

Ingo Titze, Associate Editor

# Response to Timothy Fink Regarding Gender Gap Shrinking in Voice

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Ingo R. Titze

**I**N RESPONSE TO SOME EARLIER OBSERVATIONS I made regarding the changing female voice, Professor Timothy Fink writes the following interesting letter:

Several years ago I was the music director for the Elton John musical *Aida*, and it dawned on me that all the male-female duets were harmonized in 3rds. “In my days” when I sang Curly in *Oklahoma* it was 6ths and 10ths! Gender role shifts in society are reflected in the quantity and quality of the female roles being written and their characterizations. Belting is no longer the old battle axe, but the attractive ingénue. However, these “strong” female characters have adopted formerly masculine attributes, singing in the same voice they speak in—anything resembling the classical head voice reflects a weaker, old-fashioned character. In fact, the 2002 stage version of *Thoroughly Modern Millie* makes use of this new reality: the modern Millie belts, while her old fashioned friend, the operetta singer, sings in head voice. It’s not just “operettas” that are out of style, it’s the vocalism too.

Likewise for men. The old sound of Curly as originally played by Alfred Drake is too butch, too “wife beater,” and not reflective of the more sensitive modern male ideal. Listening to the 2002 revival of *Oklahoma* and Hugh Jackman’s Curly, you’ll hear the same key but a “tenor” timbre. Alas, baritones and sopranos have all but disappeared from the contemporary MT stage. Because musicals alternate speech and song, believability is improved by the singing voice matching the speaking voice. With gender parity there is a more gender-neutral expectation of sound. Covering for men is forbidden. A natural, speech position larynx, and a bright open, unmanufactured (untrained) sound is the style. The nineteenth century technology, the singer’s formant, has been replaced with the microphone.

I’ve had an interest in the science of voice pedagogy since my days at the University of Colorado when I was introduced to the writings of Berton Coffin (and his vowel chart) and studied with Barbara Doscher. Now as a university professor, I direct, conduct, and teach

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voice for both music theater and opera. So I spent my sabbatical in 08 reading everything I could on “belting” and going to various university music theater studios and New York to witness the evolving pedagogy in action. I noticed a number of teachers vocalizing the female students on semi-closed vowels (/o/, /oe/, /e/) but with a heavier vocal adjustment (more thyroarytenoid). The resulting sound is different from the open, wide-mouthed, “toothy,” 2nd harmonic belting, but still relates to it in timbre because it doesn’t flip into head voice. The singer experiences a resonance shift, often calling it mixed; the listener hears it as the belt (or pop) continuing on up the scale.

You [Dr. Titze] seemed to suggest in an earlier piece in JOS that belting is only 2nd harmonic quality. I’m not sure the MT voice teachers would agree.

Years ago Dr. John Large published a piece about where male operatic singers experience the “cover” happening. They experienced it earlier with the closed vowels /i/ and /u/ (around C<sub>4</sub>), later with /o/ and /e/ (around E<sub>4</sub>), and lastly with /a/ at around F<sub>4</sub><sup>#</sup> or G<sub>4</sub>). My female MT beltters experience the same thing, but about a third or fourth higher or more. Couldn’t this be a similar acoustical shift?

You [Prof. Fink] give important observations and descriptions of what is happening in a shrinking vocal gender gap. Many female high notes produced in music theater, gospel, and jazz are perceived as *high* from a male perspective, in the region of A<sub>4</sub> to E<sub>5</sub>. The bulk of the acoustic energy is weighted toward the 2nd and 3rd harmonic rather than the fundamental, as in males. This greater harmonic energy provides a richer timbre and a high “apparent” pitch, even though it is an octave lower than an operatic high pitch with similar bravado. Males and females sing in thirds (harmonically) because these intervals are more in agreement with *vocal tract* anatomic differences than *vocal fold* differences. In both

genders, the voices “turn over” when the second harmonic passes through the first formant on an ascending scale, which is only a few notes higher in females than in males (20–30%, a musical third or fourth) when vocal tract differences (formants) alone are considered. The greater gender gap in vocal fold length (about 60%) is minimized somehow, but the exact mechanism is not yet clear. I suspect that women are using less cricothyroid muscle activation to keep the average pitch lower and more thyroarytenoid activation to increase harmonic energy. Incidentally, Ethyl Merman did not use the very bright vowels (/a/ and /æ/) but still got the strong second harmonic.<sup>1</sup> This agrees with your observation about not all MT singers belting with a trumpet-like mouth shape. We are working on sorting this out. Thank you for the dialogue.

## NOTE

1. I. R. Titze, A. S. Worley, and B. H. Story, “Source-Vocal Tract Interaction in Female Operatic Singing and Theater Belting,” *Journal of Singing* 67, no. 5 (May/June 2011): 561–572.

**Ingo R. Titze** is Distinguished Professor of Speech Science and Voice at the University of Iowa and Executive Director of the National Center for Voice and Speech at the University of Utah. His formal education is in physics and electrical engineering, but he has devoted much of his studies to vocal music and speech. Dr. Titze has published more than 400 articles in scientific and educational journals, coedited two books titled *Vocal Fold Physiology*, and now has three books in print: *Principles of Voice Production*, *The Myoelastic Aerodynamic Theory of Phonation*, and *Fascinations with the Human Voice*. He has lectured throughout the world and has appeared on such educational television series as *Innovation*, *Quantum*, and *Beyond 2000*. He is a recipient of the William and Harriott Gould Award for laryngeal physiology, the Jacob Javits Neuroscience Investigation Award, the Claude Pepper Award, the Quintana Award, and the American Laryngological Association Award. He is a Fellow and a Silver Medalist of the Acoustical Society of America, and a Fellow of the American Speech-Language-Hearing Association. Dr. Titze has served on a number of national advisory boards and scientific review groups, including the Scientific Advisory Board of the Voice Foundation and the Division of Research Grants of the National Institutes of Health. In addition to his scientific endeavors, Dr. Titze continues to be active as a singer. He is married to Kathy Titze and has four children and eight grandchildren. Mail should be addressed to Ingo R. Titze, National Center for Voice and Speech, 330 WJSHC, Iowa City, IA 52242. Telephone (319) 335-6600.