Hearing What You See: A Case for the Use of Ancillary Gesture in Individual Percussion Performance

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HEARING WHAT YOU SEE: A CASE FOR THE USE OF ANCILLARY GESTURE IN INDIVIDUAL PERCUSSION PERFORMANCE

By

Tyson J. Voigt

A DOCTORAL ESSAY

Submitted to the Faculty of the University of Miami in partial fulfillment of the requirements for the degree of Doctor of Musical Arts

Coral Gables, Florida

May 2016
UNIVERSITY OF MIAMI

A doctoral essay submitted in partial fulfillment of
the requirements for the degree of
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Hearing What You See: 
A Case for the Use of Ancillary Gesture in Individual Percussion Performance

Abstract of a doctoral essay at the University of Miami.

Doctoral essay supervised by Professor Svetoslav Stoyanov.
No. of pages in text. (64)

The use of physical gestures as expressive devices in western classical music performance is widely debated. Research conclusions and pedagogical assertions alike are highly subjective. Percussion performance is a special case in which expressive gestures are inseparable from motions necessary for playing the instrument, especially in terms of articulation. Research studies show that while percussion cannot vary note length to the same extent as other instruments, it can alter sound by changing the physical motion used to strike the instrument. Because the motion is nearly always visible to the listener, it is unclear whether the change in sound is more aurally or physically perceived. I argue that stroke types affect the perception of articulation as much visually as they do aurally. This synthesis of research and pedagogical principles will allow performers to more effectively communicate articulations in percussion through a deeper understanding of the role of ancillary gesture.
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Chapter 1
Introduction

The use of physical gesture in musical performance is highly controversial in the field of Western classical music. Some researchers believe physical movement conveys important information about performance expressivity, even when those movements do not necessarily correlate to sound production.¹ Known as ancillary gestures, these movements are not typically considered necessary for playing an instrument. They are instead intended to enhance the expressivity of the performance by visually reflecting musical aspects and moods. Many musicians believe music should be able to convey expression without the need of a visual crutch.² Others insist that visual components are just as key to musical expressivity as the sound itself.³

Much of this debate is centered on instruments whose execution is not visibly apparent. Creating sound on a clarinet, for example, primarily takes place inside the body, and anything visual, such as finger movements, is small and inconspicuous. Stringed instruments, on the other hand, are highly visual, and physical gesture is a more natural component. For this reason, the correlation between physical gesture and sound is somewhat subjective for players of highly visual instruments. It is not always feasible for these performers to separate ancillary gesture from necessary, or mechanical gesture. Consequently, the visual aspects of performance are as much a part of the performance as the sound itself.

¹ Baptiste Caramiaux, M. M. Wanderley, and F. Bevilacqua, “Segmenting and Parsing
**Background**

The primary role of a performer is to convey and communicate music to an audience. Because of the visual movements common to musicians of all styles and instruments, several studies have recently examined the effect of physical movement on the perception of musical performance. Most researchers have reached a similar conclusion: the visual elements of expression in performance are an integral part of audience perception.

Philosophers throughout history have been intrigued by the visual elements of sound. Early 17th century philosopher Marin Mersenne said “…the tongue describes the thoughts, or the words of the spirit, like the hand describes the speech of the tongue,” linking physical movements to meaning in sound. Mid-19th century composer and music critic Robert Schumann applied this concept to the piano:

> It is an instantaneous variety of wildness, tenderness, boldness, and airy grace; the instrument glows under the hands of its master … [Liszt] must be heard and also seen; for if Liszt played behind the scenes, a great deal of the poetry of his playing would be lost.

Music was always experienced live before the 20th century, and therefore nearly always perceived both aurally and visually. It was not until the 20th century, with the emergence

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of recording technology, that sound was isolated from sight. Not only did this shift the perception of musical expression to completely aural means, but it also created an expectation of perfect musical reproduction. Hence, the expectations of live performance were permanently altered. Musicians needed to create an environment more aesthetically pleasing than a recording, occasionally turning to ancillary gestures as one of many tools intended to create an experience that rivaled audio recordings.

Regardless of their personal thoughts on ancillary gesture, musicians generally advocate for live performance over recordings. Sound in live music is not merely heard; it is experienced. Indicative of many live music advocates, music teacher Mary Ann Stewart suggests taking children to orchestral concerts because of the “breath-taking experience” of watching performers in action. Stewart even claims that Igor Stravinsky heard music better by watching instruments and performers and that all audience members benefit similarly.

In contrast, many professional musicians and pedagogues hold firmly to the idea that performance is all about the sound of the music. Gestures mimicking auditory expression can be natural and even helpful to audience members, but in the hands of an immature performer, ancillary gestures can quickly become unnecessary, distracting, and sometimes compensatory. For example, one American parent’s eight-year-old son,


supposedly moved too much while playing his violin. His movements at such a young age impressed his teacher, but the parent was afraid the movements would be distracting to others, particularly because of the teamwork necessary in orchestral playing. She was also afraid the motions would get more and more extreme, eventually affecting his posture and technique.\textsuperscript{13} Clearly, the interpretation of gesture is highly subjective and in need of common ground.

\textit{Problem}

Musical expression is generally codified as articulation, tempo, phrasing, color, timbre, and countless other aural and visual elements.\textsuperscript{14} Methods for incorporating expression into music vary from person to person and instrument to instrument, yet most aspects are perceptible to a general audience in tangible ways. Composers include specific expressive markings in their music to more clearly communicate their intentions to performers. The performers in turn communicate these expressions to the audience, often adding their own interpretation. These expressive markings come in countless forms, but two of the most common terms are \textit{legato} and \textit{staccato}, each including several variations. Legato refers to musical notes that are played or sung smoothly and connected.\textsuperscript{15} Staccato signifies a note of shortened length.\textsuperscript{16}

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Most instruments have some ability to audibly embody these variations in note length or articulation. They are able to start, stop, crescendo, and decrescendo any tone with use of the bow, air, and tongue. They can also seamlessly connect notes with one bow movement, or a single stream of air, while changing pitches. Percussion instruments are severely limited in many of these musical aspects.\(^\text{17}\) Some instruments within the percussion family have longer sustain properties, allowing tones to ring for measurable durations of time. These instruments, such as timpani or vibraphone, produce sound because of an initial strike, but suffer from rapid note decay. Many percussion instruments do not have the ability to produce a natural sustained tone at all.\(^\text{18}\) Legato and staccato playing in percussion must have modified approaches and definitions.

Buster Bailey, former percussionist in the New York Philharmonic, believed the right technique could project a feeling of legato, overcoming the lack of an authentic legato sound.\(^\text{19}\) World-renowned marimbist Leigh Howard Stevens, in his technique book *Method of Movement*, openly ridiculed the idea that legato strokes or legato tones exist at all on mallet instruments.\(^\text{20}\) His philosophy stated that legato comes from one motion or breath that continues through multiple pitches. Percussionists must restrike every note, rendering a traditionally defined legato impossible. Stevens decided that percussionists


\(^\text{19}\) Ibid.

should focus on dynamics, timbre, or style instead. Steven Schick, another renowned percussion performer, does not refute Stevens’s or Bailey’s claims regarding sounds produced. However, he stresses that percussion is perceived as much visually as it is aurally. Nowhere else in music are sound-producing movements made more apparent to the listener. Schick believes that personal gestures are the main mode of expression available to a percussion performer.

**Need for Study**

The percussion instrument family is a prime candidate for discovering how visible actions affect sound production and perception. As percussion music has become more respected and virtuosic, research into the nature of percussion sound production has gained momentum. Still, further examination is needed. By compiling pertinent information from studies related to other instrument families, percussionists can gain a better understanding of how their own gestures impact an audience. Specifically, articulation and note length should be examined in the context of practical performance application.

