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# Dual Roles, Dual Voices: Analyzing Vocal Function in *Hamilton: An American Musical* through the Estill Voice Model™

Elizabeth Ann Benson<sup>a</sup>, James Stover<sup>b</sup> and Tara Snyder<sup>c</sup>

<sup>a</sup>Auburn University, Auburn, AL, USA; <sup>b</sup>Purdue University-Fort Wayne, Fort Wayne, IN, USA; <sup>c</sup>University of Central Florida, Orlando, FL, USA

## ABSTRACT

In *Hamilton: An American Musical*, four actors play the following dual roles: Peggy Schuyler/Maria Reynolds, Marquis de Lafayette/Thomas Jefferson, Hercules Mulligan/James Madison, and John Laurens/Philip Hamilton. In addition to changes in costumes, hair, and physicality, the actor produces a distinctive vocal sound for each character. This study explores the specific configurations of anatomical structures within the vocal tract, which contribute to the signature sounds of the dual role characters in the Original Broadway Cast recording of *Hamilton*. Identified through the Estill Voice Model™, the conditions of significant vocal tract structures of each character's sound are mapped and compared. Given the popularity and heavy distribution of the cast album, it may be particularly prudent for replacement actors to sound like the original Broadway cast. Rather than relying on aural mimicry, replacement-cast hopefuls may reproduce the mapped conditions of the vocal tract to approximate a signature sound. Voice teachers, vocal coaches, music directors, and vocal directors can use specific elements of vocal function to guide an actor toward the desired sound, while preserving the actor's own indigenous sound.

## KEYWORDS

Hamilton; dual role; Estill; voice; singing; vocal function; vocal tract

## Introduction

When actors are contracted to play dual roles in a production, they employ a number of tactics to distinguish one role from the other. In the case of *Hamilton: An American Musical*, four actors play dual roles: Peggy Schuyler/Maria Reynolds, Marquis de Lafayette/Thomas Jefferson, Hercules Mulligan/James Madison, and John Laurens/Philip Hamilton. In addition to changes in costuming, hairstyle, and physicality, the actors adapt their voices to distinguish between characters. This study explores the specific configuration of anatomical structures within the vocal tract, which contribute to the signature sound of each of the above characters in the Original Broadway Cast recording of *Hamilton* (Miranda 2015). Identified through the Estill Voice Model™, the conditions of significant vocal tract structures of each character's sound are mapped and analyzed. Replacement-cast hopefuls may reproduce the precise conditions of the vocal tract in order to approximate the sound affiliated with a particular character, rather than relying on aural mimicry.

Through mapping and analysis, a signature sound may be approximated through specific vocal function, while preserving an actor's indigenous sound.

In every casting call, each character is narrowly defined by Lin-Manuel Miranda, the creator, composer, and lyricist of *Hamilton: An American Musical*, using combinations of Hip Hop or rhythm and blues (R&B) artists and musical theatre characters. For example, one actor must produce the sound of "Lancelot meets Ludacris" (Lafayette) and "Harold Hill meets Drake" (Jefferson) (BWW News Desk 2015, 1). Due to the popularity and heavy distribution of the cast album, it may be especially crucial that replacement actors sound like the original Broadway cast. The album is certified triple-platinum by the Recording Industry Association of America®, won the 2016 Grammy Award for Best Musical Theatre Album, and is the first Broadway score to reach number one on Billboard's rap album charts. Singing actors have long-since relied on generalized aural mimicry when preparing for a cast-replacement audition. However, the anatomical conditions presented through the Estill Voice Model™ provide specific configurations of the vocal mechanism to achieve the closest approximation, while maintaining the actor's own unique sound to "get the job done."

The authors concede that without laryngeal stroboscopy, or the use of an MRI machine, it is impossible to definitively state what is happening inside a singer's throat. In this study, the Estill model of associating acoustical output with certain physiological conditions within the vocal tract is used (Obert and Chicurel 2005). This process is detailed by Steinhauer, McDonald Klimek, and Estill (2017), and is a regular practice within Estill Voice Training® (Estill et al. 2010a, 2010b). The Estill Voice Model™ is by no means the only model available to achieve an analysis. However, this methodology is used all over the world, and its thorough and detailed structure is particularly useful for comparative vocal analysis.

The complete Estill Voice Model™ consists of 13 anatomical structures, but only nine are used in this study. It was not possible to evaluate the physical conditions of the lips, jaw, head and neck anchoring, or torso anchoring because these conditions require visual evaluation. The source material used in this analysis is the Original Broadway Cast recording (Miranda 2015). Additionally, the conditions of most of the True Vocal Fold offsets are not evaluated due to the fact that most are inaudible in the recording, and some may have been removed during the audio-editing process. Furthermore, the intricate mixing components of any recording (or live performance), such as equalization, compression, auto-tune, reverb, and so on, are not possible to discern using the methods employed in this study. Mixing effects, particularly those which boost or attenuate certain frequencies, could impact the results. Nevertheless, because the Estill Voice Model™ primarily deals with vocal function, the authors believe that most physiological conditions within the model are possible to perceive even in the presence of mixing effects.

The vocal maps represent a snapshot of the actor's most-prevalent vocal sound. The authors acknowledge that actors use a continual flow of various conditions in singing, and do not maintain fixed positions. Moreover, the conditions of each anatomical structure exist on a fluid spectrum. Labeling a structure as being in a mid-position does not mean that it sits in a static position at exactly 50%. The condition of each structure is usually in flux, and a "mid" condition mostly centers around the middle. In other words, it does not center around the other extreme conditional options: low or high.

The authors also acknowledge that moving the vocal tract into a prescribed position does not automatically produce excellence in artistic expression. This study focuses on vocal function as viewed through the lens of one of many codified methodologies, but countless other elements are required to make an effective performance. This study may be of particular interest to voice teachers, voice coaches, music directors, vocal directors, and replacement-actors. Understanding the precise conditions of the vocal tract may allow an actor to preserve their own unique sound while approximating a character's signature sound.

