

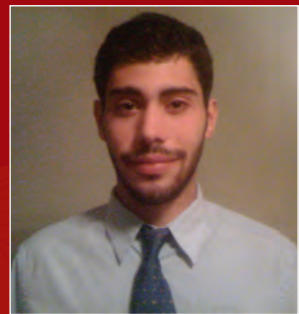
The Music of Speech: Layering Musical Elements to Deliver Powerful Messages



*Steven D. Cohen
Doctoral Fellow
University of Maryland*



*Thomas E. Wei
Affiliated Assistant Professor of Public Policy
Georgetown University*



*Daniel C. DeFraia
Master of Liberal Arts Candidate
Harvard University Extension School*



*Christopher J. Drury
Master of Liberal Arts Candidate
Harvard University Extension School*

Introduction

Music and speech are both performance arts. While these two art forms may appear distinct, they share an important characteristic: the power to evoke visceral responses from listeners.¹ Both music and speech depend upon a host of non-auditory factors, but it is the distinct mixture of sounds, both presented and perceived, that forms the primary basis for how these two art forms are understood.

Scholars have debated the rhetorical impact of speech for decades. Irvine and Kirkpatrick challenged rhetorical theorists and critics to “develop a series of models that can account for the musical form in rhetorical exchange” since the current models were “of limited service in this task.”² Since that time, scholars have published a diverse collection of articles that examine the interactions between rhetoric and music. While these articles are “diverse in perspective and theoretical grounding, [they] argue consistently that rhetorical analyses of music must consider both [the] lyrical message and musical score to be complete.”³



Although we agree with this conceptual framework, we do not view lyrics and score as two separate elements. Instead, we believe that the lyrical message is inherently musical—that there is a music *of* speech. When professional speakers deliver a line, they do not separate the words from the music. They select the words that will help them express an idea, and then they purposefully “coat” these words with music to convey a particular meaning. In doing so, they influence how listeners receive and interpret their message.

The best way to understand this “coating” process is to examine how skilled composers and professional speakers create “music.” We assert that these artists leverage precise combinations of musical elements (rather than random assortments of sounds) to strategically shape their musical message. For example, Martin Luther King, Jr. leveraged specific musical elements to transform his “I Have a Dream” speech into a moving song. Had “[King] simply distributed printed flyers of his speech, the impact would have been minimal in comparison with his powerful vocal delivery.”⁴ Indeed, music is frequently a “logical expression” of feeling, one that when used consciously in a speech “conveys to us what an emotion-characteristic ‘sounds’ like.”⁵



While speech and music clearly have structural similarities, two important questions remain:

- (1) Is there a concrete relationship between music and speech?
- (2) If so, are there music-based techniques that professional speakers use to deliver distinct and enduring messages?

We answer these questions by exploring the primary elements of music and the ways in which these elements influence speech delivery. Specifically, we examine how composers and professional speakers use five key musical elements—tempo, dynamics, pitch, timbre, and rhythm—to evoke specific emotional responses from their listeners.

Hear the speech:

http://www.youtube.com/watch?v=PbUtL_0vAJk

of how these elements are used in music, and conclude with guided speech examples that illustrate how professional speakers leverage these musical elements in practice.

Our paper proceeds as follows: we first more fully develop the music-speech analogy, then present five key musical elements with detailed examples

The Music-Speech Analogy

Humans have the ability to communicate using a vocal structure that is remarkably efficient at creating complex sounds. The position of the larynx (where the vocal cords are located) is low in the neck, enabling a high degree of sound modification. Other mammals, to varying degrees, maintain a “high position of the larynx [that] severely limits the array of sounds that can be produced.”⁶ In humans, “the vocal fold is adjustable in length, tension, and shape, giving the human larynx top honors for vocal versatility.”⁷ Given this degree of versatility, one easily can understand the inherent musicality in everyday language.

