

Homer Dudley's Speech Synthesisers, "The Vocoder" (1940) & "Voder"(1939)



Homer Dudley's 'Voder' of 1939.

"Parallel Bandpass Vocoder" (1939) Homer.W. Dudley: speech analysis and resynthesis.

"The Voder speech synthesizer"(1940) Homer.W. Dudley: a voice model played by a human operator.

The Vocoder (Voice Operated reCORDER) developed by Homer Dudley, a research physicist at Bell Laboratories, New Jersey USA, was a composite device consisting of an analyser and an artificial voice. The analyser detected energy levels of successive sound samples measured over the entire audio frequency spectrum via a series of narrow band filters. The results of which could be viewed graphically as functions of frequency against time.

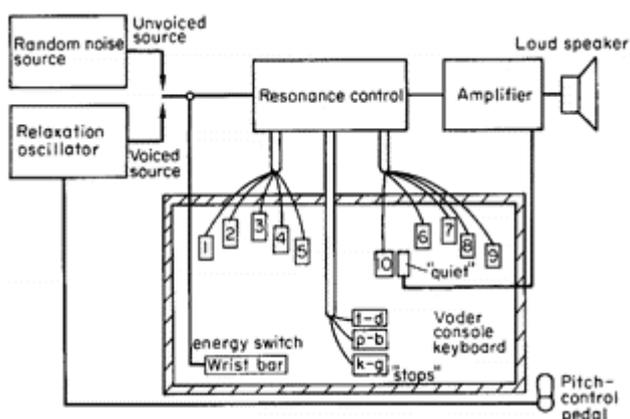
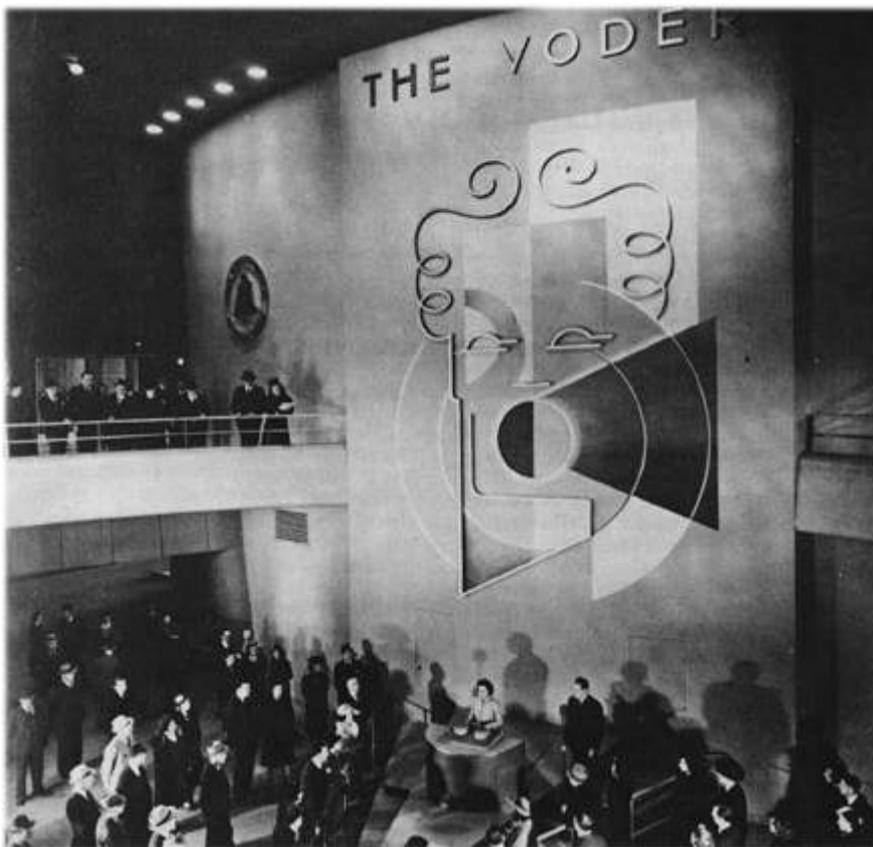


Diagram of the "Voder"

The synthesiser reversed the process by scanning the data from the analyser and supplying the results to a feedback network of analytical filters energised by a noise generator to produce audible sounds.

[A sound sample from Dudley's 1939 Voder, with introduction \(170k au file\)](#)

The fidelity of the machine was limited, the machine was intended as a research machine for compression schemes to transmit voice over copper phone lines. Werner Meyer-Eppler, then the director of Phonetics at Bonn University, recognised the relevance of the machines to electronic music after Dudley visited the University in 1948, and used the vocoder as a basis for his future writings which in turn became the inspiration for the German "Elektronische Musik" movement.



"At the 1939 World's Fair a machine called a Voder was shown . A girl stroked its keys and it emitted recognisable speech. No human vocal cords entered into the procedure at any point; the keys simply combined some electronically produced vibrations and passed these on to a loud-speaker."

("As We May Think" by Vannevar Bush, 1945.)

Further Information: