

Abstract Submitted
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Power flow in normal human voice production MICHAEL KRANE,
Penn State University — The principal mechanisms of energy utilization in voicing are quantified using a simplified model, in order to better define voice efficiency. A control volume analysis of energy utilization in phonation is presented to identify the energy transfer mechanisms in terms of their function. Conversion of subglottal airstream potential energy into useful work done (vocal fold vibration, flow work, sound radiation), and into heat (sound radiation absorbed by the lungs, glottal jet dissipation) are described. An approximate numerical model is used to compute the contributions of each of these mechanisms, as a function of subglottal pressure, for normal phonation. (Acknowledge support of NIH grant 2R01DC005642-10A1.)

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