There is also evidence that music has served an important evolutionary function. During the early stages of human development, “improvisation and novelty in a combined music/dance performance would indicate the cognitive flexibility of the dancer, signaling his potential for cunning and strategizing while on the hunt.”⁸ That



is, those humans with an aptitude for musical “performance” would be the most likely to survive, mate, and produce offspring. According to Levitin, this component of natural selection may have enabled humans to integrate musical characteristics into speech.⁹ He also notes that “singing and instrumental activities might have helped our species to refine motor skills, paving the way for the development of the exquisitely fine muscle control required for vocal or signed speech.”¹⁰

Research in vocal pedagogy suggests that the human voice is essentially an instrument. Ware argues that the voice is “a complete, unified instrument for human expression and communication” that facilitates a wide range of expression in song or everyday speech.¹¹ Indeed, what makes the human voice such a powerful instrument “is that its resonances can be continually altered by movements of the larynx, jaw, tongue, and lips.”¹² In addition, functional magnetic resonance imaging studies suggest that music involves virtually all regions of the brain, including many of the same neural mechanisms that are involved in speech processing.¹³

While many of us may be unaware of the formal mechanisms underlying musical processes, we still intuitively recognize the types of sounds that we find enjoyable. We need not understand the intricate theory or technical structure of a song to react emotionally. In other words, “all of us are expert musical listeners, able to make quite subtle determinations of what we like and don’t like, even when we’re unable to articulate the reasons why.”¹⁴ Consider the game of billiards. Skilled pool players may not be able to explain the detailed physics equations underlying the game, but they still are able to play the game as if they understand the principles. Similarly, listeners may not be able to explain what makes a speech powerful, but they instantly know whether or not they are moved by a speaker’s message.



The renowned conductor and composer, Leonard Bernstein, said that “music does possess the power of expressivity, and the human being does innately possess the capacity to respond to it,” because “in any sense in which music can be considered as a language ... it is a totally metaphorical language.”¹⁵ Often, music “sounds the way feelings feel” and “can express the forms of vital experience which language [alone] is peculiarly unfit to convey.”¹⁶ In essence, music is simply speech without words, a symphony of wordless sound. Many musical selections, especially those in the classical genre, deliver the same type of musical messages that speakers deliver to their listeners.¹⁷

Interactive Links for hearing speech as music

Listen to how the human voice is an instrument:

“Bush Song” by Henry Hey: <http://www.youtube.com/watch?v=-RQPeoyqyP4>

Listen to the expressive power of music:

Leonard Bernstein at Harvard: <http://www.youtube.com/watch?v=14VhzlcSuT0>

We often recognize that music is emotionally suggestive. However, this “theory of recognition alone is insufficient,” for music also can lead to arousal, “that is, [the process] of evoking and communicating.”¹⁸ We can think of music as its own emotion-inducing language that frequently extends beyond sound into a realm of arousal that has a specific, quantifiable role in speech. As Levitin explains, the perfect combination of music and language can create unparalleled impact:



The multiple reinforcing cues of a good song—rhythm, melody, contour—cause music to stick in our heads ... as a tool for activation of specific thoughts, music is not as good as language. As a tool for arousing feelings and emotions, music is better than language. The combination of the two ... is the best.¹⁹

The Primary Elements of Music

Classical music begins as a collection of unstructured musical elements in a composer’s mind. Individually, these musical elements represent a set of abstract qualities—volume, speed, and tone, for instance—but when meaningfully combined, these elements form the basis of music. The creation of powerful music largely hinges on both the composer’s ability to layer musical elements in a way that is emotionally evocative and the performer’s ability to breathe life into the musical elements written on paper.

Powerful music frequently evokes strong sentiments. Radwan proposes that “music presents us with an aural experience, a sonorous development over time, that expresses ideas about human life and emotion rather than propositions about reality or prescriptions for behavior.”²⁰ Music is able to create this experience, because it mirrors the “main characteristics of emotional behavior, speech, and thought.”²¹ Levitin describes this idea in detail:

Abrupt, short, loud sounds tend to be interpreted ... as [alert sounds]. Slow onset, long, and quieter sounds tend to be interpreted as calming ... Composers [are aware of these differences], of course, and use hundreds of subtle shadings of timbre and note length to convey the many different emotional shadings of human experience.²²

Although composers leverage many different types of musical elements, they often rely on five elements in particular—what we call the five *key* musical elements—to create “subtle shadings” that induce specific emotional reactions (Table 1).²³

