

by pauline oliveros

November, 1968

" I Heard A Boy Singing  
Long Long Ago.  
He Rode With The Reins Loose  
And Let The Horse Go."

Robert Duncan

Listen to the environment for 15 minutes or a longer but pre-determined time length.

Use a timer, clock or any adequate method to define this time length.

Describe in detail the sounds you hear (heard) and how you feel (felt) about them.

Include internal as well as external sounds.

You are part of the environment.

Explore the limits of audibility.

(Highest, lowest, loudest, softest, simplest, most complex, nearest, most distant, longest, shortest, sounds)

Send me your writing or recording.

Address;

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Record an environment \*  
continuously for 15 minutes

i.e. classroom

Cafeteria

dorm

freeway

La Jolla love-in

in the dark if possible

Playback, listening for sounds  
which have pitch.\*<sup>2</sup> Edit these  
pitched sounds and arrange  
them into a "melody".

This exercise can be controlled  
by designating a common environment  
such as the cafeteria.

\*<sup>2</sup> If you are not sure about pitch  
edit the sounds according to  
high, <sup>middle</sup> or low.



Rhythm

Pitch

Harmony

Timbre

Texture

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Vocal

Instrumental

Electronic

Environmental

THE NATURE OF MUSIC



Rejka Greenberg "There was also the sound of silence which I found to be extremely loud."

Christine Johnson "The one outstanding thing I did discover was that there was never complete silence."

John Dishi "If it weren't for these breaks in the monotony this constant sound would become as a silence."

Frank Sautore "It was like an orchestra with no rests, no silence anywhere."

Sandra Tom "You may think that you are in a state of complete silence but you are not. The beating of your heart and your breathing eliminates that state immediately."



"I sit quietly (with my alarm clock), close my eyes and open my ears. At this point, the curtain rises and the performance begins. My very surroundings seem to come alive, each sound revealing the personality of its creator. There are several sounds which become fixed in my ear like some "basso ostinato"; the continuous whirring of factory machinery in the distance and the hollow sound of splashing water from a nearby fountain. This background of sound is interrupted by the piercing motif of a bird." A sudden breath of air sweeps across the deck. The pages of my book respond with quick snapping sounds. The door at the entrance squeaks and moans on the same pitch like an old rocking chair, then closes with a thud. I can hear the drapery from an opened window rustling against the coarse plastered walls, while the drawing cord syncopates against the window pane."

"only a couple of minutes have passed and things are getting really involved already."

"I can smack the ~~road~~<sup>air</sup> and tires slap the road giving off that highway sound, a low hiss that has no beginning ~~or~~ end, just a hum. The drone is established and only the sharp, high pitched chirps and tweets of the birds persist in breaking the undertone."

"Every once in a while a bad apple would pass that would break the pattern; a poorly tuned car, or one that was going too fast, would seem out of place."

"At the moment these background sounds are being heard, they are linked together by other ~~random~~ irregular and random sounds. There are so many different sounds made by closing and opening doors. The clicking and rolling of the door latch



when it is opened and the simultaneous slam, squeak and click when the door closes"

Masking "Funny, there are more sounds now than when the record player was on. Now I hear a symphony of a different sort."

Amplitude "I was amazed that I could hear myself blink. It is about the softest sound I ever heard."

Aural memory "At times I was tense waiting for some noises and then they would come in a large group and I would have difficulty remembering all the sounds."

Filter "It seems that a person hears what he wants to and anything else just doesn't exist"

Pitch "I hear the continuous flow of water through the radiator pipes below me, and when listening closely, cannot help but notice that there is really a wide array of tones being produced in the pipes."

"Five minutes have passed - only five minutes! Such a complex of varied sounds as such a short time"

Well, onward - the sounds aren't waiting for me but are going on." "Another car door slams and as if cued by a conductor a buzz saw starts in a neighbor's yard. The intensity of the sound is so great now that I feel it rather than hear it. It stopped! The radio, the buzz saw, and the wind. Now I can hear a spider spinning his web while an innocent fly buzzes around my head."