Several studies on ancillary gesture have focused on percussion, but they are limited to marimba. Far less research has explored other percussion instruments. It is therefore essential that pedagogical writings be considered. While most pedagogues have not scientifically isolated performance gestures and their impact, their extensive experience merits attention. The synthesis of research identifying how and why


perception is altered can lead to a much deeper understanding of how gestures work in performance.

Purpose

The purpose of this study is to examine the extent to which ancillary gestures enhance perception in percussion performance. Research questions include:

1) What is the role of ancillary gesture in musical performance?

2) To what extent can percussion performers aurally depict changes in note length and articulation?

3) What effects do ancillary gestures have on percussion music?
Chapter 2
Literature Review

The literature review begins with general writings on gesture in musical performance. Then, sections concerning instrument-specific research, percussion-specific research, and oppositional viewpoints on ancillary gesture are reviewed more closely.

**General Ancillary Gesture**

The works of Merleau-Ponty and Foucalt, the founders of musical embodiment theory, have shown that the body is central to understanding meaning in human life.\(^{24}\) Merleau-Ponty believed that the body casts meaning onto the world. Foucalt supported the opposite idea, claiming that the body is molded by systems of power from the world. In application to musical performance, the two philosophies ask an interesting question: does the body move naturally to musical sounds to create meaning, or does the body learn movements from previous musical performances by colleagues and teachers?\(^{25}\) Both theories recognize the body as the central hub of meaning for humans.\(^{26}\) Based on research resulting from these inquiries, it can be inferred that audiences and musicians share some level of agreement concerning the meaning implicit in certain gestures.\(^{27}\)


\(^{26}\) Ibid, 40.

One such study focused on the influence visual information has on the perception of speech judgments.\textsuperscript{28} Known as the McGurk effect, researchers paired word sounds with visual images that may or may not correlate.\textsuperscript{29} The results showed that observers frequently blended the audible sound with what they saw, or sometimes even heard only what they saw. This remained true even when they recognized the conflict between visual and auditory information.

When applying these principles to stringed instruments, Saldaña and Rosenblum learned that non-speech sounds are susceptible to similar results. They took video and audio recordings of a performer bowing and plucking a cello string, then matched and mismatched the audio and video. They added a third category of audio-alone for the observers to label. The results demonstrated that video information has a significant effect on auditory judgments. Even when the observers were asked to base their judgments solely upon what they heard, the visual aspects still influenced the results.\textsuperscript{30}

Francoise Delalande shared this strong research interest in the role of physical gesture in musical performance.\textsuperscript{31} His 1988 study categorized and commented on the psychological implications present in pianist Glenn Gould’s performances. Several articles reference this study’s fundamental role in shaping research in expressive


\textsuperscript{29} MacDonald and McGurk, “Visual Influences on Speech Perception Processes,” 254.


According to Delalande, functional analysis divides musical gesture into three categories: effective or mechanical gesture necessary for playing an instrument, accompanist gestures which were related to effective gestures, and figurative (ancillary) gestures which were defined as completely symbolic in nature. His conclusions did not account for the symbolic implications of mechanical gestures. Furthermore, more research is needed regarding the role of performer-audience interaction in shaping the communicative intentions of performers.

Delalande’s article piqued researcher Jane Davidson’s interest in particular. Based on her preliminary research into expressive gesture, she concluded that non-musicians tend to be more reliant on visual cues for expression than musicians. She also pointed out that musicians find greater clarity in visual cues than in listening alone. Her studies affirmed the notion that natural performance movement has largely desirable effects on perception, but that all natural movement is not positive. Any movement that interferes with technique or is perceived as awkward significantly decreases the perception of expressivity.

Vincent Bergeron and Dominic Lopes took a special interest in why and when ancillary gesture became so important, and whether or not it has lost importance.

Confronted by the artistic contributions of Duchamp, Cage, movies, and pop music,
“philosophers have either updated their views or taken great trouble to explain why their views should stand unchanged.”

Electronic advancements, such as the iPod, seemed to defy the idea that musical expression has anything to do with the visual. Taken in a historical context, however, the visual stimulus may have more to do with expression than people realize. Bergeron and Lopes hypothesized that musical performances are joint works between the musical, or purely sonic, and the audio-visual, which includes performer movements.

Musical works that are made for performance ... could be said to license audio-visual performances whose expressive qualities depend on the interaction between visual and sonic components.

This definition of musical performance deliberately excludes electronically performed pieces, which generally have no human element outside of the composition process. It did not address platforms such as YouTube, which electronically shares audio-visual performances on a global scale.

Greg Corness agreed that electronic music should be separated from human performance. To him, music is inherently both created and experienced through physical activity. This causes electronics and computers in performance to seemingly disconnect from music’s natural affiliation with the body. This phenomenon raises the question: “Is physicality required to engage an audience or can sound itself validate the


38. Ibid, 3.


event?" According to Iazzetta, “the essence of music is the association between sound and performance gesture.” According to such a definition, sound that exists without a reference to the gesture that produces it would not be considered musical. Interestingly, in the case of headphones, we experience sound juxtaposed with the non-musical world. Iazzetta’s assertions do not account for this paradox in musical perception. Our brain comprehends two simultaneous realities, which skews our perception of the physicality of the sound.

Further inquiry seems to deconstruct Iazzetta’s argument that gesture makes sense of sound. Theodore Gracyk's studies, for example, show that performance knowledge of an instrument is not necessary to understand the music it creates. According to Gracyk, a virtuoso performer does not call attention to the difficulty level of the piece performed. To understand the level of difficulty, then, the listener must attempt the piece himself. Gracyk’s conclusions imply an inherent issue; if one knows nothing about performing the instrument, one cannot understand how difficult it may be to execute.

That does not necessarily mean that they do not perceive what is happening musically during the professional performance. Studies suggest that mirror neurons help us to comprehend actions by understanding their intended meaning. Mirror neurons in the brain work both when performing an action and when observing the same action being performed by someone else. Gracyk claimed that the performer’s gestures help to demystify the music for the listener, because the listener could understand the gestures’


implications. Therefore, according to Corness, music may be experienced by watching someone else do a familiar physical action more so than by hearing familiar sounds.  

Instrument-Specific Ancillary Research

In 1993, Davidson published her first major article concerning ancillary gesture. Based on former research methods of “Point-Light Technique,” Davidson analyzed body movement of violinists and a pianist by having them wear tracksuits with reflective tape and taking video with theater lighting. The performers were asked to play deadpan, projected, and exaggerated, though no reference was made specifically concerning physical gesture. Undergraduate observers watched in silence, listened, and watched with sound to the excerpts played by the performers. Davidson inferred, based on the results, that performers can more easily withhold expression than exaggerate it. Also, silent viewing of the performers caused the greatest variance in perception between deadpan and exaggerated, and blind sound had the least.

This implies that gesture has a greater capability to vary degrees of expression. Unfortunately, even with the point-light technique, observers were able to distinguish between performers from take to take. Another study was done with a single pianist to counteract this bias. Contrary to former results, the observers rated each of the three categories of deadpan, projected, and exaggerated similarly in terms of expressiveness. However, the visual categories had a much greater difference between projected and


47. Ibid, 109.
exaggerated performances. In general, visual gesture was not rated as the overall most expressive device. Listening without visual was generally rated as more expressive than the other categories. However, to display specific expressive intention and variety, visual gesture was paramount.

