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G. Patrick FLANAGAN

Neurophone



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Analog Magazine (Feb 1980) ~

Bio Cybernetics Revisited

by

G. Harry Stine

When Jerry Pournelli and I started to write these columns as a vis-a-vis experiment, we hoped that sooner or later one of us would write something that the other could tee off on and thus get a good controversy going that would present "alternate views." It hasn't worked out that way because Jerry and I have discovered that we think very much alike on most matters. We have not been able to stir up controversy between one another. But we did stir up controversy among the readers.

When I wrote the columns on biocybernetics in the May and July 1979 issues, my objective was more or less than science reporting with some synthesis included. I wanted to point out that a true interface between human brains and electronic computers was not only possible but that the basic experiments have been done and the foundation technologies already existed, albeit in the case of the Flanagan neurophone the data had been generally unknown for 16 years. I reported on the basis of what I knew at that time. I requested that no one write for additional data because I didn't have any additional data at that time. I do now.

These two columns have resulted in an inordinate amount of mail from readers which makes the editor happy because he knows people are reading this. Some of the letters were anticipated, some were not. Some were from people who were deaf and wanted the Flanagan neurophone at any price. Others wanted the neurophone to use in attempts to contact loved family members in a coma. There were the usual letters from Ph.Ds who should know better than to make some of the statements they did. And I got letters with real up to date information...

You may obtain copies of his two neurophone patents by writing to the U.S. Patent Office and ordering Patent No. 3,393,279 granted July 16, 1968 and Patent No. 3,647,970 granted March 7, 1972.

The rights to Patent No. 3,393,279 are owned by Intelectron, Inc. of New York City. The FDA will not permit it to be marketed because it uses a low frequency r-f carrier, and they are very sensitive these days about the biological effects of r-f radiation.

But Pat Flanagan is an inventor. With his original patent rights in the hands of another company and with an FDA ban on its production, Flanagan developed the second neurophone device covered by Patent No. 3,647,970 which does not use an r-f carrier and does not involve high voltages. At the behest of the Department of Defense, the Department of Commerce placed Flanagan's new device under secrecy order No. 756,124 dated August 28, 1968. Flanagan was

able to get this secrecy order rescinded in 1972 to permit the patent to be issued.

I sat in Flanagan's study and listened to the new neurophone on July 26, 1979. It works even better than the original one. It operates from eight Type AA alkaline penlight cells. The audio signal is double differentiated and converted to a 60 volt square wave which is then run through a zero crossing detector. The sensor electrodes are one inch diameter plates made from lead zirconium titanate insulated on one side with epoxy that also seals the attachment of the lead from the neurophone.

With one electrode placed on the soft skin of my calf and the other on my chest, I heard the audio information from the tape recorder input in my head. I listened to both speech and music, and the fidelity was outstanding. I had a cassette tape recorder running two feet from me while this was going on; there is no evidence of the audio information recorded on the cassette by the recorder; I was the only entity hearing the neurophone, and it was therefore not producing sound waves that the microphone of the recorder could pick up.

As I knew 17 years ago, the Flanagan neurophone works. I dont give a doodly damn what all you bloody experts out there have presumptuously stated in your outraged fan letters to me. I am forced to repeat the immortal words of Dr. J. C. Warren voiced after performing the first surgery with a patient under ether anesthetic administrated by Dr. William Thomas Green Morton in Boston on October 16, 1846:

"Gentlemen, this is no humbug!"

For the benefit of all you who wrote me, I gave your letters to Flanagan. There is no need for me to be in the loop. There is no need for Flanagan to defend himself nor does he need help in doing so; he has a device that works. In the eyes of some sober, respected academicians, Flanagan is perhaps flamboyant and different, but that must not be allowed to detract from the fact that he is a successful inventor and, in common with many others of his unconventional and freewheeling nature in the history of science and technology, working on the fringes of scientific research in areas that others can't or won't touch.

The most fascinating aspect of this whole affair has been the confirmation and terrible realization that the human race apparently has not progressed beyond the state of affairs a century ago when "legitimate" scientist dug in to defend their sacred turf....and made damned fools of themselves in the process. They also retarded the development of technology that would have relieved human suffering and generally improved the human condition. These scientific brahmins still exist; they are no different from the predecessors of a hundred years ago; and they exhibit an appalling lack of knowledge and understanding of the history of their own field of expertise!

Arthur C. Clarke's law is still very much in force.

Jerry Pournelle was 100% correct in his June 1979 "The Alternate View."

I would like to extend my profound thanks and grateful appreciation to those scientific brahmnis who wrote to me and to the editor about the neurophone and the human computer interface. You have greatly contributed to the contents of my "Utter Bilge" file. This is my collection of presumptuous statements from people who should know better than to make such statements in the first place. The file title derived from an infamous statement of Sir Richard Van Der Riet Wolley: "Space travel is utter bilge!"

Scientific research and technical progress is not and has never been the exclusive turf of any select group of people. There has always been a role for the amateur investigator, and still exists today. Before the "official" establishment of any new area of scientific endeavor, everyone who works in that area must, by definition, be an amateur. Even in the established fields of scientific endeavor, important discoveries have been made by amateur investigators. Good scientists and I have the pleasure of knowing many who would never reject out of hand any amateur findings and will react with enthusiasm and interest to such findings. It is only poor scientists who are insecure that will react negatively. Would there were more good scientists!

Bioelectronics today is about the same situation as electricity about a century ago. The field is ripe for experimentation. Certainly there is danger; there always is. But that is no reason for suppressing information, as one PhD. correspondent demanded be done, for fear of someone electrocuting himself by building a neurophone in his basement shop. People still get hurt in steam boiler explosions. As a matter of fact, people still get burned handling the ancient technology of a campfire. These accidents merely strengthen the statement of Herbert George Wells, "History is a race between education and catastrophe," but down on the personal level.

To paraphrase Harold Laski, science by experts means, after a time, science in the interest of experts.....

Analog Magazine (July 1979) ~

Bio Cybernetics II

by

G. Harry Stine

Last time around, two issues ago, I reported on the process made by DARPA (Defense Advanced Research Projects Agency) concerning computer

recognition of human EEG patterns. I stated that this was a major breakthrough in the development of the true intelligence amplifier wherein the human nervous system was linked directly with the electronic circuitry of a large general purpose computer. Soon, the crystalline circuitry of the computer will be able to "understand" the colloidal circuitry of the human nervous system by direct linkage through electromagnetic fields.

And I left you hanging by your fingernails on a figurative cliff overhanging an ammonia sea swarming with methane monsters, so to speak.

I stated that seventeen years ago the breakthrough had been made that would permit the colloidal circuitry of the nervous system to "understand" the crystalline circuitry of the electronic computer. In other words, if the computer signal was in the proper form, the human nervous system could pick up and decipher the electronic computer signal through an electromagnetic field.

In early 1962, I was working as assistant director of research for the Huyck Corporation in Milford, Connecticut. Dr. William O. Davis was the director of research, and he had been charged by the company to look for new products to insure that Huyck would be in business twenty five years hence. There were no caveats placed on us at that time. We could look at or for anything....and we did. Then as now I have all sorts of pipelines into the back rooms of various research and development organizations here and abroad; a science fact or science fiction writer really cant function properly without these contacts. My most valuable Little Black Spy was the former editor of this magazine. John W. Campbell, who in turn had an incredible network of Little Black Spies.

Campbell told me of an 18 year old boy in Texas who had invented a spectacular new hearing aid. I made a telephone call, talked to the boy, and was on a plane to Houston within days.

G. Patrick Flanagan of Ballaire Texas was a boy genius. In addition to being an outstanding gymnast and a pilot, this high school graduate had stumbled upon a technique of introducing audio information directly into the human nervous system without loudspeakers or earphones, and without direct electrical connection between his gadget and the nervous system.

On July 24, 1962 in Bellaire, Texas in Flanagan's shop in the attic of his parents home, I personally witnessed proof-of-principle demonstration of a direct linkage between a crystalline electronic circuit and the colloidal system of the human nervous system.

The device called the "neurophone" by Flanagan, was a very simple gadget. It used those ancient devices known as vacuum tubes. It used a 6L6G tube running as a 35 Kilohertz oscillator; the output of the oscillator was amplitude-modulated by the output of ant single channel hi-fi system through suitable impedance matching transformers, etc. This amplitude modulated 35 kilohertz

signal then went through a cheapie stepup transformer so that the output was very high voltage (about 4 kilovolts, as I remember) but at very high impedance. Flanagan fed this signal through a length of ordinary TV antenna twin lead to a pair of rubber pads about six inches in diameter that he had filched from a "relaxicisor" muscle relaxing device. Each pad consisted of a 1/16 inch thick rubber sheet, a piece of copper window screen to which was soldered one of the wires of the twin lead, and the rubber covering of the relaxicisor pad. The rubber insulation kept one from getting zapped, although the shock wasn't painful...just annoying.

Put a signal into the neurophone input, peak the frequency, peak the modulation to 100%, and then hold the two pads to your body....anywhere.

And you heard music playing in your head!

Although the pads worked better and you got a louder signal with the pads on your bare skin, it would work through a layer of clothing.

And it worked regardless of where you put the two pads! You could put one on your shoulder and the other on the sole of your foot...and you would still hear whatever program material was being played into the neurophone from the hi-fi system.

I can freely describe this today because (a) I don't think Flanagan's patent application ever got accepted and I don't believe the patent ever issued. (b) Huyck Corporation is off doing its classic thing of making paper machine parts and isn't interested in the slightest, and (c) I think the time is just about right to get going on this little gadget again.

Flanagan had succeeded where others had failed. Dr Henry Puharich had succeeded in developing a similar device, but the pads were one inch copper plates that had to be rubbed along the skin to achieve the "fricative effect" to permit Puharich's gadget to work.

In a series of long and complex experiments conducted under my supervision at Huyck and by Dr Wayne Batteau at Tufts, it was conclusively shown that the neurophone effect not the result of (a) the pads acting as electrostatic loudspeakers, (b) the pads exciting bone conduction of the sound, or (c) the pads activating the eighth cranial nerve. Although I tried the neurophone on a nerve deaf medical doctor at Columbia University in 1965, I kept the experiment running for only about ten minutes. Dr Wayne Batteau tried it at Tufts and succeed because the brain of his nerve deaf subject had "forgotten how to hear" and needed something over an hour of application of the neurophone signal in order to begin to hear in his brain again! We know now that the Flanagan neurophone operated by direct linkage of the electronic circuitry with the nervous system through electromagnetic fields. We know now that the nervous system will pick up any signal and send it to the brain

where the brain recognizes the signal according to the sensory data it represents, then switches the signal to the proper sector of the brain responsible for processing such signals. But we dont know how Flanagan accidentally happened to crack the neural code for audio data.

I can assure you that the Flanagan neurophone is no hoax. Many responsible people experienced it. Just before his death, Dr William O. Davis gave me one of the neurophones we had built at Huyck; I still have it, but a two hour search through my uncatalogued archives of scientific memorabilia and trivia failed to locate it this morning. Im going to dig it out and try it again for fun. And because it does represent a breakthrough that will permit electronic computers to communicate directly to our nervous systems...by putting on a beanie, and not plugging a cable into a socket implanted on the top of our heads!

The DARPA work with computers deciphering human EEG signals, plus the Flanagan neurophone capable of permitting a computer to communicate directly with a human, both make inevitable the final computer; the use of the computer as a extension to the human brain as an intelligence amplifier for the human being.

Now, what happened with the Flanagan neurophone, and why havent you heard more about it? I am not sure that it is because of the reaction of Big Science as discussed by Jerry Pournelle last month. There were several factors involved.

First of all, it didnt look like Huyck could get a patent position, so they wanted out. They also discovered that the Huyck Corporate Research Laboratories were producing more inventions, patents, and potential new products than the company could possibly absorb. Huyck also got into production trouble with several products that have come along before Corporate Research entered the picture. So Huyck dropped the entire corporate research program, writing off about 2.5 million spent over a five year period. They also convinced themselves that they could not afford to develop the marketing know-how for any of the new products we were coming up with. They succumbed, as have so many other small companies, to the "Harvard Business School Syndrome": Dont develop new technology and products yourself, but wait until somebody else does and then buy the whole schmear, product, production, and marketing know-how in a big package. My employment agreement was written in a way that I wasnt sure what I could talk about....then.

Dr. Wayne Batteau suffered a fatal heart attack in Hawaii while diving with dolphins. He had also done considerable work in that area.

I dont know where Flanagan is. He worked for NASA in Houston for a time in computer programming. The last I knew, he was somewhere in California as one of the top experts pyramidology. I suspect I will hear from him as a result

of this, and I'll welcome it.

Big Science did not kill the neurophone. It was complacent, and it really didn't know anything about the device. Academia was not really consulted. The neurophone has been dormant for fourteen years now because of the failure of nerve and imagination in the sales and marketing department.

But, now, there appears to be a need for the neurophone to take the final step toward direct communication between ourselves and our crystalline symbiotes/servants, the electronic computers.

Yes, I am still interested in this area. I am interested in anything and everything. But do not-repeat, repeat do not write to me or telephone me and ask for free information. I am a writer and a consultant, and my business is information...and the only thing of real value that you or I have in this world is time. I didn't write this soliciting business; I wrote it to report to you that the intelligence amplifier is just around the corner and awaiting you bright people out there to put it together right so that humans stay in control of intelligence amplifiers.

Now, what can we do in the future to integrate the creative process of "invention" more fully into the process of research, development, production, and marketing? Hang in there.....

KeelyNet BBS (15 October 1993): Dr-Deal.ASC ~

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Meridian Balancing by Use of the Neurophone

Sheldon C. Deal, D.C., N.D.

Abstract ~

A series of experiments were done by muscle testing patients for meridian imbalances and then strengthening the muscle indicators, indicating balanced meridians, by running a time-domain amplifier signal through the patient's skin.

The skin is embryonically the source of all special senses. Our skin contains more sensors for heat, touch, pain, etc., than any other part of the human anatomy. The human ear evolves embryonically out of the convolutions of the skin of an embryo in the mother's uterus. Basically, the skin is the oldest evolutionary nervous system sensor. Another way to look at this, is the special sense of touch has progressively extended over the entire body by way of skin and evolutionary wise our other special senses should follow suit and extend over our entire body in time. The skin then, since it is the precursor of the ears, should also be capable of hearing, or to put it another way, it should be able to transmit the sense of hearing to the brain by means other than the

8th Cranial Nerve.

The skin is both piezo-electric and opto-electric, that is, when the skin is stimulated by an electric or photon field, it vibrates. If it is mechanically stimulated, it will generate its own electric and photon field. In Russia, blind people have been trained to "see" with their fingertips and in Czechoslovakia, deaf people have been trained to "hear" with their fingertips.

For the purpose of our experement, we used a Neurophone, a device developed by Dr Pat Flanagan, author of the book, *Pyramid Power*. The device uses hyperspatial nested modulation technology. Briefly the device takes a complex signal such as the sound of an orchestra and electriclly processes it. First, the signal is passed into a section which clips everything into a series of square waves, remarkably analogous to the sort of clipped waves Lisitsyn confirms are the carriers of the human brain waves. Next, the square waves are differentiated, since these are finite spikes with real non-zero rise times and decay times rather than theoretical constructs, a series of noisy spikes results the second differentiator section. From here, the noisy spikes are introduced to special contact electrodes which are placed on the skin. The electrodes are fabricated of zirconium titanate imbedded in acrylic plastic tiles to provide maximum impedance match to the skin itself.

In experements done at Tufts University near Boston by Dr Dwight Batteau in Man-Dolphin communications and assisted by Dr Flanagan, it was established that the nervous system uses time ratios as major sources of intelligent information. It was found that speech intelligibility was contained in time dominant ratios of the speech waveform. Speech quality was found to be contained in dominant frequency ratios. So the nervous system is designed to recognise two distinct paramaters: the time domain and the frequency domain.

