

# **Voice Technique in Jazz**

**An Analysis on Voice Technique in Jazz Standards**

Final paper

Teacher's pedagogical studies

13/07/2023

Susanna Aleksandra Veldi

Jazz Music

Sibelius Academy

University of the Arts Helsinki

<b>Title</b>	<b>Pages</b>
Voice Technique in Jazz: An Analysis on Voice Technique in Jazz Standards.	44
<b>Author</b>	<b>Semester</b>
Susanna Aleksandra Veldi	spring 2023
<b>Department</b>	
Jazz Music	
<b>Abstract</b>	
<p>In this paper, I research voice technique in the context of jazz music. This research examines the state of the art of voice research and pairs each technical phenomenon with a concrete example of recorded jazz music. By examining pertaining scholarly literature and musical works, I aim to provide a framework for analysis that singers can use to work on their interpretation of jazz standards. The research question is: What techniques are employed by jazz vocalists on the laryngeal level to manipulate their voice for artistic expression, and how may the choice of technique relate to the storytelling?</p> <p>I have chosen four musical examples to describe specific voice techniques. The selected recordings are Carmen McRae in the song "I Only Have Eyes for You," Dee Dee Bridgewater in "Lonely Woman," Nancy Wilson in "The Masquerade is Over," and Shirley Horn in "My Future Just Passed."</p> <p>It can be concluded that jazz is a highly expressive singing style in which various techniques and effects can be used in one song. The findings of this paper focus on voice registration and specific voice techniques: belting and falsetto. It was found that there is a connection between the selected technique, the lyrics, and the singer's emotions.</p>	
<b>Keywords</b>	
Belting, falsetto, jazz voice, registration, storytelling, voice technique	
<b>Turnitin plagiarism check</b>	
11/07/2023	

*“Singers are the only musicians that are building an instrument at the same time that they’re learning it. [...] If you’re lucky, one in a thousand has a naturally registered voice that is balanced and beautiful. All the rest of us have to build our instrument, strengthen it, balance registers, find beauty in tone, get to know it, and figure it out. “*

– Sunny Wilkinson, jazz vocalist and educator (McLean 2022, 10)

# Contents

1	Introduction.....	1
2	Implementation of the study .....	4
	2.1 Research task and question.....	4
	2.2 Methodological starting points .....	4
	2.3 Data collection.....	5
	2.4 Data analysis.....	6
	2.5 Research ethics .....	7
3	Who is a jazz singer? .....	8
	3.1 Repertoire .....	8
	3.2 Skillset .....	9
	3.2.1 Genre related know-how .....	9
	3.2.2 Storytelling and emotional connection .....	10
	3.2.3 Voice technique .....	11
	3.3 Perspectives on voice technique in jazz .....	12
	3.4 Larynx and vocal folds .....	13
4	Key findings of literature and music analyses .....	16
	4.1 Vocal registers .....	16
	4.1.1 What are vocal registers?.....	16
	4.1.2 Chest voice and M1 .....	20
	4.1.3 Mixed voice and M2.....	22
	4.2 Specific techniques.....	26
	4.2.1 Belting.....	26
	4.2.2 Falsetto.....	30
5	Conclusions and discussion .....	33
	Literature .....	36
	Appendix 1 .....	39

# 1 Introduction

When I first started singing at the age of 15, I did not have a voice coach or a jazz teacher. My home country Estonia was just opening jazz departments, and there was not much knowledge about teaching pop-jazz singing. I relied heavily on my ear; I imitated the phrasing and the sound of my favorite singers of the time, such as Diana Krall, Dee Dee Bridgewater, and Julie London. I learned purely from intuition, trying to find the sounds in my voice. Looking back, I learned speech quality from Krall, twang from Bridgewater, round vowels, and a low larynx position from London.

While studying at the Sibelius Academy, University of the Arts Helsinki, I first dove into practicing time feel, phrasing, and harmonic licks and lines for improvisation. I improved my musicality and knowledge about the jazz genre, but I was not getting closer to how I wanted to sound. I could not trust my voice or be free to express myself because I had voice technique problems, such as sounding too breathy when singing quietly and feeling tense when singing high. My incompetence pushed me to dig deeper and learn to understand how I could help myself to overcome technical limitations. I dove into the world of voice technique: for two years, I studied vocal pedagogy with Doctor Aija Puurtinen, and I passed Estill Voice Training<sup>1</sup> Levels 1 and 2 taught by Helga Westmark. I did a minor in music theater, where I studied voice with Hanna Hurskainen. I also spent a semester in Los Angeles, taking jazz and musical theater courses at University of Southern California Thornton School of Music, learning from jazz vocalist Sara Gazarek and professor MzLyndia Johnson. I owe my knowledge of jazz genre and aesthetics to professor Jukkis Uotila with whom I studied for five years. All my teachers, to whom I am incredibly grateful, came from different backgrounds, both musically and pedagogically. I feel lucky to have had this rare opportunity to learn about the voice from so many angles and for teachers who passionately shared everything they had learned.

In 2017 I decided to do a tribute concert to Nancy Wilson. One of the things that had always impressed me about her singing was her variety and ability to deliver an emotional, captivating interpretation of the song. I returned to learning by imitating, only

---

<sup>1</sup> From now on EVT.

this time, equipped with more knowledge about the voice, helping me analyze and understand what she was doing with her voice while singing. Learning to sound like Nancy turned out to be a challenging task. To name a few problems, I realized I was missing her ability to control airflow and use my mixed voice and vibrato. I also understood that I habitually constricted my false vocal folds and was too loud dynamically. Analyzing, understanding, and attempting to imitate Nancy Wilson's voice led me to identify what I was missing in my voice. I discovered practice tools, and exercises to improve the areas that needed improving, which benefitted my overall voice technique and helped me find more variety and nuance in my interpretation. I followed with tributes to Ella FitzGerald and Carmen McRae and learned something from each singer. Through the process, I found freedom in my voice and developed a deeper understanding of jazz interpretation: I can now trust my instrument and pick the right colors for what I genuinely want to express.

I believe this approach could also help other singers. Jazz aesthetics and improvisation are often learned by ear by transcribing and imitating (cf. [Jazzadvice.com](https://www.jazzadvice.com)<sup>2</sup>). Technique and interpretation can be learned using the same methods, and it can be extra effective when enhanced with knowledge of how the voice works technically and anatomically when producing different sounds. If one can listen, understand what they are listening to, and reproduce the sound, one can become a better singer and voice teacher. Many books, for example, by Bob Stoloff and Darmon Meader, help jazz singers become familiar with jazz improvisation. There are also plenty of articles, books, and research about voice science. Unfortunately, there are very few materials that connect concrete jazz music examples with practical explanations of voice science and applicable advice on technique. The existing materials fail to transmit the multitude of perspectives, how quickly voice science evolves, and how many disagreements and debates are still occurring. It is essential to stay informed of the discussions about the voice as a voice teacher rather than follow one method throughout a pedagogical career (cf. Herbst 2021). In this paper, I attempt to connect the dots between literature on voice science and examples of jazz music through proprioceptive<sup>3</sup> and psychoacoustic<sup>4</sup> analysis.

---

<sup>2</sup> <https://www.jazzadvice.com/lessons/playing-the-music-of-now/>

<sup>3</sup> Refers to what can be perceived in the body (Herbst 2021).

<sup>4</sup> Refers to what is perceived by the listener (Herbst 2021).

As a professional jazz singer and voice teacher, I use my empirical knowledge to establish a correlation between the psychoacoustic and proprioceptive analysis of jazz vocalists with the principles of voice science. I have analyzed four recordings from 1962–1995 by renowned jazz vocalists Carmen McRae, Dee Dee Bridgewater, Nancy Wilson, and Shirley Horn. I have also read numerous articles and books on the latest research, aiming to break down the necessary information for singers and voice teachers in a simplified manner. The aim is to provide a frame for jazz singers and voice teachers to build upon and use for their advancement based on their specific interests and needs. I hope this method encourages jazz vocalists to explore the possibilities of their voice, improve their technique, and add to their individuality and self-expression. This paper is an invitation to look deeper into understanding voice technique and voice science as jazz pedagogues and singers.

Lastly, while I strongly advocate for a methodological and analytical approach to studying voice technique in the classroom, singers should not disconnect from the song's expression and emotion during a performance. Practice is one thing, and performance another (cf. [Jazzadvice.com](https://www.jazzadvice.com)<sup>5</sup>), therefore voice technique should be seen as a tool, not an objective. In addition, many great jazz singers have not had formal training, and I do not find that this has taken away from their artistry.

---

<sup>5</sup> <https://www.jazzadvice.com/lessons/playing-the-music-of-now/>

## **2 Implementation of the study**

The following chapter is divided into five sub-chapters. I will begin by outlining the research task and question and explain the process and methods as well as the research ethics.

### **2.1 Research task and question**

This research examines the state of the art of voice research and pairs each technical phenomenon with a concrete example of recorded jazz music. The purpose of the study is to help recognize the different vocal possibilities in jazz music to give jazz vocalists and teachers a better understanding of what elements of voice technique are essential in jazz and how they can be recognized and implemented. By examining pertaining scholarly literature and musical works, the aim is to provide a framework for analysis that singers can use to work on their interpretation of jazz standards. The research question is: What techniques are employed by jazz vocalists on the laryngeal level to manipulate their voice for artistic expression, and how may the choice of technique relate to the storytelling?

I have chosen four musical examples to describe specific voice techniques. The selected recordings are Carmen McRae in the song “I Only Have Eyes for You,” Dee Dee Bridgewater in “Lonely Woman,” Nancy Wilson in “The Masquerade is Over,” and Shirley Horn in “My Future Just Passed.”

### **2.2 Methodological starting points**

This paper is a qualitative study focused on analysis of pertaining literature on voice research and employing the findings to selected jazz recordings. According to Patricia Leavy, qualitative research is a vibrant field with many different perspectives used to explore, describe, and explain a phenomenon (Leavy 2014, 1–2). As a professional singer, and a voice teacher, I do not support the use of one voice teaching method alone. I believe in taking into consideration the individuality of the student, and a broader knowledge in how the voice works. Therefore, to illustrate the multitude of opinions and perspectives, I explore pertaining literature by several voice researchers. Secondly, I analyze the musical examples through my own lens, explaining how I perceive the voice technique as a listener and singer.