In a later study, Davidson examined a solo vocal performance of her own in which she recalled feelings of “flow.” She did not mention what she meant by “flow,” or how that was pertinent to the study. The brief song had conventional cadence points and key changes. After watching her own performance and cataloguing the gestures she used and the potential meanings behind them, she asked two other professional singers with stage-movement teaching experience to analyze her catalogue and make edits, repeating the process until all were in agreement. Some of Davidson’s movements were classified as combinations of self-comfort, navigational, or narrative reaction to music and text. Others were more technical gestures disguised as expressivity.

Davidson applied a similar process to a performance by pop singer Annie Lennox. Lennox had an added set of gestures from a separate category of “pop star,” which were allegedly aimed at interaction with co-performers and showy displays of seduction and other culturally defined behaviors. Lennox’s pop performance gestures were catalogued as biomechanical, individual, and culturally-determined, or learned. Some movements had no value for audiences. Often they were made to facilitate better technique or


stability. Regardless, Davidson’s evaluation came to the conclusion that too much or too little gesture can cause an audience to reject or distrust the performer, and further research is needed to clarify these points in the face of criticism.\footnote{51}{Jane W. Davidson, “The Role of the Body in the Production and Perception of Solo Vocal Performance: A Case Study of Annie Lennox,” 255.}

Davidson also worked with a flutist, Jorge Correia, to further explore ancillary gesture in classical performance. Correia practiced and performed a baroque and a contemporary piece for flute, contrasting compositional specificity in regards to expressive devices. Rehearsal was visually very different from performance. In rehearsal, he would identify sections and characters and timbres, then rehearse them to gain consistency within his intentions.\footnote{52}{Jane W. Davidson and Jorge Salgado Correia, “Meaningful Musical Performance: A Bodily Experience,” Research Studies in Music Education 17, no. 1 (December 2001): 70-83.} In performance, however, things changed. The presence of the audience caused much higher degrees of visual interaction and social awareness, significantly altering the performance from the state of the rehearsal.\footnote{53}{Davidson and Correia, “Meaningful Musical Performance: A Bodily Experience,” 76.} Correia and Davidson noted that live performance causes the performer to change from “conveying” expression to “becoming” it.\footnote{54}{Ibid, 78.} They seem to have observed an altered authenticity when live observers were present. Correia asserted that in order to communicate authentically with the audience, the performer must not be concerned with the details of performance such as notes, rhythms, or contrived body language. When this is achieved through the rehearsal process, bodily language also changes to become more natural and authentic, and communicates in a way that the listener identifies with on a
deeper level. Additionally, concerning the relation from composition to performance, composition cannot be authentic in and of itself because it can only give a conception of ideas. Performance gives meaning and definition to those ideas, allowing audiences to understand the conception. This is why Correia’s “becoming” is so integral. For these reasons, less musically trained listeners may rely more heavily on visual than aural cues when evaluating musical expression. They have more common ground with the performer in body movement than they do in musical sounds.

By the early 2000s, research into ancillary gesture had become a wide-ranging field with several authors. In 2005, William Thompson, Phil Graham, and Frank Russo sought to expand upon Davidson’s previous research methods. According to them, the eventual omnipresence of recording technology caused the isolation of the aural experience. Consequently, the current auditory-exclusive philosophy of musical performance and perception is skewed from that of previous times.

Davidson and Thompson both cited previously conducted non-musical studies which claimed that 75% of all information is communicated visually, with hearing at a mere 13%. Other factors such as context and personal thinking styles change how accurate those figures are, but the implications are striking. Even in an auditory-heavy context such as music, visual communication must play a significant role.

56. Ibid, 80.
57. Ibid, 79.
alter the focus of the listener, which can serve to increase or detract from musical intelligibility. Gestures can visually emulate a wide variety of information for the listener. Facial expression alone can indicate closure, how wide or small an interval is, and fulfillment or violation of expectancy points. Thompson, Graham, and Russo inferred as a result that without visual gesture, the performance becomes less about communication between performer and audience. The listener becomes more like a “voyeur” watching a “solitary act.”

The purpose of Thompson, Graham, and Russo’s study was to identify gestures that were intentional in communicating to the audience. The study used the previously published Kurosawa and Davidson 2005 study to categorize the gesture into emblems, illustrators, regulators, and affect displays. In a performance by B. B. King, the guitarist used frequent affective and illustrative gestures. Of important note, King followed his guitar sounds with gesture frequently, but not the sounds from his accompanying band. Judy Garland was similarly analyzed. In addition to illustrating the text with gestures, she visually stressed a tonal modulation by walking forward, and she mimicked her pitch rises and falls with her hand. The study conceded evidence from past studies that frequently dismissed visual expression as “bias.” The inference was that people consider musicians to sound better than reality because of the way they look. The studies claimed the general association of major with happy and minor with sad to be completely defunct, because listeners associated the emotion with the facial gestures rather than the


sounding intervals. They also surmised that MTV had significantly influenced the modern audience, particularly with expectations of visual uniqueness, youth, and other highly visual associations with popular music. With the decline of MTV, YouTube and other online platforms continue this influence in culture, which seems to be permeating the classical world where weight issues in opera, for example, are less acceptable than in former times.

In 2008, Jay Juchniewicz aimed to specifically pinpoint visual stimuli in relation to rating audio stimuli within piano performance. This included the influence of physical movement on ratings of phrasing, rubato, and dynamics, and how different performing conditions affect the perception of overall expressivity in the pianist. The study took video of a professional pianist performing an excerpt three different ways: with no extraneous movement, with head and facial movement, and with full-body movement. Then, a mix of both undergraduates and graduates were asked to rate various expressive criteria in each excerpt. Though each video was rated significantly differently, no indications showed a difference in perception by observers of different genders or level of study. Generally, the more movement the pianist did, the higher the ratings by the participants, even though the audio remained the same. The results may have been limited by an order effect, though different groups were shown the videos in different orders to prevent it. According to the author, this information raised as many questions as it answered. The uniqueness of musical listening makes it difficult to pinpoint exactly

65. Ibid, 222.
67. Ibid, 426.
how listeners perceive music, allowing a high degree of error in the data. Expectancy by listeners could cause a wide fluctuation in the data.\textsuperscript{68} Perhaps the ratings of the visual were higher by the participants because they assumed beforehand that the visual would enhance performance. Juchniewicz did not indicate how he established that the audio remained the same with the changing visuals. He also did not give information on how the execution movements may have changed with the body movements. There is enough information, however, to indicate a definite alteration in perception by the visual because of various additional studies mentioned throughout the article.\textsuperscript{69}

In 2009, Marcelo Wanderley performed a new experiment in collaboration with clarinetist Manfred Nusseck. The study was focused on the application of certain results from previous research to specific instrumental performance. The players were instructed to play the music as closely to the composer’s intention as possible without adding or detracting any emotional expression beyond what was appropriate and necessary. The purpose of the study was to examine the ancillary movements of the players, checking for levels of gesture and the resulting perception from each. The judges of the resulting recordings and videos were asked to analyze the movements based on tension, intensity, fluency, and professionalism.\textsuperscript{70} Little explanation was given as to the meanings of these categories. With front and side camera angles, researchers were surprised to find little difference in the perception of movement from one angle to the other. Also, observers’ performance experience and quality of musical foreknowledge did not significantly affect


\textsuperscript{69} Ibid.

their perception.\textsuperscript{71} A wide range of expressivity scores resulted. The overall movement of the players was not responsible for the variances, nor was the chosen tempo.\textsuperscript{72}

A new experiment was performed to isolate motion in various parts of the body. No consistent data showed that particular body motions were responsible for more or less expressivity. With one player, however, a combination of the movements seemed to add to the perception.\textsuperscript{73}

Yet another experiment was added to determine to what extent full body motion affects perception. The results were that more motion or velocity created more perception, though it remains unknown whether the size or speed of the motion was responsible.\textsuperscript{74} The authors remarked in conclusion, “Reducing unnecessary movements and learning to focus on specific expression-related body motions is an essential part of the learning process.”\textsuperscript{75}

Davidson recently wrote a paper whose purpose was to explore the expressive components of bodily movement in solo and ensemble musical performance. Research questions included, “What type of bodily movements are used?” “To what degree [are] bodily movements used for purely musically expressive effects?” and “To what degree [are] movements in performance of a socially communicative nature? i. e. co-performer

\textsuperscript{71} Nusseck and Wanderley, “Music and Motion,” 340.
\textsuperscript{72} Ibid, 344.
\textsuperscript{73} Ibid, 345.
\textsuperscript{74} Ibid, 350.
\textsuperscript{75} Ibid, 351.
and performer-audience interaction.”