Baised partially upon work done at Tufts University, it is known that the human voice does not depend upon frequencies. People who have had their larynx removed can use an "artificial larynx", a buzz generator held against the side of the throat. Word information is formed by the action of the jaw, tongue, teeth, glottis, and the nasal cavaties. The human nose and mouth form a variable time delay generator. Thus, the basic audio information our brains evolved to decipher, the human voice, is dependent not upon frequency but upon the time rate of change nature of sound caused by time delays imposed by the mouth and nasal passages.

The Neurophone makes use of these research results by suppressing the frequency domain and amplifying the time domain of the incomming signal. This is one reason why the Neurophone sounds so scratchy when one first begins to listen to it. The electronic circuitry of the Neurophone presents audio information to the skin in the way the skin originally evolved to recieve and

decode the information eons ago. Thus the Neurphone directly inputs information into the brain and nervous system, and even the mind, bypassing all the normal sensory systems that lie between the mind/brain loop and the outside environment.

Since all of the acupuncture meridians are present on the surface of the skin, we found some very interesting affects when the skin was activated by the Neurophone. All the subjects of the experement were muscle tested fo r one major muscle for each of the twelve meridians bilaterally. The meridians were recorded as under active for muscle weak in the clear and over active for muscles that became weak only by stimulation of the alarm point for its respective meridian. The subjects were then connected to the Neurophone by placing the electrodes on the skin of the forehead just lateral ans superior to the eyes. K-Y Jelly was used to enhance the contact between the skin and the electrodes. A tape recording of pink noise was then played through the Neurophone for a period of two minutes and then the muscles were retested after removal of the electrodes.

Conclusion ~

Table 1 represents the totals of 10 different paitents who went thorugh the experiment. Out of the 240 meridiand tested, 85.8% of the unbalanced ones found, were corrected. The Neurophone appears to have a beneficial effect on the body. On subesquent visits, the meridians were remaining in balance two weeks later. Some of the many comments from the paitents included: cessations of seizures, improved sleep, total relaxation, improved respiration, better concentration, and cessation of pain.

Additional Research ~

To be certain the Neurophone was not operating by bone conduction, a simple experement was done, known as the Batteau test in honor of the hearing research of the late Dr Dwight Batteau who developed the test during the Neurophone evaluation at Tufts University.

Two seperate channels of auditory information were used. One channel goes through a set of ordinary headphones, the other goes through the Neurophone. One specific frequency is played through the headphone channel. Another frequency slightly different is played through the Neurophone circuitry to the transducer disks. If the Neurophone was producing hearing by bone conduction, the two slightly different frequencies would "mix" in the bone structures of the inner ear, producing a discernible "beat frequency" which is the difference between the two frequencies. With the Neurophone, this "beat" is heard only at very high volume levels in both channels, levels at which the Neurophone is probably producing bone conduction by the strong vibration of the skin under each transducer disk. However, the beat frequency should theoreitcally be heard at all volume levels; it is not heard at normal

neurophonic listening levels.

Looking Ahead ~

Although the present experiment was a relatively simple one, the implications of future possibilities are tremendous. The following ideas may well serve as topics of future research papers and I invite all the members of the I.C.A.K. to pursue them, either on their own or in conjunction with me. Some of the possibilities for which there is already some evidence are:

1. Increase in telepathic awareness.
 2. A brain/mind link between two or more people. T.E. Bearden has developed a mathematical formula that indicates that the combined mind power of a group of people will multiply exponentially if these people are linked in a unitary consciousness.
 3. Subliminal learning may be accomplished by the subject material being played through the Neurophone at a low volume level. No conscious effort is made to learn the material. This could even be accomplished while the student is asleep.
 4. Conscious learning may be accomplished by simultaneously listening to tape recorded data by means of Neurophone and headphones. In this way, the learning centers of the brain are being accessed by at least two separate channels.
 5. Positive subliminal programs to alter undesirable habits: i.e., weight control, smoking control, and creation of positive mental attitude.
 6. Control the aging process by means of positive cellular programming via the Neurophone.
 7. Totally deaf people being able to the recorded audio.
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Huyck Research Center

209 Greenwich Ave., Stamford, CT

28 Jun 1963

Operation of the Neurophone on the Nervous System

by

G. Patrick Flanagan

Definitions: CRT = Critical Reaction Time

In a purely rate of onset pulse information system, the pulse rate of the system and the pulse amplitude of the system would remain the same. The things

which will be varied, are the slope of the leading edge of the pulse, and inversely the width.

In this system, the amplitude,(e) of the pulse remains the same; so does the repetition rate of the signal. The only things to be changed are the slope and thus the width of the top of the pulse. From now on, the slope in degrees will be represented by (α), and the width at the top will be represented by (T). We can then formulate an empirical formula for the relationship of α to T. (T measured in usec). $T = K/\alpha$ as $\alpha = 45$ degrees, $T = 0$ or $T = \text{max time}$, $\alpha = 0$ degrees. K = conversion factor.

Therefore T also equals I (instantaneous audio information).

The width of the entering pulse with no information must be equal to the CRT of the nervous system at any given instance. Then the slope of the pulse and thus the width at the top are varied, so is the response of the system. A pulse of the same amplitude but of the wrong width for the CRT of the neuron will only partially load the neuron. The amount or amplitude of the loaded signal in the neuron will be proportional to the width of the pulse as it is varied.

Now, if a sine wave is loaded into the system, the frequency of the wave must be varied so that the width of the wave will coincide with the varying CRT of the loaded system, otherwise the sine wave will have no effect on the neuron, i.e., very little.

It has been shown by my experimentation with the effects of adrenergia and cholinergia on the nervous system, that as the body goes into the state of adrenergia, the frequency of the carrier must be increased to meet the smaller CRT of the nerves introduced by the addition of adrenaline and acetylcholine into the system. And, as the body goes into a state of colinergia, the opposite is true, the frequency must be lowered, due to the increased CRT. Otherwise no information can be transmitted into the system.

In adrenergia, the excited state, the K ion mobility is increased and the CRT is smaller...thus requiring a higher frequency. In the case of cholinergia, the opposite is true.

Lets now analyze a 30 KHZ sine wave as applied to the nervous system and see what the nervous system sees. The sine wave is clipped at e and the width of the top of the clipped wave is < 15 usec. Now, if the nervous system at this instant has a CRT of approx 15 usec perfect loading will occur.

Now, if the CRT of the nervous system at this moment should change to 20 usec, the carrier would have to be shifted to 25 KHz to obtain the same response. This increase in CRT would indicate that the person had gone into a state of colinergia. The new CRT of the neuron would now cause the neuron to be improperly loaded at 30 KHZ, but properly loaded at 25 KHz.

Now we will look and see what the effects of modulated and unmodulated carrier have on the system at the neurons CRT. According to the Encyclopedia Britannica, the output frequency generated by a neuron is proportional to the amplitude of the stimulus, until the stimulus reaches a certain level and the frequency then remains the same is.. the clipping level of the system. The completely loaded neuron will then be receiving maximum stimulus and will then be generating a frequency of its own in proportion to the loaded voltage. At this loading in the unmodulated carrier, a series of meaningless pulses are being generated and sent to the brain where they are probably rejected and passed off as random noise.

Now let us look at a tone modulated carrier (AM Signal) and see what happens with some information input. The pulse width at the top (clipping) now varies with change in carrier amplitude at the audio tone modulation frequency. The loading voltage of the neuron will now vary with the audio rate....the varying width of the top of the pulse now follows a pattern of widths in time with the audio tone.

The overall process: (Audio) I = varies T and which vary e loading in neuron which generates freq to the brain. We now have a system that detects and interprets rate of change into the neuron's own coding system. Or, as applied to a purely rate of onset modulation system with a pulse input instead of a sine wave input. We now have a coded conversion system for introducing information into the nervous system.

KeelyNet BBS (15 October 1993) Neuroph11.ASC ~

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**The Neurophone Mark XI Manual
(1979)****G. Patrick Flanagan, Ph.D.**

This year the neurophone concept has now reached maturity. It was developed 21 years ago this year (1979). The entire history of the neurophone reads like a James Bond mystery novel. We are currently writing a full length book on the neurophone story, and expect to publish this next year. For the present, we will give you a synopsis of the neurophone story, and bring the reader up to date on the current development of the neurophone Mk XI, the eleventh model in a long chain of discovery. following the basic history of the neurophone, we will give instructions for the set up and use of the neurophone.

The first neurophone was developed when I was 14 years old. A brief

description of the original device is given in the book PYRAMID POWER. The original neurophone patent #3,393,279, describes a high voltage, high frequency, amplitude modulated radio oscillator. This device made the listener into a radio receiver. It transmitted sound information to the user by means of small insulated electrodes. The 3000 volt signal produced an electric field of extremely low power density. As the carrier frequency was in the vicinity of 50 KHz, and the capacitance of the electrodes was therefore extremely low. The above electrical conditions of low power density indicate that the original device was safe for use. However, if the electrode surfaces were scratched, the user would experience a mild, but annoying mild electric shock.

When I originally received the idea for the first neurophone, I was a child of 14, and did not have funds to hire a patent attorney. One of my fathers friends was a patent attorney for Shell Development Corporation, and agreed to help me write my own application. Over the years, I became very familiar with patent law, as the patent examiner in Washington said the neurophone could not possibly work, as it defied ALL present laws of neurophysiology. The patent fight over the neurophone went on for many years, finally resulting in complete rejection by the examiner, closing the file forever with no recourse.

In a brilliant move, my patent attorney (I could afford one by now) suggested that we go to Washington and demonstrate the neurophone to the examiner in a final attempt to gain approval. When we arrived at the patent office, the examiner had a real surprise waiting for us, he had arranged for a deaf employee of the patent office to be present for the demonstration! The deaf gentleman was nerve deaf in one ear, and almost totally deaf in the other ear. When the deaf employee heard high frequency sounds for the first time in 15 years, he wept for joy. The examiner then reopened the neurophone file, and issued the patent giving the original filing date.

By the time the patent was actually issued, a company in New York owned by Joseph Lawrence, and Andreja Puharich was infringing on my patent. It seems that they had applied for a similar patent several months after I had applied for mine. As I was the first to file, and had pursued the patent, I won the device. The small New York company bought the patent, and by means of legal maneuvers, succeeded in causing me to lose a small fortune in the process. This was due to their issuance of lettered stock which tumbled to a fraction of its original value by the time the SEC allowed me to sell it.

We have actually gone far ahead of our story, so we will backtrack a little. during the years in which I battled the patent office for the original patent many events took place. When I was 17 years old, LIFE magazine called and wanted to do an article on the device. When I was 14, I had received national publicity on the front pages of 300 newspapers. After the LIFE article came out, I was offered up to \$8,000,000 for the patent rights. The press coverage was unbelievable. The I've Got a Secret show(Gary Moore) invited me to New York,

and millions of people saw the neurophone demonstrated on Bess Meyerson. It was during this show, when I first met Puharich and Lawrence.

Puharich invited me to lunch at the Twenty One club, along with G. Harry Stine, a scientist under the employ of a firm in Connecticut known as Huyck Corporation. Stine's company was interested in the rights to the neurophone.

When all the offers were in, my parents and my Houston attorney agreed that the neurophone should be given to Huyck. After examining the device for two years, Huyck said the device could not be patented, and dropped it into my hands once again. By this time, I was under extreme pressure, as I was once again given the task of pursuing the patent on my own limited funds. At the same time, Puharich and Lawrence kept urging me to give up, saying that they had me beat in the patent office.

In 1964, I was offered a position at Tufts University near Boston. Dr. Dwight Wayne Batteau, a professor at Tufts had an intense interest in the neurophone as it might play a role in man dolphin communications. Dr. Batteau had a small company known as Listening Inc., along with a brilliant electronics man: Steve Moshier. Listening had extensive contracts with the ONR (Office of Naval Research), and was subcontracting Tufts in some of its research and development work.

Our first task was to establish the limits and parameters of the neurophone as it would apply to dolphins. Our secondary task was to determine the physiological mechanism by which the device worked.

Dolphins have extremely large brains, and communicate on many levels. We considered that the neurophone would open a channel to the dolphin which was not previously accessible.

In our initial testing, we found that the neurophone produced a minute mechanical vibration in the skin under the electrodes. When one person was listening to the device, other people standing near the electrodes could hear the sounds coming from the skin. If a stethoscope was placed in contact with the user's skin, the vibration could be heard loudly, and clearly. Our initial effort was to determine if this vibration was producing bone conduction, or was the skin vibration merely an artifact?

Doctor Batteau came up with an ingenious experiment to determine if the skin vibration was actually leading to bone conduction: If the neurophone were a separate acoustic channel into the brain, we should be able to play two discordant sounds into the brain of an ordinary person, one by neurophone, and one by earphones through the ears. If bone conduction were involved, the sounds would mix or beat in the bone structures of the inner ear, producing a discord. In the process of bone conduction, sounds are transmitted through bony skeletal structures to the inner ear, where the small bones normally

vibrated by the ear drum are activated by skeletal vibration. This vibration is then encoded by the inner ear, and transmitted to the brain by means of the 8th cranial nerve. We are sure that the neurophone did make use of another channel, due to the fact that people with 8th cranial nerve damage had heard with the device.

In our experiment, we played one frequency of sound into the neurophone, and another frequency into the headphones through the ears. If bone conduction were involved, the sounds would mix as predicted in the inner ear, and a discord would be perceived by the test subjects (Tufts psychology students). If the channel to the brain were a separate one, the signals would be heard simultaneously with no discord. At low volume levels, the students were able to perceive the separate sounds with no mixing. At higher volume levels, a mixing could be heard.

We then ran the same experiment by playing the sounds through stereo headphones, with each signal going into separate ears. The results were exactly the same as the neurophone experiment. At low volume levels, the signals were indeed perceived apart from each other. At higher volume levels, the discord could be perceived.

The higher volume discordant mixing can be explained by neural intermodulation possibly taking place in the corpus callosum, the small nerve bundle which connects the left and right hemispheres of the brain together. We tested a number of Tufts students, and they all had identical results. Wayne Batteau was so excited, that he suggested we write a letter to Science, for publication. Our letter is duplicated in the appendix.

As the neurophone was now proven to be a separate brain communication channel, Doctor Batteau made an offer for rights to the device. He offered to give me a 1/3 interest in Listening, a 5% royalty, and position of Vice President in charge of research. The idea was to develop the neurophones potential in many areas, including its potential as an interface (electronic corpus callosum) between man and dolphin, and play EEG signals from a human brain into the dolphin; and to reverse the procedure.

Our work was progressing at a satisfactory rate, when tragedy struck Listening. Wayne Batteau died of a heart attack in shallow water while swimming near our dolphin facility on Oahu, Hawaii. When he died, the Navy canceled our contracts and Listening began to fold. Shortly after that, we demonstrated the neurophone to the patent examiner, and the rest is history.

While investigating man dolphin communications, we succeeded in developing a language translator, a device that translated human speech into dolphin language, and vice versa. This development required a thorough understanding of the nature of speech, and information theory. We made many efforts to model the nervous system, and succeeded in demonstrating

that the nervous system uses time ratios as major sources of intelligent information. We then began to investigate timing ratios in speech patterns of humans and dolphins. During that period, we found that speech intelligibility was contained in time dominant ratios in the speech waveform. We found that speech quality was contained in dominant frequency ratios. So, the nervous system is designed to recognize two distinct parameters: the time domain, and the frequency domain.

