Mag. Alexander Mayr

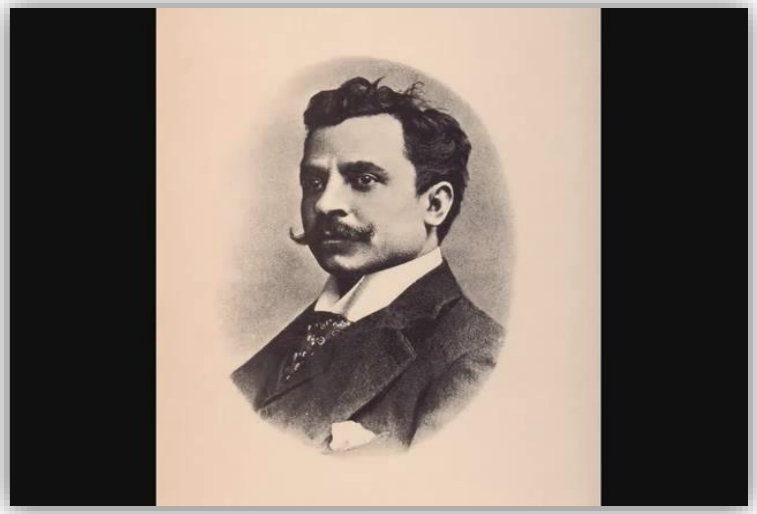
Reconstructing the „lost art“ of the *voce faringea.*

An artistic research project.

Third Meeting of the European Platform for Artistic Research in Music (EPARM) at the Conservatoire Supèrieur de Musique et Dance de Lyon, 18-20 April 2013.

Gaetano Donizetti: from *Don Pasquale,* Ernesto's aria „Com'e gentil"

- **Aristodemo Giorgini** (1879-1937), recorded 1906. <http://www.youtube.com/watch?v=nkhWp47Bl-M> (March 2° 2013)
- **Fernando de Lucia** (1860-1925), recorded (1907). <http://www.youtube.com/watch?v=RiSPAgpOC9g> (March 2° 2013)
- **Luciano Pavarotti** (1935-2007), recorded 1969. <http://www.youtube.com/watch?v=CAXpMfS-KRc> (March 2° 2013)



- **Tosi, Pier Francesco**: „Opinioni de cantori antichi, e moderni o sieno osservazioni sopra il canto figurato di Pier Francesco Tosi", Accademico Filarmonico, Bologna: 1723.

- **Mancini, Giambattista** „Pensieri e riflessioni pratiche sopra il canto figurato", Nella Stamparia di Ghelen, Vienna: 1774.

2-Register-Theory:

- "voce di petto" (chest voice): the natural, strong and bright register for low voice ranges.
- "falsetto" or "voce di testa" (falsetto or heard voice): the more darker, weaker register for high ranges.

Problem: the confusing equating of the terms „voce di testa" and „falsetto".

Characterisation of John Brahams (1774-1856), Adolphe Nourrit's (1802-1839) falsetto:

"The whole compass of Mr. Braham's voice is 19 notes, and if not all of equal strength, they yet differ so little in power perceptibly to the auditor, that it seems as if the singer could at pleasure produce any given quantity of tone from pianissimo to fortissimo upon any one of them. Mr. Braham can take his falsetto upon any note from D to A at pleasure and the juncture is so nicely managed that in an experiment to which this gentleman had the kindness to submit, of ascending and descending by semitones, it was impossible to distinguish at what point he substituted the falsetto for the natural note."

(N.N.: The Quarterly musical magazine and review, Vol. 1, London: 1818)

that I never heard that fine singer, and never saw that elegant and careful actor, without feeling that neither his clear and metallic voice— nasal in its falsetto — nor his graceful postures, belonged to the greatest school of art.

(Chorley, Henry F.: Music and manners in France and Germany, Vol 1, London 1841)

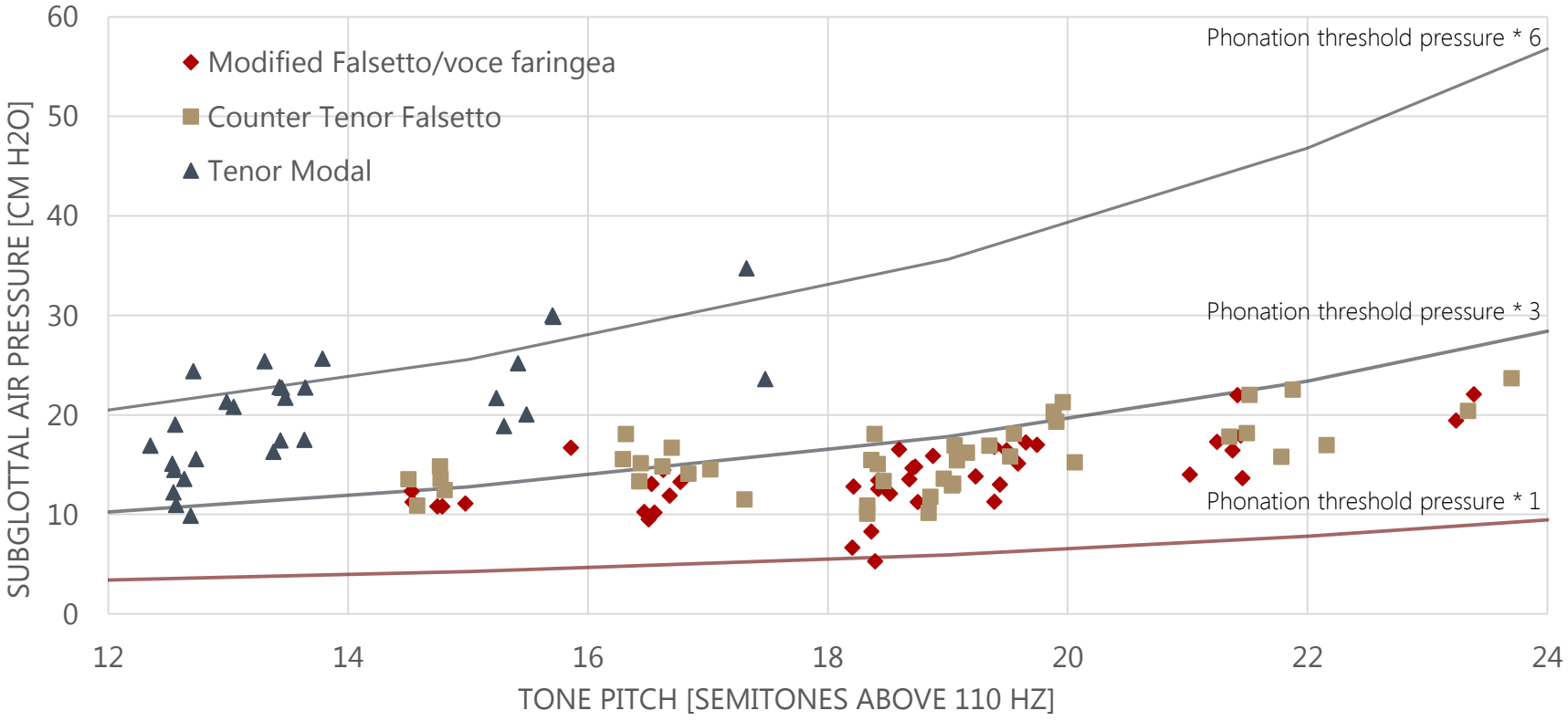
Samples of various registers in my voice: **modal**, **falsetto** and **voce faringea** were recorded and invers filtered.