"Distant voices enter - first a solo - a male - female duet, then a whole choir. There are never words, only sonorities"

Internal "One of my favorite sounds is the surge of my own heart when my ear is pressed against my pillow. Even as a youngster of five or six, I would listen to this pulse and try to speed it up"



or slow it down. I would fill the inner part of the  
boat with my own imaginary sounds. I used to  
hold balloons against my ear and chew apples  
or just listen."

"Sounds are very complex now. One of the dryers is providing an undercurrent of  
Ya Cucaracha, or something similarly Spanish,  
it is all but in light little clicky sounds -- Chick Chicka chick'chick,  
impossible to Chick Chicka' Chick Chick -- then a more relentless  
get them down, Chicka, Chicka, Chicka, Chicka. The Chicka is joined  
these seem to (and nearly drowned out) by a more dynamic washer  
be a thousand in the rinsing cycle, slowly going Swish \* Swash,  
things going on Swish \* Swash.  
at once. (12  
minutes have passed)"

Everything is watery and the sound of someone's  
voice rides into my ears on rivulets."

→ "At the end of the concert, I began to feel quite amazed  
with my surroundings. To think how utterly  
fantastic the work that I just heard was, left  
me somewhat spellbound. Everything seemed to  
fall into place. Even though the tones heard may  
not have been intelligible as those of a manufactured  
musical instrument, the work certainly seemed to  
have a structure to it. I have a feeling that  
Webster really didn't know how much he was  
really covering with his (dictionary) definition."

"At one time it was almost completely quiet, then suddenly  
all types of sounds would appear, almost like someone  
was directing the concert."

"Near the end of the fifteen minutes, almost as if it were planned,  
a girl sitting in the distance lit out with a steam  
kettle "shhh" in an effort to restore "silence" to the library."



"we read of beautiful sites of a locale, but do we hear of the sounds associated with it? Not often."

When I would hear one sound, I would think of another sound which would sound good after the first one (although this didn't occur very often - hearing the sound I wanted to hear). Actually I had progressed from simply listening to a position where I was improving with the library."

"My turn is up now. It's so hard to stop absorbing and writing - it is an awareness which I do not want to lose."

"If I listen carefully I can pick out short, sharp, medium pitched sounds but they have a background of loud confusion as the machine proceeds in its cycle. As suddenly as it came on the machine stops as it pauses to begin a new cycle. The pause is accented after the second cycle because my mind remembers the relative silence of the pause."

Heading

"I have just been ~~to~~ in concert: the continuing concert of environment. I can hear it still"

Heading

"I also noticed that my disposition was affected by the type of sounds I heard."

"Since we were only supposed to listen for fifteen minutes, disregard the last seven minutes of sound."

"The climax came when the roar of a motor cycle was met with a very unsuspected bang of an object dropped in a near by room. My nerves jumped as I settled back to the rustling leaves."

"After a time the 'earlids began to close'. That is, all sounds assumed a drone quality - the first sign of



approaching sleep. Arousing myself somewhat, I noticed that the sounds were displaying an organization - the organization of living things. Each was an instrument within the orchestra. Each <sup>was</sup> made with its own unique sound; I was very much entertained, and a smile came to my face. Hunger was getting the best of me. Knowing I could return at most any time, I left my reserved seat within the "auditorium".



## "Sounds Keep Coming and Going"

"After listening to life, I feel I can appreciate it <sup>a little</sup> more. It is a shame a lot of other people do not take the time to do the same."

"It seems to me that the whole world of sound is given a form like that of a concert piece."

It is a fascinating experience to become aware of all the "sound companions" one may discover in a once believed quiet place."

"Sounds have a way of reminding you of something and I guess most of the time people don't even realize that it was a sound that caused them to think about something because then they get tied up thinking, and not really hearing anymore."

"The fifteen

minutes seemed to go like a flash, especially toward the end"

"Opening my eyes, I know the piece is over and the normalcy of the situation is a stounding. It seems artificial to see dryers and people and carts, and the minute I begin ~~to~~ seriously considering them with my eyes, the sounds fly right away."