For this article, Davidson commissioned a versatile musical work that could serve either as a duo or two separate solos. She was attempting to find if the expressivity would change between solo and duo settings of the same piece. No facial expression was noticeable since both were wind instrument players, but several glances to coordinate entrances, exits, and musical effects occurred. Similar gestures to that of the solo performance were used, but for a different purpose, which was clearly for interacting and coordinating the musical line. The musicians matched each other’s degree of physical movement when in the duo setting as compared to the solo setting to unite ideas and musical gestures. Davidson attributed the lack of facial movements not only to the necessity for wind playing, but also to the idea that increased bodily movement compensates for the lack of facial features.

Continuing to look to piano performance for answers, Paul Sanden studied Glenn Gould in 2013, like Delalande before him. Sanden referred to Gould as [virtuosic] to a degree that insinuates mythology. He is known both for playing and thinking, leading to a much-needed discussion of the mind/body problem. The problem surfaces from the tendency to think of music as thought and not physical action, though live acoustic music requires physical action to exist. Sanden first analyzed this issue in general. Later, he analyzed Gould's recordings listening for sound directly resulting from Gould's body


77. Ibid, 608.

78. Ibid, 607.

movements. Finally, he applied this process to pop music. According to Sanden, composers in the 19th century held a higher societal rank than virtuosi. In this cult of genius, musicians who were both virtuosic performers and composers, including Liszt and Beethoven, were always more highly respected and acknowledged for their creative compositional thinking than for their performance capabilities. In Sanden’s eyes, the bias of intellect over physicality continues today, and Glenn Gould was no exception. Articles, newspapers, and books written about him all have a general bias toward his thinking over his playing. Ironically, his playing was what caused the most controversy and concern in the music world, and became an obstacle for him to overcome through his thinking. Reviews of Gould's performances consistently focused first on distractions and unconventional presentations, followed by acclaim for his mastery of the ideas of the music. He described himself quite differently from the average critic – moving as little as possible to achieve the sound he wanted, and never too forcefully. He also felt a need to apologize for describing his playing in such physical terms and later amended his words, emphasizing mental practice and thinking the sound before playing it. Regarding his eccentricities, Gould was embarrassed when an interviewer pointed out his notorious conducting and singing during performances; he had never actually thought about his physical performance before, only the audible outcome. The singing, conducting, and other odd acts were merely a subconscious way for him to achieve the sounds he

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81. Ibid, 46.

82. Ibid, 47.
desired. According to Sanden, all of this in summary points to the distinct failure of Western music studies to recognize the inherent physicality in music.

**Percussion Ancillary Gesture**

In 2003, percussion pedagogue Erick Saoud isolated marimba stroke types as one of many factors contributing to legato or staccato sounds. He began with a hypothesis that performers could not create a legato or staccato tone by changing stroke types alone, at least not with a clear difference audible to the human ear. Saoud recorded four different performers playing high, mid-range, and lower notes on the marimba with legato and staccato strokes. He then measured the note’s duration from each stroke, including several kHz of overtones. The results showed that any variation in note length from legato to staccato strokes was minimal and inconsistent at best. The only measurable result that was discernible for an average listener was that amplitude and duration were directly related. Louder strokes generally rang longer than softer strokes. Also, in the lower range, changing the stroke type changed the range of overtones. A staccato stroke lost some overtones compared to the legato stroke.

Michael Schutz and Scott Lipscomb carried Saoud’s research of marimba strokes to the next level. In their 2004 study, they too confronted the long-standing debate about performing legato and staccato on marimba. They were the first to explore visually influenced auditory perception as it relates to note duration in percussion.

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84. Ibid, 51.


86. Ibid, 45.

87. Ibid.
marimbist Leigh Howard Stevens, they asked for some elaboration on his previous statements against the legato stroke. In his response, Stevens wrote:

   Stroke height has no more to do with [note] duration than the sound of car crashing is dependent on how long a road trip was taken before the accident.  

Schutz and Lipscomb decided to scientifically put that notion to the test. Taking video and audio samples of internationally renowned percussionist Michael Burritt, the researchers had non-musicians, musicians, and percussionists rate the level of staccato and legato in audio, video, and audiovisual samples. The results clearly indicated that observers more accurately distinguished the notated articulations when they could see the performer. Without visual aid, each pitch on the marimba had very little variation in observed note length. This phenomenon caused the researchers to infer that visual information might be the only way to distinguish between stroke types.

A follow-up study conducted by the same researchers applied the McGurk effect directly to percussion note duration. Using a similar test to their previous study, Schutz and Lipscomb gave observers a mix of audio, video, and audiovisual samples in low, middle, and high registers of the marimba. Observers were to classify the note length as short or long. “No meaningful distinction between ratings” occurred in the absence of visual information.

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89. Ibid.

90. Ibid, 2.

91. Ibid, 3.

In his book, *The Percussionist’s Art*, multi-percussion soloist Steven Schick dedicated an entire chapter to the look of percussion music, signifying the performance and pedagogical importance of visual aspects. “Anyone who has ever attended a percussion concert can tell you that the experience of percussion music involves the eyes as well as the ears.” 93 Though the instruments themselves are a visual spectacle all on their own, Schick asserted that their expressive agency comes primarily through the gestures of percussion performers. 94

The instruments serve as a frame, a stage for the disposition of dramatic action. Looking at percussion in effect gauges the fluid forces of performers in motion against an immovable background of percussion set-ups and their constituent instruments. The way a percussionist looks and moves on stage is among the most important and highly personal aspects of percussion playing. For percussionists the goals of individuality, complexity and coherence are as important in the world of gesture as they are in the sonic and interpretive aspects of performance. 95

To Schick, gestures must be both readable and meaningful. 96 Gestures that achieve both at a high level comprise an important component that only performers can bring to audiences – interpretation. Especially when considering multi-percussion works, Schick believes that personal gestures are the main expressive mode available to a percussion performer.

In 2009, Mary Broughton and Catherine Stevens also applied previous research to a study of marimba performance. They began their study with the preconceived notion that sonic expressive choices in percussion are severely limited compared to other

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94. Ibid, 141.
95. Ibid.
96. Ibid, 143.
instruments. Generally speaking, dynamics and rhythm are the primary means to express expressive quality. Other than stroke type, striking spot, and initial mallet choice, there is little the player can do to alter timbre, duration, intonation, and articulation. It is likely that bodily movement is vital to convey these other roles to an audience. The study observed two performers, male and female, dressed in all black, with masked facial features, performing segments from several repertoire staples at various tempi and dynamics. They performed each segment deadpan and projected. Higher ratings of expressivity were given in both audio and audio-visual categories when performing in a projected manner as opposed to deadpan. Such results indicate that changing the visual affected the sound, even without seeing the changes made. Significant increases in expressivity occurred with the visual element, giving credence to the claim that the visual in marimba playing does more than merely serve technique. Importantly, a visually static marimba performance was commonly perceived as being less expressive than a static audio only performance.