As a result of the knowledge gained in this area, I designed a circuit which suppressed the frequency domain, while amplifying the time domain. This device, was so radical in approach, that I applied for a patent on it as a specialized speech processor. Six months after the patent was applied for, the National Security Agency placed the patent application under a top secrecy order #756,124. The order said that my invention was being suppressed in the interest of National Security. It further stated that I could be tried for treason and shot by firing squad if I revealed its working nature to anyone other than an authorized government representative. In other words they stole it! Needless to say I was very disappointed in the system. It took four years, and three law firms to sue for release of my invention. We won the battle, and the secrecy order was rescinded. Patent #3,647,970 was issued on the 7th of March 1972.

In 1974, two years after I wrote *Pyramid Power*, we spent the night in the Great Pyramid. A full description of that event will have to wait for the publication of our full length book on the neurophone.(see also "Gods of Aquarius" by Brad Steiger a starseed book) I can say that I had an experience of enlightenment, including a full blown Kundalini Release. After that experience, I became a trance medium. During one of my trances, the message came through that the speech processing patent which was under secrecy so long was in actuality the perfect neurophone circuit. Well, this was a surprise, as I had never tried the circuit in that way. I must admit, I really did not believe it could work as a neurophone. The message to try the speech processor as a neurophone kept coming and coming until I finally decided to try it out. When I tried it, I was in the surprise of my life! It worked! The result was the development of the present neurophone Mk XI, the finest neurophone to date, and it does not require the use of a radio frequency carrier wave.

The clue as to how the neurophone actually works, is contained in the skin vibration artifact which we discovered at Tufts University. The original neurophone used a high voltage amplitude modulated carrier wave to create a molecular vibration in the skin itself. The skin became the diaphragm of a biological electrostatic vibrator. The skin is piezo electric and opto-electric. That is, when the skin is stimulated by an electric field, or by a photon field, it will contract and vibrate with modulation of the field. If it is mechanically stimulated, it will generate its own electric field. In Russia, blind people have been trained to see with their fingertips; and in Czechoslovakia, deaf people

have been trained to hear with their fingertips.

The skin is the largest most complex organ of the living system. As we develop in the womb, all organs of sense evolve from the skin. The skin involutes and convolutes to form eyes, ears, etc. Our research indicates that the skin itself has the latent potential of performing all functions of perception.

The neurophone stimulates and develops this latent ability. The skin is the organ which receives the signal from the neurophone, and converts the incoming signal into a modulated molecular vibration which is then interpreted as sound. We could theoretically stimulate the sense of sight in a similar way. As all acupuncture meridians are present on the surface of the skin, we have found that the neurophone stimulation balances all the acupuncture meridians by activating the skin!

The neurophone Mk XI converts incoming non-linear acoustic information into a time domain amplified signal. This signal is then transmitted to a pair of high dielectric constant ceramic electrodes which are placed in contact with the skin of the head. The electric field (approx 20 Volts RMS) interacts with the skin ceramic electrode combination to create a molecular vibration in the skin. This is then interpreted by the brain. The result is a new modality for coupling information to the brain, using the skin itself as the receptor. Bone conduction vibrators will not work as a neurophone, as the vibratory signal is too gross, the skin itself must vibrate in a synchronous mode in accordance with the time encoded information.

Doctor Christopher Hills, in his book Nuclear Evolution states that the skin is a second brain, and is the basic organ of spiritual and psychic evolution. He states that the skin can be trained to develop powers of perception such as telepathy, etc...

The neural information processing system of the human body is apparently extremely sensitive to time domain information. Doctor Batteau postulated that the nervous system incorporates delay line correlation technology to detect time varied information ratios. The neurophone Mk XI processing circuit processes the incoming complex non linear signal waveform, and amplifies the non linearities thus increasing the timing recognition pattern of the signal. In the process, the frequency domain is suppressed. The time rate of change of the incoming signal is thus amplified. This signal is so time dominant, that it can be hard clipped or run through a zero crossing detector without losing any intelligibility.

This time processed signal is then fed to the pair of high dielectric ceramic electrodes. The 20 volt average RMS signal does not require a radio carrier to work. As stated earlier, the original neurophone design had to actually work by brute force, due to the fact that the modulation signal was not processed to increase the time domain signal properties. As previously stated, the original

neurophone produced typical voltages on the order of 3000 at a carrier frequency of 50000 hertz. As the skin is piezoelectric, and has a dielectric constant in the range of 12000, the neurophone electrodes are made of a ceramic material designed to provide a maximum impedance match to the skin itself. The entire skin electrode system is a piezoelectric resonator. Note: The ceramic electrodes are fragile and could break if dropped on a hard surface. Be very careful, they are expensive to replace.

To obtain the best results from your neurophone experience, you should spend at least 1/2 hour per day listening to a broad spectrum frequency source in a quiet, relaxing environment. It is best to listen with an increased blood flow to the brain. The preferred position is an inclined plane of 11 degrees with the head down. Testing has shown that most people go into deep alpha within 30 seconds when placed in this position. This state is the most receptive state to listen to the neurophone. The neurophone listener can build his own incline plane from a board six feet long, and at least 18 inches wide. The raised end of the board should be supported at a level of 14 inches above the floor.

The electrodes should be placed on the temples, directly behind and slightly above the eyes. Do not place on the hair. Although the electrodes will work perfectly well without electrode jelly, we suggest the use of EEG type electrode jelly, or KY jelly, as this improves impedance matching to the skin. If you use KY jelly as an electrode cream, smear an even coating over the black ceramic of each electrode, and place the electrodes in contact with the skin. The electrodes may be held in place by means of an EEG type rubber strap, or an ordinary 2 inch ACE bandage may be used.

After the electrode strap is in position on the head, insert the KY coated ceramic electrodes under the strap so the electrodes are held securely in contact with the temples. Later, you may desire to move the electrodes around to experience different sensations. Many neurophone listeners prefer to place one electrode in the center of the forehead, on the 3rd eye area, and to place the other one on the back of the neck, or on the hand or wrist.

The sound source for neurophone listening can be a cassette player, a radio, or a stereo HI Fi system. The neurophone should be driven from a headphone or a speaker output jack. Your neurophone is provided with an audio connector cable with a mini plug on the cassette end, and a 1/4 inch phone plug on the other end. This will fit most cassette players. If you want to drive the neurophone from another source you may have to obtain a different wire. Your local Radio Shack store will probably have the right one.

In using the neurophone, I generally adjust the sound level of the cassette machine to a comfortable listening level as heard through the built in loudspeaker of the machine. I then plug the mini plug into the earphone jack of the player, and plug the standard phone plug into the input jack on the

neurophone. Plug the electrode phone plug into the neurophone output jack. Rotate the neurophone volume control slowly clockwise. The switch on the control will turn the unit on. The small LED panel lamp should glow at this time. Slowly turn the control up until you begin to hear the tape from your cassette player through the neurophone electrodes. Depending on the program material to which you are listening, the sound which you first hear through the neurophone will not sound like Hi Fi. This is due to two things: The sound you hear is time domain dominant. 2. As this is a new listening channel, the brain actually has missing processing capability. If we run a frequency sweep of the neurophone while listening, we will find that all of us have certain spectra which are entirely missing from our perceptual ability. That is, in the beginning we may hear a complex sound wave of one millisecond duration (1KHz), but miss entirely a sound of another domain. As we listen through the neurophone, the missing ranges are programmed into the brain. After listening for as little as 30 minutes, the sound begins to take on new qualities. The sound appears to move around in the head, and take on new dimension as we program our psychic brain centers to receive the new signal input. The more the neurophone is used, the clearer it gets. I recommend electronic music tapes in the beginning, such as the astral sound tape.

As the neurophone channel is but one channel into the brain, we have found that supplementing the neurophone channel with the frequency domain input by means of quality headphones is desirable. The reintroduction of the frequency domain through the headphones adds a new dimension of sound to the brain mind input system. The combination of neurophone plus headphone signals provides the best listening combination. For this purpose, the neurophone contains a headphone output jack which will accept monaural or stereo headphones. The second volume control from the left is used to control sound to the headphones. As the headphones are driven by the cassette recorder, the neurophone must be plugged into a speaker or headphone output jack. The neurophone plus headphone adjustment should be made as follows:
1. First adjust the sound level to the electrodes with the headphone control in the off position. 2. With the headphones in place, slowly adjust the level of the headphones to supplement the electrode signal. Sit back, or lay back close your eyes and let the signals carry you away.

In the near future: Source of Innergy will begin to produce cassette tapes designed to be used only with the neurophone. The tapes will cover many different categories from: Psychic Center Stimulation; to Subliminal Habit Modification Programs. We will notify neurophone owners as these tapes become available for purchase.

In the beginning, it is not necessary to use special tapes, as the object is to develop the latent channel through which the neurophone works. This may be done by listening to white noise (waterfalls) or your favorite music tapes. Neurophone stimulated perceptual enhancement occurs with increasing

frequency as you use your neurophone. This experience is similar to the meditation experience of transcending. These periods of extremely clarity become more and more pronounced as you put hours on your neurophone. All changes in awareness are not gradual. All progress is in the form of discrete steps. What may appear to be a gradual altering of consciousness is actually a series of graduations. We may plod along thinking we are making no forward progress, and at the point in time where we feel we want to give up we experience quantum leap in awareness. One of the most common awareness changes with the neurophone effect is an increase in telepathic awareness. Although this cannot be turned on at will, instances of its occurrence will increase in frequency as time goes on. Please keep a diary of neurophone hours of listening, and make note of any change in awareness, dreaming, or unusual perception changes.

We would like all neurophone owners to send us a monthly research report or diary of experiences. This is important data which will enable us to share with you all experiences, and tune the neurophone experience. Keep note of your actual listening time, and listening material. If you experience any change in consciousness or awareness record this down. Others would like to share your experience.

Retired Lt. Col. Thomas Bearden is a nuclear physicist from George Washington University. He is one of the foremost experts in warfare strategy, and is an expert in the field of Soviet Psychotronics Research. Tom Bearden and I have made two mind links by means of the neurophone. Details of the brain mind link will be given in a later edition of the Innergy News, or the neurophone research journal. Col Bearden has developed a mathematical formula that indicates that the combined mind power of a group of people will multiply exponentially if these people are linked in a unitary consciousness. A small group of people could actually alter the entire course of mankind in an instant of time, if they were perfectly linked in a unified field of consciousness. Col Bearden believes that the neurophone is the key to linking consciousness. He believes it may hold the answer to solving all the problems of mankind.

This linking could be done in a number of ways. The Soviets have established that an EEG machine of only 16 channels could pick up the entire consciousness of an individual. All that is then necessary, is to feed the data into the mind of another by means of a multi channel neurophone. The neurophone would then become an electronic corpus collosum between the minds of two or more people.

At a given time in the near future, we will notify all neurophone owners to all try to listen to the neurophone at an exact time period everyday. This will be a simple attempt to unify the consciousness of the group. This type of experiment has been somewhat successful in the past, when used with group meditation. It may be that this experiment will speed up the increased

awareness brought about by the use of the neurophone.

History of the Neurowave Signal Development

1. A step up audio transformer was attached to a hi-fi amplifier. The output voltage of the audio transformer was about 1,500 volts peak to peak. The perceived sound quality was very poor, highly distorted and very weak. The signal was perceived as being loudest and clearest when the amplifier was over driven and clipped square waves were being generated. The O'scope signal had ringing spikes or oscillations of a damped wave at frequencies of 40 to 50kHz. (Flanagan, *Life Magazine* 14 Sep 1962)
2. An amplitude-modulated signal was then fed into a high frequency transformer that was flat in frequency response for an adjustable frequency in the 20-100kHz range. The output was a 2,000 volt peak to peak amplitude modulated carrier wave. (Flanagan Patent No. 3,393,279 (1968))
3. The audio signal is pulse width modulated on to a 50KHZ square wave carrier. Output is stepped up to a 50 volt square wave. This signal is applied to the body by means of piezo ceramic disks.(lead zirconium titanate) (Flanagan Patent No. 3,647,970 (1972))
4. The audio signal is pulse width modulated on to a 45KHZ square wave carrier then double differentiated(processed thru 2 differentiator circuits). Output is stepped up to a 60 volts RMS. This signal is applied to the body by means of piezo ceramic disks (Radio Shack Type)(Brass side to skin, red leads connected to circuit).(Info obtained from various researchers)
5. The audio signal is differentiated and passed into a section that clips everything into a series of square waves and then converted to 40 volt pulses which is then run through a zero crossing detector (comparator).The sensor electrodes are one inch diameter plates made from lead zirconium titanate (piezoelectric discs). (Extrema, US Patent No. 4,545,065)
6. Audio signal is modulated on to a 100KHZ carrier and power amplified then sent to an antenna. Those near the antenna perceives the sound if like thru earphones while those further away hear nothing, no contact with the antenna is made.(approx 1970's)Laser Sound System, Inc., 438 W. Cypress, Glendale, Ca 91204.....also Intelectron Corp., 432 W 57th St., New York, NY, 10036)
7. Another unit is based upon a miniaturized hi-power amplifier amplifying the audio information directly, no square waves or carriers are used. The sensors are piezo-electric transducers on ceramic bases. Good quality sound (not quite high fidelity headphone sound) is experienced coming from the middle of your brain, more or less.(www.throne.com)(GROC BOX(R))

How to use nuro devices:

1. Connect the brass electrode plates (or bare ceramic) ideally to a point above the shoulders. The sides of the neck or about 1-2 cm out on the face from the center line of the ears are good locations.
 2. Adjust the sound input device (stereo tape player or CD player) volume to its lowest setting and then increase the volume until it reaches the maximum volume possible without creating any sensation at the point of electrode contact. You should hear an external sound emanating from the location of the electrodes. This is normal.
 3. Using ear plugs, close off the exterior ears during the first week of use. This gives you time to turn your brains attention to the interior sound.
 4. For the initial week of use it is advised to use music with a wide band of frequency. Classical string instruments with the full range of orchestral sounds work well. Use the device one or more hours a day.
 5. After the first week of use switch to whatever learning tapes you wish to use. It is recommended that you use an auto reversing tape player and use it one or more hours per day.
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Life Magazine (14 September 1962) ~

Whiz Kid, Hands Down

by William Moeser

The very young man above is standing on his head because he says it helps him think. It evidently does. Pat Flanagan, a 17 year old inventor from Bellaire, Texas, is already nipping at the heels of the venerable 30 and 40 year old scientist and inventors who built the remarkable structures seen on pages 54 to 65. Pat has just perfected a remarkable machine of his own which one day may help deaf people hear and blind people see. It may also earn him a million dollars. Pat treats his imminent collision with success with equanimity, for he reckons and who is to gain say him nowadays that the generation which will take over from the take over generation will find nothing is impossible.

Pat Flanagan is a unique and self spurred teenage boy who has forged his mind and body into the model of a mature and inquisitive scientist. At the same time he reflects the more standard teenage model; he is the twist champion of Bellaire a suburb of Houston a moderate party goer and girl chaiser, the holder of a private pilots licence, and a spectacular gymnast. espite his ability to function in two worlds, Pat leaves no doubt which one he favors.

There are far too many kids my age who are willing to just get along. Pat is confident in his ability to do a lot more than just get along.

His single minded belief in his abilities began with a compelling dream he had when he was 8 years old. In the dream I was told I had to learn all about physics and electronics, he says. And it told me I should help people. Already an athletic boy able to do 300 pushups a day, he thereupon set out to improve his mind. By the time he was 13 he was repairing television sets during summer vacations, trying to earn money to build an electronic laboratory in his attic.