## 2.3 Data collection

The data for the study consists of pertaining research on voice research focused on registration and belting, voice technique in jazz, and selected jazz recordings. To collect data for my research, I first investigated the essential aspects of vocal technique. I conducted a comprehensive literature review using academic databases, such as EBSCO, ResearchGate and Arca. The selection criteria for the literature was to find peer reviewed materials that focus specifically on jazz voice, voice registration, and belting. To limit the search, I only looked for articles in English, published between the years 2000-2023. Unfortunately, very few peer reviewed materials were found specifically on jazz voice, which is why I also looked for materials that were not peer reviewed. I also got book suggestions from Professor Aija Puurtinen<sup>6</sup>, and to be informed about the highly rated books about voice technique, I also searched for literature on Amazon. In total, this paper includes nine peer-reviewed articles, three articles that are not peer reviewed, nine books, one master's thesis, and one doctoral dissertation.

Based on the analysis of literature, I classified voice technique into four main categories: body posture, breath, the larynx, and the vocal tract. I decided to limit my research to the laryngeal level. Because numerous simultaneous events occur during singing, it is extremely difficult to isolate techniques produced solely within the larynx without any adjustments or movements in the vocal tract, and vice versa. To simplify, I created four categories:

1. Registration (addressed thoroughly in the Findings chapter)
2. Effects produced on the laryngeal level (belting<sup>7</sup>, falsetto<sup>8</sup>, twang<sup>9</sup>, tilt<sup>10</sup>)
3. Larynx positions (mid, low, high)
4. Glottal configurations (onsets, offsets)

---

<sup>6</sup> Aija Puurtinen got the first doctoral degree as a CCM-singer (pop/jazz/crossover singer and composer) in Finland (<https://icvt2017.wordpress.com/aija-puurtinen/>). She does not represent any specific voice pedagogy method but rather is up to date with voice research.

<sup>7</sup> Will be thoroughly explained under the sub-chapter 4.2.1.

<sup>8</sup> In the meaning of breathy tone that occurs when the vocal folds do not fully close. Not used here as a term for a register.

<sup>9</sup> A specific vocal technique described by Estill as a certain vocal technique producing a loud, brassy, and sometimes twangy sound (Sundberg, 2010).

<sup>10</sup> Laryngeal tilt, sometimes referred to as the thyroid tilt. The movement of the thyroid cartilage tilting forward. (Aaen, McGlashan & Sadolin, 2019.)

I decided to focus on registration because of its complexity and the different viewpoints of the topic. Moreover, it is a topic that is not addressed by Van Opstal. I also chose to view two effects produced on the laryngeal level: belting and falsetto. Firstly, I pointed out the possibilities of using belting because it is not so common in jazz but still present. Secondly, the falsetto is one of the most common effects in an intimate jazz style. To limit the scope of this paper, I decided not to dedicate chapters to larynx positions or twang. Neither will I commit separate chapters to glottal configurations. I will, however, make additional observations about some of those aspects, and the singing styles, and I will present my perspective on the connections between the chosen technique and the storytelling.

Having decided on the technical aspects, I created a list of ten female jazz vocalists born between 1915 and 1994. I listened to their recordings for the best examples of each technical phenomenon. The list of albums is provided in Appendix 1. While attentively listening, I created a spreadsheet containing the technical aspects of interest and listed the examples of singers under the correct categories such as chest voice, mixed voice, belting and falsetto. This paper focuses on jazz standards, not original compositions. To limit the length of this paper, I have reduced the number of musical examples to four songs. The songs and singers were chosen in this paper to give the clearest possible example of each technical phenomenon. The material of this research includes analyses on four songs and numerous articles and books written on voice science.

## **2.4 Data analysis**

As a jazz voice student, professional jazz vocalist, and educator, I have listened to hundreds of jazz recordings, diving deep into the details of the genre. In this research, I focus on the voice technique in jazz, which consists of several aspects. Theodore Dimon speaks of three elements that make up the voice: the larynx as the vibrator (vocal folds that vibrate), the breath as the power source (that makes the vocal folds vibrate), and the vocal tract as the resonator (resonating cavities above the larynx). (Dimon 2011, 2– 3). To limit the length of this paper, I will not address the topic of breath as the power source or the vocal tract as the resonator. I will focus solely on the laryngeal level.

The paper is a qualitative research based on research and books on voice and a psychoacoustic and proprioceptive analysis of four pieces of music. I will explain the investigation methods of vocal registration under the chapter “Vocal Registers”. In the

analysis, I rely on proprioception and psychoacoustic perception, and I am aware of the limitations of this subjective approach. Based on Leavy, bias is unavoidable, but a researcher must at least attempt to remove or at least reduce bias by means of triangulation. (Leavy 2014, 84). I have analyzed and compared my examples to those used in the study of Kochis-Jennings (2010, 193), and I have asked Aija Puurtinen to listen and approve using my selected examples.

## **2.5 Research ethics**

This research follows Finland's principles on good scientific practice and research integrity (TENK, 2019). In this research, to gather a comprehensive understanding of voice technique, I am exploring various perspectives that include peer-reviewed and non-peer-reviewed materials on voice research and pedagogical methods, including EVT and CVT. I chose the specific articles because they best suited my objective of presenting the topics of voice registration, belting, and falsetto; most of them had also been cited by other voice researchers. In addition, I considered the advice of Professor Aija Puurtinen with whom I share many aspects of pedagogical philosophy.

Some of the articles were not peer reviewed but I consider them trustworthy because they have been publicized in a trustworthy magazine, the *Journal of Voice*. In addition, I acknowledge the limitations of the proprioceptive and psychoacoustic analysis, as well as the subjective nature of my analyses.

## 3 Who is a jazz singer?

According to Mark Murphy, a jazz singer is a singer who sings jazz (Crowther, Pinfold 1997, 11). While this sounds obvious, there has been room for debate among singers, musicians, and enthusiasts. This chapter aims to define jazz singers, what they should know, and previous literature on the topic of jazz voice.

### 3.1 Repertoire

According to Robert P. Vande Kappelle, scholars have long argued over what jazz singing should include and who could be called a jazz singer (Kappelle 2011). Firstly, there is the question of repertoire. Kappelle notes that since the 1920s, jazz vocalists have overlapped styles such as folk, blues, and gospel, participated in music theater, and been part of the famous music scene. Renowned jazz singers like Louis Armstrong, Ella Fitzgerald, Billie Holiday, Sarah Vaughan, Anita O'Day, Dinah Washington, and Mel Tormé have all sung both jazz and popular music of their time. (Kappelle 2011.) In their book "Jazz Singers and their Styles," Bruce Crowther and Mike Pinfold state that jazz has influenced, affected, and changed popular music while popular music, in its turn, has also affected jazz. Many jazz singers have had long and diverse careers recording both jazz repertoire and popular music, writing their repertoire, lyrics to pre-existing jazz compositions (Crowther & Pinfold 1997, 11–19), or mixing jazz with other genres. Numerous jazz recordings of the Great American Songbook, music theater tunes, and popular music from later periods demonstrate the merging of popular repertoire and jazz delivery. Since the recording of the 1920's Tin Pan Alley tunes by Louis Armstrong, it has been proved that it is more in the performance rather than the repertoire that really makes jazz jazz (Crowther & Pinfold 1997, 11–19).

Currently, jazz vocalists like Veronica Swift and Cecile McLorin Salvant, to name a few, play with the borders of musical genres. Swift, who refers to herself as a trans-genre artist, mixes elements of popular and classical music, rock, funk, and jazz, boldly transitioning from song to song and surprising the audience with unexpected arrangements. While jazz purists may see this as drifting away from her jazz roots, the fact that her upcoming album includes a lot of rock influences does not take away from the fact that she is a versatile

jazz vocalist who effortlessly scats over chord changes. While not as extreme as Swift, Cecile McLorin Salvant also merges elements of genres, mainly playing around with the influences of classical music and French chansons. Due to jazz's long history and inclusive nature, defining a jazz singer based on their repertoire is limiting.

## **3.2 Skillset**

If it is not repertoire, is it the skills that define who a jazz singer is? According to Crowther et al., the public associates jazz singing with the swinging, scating, and improvising approach of Ella Fitzgerald. However, singers who never improvised can also be considered jazz singers. Billie Holiday, for example, was considered one of the greatest jazz voices in history, but she never scatted. For some jazz singers, taking risks, using the voice as an instrument when improvising, and knowing the changes are essential. For others, finding a unique sound and interpreting lyrics takes center stage. (Crowther & Pinfold 1997, 11–19.)

As the number of jazz departments is growing, so are the expectations for the musicians' skillset and know-how. A jazz musician is expected to have the technical craftsmanship of the instrument, know jazz history and aesthetics, and be able to navigate the complexities of modern jazz. To simplify and structure information, I am breaking the skillset of a jazz vocalist into three categories: genre related know-how, storytelling and emotional connection, and voice technique. These skills together serve the purpose of reaching masterful, touching performances and unique interpretations. The following paragraphs will address these three areas of the jazz voice skillset.

### **3.2.1 Genre related know-how**

To be a respected singer of the genre and to “survive” the musical complexity of modern jazz tunes and the overall competitiveness of the global music scene cf. McLean 2022), it is generally not enough to know the melody and have a pleasant voice. A jazz singer is expected to do the work that the instrumentalists are doing, including the practice of improvisation, scales, changes, melodic and rhythmic patterns, and time feel. There are several books specially designed for jazz vocalists that cover these topics from the perspective of vocal improvisation. For example, Bob Stoloff covers everything from scat syllables to singing the changes in his book *Scat!* (1998). He provides rhythm exercises that specify which scat syllables apply with specific rhythms and melodic etudes that

teach improvisation based on the chord changes. In his book *Recipes* (2004), He also introduces in what order the practice of jazz improvisation can be approached: starting from singing the roots<sup>11</sup> and guide tone lines<sup>12</sup> to chord arpeggios and scales. Jazz vocalist Darmon Meader has published a book that focuses on improvisational lines and scat syllables called *Vocal Jazz Improvisation: An Instrumental Approach* (2016), and jazz vocalist and educator Judy Niemack has published a book series called *Hear It and Sing It* that focus on exploring the blues and modal jazz improvisation. Her books combine improvisation practice with theoretical knowledge, including jazz specific vocal warm up exercises, modes, and transcriptions. These are just a few examples I have used myself as a jazz vocalist and teacher.