"I thus depart with a new and unusual experience - I have heard a composition from the "Sounds of Silence."

← "It is amazing the way the different sounds seem to build up to a climax and then diminish as in a musical composition."

→ "One curious thing I have noted is that the very building I am in has a noise of its own. Perhaps it is caused by the heating system. Wherever I go I can hear a soft hum of noise which seems



←  
to come from the ceilings and walls. Usually this noise is covered up by more demanding and raucous sounds, but now in a period of relative quiet I can peel back the layers of other sounds and listen to this very unobtrusive hum.

A shot! What sounded like a <sup>gun</sup> shot just occurred beneath my window. I'm not sure it was a gun shot (I've never actually heard a real, live gun shot) but it sounded like what one would expect from a gun. Perhaps it was a balloon or a cap pistol. What ever it was, it was loud and short. There was no echo or diminuendo. It immediately grasped my attention and for a brief second I could hear no other noise except that."

"even when I was listening, I missed some sounds. The explanation being that part of the sounds are filtered by the mind from consciousness even when one is paying attention. I did find that soft sounds were lost easier than loud sounds. This is probably because soft sounds tend to lull one while strong and loud sounds, which one associates with unpleasant experiences, attracts ones attention."

"A boy came along with a basket ball. He didn't bounce it until he was very close to me, and the sudden noise startled me. It blanked out all else and I was forced to listen to it briefly."

"It's like a lesson in articulation: as the balls hit the sound is sharp, explosive and as they fall into the pocket the sound is dull and flat."



✓ " And then there were the sounds that crept up on me, coming out of the drone, sharing the stage with or stealing it from the fountain, and then blending themselves unnoticed, back into the drone. Obviously, these were sounds without clearly defined boundaries. A minor example of this type of sound would be is of a bus on a nearby road. The sound reached a level of only slight prominence and then disappeared leaving the listener unsure of the veracity of its very existence. But the sound of a jet-fighter traversing the breadth of the campus was quite a different matter: First there was the drone, and then the jet; and then the jet was all I knew. It did not, however, dominate, so to speak, the sound of the fountain. Actually, for the time that it was at its maximum, it adopted the fountain, so that the splashing seemed to be just another sound of the jet. And then the jet left while the ever-present splashing and droning continued. "

" Just outside my window and a couple of floors down hies some exhaust outlet. It hies so quietly I can barely hear it unless I lean far out the window. Also thru this same outlet emanate clearly but weakly, from the seeming subterranean depths of underground garages, the screeches of cornering tires and the growl of automobile exhausts. Loozing the reins on my imagination, I might describe this last sound like the enraged sounds of a modern day mechanical dragon. Combining the wind sounds and the automobile sounds, late at night, a tableau forms that could send the sanest of men into a fit of ~~laughter~~ terror. The wind whistles gently, leaves shiver and scrape across cement;



times screech in such a succession that it would seem that humans could not be driving. In addition, sea gulls' occasional caws intermittently intrude. The high bushes wave back and forth directly across from my window as if there was a human soul imprisoned silently crying for release. Next door to my apartment building are little tarpaper shacks. At late hours, black cats patter about like shades of times long ago. The inhabitants of these tarpaper shacks, meanwhile, make silent shapes on window shade while the tarpaper shacks creak and groan as if they too contained an embodied spirit. Also at this hour small birds flutter as if the air was losing its fabric and could no longer support them."

✓ "It all sounded very rhythmical and as if it had purposely been ~~planned~~ put together in a certain way. After this I began to notice groups of sounds at a time. A door slammed and then a turnstile clicked at almost the same time another door ~~slammed~~ closed. Then an airplane created a loud textured noise and a pile of books smashed down this time. I noticed one girl go up the stairs in very even steps and then a boy skipped up. Whispering began, a chair squeaked and the turnstile clinked, steps getting louder."

"There seemed to be definite drones mixed with occasional melodies in almost contrapuntal fashions. Rhythms seemed to ebb and flow as well as complexity and simplicity. Pitches covered a wide range. The effect was surprisingly interesting and fascinating. I never knew that everyday sounds could be so nice!"