Table 1. The Five Key Musical Elements

Element	Definition	Characterization
Tempo	The general speed of the sound	<ul style="list-style-type: none"> • Does the music have a fast, frenetic pace, or is it very slow? • Does the pulse change suddenly? • Does the speed fluctuate a lot?
Dynamics	The volume of the sound	<ul style="list-style-type: none"> • Is the volume always loud or always quiet? • Does the volume suddenly become loud and then suddenly quiet? • Is the change in volume very gradual?
Pitch	The location of the sound in the musical scale	<ul style="list-style-type: none"> • Is the sound high-pitched like a typical female voice or bird, or is it low-pitched like a typical male voice or lion? • Are there very high and very low notes? • Do pitches change gradually in small steps as in a musical scale, or do they jump up and down in large intervals?
Timbre	The “character” or “personality” of the sound	<ul style="list-style-type: none"> • Is the sound rough, biting, sweet, warm, obtrusive, or sonorous? • Are certain notes heavily emphasized or accented more than others? • Is there a sharp and alarming emphasis at the beginning of the note, or is there a more subtle, dull emphasis throughout the note’s duration?
Rhythm	The structural spacing of the sound	<ul style="list-style-type: none"> • Do the notes occur in regular and constant time intervals, or is there significant variation and unpredictability among the notes? • Do pauses occur suddenly after a flourish of notes, or do the notes slowly ease into a natural break? • Are the pauses of significant duration, or are they more like short breaths?

Composers often begin structuring these musical elements to reflect emotional impulses “that have been seeking an outlet, a means of expression, of communication to others.”²⁴ These impulses usually lead to the development of a phrase, a group of notes or “musical unit.”²⁵ The phrase addresses the shape and flow of a musical idea and identifies the main themes, the primary voices, and the auxiliary components. The phrasing of a piece of music is important, because it will impact how listeners receive and process the sound.



We have selected and analyzed a variety of classical pieces to offer deeper insight into the ways in which composers can use musical elements to evoke specific emotional responses.²⁶ All five musical elements are versatile insofar as they are used in a variety of ways to elicit dramatically different images and feelings. Composers do not necessarily follow formulaic rules. Instead, they employ a variety of techniques to organize the five key musical elements as they see fit.²⁷

The first musical element that we will consider is tempo. Fast tempos often generate excitement, energy, and action, while slow tempos often elicit reflection and solemnity. For example, Nikolai Rimsky-Korsakov’s *Flight of the bumblebee* speeds along at a breakneck pace to capture the frenetic motions of a berserk insect. In contrast,

Richard Strauss' *Death and Transfiguration* crawls along at a lethargic pace to transport listeners to a room housing a man on his deathbed.

Choosing a fast or slow tempo is not the only way to leverage this particular element—tempo contrasts are also vital. The lightning pace at the start of Modest Mussorgsky's *Night on Bald Mountain* produces a turbulent seaside mountain image for listeners. After this first storm surge, a long pause unexpectedly fills the air. This frozen silence creates the feeling of a lull before the storm—a lull that keeps listeners in suspense until suddenly, the same quick buzzing heard from the strings at the start of the piece is repeated to portend the onslaught of another storm.

The Mussorgsky example demonstrates how a sudden tempo change can elicit feelings of suspense and anticipation. Another way to create tempo contrasts is by gradually changing speeds to build musical momentum in anticipation of a satisfying climax. An excellent example is Ludwig van Beethoven's *Symphony No. 9*. This celebrated piece draws to a close with subtle tempo increases, soaring to one of the most jubilant peaks ever attained in classical music.

Alternatively, composers sometimes use a regimented, constant tempo to build and sustain tension. For instance, Gustav Holst's *Mars* (from *The Planets*) begins at a brisk but steady pace, evoking an image of a relentless army destroying everything in its path. In this case, it is the absence of tempo contrasts that harbinger a sense of persistent dread, which is precisely how Holst intends to characterize the blood-thirsty Roman God of War.



The same basic principles underlying the effective use of tempo also apply to the effective use of dynamics and pitch. Although there are no universal rules, loud sounds can be startling, alarming, and grand, whereas quiet sounds can be sad, brooding, and ominous. Likewise, high pitches can be energizing and exciting whereas low pitches can be dark and morose. As with the use of tempo, however, it is often the contrast in dynamics and pitch that provides the driving force behind powerful music. For example, *Night on Bald Mountain* begins with a quiet, foreboding, shimmering sound from the strings, which is then reinforced by thumping notes from low-pitched instruments. Throughout this initial musical statement, there is a rise in volume and then a sudden fall in volume. This dynamic contrast produces a heaving sensation as if waves are washing ashore in a violent fashion before receding and rising again. Similarly, *Mars* features low-pitched brass instruments that begin quietly and get louder before fading away. Holst's use of dynamic contrast and instrument timbre creates a menacing, ominous, and otherworldly musical image.