Pat's restless imagination drove him to tireless sessions in his laboratory. To abet them he solicited a rare favor from his parents and his older brother Mike the privilege to experiment there undisturbed. One weekend last October, Pat started the experiment which led to the development of his particular fantastic machine. Starting with a radio transmitter he had designed himself, he tried modulating its waves to see if he could induce hearing in his nervous system without going through the normal channels of hearing. He hooked his radio to a small transmitter which looked like an earmuff. After 34 hours of work, he stopped up his ears, put the earmuff to his head and found he still could hear.

I ran downstairs to tell somebody anybody. I woke my mom. She just rolled over and said to me, that's nice, Pat, but I'll listen to it in the morning. She did listen in the morning and a lot of very important people have been listening to Pat ever since.

Pat calls his device the neurophone and the process it operates by neuroception. Essentially what it does, he thinks, is transmit electrical messages identical to those sounds generate through the body's nervous system direct to the brain. Hence he can place the neurophones earmuff on someone's spine or solar plexus, plug up his subject's ears, and the person will still hear. Obviously if the neurophone in fact does what it seems to do, Pat has come a long way toward short circuiting the body's ordinary sensory processes and giving man, unprecedented access to his brain. Other inventors many with a lot more experience and facilities than Pat have been seeking such a device for years, and Pat explains his success versus their failure as a product of his own vigorous one man approach to science. I believe research in the problem of electronic hearing has been limited because inventors haven't been able to use human subjects as guinea pigs. An animal can't tell you just what 'he heard or how clearly he heard it. But I was my own guinea pig and I wasn't restricted by the possible bad effects, and I got the secret.

There is some question as to just what Pat has got even he has no firm knowledge of why his neurophone works but no question whatever that somehow he has onto something valuable. Several companies have expressed

interest in buying the rights to the neurophone and one Corpus Cristi firm has tentatively offered him a million dollars if the machine can be adapted to send visual images into the brains of blind people. Dr. William O. Davis of Stamford, Conn Hyuck Corporation, a research and development company which is also fascinated by the neurophone says, The ability to detect radio signals in the brain is a remarkable phenomenon. If we never learn more about Pat's invention, even if we never learn why it works, it certainly is a utilitarian breakthru which could help a number of people. Davis, who used to run the Air Forces basic research program, adds, its important to realize that young Flanagan had the necessary intuition to invent his neurophone. You make discoveries intuitively, in the same manner you would paint a picture or write a symphony.

Pat wants to go on to college, but he is worried about fettering his talent: I seek the knowledge college will provide, but I never want to be just satisfied with what someone else has written and done. He hopes, as his skills increase, to probe other recesses of mens mind. I believe someday the entire concept of medical pratice will be changed by electronics, he says. People will be treated electronically rather than with medicine. If God can make the earth and sky and the force that people and trees live, then inventing anything less than this should be relatively simple.

Statements like this one tend to prove a bit abrasive to Pat's classmates. Pats a wise guy, plenty cocky, and sure of himself, one says, but the bad part of it is hes just that much better at anything he sets his mind to do.

Pat claims this reaction does not bother him I want to be accepted, sure, but some people were cutout to go full tilt. Pats hands and mind are always going full tilt of late. The books strewn across his cluttred attic laboratory range from Zen to Karate to electronic jurnals to the Hidden Persuaders. Lights glow from a wave testing machine and he is working on a new way of tuning TV sets.

People think Ive accomplished so much in life, he says. They say what else can you do , and all that stuff. But I know where Im going and I know what I have to do. When I die I want to leave behind something which will greatly affect and help everyone.

KeelyNet (15 October 1993) Neurop50.ASC ~

This File is shared with Keelynet courtesy of Terry Bastian

The Neurophone Model 50 ~ The Thinkman Principles of Operation

The Thinkman is the latest development in the series of neurophone devices

first invented by Patrick Flanagan in 1959 when he was a prolific young inventor of 14. Since that time, considerable progress has been made in the development of improved neurophone devices, and the thinkman is the fiftieth neurophone system developed by Dr. Flanagan. A full and complete theory of the neurological, physiological and psychological operation of the neurophone is still being pieced together.

How does it work? How is it possible to hear without using ones ears? The current hypothesis is based upon the fact that the skin is embrionically the source of all our human sense organs. In fact, the skin itself contains more sensors, for heat, touch, pain, etc., than any other part of the human anatomy. The human ear evolves embryonically out of the convolutions of the skin of an embryo in the mothers womb. Basically, the skin is the oldest evolutionary nervous system sensor. Since it is the precursor of the ears, the skin should also be capable of hearing and, as the neurophone proves, the skin does indeed have this capability.

Neurologically, the human skin is both piezoelectric and optoelectric. This means that it produces minute electrical currents when vibrated or rubbed. Soviet and Czechoslovakian neurological research has also shown that the skin produces an electric current when stimulated by light.

As long ago as 1785, Charles Augustin DeCoulomb, a french physicist and an early experimenter with electricity, proved that an electrostatic field produces a measurable physical force. The neurophone processes audio information to produce a very weak 20 volt RMS electric field at each of its two transducer disks. This alternating electric field is changed as a function of the time rate of change of the audio signal coming into the neurophone. This minute electrical field actually causes microscopic vibrations of the skin under the transducer disks. Maximum coupling of the electric field to the skin is ensured by fabricating the transducer disks from Zirconium Titanate which possess the same dielectric constant as human skin. If you were to put an ordinary medical stethoscope on the skin next to one of the transducer disks while the neurophone is being used, you would be able to detect the vibrations of the skin created by the tiny electric field of the transducer disk.

Work done by Dr's Patrick Flanagan and Dwight Wayne Batteau at Tufts University during the years of 1964-1968 is the basis of the current theory regarding how the neurophone works. They discovered that the frequency content of the human voice had little to do with the brain's ability to recognize intelligence in human speech. For example, people who have had their larynx removed can use an artificial larynx, a buzz generator or low frequency vibrator held against the side of the throat. Words are formed totally by the action of the jaw, the tongue, the teeth, the glottis, and the nasal cavities. These cavities form a highly variable time delay encoding chamber. They found that the basic audio information which our brains evolved to decipher, the human

voice, is dependent not upon frequency but upon the time rate of change nature of a sound caused by time delays imposed by the mouth and nasal passages. The neurophone makes use of these time delay codes by processing the incoming audio signal to remove the frequency component and leave only the time domain, the time rate of change information. This is one reason why the neurophone sounds so scratchy when one first begins to listen to it. Thus, the electronic circuitry presents audio information to the skin in the manner that the skin was originally designed to receive and decode such information eons ago.

But is it certain that the neurophone is not operating by bone conduction as are some other devices available today for listening experiments and enjoyment? A definitive experiment proving that bone conduction is not a cause of neurophonic hearing can be duplicated by anyone with the required simple equipment. This procedure is called the Batteau test, honoring the late hearing researcher, Dr Dwight Wayne Batteau, who developed the test during neurophone evaluation at Tufts University. Two separate channels of audio information are required. One channel goes through a set of ordinary headphones, the other goes through the neurophone. One specific frequency is played through the headphone channel. Another slightly different is played through the neurophone circuitry to the transducer disks. If the neurophone were producing hearing by bone conduction, the two slightly different frequencies would mix in the bone structure of the inner ear producing a discernible beat frequency. With the nerophone, this beat frequency is heard only at very high volume levels in both channels, levels at which the neurophone probably producing bone conduction by the strong vibration of the skin under each transducer disk. However the beat frequency should theoretically be heard at all volume levels and yet it is not heard at normal neurophonic listening levels. The neurophonic experience is therefore probably a new way to hear, using a new channel into the brain: the skin.

The neurophone is an electronic audio information processor designed and sold for experimental and entertainment purposes. The electronic circuitry of the neurophone accepts an input from any audio or Hi Fi system. It converts the audio signal into a digital like low voltage electrical signal that activates two small transducer disks. These two disks or electrodes may be placed anywhere on the bare skin of the listener. When the transducers are in contact with the skin, the audio signal will then be perceived in the persons head. There are no hazardous voltages or currents between the two sensor disks. There are no radio frequency carriers involved in the action of the neurophone. The neurophone thinkman operates from a 9 volt transistor radio type battery which is enclosed in its case.

The audio signal source for the neurophone may be a portable cassette tape player, a radio, or a stereo Hi Fi system. Most modern cassette tape machines and Hi Fi stereo systems have a headphone or external speaker output jack.

The neurophone output goes through two 1 inch diameter transducer disks fabricated of Zirconium Titinate which are imbedded in acrylic plastic tiles to protect the brittle disks against breakage. The transducer disks are, nevertheless, still fragile and should be treated carefully because hard physical shocks will break them. If a transducer disk is broken by rough handling, a new set of transducer disks may be obtained from us. Insert the plug at the end of the transducer lead into the jack labeled electrode on the end of the thinkman.

Connect your neurophone to an audio source such as a cassette machine by means of an audio connecting cable. The small plug on your connecting cable will usually fit into the headphone output or external speaker jack on your machine, the other plug on your connecting cable will plug into the audio jack on the neurophone. Before plugging the cable into your cassette jack, adjust the output volume control on your machine to a 50% or higher level to ensure that the signal processor on your neurophone is receiving an adequate signal level. Turn on the neurophone by rotating the volume control in a clockwise direction. The red LED indicator light will glow, indicating the neurophone is on. Place the two transducer disks on the bare skin on either side of the forehead; They may be held in place by the elastic headband supplied with the unit. Turn the volume control clockwise to about mid way. Turn on your audio source so that the signal will now play through the neurophone. Place the electrode disks on the skin of your temples, plug up your ears, and the audio signal should be heard, appearing to exist in the middle of your head. If necessary, adjust the neurophone volume control until the signal is heard.

As you become more experienced in neurophone listening, you will find that you will be able to place the two transducer disks on the bare skin in spots other than the forehead. One neurophone listener reports excellent neurophone listening with one transducer disk on the soft flesh of one leg and the other transducer on the soft skin of the stomach. However, the neurophone must be operated at a higher volume setting to obtain the same level of neurophone hearing under such remote transducer locations. The ability of the transducer disks to function at a location of the skin remote from the head is partially explained by the current operating hypothesis.

If your neurophone begins to sound weak and the red LED indicator on the front panel begins to glow very dimly, replace the battery in the unit. Unfasten the four phillips head screws holding the bottom on the case and remove the bottom plate. Inside, you will find a battery clip and a 9 volt transistor battery. Replace the battery with a fresh one. For best results, use an alkaline battery which will provide more than 10 hours of neurophone use under normal conditions.

The neurophone processes audio information in such a way that the frequency domain is eliminated but the time domain is preserved. Studies with earlier

versions of the neurophone by Tufts University for the US Navy as long ago as 1966 indicated that the brain initially may have difficulty in recognizing the neurophone signals due to gaps in perception. The user may not be able to perceive certain frequencies and time domains in portions of the audio spectrum. As you use your neurophone, these holes in your neurophone hearing process will disappear, as your brain learns to recognize these energies, and you will begin to hear neurophonic sound with full frequency and wide dynamic range.

The neurophone is an experimental listening device that may by continuous use stimulate and enhance dormant perceptive abilities in the user. For example, since the device is apparently stimulating pathways to the brain that are not used normally, it may increase intelligence, telepathic ability, and neural efficiency. Dr. Flanagan has used the neurophone longer than anyone in existence, and has developed extremely high neural efficiency scores. He believes this increase in brain efficiency is directly related to the use of the neurophone device. Many long term neurophone users report increased awareness, telepathic ability, out of body experiences, better memory, and increased auditory frequency range. A commercial pilot from Saudi Arabia reported a recovery of hearing damage due to aural trauma resulting from the loud aircraft engine noise as a result of his job. Please note however, that the neurophone is an experimental device, and has many uses that have been untapped. The neurophone owner will have to experiment and discover his own uses for the device. Dr Flanagan used his own neurophone to learn the Arabic language; actress Susan Strasberg found that she could learn her stage lines easier by playing them through the device. A recent book by G. Harry Stine, titled THE SILICON GODS by Dell, discusses the possibility of using the neurophone as a part of a mind computer link in which the power of the human mind could be amplified by millions of times. Stine says that the entire process if feasible right now, with the help of the neurophone and state of the art brain scan technology. Tom Bearden, in his book EXCALIBER BRIEFING says that the neurophone may eventually be used to successfully enable one or more people to do a perfect mind link in which the power of multiple minds may solve all world problems.

We hope that neurophone owners will join us in the task of discovering and using the potential of the device. The field of neurophone research is wide open, in the future we will see the development of neurophone software and hardware as well as neurophone user's league, our own neurophone magazine, and a host of other neurophone support devices. We invite all neurophone owners to share their experiences with us, so that we may share them with others.

TECH DATA: Model 50 ~ US Patent # 3,647,970

Input impedance: 5000 ohms

Max output voltage at disks: 20 volt RMS>

Battery: 9 volt

Battery life: 10 hours Alkaline cell

Output: Up to 12 pairs of disks

Control: Transducer volume

Operating temp: -40 to +120 F

Dimensions: 4 3/4"x 2 1/2"x 1 1/2"

KeelyNet (15 October 1993) Pacinian.ASC ~

This File is shared with Keelynet courtesy of Terry Bastian

The Pacinian Corpuscle

The skin contains many energy sensing mechanism, one such mechanism is known as the Pacinian Corpuscle. The PC is a special nerve ending that transforms mechanical vibrations or pressures into nerve impulses. Until this year, (1980) very little was known about this transducer, and it was thought that the device could only work at low frequencies of stimulation.

Recent research by Fernando Grandori and Antonio Pedotti of Milan, Italy has shed a whole new light on this mechanism. (*IEEE Transaction on Biomedical Engineering*, Vol BME-27, #10, Oct 1980) It now seems that the PC can react to very high frequencies, and responds best to a square wave stimulus.

The PC consists of a sensitive nerve ending surrounded by a cylindrical-like core structure consisting of closely packed membranes called lamellae. The core is surrounded by a second set of lamellae, in which the distance between each one increases from the innermost lamella toward the periphery of the corpuscle. The space between all the lameae is filled with a liquid whose mechanical properties can be considered similar to that of water. When a displacement of the outermost lamella is caused by exerting an appropriate pressure, this stimulus is transmitted to the core, and in turn, causes a compression of the innermost lamella. This system acts as a differentiating mechanical amplifier.

What is significant here, is that the PC responds best to a Squarewave. The above paper reveals that rate of change is more important than the amplitude of the pressure applied to the corpuscle. This indicates that this highly refined receptor is designed to detect time significance first, and pressure significance secondly.

If we take the Neurophone electrode disks and feed a 50 volt sine wave audio signal into them while placing them on the temples, the signal will be

percieved weakly. If we feed the same signal as a square wave, the percieved is 10 times as loud as the sine wave. This tends to substantiate Dr Flanagan's theory regarding the Neurophone perceptual mechanism as being timerate of change encoded.

PC are located over the entire skins surface, with greater concentrations on the fingertips and sexual organs. In 1981 Dr Flanagan intends to develop research projects which will be able to evaluate the PC theory.

KeelyNet BBS (15 October 1993) Theory.ASC ~

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Neurophone Breakthrough A Possible Mechanism for Neurophonic Action

The Neurophone is a new electronic invention that may enable us to hear by a completely new information channel to the brain. Ordinary hearing is the result of the stimulation of bones in the inner ear by means of vibration. Sound waves may reach these bones through ear canal via the ear drum, or by bone conduction in which sound waves are conducted to the inner ear vibrations in the crainial bones.

When the sound waves reach the inner ear, a vibration is set up in the cochlea which then converts the waves into nerve impulses that travel up the 8th Cranial Nerve to the sound recognition centers of the brain.