Partnering with Fiona Manning in 2013, Schutz compiled several of his previous research findings in *Percussive Notes*, the Percussive Arts Society’s primary publication. Based on his findings, Schutz firmly asserted that percussionists’ gestures cannot change the acoustic sound of a note, but can successfully alter the way the note sounds to

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98. Ibid, 139.

99. Ibid, 144.

100. Ibid, 148.

101. Ibid, 149.
people.\textsuperscript{102} This is made possible because our brains automatically unite sights and sounds together when they are part of the same event.\textsuperscript{103} For example, in movies, the audience perceives the sounds as originating from the screen, but the sounds are actually coming from speakers on the side of the room.\textsuperscript{104} Assuming the brain processes musical performance in a similar way, audio-alone formats of music such as radio broadcasts and mp3s do not fully capture the musical experience.\textsuperscript{105} The implication for blind audition processes is also significant.

\textbf{Cautions Concerning Inauthenticity}

Anne Midgette of the \textit{Washington Post} believed in the dramatic purity of opera in addition to chamber music. She sarcastically summarized a statement by the Metropolitan Opera’s general manager Peter Gelb: “In the old days, opera singers didn’t use to act, but under my great new regime they do.”\textsuperscript{106} Midgette found herself annoyed at the widespread ignorance concerning past singers who were also great actors. She attributed the good acting of the past to more serious study and regard for major roles. Young singers today, she asserted, view these roles more as hurdles to leap over to prove one’s self. Midgette implied both have become commonplace as substitutes for the real thing. To her, the basic principles of acting are no longer invoked even by those who have a

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\textsuperscript{103} Ibid, 28.

\textsuperscript{104} Ibid.

\textsuperscript{105} Ibid, 27.

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past history of doing so. She rebuked Gelb’s use of the phrase “park and bark,” claiming that he does not understand the difference between weak and strong opera.  

Similarly in the orchestral world, Robin McNeil attended a concert by a famous violinist whom he had already grown to admire through recordings. During the concert, however, she moved so much that he “wondered how she could perform at all.” He recognized the need to move when performing, but her jumps and backward hops seemed to him to be without purpose, especially when trying to play notes and phrasing accurately. Her movements with her bow at the ends of phrases and during climactic points gave him cause for concern that she might hurt herself or others around her. To him, these motions were extreme. McNeil admitted that violinists who do not move at all also do not move their music at all, creating an opposite extreme.

According to McNeil, the pianist Lang Lang is also excessive:

He leans back and gazes at the ceiling, swings his arm off the keyboard and behind him, clutches his heart with one hand, buries his nose in the keyboard, and occasionally swings his feet up underneath the piano ... all while contorting his face and rolling his eyes back into his head.

McNeil’s reservations about such gestures came from the lack of need for them. Pianists, for example, move in various ways by necessity for fingerings, black key passages, and tension prevention. In his opinion, any gestures beyond these necessary movements are too frequently excused via explanation of reports about Franz Liszt, Frederic Chopin, and Clara Schumann. McNeil attributed these exaggerated reports to


109. Ibid.

110. Ibid.
writers who were unaccustomed to wide dynamic ranges and legato playing. The movements they were seeing for the first time were simply those that were necessary to accomplish these effects in piano playing, which was a very young art. Modern pianists, on the other hand, exaggerate these necessary movements to prove how expressive they are to audiences, “rather than let the music provide the expression.” Even Sergei Rachmaninoff and Vladimir Horowitz did not move much at all.\textsuperscript{111}

McNeil cited Davidson's 2012 article concerning bodily movement in solo and duo instrumentalists. His arguments focused on the second part of her article, when she studied a performance by Lang Lang. He decided that Davidson did not have enough music background to understand his gestures and memorization process. McNeil thought it would be distracting to the performer's concentration to move so excessively, “just to prove to the audience how wondrously expressive one is.” He claims with certainty that the movements were artificial and could not understand how extraneous movements translate into meaningful music.\textsuperscript{112}

McNeil referenced private instructors who praised their young students for their movements, calling them impressive. He expressed frustration that the instructors did not reduce the movements to focus the student on the playing. For him, any movement that is contrived adds to the mental task of performing, which is consequently detrimental to developing musicianship. More importantly, it distracts the listener, just as Elvis Presley and guitar-smashing rock bands did. He further emphasized these points by inferring that attention-seeking trends in rock concerts have usurped the importance of musical virtuosity. He hoped that young musicians, rather than seek antics and excessive gestures,


\textsuperscript{112} Ibid.
would perform serious concerts in serious manners, and receive the subsequent ovation as evidence enough that they have succeeded.\textsuperscript{113}
Chapter 3
Method

This study examines the utility of visual gestures in percussion performance. Analysis of perception relies heavily on opinion, including research surveys and studies. The assumptions of unbiased results are now shown to be “demonstrably false,” regardless of the care taken to avoid presumption and fully utilize the scientific method.\footnote{114} Therefore, I have not assumed a lack of bias, but rather embraced the principles and conclusions resulting from the various studies.

To control bias as much as possible, the synthesis of information here includes all conclusions and results found by researchers and experts, even when highly contradictory. By doing so, the principles developed throughout this study were necessarily shaped exclusively by threads common to majority opinion. If a field of study did not have enough evidence to support a definitive argument, this study left that particular area open-ended as a point for further research in the future.

Not all research on visual gesture is substantial, unbiased, or relevant to a study focused specifically on percussion performance. Concerning audience perception in particular, researchers repeatedly agree that data implies certain results but with the caveat that far more research is needed to confirm the discussion points of the researchers.\footnote{115} Complexity of musical background, observers’ opinions, and a consistently high amount of variables force researchers to draw conclusions based loosely on majority opinion.


Due to the vast field of research into this aspect of performance, limitations must be made on this study. Theatrical music, for example, contains prescribed or insinuated physical gestures within the score itself. This study did not consider such settings. A further limitation on the inquiry was that it only pertained to how ancillary research applies to individual performers, not considering the perception of a group of percussionists. The hypothetical individuals were considered in various contexts, however, such as solo, chamber, and orchestral percussion settings.

The first research question sought to define the role of ancillary gesture in general musical performance. It is important to find out how non-percussion instruments effectively incorporate gestures into their performance expression so that the principles may be applied to percussion. The answer to this question lies mainly in research that began around 1990. Most researchers cite each other’s work frequently. Therefore, it was simple to ensure that a substantial scope of journal research is included in the answer. Sections of books were also included. Synthesizing new ideas with critiques narrowed the implications of ancillary gestures. Those implications served as a foundation of principles to begin inquiry into percussion-specific gestures.

To address research questions two and three, an anonymous survey of four internationally regarded percussion pedagogue-performers was conducted. As experts who perform and observe percussion at the highest levels, their conclusions and insights helped to fill in the gaping areas in current ancillary gesture research.

The second research question addressed aural capabilities in percussion. The extent to which a performer could aurally communicate variations in articulation and

duration without visual information was previously unclear, especially to non-percussionists. By the very nature of its sound production, percussion requires a starkly different approach to convey note lengths and articulations. Information from the synthesis of previous studies and answers from the anonymous survey were combined. Questions of relevancy were also addressed, particularly pertaining to that of note length.

The third research question examined the effects of visual gestures on percussion music. Performers must also understand what it is about the gestures that affects audience perception. Only then can they be properly understood and used in a practical manner. The answer to this question included survey results, previous research, and older pedagogical writings.