## Method

The authors, all of whom trained in the Estill Voice Model™ (<https://www.estillvoice.com/>), selected audio samples for each character from the Original Broadway Cast Recording (Miranda 2015), which are listed in each table. Audio samples of the solo voice, without backing vocals or heavy instrumentation, were favored so that the voice could be perceived as clearly as possible. From the samples, an overall vocal sound was mapped for each character, identifying the most-frequent condition of each of the following anatomical structures: True vocal fold (TVF) onset, True vocal fold (TVF) body-cover, False vocal folds (FVF), Thyroid cartilage, Cricoid cartilage, Aryepiglottic sphincter (AES), Larynx, Tongue, and Velum. According to the Estill Voice Model™, each of these structures may manifest in various conditions. The conditions were determined by author consensus in aural perception, and when possible, confirmed through Estill Voiceprint Plus™ software. The differences in structural conditions (and the resulting sound) between characters played by the same actor are analyzed and discussed. In some cases, both a speech and a singing comparison of voices are made due to the prevalence of rap in the show.

## Analysis

### *Jasmine Cephas Jones*

Jasmine Cephas Jones plays Peggy Schuyler and Maria Reynolds. The 2015 *Broadway World* audition notice reads as follows:

PEGGY SCHUYLER/MARIA REYNOLDS (dual role.): Non-white, late teens-20s, Mezzo-Soprano. PEGGY SCHUYLER: sweet, shy, youngest of the three Schuyler Sisters. The Michelle Williams of Destiny's Child. MARIA REYNOLDS: sultry, young, calculating. Affects the role of a damsel in distress to seduce Hamilton. Jasmine [sic] Sullivan meets Carla from Nine. (BWW News Desk 2015, 1)

Range identification is notably absent from character breakdowns in all of Miranda's musicals, but the operatic label of "mezzo-soprano" seems like a relic from the past, offering little guidance toward the desired contemporary sound. Both roles demand low and high notes and a tremendous amount of belting, which is also not mentioned. More specific information may be gleaned from the references to R&B artists. The former member of Destiny's Child, Michelle Williams, has made a successful solo career in R&B, gospel, and pop styles, as well as in musical theatre (*Aida*, *Roxie Heart*, *Shug Avery*). Williams's "warm vocal" has been compared to the "breathy timbre of Diana Ross"

(Cinquemani 2002, 1). All other dual role characters include a musical theatre character reference along with the rap or R&B artist. For Peggy, there is no musical theatre character reference, which perhaps deliberately sidelines the character; is she there just to fill out the harmonies in support of the more significant sisters? The R&B- and jazz-influenced singer-songwriter Jazmine Sullivan has a warm and agile voice, favoring the low range and a light rasp in the sound (InStyle Staff 2015, 1). The mistress/seductress role of Carla in *Nine* was played by Jane Krakowski (2003 revival), who is the epitome of a modern Broadway belter. The sum of these influences would suggest a full-bodied belt sound for Maria, such as those commonly found in R&B, gospel, or jazz. It is not entirely clear that Peggy's sound should be vastly different from Maria's, but the adjectives used to describe the characters are certainly contrasting. As Wolf (2018) points out, the two characters are familiar female stereotypes: Peggy is the "good girl," (170) and Maria is the "seductress" (176). One could infer from the character descriptions alone that Peggy should sound more innocent and youthful than Maria.

According to Cephas Jones, the vocal sound that she uses as Maria represents her indigenous sound: "I just went into the audition like Jasmine, and how I would normally sing," and believes that she landed the role "not in spite of her distinctive R&B voice but because of it" (Miranda and McCarter 2016, 175). She described the song "Say No to This," as "my jam" (174). Cephas Jones trained in jazz and contemporary music at Berklee College of Music, and is the daughter of jazz singer Kim Lesley and actor Ron Cephas Jones. For the preliminary audition, she sang Prince's song "How Come U Don't Call Me [Anymore]?" because of the "R&B vibe" and "belty feel." During the audition, the music director, Alex Lacamoire, "wrote out the Peggy part on a napkin" for the beginning of "The Schuyler Sisters" and taught it to Cephas Jones (Playbill Staff 2017, 1). Once she joined the cast, Miranda revised the "The Schuyler Sisters" to include tight-harmonies because "one night during the run at the Public, Lin heard Jasmine and her onstage sisters, Renée [Renée Elise Goldsberry] and Pippa [Phillipa Soo], singing R&B songs in their dressing room. He loved their harmonies so much that he rearranged 'The Schuyler Sisters' to showcase them better" (Miranda and McCarter 2016, 175).

The vocal sounds that Cephas Jones executes in each role are quite different from one another (See Table 1). In "The Schuyler Sisters," Peggy sings her solo lines in an innocent tattletale timbre, reciting the rules to her sisters, beginning with, "Daddy said to be home/by sundown" (0:30–0:33). This sound is distinguished by a high larynx, resulting in a youthful and bright sound, and a narrow aryepiglottic sphincter (AES), particularly evident on "And Peggy!" (0:25). The narrow AES is achieved by narrowing the pseudo-sphincter formed by the arytenoid cartilages, aryepiglottic folds, and epiglottis at the top of the larynx. The AES is also referred to as the "epilarynx tube" which Titze and Story (1997) explain, "clusters the third, fourth, and fifth formants to generate the vocal *ring* (singer's formant)." They state that "the resonance frequency of the epilarynx 'attracts' all formant frequencies of the vocal tract" by generally pulling  $F_1$  and  $F_2$  upward, and  $F_4$  and  $F_5$  downward (2243). This particular ring results from the boost to the sound energy between 2 kHz and 4 kHz, and is referred to as "twang" in Estill terms (Steinhauer, McDonald Klimek, and Estill 2017). When the three sisters introduce themselves (0:21–0:26), each presents the musical motive associated with her name: "Angelica!" and "Eliza!". However, "And Peggy!" is spoken instead of sung. Miranda explains that Peggy "doesn't stick around the story long enough to merit a musical motif" (Miranda and McCarter 2016, 42). As a departure from Peggy's

pervasively high larynx in her solo singing, Cephas Jones lowers the larynx, perhaps to blend with Goldsberry and Soo, which may be heard on the lyrics “in the greatest city in the world!” (2:56–3:03). Although Peggy is the youngest Schuyler sister, she sings the lowest part of the 3-part harmony. Her laryngeal adjustment makes the three voices virtually indistinguishable throughout “The Schuyler Sisters.”