In 1958, Dr Flanagan, then a child of 14 developed a radio transmitter that made the brain into a radio receiver. This device transmits acoustic information to the brain by means of radio waves into the skin, bypassing the 8th Cranial Nerve. When he applied for a patent on the device, the patent examiner rejected the whole thing saying that such a device would go against all known laws of science. Over the following years, Dr Flanagan fought against insurmountable odds to prove that the device did indeed work. In the meantime, LIFE magazine ran a major article on Flanagan and the Neurophone, naming him as one of the top ten scientists in the US at the age of 17! In a final desperate move Flanagan flew to the patent office with a model of his invention and successfully demonstrated the device on a deaf employee in the patent examiner's office. The deaf man heard music for the first time in 15 years and broke down into tears. The examiner declared that the Neurophone was indeed a basic patentable device and approved the patent for release. Patent # 3,393,279 dated 16 July 1968.....

In the years that Dr Flanagan fought to receive deserved recognition by the

patent office, he grew into manhood and was working on Man-Dolphin Communications for the US Navy when the patent was finally issued. While involved in Man-Dolphin research, he became interested in nerve signal information encoding, and began to develop electronic circuits that duplicated the process of pattern recognition observed in the human nervous system. This work led to research in Cryptography. During that period he developed a top secret sound scrambler that was virtually impossible to decode. Part of the scrambler was based on his research into nerve encoding.

Dr Flanagan believed that the pattern of nerve encoding used in the human speech recognition system could be used to make a better Neurophone. He succeeded in perfecting an electronic circuit that he believes duplicates the precise encoding of the Cochlea and 8th Cranial Nerve. When he applied for a patent on the new circuit, the patent application was immediately placed under top secrecy by the National Security Agency. The only explanation given at the time was that the circuit had potential uses in the defense of the country. Dr Flanagan was happy that the government considered that his device could be used in his country's defense. The only problem was that the government wanted the device free, and he spent 14 years on it.

He hired attorneys and challenged the secrecy order for over five years. At the end of that period, the patent was released from secrecy and was approved for issue by the patent office. Patent # 3,647,970 dated 7 Mar 1972.

Dr Flanagan then perfected the circuit for another five years. This circuit recognizes time-relationships in the signal waveform, and generates a square wave that is time encoded. Dr Flanagan believes that the nervous system uses a complex delay line time recognition computational system that recognises time information. (50KHZ square wave pulse width audio modulation with double differentiator output)

In July of 1978, he successfully applied the Time Recognition Processor to his Neurophone. When an audio signal is processed through his circuit, it is converted into a form which he believes is an electronic analog of the nerve signal released from the human cochlea, but with one major difference; in the cochlea hundreds of nerves carry the time-encoded signal to the brain. In the case of the Neurophone, the full signal processing is complete and may be carried to the brain by alternate pathways. Through the skin itself.

In the original Neurophone, a 3000 volt amplitude modulated radio wave carried the signal to a pair of insulated electrodes that were placed on the head of the subject. In the present Neurophone, the voltage has been reduced to a 50 volt (maximum) square wave. This signal is applied to the body by means of ceramic disks.(zirconium titanate) The ceramic disks allow the energy field to affect the skin without a current flow. The small electric field causes the skin to vibrate internally in rhythm with the stimulation. The inte-

dermal vibration can be heard by others if they place their own ears near the point of electrode skin contact. The vibration is not powerful enough however, to vibrate the bone below the skin surface.

For the past year, Dr Flanagan has been developing a theory which would explain how the Neurophone actually works in the body. Some mechanism must exist that transmits the information from skin to the brain.

The Neurophone has been out now for nearly five months, and we are starting to get reports back from layman and professional users. The initial results are exciting. Several people have reported that their ability to remember data is increasing. People who could not remember telephone numbers are becoming walking phone books!

The first professional research report has been written by Dr Sheldon Deal, D.C., N.D.; of Tucson, Az. Dr Deal is director of the Swan Clinic, and is current President of the International College of Applied Kinesiology.

Dr Deal's preliminary Neurophone research paper was recently presented at the I.C.A.K. convention in Detroit. With Dr Deal's permission, we are publishing his entire paper in INNERTY NEWS.

KeelyNet (15 October 1993) Bearden.ASC ~

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Neurophone Extract from T.E. Bearden's Book *Excalibur Briefing*

Another device that uses the new hyperspatial, virtual state, nested modulation technology (and has done so for 17 or 18 years) is Dr. Pat Flanagan's neurophone. With brilliant insight and intuition far beyond that of science at the time, Pat invented and patented the instrument by the time he was seventeen years old. The neurophone is a device that, contrary to all present theory and knowledge, will directly pump the brain and reproduce sound and information directly in the brain and mind system, without going through the auditory system at all. A simplified diagram of Pat's improved neurophone is shown in the figure.

Briefly, the device takes a complex signal, such as the sound of an orchestra playing a musical interlude, and electrically processes it as shown in the figure. First the signal is passed into a section that clips everything into a series of square waves, remarkably analogous to the sort of clipped waves Lisitsyn confirms are the information carriers of the human brain. Next the square waves are differentiated, yielding a series of sharp spikes (note that these spikes retain the pulse time content of the clipped signal). These spikes are again differentiated, and since these are finite spikes with real nonzero rise times and decay times rather than theoretical

constructs, a series of noisy spikes results from the second differentiator section. From here, the noisy spikes are introduced to special contact electrodes, one of which is normally placed on the forehead, while the other may be placed almost anywhere, including on the foot. Nowhere are any sound waves introduced to the head.

The square wave clipper section reduces the complex signals, their overtones, and their complex modulations to square waves, retaining the temporal content of the wave mix but not the waves themselves. The first and second differentiators heighten or filter through the temporal content of the higher order differentiations, that is, they serve as a band pass filter unit to accent the time keying of the neutrnic and mind field portions or aspects of the signal. When these time spikes are then introduced across the body as pulsed voltages, they are modulated directly on the dendrite firings of the brain and nervous system, providing direct and pulsed modulation of the neutrnic and mind field component channels of the mind brain consciousness life loop itself. Thus the neurophone directly inputs information into the brain and nervous system, bypassing all the normal sensory systems that lie between the mind brain loop and outside environment.

KeelyNet (15 October 1993) History.ASC ~

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Excerpt from Flanagan's book *Pyramid Power* (8th Edition, 1980)

Chapter 3 Authors Background, The Neurophone

In 1958, when I was fourteen years old, a close friend of mine, Lou Macko, a television repairman in Houston, Texas told me of a most unusual phenomenon. He told me of a device that would transmit sound to the brain without using the ears.

The description of the device had been given to him by a complete stranger when he had visited Chicago. The device consisted of two copper mesh scrub pads with wires attached to them. The pads were placed in a pair of plastic bags to act as insulators. The wires were then connected to the high voltage side of an audio output transformer which was connected back to back with the output of an ordinary record player.

The result is shown in the figure.

The voltage from the Hi Fi was stepped up a bit and applied to the pads. If the

pads were placed on the skin of the head in the vicinity of the temples, one would "hear" the sound from the Hi Fi as if it were coming from within the head itself.

The item at that time had no practical advantage as it was extremely distorted. A good deal of the sound seemed to be missing as if it were cut off.

I researched at the library and discovered the phenomenon was known as far back as 1800 and was discovered by Volta. It was called electrophonic hearing. It was believed that the phenomenon was merely the action of the muscles being electrically stimulated and affecting the bones in the ear by means of minute muscle vibration.

I examined the signal from the device by oscilloscope and discovered the sound came through in a blast when the transformer was overloaded and produced a sharp spike or ringing on the wave form. I soon discovered that the real information was coming through only when this effect occurred. This explained why only parts of the music and voice came through.

I reasoned that the true carrier of information was a radio signal due to the oscillation produced by shock excitation of the combined circuit of the transformer and the parallel tuned circuit formed by the electrodes and the human body. I started experimenting with the unit using a high frequency oscillator of my own design and discovered a resonance in the circuit around 40,000 cycles per second. I soon found that the resonant frequency would change abruptly with emotions and general body changes. The capacitance of the electrodes, therefore the dielectric constant of the skin, changed abruptly from the slightest outside stimulus. The dielectric constant of the skin would change by several orders of magnitude in a fraction of a second! After preliminary measurement of parameters, I designed the original Neurophone which is illustrated in my patent on the device. (#3,393,279)

The device was essentially a high voltage frequency modulated radio transmitter of low power. Its frequency was adjustable to correct for changes of resonance. The original unit was hand adjustable. Later units were automatically tuned for maximum resonance.

The addition of the resonant radio carrier wave made the difference. The sound from the device was fantastic, like sound from another world. The normal frequency response of the ear was extended beyond normal boundaries and there was no distortion.

I began experimenting with a number of people who were considered to be totally nerve deaf, that is, they were unable to hear anything, even with what is known as bone conduction. The results were spectacular. People who had not heard in years were now hearing sounds they only dreamed of ever recapturing. A patent was applied for, and my research continued.

The press learned of my discovery and articles appeared on the front pages of 300 newspapers, and it was picked up by news syndicates and international magazines around the world. LIFE did an article in Sept 14, 1962 page 69, 72. The results were as spectacular as the discovery. We received hundreds of thousands of letters from all over the world. Letters came from as far away as Tasmania addressed only to Pat Flanagan, Inventor, Texas, U.S.A. The U.S. Postal service did a spectacular job in getting the mail to the right party.

There were many Neurophone discoveries not made public. On occasions the device stimulated perfect telepathic contact between one or more persons, often with startling results. These telepathic incidents were kept under wraps for fear of ridicule.

KeleyNet BBS (15 October 1993) Meditate.ASC ~

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As a result of his research, Dr Flanagan has designed the ideal meditation environment. This environment is a special room shielded from electromagnetic pollution. In this room are placed: an ERG (earth resonance generator), Ion Generator (caution-some ion gen produce pollution as well), an 8HZ pulsating high voltage field (sync to the ERG), and a Neurophone.....

Patrick Flanagan's Neurophone --- Hope for the Deaf and Superlearning for All

by
Eddy Taylor

In 1958, Dr. Patrick Flanagan invented the Neurophone in Bellaire, Texas when he was 14 years old. This electronic device transmits sound through the skin, by-passing normal hearing. A family friend who was a patent attorney for Shell Oil, helped Patrick submit a patent application. The patent examiners thought that this was just sound transfer through bone conduction and refused to issue a patent for 12 years. In a rare meeting in 1970, the patent office agreed to examine the Neurophone for themselves and meet Patrick and his attorney. They both encountered a surprise. The examiner had a deaf employee attend the meeting to test the device. The man was totally nerve deaf in one ear and almost totally deaf in the other. Patrick showed him how to use the Neurophone and played a record of the famous Maria Callas singing an opera. As he was able to hear the undistorted beauty of her voice, the tears of joy streamed down his face.

For the first time in history the Patent Office reopened a file after it was officially closed and Patrick Flanagan received United States Patent Number 3,393,279. Prior to this, scientists thought that sound could only be perceived

by the inner ear to the brain.

A Houston Post reporter had a relative who was nerve deaf from spinal meningitis. A test was arranged and when the device worked, an explosion of news coverage resulted in the story being carried on the international wire services.

How the genie was lost ~

In an agonizing infringement, a Defense Intelligence Agency sealed the patent and a national security order forbade Patrick from working on, or even talking about this invention. After many years and nearly 300 inventions later, Patrick received the Neurophone for public use. In a triumphant court case, the secrecy and the seizure of the device, by the Government Agency, was overruled and the genie was out of the bottle!

Electronic hearing and telepathy ~

To quote Patrick's Neurophone article in Nexus Magazine-Feb/March 1994, "All hearing aids stimulate tiny bones in the ear. In order for bone conduction to work, the cochlea or inner ear that connects to the 8th cranial nerve must function. People who are nerve deaf cannot hear through bone conduction because the nerves in the inner ear are not functional. A number of nerve deaf people who have had the entire inner ear removed by surgery have been able to hear with the Neurophone.

The Neurophone is really an electronic telepathy machine. Several tests prove that it bypasses the 8th cranial nerve or hearing nerve and transmits sound directly to the brain. This means that the Neurophone stimulates perception through a 7th or Alternate Sense!"

The Texas home of the Neurophone ~

The Neurophone became publicly available on a broad scale for the first time in July, 1996. An international Health Products company is now distributing the Neurophone. This corporation is based in Dallas, Texas and was established in 1976. A digitally computerized model is now being developed by Patrick and his wife Gael Crystal in their laboratory in Sedona, Arizona.

Turning on our neurophysiological potential for health, knowledge and awareness ~

One of the last statements by Nikola Tesla, inventor of alternating current, the radio and holder of well over 1,000 patents, was that he regretted not having done more in the science of electromedicine. In 1962, Patrick predicted that electromedicine would revolutionize conventional health care. One of the relatively unknown, silent revolutions has already taken place in the form of blood and lymph cleansing devices. These simple, yet powerful, electronic

devices have been popularized by Bob Beck, physicist and bio electronic researcher and Hulda Clark, N.D.

In 1990, a remarkable discovery was made by Steven Kaali, MD and William Lyman, associate Professor of Pathology at Einstein College of Medicine in N.Y.C. It was shown that a minute current (50-100 micro amperes) can alter outer protein layers of the HIV virus and prevent it's attachment to receptor sites. (Science News March 30, 1991, pg. 207). The viruses loose the ability to make an enzyme crucial to their reproduction. This process may also reverse Epstein Barr (Chronic Fatigue Syndrome), Hepatitis and Herpes B. Responsible users of this technology who are HIV positive, may expect a Negative P24 surface antigen or PCR test (no more HIV detectable in blood) after 30 days. A simplified version of this unit now makes self help feasible. The potential to clean and potentize the blood banks of the world with this instrument is truly staggering. Bob Beck's Sept. 96 Explore Magazine Article notes a study on the life span of blood cells sealed under cover slips on microscope slides. While the average life of "normal" blood is about 4 days; blood cells treated with a mild microcurrent live for well over a month!

This very mild charging of the blood does not harm blood cells. Furthermore, the applied physics of Eddy Current (Lenz's law) demonstrates the neutralization of a myriad of parasites, viruses, microbes and fungi. It is important to realize that these organisms are critical co-factors, if not actual carriers, regarding the multitude of new deadly contagious diseases appearing throughout the world.

These blood cleansing devices are safe, with intelligent use, have been around for decades, and seem to have a variety of other benefits. You can do your own research on the scientific evidence by scanning (<http://www.electriciti.com/explore/Articles/Beck/HIVArticle.html>). Be aware that there are now customized, blood and lymph cleansing units far better than Mr. Beck, Dr. Clark, and most others, describe and or advertise.

The big turn off ~

By contrast, the HAARP Project, a giant array of microwave towers in Anchorage Alaska, may not exactly raise awareness and improve human health. It's billion plus watts of power can impact an entire nation or even a complete hemisphere of the world. You may find the rest of the story through the writings of Nick Begich and other investigators. This brings new meaning to that old expression used in TV. and Radio, "Don't touch that dial!" Nick is a life long educator, native of Alaska, and has been featured on thousands of radio programs in the last 4 years. He also is perhaps the most informed writer on the Patrick Flanagan story and the benefits of the Neurophone.

Education Automation Vacation ~

Scientific experiments indicate that effects of the Neurophone range from super learning, long term memory speed learning, relaxation, pain control and enhanced psychic abilities. The Neurophone's ability to transfer large amounts of information into long term memory may, alone, make the current model of education obsolete. We could advance beyond the problem of information overload and actually emphasize values, goals, strategy and a profound interdisciplinary approach to world problems. Positive solutions in an ever more complex world may themselves depend on the solution offered by the responsible use of the Neurophone.

Ma Bell ~

Studies on a special "head start" program, with pregnant women using the Neurophone have promising news. These women describe children with marked intelligence. This neuro-networking seems actually to nurture neuropathways for the fetus.