We have measured, compared and documented various physical parameters of the glottal functions during phonation, e.g.:

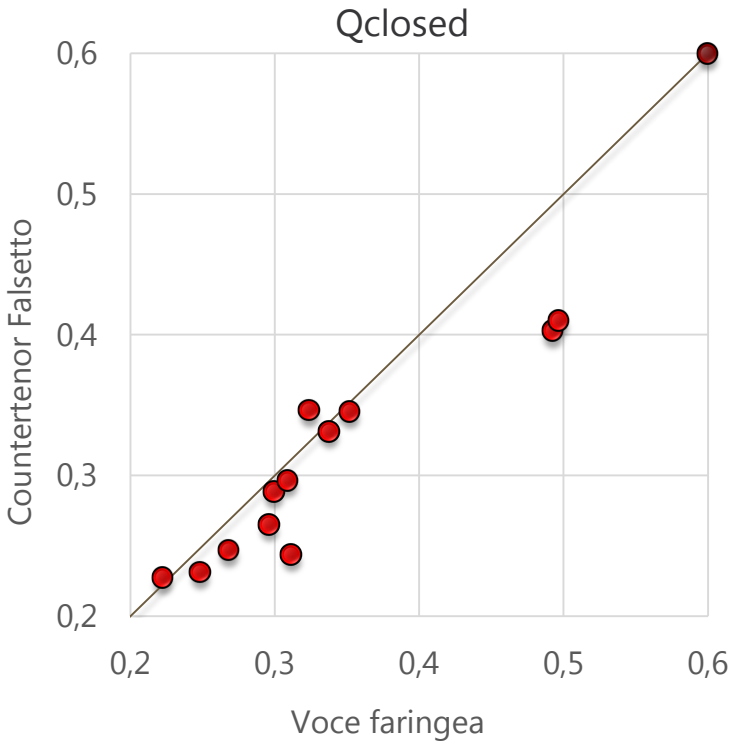
- subglottic air pressure,
- closed an open phase of the vocal folds,
- the glottal air leakage,
- the volume of the two lowest component harmonics.

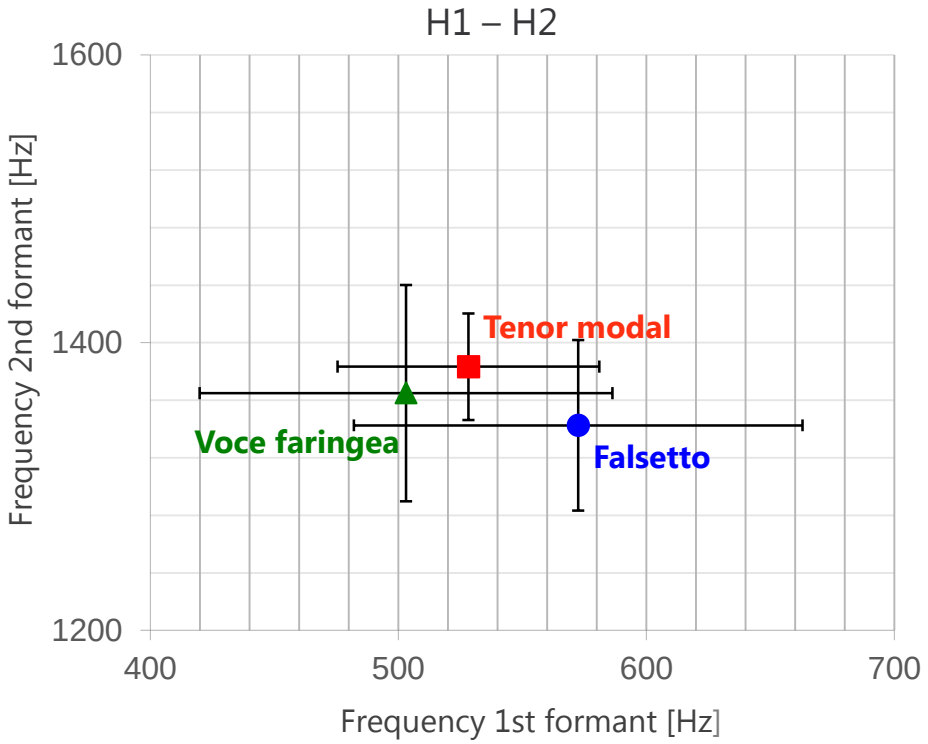
Electroglottograph: http://maywdkbfg.info/laryngograph/ (2.3.2013)

Comparison of the subglottal air pressure in voce faringea, falsetto and modal register.



Closed Quotient of the vocal folds and frequency values of the 2 lowest harmonic components.





Thank you for your attention!

Voice register terminology.

