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Editorial
Article: Hallucination research
Books: Verbal hallucinations; sound reproduction
Abstracts: Music analysis

1. Editorial

Recently heard strange words that noone else seemed to hear? This month the Newsletter contains an "acoustic" topic far off the mainstream. Aside from classics like "transduction and neural processing of air pressure waves" there is a new interest to explore the neurophysiological source of the most mysterious of sounds that accompanies humans since ancient times: acoustic halluzinations – voices and noises that seem as real as any and yet cannot be shared by others. They are thus most personal and intimate, and yet at the same time crucial for the diagnosis of mental diseases like schizophrenia. Until today they are surrounded by an air of phantasy, hystery, and even fraud. Using specific magnetic stimulation of parts of the brain researchers are now trying to revive studies from the nineteen-sixties (e.g. by Penfield and Perot, 1963) where electrodes inserted in certain areas were able to deliberately induce acoustic experiences. A tiny stimulus and sounds emerge from within the very brain that perceives them - and classifies them as coming from a stranger. Surely a braintwister that deserves more auditory attention.

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2. Experts See Mind's Voices in New Light

The New York Times, May 6, 2003
By ERICA GOODE

It was just one voice at first, loud and male, coming from the ceiling, saying, "Hi, John," calling him by name as if they were buddies. But after a while, the voice, which he came to know as the "evil genius," urged him to steal other people's brain cells and told him that he had a cancerous tumor in his head. Eventually, other voices joined in, maybe 50 of them, male and female, yelling "as loud as humans with megaphones," John recalled, from the moment he awoke in the morning until he fell asleep at night, cursing or ordering him to kill himself or, once, when he picked up a ringing telephone, screaming in chorus, "You're guilty! You're guilty!"

"It was utter despair," John said. "I felt scared. They were always around."

Auditory hallucinations are a hallmark of schizophrenia: 50 percent to 75 percent of the 2.8 million Americans who suffer from the illness hear voices that are not there. Like John, whose schizophrenia was diagnosed in 1981 and who spoke on the condition that he not be identified, many people with schizophrenia spend years pursued by verbal tormentors as relentless as the furies of Greek mythology. Suicide is sometimes the result, death seeming the only escape from unending harassment.

Yet psychiatrists who study schizophrenia have traditionally shown little interest in the voices their patients hear, often dismissing them as simply a byproduct of the illness, "crazy talk" not worthy of study.

Recently, however, a small group of scientists has begun studying auditory hallucinations more intensively. Aided by new brain imaging techniques, they have begun tracking such hallucinations back to abnormalities in the brain, finding that certain brain regions "light up" on brain scans when patients are actively hallucinating. And the experts are listening far more carefully to what patients say about their hallucinatory experiences.

The research has led to new theories of what may cause such bizarre alterations in perception and has spawned at least one promising new treatment: the delivery of low-frequency magnetic pulses to areas identified by the brain scans (transcranial magnetic stimulation or T.M.S) seems to quiet, at least temporarily, the voices of patients who have not found relief through standard treatment with antipsychotic medications.

Ultimately, the researchers say, knowing more about what causes auditory hallucinations may help them understand more broadly the mechanisms that underlie schizophrenia and other psychotic illness.

In research described in a recent issue of Archives of General Psychiatry, Dr. Hoffman and his colleagues at Yale found that schizophrenic patients who received 132 minutes of the magnetic stimulation over 9 days showed a significant reduction in auditory hallucinations compared with control subjects given a dummy treatment. Half

of the subjects in the study experienced a return of their symptoms within 12 weeks, though in some cases, the hallucinations remained at bay for up to a year. All the patients were also taking antipsychotic medication.

Schizophrenic patients describe voices that not only talk to them but talk about them, haranguing, insulting and sometimes provoking them to hurt themselves or to perform other actions. In many cases, the hallucinations become more intense when the patient is under stress.

Dr. Hoffman noted that transcranial magnetic stimulation applied to Wernicke's area appeared to suppress hallucinations in some schizophrenics. "My view is that in schizophrenia it is not just inner speech or an acoustic memory that is misinterpreted," Dr. Hoffman said. Instead, he said, patients "are actually having perceptual experiences that have the same clarity and vividness of external speech."

