



## 50<sup>th</sup> year anniversary CoMeT

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### **“Hyperfunction, Airflow, Fundamental”**

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The function of the vocal folds is the most vulnerable part of voice production and is therefore clinically and artistically relevant. The output of the vocal fold vibrations during phonation is a pulsating glottal airflow, which can be analysed by inverse filtering the radiated sound. The result can be shown in terms of flow glottograms, showing glottal airflow versus time. Flow glottograms are characterized by quasi-triangular pulses surrounded by typically ripple-free segments during the open and closed phases of the vocal fold vibration cycle, respectively. Inverse filtering classically trained male singer voices and deliberately hyperfunctional voices revealed a very strong correlation between the amplitude of the pulse and the amplitude of the voice source fundamental. – For a given subglottal pressure, the pulse amplitude can be varied by changing glottal adduction, increased adduction producing shorter pulses with lower amplitudes. The area under the pulses represents the mean airflow, provided absence of glottal leakage. Hence, glottal adduction affects airflow; an increase of glottal adduction produces smaller pulses, decreased airflow and a weaker voice source fundamental. Habitual use of hyperfunctional phonation tends to lead to voice disorders. Thus, the results seem to explain the beneficial effect on such voices of airflow exercises, such as phonation on the consonant /r/ or lip trill. It also suggests that the degree of hyperfunction can be heard in terms of the dominance of the voice source fundamental.