

MAX NEUHAUS

The **BROADCAST WORKS** and **AUDIUM**

MAX NEUHAUS: SOUND DESIGN

I would like to begin by talking about something I feel is quite astonishing - this built-in sound analyzer and source that we all have. One of the most astonishing things about it is that we are largely unaware of it.



Right now I'm talking to all of you, but few of you realize you're actually hearing. You don't hear what I'm saying as sound; you are able to understand this small group of phoneme sounds directly as the English language. Your aural mind takes care of all the intricate steps in

between, without distracting you from thinking about the meaning of the words.

I am also fascinated by the remarkable level of aural discrimination which we demonstrate through our use of language. If we look at our language sounds in the context of the total spectrum of sound possibilities that we are able to perceive, then we can see that these sounds that we communicate ideas and thoughts with

occupy only a minute part of that spectrum, and that the differences between them are very small, so small that a non-native speaker has trouble distinguishing between many of them. Yet in our own language we go much further than simply distinguishing between its phoneme sounds. We can tell which part of the country someone was born in from small differences in the way these few sounds are pronounced. These differences are almost immeasurable, yet we are able to distinguish them quite easily, almost automatically.

Another thing most of us are not aware of when we speak is that we superimpose another language on top of our verbal one. It is a language we begin to develop at a very early age - that some say we are even born with. It is cross-cultural.

It is not a discrete language made up of separate words like our verbal one, but a continuum of inflection and intonation as we speak those words. It is a rich source of information about the person we are listening to and what he is trying to tell us - the information between the lines, the missing element which we try to compensate for when we transcribe the spoken into the written word.

It is a parallel to facial expression; we read tone of voice without thinking, as well. It also provides highly accurate information: it is hard for the speaker to manipulate convincingly. Often we use it as the final arbiter of the meaning of the words themselves.

This language has not received much attention from scientists and engineers. In fact, for many years telephone engineers denied its existence both theoretically and literally by limiting telephone bandwidth to the point where it was largely eliminated and only the words themselves could be understood. Modern proposals where the voice sounds in a telephone conversation would not actually be transmitted, but only enough information to

resynthesize the words at the other end, deny its existence also.

seems strange for science to ignore it, especially in the digital age when they are trying to get computers to feel more comfortable by teaching them to talk; it is also the element missing from computer speech. But, among other things, intonation communicates the emotional states of the person speaking; and in the super objective world of science, of course, emotion is taboo.

In the world of culture, though, it is not.

I should also give some background about the ways I think about broadcasting and telephony. Radio and telephone both may seem like rather primitive technologies in this digital age at the end of the twentieth century, but in fact they are the most widely used forms of live communication technologies we have and will remain so for a long time to come.

The global telephone system at this time connects 500 million different places on the earth. It is the biggest machine that we have ever made. This idea of a conversation between two people that can ignore geography: the quality of the line is good enough today that often when I call transatlantic I can convince the other person I'm in New York even though I'm sitting in Paris. The only time I'm caught is when a police car goes by, and they hear the difference in sirens ... Max, you are not ... where are you?

The telephone forms a two-way virtual space in the aural dimension; we function in it aurally as if we were in one real space, but this space doesn't physically exist. The radio on the other hand can give us a live ear view into a space which can be anywhere or nowhere; it can also be completely electronic.

The fact that these are single dimension virtual spaces has some interesting aspects. Rather than the multidimensional virtual realities we are dreaming of in the future, which many look forward to as even better than real life, and some fear will become a substitute for it, a one dimensional virtual space doesn't engulf us. It leaves us in our real world, but extends it. In the same way that the radio is less engulfing than the television, an aural virtual space repropotions focus and stimulates imagination rather than becoming a substitute for it. If we combine the public telephone network and radio broadcast, we can make a virtual aural space in which a large number of people can be at the same time.

This is what I did with "Public Supply I".