VOICE REGISTER

F_2 87 c/s Female — F_3 175 — D_4 294 – F_4 349 — D_5 587 – E_5 659 — B_5 988 — C_7 2093

F_1 44 c/s Male — F_2 87 — D_3 147 – F_3 175 — D_4 294 – F_4 349 — B_4 494

Lägsta (djup) område 29, 35, 39
Bierbass 5
Kehlbass 18, 21, 12
Oktavierreg. 5
Strohbass 16, 9, 21, 12, 14, 8, 33, 19 5, 38
Tiefstes Gebiet 29
Deepest Range 29
Rayon profond 29

Djupläge 29, 34, 35, 9, 37, 39
Baseregister (vanligt)
Brustreg. 21, 19, 31, 34, 38
Knorpelreg. 2
Brststimme 12, 21, 18, 34
Vollstimme 4, 18
Vollreg. 5
Tiefoktave 9
Unterreg. 3
Fuldreg. 5, 38, 40
Chestvoice 19
Volliton 18
Voix de poitrine 17
Djupt register 6
Contrebasse 6
1. reg. 30
Long-reed 36
Chest register 33
reg. Grave 6
Tieflage 29
Deep-level 29, 37
Site grave 29

Mellanläge 29, 34, 35, 9, 39
Volliton 18
Brustetimme 18
Mittelregister 23, 21
Mittelstimme 7, 12*, 21, 9, 18, 14
Amphotere Töne 9, 10, 11, 17
Halbstimme 26
Falsetto I 28
Falsett 6, 7, 12, 18, 31
Kopfregister 1, 33
Kopfstimme 1
Bänderstimme 2
Zwischenstimme 6
Registermischung 5
Mellanregister 6, 5
Mellanstämma 7
Mischstimme 7
Midvoice 19
Medium 17, 6, 25
Voix mixte 17, 14, 25
Mitteloktave 9
Fausset-tête 6
2. reg. 30
Long-reed 36
reg. Moyen 6
Rand register 38
Mittellage 29
Mid-level 29, 37
Site moyen 29

Höjdläge 29, 34, 35, 9, 39
Headvoice 32
Falsettovoice 19
Falsetto II 28
Zwischenstimme 11
Kopfreg. 21, 19
Fistelstimme 12, 18
Hochoktave 9, 37
Oberreg. 3
Dünne Stimme 2
Mellanstämma
Kopfton 26
Kopfregister 23
Randstimme 4
Randregister 5
Hochregister 6, 14
Falsett 11, 18, 14
Huvudröst (de flesta)
Voix de tête 17
Kopfstimme 21, 18, 32, 34
Falsettregister 21, 12, 33
Fausett-tête 6, 17
3. reg. 30
Short-reed 36
reg. aigu 6
Hovedstemme 38
Hochlage 29
High-level 29, 37
Site aigu 29

Högsta (höjd) område 29, 32, 35, 39
Flageolette 8, 17
Pfeiffregister 8, 21, 14, 34
Fistelstimme 21, 11, 18, 23, 20, 31, 38
Partialstimme 5
Delregister 5
Kortregister 5, 33, 38
Falsett 18, 19, 32, 36
Petit registre 16
Voix de sifflet 16, 17
Flöjtestimme 33
Grenzoktave 9
4 reg. 30
Pipe register 19
Flute 19
Whistle 19
Höchstes Gebiet 29
Highest range 29
Rayon élevé 29