Extra sensory perceptions ~

All organs of perceptions evolve from the skin of the child within the womb. Theoretically, the skin could perform all sense perception. In Russia blind people have been taught 'to see' with their fingertips. Deaf people in Czechoslovakia have been instructed 'to hear' with their fingertips.

Details on the Neurophone, super learning and electromedicine ~

The intricacies of how the Neurophone is constructed, along with it's bio-physical- interactivity, is provided in the book, *Towards A New Alchemy*, by Nick Begich. For a broader background see *Super-Memory: The Revolution*, by Sheila Ostrander and Lynn Schroeder. The Explore More Magazine's March/April 1996 article, 'The Skin, Our Fifth Sense' is a real eye opener. For a historical view of related research read *Psychic Discoveries Behind The Iron Curtain* by Sheila Ostrander and Lynn Schroeder. A technical understanding of the bio-electronics of organisms in health and disease, will be found in the book, *The Body Electric- Electromagnetism and the Foundation of Life*, by Robert O. Becker, M.D. and Gary Selden, (Quill Publisher).

Dolphin speak ~

In a curious parallel to Roxanne Kremer's work on interspecies communication with the Pink Amazon River Dolphins, Dr. Flanagan has made impressive technical contributions. In February, 1968, he applied for a patent on a device for translating human speech into dolphin language and vice/versa. This was a result of studies with dolphins in the lagoon of a small island off the coast of Oahu, Hawaii. A vocabulary of 30 words was discovered before a startling intervention. Six months after applying for the patent, it was placed under secrecy order #756, 124 by a U.S.Government surveillance agency. Five

years later, another hard-fought legal battle rescinded the suppression and patent #3,647,970 was granted on March 7th 1972. This speech processing patent is actually used as the circuit in the present version of the Neurophone.

The sound of the new millennium ~

"The Music of the Spheres and the Hemispheres", heard with the assist of the Neurophone, opens new doors for musicians and composers, as well as educators and students of life in general. In what may be seen as another motif on Sonic Bloom-like-phenomena, some theories hold that it has the potential for developing super plants and healing animals as well as people.

Mind meld ~

Experiments with a Neurophone mind link between two or more people seemingly makes possible learning directly from the mind of another. And I thought this was only in the SCI FI domain of Star Trek's Mr. Spock and certainly beyond the ken of Dr. Spock. Nick Begich describes the phenomenon as an electronic 'corpus collosum' between the minds of 2 people. The corpus collosum is the semi-permeable bridge between the 2 hemispheres of an individual's brain.

The Neurophone and other gems ~

The Neurophone also causes both sides of the brain to pulse in harmony creating an environment which may be ideal for learning. Use of the Neurophone tends to balance all the acupuncture meridians. In the near future the Flanagan's will produce cassette tapes and CD's designed to be used only with the Neurophone. The tapes will cover categories as varied as Psychic Center Stimulation to Subliminal Learning Programs.

Other Flanagan products include Crystal Energy, (ultra colloids --- each only 12 atoms wide --- of silica, magnesium, zinc, gold, silver, and titanium which have duplicated the structure and improved upon the health benefits of Hunza Water). The people of Hunza claim that their longevity, often living up to 130, stems primarily from their consumption of Hunza water, also known as 'glacial milk'. This technology has also been used to create what is truly the most unique spirulina, and other supplements, presently known.

A word to the wise: Winston Churchill said, "Most people occasionally stumble over the truth, but most pick themselves up and continue on as if nothing had ever happened". If you sense you've encountered some truths in this article don't use them as stumbling blocks. They may be stepping stones to far higher truths, if you dare to care and share. Data in this article can be legally offered only as "theoretical"; and no medical claims can be made or implied. See your health professional...

US Patent # 3,393,279

US Cl. 179/107 (16 July 1968)

Nervous System Excitation Device**Gillis Patrick Flanagan**

This invention relates to electromagnetic excitation of the nervous system of a mammal and pertains more particularly to a method and apparatus for exciting the nervous system of a person with electromagnetic waves that are capable of causing that person to become conscious of information conveyed by the electromagnetic waves.

It is an object of the present invention to provide a means of initiating controllable responses of the neuro senses without applying pressure waves or stress waves to the ears or bones. Another object of this invention is to provide a means of causing a person to receive an aural perception of the sound corresponding to the audio modulation of radio frequency electromagnetic waves that are coupled with the nervous system of the person. These and other objects of this invention will be understood from the following drawings and description of the invention, wherein:

Figure 1 is a schematic illustration of one form of the present nervous system excitation device.

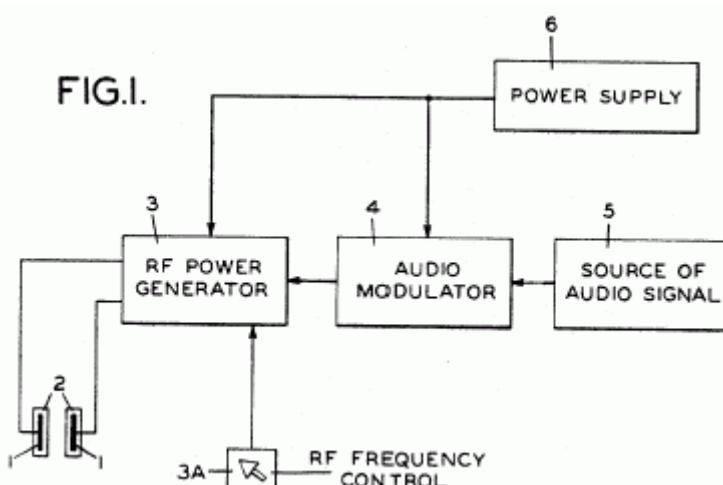


Figure 2 is a circuit diagram of one form of the present nervous system excitation device.

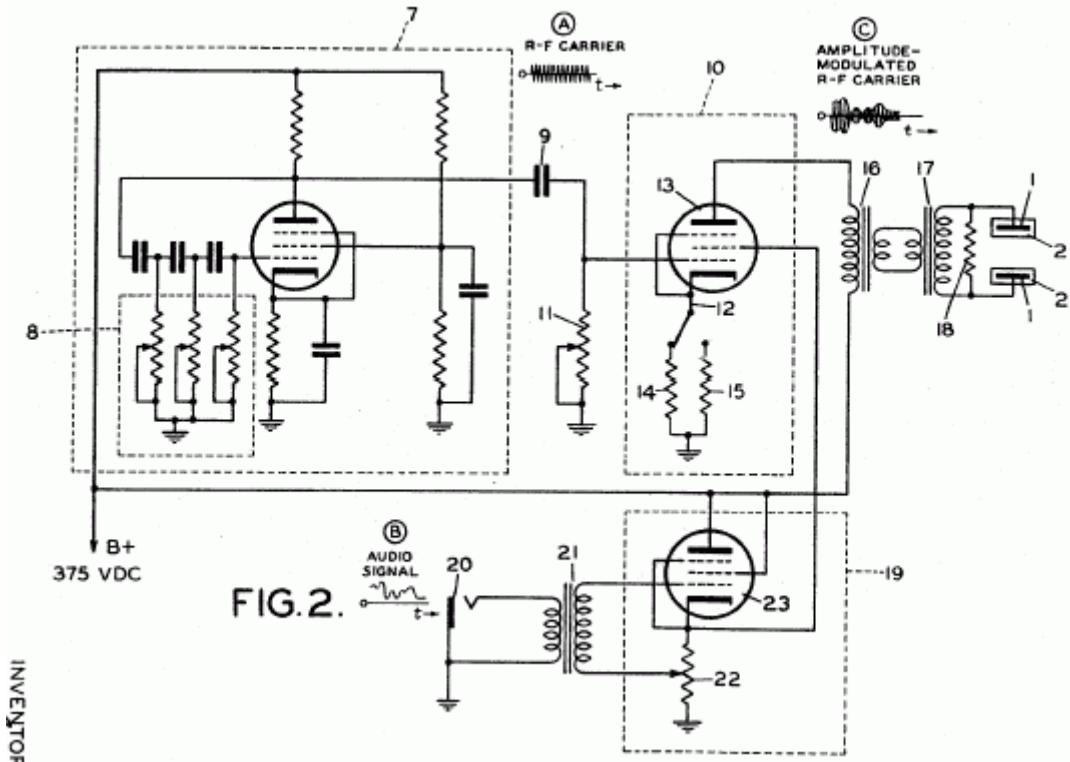


Figure 3 is a diagrammatic view illustrating one form of field generator adapted to be used with the device of Figure 1.

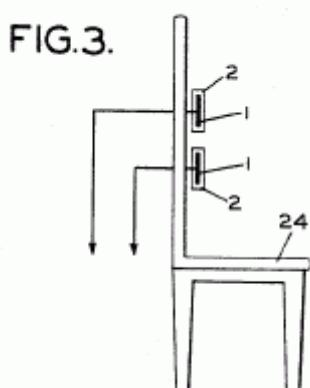


Figure 4 is a diagrammatic view illustrating another form of field generator adapted to be used with the device of Figure 1.



FIG.4.

The present invention involves the discovery that certain electromagnetic waves induce responses in the nervous systems of mammals. In human beings a response is produced when some or all of a person's nervous system is

placed within a field of electromagnetic carrier waves of such a frequency, the nervous system is responsive to the modulation of the carrier waves. Each individual nervous system is at least somewhat selective in respect to the frequencies to which it is most responsive. A frequency to which the nervous system of a person is demonstratively responsive can be determined by varying the frequency of carrier waves that are modulated by an information signal, such as speech or music, and measuring the frequency of such waves that produce the sensation of hearing the sounds corresponding to the modulating signal.

In the method of the present invention, a response is initiated in the nervous system of a mammal by disposing at least a portion of that nervous system within a field of electromagnetic waves of a frequency above the aural range. In a preferred embodiment of this invention, at least a portion of the nervous system of a person is exposed to audio modulated electromagnetic waves having a radio frequency such that the person experiences the sensation of hearing, substantially free of distortion, the information which is conveyed by the audio modulation.

The present invention may be used as a hearing aid, as an aid to teaching speech to a person who was born deaf, as a means of communicating with persons in locations in which the noise level is high, as a device by which a person can listen to an audio signal that cannot be heard by others, etc.

As shown in Figure 1 of the drawing, in a preferred form of the invention, a field of electromagnetic waves is generated by a field generating means, such as a pair of electrodes 1. The electrodes 1 are preferably electrically insulated, for example by surrounding them with a suitable electrical insulating material 2, and are arranged to generate a field coupled with at least a portion of the nervous system of a person, for example by being placed near or along opposite sides of a person's head. The electrodes 1 can be placed in direct contact with the skin and the electrodes can be placed on or near various portions of the body, such portions preferably being near the spinal cord.

The electrodes 1 are electrically connected to a source of modulated electromagnetic waves inclusive of a radio frequency power amplifier and variable frequency oscillator, indicated in box 4, a source of audio signal, indicated in box 5, and a power supply for the signal source, modulator and amplifier, indicated by box 6. The variable frequency oscillator 3 is preferably provided with a manual radio frequency control means, indicated by box 3a. Numerous forms of the components, indicated in boxes 3 to 6, that provide suitable power and a source of modulated electromagnetic waves are presently known and the known devices can be suitably used as long as they are arranged to produce a relatively high voltage output that has a radio frequency above the audio range and is capable of being modulated by an audio signal or other signal adapted to be conveyed by the modulation of

electromagnetic waves of such a frequency.

The modulation can suitably be effected by means of either an amplitude or frequency modulation of such electromagnetic waves. These waves preferably have a frequency in the range of about 20 kilocycles per second to about 200 kilocycles per second. The output of the source of modulated electromagnetic waves is preferably at least about 1 watt where the field generator comprises a pair of insulated electrodes placed on the head of a person. The extent to which a person is aurally perceptible to the output supplied at a given wattage is materially increased when at least one of the electrodes is placed in electrical contact with the body of the person.

In a preferred mode of operating the apparatus shown in Figure 1, the electrodes 1 are placed on the sides of the head of a person. The source 5 of audio signal is actuated to produce an audio signal corresponding to sounds recognizable by that person, and source 3 of modulated electromagnetic waves is actuated to couple the waves with the nervous system of that person. When control 3A is adjusted so that the frequency of the modulated waves is a frequency to which his nervous system is particularly responsive, the person to whom the field of such waves is applied has the sensation of hearing the sounds corresponding to the audio signal substantially free of distortion.

In the circuit shown in Figure 2, a phase shift type of carrier oscillation, generally designated by dotted rectangle 7, with a frequency control, generally designated by rectangle 8, is arranged to produce electromagnetic waves, shown at A, a frequency ranging from about 20 to 200 kilocycles per second. The oscillator output is coupled through capacitor 9 to a radio frequency power amplifier, generally designated by a dotted rectangle 10. Potentiometer 11, which is connected between capacitor 9 and ground, provides a means of adjusting the input to the amplifier. Switch 12, which is connected to the cathode of tube 13 of the amplifier, provides a means of switching between resistors 14 and 15 to vary the operating power characteristics of the tube.

The output of amplifier 10 is connected to transformer 16 which is coupled back-to-back with transformer 17. This arrangement of transformers provides an inductive load such that the amplifier yields a high voltage output is isolated from other components of the circuit. Resistor 18 connected across the output side of transformer 17 serves to reduce any dangerous voltage spikes which might be produced. The output side of transformer 17 is connected to a suitable field generator, which may comprise the electrodes 1 surrounded by insulating material 2.

The output of amplifier 10 is amplitude modulated by means of the modulator generally designated by dotted rectangle 19. A fluctuating electrical signal B, preferably of audio frequency, is applied to the modulator by means of input jack 20 and transformer 21. The output of the modulator varies the screen

voltage of tube 13 of the amplifier so that the modulation envelope of the current oscillations C produced across the load of tube 13 correspond to the fluctuating signal B applied to the modulator.

Potentiometer 22 is connected to the cathode of tube 23 as the cathode resistor of tube 23. Potentiometer 22 is preferably adjusted so that the plate current of tube 13 of the amplifier so that the modulation envelope of the current oscillation C produced across the load of tube 13 correspond to the fluctuating signal B applied to the modulator.

Potentiometer 22 is connected to the cathode of tube 23 as the cathode resistor of tube 23. Potentiometer 22 is preferable adjusted so that the plate current of tube 13 is about half its normal maximum value. The fluctuating signal applied to modulator 19 is then adjusted to cause the plate current of tube 13 to vary between the maximum and minimum values so that a large current variation occurs in the load 16 of tube 13.

The apparatus shown in Figure 2 has been used to communicate speech and music to numerous persons including registered physicians. In these uses the electrodes 1, in the form of circular disc covered by a plastic insulation 2, were placed against the sides of the heads of the persons. When the electromagnetic waves were adjusted to a frequency to which persons having normal hearing were selectively responsive, none of these persons perceived any sensations of hearing or experienced any discomfort when no audio modulation was applied to the waves. When the waves were audio modulated with a speech or music signal, none of these persons experienced any discomfort, but they each had the sensation of listening to the transmitted information and hearing it at least as clearly as they would hear such information from an audible transmitter. When the same apparatus was similarly employed on a person whose hearing had been damaged to an extent requiring a hearing aid to hear normal conversation, that person heard the audio signal (with this hearing aid disconnected) and heard music with a better fidelity than that obtainable with this hearing aid.

Figure 3 shows an arrangement for mounting the field generating means in a position such that a portion of a person's nervous system may be moved into and out of coupling with the field at the will of the person. In this arrangement, electrodes 1 surrounded by insulation 2 are mounted in vertical alignment along the back of a seating device, such as chair 24. When a person is seated and leaning back in the chair, portions of his nervous system are brought into coupling relationship with the field produced by electrodes 1.