The prior discussion provides a natural segue to the use of timbre. In *November Woods*, Arnold Bax creates magic and mystery with the harp, high strings, and flutes, which feature thin, airy, ethereal, and rustling timbres. Conversely, Richard Strauss reinforces a morose and resigned atmosphere in *Death and Transfiguration* by using sad-sounding instruments such as the bassoon and oboe. The choice of a shrieking violin in *Flight of the Bumblebee* mimics the buzzing of a pesky insect. And in *Gun Battle* (from *Billy the Kid*), Aaron Copland uses snare drums and trumpets—instruments with a sharp, metallic timbre—to create the essence of exploding gunpowder and whizzing bullets.

Interactive Links for Listening to Musical Elements

*Tempo

Flight of the Bumblebee: <http://www.youtube.com/watch?v=aGyXJxZZ5ro>
Death and Transfiguration: <http://www.youtube.com/watch?v=KHnFgmNWtfM>
Night on Bald Mountain: <http://www.youtube.com/watch?v=iCEDfZgDPSS>
Symphony No. 9: <http://www.youtube.com/watch?v=yBAqBkoT5-4&feature=related>
Mars: <http://www.youtube.com/watch?v=L0bcRCCg01I>

*Dynamics and Pitch

Night on Bald Mountain: <http://www.youtube.com/watch?v=iCEDfZgDPSS>
Mars: <http://www.youtube.com/watch?v=L0bcRCCg01I>

*Timbre

November Woods: <http://www.youtube.com/watch?v=uthB96Q-QWw>
Death and Transfiguration: <http://www.youtube.com/watch?v=KHnFgmNWtfM>
Flight of the Bumblebee: <http://www.youtube.com/watch?v=aGyXJxZZ5ro>
Gun Battle: <http://www.youtube.com/watch?v=BJOcCaGHIRk&feature=related>

*Rhythm

Mars: <http://www.youtube.com/watch?v=L0bcRCCg01I>
Death and Transfiguration: <http://www.youtube.com/watch?v=KHnFgmNWtfM>
Gun Battle: <http://www.youtube.com/watch?v=BJOcCaGHIRk&feature=related>

Finally, composers can use variations in rhythm to achieve their musical objectives. *Mars* not only features a constant tempo, but also presents a steady rhythm repeated ad infinitum. This regimented repetition enables listeners to visualize an army of soldiers marching in strict time. *Death and Transfiguration* begins with quiet, low-pitched strings playing an uneven rhythmic pattern that is starkly different from Holst's precise march-like rhythm. This irregular and quiet pattern evokes the image of a man experiencing heart arrhythmias, palpitations, and unstable breaths. In contrast, *Gun Battle* leverages pauses of varying lengths, as well as accented notes and quick irregular rhythmic flurries, to simulate a gun fight with bullets ricocheting off walls. The rhythmic unpredictability generates an exciting atmosphere that keeps listeners alert and on edge.

As these examples illustrate, composers can layer tempo, dynamics, pitch, timbre, and rhythm to construct an image, create a mood, or tell a story. However, one need not be a musical expert to detect this layering process: musicians often visually telegraph the images and emotions through their body language. Levitin elaborates on this concept:

Studies have shown that nonmusician listeners are exquisitely sensitive to the physical gestures that musicians make. By ... attending to things like the musician's arm, shoulder, and torso movements, ordinary listeners can detect a great deal of the expressive intentions of the musician. Add in the sound, and an emergent quality appears—an understanding of the musician's expressive intentions that goes beyond what was available in the sound or the visual image alone.²⁸

While there is no strict formula, speakers can layer these musical elements on top of one another to reinforce their desired message. In the next section, we discuss how speakers, through careful study and practice, can leverage these musical elements to create powerful musical images.

Transmitting Musical Images Through Speech

No two speakers or messages are exactly alike. Even when professional speakers deliver the same words, they frequently combine the five key musical elements to convey different sentiments. These speakers appropriately “coat” their words with emotion so that they can take their listeners on distinct and enduring musical journeys.