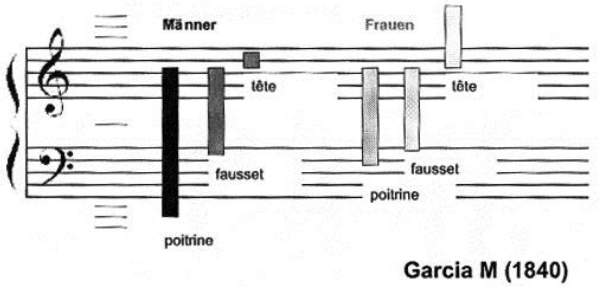
p/s =Hz = c/s
fistula =

1. Rossbach
2. Seydel
3. Hennig
4. Scheidemantel
5. Forchhammer V.
6. Garcia
7. Stockhausen
8. L. Mozart
9. Hartlieb
10. Gutzmann
11. Merkel
12. Bottermund
13. Seiffert
14. Barth
15. Fröschels
16. Garde
17. Tarneaud
18. Luchsinger
19. Van den Berg
20. Winckel
21. Preissler
22. Thausing
23. Nadolecsny
24. Trendelenburg
25. french expression
26. Stern
27. Hollien
28. Chiba
29. Mörner
30. Husson
31. Musehold
32. Rubin H.
33. S. Schmidt
34. P. Lohmann
35. S. Fex
36. M. Mackenzie
37. Vennard
38. NHR Blegvad
39. Sällström F.

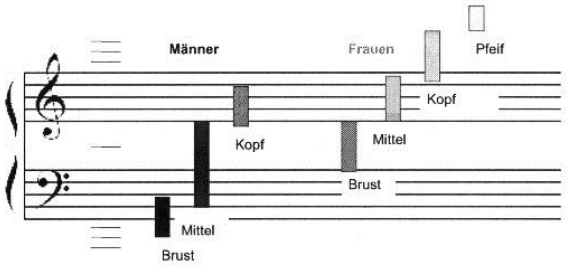
*12 „Mittelstimme oder Falsett"

Mörner, Marianne et al.: Voice register terminology and standard pitch, Stockholm: 1963

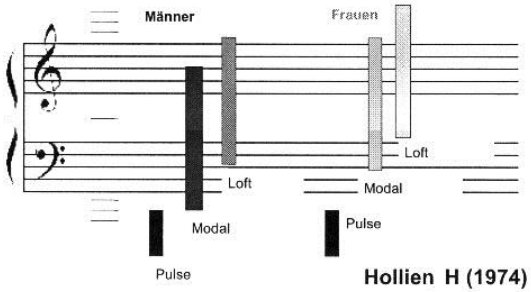
Historical cross-section of register terms (1840 – 2000):



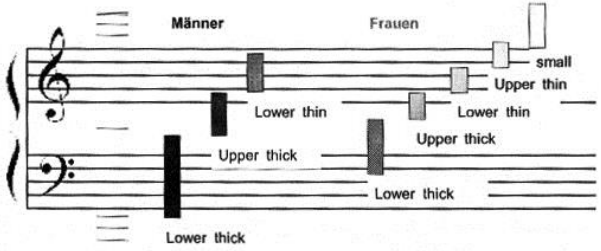
Garcia M (1840)



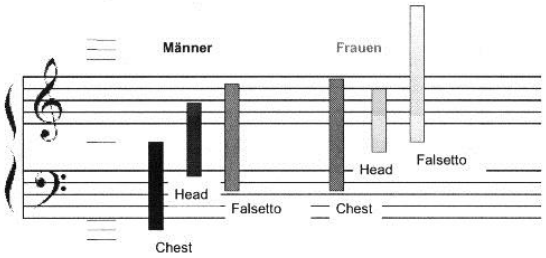
Nadoleczny M (1923)



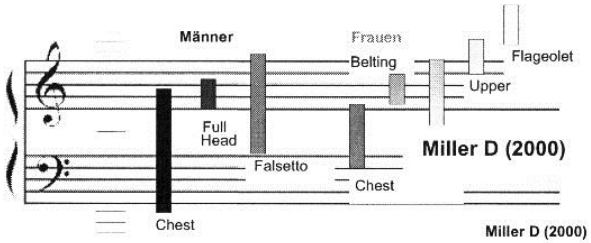
Hollien H (1974)



Behnke E (1880)



Vennard W (1967)

