

THE SHOUTING VOICE ABILITY AND THE IMPORTANCE AS A 'FITNESS' PARAMETER FOR ALL VOICE USERS

Josef Schlömicher – Thier¹, Hannes Tropper¹, Ingolf Franke²

¹ Austrian Voice Institute and International Voice Center Austria

² WEVOSYS medical technology GmbH, Baunach, Germany

Abstract: The term "shouting voice" is understood to mean a voice production that is physiologically and healthily produced and thus by the rules of vocal hygiene. The shouting voice is created by producing a short, swelling, powerful sound using increased breath pressure and complete glottis closure. This tone represents the highest and loudest vocal range of the chest register. The measured frequency position of the shouting voice in the vocal field coordinate system, often an indentation of the vocal field, corresponds to the position of the register transition between the chest and head register. According to the voice evaluation protocol of the European Laryngological Society (ELS), the maximum performance in men is 95dB and in women 90dB. This can be used as a possible guide in the determination of voice registers and to define the "vocal field architecture", as same as to define the "fitness of the voice. We analyzed the acoustic structure and the dynamic of the shouting in four everyman shouters in the play "Everyman" at the Salzburg Festival and we will underline the hypothesis, that a professional shouter has an "Shouting Formant" similar to the resonance strategy of singers and the ability of an extraordinary shouting dynamics (113 – 120 dB A)

Keywords: Shouting Formant, Shouting Dynamics, Leap Interval, Fitness of the Voice

I. INTRODUCTION

1. History of Everyman

The dramatist Hugo von Hofmannsthal completed his reworking of the 15th century English morality play "Everyman" (Jedermann) in 1911. Later with Max Reinhard and Richard Strauss he founded the Salzburg Festival and the first production of Jedermann to be performed there was under the direction of Max Reinhard on 22.08.1920 on Cathedral Square. Alexander Moissi was cast as the first Jedermann. The Cathedral Square in Salzburg still offers a splendid

open-air backdrop for this morality play, only in the case of heavy rain does the Everyman Play move to the Large Festival Hall.

2. The Story

A rich squire, businessman, is extremely greedy and stingy. He lets his debtors be thrown into debtor's prison, good deeds happen rarely, but if then only to avoid a troublesome situation. So it is that to avert annoying lamentations he consents to the support of the family of his debtor, whom he has hard-heartedly thrown into debtor's prison. A splendid feast is prepared, where he is escorted by the Buhlschaft. Here, however, he begins to feel poorly. He hears bells ringing and loud voices calling his name - "Jedermann, Jedermann!", things that he alone among the party-goers can hear.

3. The Shouting Voice

The term "shouting voice" is understood to mean a voice production that is physiologically and healthily produced and thus by the rules of vocal hygiene. The shouting voice is created by producing a short, swelling, powerful sound using increased breath pressure and complete glottis closure. This tone represents the highest and loudest vocal range of the chest register. The dynamics of the shouting voice defines the "fitness of the voice," the maximum performance in men is 95dB and in women 90dB. This is opposed to the term "**Screaming**", created by an exaggerated frequency, roughly creaking, fidgeting in the falsetto, and often emotionally charged.

II. METHODS

Shouting” Locations



There are four Jedermann shouters for each performance. They are positioned at different distances. Two shouters are located behind the Cathedral arches (left and right), A third shouter is in the Franciscan Church tower 150 meters away. The fourth shouter is located on the "Katz" at the Fortress Hohensalzburg and has to cope with the longest distance of about 500 meters

Material

Everyman Shouting Casting 2012

The measurement of the Salzburg Everyman-Shouter was carried out with the Lingwaves Phonetogram, with the lip microphone distance of 30 cm. With the measured at the Shouters a Shouting level values between 113 to 120 dB(A). It turns out that only Shouters with a level value of at least 113 dB (A) were accepted by the director because they were able to handle the resonating space of the Cathedral Square well.

Shouter	Dynamics in dB	F0
1	120 dB	349Hz, f4,
2	118 dB	380Hz, fis4
3	118 dB	306 Hz, dis4
4	113 dB	289 Hz, d4

The acoustic Analyse of the of the four shouters shows a significant energy increase in the range of 2000-3000 Hz in professional Shouter (Everyman Shouter) and could in analogy to singer formant (2800-3500 Hz) be named as the shouting formant (2000-3000 Hz).

8	3	14	118	459	ais4	
5		12	115	368	fis4	
12		12	106	345	f4	
11		10	118	341	f4	
4		9	113	353	f4	
6		8	115	353	f4	
9		6	114	287	d4	
10		4	110	368	fis4	
13			111	483	h4	

III. RESULTS

The Measurement of four Shouters 2019 (System Lingwaves)

There were two Bariton Shouter (349Hz, 380Hz, f4, fis4), and two Bass Shouters (289Hz, 306Hz, d4, dis4). There was a shouting interval of a quart between the Baritone Shouters (380 Hz, fis4) and the Bass Shouters (289 Hz d4).

IV. DISCUSSION

It was surprising, that these middle Shouting Frequencies of the casting 2012 and 2019 are in the Leap Interval, where according the presentation of Don Miller, Jan Svec and Harm Schutte the characteristic leap interval (CLI) for the chest – falsetto leaps in a given voice is situated [1]. This region is called the first passagio for women and second passagio for men. The measured frequency position of the shouting voice in the Phonetogram coordinate system, corresponds to the position of the register transition between the chest and head register ([2], [3]) Schutte 1980, Gross 1981, Klingholz 1985) These two transitions show the phenomenon of a zone where the chest registers is left or reached again from above. This zone is between D4 (294 Hz) and F4 (349 Hz). It is precisely these register breaks that are artificially formed during yodelling. The Position of the Shouting Frequency is the Zone of the upper end of the chest register.

V. CONCLUSION

Only Shouters with a level value of at least 113 dB (A) were accepted by the director of the Everyman Play, because they were able to handle the resonating space of the Cathedral Square well. All the shouters have had a gifted shouting ability and a special "fitness of the voice." The measured frequency position of the shouting voice in the Phonetogram coordinate system corresponds to the position of the register transition between the chest and head register. The acoustic analysis shows a significant energy increase in the range 2000-3000 Hz in professional Shouter (Everyman Shouter) compared to a shouter with a weak shouting voice (Nonprofessional Shouter) and could in analogy to singer formant (2800-3500 Hz) be named as the shouting formant (2000-3000 Hz).

REFERENCES

- [1] D.G. Miller, J.G. Švec, HK Schutte. *Measurement of characteristic leap interval between chest and falsetto registers.* J Voice 2002; 16(1):8-19
- [2] J. Calvet, G. Malhiac. *Courbes vocales et mue de la voix.* J Franc Otorhinolaryngol 1952; 1:115-124
- [3] F. Klingholz, F. Martin, (1983) *Die quantitative Auswertung der Stimmfeld- Messung.* Sprache – Stimme – Gehör 1983; 7:106-110