Communication Gap

Rand Wilson

Quote Sam McKelvey

Poetics definition - Lecture in progress

Thank for papers

What led me to think of it as a composition

Musicians awareness - Throwing up chair scrapes etc

Inner generative power of a pitch

Traditional music requires filtering out of environment

sense those sounds not accepted as part of the music  
Japanese appreciate the interval between objects

Realization about Variations for Sextet as played in 409

Feelings about space and extensions of music systems.

Gerald Walker - Grad Composer - Ideas about space.

Disorientation for re-orientation



Dec 22, 1968

Poetics  
The ~~music~~ of Environmental Sound

Study of work to be done  
Brain to do or make

How the listener <sup>Perceives</sup> receives the environment

" " " " proceeds to abstraction (elimination of intelligence)  
Transcendental communications

The resultant music  
Heightened awareness

What are the elements of the acoustical environment?

" " " variables " " " " " " "

noise pollution noise Pollution

The confusion of concert halls

The mystery of acoustical factors

visual music.

startle reaction - autonomic nervous system

Bronchophonic sound

What are the methods and mediums of transmission?



Today we are in dire need of sensory awareness

## The Three Monkeys

We are a bunch of sensory shut-off-ers

City planners should be hiring composers as well as sculptors.

Memory of childhood sounds - cicadas hot days

Smell of Spring air

Seeing fresh water life

Hot days no air conditioning

Cool of evening

Taste of corn directly from Catskill garden

Smell of early morning New York.

Phonograph Victor Wind up Tif toe thru the tulips H. Lauder  
Wire recorder 1947

Tape recorder 1954

Tape record environment 1958

Awareness of environmental music (mind ordered - half waking)

People have had much training in filtering out sounds. Listening to traditional music requires this as the modern environment is not accepted as part of the music. "The Japanese appreciate <sup>MA</sup> the interval between objects"



What is our sound expectancy?

En. Br. pg 733

"noise (a word of doubtful origin; O. Fr. NOISE OR NOSE; others take Latin noxia, harm, as the source), an excessive, offensive, persistent or startling sound. By the common law of England freedom from noise is essential to the full enjoyment of a dwelling house, and acts which affect that enjoyment may be actionable as nuisances. But it has been laid down that a nuisance by noise, supposing malice to be out of the question, is emphatically a question of degree (Baunt v. Finney, 1872, 8 Ch. Ap. 8). The noise must be exceptional and unreasonable.

The ringing of bells, building operations, vibrations of machinery, fireworks, bands, a circus, merry-go-rounds, collecting disorderly crowds, dancing, singing, etc., have been held under certain circumstances to constitute nuisances so as to interfere with quiet and comfort, and have been restrained by injunction. Noise occasioned by the frequent repetition of street cries is frequently the subject of local by-laws, which impose penalties for infringement."

pg 445 "A mere noise is an irregular disturbance". article on sound  
how consonance - dissonance relationship.

Noise is unwanted information.

Examine the multi meaning of the word sound.

healthy, perfect, complete, well based argument or doctrine, a person well trained in his profession, same, swim bladder of a fish, narrow stretch of water between inland sea and the ocean or island & mainland, to test or measure depth



"For myself, I can not begin to take an interest in the phenomenon of music except insofar as it emanates from the integral man, I mean from a man armed with the resources of his senses, his psychological faculties, and his intellectual equipment."

Only the integral man is capable of the effort of higher speculation that must now occupy our attention.

For the phenomenon of music is nothing other than a phenomenon of speculation. (There is nothing in it --) It simply presupposes that the basis of musical creation is a pre-liminary feeling-out, a will moving first in an abstract realm with the object of giving shape to something concrete. The elements at which this speculation necessarily arrives are those of sound and time. Music is inconceivable apart from those two elements."

Hidden Dimensions

Mr Freud and his followers observed, our own culture tends to stress that which can be controlled and to deny that which cannot."

"A high noise level or low illumination will ordinarily bring people closer together."