Orchestral excerpts were selected to demonstrate the various scenarios and possible approaches. The excerpts include music with highly specific expressive markings and less specifically notated music. Marimba was not included because of its exclusive prominence in the research field. Xylophone, snare drum, and timpani were chosen to gain a firmer understanding of percussion as a group of instruments. The instruments selected represent three common instruments with widely varying timbral and resonant qualities.
Chapter 4
Results

Without question, scholarly evidence indicates that visual gestures affect musical performance. Saldaña and Rosenblum’s application of the McGurk effect to instrumental performance provides sufficient evidence on its own to substantiate such an assertion.\textsuperscript{117} Determining the exact way in which ancillary gestures alter audience perception is impossible due to its subjective nature. Perception is different from person to person because of variation in first-hand experiences, preconceived notions, musical training, and philosophical principles within musical aesthetics.\textsuperscript{118} What can be inferred is a collection of general principles extracted from consistent results in surveys and first-hand experience.

Research Question 1

What is the role of ancillary gesture in musical performance?

No two people hear the same thing in the same performance. Their own perceptions, experiences, and “baggage” have a lot to do with how they hear.\textsuperscript{119}

John Cage famously curated “happenings” such as HPSCHD to create an atmosphere where no two people could possibly experience the same event. So much visual and aural art was occurring simultaneously that where one stood or even looked created a unique artistic experience. But Cage was actually expounding upon an already established precedent, which is that two people in a concert will never have the same experience. Background, education, experience, lifestyle, and personal taste deeply affect


\textsuperscript{119} Appendix, Table 2, Respondent 3.
musical perception among other events, not to mention location in the room, where the person is looking, and even attention levels throughout the performance. Common experiences allow human beings to relate to one another, however, which is why two people in the same performance can appreciate similar factors. Musical performance evokes sounds and visual gestures that can be related to in some way, allowing performers to connect to the audience on a personal level. Performers seek to capitalize on these relatable aspects of music to give expressive meaning to the music, and therefore to the audience. With this in mind, it is important to understand that “literal acoustic information is less important than how it is perceived.” 120

One way to group a large, diverse audience is by dividing those who have extensively studied or performed music from those who have not. Davidson labels the two groups musicians and non-musicians. The categorization is admittedly problematic for several reasons, but let us use this construct for demonstration purposes. Davidson theorizes that the perception of musical expression between these two loosely defined groups is noticeably disparate.

…less musically trained listeners may rely more heavily on visual than aural cues when evaluating musical expression. Their need for meaning in music cannot be satisfied by the sounds alone because the associated meaning of those sounds has not yet developed. The movement of the body, instead, acts as interpreter to convey meaning through shared bodily knowledge. 121

Several other reasons for this phenomenon are possible. One could infer that musicians critique sound in a more detailed fashion and are therefore much more sensitive to its nuances. Contrarily, musicians could also be taught that sound is a more important


element in performance, and therefore comment more heavily on such elements during the study. Without further study, the theories for the noticeable difference between these two focus groups are nothing more than unsubstantiated opinions. The more important factors found in this study have to do with what the groups marked in common with one another.

Interestingly, musicians throughout Davidson’s studies commonly cited that visual information served to clarify aural expression.\textsuperscript{122} Therefore, whether speaking about listeners as musicians or non-musicians, visual gesture elucidates aural gesture. As previously stated, visually static performances omit the best avenue of communication between performer and audience.\textsuperscript{123} The relatable experiences that connect audiences to performers are lost as a result, ruining an opportunity to maximize the perception of musical expression.

Yet, no study has concluded that visual gesture was the overall most expressive device available to a performer. In several studies, listening to music without visual engagement was consistently rated as more expressive than when the listener could see the performers.\textsuperscript{124} Regardless of the musical demographic in an audience, it seems that

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visual gesture serves to clarify musical intention rather than to be the expression in and of itself.\textsuperscript{125}

Generally speaking, no particular body motions are perceived as more or less expressive than others.\textsuperscript{126} The degree to which body motion is executed is the more important factor. It comes as no surprise that larger and/or faster motions beget greater perception of expression.\textsuperscript{127} Less obvious is that body motion can convey stronger characteristics than facial gesture. Emotion is commonly associated with facial expression. In musical studies, however, body language is the more determining factor.\textsuperscript{128} Several reasons could account for this. Audiences may be too far away during performance to see more nuanced facial gestures. Musicians’ faces may not be ideally positioned for audience members to see due to direction, lighting, or visual interference from instruments or other audience members. Whatever the reason, musicians should be aware of their body language more than any other visual factor if they wish to clarify their musical intent.

\textit{Research Question 2}

To what extent can percussion performers aurally depict changes in note length and articulation?


\textsuperscript{127} Nusseck and Wanderley, “Music and Motion,” 350.

Researchers agree that percussion is sonically limited concerning articulation.\textsuperscript{129} However, according to respondents in a survey of expert percussion performer-pedagogues, “A trained percussionist has the ability to manipulate sound in meaningful ways that can be audibly perceived.”\textsuperscript{130} The nature of these meanings remains unclear. Skeptics attribute any aural manipulations to imagination or illusion, for example.\textsuperscript{131, 132} Precedent dictates that in order to alter note duration and articulation, the players must master their control of stroke types, beating spots, and mallet choice.\textsuperscript{133} Through such means, a skilled performer may potentially alter facets of articulation and note duration on an aural level.\textsuperscript{134}

Broughton and Stevens’ 2009 study debunked any notion that note length is changeable through stroke type, as did Eric Saoud and Michael Schutz. The results of their various experiments on marimba were unanimous. Variation in note length from

\begin{itemize}
\item \textsuperscript{129} Mary Broughton and Catherine Stevens, “Music, Movement, and Marimba: An Investigation of the Role of Movement and Gesture in Communicating Musical Expression to an Audience,” \textit{Psychology of Music} 37, no. 2 (April 9, 2009): 137.
\item \textsuperscript{130} Appendix, Table 1, Respondent 1.
\item \textsuperscript{131} Appendix, Table 8, Respondent 3.
\item \textsuperscript{133} Mary Broughton and Catherine Stevens, “Music, Movement, and Marimba: An Investigation of the Role of Movement and Gesture in Communicating Musical Expression to an Audience,” 137.
\item \textsuperscript{134} Appendix, Table 1.
\end{itemize}
legato to staccato strokes was “minimal and inconsistent at best.” In the absence of visual information, little distinction was evident in any of the three studies.

Altering stroke type, beating spots, and mallet choice has other effects on the sound. Dynamics and timbres are profoundly influenced. Articulation is, however, elusive. By the very nature of sound production – striking objects to create sound – articulations in percussion are handled differently than that of other musical instruments. Articulation is primarily controlled by the speed of the stroke. The skilled performer “changes the quality of the attack, not the sustain.” Therefore, note length is not a factor. Rather, controlling accent gradation, or fluctuation in accent dynamic and intensity, conveys various articulations.

Some percussionists claim that accent gradation is the means by which all musicians distinguish longer and shorter notes. In this perspective, hearing legato and staccato on any instrument results from careful control of attack. By this definition, percussion should be at no disadvantage to other instruments concerning legato and staccato playing. When asked if “true legato” was possible in percussion, one surveyed percussionist directly opposed the opinions of marimbist Leigh Howard Stevens.