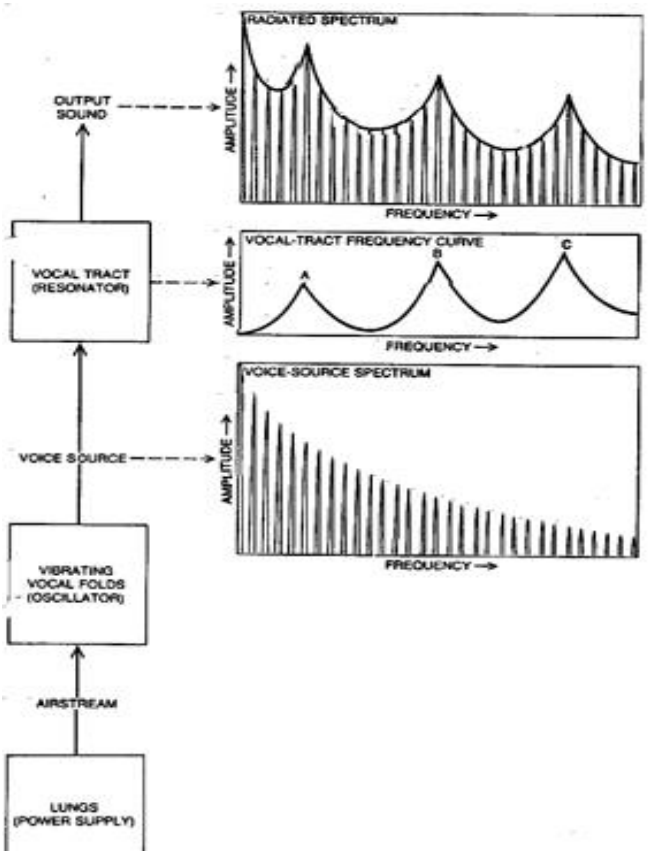


Miller D (2000)

Echternach, Matthias: Untersuchungen zu Registerübergängen bei männlichen Stimmen, Bochum/Freiburg: 2010.

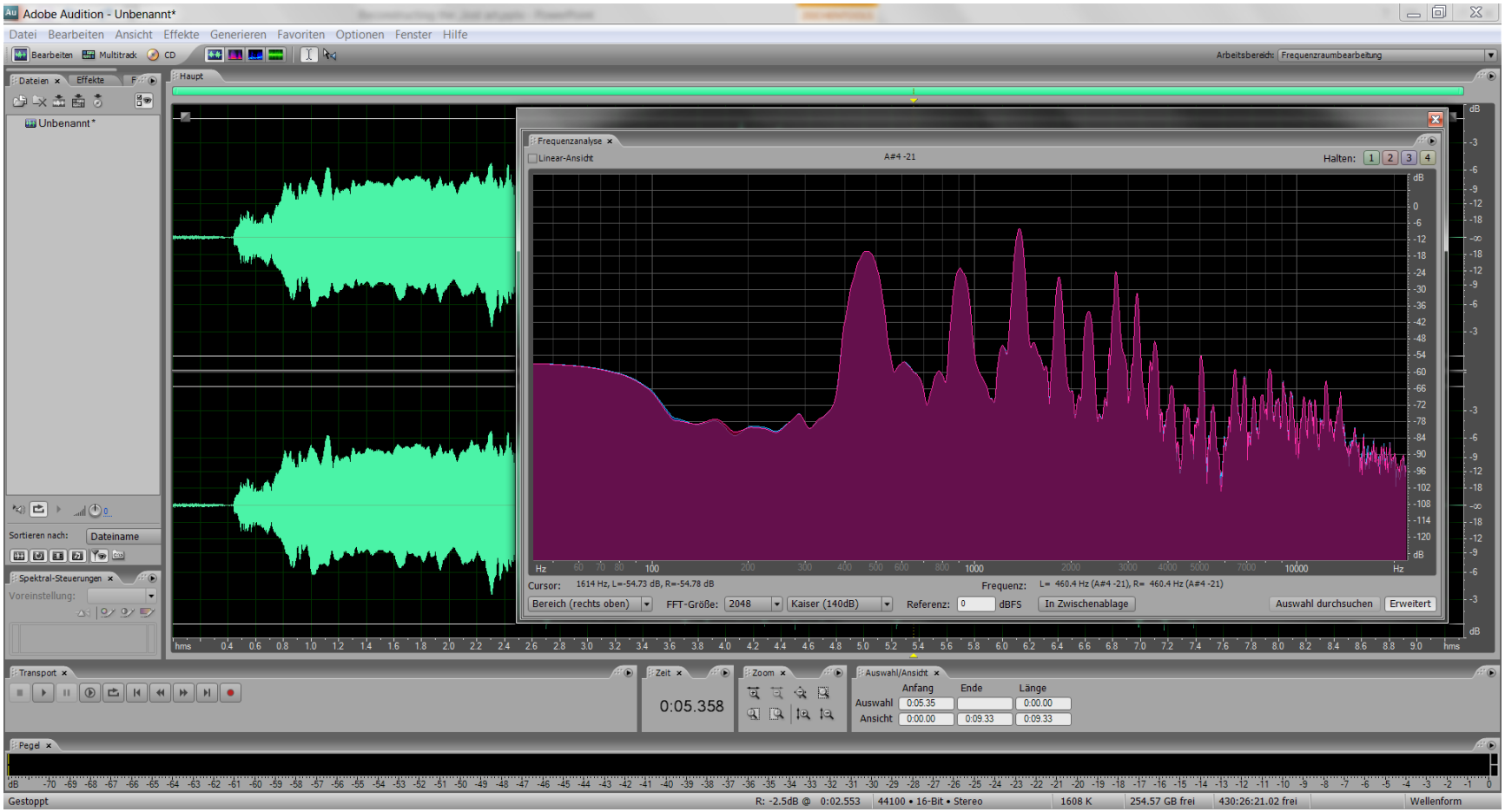
Invers filtering:

Through a series of filter processes (Soundswell software) the vocal source sound produced by the vocal cords is determined. The formant structure which is dependent on size and shape of the resonating system (throat, mouth, pharynx, nasopharynx) is thereby reversed. The filters work as anti-resonances which compensate the resonances of the vocal tract.



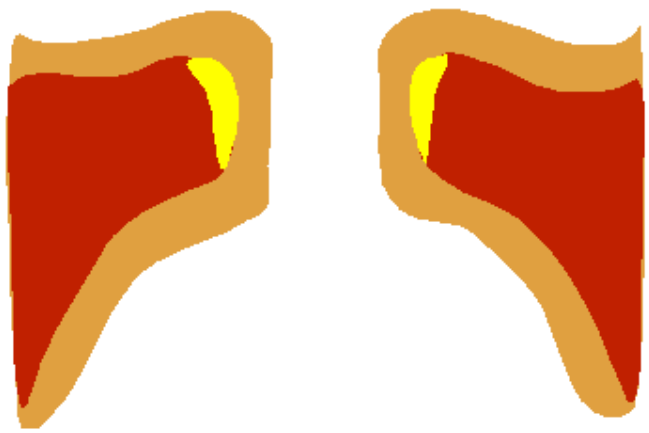
Modification of the primary sound in the vocal tract.
http://www.zainea.com/voices.htm (2.3.20013)

Analyzing the formant structure of sound samples with Adobe Audition

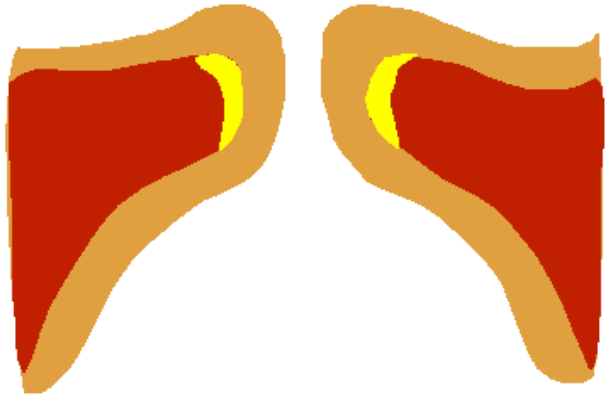


The modal register differs from the falsetto by:

- stronger longitudinal tension of the M. vocalis (falsetto stronger longitudinal tension of the ligament),
- thicker, bigger vibrating mass,
- bigger mucosal wave (between the core of the vocal folds and the edges)
- stronger harmonic components.



Chest register



Falsetto

<http://www.forum-stimme.de/web-content/JOURNAL/stimmfunktion.html> (2.3.2013)