### **3.2.2 Storytelling and emotional connection**

Without underestimating the importance of genre-related skills, a genuinely excellent vocal jazz performance lies in a strong, emotionally connected delivery of the lyrics. In practicing jazz-related skills, a vocalist should remember their role as the storyteller. While practicing scales, phrases, etc., is a rather concrete task, practicing storytelling and interpretation can, in contrast, be vague. There is little literature on how to practice storytelling and emotional delivery in jazz. I found handy and applicable tools during my music theater studies, which I later applied to sing other genres, including jazz. Music theater students learn to act through the song, starting with a deep analysis of the text and then connecting the lyrics with specific emotions. Two books, *Acting the Song: Performance Skills for the Musical Theatre* by Tracey Moore and *Acting in Musical Theatre: A Comprehensive Course* by Joe Deer and Rocco Dal Vera, offer an approach to musical theater learning using the Stanislavski-based acting techniques and terminology (Arecchi 2009). Though it is not this paper's focal topic, I will briefly describe the relation between emotional connection and storytelling with the voice technique in each of my four analyses. Due to the subjective nature of the topic, this side of the analysis is purely my perception.

---

<sup>11</sup> Bass note.

<sup>12</sup> Thirds and sevenths of the chord.

### 3.2.3 Voice technique

The third pillar in delivering a masterful performance is voice technique. The singer's instrument is the body itself, and by learning technique, singers learn to know the "buttons" in their instrument and what their instrument is capable of. I have observed disagreements regarding the importance of voice technique in jazz education, which I would like to address before diving into the literature overview.

Firstly, in academia, where jazz instrumentalists lead many jazz departments, the focus often lies on jazz aesthetics and other musical aspects rather than voice technique. Some may argue that jazz vocalists can change keys or improvise only in a comfortable range. Mclean writes that singers like Billie Holiday or Diana Krall have had successful careers with relatively small ranges. Today, however, many jazz singers also work in commercial settings, such as cover bands, musical theater, television and radio, voice-over work, or choirs (Mclean 2022, 1–2). According to Julia Silvera-Jensen, good technique allows students to cross genres and styles, and providing tools is the goal of every teacher (Silvera-Jensen 2005).

Secondly, some jazz educators encourage singers to sing with their "natural voice," paying attention to the aesthetics of the genre but not to the versatility of the student's voice or their technical issues.<sup>13</sup> The term "natural voice" can be debatable. For example, many singers naturally strain their voices when singing high notes. Continuing this voice use can lead to injuries and cut a career short. Another example would be singing in English with a solid native language accent. Just because it may be natural to a singer does not mean it suits the song. A broad toolkit of techniques allows greater vocal and interpretational freedom, which widens improvisational possibilities regarding pitch, range, tone, and the ability to deliver rhythm. It also paves the way for a meaningful and nuanced interpretation of the lyrics (cf. Mclean 2022).

In conclusion, singers can achieve a masterful vocal jazz interpretation by combining genre-related skills, deep emotional connection, and rich expression. Those three pillars deserve more investigation and constant development to serve the expectations and needs

---

<sup>13</sup> <https://www.theguardian.com/music/2009/may/10/jazz-singing-advice> The article in question says that technique is not needed in jazz and that jazz is an extension of the natural speaking voice.

of future jazz vocalists. This paper focuses on jazz voice technique by connecting research on voice research with concrete examples by jazz vocalists.

### **3.3 Perspectives on voice technique in jazz**

While there is plenty of material on voice technique or voice research, only a few materials are specific to vocal technique in jazz. In the following paragraphs, I will highlight relevant works to depict what researchers have investigated thus far and how this paper can contribute to jazz voice pedagogy.

In his doctoral essay, *A Study of vocal technique through the development of four advanced études for jazz and contemporary vocalists*, Charles L. Christenson investigates how jazz has been taught by researching existing classical and jazz études. He argues that most jazz études and pedagogical materials focus on technical skill building during improvisation but not on voice technique. Christenson has written four technical études focusing on breath management, registration, tone, onsets, and agility (Christenson 2020, 1–5). He offers a good framework for writing études for practicing jazz technique, but he does not provide examples from actual jazz music recordings.

A doctoral dissertation by Jenna McLean, *A Study in Effective Teaching Methods for Jazz Voice Technique in Higher Education* is relevant to this paper because she aims to discover an effective teaching method for jazz technique by interviewing 20 jazz voice pedagogues from different universities in the United States (McLean 2021). Her work provides topics important to jazz voice educators, including registration, articulation, resonance, and breath management. McLean also provides several analyses and transcriptions of jazz singers' approaches to songs. Her work offers a broad overview of the essential technical aspects of jazz. She gives explanations of voice science but bases them mainly on interviews with voice teachers and some voice research without providing a comprehensive overview of the varied viewpoints encountered in modern voice science.

Secondly, some works view jazz among other genres. Singer and educator Lisa Popeil analyzes various music styles from a technical perspective. I attended her speech at the Pan European Voice Conference in 2022 in Tallinn. She highlighted the differences in the resonator shapes, vocal fold adduction from breathy to hard, resonance (including volume traits, larynx positions, and pharynx width), vibrato, registers, dialect, emotions, articulation, and stylistics of each genre. She also divided the jazz genre into swing, show,



and sultry jazz. For example, she described the resonator shapes in sultry jazz as “fish lips,” in show jazz as “rectangle,” and in swing jazz as “smile.” Her categorization of voice technique elements provides a good structure for voice teachers. It reminds educators which details they can pay attention to and offers ways to verbalize technical observations in a simplified, hands-on way. However, since many jazz vocalists use multiple techniques in one song or even one phrase, it may be misleading to use too many generalizations.

Thirdly, one of the most comprehensive works on jazz voice technique is by the master of the Estill Voice Training method<sup>14</sup> Katrien Van Opstal, called *Vocal Jazz Technique: The Mixing Table Model*. Her relatively recent research provides a new way called the Mixing Table Model. Her research focuses on the technical differences between bebop, swing, and bossa nova, relying primarily on the EVT method. She provides material based on literature studies, recordings, and vocalist interviews. Her survey of musical examples is based on kinesthetic and aural perception and spectrographic analysis. Van Opstal also provides exercises and simplifies the research for students. Her excellent work addresses the need for more information on jazz voice technique. While I have also passed EVT Levels 1 and 2 and learned a lot from the method, I have also realized that voice science constantly evolves. Using one method might leave room for blind spots, and the method might not always be scientifically updated. Other points of view than EVT could be considered when explaining voice science. In addition, Opstal does not address the registration topic; instead, she discusses three modes: speech mode, cry mode, and twang mode. In addition, Opstal has made many generalizations based on subjectively chosen examples and does not view jazz ballads. She provides one example by Nancy Wilson and one by Carmen McRae but does not mention Shirley Horn or Dee Dee Bridgewater, whom I have decided to include because of their contrasting vocal timbres, and their contribution to the realm of vocal jazz, including a vast discography in the genre.

### **3.4 Larynx and vocal folds**

This paper contains many terminologies related to vocal research and jazz music. I will introduce most terms under the paragraphs where they appear or under footnotes. There is some terminology that needs a more thorough explanation. Going through all aspects

---

<sup>14</sup> Referred to as EVT in the future.

of voice anatomy would consume this research, so I will only explain what is directly relevant to this paper, namely the larynx and vocal folds.

James Stark mentions that discussing the larynx is “a gristly business, as it involves the cartilages, muscles, and ligaments of the vocal mechanism.” The larynx is an organ of the respiratory tract located in the anterior part of the neck. Its functions include protection of the lower respiratory tract and phonation. (Suárez-Quintanilla et al., 2022). Figure 1 below shows the placement and the parts of the larynx.

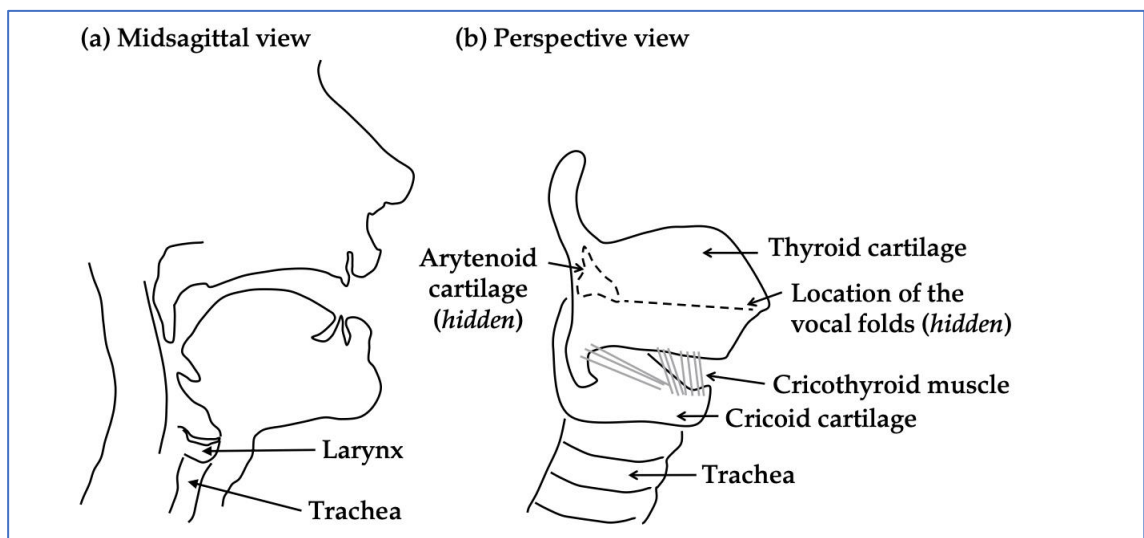


Figure 1. The larynx (Story 2015, 35)

The larynx also houses the vocal folds<sup>15</sup>. During phonation, the air moves out between the vocal folds, causing the vocal folds to vibrate (open and close) and produce sound waves. Figure 2 by Theodore Dimon provides a simplified drawing demonstrating the placement of the vocal folds in the larynx. (Dimon 2011, 2, 27.) Figure 3 shows a more detailed view on the abduction and the adduction of the vocal folds, and the coronal view of the vocal folds.