After Cephas Jones has changed her clothes and put on red lipstick, she emerges as Maria Reynolds, the femme fatale who, along with her abusive husband, blackmails Hamilton and ruins his presidential prospects through one of the first great political sex scandals. The music she sings is in a different style. “Say No to This” is essentially a duet with Hamilton: he raps while she “sings her side of the story in R&B” (Miranda and McCarter 2016, 174). The acting stakes are high, as the song progresses through the initial seduction, James Reynolds blackmailing Hamilton, Hamilton confronting Maria, and his decision to continue the affair. She seduces Hamilton using a sound produced by (See Table 1) slack vocal folds (vocal fry), portraying intimacy and fragility on “I came here/all alone” (0:43–0:46) and “suddenly he’s up and gone” (0:52–0:56). Her sound borders on saccharine sweetness (using thyroid tilt) on “You’re too kind, sir” (1:02–1:05). The larynx is notably lower in this role, likely due to the lower range (often below C4) and the maturity of Maria as compared to Peggy. Sensuality is underlined through the dark and rich sound of a pervasively low larynx, particularly in combination with the warm resonance created by wide false vocal folds (FVF). This sound is prevalent throughout the song, but is prominent on “I’m so sorry to bother you at home” (0:37–0:41). The song comes to a climax on her offer that as long as Hamilton continues to pay her husband the blackmail money, he “can stay” (3:00–3:05), leading the song through a modulation of key on D5/Eb5. This sound uses tilted cricoid cartilage and a narrow AES, resulting in a shout-quality and heightened ring, respectively. Other than “stay,” Maria’s AES is wide

**Table 1.** Voice map for Jasmine Cephas Jones (Peggy Schuyler/Maria Reynolds).

Structure According to the Estill Voice Model™	Peggy Singing Estill Terms	Other Terms	Maria Singing Estill Terms	Other Terms
True Vocal Folds: Onset	Glottal/Smooth	Abrupt, hard/Balanced, clean	Glottal/Smooth	Abrupt, hard/Balanced, clean
True Vocal Folds: Body-Cover	Thick	TA-Dominant, chest voice, full voice, speech-quality	Slack/Thick	Vocal fry, creak/TA-Dominant, chest voice, full voice, speech-quality
False Vocal Folds	Mid	Neutral, relaxed	Retract	Open, resonant, laugh position
Thyroid Cartilage	Vertical	Neutral, modal, speech-like	Vertical	Neutral, modal, speech-like
Cricoid Cartilage	Vertical	Neutral, natural	Vertical/Tilt	Neutral, natural/Belted, loud, shouty
Aryepiglottic Sphincter	Narrow	<i>Chiaro, squillo, twangy</i>	Wide	Neutral, open, free
Larynx	High	Bright, young, high	Low/Mid	Dark, warm, rich/Neutral, speech-like, relaxed
Tongue Velum	Mid High	Neutral, speech-like Oral resonance, clear	Mid High	Neutral, speech-like Oral resonance, clear

Audio sample for Peggy from “The Schuyler Sisters” (0:21–1:17)

Audio sample for Maria from “Say No to This” (0:34–1:38, 2:33–3:44)

or neutral, resulting in a rich sound which contrasts with the bright twang of Peggy's pervasively narrow AES.

### **Daveed Diggs**

Daveed Diggs plays Marquis de Lafayette and Thomas Jefferson. The 2015 *Broadway World* audition notice reads as follows:

MARQUIS DE LAFAYETTE/THOMAS JEFFERSON (dual role): Non-white, 20–30s, Tenor-Bari, MUST be able to sing and rap well. LAFAYETTE is an earnest, idealistic Frenchman who reveals himself to be a superb military commander/rapper. Think Lancelot meets Ludacris. JEFFERSON is relaxed, jazzy, brilliant, whose effortless cool is ruffled ONLY by Hamilton. Harold Hill meets Drake. (BWW News Desk 2015, 1)

Versatility is central to this casting notice. One must be a tenor, a baritone, a rapper, and a singer. Lafayette speed-raps with a French accent, and the same actor must then transform into a jazzy, “super-smooth Jefferson, aloof and debonair” (Miranda and McCarter 2016, 148). The alliterative references for Lafayette (Lancelot and Ludacris) reveal a well-developed concept for this character. Lancelot, the beloved knight of Lerner and Loewe's *Camelot*, melts hearts with his combination of bravery and romance within lyric phrases delivered through a smooth baritone voice. Ludacris, rapper and winner of 3 Grammy Awards, often uses humor in a “witty, animated style” which “took him to the forefront of the ‘Dirty South’ [rap] movement” (Mitchell 2006, 1). Lafayette raps significantly more than he sings, whereas Jefferson's character is more evenly divided between rapping and singing. The reference to Harold Hill (*The Music Man*) may pertain to the confidence and charisma of the fast-talking traveling salesman turned romantic lead, rather than to his vocalizations. Harold Hill has been played by famously un-trained singers who favor a speech-like delivery: Robert Preston (1957 original) and Dick Van Dyke (1980 revival). Drake, rapper, singer, winner of 4 Grammys and 27 Billboard Music Awards, is known for mixing sung melody with rap. He has been called a “virtuoso and something of a chameleon” (O'Connor 2018, 1). He favors a high tenor range, and his voice has a bright yet slightly gravelly (distorted) quality.