Dr. Hoffman's research team is now using M.R.I. scanning with each research subject to determine which brain regions are active when the subject is hallucinating, and then delivering stimulation to that area.

http://www.nytimes.com/2003/05/06/health/psychology/06VOIC.htm

3. Book: Verbal Hallucinations

Voices of Reason, Voices of Insanity. By Ivam Leudar and Philip Thomas. Routledge, London and Philadelphia, 2000.

"Voices of Reason" examines reports of people expressing hearing voices throughout history. These include philosopher Socrates, Daniel Paul Schreber (the German judge whose memoirs were analyzed by Siegmund Freud) and Pierre Janet's famous patient "Marcelle" in Salpêtrière. It shows how the experience has changed from being a sign of virtue to a clear sign of insanity. In a fresh perspective on the topic Leudar and Thomas argue that 'hearing voices' is an ordinary human experience which is unfortunately either mystified or pathologized.

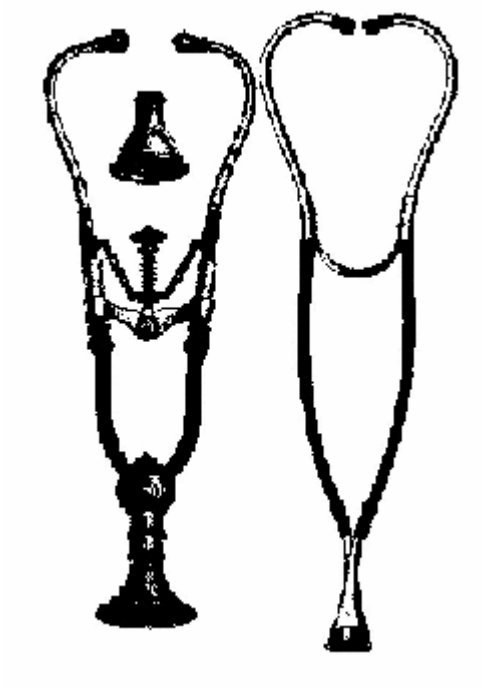
Ivan Leudar is Reader in Psychology at the University of Manchester. Philip Thomas is a Consultant Psychiatrist and Senior Research Fellow at the University of Bradford.

4. Book: On the Origins of Sound Reproduction

The Audible Past. By Jonathan Sterne. Duke University Press, 2003.

"The Audible Past" describes a distinctive sound culture that gave birth to the sound recording and the transmission devices so ubiquitous in modern life. With an ear for the unexpected Sterne uses the technological precursors as an entry point into a history of sound in its own right. This history crisscrosses the liminal regions between bodies and machines, originals and copies, life and death. Along the way Sterne encounters inventors, musicians and philosophers, doctors and patients folklorists and tribal singers. He thus stakes out a largely neglected but important topic.

Jonathan Sterne teaches at the Department of Communication at the University of Pittsburgh. He is also codirector of the online magazine "Bad Subjects: Political Education for Everyday Life".



Binaural stethoscopes - exploring physiology by hearing. From "The Audible Past" by J. Sterne.

5. Abstract: Analysis of Music

Computer Science - cs.SD/0303025
http://arxiv.org/abs/cs.SD/0303025

From: Rudi Cilibrasi Rudi.Cilibrasi@cwi.nl
Date: Mon, 24 Mar 2003 16:01:46 GMT

Algorithmic Clustering of Music

Rudi Cilibrasi (CWI), Paul Vitanyi (CWI and University of Amsterdam), Ronald de Wolf (CWI)

17 pages, 11 figures

Keywords: Sound; Data Analysis, Statistics and Probability; Learning

We present a fully automatic method for music classification, based only on compression of strings that represent the music pieces. The method uses no background knowledge about music whatsoever: it is completely general and can, without change, be used in different areas like linguistic classification and genomics. It is based on an ideal theory of the information content in individual objects (Kolmogorov complexity), information distance, and a universal similarity metric. Experiments show that the method distinguishes reasonably well between various musical genres and can even cluster pieces by composer.