We have selected and analyzed a variety of speeches to illustrate some of the ways in which professional speakers use musical elements to enhance their vocal delivery.²⁹ We begin our discussion with the techniques used to manipulate tempo, and then explore the treatment of dynamics, pitch, timbre, and rhythm in well-known speeches.

Mario Savio's *Sit-in Address at the Steps of Sproul Hall* is especially memorable because of its perpetually fast tempo. Savio speaks about the power of non-violent civil disobedience with a tensile rapidity, without dramatic pauses or thought breaks. The panting Savio articulates his message quickly and assertively to generate excitement and inspire his listeners to “put [their] bodies upon the gears and upon the wheels, upon the levers, upon all the apparatus ... to make [the machine] stop!”³⁰ This quick tempo enables Savio to harness the energy of a crowd calling for change.

Jesse Jackson also leverages the power of tempo in his *1988 Democratic National Convention Address*. Rather than maintain a fast tempo, however, he employs tempo contrasts. Jackson begins by presenting the state of racial discrimination in America at a moderately slow pace. This is the status quo: indeed, Jackson factually paints the reality of the day with an ordinary delivery. But soon he

begins to increase his tempo to express a passionate desire for racial equality. As his tempo quickens, Jackson seems to plead with his listeners while strongly conveying his desire for a better tomorrow. Jackson's use of tempo contrasts emphasizes the temporal difference between the present and the future and enables him to build to a resounding climax. Jackson's conclusion is not unlike the end of Beethoven's *Symphony No. 9*, which makes use of tempo contrasts to build to an exulting finish.

Like tempo, dynamics dramatically influence the mood and excitement level. Speakers can use dynamics to excite or surprise, but they can also use dynamics to soothe and calm. Former President Bill Clinton illustrates the use of dynamics to assuage listeners in his *1995 Oklahoma Bombing Memorial Prayer Service Address* when he speaks to a bereaving crowd and country four days after the bombing. Unlike Savio or Jackson, Clinton does not speak with a desire to inspire action and change; he speaks with a desire to comfort and reassure. To accomplish his objective, Clinton uses a particular dynamic pattern throughout his speech. At the beginning of each sentence, Clinton's voice is strong and appropriately loud. But as he concludes each sentence, his voice quiets and tapers downward. This repeated dynamic pattern is congruent with the somber mood and the main themes of the speech—grief, justice, and unity. By effectively using dynamics, Clinton conveys the importance of moving from thoughts of anger to thoughts of acceptance.



Interactive Links for Hearing the Musical Elements in Speech

*Tempo

Mario Savio, Sit-in Address at the Steps of Sproul Hall:

<http://www.americanrhetoric.com/speeches/mariosaviosproulhallsitin.htm>

Jesse Jackson, 1988 Democratic National Convention Address:

<http://www.americanrhetoric.com/speeches/jessejackson1988dnc.htm>

(compare to Beethoven's Symphony No. 9: <http://www.youtube.com/watch?v=yBAqBkoT5-4&feature=related>)

*Dynamics

Bill Clinton, Oklahoma Bombing Memorial Prayer Service Address:

<http://www.americanrhetoric.com/speeches/wjcoklahomabombingspeech.htm>

*Pitch

Mohandas Gandhi, Address at Kingsley Hall: <http://www.americanrhetoric.com/speeches/mohandasgandhi.htm>

(compare to Brandenburg Concerto No. 5: <http://www.youtube.com/watch?v=49IOKnhX0Sk>)

*Timbre

Elizabeth Glaser, 1992 Democratic National Convention Address:

<http://www.americanrhetoric.com/speeches/elizabethglaser1992dnc.htm>

*Rhythm

Tom Hanks, Commencement Address at Vassar College:

<http://www.americanrhetoric.com/speeches/tomhanksvassar.htm>

(compare to Strauss' Death and Transfiguration: <http://www.youtube.com/watch?v=KHnFgmNWtfM>)

Hillary Rodham Clinton, Remarks to the U.N. 4th World Conference on Women:

<http://www.americanrhetoric.com/speeches/hillaryclintonbeijingspeech.htm>

*Various Music Elements:

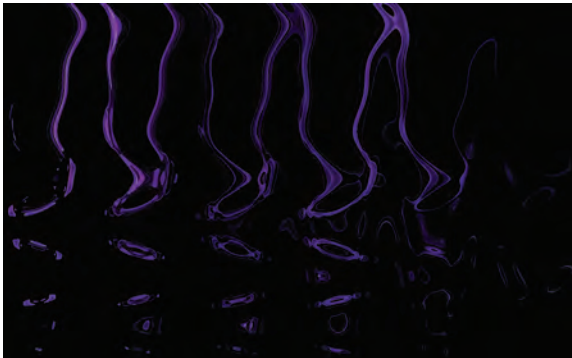
Ronald Reagan, Veterans Day Ceremony Address:

<http://www.americanrhetoric.com/speeches/ronaldreaganvietnammemorial.html>

In contrast to Clinton, Mohandas Gandhi, in his 1931 *Address at Kingsley Hall*, focuses more on the element of pitch. Declaring his never-ending belief in a higher power, Gandhi generally maintains a constant tempo, rhythm, and timbre throughout his speech, while only subtly altering his dynamics. The most noticeable change occurs as he modulates the pitch of his voice. Gandhi speaks in a blunt, steady manner that conveys his firm and unalterable belief in God. Had Gandhi not altered his pitch from phrase to phrase, his speech would have been bland and robotic; by varying just pitch, he effectively conveys his resolve and reverence. Many Baroque concerti—such as Johann Sebastian Bach's *Brandenburg Concerto No. 5*—are equally precise and controlled.

In her 1992 *Democratic National Convention Address*, Elizabeth Glaser takes advantage of the timbre of her voice to convey a different set of images—images related to the AIDS crisis in the United States. In her address, Glaser uses a natural and noticeable timbre to evoke a variety of emotional responses. Even though dynamics and pitch are heavily involved in her speech, she primarily adjusts her timbre to convey anger when discussing the lack of government action and hopefulness when highlighting the possibility of real change. Unlike the subtle Southern drawl of Bill Clinton's voice, Glaser's vocal timbre is firm and deliberate—as is her conviction and passion.

Although every speaker naturally employs some rhythmic pattern, Tom Hanks, in his 2005 *Commencement Address at Vassar College*, deftly manages his rhythm to deliver a notable message. Like Strauss' *Death and Transfiguration*, Hanks' rhythmic pattern constantly changes and forces listeners to hang on to each phrase and wait in anticipation for the next one. When he introduces a key idea—such as the simplicity of removing four cars from the road to eliminate gridlock—he uses pauses of varying lengths to emphasize the importance of what he is saying. The changing rhythm adds significant prominence to particular messages and helps Hanks keep his listeners engaged.



Hillary Rodham Clinton, in her 1995 *Remarks to the U.N. 4th World Conference on Women*, further illustrates rhythmic variations but also combines these variations with distinct timbre and pitch. Clinton emphasizes the importance of human rights for women through the rhythmic repetition of the phrase, “It is a violation of human rights,” but she also raises her pitch when she says the word “human” to draw attention to her theme that “human rights are women’s rights.”³¹ She makes this point with a hard and confident timbre, purposefully accentuating her words. Clinton’s blatant, almost staccato delivery makes her message even more meaningful, as she explains that these issues must be heard “loudly” and “clearly” and that “we must move beyond rhetoric.”³²

Our analysis would be incomplete without examining the “music” of former President Ronald Reagan’s 1988 *Veterans Day Ceremony Address*. In this somber speech, Reagan varies the configuration of his pauses to fit the contours of the sentences, all within the confines of a relatively constant and moderate tempo. Reagan’s voice generally exhibits a quiet dynamic level and soft timbre that is sage and reassuring, as he pays tribute to those who have served in the Armed Forces. However, when Reagan proclaims that “we can all agree that we’ve learned one lesson: that young Americans must never again be sent to fight and die unless we are prepared to let them win,” his timbre modulates noticeably into a firmer, insistent tone, and his dynamic level increases to drive home the importance of advancing an unfinished agenda.³³ It is no surprise that these lines prompt the audience to break into applause.

These examples highlight some of the ways in which professional speakers purposefully use tempo, dynamics, pitch, timbre, and rhythm to elicit specific emotional responses. While a speaker may focus on a single musical element, he or she can also layer these elements on top of one another to form a powerful musical collage. Speakers who strategically layer musical elements transmit powerful musical images that are holistically much stronger than the sum of their various parts.

