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< The Vocoder: From Speech-Scrambling To Robot Rock

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Heard on Morning Edition

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May 13, 2010 - LYNN NEARY, host:

If you've listened to pop music in the past 40 years, you've heard more than a few songs with a robotic sound. You might have even wondered how that effect was created. Well, it didn't happen in a music studio - it all began at the phone company.

Unidentified Man: (Speaking through vocoder) This is the Voice of Power. I make it possible for you to know electric light and radio and television. I am both your servant and your master, so beware of how you use me.

NEARY: That other worldly voice was recorded in the 1920s by Bell Labs, the research division of AT&T. That strange sound was made by speaking into one of their newest inventions, a vocoder. Originally developed to reduce the cost of long-distance, the vocoder has had many uses over the years.

Dave Tompkins has written a new book about the device, "How to Wreck a Nice Beach: The Vocoder from World War II to Hip-Hop."

He says the vocoder played a significant role in the Second World War.

Mr. DAVE TOMPKINS (Author, "How to Wreck a Nice Beach: The Vocoder from World War II to Hip-Hop"): Churchill and FDR's conversations were being intercepted by the German intelligence and deciphered in real time. Pearl Harbor really cemented that idea because of the warning, the Japanese ultimatum could not be transmitted by phone because the phones could not be trusted, they were looking for a different way to encode speech. And so Bell Labs was commissioned by the Natural Defense Research Committee, in 1942, to develop this massive speech-encoding machine.

NEARY: Was there ever any trouble understanding what people were saying? Obviously with this technology, you can really distort words and distort what's being said.

Mr. TOMPKINS: Intelligibility was a problem, and particularly with the pitch control. They would send Bell Labs' engineers to the Pentagon to regulate this wild pitch situation. And so, they didn't mind world leaders and generals sounding like robots, just as long as they didn't sound like chipmunks. Eisenhower did not want to sound like a chipmunk.

NEARY: All right. At some point, the vocoder made a shift from being something the military used, to becoming part of popular culture. When did that begin to happen?

Mr. TOMPKINS: The biggest shift occurred in Germany, and there's a speech in 1949 by an information theorist named Werner Meyer-Eppler, and he talked about the applications of artificial speech. And the speech inspired radio engineers in West Germany to have a vocoder developed by Siemens for West German radio in Cologne.

But a big transitional point would be Wendy Carlos' soundtrack for "A Clockwork Orange." Wendy Carlos did a vocoder interpolation of the fourth movement of Beethoven's "Ninth." And essentially that introduced the vocoder to its first major audience.

(Soundbite of vocoder interpolation, Beethoven's "Ninth Symphony")

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