This [Wikipedia] article translates legato in Italian as “tied together.” In that sense, any performance in which the notes are compellingly “tied together” by the performer is legato. So yes, I think true legato is possible for percussionists. I


137. Appendix, Table 6, Respondent 2.

138. Appendix, Table 6, Respondent 3.

139. Appendix, Table 7, Respondent 3.
would point to piano as a percussion instrument. Most musicians wouldn't question the ability of a pianist to play legato - but they are performing by striking strings with hammers in the same way percussionists are performing by striking wood or metal or skins. The analogy of piano to percussion is particularly accurate when considering those instruments which have greater resonance, such as vibraphone or timpani. The analogy is less true for drums or marimba, because unlike piano strings, these instruments have severely limited resonance. Even so, any professional performer, percussion or otherwise, will assert that instruments of all kinds have ways of manipulating the sound to get at least small changes in resonance. On timpani, subtle changes in beating spot create different combinations of high and low overtones, which may decay differently. Any other type of drum should react similarly, since it is constructed by stretching some sort of vellum over a shell or bowl. It should be noted, however, that smaller drums with tighter tension resonate for significantly shorter amounts of time than larger, looser drums. For instance, bass drums ring far longer than snare drums. As a result, smaller drums are much less likely to convey perceived changes in resonance because the resonance is already miniscule. Even so, pedagogues and performers consistently agree that stick choice and beating spot effect resonance in aurally perceptible ways. Researchers have concluded that such effects were not actually altering resonance, but rather timbre. In several studies analyzing marimba resonance, the only

140. Appendix, Table 8, Respondent 4.
141. Appendix, Table 7, Respondent 3.
142. Appendix, Table 3, Respondent 4.
143. Appendix, Table 3, Respondent 1.
144. Appendix, Table 6, Respondent 4.
measurable result distinguishing stroke types concerned the relationship between amplitude and duration.  

145 Louder dynamics rang longer than softer dynamics. Changes in stroke type and beating spot did not change duration at all. Instead, they changed the overtones, which were not observed to decay markedly shorter or longer from stroke to stroke.  

146 This calls into question the former assertion that overtones decay differently on timpani. Any form of legato in percussion, according to these findings, is more an illusion than an actual achievement.  

147 If legato and staccato are completely reliant upon accent gradations in every percussion instrument, then a “true” legato must be redefined. Most instruments are fully capable of altering note lengths far more perceptibly than percussion. The only way a percussionist can change the natural decay of an instrument is through muting with cloth or muffling with the hand.  

148, 149 Timpani and vibraphone are the clearest examples of both methods, distinctly altering the sound on a purely aural level.  

150 Both muffling and muting have severe limitations, however. At fast tempi, hand muffling is not possible. Cloth muting causes a permanent limitation of resonance, preventing long tones. Many instruments with short, fixed durations, such as snare drum, are relatively incapable of
varying note lengths at any level.\textsuperscript{151} To convey legato and staccato in these circumstances, percussionists must find alternative means.

Percussion, in general and absent dampening, does not vary the length of the notes, but achieves variation in articulation through changes in the quality of the attack and subtle dynamic control. A series of notes played at a constant dynamic will sound more staccato; the same notes with dynamic inflection will sound more legato.\textsuperscript{152}

Percussionists generally agree that dynamics are controlled through stroke height and velocity, while articulation is controlled by stroke velocity and weight.\textsuperscript{153} The caveat is that higher speed requires lower heights to maintain a constant dynamic. Players must carefully combine the factors along with release from the attack to effectively manipulate the overtones of the instruments. Higher overtones allude to shorter, lighter sounds, while lower overtones have the opposite effect.

\textit{Research Question 3}

What effects do ancillary gestures have on percussion music?

Glenn Gould’s extraneous performance actions, though far more extreme than a typical percussion performance, provide an ideal illustration for the inherent problem in analyzing visual gesture in percussion performance. Delalande’s separation of effective and figurative gestures set a counterproductive precedent for the impact of visual information on perceived sound. Most musicians move in particular ways to create variations in sound, therefore nearly always combining mechanical movements with

\textsuperscript{151} Appendix, Table 4, Respondents 2 and 3.

\textsuperscript{152} Appendix, Table 8, Respondent 2.

\textsuperscript{153} Appendix, Table 6, Respondent 2.
ancillary illustrations. Refuting Delalande’s assessments even further, percussion cannot create aural gestures without visual movements. Therefore, visual gesture can have an immense impact on the perception of percussive sound without necessarily being extraneous. Changing the way the performer moves simultaneously alters both sound and sight. Visual gesture by this definition is the means to the end, not the end in and of itself.

Due to the complex nature of expression, this definition of ancillary gestures and their appropriate functions may be too limited in scope. According to researchers Broughton and Stevens, “…the visual in [percussion] playing does more than merely serve technique.” In their studies, a visually static marimba performance was commonly perceived as being less expressive than an aurally static performance. These conclusions affirm previous assertions by Steven Schick, Michael Schutz, and many other percussionists, who believe visual gestures can successfully alter the way a note sounds to listeners. When asked about the influence of sight on sound in percussion, one survey respondent gave the following anecdote:

…audiences often hear based on what they see. When I studied recording arts in undergrad, we were taught that when an audience member is looking at a particular musician in orchestra, they will “hear” that musician more clearly. In


155. Appendix, Table 9, Respondent 4.
156. Appendix, Table 5, Respondent 3.
158. Ibid, 149.
mix audio for live performance videos, producers will often slightly turn up the sound of a particular musician when the camera is focused on them, in order to imitate our expectations of hearing that performer more clearly if we are focused on them in a live setting. I think this translates into real results for performance. For example - I don't think that crash cymbals actually sound any louder by being held up in the air after a crash. But the act of holding them up draws the audience’s attention the sound of the crash as the resonance hangs in the air. And that might heighten the intended effect of that moment. 161

Articulation markings in percussion provide the perfect example. Observers more accurately distinguish articulations in percussion when they can see the performer. 162 The aforementioned accent gradations may create variances in attack and note length by altering overtones, but the variances are far more perceptible when they are visually indicated. 163 Some would argue that the audible variances are so subtle that visual information might be the only way to distinguish between stroke types, especially on instruments that have extremely limited resonance. 164 Schutz describes the illusion as a psychological game performers must play:

If the performer hears in their mind and responds physically to the sound they imagine they want, they can convince the audience to hear what they want (even if sometimes the instrument is limited in actually being able to produce that sound). 165

To demonstrate how the visual clarifies the aural in percussion, examples from standard repertoire can be hypothetically analyzed. Orchestral excerpts serve as excellent

161. Appendix, Table 2, Respondent 4.
163. Appendix, Table 2, Respondent 3.
164. Appendix, Table 4, Respondent 1.
candidates for demonstration of these ideals because of their brevity, specificity, virtuosity, and familiarity. Most research studies have used marimba, so excerpts have been selected for other common instruments with unique properties: xylophone, timpani, and snare drum.

In Olivier Messiaen’s *Oiseaux Exotiques*, expressive specificity is at its peak. He made no concessions for percussion instruments, regardless of any assumed inhibitions with note length or otherwise. Messiaen’s xylophone part, for example, is full of slurs, accents, staccato, tenuti, and dynamics just as one might expect to find in a wind or string instrument. The execution provides a simple example of how ancillary gestures and aural manipulations interact with one another to embody expressive meaning in notated music.


At rehearsal number 6, the xylophone has a tenuto F# with a grace note preceding, then an accented B natural followed by an unaccented B natural and F natural. Each of these markings is most commonly executed through the aforementioned accent
gradations, and are merely dynamic variations more than actual timbral manipulation. However, the sixth measure of rehearsal 6 begins with a very high B natural eighth note tied to a staccato Bb flat in the middle of the staff. The xylophone is not capable of giving the eighth note its full duration and consequently will always sound the same as the sixteenth notes preceding it. The slur to the Bb causes an even greater issue. According to the principles established in this study, however, the percussionist could use the same mallet for both notes, using a smooth motion to clearly connect the two visually. The performer could also use a rapid motion to visually display the shortness of the staccato Bb. The two motions tying the notes together and embodying the staccato mark may arguably alter the sound of the notes compared to standard strokes, but the visual gestures involved clarify the performer’s expressive intent exponentially. That intent would be further clarified by the choice to perform the same B natural and Bb with separate hands in the eighth bar of rehearsal 6, visually displaying the notes’ disconnect.