Conclusion

Composers leverage a variety of building blocks to craft powerful, memorable pieces of music that evoke specific emotional responses. In this paper, we have introduced five key musical elements that trigger these responses, and we have explored how professional speakers use these elements to create musical images that leave a lasting impact on their listeners.

Although many of the techniques that we have discussed may seem subtle and nuanced, they all serve vital purposes. As is the case with a complex birdsong, listeners may not be able to recognize or parse all of the subtle musical components, but each component immeasurably contributes to listeners’ emotions and impressions.



This paper makes two primary contributions to the field of communication. Theoretically, we have highlighted the important technical linkages between music and speech that thus far have been underappreciated. Methodologically, we have explored specific techniques that professional speakers use to enhance their vocal delivery. We have drawn from multiple disciplines to bolster our theoretical arguments and have provided numerous music and speech examples to illustrate the relevance of our work.

It is our hope that both novice and experienced speakers leverage our analysis to improve their ability to design and deliver powerful messages. The goal of this paper is not to provide a formulaic playbook for speech success; indeed, speech delivery is an art form that requires extensive experimentation and practice. Rather, our primary purpose is to stimulate discussion about musical elements and the ways in which speakers can use these elements to craft speeches that achieve a specific objective. While we do not believe that a rigid guide is practical, we hope that our paper encourages communication scholars to explore the music-speech analogy in more depth and design empirical studies to evaluate the effectiveness of “coating” words with particular combinations of musical elements.



Listen to birdsong here:
<http://www.youtube.com/watch?v=rL4Z9d9oObY>

Appendix: Five Key Musical Elements Interactively Illustrated

We encourage readers to use a virtual keyboard to explore how composers can leverage the five musical elements that we have emphasized in this paper.

The exercise below (Table 2) highlights the use and variation of each of the five musical elements, holding all other elements constant. To complete this exercise, we recommend that readers access the following virtual keyboard:

http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/music/piano/index.htm.

Table 2. Musical Elements in Action

Element	Exercise 1	Exercise 2	Explanation
Tempo	Press A, A, A, A. Wait 1 second between each key press.	Press A, A, A, A. Wait 0.5 seconds between each key press.	Holding all other elements constant, exercise 2 has a faster tempo than exercise 1.
Dynamics	Press A.	Increase speaker volume, then press A.	Holding all other elements constant, exercise 2 has a louder dynamic level than exercise 1.
Pitch	Press C.	Press F1.	Holding all other elements constant, exercise 2 has a higher pitch than exercise 1.
Timbre	Press A.	Click on the “pan pipes” button, then press A.	Holding all other elements constant, the character of the sound is different between exercise 2 (airy and soothing) and exercise 1 (sharp, pingy, and metallic).
Rhythm	Press A, A, A, A. Wait 1 second between each key press.	Press A. Wait 2 seconds, and then press A, A, A. Wait 0.5 seconds between each key press.	Holding all other elements constant, exercise 2 has a more irregular rhythm than exercise 1.

The following table (Table 3) provides an illustration of how musical elements can be layered on top of one another to create musical masterpieces:

Table 3. Layered Musical Elements

Elements	Exercise 1	Exercise 2	Explanation
Layering of tempo, dynamics, pitch, timbre, and rhythm	Click on the “piano” button, then press C, C, G, G, A, A, G, F, F, E, E, D, D, C. Wait 0.5 seconds between each key press.	Click on the “pan pipes” button, decrease speaker volume, then press G, G, D1, D1, E1, E1, D1, C1, C1, B, B, A, A, G. Wait 1 second between each key press.	Relative to exercise 1, exercise 2 has a different timbre, lower dynamic level, higher pitch, slower tempo, and the same rhythm. The mutually reinforced layering of elements makes exercise 2 more soothing and lullaby-esque, while exercise 1 is more sprightly, whimsical, and dance-like.

These exercises illustrate some of the fundamental building blocks that composers can use to create musical images that leave a lasting impact on their listeners.