Diggs joined the Vassar Workshop Cast of *Hamilton* in 2013, while the show was still in development. Much of the original material in the roles of Lafayette and Jefferson was created for Diggs, who was already an established performance artist with the experimental hip hop and rap group Clipping. He also had a background in theatre, which he had studied at Brown University, and professional credits in experimental theatre and Shakespeare. He knew Miranda and director Tommy Kail from their hip-hop comedy troupe, Freestyle Love Supreme. “Guns and Ships” which boasts an impressive 22 words in 3.3 seconds (1:16-1:19), was written using speed as “a punchline” (Miranda and McCarter 2016, 118) Miranda explains that earlier in the show Lafayette is notably foreign. In “My Shot,” Lafayette rhymes “monarchy” with “anarchy” only by mispronouncing “anarchy” as “onarchy” (1:36–1:43) due to his thick French accent (27). However, once he has been given command in “Guns and Ships,” he reveals himself to be a “rap god/military superhero.” Miranda states that the role could be written this way only because of Diggs, “one of the most technically gifted rappers I've ever met.” Miranda recalls that it was Diggs's “idea to rap this ‘resilience/brilliance’ rap in a triplet rhythm



["Guns and Ships," 1:06–1:10], which is perfect" (118). In Fact, Lafayette's fastest line in the show, "I mean ya/gotta put some/thought into/the letter but/the sooner the/better/to get ya right/hand man back" ("Guns and Ships," 1:16–1:19), was the last line Miranda added to the show because he wanted "just *one more fast rap for Lafayette please*" (119). Diggs was drawn to the work because of Miranda's ability to "figure out" the unique "swag" of each character (Binelli 2016, 1). As a default sound, Diggs's rap voice is inherently bright yet gravelly, naturally very similar to Drake's voice.

While rapping as Lafayette (See Table 2), Diggs occasionally uses constricted FVF in support of the French dialect, resulting in a growl sound such as in "My Shot," on the lyrics "When I fight, I make the other side panicky" (1:43–1:46). Not surprisingly, the tongue moves through the entire spectrum of conditions in speech, (low/mid/high) and is near-constant flux to deliver the high-speed and "verbally dexterous" performance (Walsh 2016, 457). In the fastest text, such as the aforementioned line in "Guns and Ships" (1:16–1:19), the tongue is high. The French accent also demands some nasalized vowels, which are inherent sounds of the French language, and may be achieved by lowering the velum, heard in "Guns and Ships" on the lyrics "Guns/And ships/and so the balance shifts" (0:44–0:48). Lafayette's sound has some twang, resulting from pervasive AES narrowing, evident in "Aaron Burr, Sir" on the lyrics "I came from afar just to say 'Bonsoir!'" (1:48–1:51). Distorted sounds are notably absent in Diggs's *singing* voice as Lafayette (See Table 3), which adds tilted thyroid cartilage, resulting in a sweet and cultured sound, evident in "The Story of Tonight Reprise" on the lyrics "Raise a glass to freedom" (0:20–0:23). In this song, the larynx is high and the true vocal folds (TVF) are thin, likely due to the tessitura sitting high in the tenor range, such as on "We'll tell the story of tonight" (0:38–0:41). The resulting sound is bright and youthful, which matches the spirited portrayal. However, Lafayette sings very rarely, and the only singing sample used is from "The Story of Tonight Reprise." Nearly every other line of the character is delivered through rap.

**Table 2.** Speech voice map for Daveed Diggs (Marquis de Lafayette/Thomas Jefferson).

Structure According to the Estill Voice Model™	Lafayette Speech Estill terms	Other terms	Jefferson Speech Estill terms	Other terms
True Vocal Folds: Onset	Smooth	Balanced, clean	Smooth	Balanced, clean
True Vocal Folds: Body-Cover	Thick	TA-Dominant, chest voice, full voice, speech quality	Slack/Thick	Vocal fry, creak/ TA-Dominant, chest voice, full voice, speech quality
False Vocal Folds	Mid/Constrict	Neutral, relaxed/Growl, scratchy, distorted	Mid/Constrict	Neutral, relaxed/Growl, scratchy, distorted
Thyroid Cartilage	Vertical	Neutral, modal, speech-like	Vertical	Neutral, modal, speech-like
Cricoid Cartilage Aryepiglottic Sphincter	Vertical Narrow	Neutral, natural <i>Chiaro, squillo</i> , twangy	Vertical Narrow	Neutral, natural <i>Chiaro, squillo</i> , twangy
Larynx	Mid	Neutral, speech-like, relaxed	Mid	Neutral, speech-like, relaxed
Tongue	Low/Mid/High	Covered, dark/Neutral, speech-like/Bright, clear	Mid	Neutral, speech-like
Velum	Mid	Nasalized, muted, dampened	High	Oral resonance, clear

Audio sample for Lafayette from "Aaron Burr, Sir" (1:43–1:56), "My Shot" (1:36–1:47), and "Guns and Ships" (0:31–1:20)  
 Audio sample for Jefferson from "Washington on Your Side" (0:22–2:03) and "Cabinet Battle #1" (0:36–1:17)



**Table 3.** Singing voice map for Daveed Diggs (Marquis de Lafayette/Thomas Jefferson).

Structure	Lafayette Singing According to the Estill Voice Model™ Estill Terms	Other Terms	Jefferson Singing Estill terms	Other Terms
True Vocal Folds: Onset	Smooth	Balanced, clean	Glottal/Smooth	Abrupt, hard/Balanced, clean
True Vocal Folds: Body-Cover	Thick/Thin	TA-Dominant, chest voice, full voice, speech quality/CT-Dominant, head voice, mix, soft	Slack/Thick/Thin	Vocal fry, creak/ TA- Dominant, chest voice, full voice, speech quality/CT-Dominant, head voice, mix, soft
False Vocal Folds	Mid	Neutral, relaxed	Mid	Neutral, relaxed
Thyroid Cartilage	Tilt	Sweet, cultured, trained	Vertical/Tilt	Neutral, modal, speech- like/Sweet, cultured, trained
Cricoid Cartilage	Vertical	Neutral, natural	Vertical	Neutral, natural
Aryepiglottic Sphincter	Narrow	<i>Chiaro, squillo</i> , twangy	Narrow	<i>Chiaro, squillo</i> , twangy
Larynx	High	Bright, young, high	High	Bright, young, high
Tongue	Mid	Neutral, speech-like	Mid	Neutral, speech-like
Velum	Mid	Nasalized, muted, dampened	High	Oral resonance, clear

Audio sample for Lafayette from “The Story of Tonight Reprise” (0:20–0:42)

Audio sample for Jefferson from “What’d I Miss?” (1:13–2:42)