<sup>15</sup> Dimon uses the term *vocal chords*, but the terms *vocal cord* and *vocal folds* are more commonly used.

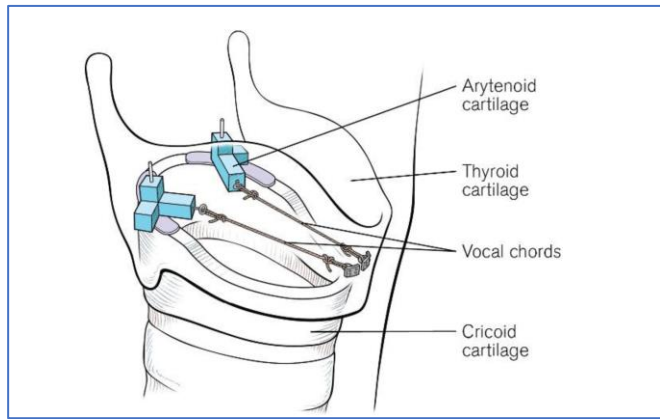


Figure 2. Placement of the vocal folds in the larynx (Dimon 2011, 2, 27)

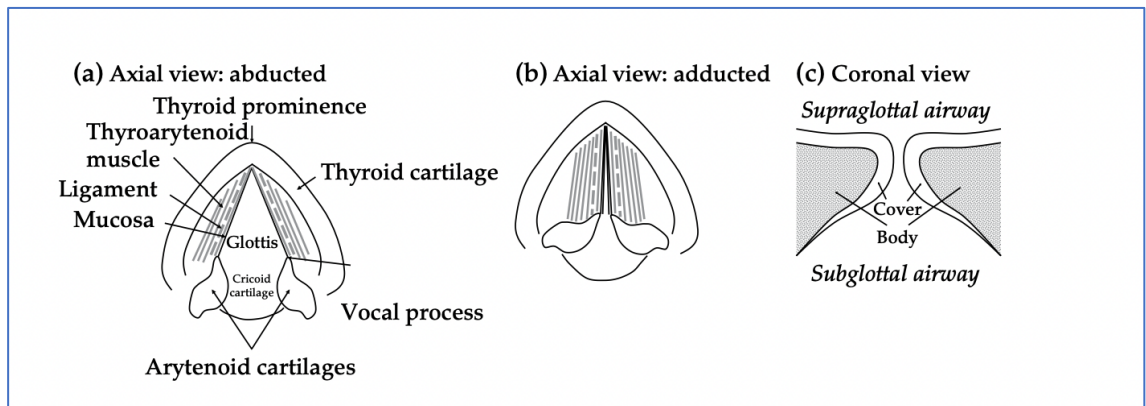


Figure 3. The vocal folds (Story 2015, 35)

## **4 Key findings of literature and music analyses**

This chapter provides detailed explanations on registration, belting, and falsetto. It contains the key findings based on the literature analysis research on registration, belting and falsetto, and four musical analyses. Each musical example is analyzed both psychoacoustically and proprioceptively, based on what I hear the singer is doing on a technical level and what I feel when imitating their voice. The aim is to provide a framework for analysis that singers can use to work on their interpretation of jazz standards. The first subchapter focuses on registration, and the second subchapter centers on specific vocal techniques, belting, and falsetto. I will also pay attention to the connection between the selected techniques and the interpretation of the lyrics. Finally, I will provide advice on strengthening those techniques in one's voice.

### **4.1 Vocal registers**

Mastering vocal registers is one of the most important skills regarding vocal agility and freedom. Understanding registration helps to make the voice sound unified and to feel comfortable singing high and low. Most educators interviewed by McLean agree that in executing passages of a wide range in a tension-free manner, it is important to develop both the head and the chest registers and a strong mix between them. Secondly, understanding registration allows one to discover vocal possibilities. It gives access to a broad spectrum of sounds and a palette of colors when singing melodies and improvising. Jazz singers have different approaches to registers. Carmen McRae, for example, tends to use the chest register or chest mix, and Betty Carter is known for her horn-like head voice and mix. (McLean 2022, 1–3.) Some singers may use one preferred register, while others combine different registers, rhythmic expressions, and tone variations.

#### **4.1.1 What are vocal registers?**

Registers are one of the most debated topics among voice researchers and pedagogues. Christian Herbst calls it a snake pit of vocal pedagogy, for disagreements on terminology and pedagogic application have remained despite recent scientific research. (Herbst 2020,

176.) The abundance of information and keeping up with new studies can also be overwhelming. Before analyzing musical examples, it is crucial to understand what registers are. I do not include the history of vocal register classification to limit the length of this paper.

In Johan Sundberg's words, a register is a phonation frequency range in which all tones are perceived as being produced similarly and possess similar voice timbre. (Sundberg 1987, 49). According to James Stark, vocal registers are physiological and acoustical discontinuities occurring as the voice ascends the scale from the lowest to the highest. (Stark 2003, 57–70) There has been a long debate on the number of registers. Nowadays, most researchers agree that there are four registers. The chest voice is a stronger, fuller sound, and the head voice or falsetto is a thinner flute-like sound. Two registers at the extreme ends of the vocal range are the whistle register in the high extreme and the vocal fry in the low extreme. (Dimon 2011, 56–71) In addition, the number of research on the middle register or mixed voice<sup>16</sup> is growing.

Registers can be examined from several perspectives. Roubeau et al. explain physiologists, physicians, phoneticians, voice scientists, voice teachers, and singers have all investigated registers (Roubeau, Henrich & Castellengo 2009, 425). Herbst provides five perspectives for understanding registrations: proprioception, psychoacoustic perception, laryngeal mechanisms, vocal tract effects, and individual didactic systems (Herbst 2020, 176). I will simplify and shorten the overview of the first three perspectives provided by Herbst. Because I will not focus on the last two perspectives in this paper, I will only explain the main idea without going into much detail.

Firstly, proprioception refers to the classification of registers based on perceiving vibrations in the body, namely the head and the chest. It is the oldest classification of registers that dates to the 16th century. Johan Sundberg's research concluded that the vibrations only serve as feedback to the singer and are not heard by the listener. Interestingly, he found that the chest vibrations are felt up to 300 Hz, which coincides with the *zona di passaggio*<sup>17</sup> in classical music. A connection between the facial/ cranial<sup>18</sup> vibrations and a specific register hasn't been found yet. Vibrations are more likely

---

<sup>16</sup> Mixed voice will be more thoroughly explained in 4.1.3.

<sup>17</sup> The area between two registers.

<sup>18</sup> Relating to the skull.

connected to pitch than caused by laryngeal mechanisms. (Herbst 2020, 177.) Dimon finds the terms chest voice and head voice misleading because they don't explain where or how the voice is produced. However, imagining points of resonance can help activate specific muscle work. (Dimon 2011, 56–71.) In vocal pedagogy, the terms head voice and chest voice are widely used to explain how the singer perceives the vibratory sensations in their own body: whether the feeling of resonance is in the head, in the chest, or somewhere in the middle. Herbst underlines that vibrations greatly depend on the sung vowel and that the sensations may vary from singer to singer due to anatomical differences. (Herbst 2020, 177.) What works for one singer may not work for another.

Secondly, the psychoacoustic perception refers to what can be perceived by the listener. Sundberg suggests trained singers can distinguish between the chest voice and the falsetto relatively well. Herbst finds that their own bias can affect the listener's perception. Moreover, it can be challenging to tell registers apart in the *zona de passaggio* where registers may overlap because perception is based on several attributes of the voice: pitch, timbre, and loudness, and trained singers learn to mask laryngeal or resonatory register transitions. Psychoacoustic perception is essential for voice teachers because they work with audible results. However, it is important not to rely solely on the ear and imitation. Moreover, teachers should consider the anatomical differences and the students' individuality. (Herbst 2020, 179.)

Thirdly, according to Dimon, vocal registers are not a result of resonance in some regions of the body but are produced in the larynx (Dimon 2011, 56–71). The laryngoscopic analysis describes the amplitude of vocal fold contact during successive vibratory cycles (Roubeau, Henrich & Castellengo 2009, 425–431) and the vibratory modes (Herbst 2020, 184). It is essential to understand that the vocal folds are thicker and shorter in the lower register and stretched longer and thinner in the higher register. The vocal folds also have a layered structure (the body-cover theory) (Herbst 2020, 183–184). Based on the depth of the vocal fold contact, and the interaction of those layers during vibration, there are four laryngeal mechanisms M0, M1, M2, and M3. In M1, the deep layers of the focal fold participate in the vibratory movement. In M2, the vibrating mass is minimal and superficial. During the transition from M1 to M2, and vice versa, there is an abrupt change of the vocal fold mass: a sudden thinning of the vocal fold and the reduction of the vibrating mass during the transition from M1 to M2, and the opposite when descending from M2 to M1. The chest voice (heavy, normal, or modal) is produced using M1. The

false alto and head register is produced using M2. (Roubeau, Henrich & Castellengo 2009, 425–431.) Vocal fry uses M0 and the whistle register M3, but this paper does not focus on those registers as they are irrelevant to jazz music. Herbst also mentions the findings of Ingo Titze (2000). In a very simplified explanation, it has been found that the cartilage and the membrane can be controlled separately, which allows a diverse production of sounds at the laryngeal level. (Herbst 2020, 184).

The fourth perspective investigates the influence of the vocal tract on resonance and registers. When the resonance of the vocal tract aligns with the voice source harmonic, the sound has more intensity and is louder. The fifth perspective mentions alternative pedagogical approaches in which the term “registers” is not used. Complete Vocal Technique<sup>19</sup> has replaced them with four vocal modes: neutral, curbing, overdrive, and edge. (Herbst 2021, 348.) Estill Voice Training differentiates four conditions of the body and cover of the vocal folds: slack, thick, thin, and stiff. (Estill 2005, 42–44) Even though they are not called registers, these terms are based on the body-cover theory.

There is a multitude of vocabulary and terms used to describe each register. Lee et al. provide a thorough overview of terminology in the Figure 4 below (Lee, Oya, Kaburagi, Hidaka & Nakagawa 2021, 2).