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Endnotes

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- ⁷ *Ibid.*, 432.
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- ¹¹ Clifton Ware, "From Speech to Singing: The Voice as a Single Instrument," *Opera Journal* 34 (2001): 66-67.
- ¹² Robert Jourdain, *Music, the Brain, and Ecstasy: How Music Captures Our Imagination* (New York, Avon, 1997), 40.
- ¹³ Daniel Levitin, *This Is Your Brain on Music: The Science of a Human Obsession* (New York, Penguin Books, 2006), 86, 129-130.
- ¹⁴ *Ibid.*, 220-221.
- ¹⁵ Leonard Bernstein, "Bernstein at Harvard," *YouTube*, December 12, 2009, <http://www.youtube.com/watch?v=14VhzcSuT0>.
- ¹⁶ Deanna Sellnow and Timothy Sellnow, "The 'Illusion of Life' Rhetorical Perspective: An Integrated Approach to the Study of Music as Communication," *Critical Studies in Media Communication* 18 (2001): 397; Susanne Langer, *Feeling and Form* (New York, Charles Scribner's Sons, 1953), 32.
- ¹⁷ We refer to musical selections that lack words—specifically classical music selections—to make it easier to focus on the music instead of on the lyrics.
- ¹⁸ Richard T. Allen, "The Arousal and Expression of Emotion by Music," *British Journal of Aesthetics* 30 (1990): 59.
- ¹⁹ Daniel Levitin, *This Is Your Brain on Music: The Science of a Human Obsession* (New York, Penguin Books, 2006), 267.
- ²⁰ Jon Radwan, "Mediated Rhetoric: Presentational Symbolism and Non-Negation," *American Communication Journal* 5 (2001): 4.
- ²¹ Michael Lewis, Lisa Barrett, and Jeannette Haviland-Jones, *Handbook of Emotions* (New York, Guilford Press, 2008), 107.
- ²² Daniel Levitin, *This Is Your Brain on Music: The Science of a Human Obsession* (New York, Penguin Books, 2006), 92.
- ²³ We acknowledge that these are not the only elements that composers use to elicit emotional reactions. For purposes of this paper, we focus only on those elements that are most intuitively applicable to formal speeches delivered by a single orator. We exclude harmony, for example, because individual speakers cannot leverage this element.
- ²⁴ Deryck Cooke, *The Language of Music* (Oxford, Oxford University Press, 1959), 169.
- ²⁵ Gordon Paine, *Five Centuries of Choral Music: Essays in Honor of Howard Swan* (Hillsdale, Pendragon Press, 1988), 288.
- ²⁶ We recognize that composers leverage the five key musical elements to create powerful music in a variety of musical genres. We chose to analyze classical selections, because one of this paper's authors is an experienced musician who has studied classical music for more than 20 years. To select the musical examples, we first identified the "top" classical selections by examining major symphony orchestra programs and iTunes sales rankings. We then purposefully chose examples from this large pool that, in our opinion, superbly illustrate the effective use of musical elements. (We should point out that our analysis emphasizes classical music of the Western European tradition during the 19th and early 20th centuries. Such a focus reflects our musical knowledge, the popularity of programmatic music during this period, and the relevance of this type of music to speech.) Because of space limitations, we were forced to omit many excellent examples.
- ²⁷ The Appendix provides a set of guided exercises to help readers learn more about musical elements and the ways in which composers can vary these elements to elicit specific emotional responses.
- ²⁸ Daniel Levitin, *This Is Your Brain on Music: The Science of a Human Obsession* (New York, Penguin Books, 2006), 210.
- ²⁹ As with the music examples, we sought to select speech examples that best illustrate the effective use of musical elements. Each of us identified potential examples from the American Rhetoric speech database. We then met as a research team to choose examples that, in our opinion, were both clear and understandable. Unfortunately, we were forced to omit many excellent speech examples due to space limitations.
- ³⁰ Mario Savio, "Sit-in Address on the Steps of Sproul Hall," *American Rhetoric*, December 2, 1964, <http://www.americanrhetoric.com/speeches/mariosaviosproullhallsitin.htm>.
- ³¹ Hillary Rodham Clinton, "Remarks to the U.N. 4th World Conference on Women Plenary Session," *American Rhetoric*, September 5, 1995, <http://www.americanrhetoric.com/speeches/hillaryclintonbeijingspeech.htm>.
- ³² *Ibid.*
- ³³ Ronald Reagan, "V-Day Ceremony Address at the Vietnam Veterans' Memorial," *American Rhetoric*, November 11, 1988, <http://www.americanrhetoric.com/speeches/ronaldreaganvietnammemorial.html>.