Jefferson raps, but certainly not as much as Lafayette, and not nearly as fast. Like the “chameleon” (O’Connor) artist Drake, we hear a broader range of styles in the voice of Jefferson, caused by using a wider range of conditions in TVF onset, TVF body-cover, and thyroid cartilage (See Table 2 and Table 3). There are a few instances of glottal onset, heard in “What’d I Miss” on the lyrics “I gotta be in Monticello” (1:27–1:30), but otherwise, most onsets are smooth, contributing to Jefferson’s high-class sound as a “scheming dandy” (Zoglin 2015, 54), or “cane-twirling fop” (Brookhiser 2015, 50). Thick TVF are Jefferson’s default, but slack TVF may be heard in “Washington on Your Side” on the lyrics “he got Washington in his pocket” (1:01–1:04). Thin TVF may be heard in “What’d I Miss” on the phrase “‘What’s goin’ on?’” (2:40–2:42). In some of the faster sections of “What’d I Miss,” Diggs uses a titled thyroid cartilage, which lends itself to a refined and sweet sound, such as on the lyrics “It says the president’s assembling a cabinet/And that I am to be the secretary of state, great” (2:06–2:12). In contrast to Lafayette’s mid-condition velum, causing a slightly nasalized French sound, the velum as the well-educated and refined Jefferson is high, resulting in pervasively oral resonance. The voice maps for Lafayette/Jefferson do not contain as much contrast as the other dual-role characters, perhaps due to the stark contrast in musical style, which Miranda created deliberately. He states, “figuring out the ‘sound’ of Thomas Jefferson was a fun challenge. [...] I wrote him in a sort of a Lambert/Hendricks/Ross/Gil Scott-Heron mode—jazzy, proto-hip-hop,” and explains that “he [Jefferson] has just as much fun [as Hamilton] with words, but they swing and they sing” (Miranda and McCarter 2016, 152). In all sounds and roles, Diggs maintains a narrow AES, resulting in a distinctive *squillo* or twang. The narrow AES may be a part of Diggs’s natural sound, as this quality is also audible in his subsequent recordings and film and television roles. While the sounds of Lafayette and Jefferson differ significantly, the spotlight remains on Digg’s indigenous sound.

## Okieriete Onaodowan

Okieriete Onaodowan plays Hercules Mulligan and James Madison. The 2015 *Broadway World* audition notice reads as follows:

HERCULES MULLIGAN/JAMES MADISON dual role: (male, 20–39) non-white, must be able to sing and rap well; tenor/baritone. Mulligan is the life of the party, dripping with swagger, streetwise and hilarious. Joins the revolution to get out of being a tailor’s apprentice, and befriends Laurens, Hamilton and Lafayette. Busta Rhymes meets Donald O’Connor. Also plays Madison, an incisively intelligent, quiet, professional. A former Hamilton ally, he becomes Jefferson’s detail man concerning all matters he gets things done. RZA meets Zach from “A Chorus Line.” (BWW News Desk 2015, 1)

As is true for the Lafayette/Jefferson track, Mulligan/Madison must also be a tenor, a baritone, a singer, and a rapper. Mulligan should have the “youthful exuberance” and “bountiful good humor” (Welkos 2003, 1) of Donald O’Connor (known for his role as Cosmo Brown in the 1952 musical film *Singin’ in the Rain*). This goofiness should be delivered in combination with the “trademark gravelly roar” (Bozza 1998, 1) of the innovative and larger-than-life rapper Busta Rhymes. Hercules Mulligan (whom Miranda claims has “the best rap moniker I ever heard in my life” (Miranda and McCarter 2016, 25)) gets a shout-out from Rhymes himself in the cover of “My Shot (Rise Up Remix)” on *The Hamilton Mixtape* (Various Artists 2016). By contrast, Madison should evoke the discipline of vegan rapper and leader of the Wu-Tang Clan, RZA (author of *The Tao of Wu*) and the tightly-wound determination of the stage director character of Zach (*A Chorus Line*). Brewing this melting pot of ideas into an audition performance would be a daunting task for even the most skilled performer.

It is no surprise that this dual role was filled by an experienced performer. Okieriete Onaodowan (“Oak”) went directly from performing in Broadway’s *Rocky* to joining *Hamilton*’s final lab cast, before it moved to The Public Theatre. Onaodowan explains that when he joined the cast, Mulligan was a well-developed character, but Madison was less so. He was able to fill out the details of Madison himself, creating a small and sickly character, who was “slightly always annoyed,” the opposite of the physically bombastic “fun-loving” Mulligan (Onaodowan 2016, 4:15–4:30). Onaodowan relished this contrast, explaining that he “wanted it to be a double take,” hoping that the audience would forget, and then later, “realize it’s the same person” (Hyman 2016, 1). Miranda states that both characters “seemed effortless, even though they were totally different types, and neither was much like Oak in real life” (Miranda and McCarter 2016, 148).

As Mulligan, Onaodowan’s speech sound (See Table 4) is characterized by glottal onsets, false vocal fold constriction, vertical thyroid cartilage, and a low larynx. In “Yorktown” the sounds of TVF glottal onsets appear in “See, that’s what happens when you up against the ruffians” (1:59–2:02). In “Aaron Burr, Sir,” the growl from FVF constriction may be heard on “Lock up ya daughters and horses, of course/It’s hard to have intercourse over four sets of corsets” (2:01–2:07). The AES is mostly wide except for the comedic line in “Aaron Burr, Sir” on the lyrics “yes I heard ya mother said ‘come again?’” (2:00–2:01) when the AES narrows to imitate a female voice. When combined with the neutral sound of vertical thyroid cartilage and a low larynx, the resulting sound is a “physically and verbally explosive Hercules Mulligan,” who punctuates “his hardcore raps with physical punches, jumps, and stomps” (Walsh 2016, 457). As Mulligan,

**Table 4.** Speech Voice Map for Okieriete Onaodowan (Hercules Mulligan/James Madison).

Structure According to the Estill Voice Model™	Mulligan Speech Estill terms	Other terms	Madison Speech Estill Terms	Other Terms
True Vocal Folds: Onset	Glottal	Abrupt, hard	Smooth	Balanced, clean
True Vocal Folds: Body-Cover	Thick	TA-Dominant, chest voice, full voice, speech quality	Thick/Thin	TA-Dominant, chest voice, full voice, speech quality/ CT-Dominant, head voice, mix, soft
False Vocal Folds Thyroid Cartilage	Constrict Vertical	Growl, scratchy, distorted Neutral, modal, speech-like	Mid Tilt	Neutral, relaxed Sweet, cultured, trained
Cricoid Cartilage	Vertical/Tilt	Neutral, natural/ Belted, loud, shouty	Vertical	Neutral, natural
Aryepiglottic Sphincter	Wide	Neutral, open, free	Wide	Neutral, open, free
Larynx	Low	Dark, warm, rich	Mid	Neutral, speech-like, relaxed
Tongue Velum	Mid High	Neutral, speech-like Oral resonance, clear	Mid High	Neutral, speech-like Oral resonance, clear

