradictions of the situation:

> Whether one likes it or not, any instrument represents essentially an aesthetic choice: the violin, the oboe, the clarinet reflect aesthetic categories which were defined two or three hundred years ago (if not longer), imposed on the composer even before he could imagine a realization of his intentions, forcing him, whatever his desire for revolution, to use a pre-existing prevailing material. Therefore numerous musicians and instrumentalists desirous of going beyond these limits but unable to do so by rational means, get out of the difficulty through irrational means, they place themselves on the periphery, and consequently achieve temporary, local, or even anecdotal solutions (. . .)[48].

Clearly, Boulez is thinking about creating completely new instrumental entities that can again, like the violin, the oboe, the clarinet, occupy the *center* of the stage; instruments that are not historically marked, instruments without contextuality, without constraints. Such conditions consequently exclude peripheral, personalized objects, products of "furious artisanal" activities. The computer might be envisaged as the very tool that could possibly create this new uncommitted space or at least be its artificial intelligence "model," rather than, as we suggested above, being a mosaic of highly individualized and pragmatically limited languages/systems/processes.

According to Boulez, too often the total field of percussion, industrial or artisanal, in its scattered and unorganized state reduces *writing* to a "rudimentary dialectic in total contrast with the sophisticated notions used in other instances"[49]. Percussion is there then to remind the rational world about the living presence of colorful sounds! But taking the criticism in good faith, it is quite possible to imagine that a certain process of neutralization of the sound space will occur in the future in the alternative world of discontinuous sound sculptures. Certain stable patterns could very well become established in the near future, that would create a situation very similar to the percussive society of Java and Bali: local diversifications within a fairly well-defined body of cultural and musical practices.

In any case one could imagine that the two worlds, global and local, public and private, will go about their own separate parallel ways in relatively peaceful co-existence; the one in the undifferentiated space of the jet-civilization, the other in the affirmation of divergent styles of living and alternative spaces. These two worlds amicably agree to ignore each other. There is little interference between them, but at the same time they are complementary manifestations constituting one total expression of a paradoxical society.

[1]Jaap Kunst, *Music in Java, Volume I,* The Hague, Martinus Nijhoff, Holland, 1949, p. 140.

[2]See Daniel Charles, *New Music: Utopia and Oblivion,* in Performance in Postmodern Culture, edited by Michel Benamou, Center for Twentieth Century Studies, University of Wisconsin, Milwaukee, Coda Press, Inc., Madison, Wisconsin, 1977.

[3]See Stuart Smith, "The Early Percussion Music of John Cage," in *Percussionist,* Volume XVI, N. 1, Fall 1978, published by Percussive Arts Society, Terre Haute, Indiana.

[4]See John Cage, *Silence,* Wesleyan University Press, Middletown, Conn., 1961, pp. 3-5.

[5]For examples see: John Cage/Lou Harrison, *Double Music;* John Cage *First Construction (in Metal);* Lou Harrison, *Violin Concerto;* Robert Moran, *Bombardment N. 2;* and Lejaren Hiller, *Machine Music.*

[6]See Dr. Joseph H. Howard, *Drums in the Americas,* OAK publications, New York, 1967.

[7]John Cage, *Pour Les Oiseaux,* p. 68 (my translation).

[8]*Ibid.,* p. 69.

[9]John Cage, *For More New Sounds,* in *John Cage* edited by Richard Kostelanetz, p. 66.

[10] John Cage, *Pour Les Oiseaux. . . ,* p. 224 (my translation).

[11] *Ibid.,* p. 224.

[12]Actually Lou Harrison spent a fair amount of time in Korea studying Korean music; but it is in terms of his career as a musician that he can be described as a very private composer and performer, with not much involvement with the circuits of international touring artists.

[13]Lou Harrison, *Music Primer,* C. F. Peters, New York, 1971, p. 4.

[14]Lou Harrison, *Music Primer,* p. 7. "Surd" = "Deaf", "Absurd" = "from Deafness".

[15]Electrical conduits, aluminum tubes, furniture tubing, scrap metal, food cans (for the resonators), etc.

[16]John Grayson, *Sound Sculpture,* A.R.C. Publications, Vancouver, British Columbia, Canada, pp. 162-169.

[17]*Ibid.,* p. 162.

[18]*Ibid.,* p. 163.