→ Jan Melnar "Man + His Environment" "No species can exist without an environment, no species can exist in an environment of its exclusive creation, no species can survive save as a non-disruptive member of an ecological community. Every member must adjust to other members of the community and to the environment in order to survive. Man is not excluded from this test."



" In sound sensation we have nothing corresponding to white light. A noise such as the roar due to traffic in a town may correspond physically in that it could probably be resolved into a nearly continuous series of wave lengths, but psychically it is of no interest. We do not use such noise, but rather seek to avoid it. We certainly do not wish to measure its loudness, and even if we did it might be difficult to fix on any unit of noisiness. Probably we should be driven to a purely physical unit, the stream of energy proceeding in any direction, and if the noise were great enough we might measure it possibly by the pressure against a surface. "

Astronomy class - Lecturer repeatedly told us why man could not and would not reach the moon in our life time.

Why children should not study history - It causes sensory drop out.

Waves and the Ear Ch III pg 65-66

↳ "Whatever is not arbitrary about language is determined in part by the structure of the organs used to produce human speech and in part by the capabilities and limitations of our sense of hearing. But language also is constrained and shaped by the properties of frequency and velocity, and by the consequent phenomena of interference and resonance characteristics of sound. The very anatomy and physiology of speech and hearing must conform to the facts of acoustics. Thus an understanding of acoustics is necessary to an understanding of man and his sounds."



Musicians unaware of "total" sensations  
Scrap chains - look outward etc.  
Communication has to take place on  
many levels.

Hearing is not isolated

I see I hear I smell I taste I touch

INTERNAL MUSIC

1/17/69

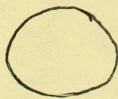
Interpret the following symbol for

5 minutes :

SILENCE

1 HOUR

FOREVER





# TESTS SHOW NOISE CAUSING TENSION

## Hunter Co-eds Are Used in Psychologists' Study

By **JOHN LEO**

Man is paying a high price for the rising noise level of his society, according to a study made by two New York psychologists.

Tests by David Glass, a New York University social psychologist, and Jerome E. Singer, a psychologist at the State University of New York at Stony Brook, show that random, unpredictable noises bring marked irritation and frustration, as well as dramatic declines in work efficiency, even after the noise is stopped.

"Our study suggests that powerlessness is the cause of the adverse effects," Dr. Glass said in an interview yesterday. "If the noise is predictable and regular, or if the noise is irregular but the subject is told he can shut it off if it becomes too much for him, the frustration and inefficiency don't appear."

### Hunter Girls Tested

In the first part of the test last fall, 50 Hunter College co-eds were separated into five groups of equal size. Three groups (loud predictable noise, low predictable noise, and no noise at all) showed little tension and high ability to stand frustration.

The other two groups (loud unpredictable noise, low unpredictable noise) showed high tension on a dynograph recorder — similar to a lie detector — and a low ability to handle frustration on a series of mathematical puzzles.

A second experiment, some weeks later, was designed to test Dr. Glass's hypothesis that the adverse effects were linked to powerlessness—in this case the inability to control or predict the environment.

Two groups of randomly selected co-eds were exposed to equal series of loud unpredictable noise. One group, told in advance that it could press a buzzer and thus stop the test if the noise was too great, dramatically outperformed the group that had no reason to suppose it could control the noise.

The buzzer group showed two to five times the ability to handle frustration in the puzzle tests conducted after the noise ended.

In an interview yesterday, he suggested that the study might have important implications for white society's treatment of Negroes.

"If adverse effects are wiped out when you give a person control, what would this mean for giving the Negro power and control of his environment?" Dr. Glass asked.



# JET NOISES LINKED TO PSYCHOTIC ILLS

Interrupt Dreams, Vital to  
Health, Experts Say

By EDWARD HUDSON

The possibility that residents of communities afflicted by jet noise may develop psychotic symptoms because their dreams are interrupted at night was raised here last week by a psychiatrist and a psychologist.

Both referred to recent studies on dream interruption which, the psychologist said, showed "dreams are very necessary to mental health." If people are awakened and prevented from dreaming, they said, severe psychotic symptoms can occur.

