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“Objective Measures Comparing Different Interpretations of Operatic Excerpts”

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Abstract:

The primary aim of the study was to observe acoustic and aerodynamic adjustments that an elite soprano makes when vocally creating contrasting interpretations of the same lines from the standard operatic canon. The performer is a soprano who currently performs at the Metropolitan Opera in NYC. Short excerpts from two operas were sung to show contrast in intentional registration shifts through the primo passaggio. Analyses were of simultaneously recorded wideband airflow, microphone, and EGG signals. The two interpretations for each excerpt varied the perceived amount of chest and head registration according to the performer. The main findings were that (1) there were large formant differences for the intended vowels between the two interpretations, resulting in large spectral differences for the “same vowels” in the score; (2) the more “provocative” interpretations were sung in less time; (3) vibrato extent and rate were varied selectively for specific vowels, but on average were similar between interpretations; (4) typically the average airflow was greater in the interpretation that was considered more “indirect” (and would be produced “aside” on stage); (5) the more provocative interpretations had greater airflow spikes (peaks) relative to consonant production, suggesting subglottal pressure control; (6) the primary example of a registration shift from head to chest register was accompanied by a severe drop in airflow suggesting a significant rise in laryngeal airflow resistance; (7) a primary indication of intent for one of the interpretations was a large variation in the intensity for emphasis. The research suggests that contrastive interpretations have contrastive objective measures that lend greater understanding of basic processes of phonation and communication intent, and provide basic pedagogical information to guide singers to valid interpretation practices.