Register	Synonyms
Pulse	Vocal fry, glottal fry, creak, strohbass, mechanism 0 (m0), #1
Chest	Modal, heavy, normal, mechanism 1 (m1), #2
Mixed	Mix, voix mixte, middle, mid, chestmix, chest-dominant mix, headmix, head-dominant mix, falsetto-dominant mix, head (male), falsetto/fausset/faucet (19th century), voce mezzo-falso, middle-falsetto, schlundkopfreger, feigned voice, voixsur-laryngienne, voix pharyngienne, pharyngeal voice, voce faringea, mx1, mx2, #2A, chuseiku (Japanese), hannura (Japanese)
Falsetto	Light, loft, lift, head (female), mechanism 2 (m2), #3
Whistle	Flageolet, flute, acute, pipe, mechanism 3 (m3), #4

Figure 4. Register Terminology. ((Lee, Oya, Kaburagi, Hidaka & Nakagawa 2021, 2).

In this paper, I proceed from the assumption that chest voice and chest mix use M1, head voice and head mix use M2. I will not address the head voice separately, as I already cover the M2 mechanism under the mixed voice.

<sup>19</sup> From now on CVT.

#### 4.1.2 Chest voice and M1

Jazz is a conversational music style that requires grit to oppose classical singing. Many view chest voice as the predominant register for jazz vocalists. (McClean 2022, 3.) The chest voice is also known as the speech or modal register, perceptually characterized by a rich timbre (Kochis-Jennings 2010, 183), a vibratory mechanism M1, and acoustically harmonic energy above the fundamental (Titze 2018, 49). The lower register is more efficient for using less airflow (Stark 2003, 83), and the vocal folds are relaxed and vibrate loosely with full and deep contact (Dimon 2011, 59).

#### **Carmen McRae “I Only Have Eyes for You”, by Harry Warren, Al Dubin.<sup>20</sup>**

Carmen McRae is the first name that comes to mind when thinking about chest voice in the jazz context. An excellent example of this is "I Only Have Eyes for You," released on the album "The Great American Songbook" in 1972 by Atlantic Jazz. The featured musicians are Jimmy Rowles on piano, Joe Pass on guitar, Chuck Domanico on bass, and Chuck Flores on drums<sup>21</sup>. During the recording of this song, Carmen McRae was 52 years old. In this medium swing<sup>22</sup> tune that tells the story of newfound love, Carmen McRae relies mainly on her chest resonance, chest mix, and conversational singing style. The focus is on the first chorus before the solos.

Firstly, the range of the melody remains between Eb3 and Bb4. Many female singers begin to mix their voices around Eb4, but McRae stays in her chest until A4 in the first A sections. It can be recognized from the high intensity and volume of her voice. In the last A section, both McRae and the band raise the energy before going into the solos. She also uses her chest voice up to Bb4 in the phrase “*And I, I only have eyes for you*”.

In addition, she plays with the contrast between a conversational and lyrical singing style. It seems as if she is vocalizing the beginning phrases, “*Are the stars out tonight? I don't care if it's cloudy or bright.*” with her natural speaking voice, only adding the right pitch to her spoken words. In these first four bars, she uses speech-like phrasing in which the words are sung short and without vibrato. Her first long note is not until the fifth bar, in

---

<sup>20</sup> Album link: <https://www.allmusic.com/album/the-great-american-songbook-vol-1-mw0000197138>

<sup>21</sup> Based on [www.allmusic.com](http://www.allmusic.com)

<sup>22</sup> Usually tempo between 100 - 150 bpm (beats per minute).



the phrase *"But I only have eyes, for you, Joe Pass,"* in which she prolongs the words eyes, you, and Joe Pass. She lightens her tone and adds vibrato only at the end of those words. Contrasting the short, speech-like phrasing and long lyrical notes adds variety to her interpretation.

Moreover, McRae stresses the consonants and vowels at the beginning of words, especially apparent at the beginning of the B section *"I don't care if we're in a garden or on a crowded avenue."* She uses the glottal onset in which the vocal folds close before vocalizing (Estill) when she sings the words "are," "out," "I," and "if." Using the chest voice with the glottal onset, emphasizing the beginning of each word, helps her bring forth the rhythm of the text and add energy and swing. The song's tempo is relatively slow for a swing tune, making it challenging for musicians to avoid speeding up or slowing down. The fact that McRae stresses the rhythm with her onsets and chest voice plays a role in keeping the tempo and complimenting the band's energy.

McRae's speech-like approach leaves the impression of her sharing a personal story. Using the chest voice provides a certain honesty and a personal touch that gives the listener a feeling of being included in the conversation. The speech-like approach also captures the listener's attention and cultivates curiosity in the lyrics and the story. This song was recorded during a live concert, and some of the audience's reactions and applause can be heard, revealing how drawn in they were by the performance. Secondly, by using the chest voice and rather loud dynamics, McRae evokes confidence both as a performer and in her newfound love about whom she tells the story. Although this paper does not discuss the details of twang, the listener can recognize it in McRae's voice from her sharpened, brassy tone. Using so much of it transmits arrogance or being in control of the situation.

Finding a chest voice or thick fold mechanism can pose a challenge for singers with a choir singing or classical training background. However, using the chest register is extremely important in jazz music. A good exercise I learned from Doctor Aija Puurtinen is to speak the lyrics with one hand on the chest while focusing on the feeling and the chest resonance. Then, the correct pitch can be added to the lyrics, maintaining the feeling of chest resonance. In jazz, the singer must also produce rhythm using the lyrics. A good exercise is to practice speaking the lyrics emphasizing each word's beginning consonant or vowel. Then, add the correct pitch without losing the "attack." This exercise can be

taken further by speaking the lyrics in a swing or straight feel, beginning, and ending the phrases on off beats.

In conclusion, Carmen McRae's singing is an excellent example of chest voice, conversational singing style, and glottal onsets. In addition, she uses a lot of twang. For further exploration, another great example of speech-like singing and using the chest voice from a modern-day singer is Veronica Swift in the song "I'm Hip", on the album "Confessions" released in 2019.

### **4.1.3 Mixed voice and M2**

The term mixed voice has caused many discussions and unclarity among students, pedagogues, and even researchers. While this is a commonly used term by singers, it is still being determined what the mix is and whether it even exists.

Kochis-Jennings explains the term mixed voice as a transition between the chest and the head, perceived as having some characteristics of both registers. She distinguishes between the chest and head mix: the first sounds closer to the chest voice, and the second closer to the head voice. (Kochis-Jennings 2010, 182–192.) Some prefer the terms heavy and light mix. Kochis-Jennings observed the thyroarytenoid and cricothyroid muscle activity in the mixed voice. She concluded that the TA muscle was more active during the chest and chest mix than for the head and head mix. The chest and head mix were perceptually identifiable, and different both acoustically, and in the degree of the TA muscle activity and vocal fold adduction. In addition, the research found that singers in Western classical music tend to use the head mix, while people with CCM training are more likely to use a chest mix. (Kochis-Jennings 2010, 182–192.) Later research has not found support for the CT- or the TA-dominant types of phonation regarding registers and found that pitch than register defines CT-TA muscle activity ratios (Aaen 2019, 806).

Some, for example, Roubeau et al., suggest that the mix does not result from a laryngeal process. An EGG<sup>23</sup> analysis showed a sudden thinning of the vocal fold and a reduction of the vibrating mass during the transition from M1 to M2 and the opposite during the transition from M2 to M1. They found that the border between the mechanisms is mobile and that there is a partial overlap of the range of the mechanisms (one octave on average).

---

<sup>23</sup> Electroglottographic analysis.

When the voice ascends from a lower pitch to a higher pitch, the transition happens later than when the voice descends from a higher pitch to a lower pitch. Men produced the mixed voice using M1 and women using M2. (Roubeau, Henrich & Castellengo 2009, 427–436.) The study focused on Western operatic singers. Possibly, the results would have been different with CCM singers.

A recent study in Japan concluded that the mixed register has a distinct voice production mechanism and differs from the chest and the head registers perceptually, acoustically, physiologically, and aerodynamically. The research found that the mix is often used by students or developing singers and that accomplished singers can vary voice timbers from chest-dominant, fifty-fifty to head-dominant mix. They found that the mix is the most efficient register to produce aerodynamically, making it an essential tool for the singer to avoid vocal injuries. The reason is that there is less subglottal pressure in the mix than in the chest voice and a lower mean flow rate than in the head voice. (Lee, Oya, Kaburagi, Hidaka & Nakagawa 2021, 2–14.) The participants of this study were all Japanese. Because native language also plays a part in how people sing, the results may vary with subjects of other native languages.

Ingo Titze presents two competing arguments on what the mix is. The first school argues that mixing is not mechanical regarding vocal fold vibration but an acoustic and perceptual phenomenon. There is a chest mix that uses M1 and a head voice mix that uses M2. Though one cannot perceive the transition from one register to the other thanks to vowel modification or adjustments in adduction, a sudden change of mechanism still occurs. The other school argues that the two mechanisms of vibrations can merge and form a continuous pattern by balancing the tensions in the layers of the vocal fold and the shape of the surface of the folds. The latter requires extensive practice and is incredibly challenging for those who dominantly use one register (either the chest or the head) in their voice. Mixing is most effortless for those who have used it as their default speaking voice for many years. Mixing is not purely a laryngeal phenomenon and that multiple harmonics interact with multiple resonances on multiple pitches. (Titze 2018, 49.)

In an interview with jazz voice educators, McLean identified two problems concerning registration. First, students' voices are too mixed, and they cannot isolate the registers. Second, the registers are too isolated, and the students cannot mix. Most educators agreed

that it is essential to develop both the head and the chest registers and a strong mix in between. (McLean 2022, 3.)

Unable to measure the balancing of the tension of the vocal folds or the shape of the surface of the folds in my voice, I can only describe my perception as a singer. For me, the mixed voice is a non-breathy tone with good vocal fold closure in the middle register. The chest mix is a lighter version of M1, and the head mix is a heavier version of M2. The so-called 50-50 mix has a different sensation than singing in pure chest voice, head voice, chest mix, or head mix. I can feel the resonance in both the head and the chest, the singing feels very effortless, and the whole body feels active.

**Example: Dee Dee Bridgewater in “Lonely Woman”, by Horace Silver <sup>24</sup>**

Dee Dee Bridgewater’s vocal technique is impressive in “Lonely Woman,” written by Horace Silver, on the album “Love and Peace,” recorded in 1995 (Verve). The musicians on the track are Lionel Belmondo on tenor saxophone, Thierry Eliez on piano, Hein van de Geyn on bass, and André Ceccarelli on drums. She was 44 years old during the recording. The jazz ballad tells a story of loneliness and missing a special someone. The focus is on the first A section of the first chorus and the last A at the song's end.