Figure 4 shows an alternative arrangement of the field generating means. In this arrangement, inductive coil 25 is connected to the output of a suitable source of modulated electromagnetic waves and serves as a field generating means which is adapted to be placed around the head of a person.

It is to be understood that the above embodiments and examples have been presented for descriptive purposes and that, within the scope of the appended claims, the invention may be practiced otherwise than specifically illustrated and described.

US Patent # 3,647,970
US Cl. 179/1/5 (5 March 1972)

Method and Apparatus for Simplifying Speech Waveforms

Gillis P. Flanagan

Abstract ~

A speech waveform is converted to a constant amplitude square wave in which the transitions between the amplitude extremes are spaced so as to carry the speech information. The system includes a pair of tuned amplifier circuits which act as high-pass filters having a 6 decibel per octave slope from 0 to 15,000 cycles followed by two stages, each comprised of an amplifier and clipper circuit. For converting the filtered waveform to a square wave. A radio transmitter and receiver having a plurality of separate channels within a conventional single side band transmitter bandwidth and a system for transmitting secure speech information are also disclosed.

Background of Invention ~

This invention relates generally to electronic processing of speech, and more particularly relates to a method and system for simplifying the speech waveform to facilitate transmission of the speech throughout various media without materially degrading intelligibility.

In the process of producing human speech, the voice box creates a series of sound pulses which reverberate within and are shaped by the upper throat and mouth cavity. The frequency of the pulses produced by the voice box primarily determines the frequency or pitch of the sound, while the shape of the mouth cavity reverberates and shapes the sound pulses to produce the speech information. The resulting speech waveform is very complex and highly redundant. If such a waveform is passed through a band-pass filter having a bandwidth significantly less than 3000 cycles per second, the speech becomes unintelligible. Thus, even the simplest voice communication channels require a substantial bandwidth. Heretofore it has been commonly believed that the speech information was contained in the amplitude as well as the frequency modulation of the speech waveform. When voice sounds are induced in a body of water or the earth, the many reverberations caused by the various velocity discontinuities make speech unintelligible over relatively short transmission lengths. Also, the complex speech waveform has made

encoding or scrambling for secure transmissions, either by electromagnetic, electrical, or pressure waves, so impractical as to be very seldom used.

Summary of Invention Claimed ~

This invention is concerned with a method and system for simplifying a complex speech waveform so that it can be used for a multitude of applications. The simplified speech waveform may be passed through a narrow band-pass filter, thus permitting a greater number of communication channels within a given frequency band. The simplified speech waveform can be transmitted directly through the earth or water as a pressure wave and understood, either directly from the medium, or after simple amplification. The simplified waveform can be easily encoded by scrambling to provide secure voice communications. The simplified may be used to operate machinery, produces more efficient public address systems and transmitters with greater range peak power for a given average power, and thus longer ranges.

In accordance with the present invention, the speech waveform is converted to a signal having substantially constant upper and lower levels with abrupt transitions from one level to the other, the abrupt transitions being in time correspondence to amplitude changes in the speech waveform that exceed a predetermined rate of change. This is accomplished by a system including a high-pass filter and means for converting the filtered waveform to a constant amplitude, substantially square wave.

More specifically, optimum results have been achieved by using a filter having a 12 decibel per octave slope from 0 to 15,000 cycles per second. In one specific embodiment, this filter is formed by a pair of tuned amplifier circuits each having a 6 decibel per octave slope within the frequency range of interest. In this embodiment, the speech waveform is preferably combined with a high frequency noise masking signal of lower amplitude prior to processing.

In accordance with another specific aspect of the invention, means for converting the filtered signal to a square wave comprises at least one amplifier followed by a clipper circuit.

The invention also contemplates a voice communication system having a plurality of separate channels within a bandwidth normally allotted for a single frequency, for example four channels within a bandwidth of 1500 cycles per second. In this system the processed speech is selectively passed through one of a plurality of narrow band-pass filters to a transmitter. The receiver has similar narrow band-pass filters so as to be selectively sensitive to transmissions in that pass band.

In accordance with another specific aspect of the invention, each transition of the square wave is converted to a pulse of predetermined amplitude and

width, which is then converted into a plurality of pulses with predetermined time spacing. These pulses are then transmitted to a receiver where the plurality of spaced pulses are recombined as one pulse. The square wave is then reproduced from the combined pulses.

Brief Description of the Drawings ~

The novel features believed characteristic of this invention are set forth in the appended claims. The invention itself, however, as well as other objects and advantages thereof, may best be understood by reference to the following detailed description of illustrative embodiments, when read in conjunction with the accompanying drawings, wherein:

Figure 1 is a schematic block diagram of a system for processing a simplified speech waveform in accordance with the present invention;

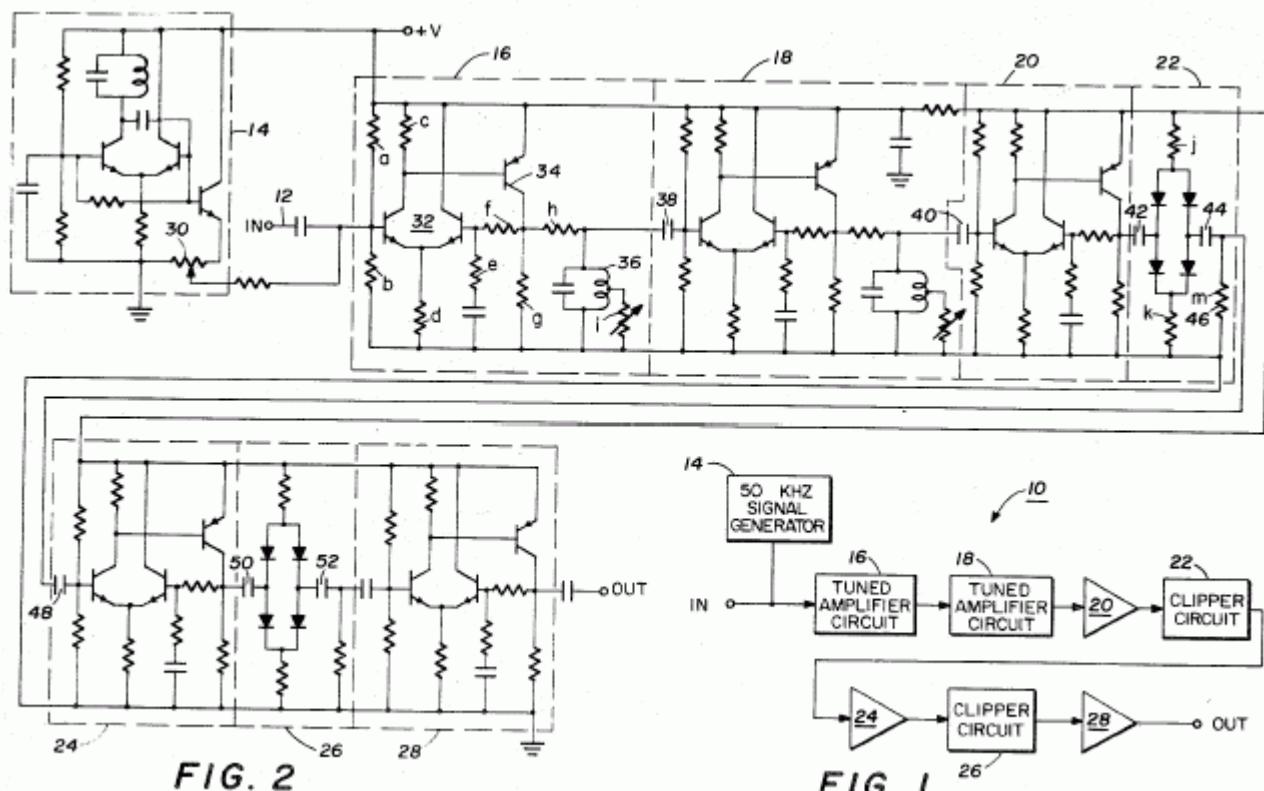


Figure 2 is a detailed schematic circuit diagram of the system in Figure 1;

Figure 3 is a schematic block diagram of a multichannel transmitter in accordance with the present invention.

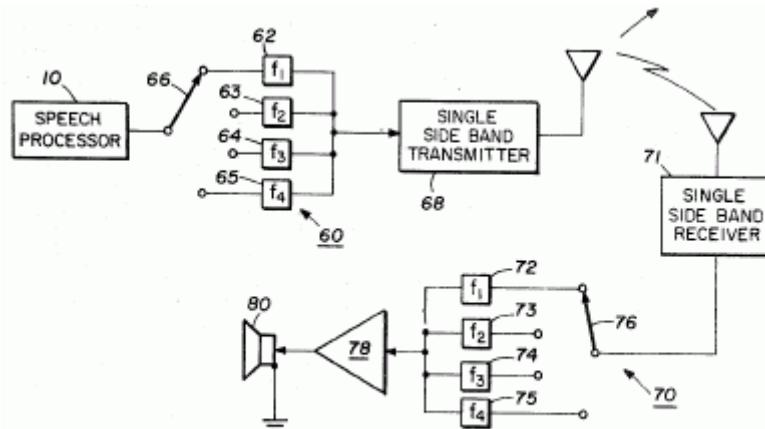


FIG. 3

Figure 4 is a schematic block diagram of a system for transmitting and receiving scrambled speech waveforms in accordance with the present invention.

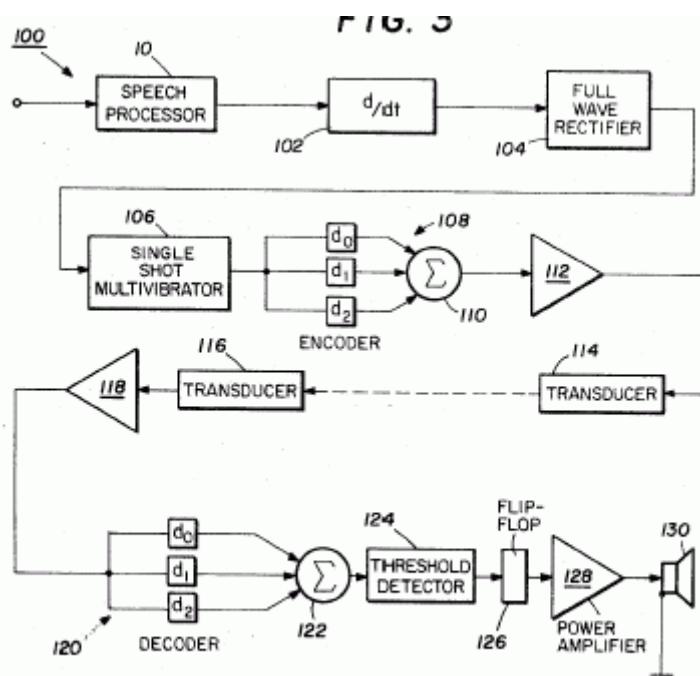


FIG. 4

Description of Preferred Embodiments ~

Referring now to the drawings, and in particular to Figure 1, a speech processor in accordance with the present invention is indicated generally by the reference numeral 10. The speech waveform is applied to the input 12 as a voltage signal derived from a microphone (not illustrated) or other suitable transducer. The speech waveform is summed with a much higher frequency, for example 50 KHz, masking signal produced by the signal generator 14. This signal is passed through a pair of tuned amplifier circuits 16 and 18. Each of the circuits 16 and 18 is a high-pass filter having a 6 decibel per octave slope from 0 to 15,000 cycles per second, thus providing a combined slope of 12 decibels per octave.

The filtered waveform is then passed through a circuit means for converting the filtered waveform to a square wave which is converting the filtered waveform to a square wave which is comprised of a first high gain amplifier 20, a first clipper circuit 22, a second high gain amplifier 24, and a second clipper circuit 26. The square wave is then passed through power amplifier 28 to the output in a form to drive a loudspeaker, transducer, radio transmitter or the like. When ultimately passed through a speaker, or other suitable transducer, the square wave is fairly intelligible. The square wave so produced has constant upper and lower levels, with very abrupt transitions between the upper and lower levels as a result of the two stages of amplification and clipping. The transitions occur in time correspondence to amplitude changes in the original speech waveform applied to the input 12 that exceed a predetermined rate of change so as to be passed through the high-pass filters 16 and 18.

A detailed circuit diagram of the system 10 is shown in Figure 2 wherein corresponding components are designated by corresponding reference numerals. Each of the components is of conventional design. The signal generator 14 has a variable load resistor 30 in the output stage which permits the amplitude of the masking signal to be adjusted to eliminate oscillations caused by noise. The amplitude of the masking signal should not be any greater than is required to prevent oscillation to minimize interference with the processing of the speech waveform. The tuned amplifier circuits 16 and 18 are of identical construction. Each is comprised of an amplifier having a differential input stage 32 and a single output stage 34 which drives a tuned filter circuit 36. The tuned amplifier circuits 16 and 18 are coupled by capacitor 38, which of course also comprises an element of the filter. The amplifier 20 is identical to the amplifier portions of the tuned amplifiers 16 and 18, and is coupled to the output of tuned amplifiers 16 and 18, and is coupled to the output of tuned amplifier 18 by capacitor 40. The clipper circuit 22 is merely a diode bridge to the output of tuned amplifier 18 by capacitor 40. The clipper circuit 22 is merely a diode bridge coupled to the output of amplifier 20 by capacitor 42, followed by a filter comprised of capacitor 44 and resistor 46. The output of the clipper circuit 22 is coupled to the input of amplifier 24 by capacitor 50. Amplifier 28 is identical to amplifiers 20 and 24 and is coupled to the output of the clipper circuit 26 by capacitor 52.

In a typical embodiment of the circuit of Figure 2, the PNP transistors may be MPS3640 transistors, and the diodes may be IN914 diodes. The resistors have the following values in kilohms as referenced in circuits 16 and 22: a = 33, b = 33, c = 10, d = 33, e = 0.33, f = 33, g = 10, h = 10, i = 10, j = 100, k = 100, and m = 1.0. The capacitors are 10 microfarads, except for the capacitors in the LC tuned circuits which are 0.001 microfarads. All coils are 10 millihenrys.

The high-pass filters 16 and 18 may be of any suitable conventional circuit design, and may be a resistor-capacitor filter, a shortened delay line filter, or an

inductor-capacitor filter, for example. The means for converting the filtered waveform to a square wave may also be any suitable conventional circuit such as a Schmidt trigger, or a very high gain amplifier which quickly saturates.

A multichannel speech transmission system in accordance with the present invention is indicated generally by the reference numeral 60 in the schematic block diagram of Figure 3. In the system 60, the speech processor 10 is selectively connectable to any one of four filters 62-65 by a selector switch 66. The outputs of the filters 62-65 are connected to the input of a conventional single side-band transmitter 68.

The filters 62-65 are narrow band-pass filters of any suitable conventional design having mutually exclusive pass bands of about 300 cycles centered at frequencies f₁, f₂, f₃ and f₄, and are grouped within a total bandwidth of about 1500 cycles, for example. Since 3000 cycles is a typical bandwidth for single side band transmitters operated for simple speech transmission, eight filters can be used if desired. The square wave produced by the speech processor 10 may be selectively passed through any one of the narrow band-pass filters 62-65 without materially reducing its intelligibility.

The filtered square wave is transmitted by the conventional transmitter 68 to a conventional single side band receiver 70. The output of the receiver 70 is selectively connectable through filters 72-75 to a power amplifier 78 by a selector switch 76. The filters 72-75 have corresponding passbands centered at frequencies f₁, f₂, f₃, and f₄. The amplifier 78 may drive a speaker 80. Therefore, if the selector switch 76 of a particular receiving set 70 is set to the filter corresponding in frequency to the filter selected by switch 66 in the transmitter, the filtered square wave will be reproduced by the speaker 80 and will be sufficiently intelligible for nearly all voice communication purposes. However, if the selector switch 76 of a particular receiver is set to another frequency filter, no sound is produced by the speaker 80. Thus, the transmission system of Figure 3 provides four separate voice channels within the frequency band of 1500 cycles, or eight channels in the 3000 cycle bandwidth conventionally allotted for single side band operation. Of course, it is to be understood that the particular radio frequency is merely illustrative of the broader concept of the invention and that the same principles can be applied to transmissions through any media by electrical or electromagnetic waves.