The two were among nine witnesses who spoke at a hearing held here by the State Assembly's mental hygiene committee at the Bar Building, 42 West 44th Street.

Many of those who testified lived near Kennedy International Airport and told of loss of sleep by themselves and their children, as well as other effects of jet noise on their lives.

Daniel Rhodes, a representative of the Flatbush Park Civic Association in Brooklyn, told of two instances of threats of armed violence by noise-protesting residents and added: "It's a peculiar thing why my neighborhood should have a distressing amount of nuts."

## Yoswein Heads Committee

The inquiry was conducted by State Assemblyman Leonard E. Yoswein, whose Brooklyn district abuts Kennedy Airport. Mr. Yoswein, chairman of the committee, recently introduced a bill that would require the State Commissioner of Mental Hygiene to study effects of jet noise on the well-being and men-

tal health of people living near airports.

No one spoke against the bill and many expressly approved it.

The psychiatrist, Dr. Julius Buchwald, a faculty member of the Downstate Division, New York State Medical Center, said "everybody dreams at least five times a night."

If a person is awakened and prevented from having his dream, he said, psychotic symptoms from mild to "more severe" can occur. He listed these as paranoid delusions, psychoses, hallucinations and suicidal and homicidal impulses.

Dr. Buchwald said in jet noise-affected communities laboratory experiments on dreams were repeated "on a grand scale."

## Other Harmful Effects

Dr. Buchwald said jet noise could create other harmful effects. It can arouse "nightmarish" memories if linked to past experiences in sleep, he said.

The conscious perception of noise, he said, can lower a person's productivity and "greatly" reduce his sense of humor and ability to handle "ordinary frustrations." Even perceived unconsciously, he said, jet noise can build up frustrations that later explode.

The psychologist, Dr. Howard M. Bogard, chief psychologist of Queens Hospital Center, said persons prevented from dreaming "will tend toward true psychoses."

He urged a study of whether residents near airports "lose out on dream time," whether such communities become "disoriented" by people moving away, and whether family life is disrupted because of interruptions in ordinary communication.

"I have heard of several instances of children running into houses absolutely terrified," he said. "People should not be subjected to intimidation by outside forces over which they have no control."



# Your Teen-ager May Have Ears That Are 60 Years Old

BY LINDA MATHEWS

Times Staff Writer

If teen-agers don't seem to listen when their parents warn them to turn down the volume on the stereo, it may be that the kids quite literally can't hear, says a University of California medical professor.

After two studies conducted in San Francisco's cavernous rock ballrooms, Dr. Charles Lebo reports that the throbbing rhythms of heavily amplified electronic music are doing temporary, and sometimes permanent, damage to the ears of young America.

Lebo, an assistant professor of otolaryngology at the UC Medical Center and the concerned father of teen-agers, took acoustical measurements in two rock ballrooms, where the din was produced mainly by amplified guitars and percussion instruments, plus multiple microphones and speakers.

He found that the sound intensity averaged over 100 decibels at all frequencies, peaked at about 120 db in the center of the dance floor and near the bandstand and never dropped below 70 db.

## Above Industrial Levels

"That's consistently above the danger point the state of California has established for industrial noise," Lebo said in an interview, noting that employers are required to provide protection for employees who face prolonged exposure to noise levels above 85 db in the frequencies of human speech.

What happens to avid rock 'n' rollers, particularly the musicians themselves?

That depends on the individual's sensitivity to noise, Lebo said. About 10% of the people in the halls where he did his testing probably were not affected by the noise, 80% had their hearing threshold raised by five to 30 db and 10% suffered a 40-db impairment, at least temporarily.

Steady listening, varying from a week to a year, resulted in permanent loss of hearing acuity for sounds in the frequency range of human speech, which is roughly from 250 cycles per second, the pitch of middle C on the piano, to about 2,000 cycles, three octaves higher.

For the rock combos, sitting directly in front of the amplifiers, the loss was particularly acute — and a threat to their occupation.

Two Houston researchers, for example, tested five members of a band and discovered that one musician had a 50-db temporary loss and three others had already suffered slight but permanent loss. The oldest, just 22, worried that his music would suffer if he could not distinguish pitches.