The range of this song is between G3 and D5. Dee Dee Bridgewater uses the chest voice in the small octave and mixes above C4 mixed voice most of the song. She begins with the word “I” in her chest voice in G3 and then jumps an octave higher to G4, masterfully shifting to her head mix. Bridgewater uses her head resonance in “*need someone to be a companion, you see,*” ranging between F4 and Bb4. Her voice is supported, and she has good vocal fold closure, even though she is breathy in the endings of the words “*someone*” and “*to,*” which I believe is used for effect. The lightness of her voice allows us to believe that she is using M2. The following section, “*I’m just a lonely woman,*” is fascinating. Purely based on perception, she seems to be using the so-called 50-50 mix, in which the resonance lies between the head and the chest, and the vocal fold closure is firm but not quite as strong as thick folds. Investigating and measuring this further with more advanced methods would be fascinating. In the next section, “*In search of company, now just,*” she transitions to her chest voice and returns to a head mix on “*Where can he be.*”

---

<sup>24</sup> Album link: <https://www.allmusic.com/album/love-and-peace-mw0000176364>

The ballad arrangement begins from a more minimalistic setup with the piano trio and voice, adding the tenor saxophone counter melodies and second voice to the melody as the song advances. The song ends with a dynamic culmination from the band. Bridgewater adds to the culmination, using a chest mix in “*I’m so*” but then transitioning to the head mix in the middle of the next word, “*alone,*” as the melody ascends to A4. She finishes the song in the head mix, “*Where can he be*” (C5).

Bridgewater mainly stays in a mixed voice throughout the song, using a lyrical singing style. She sustains long notes and uses vibrato at the ends of words. Moreover, a laryngeal tilt is present in her voice. The listener can recognize it because she seems to have a crying or complaining quality in her voice. The roundness of her vowels leads us to believe that she is raising her soft palate.

Dee Dee Bridgewater is known to be a strong belter, and she often uses the chest voice or chest mix in the higher register (for example, on the song “*Filthy McNasty*” on the same album). Throughout the song, Bridgewater prefers to stay in a mixed voice rather than a strong chest voice or belting. Making an artistic choice not to belt or use the chest mix past Ab4 in this song conveys tenderness and vulnerability, beautifully illustrating the lyrics and transmitting her emotions of longing. The chosen register and the laryngeal tilt transmit vulnerability and loneliness. Her technique beautifully correlates with the song's lyrics, making it another excellent example of how vocal flexibility, technical ability, and emotional interpretation are interlinked.

This song challenges vocalists for two main reasons. First, many singers find sustaining long half-note vowels in a relatively uncomfortable register challenging. Because G4 can be sung either with chest voice, head voice, and mixed voice, it is a problematic register transition note for many vocalists. Secondly, the octave jump in the first phrase, “*I need someone ...*” and “*Now just where can he be,*” is uncomfortable because broad melodic jumps require energetic and physical readiness and quick adjustments in the larynx and the vocal tract. The low note seems comfortable and easy, and the high note is like a sudden unpleasant surprise if unprepared. Using the head mix may sound easy when listening to Dee Dee’s effortless, but a lot of energy and thought are needed to master this technique. Firstly, activating and raising the soft palate is essential to avoid nasality and loss of resonance in the oral cavity. Secondly, to avoid straining, the false vocal folds need to be retracted and the tongue placed at the front of the mouth, so it does not press

on the larynx. Thirdly, the laryngeal tilt should be added to allow the vocal folds to stretch. Singers should avoid extensive breathiness and pay attention to having good vocal fold closure and controlled exhalation.

In conclusion, Dee Dee Bridgewater in “Lonely Woman” is a fantastic example of the mixed voice and a lyrical approach to singing jazz. She seems to be playing with the degree of the mix, sometimes sounding more heavy, sometimes lighter. It would be fascinating to explore this type of voice use with other methods besides proprioception and psychoacoustic analysis.

## **4.2 Specific techniques**

The following chapter does not focus on registers but on specific voice techniques that jazz vocalists can use as effects. This chapter could contain many topics, but the focus is on two contrasting effects: belting in the example of Nancy Wilson and the falsetto in the example of Shirley Horn. This research includes belting, namely because it is seldomly discussed in the context of jazz, and falsetto, because it is one of the most common techniques used in an intimate jazz style.

### **4.2.1 Belting**

Belting is a technique that enables singing with intensity and loud volume in the high register. Popeil defines it as a speech-like or yell-like style of singing that feels like it is “shooting straight through the mouth.” (Popeil 2007, 77.) The traditional belt range has been from E4 to C5 (523,25 Hz), but nowadays, musical theatre pieces require belting up to E5 or F5 (698.46 Hz). (Roll 2016, 638) Stylistically, belting is mainly associated with musical theatre, ethnic music, and Gospel. (Estill L2 2005, 65). It originated from African American musical traditions preceding jazz (McLean 2022, 7), and it became popular at the beginning of the 20th century when loud singing was an acoustic necessity. (Popeil 2007, 77). The famous belters in the 1930s were Ethel Merman, Ma Rainey, and Bessie Smith. Singers like Carmen McRae, Sarah Vaughan, Esperanza Spalding, Dianne Reeves, and Nancy Wilson have used belting in jazz. (McLean 2022; 7.) While a jazz singer has much artistic freedom and may choose not to belt, the skill can be handy in enhancing the vocal range and expressive possibilities.

During my studies in Finland and my exchange semester at USC Thornton School of Music in Los Angeles, USA, I noticed how different teachers use the terminology: I observed that some teachers use the term more loosely to describe any use of M1 past E4. In contrast, others only use it to describe a particular technique. Christianne Roll writes that the views on belting differ among pedagogues: some believe it is solely a chest voice pushed beyond its typical range, while others see it as a combination of chest and head registers (Roll 2016, 638). Kochis-Jennings explains belting as a high-pitched chest voice carried above the first passage. (Kochis-Jennings 2012, 183). EVT explains belting through a specific “recipe” or physical adjustments that need to take place (Estill 2005 L2, 17). Jazz voice educator Jan Sullivan lists several necessary adjustments, including a high larynx, a specific shaping and positioning of the lips, teeth, tongue, and jaw, vowel placement, posture, breath support, and control of vocal onset. (McLean 2022, 7). In recent research, Herbst et al. explain that belting is “likely produced with an increased relative duration of glottal closure and vocal fold contact.” Stressing the importance of vowel modification, he does not find it accurate to view belting as speech-like singing because belting cannot be achieved using speech-like vowels. (Herbst, 2023) In contrast to all previous views, CVT does not use the term “belting” at all, replacing it with “edge.”

During my studies in the United States, I noticed the use of the terms head belt and chest belt, while in my school in Finland, only chest belt was considered belting, and the American head belt was considered a mixed voice with head resonance and twang. In addition, one of my teachers, Hanna Hurskainen, differentiated between pure belting and belting with the laryngeal tilt. The first option sounds rough and robust, like shouting. The second option sounds softer and rounder and is much easier to produce. Popeil also names several belting styles, including heavy, nasal, twangy, brassy, and speech-like belts. (Popeil 2007, 78)

Anatomically, belting requires an opening of the C-T space. Jo Estill suggested two options for this to happen: to tilt the cricoid cartilage downwards or to rock the thyroid cartilage backward. (Estill L1 2005, 60). Today, it is known that the first option is not possible, as no muscles are positioned in the larynx to pull the cricoid downwards. The second suggestion is valid: a slight up and back movement of the thyroid cartilage achieved with a nod-up is necessary to allow the vocal folds to shorten and thicken (Keyes 2017, conference), enabling a firm vocal cord closure. Popeil adds that during belting, “the cricothyroid is active while the pitch raises while the thyroarytenoid remains active

although decreasing percentages.” (Popeil 2007, 78) Because belting happens in the high register, the vocal fold contact is not as deep as in chest voice, but it is more profound than the vocal fold contact generally used in that octave range.

Not all teachers are comfortable teaching students how to belt, for it can seriously affect vocal health if done wrong. According to Christianne Roll, teaching belting in academia is relatively new. While an increased number of students are interested in the topic, there remains a lack of established pedagogy due to the unclarity of what belting is and how it is produced. (Roll 2016, 639.) Beginners are not advised to belt, and teachers must consider each student’s individuality, vocal range, and physical habits. However, it is much better to practice belting in the classroom rather than letting the students figure it out independently from a YouTube tutorial.

Based on the information today, belting is a singing technique used in the range between E4 to F5 (G5) to deliver an intense and powerful performance. During belting, the vocal folds are shortened and thickened by the thyroid movement up and back. Belting requires much energy, and successful belting includes several adjustments of the posture, the breath, the larynx, and the vocal tract.

**Nancy Wilson in “The Masquerade is Over”, by Herbert Magidson, Allie Wrubel<sup>25</sup>**

I am impartial about the following example. Nancy Wilson's rendition of "*The Masquerade is Over*" is one of the most touching interpretations of a jazz ballad for me. The song appears on the studio album "Nancy Wilson/ Cannonball Adderley," released in 1962 by Capitol Records. The musicians on the album are Cannonball Adderley on alto saxophone, Nat Adderley on cornet, Joe Zawinul on piano, Sam Jones on double bass, and Louis Hayes on drums<sup>26</sup>. The accompaniment is minimalistic and intimate throughout this song; Wilson is accompanied only by the piano trio without the saxophone and cornet. Nancy's singing is complemented by Zawinul's musical comments on the piano. During the recording, Nancy Wilson, who was only 24 years old, demonstrates incredible emotional and vocal maturity in the jazz ballad that tells the story of an ending

---

<sup>25</sup> Album link. <https://www.allmusic.com/album/nancy-wilson-cannonball-adderley-mw0000194135>

<sup>26</sup> Based on [www.allmusic.com](http://www.allmusic.com)



love affair. The focus is on the last A section of the song, but it is also important to point out what happens in her voice throughout the song.

