

Musical illusion fools audiences and performers, says researcher

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(PhysOrg.com) -- Musicians take advantage of a previously undocumented musical illusion to change the way audiences hear their performances. Intriguingly, the performers themselves are generally unaware of what they are doing.

Visual information can have a profound impact on how we experience live music, creating an illusion where percussive sounds seem longer or shorter than they really are.

In an article published in a recent edition of the journal *Percussive Notes*, Michael Schutz, assistant professor in the Department of Music at McMaster University describes how expert musicians take advantage of a previously undocumented musical [illusion](#) through visible physical gestures to change the way audiences hear their performances. Intriguingly, the performers themselves are generally unaware of what they are doing.

Using videos of a world-renowned percussionist Michael Burritt, Schutz found that the length of the physical gesture - the up-down motion used to strike a percussion instrument - has no effect on acoustic duration of musical notes. In other words, notes produced using long and short motions are acoustically indistinguishable. But when study participants were watching the gestures as well as listening, the notes sounded long or short due to their brains' integration of auditory and [visual information](#).

"Although physical gestures fail to change the sound of a note, they can change the way a note sounds," explains Schutz, who is affiliated with the McMaster Institute for Music and the Mind. "It's very much like the well-known 'ventriloquist illusion' in which we think the speech or sound is coming from the lips of a mute puppet."

This raises some interesting questions about how

music is best experienced, he says. In this context, performers can only realize their musical intentions through the use of visual information. Therefore, do CDs, mp3s and radio broadcasts capture the full musical experience, or do they instead rob performers and listeners of an important dimension of musical communication?

Not only do expert musicians "trick" their audiences, they in fact trick themselves. Many professional musicians believe their gestures change the acoustic information they produce. Although this research demonstrates they have no acoustic effect, these gestures accidentally accomplish their goal by instead changing an audience's perception.

"Sound becomes music only within the mind of the listener," says Schutz. "Therefore [gestures](#) that change the sound within the mind have done more than 'alter perception'. They have effectively changed the music."

Provided by McMaster University

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