

Christmas Carol Talk

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Even without the lyrics, the tunes of some Christmas carols -- such as "Jingle Bells" or "Deck the Halls" -- sound uplifting. But the melodies of other songs like "We Three Kings" have a different, somber sound.

That's because the notes used to compose these pieces <u>music</u> were borrowed from the sounds we make in everyday speech, according to research published in the latest issue of <u>Journal of the Acoustical Society</u> <u>of America</u>. The notes in Jingle Bells resemble patterns in excited talking, while the notes in We Three Kings resembled patterns in subdued talking.

When we speak, our vocal chords vibrate to produce a pitch. By moving the lips and the throat move, our bodies transform that pitch into a complicated pattern of many simultaneous sounds with different pitches -- which can be seen on a diagram called a spectra that shows how loud all the different <u>sound</u> frequencies in our speech are. Every vowel has a different pattern of sounds that allows ears of a listener to distinguish an "ah" from an "oo."

"Lots of people over the centuries have noted similarities between speech and music, but no one has compared the spectra of these two sound categories," said Purves.

When we get excited, the pitch produced by the vocal chords rises. This changes the pattern of sound for each vowel to mathematical relationships that resemble many of the chords used in "major" scales and songs like "Happy Birthday." In subdued speech, the pitch by the



vocal chords drops, changing the vowel patterns to resemble "minor" chords used in carols such as "God Rest Ye Merry Gentlemen."

The research builds on previous work by Purves suggesting that every note on the piano and all the scales of notes used in music around the world -- from Japan to India to the West -- are fundamentally connected to patterns in the sounds of conversation.

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