The range of this song is between Bb3 and Eb5. For most of the song, Nancy Wilson uses a lighter tone, leading to believe that she is using her mixed voice, alternating between the head and chest mix. When paying close attention, the listener can hear a little inside smile in her voice, implying that she is retracting her false vocal folds, creating more space and roundness to her sound. In addition, she uses many contrasts in her melodic delivery: twang vs. tilt, conversational vs. lyrical. Wilson plays with the amount of twang and laryngeal tilt in her voice, usually using the twang for more attack in the conversational singing and the laryngeal tilt for more sustain in the more extended notes with vibrato and lyrical singing. She builds her energy in the last A section and transitions into a more potent chest mix. It is not until the song's end that she belts, "*It's all over. And so is love*". The belting can be recognized from the loud dynamics and the piercing tone.

From the storytelling perspective, the fact that she uses such a light approach to sing about a complex topic elicits empathy in the listener. It feels like she is trying to keep a pleasant atmosphere and hide the pain she carries behind a smile, leaving room for the listener's imagination. It feels as if the whole song builds up to the moment in which she finally reveals her genuine emotions. The fact that the band does not raise dynamics and stays minimalistic enhances the contrast and evokes a feeling of an unexpected and sudden burst of emotion that she can't keep inside anymore. Many singers belt to show off a big voice and to get the audience's applause, but in this example, the technique is strongly connected to the underlying emotion and, therefore, used as a tool for interpretation. Nancy Wilson presents belting at its best.

Another excellent example of Nancy Wilson belting is in the song "Never Will I Marry" from the same album. She belts the last phrase, "*Till I'm dead.*" There is also a video of Nancy Wilson singing on YouTube<sup>27</sup>. Visually, the belting can be recognized by a specific shaping and positioning of the mouth: her teeth are showing, and it looks like she is biting an apple. Also, her tongue placement is high. She leans back during the belting, activating her body for better support.

---

<sup>27</sup> <https://www.youtube.com/watch?v=q66n57EJvPk>

Multiple adjustments need to take place for successful belting:

1. A positive, excited feeling can help to activate the soft palate and to retract the false vocal folds.
2. Body activation includes a good singing posture, balance, head and neck anchoring (EVT term), and activation of the soft palate.
3. Breath support. Too much airflow can activate the false vocal folds.
4. False vocal fold retraction.
5. A nod-up to activate the movement of the thyroid.
6. High larynx position.
7. Narrow AES.
8. A narrow position of the jaw and mouth that shows teeth and looks like biting an apple allows a focused sound projection.
9. A high and frontal tongue placement.
10. Vowel placement and modification.
11. A laryngeal tilt helps to belt higher and makes it sound rounder.

#### **4.2.2 Falsetto**

Jazz is also known as an intimate or sultry style of singing (Cf. Popeil). One way to achieve an intimate result is using falsetto as an effect. As mentioned, the word falsetto does not refer to a register in this paper, but a voice quality, described by a breathy tone. It is a widely used effect in pop-jazz singing, produced on the laryngeal level when the vocal folds do not fully close. EVT describes it as a vocal quality that resembles a child singing sweetly. Falsetto is easiest to produce in a high register. Despite losing some intensity, it can also be used when singing low. (Estill Level 2; 21–25). The voice quality uses the aspirate onset, where the airflow begins before the vocal folds close (Estill Level 1, 26). Dimon explains that in falsetto, only the inner margins of the vocalis are brought into motion, vibrating at a faster rate and with less richness of timbre. While a breathy tone may sound intimate and tender on the microphone, it must not be overused. Dimon warns that chronically overusing breathy or hoarse singing at the expense of other registers can lead to losing the function of other registers (2011, 63).

**Example: Shirley Horn “My Future Just Passed”, by George Marion Jr., Richard A. Whiting<sup>28</sup>**

---

<sup>28</sup> Album link. <https://www.allmusic.com/album/loads-of-love-mw0001181714>

Shirley Horn is one of those singers who is immediately associated with a certain sound, her trademark being a tender and intimate tone. A great example of this is “My Future Just Passed”, released in 1963 (Mercury) when she was 29 years old. It can be noted that Shirley Horn, who was also known as a pianist, does not accompany herself on this recording. The rhythm section is composed of Hank Jones on piano, Kenny Burrell on guitar, Milt Hinton on bass and Ossie Johnson on drums<sup>29</sup>. In addition, the arrangement includes a larger ensemble with strings, horns, and a harp. Unfortunately, there is no information on the ensemble on the vinyl cover. The ballad tells a one-sided love story of someone, who falls in love from a distance, and makes plans to win the other half’s attention. A closer look is taken in the first A section.

The range of the song is relatively low a female singer, between D3 and G4. One of the first things that emerges is Shirley Horn’s ability to sustain a similar sound across registers and throughout the song, using a tender approach in both the chest and head register. At times, she sounds even so intimate that she almost whispers. The song begins with the words “*he is my fate with capital F in it*”. A contrast can be heard between “*he is my*” and “*fate*”: the beginning of the phrase is much lighter, and the word “*fate*” is stressed. I perceive her using the chest resonance throughout this passage, but in comparison to the chest voice example by Carmen McRae, there is a remarkable difference in sound because of the reduced dynamics and added breathiness. The breathiness, and the excessive air can be heard especially well in the word “*capital*”, while in contrast “*in it*” is sung with good vocal fold closure while keeping the tenderness with reduced dynamics. In the next phrase “*Now in my dreams there’ll be someone definite*” she continues using the chest resonance but then transitions to her head resonance in the word “*be*”, and back again. The octave transition from G3 to G4 is beautifully blended together by a unified sound. In the previously analyzed example of Dee Dee Bridgewater, the transition from M1 to M2 was very clear while in Shirley Horn’s example, the transition is less evident. In the end of the first A section, she sings “*my future just passed*” in a whisper-like tone.

In comparison to Carmen McRae’s assertive confidence, Shirley Horn’s approach is more vulnerable and intimate. It feels as if she’s letting the listener in on a big secret, she does

---

<sup>29</sup> Based on [www.allmusic.com](http://www.allmusic.com)

not want anyone else to know. She sounds dreamy and desperately in love as the lyrics describe her feelings while watching her secret love. Starting the second A section, she uses less breathiness, and it sounds as if she's gaining more confidence. The lyrics reveal how she's planning to conquer the other party. Shirley Horn's storytelling is equally compelling to Nancy Wilson's, but her approach is completely different.

It must be admitted that listening and imitating this type of example makes me realize the limitations of my analysis methods. It would be interesting to see the EGG, needed to identify the mechanics of the vocal folds, in the type of voice used by Shirley Horn. Considering her reduced dynamics and the lightness of her tone, I wonder whether she used M1 in the chest register or M2.

## 5 Conclusions and discussion

In conclusion, the purpose of the study was to find out what techniques are employed by jazz vocalists on the laryngeal level to manipulate their voice for artistic expression, and how may the choice of technique relate to the storytelling? By examining pertaining scholarly literature and musical works, the purpose of the study was to provide a framework for analysis that singers can use to work on their interpretation of jazz standards. I chose four musical examples to describe specific voice techniques produced on the laryngeal level. The selected recordings are Carmen McRae in the song “I Only Have Eyes for You,” Dee Dee Bridgewater in “Lonely Woman,” Nancy Wilson in “The Masquerade is Over,” and Shirley Horn in “My Future Just Passed.”

The task set out to be much more complicated than I had expected. Research on voice is constantly evolving, and there are many perspectives on each subject. The language that researchers use in the books and articles is rather complicated and demands much from the reader. While I find it extremely important for voice teachers to stay up to date with research and new information about the voice, I also see a lack of simple explanations that connect research and practice. I feel the need for a "translator" or a database of updated material in an understandable language with explanations of terminology and practical examples from the pop-jazz styles. This could be an exciting research task for the future.

Secondly, I found it challenging to decide how to approach registers due to the complexity of terminology and the different perspectives. I could have analyzed the chest voice, the chest mix, the head mix, and the head voice separately, but to limit the paper, I chose to view only the chest voice and M1 and the mixed voice using M2. In addition, it was challenging to analyze registers only based on the ear. While I have experience as a singer and a teacher, I felt the limitations of psychoacoustic and proprioceptive analysis. So much depends on the individual characteristics of each singer, and my perception of someone's voice might only sometimes be accurate to what is happening on the laryngeal level. In addition, it is complicated to differentiate what happens on the laryngeal level

from the adjustments of the vocal tract. A great continuation would be to analyze voice examples of jazz vocalists using the EGG and other analysis methods.

The research question was: What techniques are employed by jazz vocalists on the laryngeal level to manipulate their voice for artistic expression, and in what ways the choice of technique may relate to the storytelling? I answered the first part of the question using the frame of voice registers and two effects, belting, and falsetto. The honest answer is a lot longer than what this paper was able to provide. Jazz is a highly expressive singing style, using various techniques and effects. As my analyses show, the four jazz vocalists use different registers and singing styles and even vary their tone from phrase to phrase, and word to word. I intended to stay within my frames, but it was almost impossible not to notice all the other elements that were present in the voices of the singers. Therefore, I also touched the subjects of onsets, phrasing, and dynamics without going into too much detail. I could have also analyzed the use of twang, and the larynx position of the singers, but decided that this could be done in another paper.

Some voice researchers, for example, Van Opstal and Popeil, have tried to break down and simplify the information, creating groups of common denominators to define what different styles sound like. I believe there is a need for connecting voice research and practice, and the topic needs some simplification. However, based on these four examples, it can be seen how much is happening on the technical level of the singer. Generalizations only take a singer and a voice teacher so far: they might get the overall idea but need to catch up on the details. Both singers and voice teachers need tools, vocabulary, and a structure for an independent psychoacoustic and proprioceptive analysis that allow them to break down the information of musical examples for themselves. While I admit these types of research are limiting and biased, perception and the ears remain the primary tools used in learning and teaching.

The second part of the research question was: How may the choice of technique relate to the storytelling? To answer this, I explored the potential relationship between the choice of technique, its impact on storytelling, and the emotions the singer conveyed through lyrics. I realized from the start that this part of the research is purely based on my intuition and perception, and another listener might perceive the same musical example in a completely different way. However, what matters most to me is not whether I am right in guessing what the singer was feeling, but rather that just by listening. to the technique, a

story began to unroll in my mind, drawing me closer to the song and its lyrics. My intent was not to be correct but to explain how I connect the use of technique with the storytelling. I believe that a certain emotion can bring about a certain tone or specific technique, but I also believe in the opposite: singers can use a certain technique or tone to convey a certain emotion and trigger similar feelings in the listener. It would be fascinating to explore how a group of different listeners would perceive the underlying emotions of singers.