Especially affected was acuity for the high-frequency speech ranges involving consonantal sounds and symphonic music—the same thing senior citizens complain of.

"Essentially," Lebo said, "the aging process accelerates so that 20-

year-olds have 60-year-old ears."

Lebo and a team of acoustical engineers and doctors concluded that the overblown electronic amplifiers, not the instruments, are to blame for the damage done to rock 'n' rollers.

They compared the sound intensity in the rock joints with that in a symphony hall, where the fortissimo in the highest frequencies sometimes cross the danger line for a split second. But, they noted, in the range of human speech, the symphony never exceeded 95 db.

"Usually sound is dissipated in the open air, or in a living room or at the symphony, absorbed by furniture and rugs," Lebo explained. "But in a discotheque or one of these big empty halls, there's no place for the sound to go and it is reamplified over and over."

Recordings of amplified rock music are not so dangerous, he pointed out, not only because home furnishings alleviate the noise but because the sound is more refined and "parents and neighbors act as limiting factors."

Some deterioration can be produced by regular listening to earphones, Lebo warned. "They're great to use, of course, and a blessing to everybody else in the house but they are dangerous because the sound is delivered directly to the ear without any kind of muffling."

Lebo worries particularly about the kind of damage that is done for, if permanent, it is irreparable.

"The hearing loss, which largely affects the ability to understand speech, is caused by injuries to the nerve endings in the ear and is called 'nerve deafness.'"

## Injury Can't Be Repaired

"And though doctors can repair earbones and rebuild eardrums, this kind of injury is beyond us."

As preventive measures, Lebo recommends a doctor's examination and—painful as it may seem—abstinence.

"Rock musicians I consulted feel that some performers are merely exploiting the parameters of amplification now and will eventually revert to more bearable limits," Lebo said.

"In the meantime, however, the only answer is to avoid prolonged exposure to amplified music. Either stay away from concerts or wear some kind of ear protection."

For musicians who depend on the amplifiers for their livelihood, he recommends either small, inexpensive earplugs or the insulated, noise-absorbing plastic earmuffs worn by airport ground crews and pneumatic riveters.

"When my children go to concerts, they take along little ear protectors," Lebo concluded. "I only hope they wear them."



## BRAINS VARY

# Seeing 'Eye to Ear' Can Bring Strife

UNITED NATIONS (AP)

—When diplomats don't see eye to eye, a prominent brain specialist says, it is sometimes because they have different types of brain rhythm.

For example, he says, if one is a visual thinker and the other an abstract thinker, they may be unable to reach an imaginative compromise because they're approaching the problem "eye to ear."

The scientist suggests that some future world crises might be averted if diplomats had their brain rhythm type stamped in their passports, so that incompatibles would not be assigned to negotiate with each other.

### **Father of Ideas**

These ideas are advanced by Dr. W. Grey Walter in the UNESCO journal, *Impact of Science on Society*. Walter is director of the physiology department of the Burden Neurological Institute and a professor at the University of Aix-Marseille, France.

He says the world's population can be divided into three groups—nonvisualists, pure visualists and mixed visualists — which can be distinguished by the presence or absence of alpha rhythms, or external electric echoes of brain activity.

Walter says the antagonism between visual thinkers and abstract thinkers can cause an irrational rupture of communications among scientists, politicians, administrators, diplomats and even married couples, destroying all chances of effective dialog.

"The two antagonists think they are speaking the same language," Walter says, "but are not. Their mental accents, so to say, separate them as surely as verbal accents in a class-conscious society."

### **Cause of Crises**

Referring specifically to diplomacy, he comments:

"It may even be that serious crises between nations, where no territorial or material advantage can be gained by either side, have arisen because the negotiators have different types of imagery and can only talk at cross-purposes."

Walter suggests that certain features of brain activity, such as alpha rhythm, are genetically determined.

He suggests that, in the future, every child should have an electroencephalogram because "there is as much reason to study the brains of the next generation as to measure their bodies or their ability to pass intelligence tests."