[19]*Ibid.,* p. 196.

[20]Cf. Harry Partch, *Genesis of Music,* p. 196; "And not a small part of the element of good condition is the visual; the instruments must be kept looking well since they are almost always on stage as part of the set." See also pp. 320, 335.

[21]"My work takes its character from the instruments I have built, played competently and from my ideas and attitudes. The clarinets, cellos and basses for which I occasionally ask can never take over this responsibility (. . .)". *Ibid.,* p. 196.

[22]Kryzysztof Wodiczko, *Instrument - Percussion Instrument,* Abstract from Diploma Thesis, p. 2. (Copy of the Abstract given to me by Michael Udow. Date unknown).

[23]*Ibid.,* p. 2.

[24]*Ibid.,* p. 1.

[25]*Ibid.,* p. 2.

[26]*Ibid.,* p. 2.

[27]*Ibid.,* p. 4.

[28]Ronald George, "Research into New Areas of Multiple-Percussion Performance and Composition," in *Percussionist* XII, N.3, spring 1975, pp. 110-131, published by Percussive Arts Society, Terre Haute, Indiana.

[29]*Ibid.,* p. 110.

[30] See p. 118 and following pages for details.

[31]See "New Instrumental Resources Panel Discussions" this issue for a photograph of Ron George's *Percussion Console.*

[32]Op. cit., p. 6.

[33]See Robert Erickson "Instruments for Cardenitas," in *Source,* Music of the Avant Garde, N.5, Vol. 3, N.1, January 1969, p. 29.

[34]See Robert Erickson, *Sound Structure in Music,* Chapter 5, "Klangfarbenmelodie: Problems of Linear Organization," pp. 106-136.

[35]Program notes of *Loops,* UCSD performance, October 28, 1977.

[36]"Souk": market in the Middle East and North Africa.

[37]See Mauricio Kagel, *Theatrum Instrumentorum,* Instrumente Experimentelle Klangerzeuger Akustische Requisiten Stumme Objekte, aus *Acustica* (1968/70), *Staatstheatre* (1967-70), *Zwei-Mann-Orchester* (1971-73), Kolnisher Kunstverein, June 1975.

[38]See *Percussive Notes,* Volume 16, Number 2, Winter 1978, p. 39, published by the Percussive Arts Society, Terre Haute, Indiana.

[39]*Ibid.,* p. 39.

[40]Personal communication, summer 1979.

[41]At the Center for Music Experiment, *Timbre Tuning System,* designed by Bruce Leibig (1975); at I.R.C.A.M. on Music 10 with interactive software written in "Sail."

[42]John Grayson, *Environments of Musical Sculpture You Can Build,* Aesthetic Research Center of Canada Publications, Vancouver, British Columbia, 1976, p. 6.

[43]In John Grayson, *Sound Sculpture,* p. 1.

[44]See *Catalogue for the Exhibition/Festival For New Instrumental Resources I and II,* May 1979, 1980, Co-sponsored by UCSD's Center For Music Experiment and Interval Foundation, in Interval, Spring-Summer 1980, Vol. II, number 2, 3, San Diego, California, p. 17 and cover.

[45]Max V. Mathews, *The Sequential Drum,* I.R.C.A.M., Paris, 13 May 1980, p. 1.

[46]Ronald M. George, *The Development of a New Instrument of Percussion. The Two-Manual Vibraphone,* Center for Music Experiment and Related Research, UCSD, San Diego, California (Project Proposal), 1978.

[47]Harold Howland, "The Vibraphone: A Summary of Historical Observations with a Catalog of Selected Solo and Small Ensemble Literature," *Percussionist,* XIV, N. 3, Summer 1977, pp. 77-93; and *Percussionist* XV, N. 1, Fall 1977, pp. 20-44.

[48]Pierre Boulez, "Perspective-Prospective," in *Musique en Projet,* Collection Cahiers Renaud-Barrault Gallimard/I.R.C.A.M., Paris, 1975, p. 27 (my translation).

[49]*Ibid.,* p. 29 (my translation).

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Seesaw/Okra Music Corporations
Somers Music Publications
Southern Music Co.
Studio 4 Productions
Studio P/R Inc.
Steven Traugh
Unharrie Clarinet & Percussion Duo
Windsor Music Publications

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