Using many sources, I aimed to connect scholarly literature on voice registers, belting and falsetto, and musical works. I also analyzed four musical examples that contain those elements. By doing so, I intended to provide both a theoretical and practical understanding of those elements so that singers can use the knowledge to work on their interpretation of jazz standards. Moreover, I investigated the relationship between the choice of technique and storytelling. The research was based on a rigorous examination of literature from several perspectives and a proprioceptive and psychoacoustic analysis of four musical examples. As mentioned several times in this paper, voice research is a vast, constantly evolving field, and I may need to catch up on research continuously. Overall, however, I believe my research demonstrates trustworthiness.

All in all, I found several topics for future research. Firstly, both singers and voice teachers need better tools to understand voice science in theory and practice. It would be interesting to create a database designed for singers and voice teachers that includes simplified but accurate information on the state of the art of different aspects of voice science and explanations of vocabulary used in research. Secondly, it would be fascinating to find out how more extensive groups of listeners perceive the emotions conveyed by the singers based on their technique.

Finally, the singer's mastery comes from the palette of techniques they use in connection with the storytelling and the emotion. As in the words of Sundberg, the point is to take optimal advantage of the possibilities that the individual characteristics of the person's vocal folds and vocal tract offers (Sundberg 1987, 2).

## Literature

- Aaen, M., McGlashan, J., Sadolin, C., 2019. *Investigating Laryngeal “Tilt” on Same-pitch Phonation—Preliminary Findings of Vocal Mode Metal and Density Parameters as Alternatives to Cricothyroid-Thyroarytenoid “Mix”*. *Journal of Voice*. 33, 5, 806.e9–806.e21
- Crowther, B., Pinfold, M. 1997. *Jazz Singers and Their Styles*. San Francisco. Miller Freeman Books.
- Dimon, T. 2011. *Your Body, Your Voice: The Key to Natural Singing and Speaking*. Berkeley, California. North Atlantic Books.
- Estill, J. 2005. *Estill Voice Training, Level One: Figures for Voice Control. Workbook*. Ed. Steinhauer, K., Klimek, M. M., Obert, K. Estill Voice Training Systems Internationals, LLC
- Estill, J. 2005. *Estill Voice Training, Level , Level Two: Figures Combinations for Six Voice Qualities. Workbook*. Ed. Steinhauer, K., Klimek, M. M., Obert, K. Estill Voice Training Systems Internationals, LLC.
- Guide to Performing: Singing Jazz. 2009. The Guardian. Retrieved from [www.theguardian.com/music/2009/may/10/jazz-singing-advice](http://www.theguardian.com/music/2009/may/10/jazz-singing-advice), read on July 7, 2023.
- Herbst, C. 2023. *Acoustical Theory of Vowel Modification Strategies in Belting*. *Journal of Voice*. E-pub ahead of print.
- Herbst, C. 2021. *The Snake Pit of Voice Pedagogy PART I: Proprioception, Perception, and Laryngeal Mechanisms*. *Journal of Singing*, 77, 2, 173–188.
- Herbst, C. 2021. *The Snake Pit of Voice Pedagogy PART II: Mixed Voice, Vocal Tract Influences, Individual Teaching Systems*. *Journal of Singing*, 77, 3, 345–358.
- Kappelle, R.P.V. 2011. *Blue Notes: Profiles of Jazz Personalities*. Wipf & Stock Publishers
- Kochis-Jennings, K.A., Finnegan, E.M., Hoffman, H.T., Jaiswal, S. 2010. “*Laryngeal Muscle Activity and Vocal Fold Adduction During Chest, Chestmix, Headmix, and Head Registers in Females*” . *Journal of Voice*, 26, 2, 182–193.



- Korpisaari, K., 2011. “Korkeakoulusta valmistuneen pop/jazz laulajan instrumentin hallinta”. Master’s thesis. Helsinki: Sibelius Academy, University of the Arts Helsinki.
- Lee, Y., Oya, M., Kaburagi T., Hidaka S., Nakagawa T. 2021. *Differences Among Mixed, Chest, and Falsetto Registers: A Multiparametric Study*. *Journal of Voice*. 37, 2. 298.e11-298.e29
- Leavy, P. 2014. *The Oxford Handbook of Qualitative Research*. Oxford. New York. University Press.
- McLean, J. 2022. *Flexibility in Range and Registration in Jazz Singing*. *Voice and Speech Review*. E-pub ahead of print.
- McLean, J. 2021. *A Study in Effective Teaching Methods for Jazz Voice Technique*. Doctoral Dissertation. Colorado. University of Northern Colorado.
- Playing the Music of Now. 2011. [www.jazzadvice.com](http://www.jazzadvice.com). Retrieved from <https://www.jazzadvice.com/lessons/playing-the-music-of-now/>, read on July 8, 2023.
- Popeil, L. 2014. [www.nats.org](http://www.nats.org). Retrieved from: [www.nats.org/\\_Library/Science\\_Informed\\_Voice\\_Pedagogy\\_Resource/Article\\_NATS\\_Chat\\_LisaPopeil\\_handout\\_April\\_9\\_2017\\_1\\_.pdf](http://www.nats.org/_Library/Science_Informed_Voice_Pedagogy_Resource/Article_NATS_Chat_LisaPopeil_handout_April_9_2017_1_.pdf), read on July 11th 2023.
- Popeil, L. 2007. *The Multiplicity of Belting*. *Journal of Singing*. 64, 1, 77–80.
- Roubeau, B., Bernardoni, N. H., & Castellengo, M. 2008. “*Laryngeal Vibratory Mechanisms: The Notion of Vocal Register Revisited*”. 23(4). 425438.
- Roll, C., 2016. *The Evolution of the Female Broadway Belt Voice: Implications for Teachers and Singers*. *Journal of Voice*. 30, 5, 639.e1–639.e9
- Story, B. H. 2015. *Mechanisms of Voice Production*. Ed. Redford, M. A. *The Handbook of Speech Production*. Wiley Blackwell. 3458.
- Sundberg, J. 1987. *The Science of the Singing Voice*. Illinois. Northern Illinois University Press.
- Sundberg, J., Thalen, M. 2010. *What is Twang?* *Journal of Voice* 24, 6, 654–660.
- Suarez-Quintanilla J., Cabrera A. F., Sharma S. 2022. *Anatomy, Head and Neck: Larynx*. National Library of Medicine. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK538202/#:~:text=The%20larynx%20is%20a%20cartilaginous,into%20the%20trachea%20while%20breathing>, read on July 11.
- Stark, J. 1999/2003. *Bel Canto*. Toronto Buffalo London. University of Toronto Press Incorporated.

TENK 2023. *The Finnish Code of Conduct for Research Integrity and Procedures for Handling Alleged Violations of Research Integrity in Finland*. Guidelines of the Finnish Advisory Board on Research Integrity. Retrieved from [https://tenk.fi/sites/default/files/2023-05/RI\\_Guidelines\\_2023.pdf](https://tenk.fi/sites/default/files/2023-05/RI_Guidelines_2023.pdf), read on July 1st. 2023. n

Titze, I. 2018. *Mixed Registration*. *Journal of Singing*. 75, 1, 49–50.

Van Opstal, K. 2022. *Vocal Jazz Technique: The Mixing Table Model*. Antwerp. Aaurk ed.

# **Appendix 1**

List of vocal jazz recordings

Table 0-1. List of vocal jazz recordings

Name	Birth year	Recording name	Recording year	Link
Ella Fitzgerald	1917	1. Ella Swings Lightly 2. Easy Living	1. 1959 2. 1986	<a href="https://www.allmusic.com/album/ella-swings-lightly-mw0000199730">https://www.allmusic.com/album/ella-swings-lightly-mw0000199730</a>  <a href="https://www.allmusic.com/album/easy-living-mw0000193223">https://www.allmusic.com/album/easy-living-mw0000193223</a>
Carmen McRae	1920	1. The Great American Songbook 2. Carmen Sings Monk	1. 1972 2. 1988	<a href="https://www.allmusic.com/album/the-great-american-songbook-vol-1-mw0000197138">https://www.allmusic.com/album/the-great-american-songbook-vol-1-mw0000197138</a>  <a href="https://www.allmusic.com/album/carmen-sings-monk-mw0000208213">https://www.allmusic.com/album/carmen-sings-monk-mw0000208213</a>
Sarah Vaughan	1924	1. At Mister Kelly's 2. Swingin' Easy	1. 1957 2. 1957	<a href="https://www.allmusic.com/album/at-mister-kellys-mw0000276440">https://www.allmusic.com/album/at-mister-kellys-mw0000276440</a>  <a href="https://www.allmusic.com/album/swingin-easy-mw0000616747">https://www.allmusic.com/album/swingin-easy-mw0000616747</a>
Blossom Dearie	1924	1. Once Upon a Summertime 2. Blossom Dearie	1. 1958 2. 1959	<a href="https://www.allmusic.com/album/once-upon-a-summertime-mw0000691433">https://www.allmusic.com/album/once-upon-a-summertime-mw0000691433</a>  <a href="https://www.allmusic.com/album/blossom-dearie-mw0000200517">https://www.allmusic.com/album/blossom-dearie-mw0000200517</a>
Betty Carter	1929	Social Call	1955, 1956 (released in 1990)	<a href="https://www.allmusic.com/album/social-call-mw0000900427">https://www.allmusic.com/album/social-call-mw0000900427</a>
Shirley Horn	1934	1. Loads of Love	1963	<a href="https://www.allmusic.com/album/loads-of-love-mw0001181714">https://www.allmusic.com/album/loads-of-love-mw0001181714</a>
Nancy Wilson	1937	1. Nancy Wilson & Cannonball Adderley 2. The Swinging's Mutual	3. 1962 4. 1961	<a href="https://www.allmusic.com/album/nancy-wilson-cannonball-adderley-mw0000194135">https://www.allmusic.com/album/nancy-wilson-cannonball-adderley-mw0000194135</a>
Dee Dee Bridgewater	1950	Love and Peace	1995	<a href="https://www.allmusic.com/album/love-and-peace-mw0000176364">https://www.allmusic.com/album/love-and-peace-mw0000176364</a>