Audio sample for Mulligan from “Aaron Burr, Sir” (1:54–2:07), “My Shot” (1:45–1:58), and “Yorktown” (1:50–2:08)

Audio sample for Madison from “Washington on your side” (1:33–1:48), “The Adams Administration” (0:39–0:48) and “Who lives, Who dies, Who Tells Your Story?” (0:31–0:39)

Onaodowan offers more extreme sounds in comparison to the contained and cultured Madison. Mulligan's extreme sounds include a nearly pervasive distortion created by the aforementioned FVF constriction, and the shouting quality of tilted cricoid cartilage, which may be heard in “Yorktown” on the lyrics “When you knock me down I get the fuck back up again!” (2:06–2:08). Throughout “Yorktown,” Miranda paid homage to what he calls the “Busta Rhymes soft-loud-soft” technique.” Miranda explains that “on countless songs, Busta will give you the smoothest, quietest delivery and then full-on scream the next verse” creating “delightful tension and release,” which is “entirely vocal” (Miranda and McCarter 2016, 122). Mulligan provides the “loud” in the “Busta Rhymes loud-soft-loud” technique, starting with inspiring the ensemble to shout his introduction, “Hercules Mulligan!” (1:48–1:50). Like Lafayette, Mulligan delivers nearly all his lines in rap, but when singing (See Table 5) in “The Story of Tonight Reprise,” there is a striking lack of FVF constriction and the addition of tilted thyroid cartilage on the lyrics “No matter what she tells you” (0:26–0:29), producing a sweet and cultured sound. This song has been compared to “Drink With Me” from *Les Misérables*, and before a battle, Magee (2018) points out that “in both shows, the drinking song reinforces male camaraderie and offers a peaceful contrast to the ensuing battle” (217). Perhaps the characters soften slightly in this sentimental ballad, both by forgoing rap for song, and by leaving out any distorted sounds.

As Madison, Onaodowan transforms into a “consumptive sphinx” (Zoglin 2015, 54) who is both “physically and verbally precise” (Walsh 2016, 457). When speaking as Madison (See Table 4), Onaodowan uses smooth onsets, thin TVF, and tilted thyroid cartilage, all of which reinforce the education and elitism of the character. Madison’s voice has been described as “nasal” (Miranda and McCarter 2016, 148); however, nasality is a result of an open (or partially-closed) velopharyngeal port. Onaodowan’s Madison uses a high velum (the velopharyngeal port is closed), which

**Table 5.** Singing voice map for Okieriete Onaodowan (Hercules Mulligan/James Madison).

Structure According to the Estill Voice Model™	Mulligan Singing Estill Terms	Other Terms	Madison Singing Estill Terms	Other Terms
True Vocal Folds: Onset	Smooth	Balanced, clean	Smooth	Balanced, clean
True Vocal Folds: Body-Cover	Thick	TA-Dominant, chest voice, full voice, speech quality	Thick/Thin	TA-Dominant, chest voice, full voice, speech quality/ CT-Dominant, head voice, mix, soft
False Vocal Folds	Mid	Neutral, relaxed	Mid/Retract	Neutral, relaxed/Open, resonant, laugh position
Thyroid Cartilage	Tilt	Sweet, cultured, trained	Tilt	Sweet, cultured, trained
Cricoid Cartilage	Vertical	Neutral, natural	Vertical	Neutral, natural
Aryepiglottic Sphincter	Wide	Neutral, open, free	Wide/Narrow	Neutral, open, free/ <i>Chiario</i> , <i>squillo</i> , twangy
Larynx	Low/Mid	Dark, warm, rich/ Neutral, speech-like, relaxed	Mid	Neutral, speech-like, relaxed
Tongue	Mid	Neutral, speech-like	Mid	Neutral, speech-like
Velum	High	Oral resonance, clear	High	Oral resonance, clear

Audio sample for Mulligan from “The Story of Tonight Reprise” (0:27–0:29, 0:35–0:37)

Audio sample for Madison from “What’d I miss?” (2:43–3:06), “We know” (0:22–0:32), and “The Election of 1800” (3:12–3:16)

precludes nasal resonance. Smooth onsets, thin TVF, and tilted thyroid cartilage sounds, are heard in “The Adams Administration” on the lyrics “And he just destroyed President John Adams, the only other significant member of his party” (0:42–0:48). He sometimes retracts the FVF creating a particularly warm and resonant sound, such as in “Who Lives, Who Dies, Who Tells Your Story?” on the lyrics “I hate to admit it, but he doesn’t get enough credit for all the credit he gave us” (0:32–0:39). It is important to note that these two examples are spoken, not rapped. There is no rhythm to the lines, and the libretto text is printed in prose form, rather than poetry (224, 280). Speech with free rhythm is easier to deliver in a *legato* style, and this smoothness contrasts with Mulligan’s high-energy percussive rap style. Smooth onsets are also present in Maddison’s singing voice (See Table 5), along with some narrowing of the AES, which may be heard in “What’d I Miss” on the lyrics “Hamilton’s new financial plan is nothing less than government control” (2:52–2:59). The AES narrowing on “control” provides a temporary boost in ring and perceived volume; however, Madison is generally quieter both vocally and physically than Mulligan. Miranda describes the contrast as playing “muscle” as Mulligan, and “brains” as Madison (148). Even without seeing the fully staged production, Onaodowan’s vocal contrast ensures that the listener can distinguish the revolutionary hero from the future president.