A secure system for transmitting scrambled voice communications is indicated generally by the reference numeral 100 in Figure 4. Again the speech processor 10 is used to generate the square wave as heretofore described. The square wave is then passed through a differentiator 102 which produces a sharp spike pulse in time correspondence to each transition of the square wave. The sharp spike pulses have a polarity determined by the polarity of the transition and are therefore passed through a fullwave rectifier 104 which converts all of the

spike pulses to the same polarity. The spike pulses are then used to trigger a single shot multivibrator 106 which produces a pulse of predetermined amplitude and time width in response to each spike pulse. The uniform pulses from the single shot multivibrator 106 are then passed through an encoder 108 which produces a plurality of pulses of corresponding width in a predetermined timed sequence in response to each input pulse. This may easily be accomplished by a plurality of parallel delay lines d0, d1, and d2 for transferring the pulses to point 110 at predetermined time intervals. The pulses are then amplified by an amplifier 112 which drives a transducer 114. The transducer 114 may induce the pulses in water, in the earth, or in any other propagating medium. Or, if desired, the transducer 114 can be replaced by a radio or other electromagnetic wave transmitter.

The transmitted pulses are received by an appropriate receiving transducer 116, which reproduces electrical pulses of corresponding width and amplitude. The received pulses are amplified by amplifier 118 and applied to a decoder 120. The decoder 120 is comprised of an identical number of delay lines of identical time relationship so that the three pulses are recombined as a single pulse summation point 122. Each time that the three pulses occur at the same point in time, the sum of the pulses exceeds the threshold of a detector 124 which triggers a flip-flop 126. The output of the flip-flop is then a reproduction of the square wave originally produced by the speech processor 10. This square wave is then amplified by amplifier 128 to drive a speaker 130 and produce the voice communication. Reproduction of the voice communication can be accomplished only if the receiving decoder matches the transmitting encoder. The encoders and decoders can be easily interchanged in order to maintain secure transmissions.

Although preferred embodiments of the invention have been described in detail, it is to be understood that various changes, substitutions and alterations can be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

[Claims not included here].

<http://www.toolsforwellness.com/neurophone.html>



This fascinating technology was developed in 1958 by Patrick **Flanagan**. It was thought that sound was only heard by the inner ear; **Flanagan**, however, was able to demonstrate that the brain also hears sounds that vibrate on the skin.

To use this technology, you place the sensors on the forehead under a headband. Then plug the unit into your sound source, such as a CD player. The sensors cause your skin, the largest organ of the body, to vibrate to the music you've selected, much like a speaker vibrates.

By bypassing the ear, you are using a completely different part of the brain to process the sound creating new neural pathways. This technology is great for concentration while studying, learning languages, assisting in "new sound perception" great for listening to music in a whole new way, helping with meditation, relaxation, and healing.

When you first put the sensors on your skin, you feel a vibration and can actually hear the sound of the music you've selected. You can put the sensors on any part of your body, not just the forehead.

Just by wearing the sensors, you will notice a dramatic mood shift making you more positive, and also a change in your brain power, producing unwavering focus! The ultrasound it produces sends high frequency sound waves and their harmonics beyond the hearing threshold to the brain. It is these high frequency sounds that actually energize the brain, giving you more energy and focus. For music lovers, the clarity of the sound will astound you.

There are two products using this technology available, the **Neurophone** and the Echofone. Here are the differences:

Neurophone

Portability makes it useful for: Listening to lectures in the classroom ~ Using at work for powerful focusing ~ Focusing at sporting events

Echofone

Stereo Transducers makes it useful for: Serious musicians learning music ~ Music afficianados to experience incredible listening pleasure Sound therapy utilizing binaural beat frequencies

The **Neurophone** operates on an internal rechargeable battery making it completely portable, not requiring a plug. The internal pink sound generator makes it easy to use on-the-go because you don't need to plug it into a CD player.

The Echofone works in a similar manner, however is not portable. It is ideal however for music appreciation having a convenient control panel allowing you to easily mix the vibration intensity of the sensors with the volume intensity of the headphones.

<http://www.neurophone.com>

The New Neurophone GPF-1011 DSP

Dr. Patrick Flanagan's revolutionary ultrasonic neural stimulation instrument for brain entrainment, aiding in learning, relaxation and meditation

The NEW Neurophone® Golden Ratio Series is here!

The Neurophone® marks a culmination of innovation and engineering spanning 45 years. The GPF-1011 DSP offers a refined aesthetic design and advanced microprocessor control to create the finest experience in ultrasonic neuropathic stimulation. The Neurophone® is a precision scientific instrument with an extensive digital signal processor that encodes sound and modulates it into ultrasonic signals. The GPF-1011DSP offers the first, all digital Neurophone®. This profound digital engineering offers a quality of ultrasonic transmission that is more accurate and rich in harmonics than an analog representation, offering a more enriching and stimulating experience. Exciting new University studies are underway evaluating the Neurophone's® profound role in accelerated learning and memory retention. This instrument represents my life's work and I am greatly pleased to offer the new Neurophone® Model GPF-1011 DSP.

Contact us with your questions and comments!

<http://home.dmv.com/~tbastian/files/cochlea1.txt>

Another Look at the Neurophone

by

Rick Andersen

(6/21/97) Freely distributed for informational purposes

Dr. Pat Flanagan's Neurophone, in its several versions, has been the subject of intense interest to many experimenters. Later embodiments of his device appear to be based on the observation that our neural systems are set up to receive and decode external stimuli as sharp, transient spikes which represent a conversion of smoothly-varying analog sound pressure waves into time-coded "digital" nerve impulses. The associated propagation delays most likely do with sound what our TV screens do with serially-sequenced video waveforms: Convert them into a spatial distribution across the TV screen as a picture (sound waves encoded spatially across the brain cortex as a spatio-temporal pattern). The Neurophone is a first attempt at performing this complex conversion from frequency- to time-domain.

The idea of reducing full-fidelity speech/music into a differentiated, time-ratio coded version has many potential applications such as:

- * Compression of audio or other analog signals
- * Artificial cochlea for "androids"
- * Alternative sensory stimulus ("hearing" through the skin) a la Neurophone
- * Induction of information to the brain without contact (e.g., sharply-pulsed magnetic fields around the head such as Persinger's work)

After reading the many files available on the Neurophone's history and many embodiments, as well as building a few experimental circuits myself, I've come to the conclusion that the simple "clipper/double-differentiator"-type circuit, as described by Tom Bearden in his book "Excalibur Briefing", is lacking as an effective way to convert sound to time-coded pulses, for the following reasons:

All sound waveforms (other than pure sine waves) are complex superpositions of several frequencies -- fundamentals and their harmonics, if they're periodic (pitched) sounds. The "tone color" is heavily dependent upon the relative amplitudes of the harmonics vs. the fundamental frequency.

Vowels, or diphthongs, in spoken language, are essentially very specific bandpass-filtered spectra. The vocal cords produce a harmonic-rich, raspy buzz, analogous to a sawtooth or pulse wave as seen on an oscilloscope. The mouth and nasal cavities act as resonators to selectively filter the buzz from the voice box into recognizable vowel sounds. "Fricatives" such as the "ssss" sound are unpitched bursts of air, "filtered" through the teeth, lips, etc. Fricatives contain many high frequencies clustered around 6-9 KHz, whereas a male voice is usually pitched (fundamental) around 200 Hz.

To run such a waveform into a clipper or squaring amplifier (comparator, Schmitt trigger) would be to take a very crude zero-crossing detection; the frequency with the largest amplitude is the fundamental... the higher harmonics "ride" upon it... so the fundamental is the frequency that gets to

"call the shots" with the zero-crossing detector. So out comes a square wave, switching up or down through zero only at the grossest points of change along the waveform. We've already "hacked off" most of the "details"-- the information contained in the upper harmonics.

Now if we differentiate, and then "double-differentiate" this clipped wave, we will get narrow pulses which "track" the edges of the original complex sound wave ONLY WHERE IT CROSSED THROUGH ZERO on the scope. The problem is, we've clipped all the good stuff -- the harmonics -- off, and lost much of the information in the process. The speech now sounds like a person talking through a "kazoo" -- amusing, but not very useful.

How do we make square waves, and then narrow pulses (differentiated), out of a complex wave in such a way as to preserve DETAILED variations (upper harmonics)?

INTEGRATE, COMPARE, DIFFERENTIATE, and SUM

The method I am outlining here is a result of my own brainstorming on the problem; if I have stepped on anyone's feet by re-inventing your ideas, my apologies, but rest assured that I'm not looking for patent rights, just circuit functionality. Maybe I've discovered Flanagan's REAL method???

First, we need to appreciate the fact that there are millions of neurons doing their thing in our auditory system, not just a few. Accordingly, I'm going to outline a simple circuit that will produce time-coded spikes, but I'm recommending that several of the circuit modules be built and chained together SEQUENTIALLY (analog sections), with their differentiated SPIKE outputs all SUMMED together and perhaps clipped as a group so that there is one amplitude for them all, but varying repetition rates -- sort of like Pulse-Position Modulation but more complex. This is the output that will connect to the piezo skin transducers after suitable amplification.

The cochlea has many, many neurons working on a serial sound "stream" at the same time. Some are positioned "up front" where the sound enters from the outside, some are down the trough a ways, and some are located at the far end. As such, there is a built-in time delay, or acoustic propagation delay, from one end of the membrane to the other. Carver Mead at Cal-Tech has attempted to model this by means of a series of transconductance amplifiers wired as simple delays with carefully-calibrated frequency "damping" per section.

My version models this with a simple R-C lowpass filter (integrator) and an op amp (buffer) per module. The first stage or module will have the highest cutoff frequency, approximately 5 KHz, and will set the resolution limit of the system. The output of the buffer, which reproduces the slightly low-pass filtered (and DELAYED) version of the original audio signal, goes on to the input of the next module.

The next module's R-C filter has a slightly lower cutoff frequency, say, 3 KHz. And so on, down to maybe 200 Hz. (Probably best to taper the cutoff frequencies LOGARITHMICALLY for economy and accuracy.)

Back to the first module, which had the highest cutoff frequency of the chain of modules we're building up... say, about 5KHz:

Across the series resistor forming part of our RC filter, we tap off two wires and run them into a comparator (op amp with no feedback resistor... = squaring amplifier). The input side of the resistor (before being low-pass filtered) goes to the (+) input of the comparator; the other lead of the resistor (which connects to the filter cap and then to the buffer input) goes to the (-) input of the comparator.

The comparator, therefore, constantly compares the two versions of the audio waveform at its terminals: the unfiltered/undelayed input vs. the filtered/delayed output side of the RC filter. When the input side is rising in amplitude, and exceeds the delayed output side, the comparator switches its output logic HIGH; when the input signal amplitude dips down below the delayed signal amplitude, the comparator switches LOW. THIS PRODUCES A VERY PRECISE "PEAK-CROSSING" DETECTOR WHICH TENDS TO SWITCH AT THE +/- PEAKS OF A SINE WAVE, rather than at the zero-crossings at the middle of the waveform.

Now we run this squared-off comparator output into a DIFFERENTIATOR --- a series cap (about .001uf) and a resistor to ground (10k) -- which hi-pass filters the square wave into sharp spikes having approximately a 10 uS time constant, nice and short. We have now generated a series of bipolar spikes whose position, relative to one another over time, is a function of the DIFFERENCE of amplitudes and phases of two slightly different copies of the original incoming sound wave.

A similar mechanism has been discovered within the retinal cells in the eye. Carver Mead has reproduced this one, too. I.e., a retina cell "computes" the [logarithm of the] DIFFERENCE between what it "sees" and what its immediate neighbors see -- and it tries to inhibit their outputs, producing automatic EDGE DETECTION which can be thought of as spatially high-pass filtering a visual scene; the result is that CHANGING brightnesses are emphasized. Play with a kitten and you'll notice a direct proportion between how fast you pull the yarn past its visual field and how badly the kitten feels it "has to" pounce on it. And frogs tend to ignore everything except quickly-moving black spots (flies) across its visual field.

This is likely the mechanism of neural coding by which we hear, also (or something like it). Living things tend to respond to CHANGES in sensory stimulus; long, monotonous stimuli lead to neural shutdown (boredom --> sleep) as any school teacher can tell you.

My version of Flanagan's Neurophone preserves several frequency-bands worth of harmonic information... but as time-domain spikes just as Flanagan says we need. And we don't hack the most interesting stuff off the top with this approach, like we do with simpler versions.

INTEGRATE, COMPARE, DIFFERENTIATE, and SUM -- A SUMMARY

Visualise the human cochlea as a long delay-line with damping (low-pass filtering) progressing as you go down the line. Picture a comparator every few millimeters, with its two inputs slightly separated, "sampling" across a small section of the delay line as the waves propagate down the line. An entire array of such comparators, with their outputs differentiated into 10 uS spikes, perhaps "OR'd" together, would present a highly detailed PPM spike-train which, I predict, would produce an increased efficiency in frequency-to-time or analog-to-digital sound conversion for the next generation of homemade Neurophone-like devices.

HERE IS A QBASIC PROGRAM WHICH WILL RUN A SIMULATION OF THE ABOVE ON YOUR COMPUTER SCREEN.... drag your mouse across the following code, COPY it and SAVE AS a new file called COCHLEA1.BAS. Then, RUN it from your resident QBASIC environment.

The program generates a rippled, sawtooth-like "audio" waveform (white) made up of a fundamental and 10 harmonics, and then samples it several times, each time having a slightly lower cutoff frequency (longer time delay, more low-pass filtering). This is displayed in yellow.

The comparator output for each delay is plotted in green.

The superimposed differentiated spikes from all the comparators are plotted at the bottom of the screen in white.

Hope these ideas stimulate further research and development.

' -----

' cochlea1.bas 6/21/97 by Rick Andersen

```
DECLARE FUNCTION integrate (sample, cap, tc)
DECLARE FUNCTION differentiate (sample, cap, tc)
COMMON SHARED accumulator
CONST pi = 3.14159
SCREEN 9: CLS
```

```
FOR timeConstant = 10 TO 600 STEP 100
accumulator = 0
```

```
FOR a = 0 TO 22 STEP .01
wave = 0
```

FOR h = 1 TO 10

wave = wave + SIN(a * h) / h

NEXT h

lopass = integrate(wave, cap1, timeConstant)

IF wave > lopass THEN

trigger = 1

ELSE

trigger = 0

END IF

hipass = differentiate(trigger, cap2, 20)

PSET (a * 30, 50 - wave * 20), 15

PSET (a * 30, 50 - lopass * 20), 14

PSET (a * 30, 100 + timeConstant / 4 - trigger * 15), 2

PSET (a * 30, 270 - hipass * 20), 15

NEXT a

NEXT timeConstant

END

FUNCTION differentiate (sample, accumulator, tc) STATIC

fsample = tc

leakage = 1 - EXP(-2 * pi * 1 / fsample)

capAvg = leakage * accumulator

accumulator = accumulator - capAvg + sample

differentiate = sample - capAvg

END FUNCTION

FUNCTION integrate (sample, accumulator, tc) STATIC

fsample = tc

leakage = 1 - EXP(-2 * pi * 1 / fsample)

capAvg = leakage * accumulator

accumulator = accumulator - capAvg + sample

integrate = capAvg

END FUNCTION

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