### **Anthony Ramos**

Anthony Ramos plays John Laurens and Philip Hamilton. The 2015 *Broadway World* audition notice reads as follows:

JOHN LAURENS/PHILIP HAMILTON (dual role): male (18–29) Male. Non-white, late teens- 20s, Tenor, MUST be able to sing and rap well. LAURENS is an ardent young abolitionist and idealist, born into privilege, joining the Revolution. Hamilton’s loyal best friend. Nas meets Elder Price. PHILIP HAMILTON. Prodigious, full of life, a wordsmith in the mold of his father Alexander. Tupac meets J. Pierrepont Finch. (BWW News Desk 2015, 1)

The Laurens/Philip track has the distinction of dying in both roles. Mercifully, Laurens’s death takes place offstage, but his ghost performs in the scene “Tomorrow There’ll Be More of Us” as Eliza and Alexander learn of his death through a letter. Miranda explains that this is the only scene that was omitted from the cast recording because Hamilton’s response is uncharacteristically “quiet,” due to his “genuine, life-changing grief” (Miranda and McCarter 2016, 131). In Act 2, 19-year-old Philip Hamilton dies from a gunshot wound after a duel gone awry, with his parents at his side. The actor’s task of getting the audience to invest in each character so that they are deeply affected by each death is no small feat. Add to that the ability to play Laurens in his mid-20s, Philip at age 9, and Philip at age 19, while both rapping and singing, and it is clear that this track calls for a virtuosic performer. Digging deeper into the casting notice, Laurens calls for a combination of hip-hop artist Nas and Elder Price (*Book of Mormon*). Nas is known for prioritizing lyrics over beats in a “natural” style and is credited with mastering the “craft” of rap by using “poetic devices like enjambment so subtly that it works as prose” (Phelan 2008, 1). Contrastingly, the sheltered and optimistic Elder Price from *Book of Mormon* has a fantastic “pop-rock high tenor” sound (American Conservatory Theatre 2013, 1). As Philip Hamilton, an actor should combine the “impish charm” (Stewart 2012, 1) of J. Pierrepont Finch (*How to Succeed in Business Without Really Trying*) with the husky baritone of the late rapper Tupac Shakur, whose sound “mixes toughness with tenderness” (Abdul-Adil 1995, 5).

At age 24 when *Hamilton* opened on Broadway, Anthony Ramos was the youngest member of the cast. After completing his theatre training at the American Musical and Dramatic Academy (NYC) on a full scholarship, he auditioned for the final lab version of the show. Even though he had another job at the time, the casting director called him back four times because he was “right” for the show (McGoldrick 2016, 1). Ramos feels a strong affinity to the struggle of both characters because he grew up in a “rough part of Brooklyn.” When he was auditioning at the final callback he felt that he “wasn’t acting,” and he felt such a strong connection to the sentiment of the line “I’m not throwing away my shot” that he “felt like a bomb [...] just went off” (Miranda and McCarter 2016, 244). During the development of the show, Miranda was able to “suit” the material to Ramos’s “strengths” as “a crooner at heart” (28) by changing a line in “My Shot” from yelling to lyrical singing: “Rise Up!/When you’re living on your knees,/You rise up” (3:31–3:35).

As Laurens (See Table 7), smooth onsets, tilted thyroid cartilage, and a mid-condition larynx provide a sweet, endearing sound, which is especially evident in “The Story of Tonight” on the lyrics “Raise a glass to freedom,/Something they can never take away” (0:22–0:29). However, with Lafayette and Mulligan as his comrades, Laurens occasionally veers from this default with a constricted FVF outburst, such as in “The Story of Tonight Reprise” on the lyrics “There’s hope for our ass, after all!” (0:17–0:20). AES narrowing provides extra ring in the sound, which may be heard in “Aaron Burr, Sir” on the lyrics “I’m John Laurens in the place to be!/

Two pints o'Sam Adams, but I'm workin' on three, uh!" (1:30–1:36). The TVF are mostly thick, allowing for high volume and speech-like sounds in rap (See Table 6), but we also hear TVF in a thinner condition when singing (See Table 7) in “The Story of Tonight” on the lyrics “no matter what they tell you” (0:29–0:33). These conditions provide a character who sounds idealistically determined, but not naïve.

As Philip, Ramos's speech sound (See Table 6) offers mostly glottal and smooth onsets. As Alexander Hamilton, Miranda himself widely uses glottal onsets and offsets ([']) such as those found in “My Shot” on the lyrics “[']Only nineteen but['] my mind is older/These New York City streets get['] colder [']I shoulder/[']Ev'ry burden, [']ev'ry disadvantage” (0:25–0:32), and perhaps Ramos intentionally added more glottal onsets and offsets to Philip's voice in order to emulate his father such as in “Blow Us All Away” on the lyrics

**Table 6.** Speech voice map for Anthony Ramos (John Laurens/Philip Hamilton).

Structure According to the Estill Voice Model™	Laurens Speech		P. Hamilton Speech	
	Estill Terms	Other Terms	Estill Terms	Other Terms
True Vocal Folds: Onset	Smooth	Balanced, clean	Glottal/Smooth	Abrupt, hard/Balanced, clean
True Vocal Folds: Body-Cover	Thick	TA-Dominant, chest voice, speech quality	Thick	TA-Dominant, chest voice, speech quality
False Vocal Folds	Mid	Neutral, relaxed	Mid	Neutral, relaxed
Thyroid Cartilage	Vertical	Neutral, modal, speech-like	Vertical	Neutral, modal, speech-like
Cricoid Cartilage	Vertical	Neutral, natural	Vertical	Neutral, natural
Aryepiglottic Sphincter	Narrow	<i>Chiaro, squillo</i> , twangy	Narrow	<i>Chiaro, squillo</i> , twangy
Larynx	Mid	Neutral, speech-like, relaxed	Mid	Neutral, speech-like, relaxed
Tongue	Mid	Neutral, speech-like	Mid	Neutral, speech-like
Velum	High	Oral resonance, clear	High	Oral resonance, clear

Audio sample for Laurens from “Aaron Burr, Sir” (1:30–1:43), “My shot” (1:58–2:07), and “Stay alive” (1:11–1:18)

Audio sample for P. Hamilton from “Take a break” (1:19–1:43) and “Blow us all away” (0:05–0:38, 2:20–2:30)

**Table 7.** Singing voice map for Anthony Ramos (John Laurens/Philip Hamilton).

Structure According to the Estill Voice Model™	Laurens Singing		P. Hamilton Singing	
	Estill Terms	Other Terms	Estill Terms	Other Terms
True Vocal Folds: Onset	Smooth	Balanced, clean	Aspirate/Smooth	Breathy, weak/Balanced, clean
True Vocal Folds: Body-Cover	Thick/Thin	TA-Dominant, chest voice, speech quality/ CT-Dominant, head voice, mix, soft	Thin/Stiff	CT-Dominant, head voice, mix, soft/Breathy, floating, loft
False Vocal Folds	Mid	Neutral, relaxed	Mid/Retract	Neutral, relaxed/ Open, resonant, laugh position
Thyroid Cartilage	Tilt	Sweet, cultured, trained	Tilt	Sweet, cultured, trained
Cricoid Cartilage	Vertical	Neutral, natural	Vertical	Neutral, natural
Aryepiglottic Sphincter	Narrow	<i>Chiaro, squillo</i> , twangy	Wide/Narrow	Neutral, open, free/ <i>Chiaro, squillo</i> , twangy
Larynx	Mid	Neutral, speech-like, relaxed	High	Bright, high, young
Tongue	Mid	Neutral, speech-like	Mid	Neutral, speech-like
Velum	High	Oral resonance, clear	High	Oral resonance, clear

Audio sample for Laurens from “My Shot” (3:32–3:41), “The Story of Tonight” (0:22–0:39), and “The Story of Tonight Reprise” (0:00–0:45)

Audio sample for P. Hamilton from “Schuyler Defeated” (0:11–0:30) and “Stay Alive Reprise” (0:36–0:59, 1:11–1:32)



“I’m only nineteen but['] my mind is [']older,/Gotta be my [']own man, like my father but ['] bolder” (0:15–0:21). In the singing sound (See [Table 7](#)) Ramos’s default larynx condition moves from mid as Laurens to a regularly high condition for the younger and more playful Philip, and is especially evident in “Schuyler Defeated” on the lyrics “Let’s meet the newest senator from New York” (0:22–0:25). The AES was narrowed as Laurens, but the conditions move through extremes as Philip. The AES is narrow in much of “Blow us all away,” evident on the lyrics “Ladies, I’m lookin’ for a Mr. George Eacker” (0:26–0:29). According to Miranda, this song contains the “brightest, happiest music in the show—happy flutes and rock basslines,” which “ratchet up tension and contrast for what will follow” (Miranda and McCarter 2016, 245). When Philip is wounded in “Stay Alive (Reprise),” Ramos’s AES widens, such as on the lyrics “Even before we got to ten—/I was aiming for the sky” (0:47–0:52). The death scene requires extreme conditions of vocal function, such as retracted FVF, revealing fear/sadness at his impending death on the lyrics “I held my head up high” (0:40–0:42). Ramos uses tilted thyroid cartilage as both characters, which adds sweetness to the sound, and perhaps increases the characters’ endearing qualities. Philip’s heartbreaking apology showcases the sound of tilted thyroid cartilage on the lyrics “Mom, I’m so sorry for forgetting what you taught me” (1:09–1:14). In his final moments, Philip can only manage aspirate onsets and stiff TVF, heard on the lyrics “You would put your hands on mine” (1:20–1:22) and “Ha. I would always change the line” (1:25–1:28). For Miranda, this scene was “the hardest” (248) to play each night, and Ramos’s mix of “gentleness and persistence” would “routinely wreck the audience” (244).

## Conclusion

Hamilton will “likely seep deeply into upper-middlebrow popular culture, especially that of older, more affluent white people who have largely ignored rap,” making it a “transformative” and “important cultural event” (Smith 2017, 522). With the widespread impact of *Hamilton: An American Musical*, listeners have developed a strong perception of each character’s signature sound. By Miranda’s and Kail’s design, the dual roles must be “friends in the first half” and “enemies in the second half,” with the exception of Laurens/Philip, whom everyone adores and mourns in both roles. This requires “supremely dynamic actors” (Miranda and McCarter 2016, 148), with voices that are equally dynamic and versatile in both style and function. Using the Estill Voice Model™ to identify conditions of structures within the vocal tract, voice maps of each character’s distinct vocal sound may be created. By analyzing the conditions of specific elements of vocal function, a signature sound may be approximated while still preserving an actor’s indigenous sound. Efficient vocal function is crucial in dual roles which demand contrasting sounds, but it is just one of many elements which comprise excellence in artistic expression.

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## Notes on contributors



**Elizabeth Ann Benson**, DMA, is an Assistant Professor at Auburn University where she teaches applied voice for music theatre majors and serves as music/vocal director. She specializes in crossover vocal technique, spanning from opera to musical theatre to rock. She is trained in numerous pedagogical methodologies, including Estill Voice Training®, Levels 1–2 (2017). Her research has been published in *American Music Teacher*, the *Journal of Singing*, and she is the author of the book *Training Contemporary Commercial Singers*. She holds an MM from New England Conservatory and a DMA from the City University of New York Graduate Center.



**James Stover** is a Continuing Lecturer of Acting and Musical Theatre at Purdue University Fort Wayne. A member of the Actor's Equity Association, he has performed Off-Broadway, in a National Tour, on television and at regional theatres across the country (including the Walnut Street Theatre, Utah Shakespeare Festival, McCarter theatre, Virginia Repertory Theatre and many more). James has directed acclaimed productions of plays and musicals both professionally and in academia. He completed Estill Voice Training®, Levels 1–2 in 2017 and 2019. He holds an MFA in theatre pedagogy from Virginia Commonwealth University, and a BFA in Musical Theatre from Otterbein University.



**Tara Snyder** is an Associate Professor at the University of Central Florida and one of 34 Estill Mentor and Course Instructors in the world. Her area of expertise is musical theatre, with an emphasis on the singing voice and related research in vocal health and stage violence. Presentations on Estill, musical theatre, and stage violence have taken her around the world. Recent favorite artistic activity includes directing/producing/singing in *ReuKnighted: UCF Sings 50 Years of Hits* at the internationally known Feinstein's/54 Below in NYC. Tara is also an Actor Combatant with the Society of American Fight Directors' with five weapon certifications.

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