The same ancillary technique cannot be applied to the following measures due to the speed and repetition of the passage. Though the notes are connected with the phrase marking, two separate hands must alternate to perform the notes and rhythms correctly. However, by creating a smooth overall visual motion followed by stopped motion between phrase markings, the notes can be tied together and separated in meaningful ways. For example, in the tenth measure after rehearsal 6, the three repeated pitches could be connected with smooth strokes and a slight decline in accent gradations, ending with a stopped stroke motion and resetting to a louder dynamic for each repetition. Though the only aural aspect of this stroke choice would be a 3-note decline in dynamic,
the smooth stroke and stopped motion would clarify the expressive meaning notated by Messiaen.

Though most percussion repertoire lacks specific markings, most percussionists apply articulations and other expressions to the music. These decisions are usually based on the orchestral context or markings in other instruments that are in unison or highly similar to the percussion part. Timpani are often the most indicative example of a percussionist attempting to match other ensemble members. The ending of Brahms Symphony No. 1, for example, is often included in audition repertoire because it allows the jury panel to listen critically to the timpanist for the orchestrational expressive markings.

Figure 2. Johannes Brahms, *Symphony No. 1 in C minor, opus 68*, (New York: Kalmus).

![Brahms Symphony No. 1 in C minor, opus 68](image)

Timpani have much more resonance than xylophones, but the resonance is only manipulable via hand muffling or cloth muting. To accurately depict Brahms’ staccati in
measure 391, the timpanist would assumedly need to muffle each note with a hand or mute the drums entirely. Unlike the last few bars of the piece, the passage at 391 is far too quick to allow for hand muffling. Cloth muting would also be counterproductive. Within this excerpt, the timpanist needs the ability to have long resonance. Though Brahms did not necessarily indicate note lengths in the timpani part, common practice dictates that the player follow the orchestration throughout. For instance, the quarter notes in measures 413 and 415 are often allowed to ring indefinitely since they are in unison with the orchestra’s much longer note duration. Cloth muting would inhibit this resonance, and is therefore not a viable option. The timpanist only has one option remaining for measures 391 through 394, which is to mimic the staccato stroke employed in the xylophone excerpt – a rapid, disconnected motion. The stroke type certainly alters overtones produced in the sound, emphasizing highs, and therefore alluding to lighter, shorter note lengths. However, the note lengths would, in reality, remain unaffected. More effectively, stroke type has a visual effect, causing the audience or jury panel to accept the illusion of staccato playing.

Snare drum is treated expressively similar to that of the xylophone. Resonance is not manipulable in a realistic way, so legato and staccato articulations are completely timbral when aurally observed. More likely, the visual cues give credence to disconnected and connected notes. Because every note on snare drum is played in a very small area on the head, the visual observation of stroke types is more focused and therefore more pronounced than on pitched instruments. The most viable examples of visually influenced expression on snare drum are the Douze Etudes by Jacques Delecluse. The twelve etudes are so frequently played in auditions and solo performance that a
performance practice has developed around each of them, but most especially with the first and ninth etudes.


The first note of the Etude 1 is mezzo-forte, followed by a quarter rest and piano eighth notes with grace notes. The single mezzo-forte note also has an accent. In order to clearly delineate the accent, the performer must have a quicker stroke with more force than a typical mezzo-forte might have. On a recording, the note simply sounds louder, perhaps with a slightly forceful timbre, even when contrasted by the softer, calmer timbres of the following passage. However, when the listener can see the performer execute the stroke, the volume differentiation combines with the visual change of stroke speed. Seeing this action shows the audience that the first note was different from the others for more reasons than mere volume.

Many performers and pedagogues assert that the difference between the two stroke types is clearly audible. Through timbral and overtone changes, they claim to clearly hear the difference, and due to the highly subjective nature of individual perception, the point must be conceded to them. They can hear the difference. In the case of the non-percussionist, however, these same dissenting voices admit that “variation is perceived visually.” Listeners may perceive a difference in quality of sound, but most
likely they will not understand exactly what characteristic is different.\textsuperscript{166} Fortunately, seeing the percussionist allows more concrete perception of the sound variations.

Articulations come in many shapes and forms, and each must be dealt with according to the instrument capabilities in question. However, because percussion has such limited resonance, visual gestures serve to give greater clarity to the performer’s expressive devices. Aural changes are perceptible, but without the visual means to understand the changes in sound, subjectivity overwhelms the listener and comprehension suffers. The same principles apply to phrasing and expression not clearly notated by a composer. In the absence of notated expression, percussionists create phrasing and musicality of their own. As long as the action can be seen, the sound changes will be more clearly understood, and therefore more effective.

\textsuperscript{166} Appendix, Table 1, Respondent 3.
Chapter 5
Discussion

Based on the available research and professional conclusions, visual gestures ultimately serve to clarify musical intentions.\textsuperscript{167} Little evidence gives credence to the notion that visual gesture can be expressive on its own, but without gesture, aural expression can be ambiguous, especially to less musically trained audience members. In percussion, the lack of note length complicates aural issues further. Instead of varying note lengths, the percussionist alters attacks. By such means, the performer can effectively alter overtones and accent gradations, but the full impact of stroke changes may not be enough to clearly communicate articulations aurally alone. The shortness of sound limits the ability of the audience to delineate changes of legato or staccato, for example. Without visual aid, aural manipulations can be unclear or even undetected.

Mechanical motion required for sound production in percussion is inextricably tied to ancillary gesture. Articulations are produced through unavoidably visual gestures. Even in an audio exclusive environment, the percussionist uses ancillary gestures to create the soundscape. When the visual aspects of the performance are available to the listener, subtle nuances receive higher degrees of clarity. On any fixed-duration percussion instrument, ancillary gestures can successfully alter the way a note sounds to listeners not just by changing the aural result, but by showing the audience how to hear the music.\textsuperscript{168,169}


**Caveats**

Not all ancillary gestures are positive. Too much or too little gesture can cause an audience to reject or distrust the performer.¹⁷⁰ Musicians must avoid substituting visual virtuosity for aural expression without risking overtly static performance. ¹⁷¹, ¹⁷², ¹⁷³ “Great performers understand the balance between useful gestures and distracting, unhelpful motions,” according to Thompson, Graham, and Russo.¹⁷⁴ Schutz adds that “reducing unnecessary movements and learning to focus on specific [aural] expression-related body motions is an essential part of the learning process.”¹⁷⁵

Most musicians and critics define unnecessary gestures as those “without purpose.”¹⁷⁶ Extreme motions that lack aural foundations come across as contrived and superficial, resulting in distraction. As Schutz says, “when they have nothing integral to do with the musical gestures and vision,” gestures give an impression that the aural music is not expressive enough on its own, and that it needs visual compensation.¹⁷⁷ Even extraneous gestures are acceptable as long as they are “genuinely intended by the

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¹⁷³. Ibid.


¹⁷⁵. Ibid, 351.

¹⁷⁶. Ibid.

¹⁷⁷. Appendix, table 9, Respondent 3.
performer to better communicate the music to the audience.\textsuperscript{178} Inauthenticity is perceived when the performer is trying to communicate something “extra-musical” or when the gesture feels unnatural, awkward, or superficial.\textsuperscript{179} This is especially the case when the gestures interfere with technique, contradict the musical phrasing, or when they occur in a drastically different time frame from the aural element.\textsuperscript{180}

\textit{Relevancy}

Discussions of note length and articulation and their relevancy in percussion dialogues remain disputed and controversial. Some experts question the validity of problematizing percussion for its lack of sustain qualities compared to other instruments or voice. They raise the valid point that musicians use terms such as legato or staccato without a clear definition that can apply to all instruments.\textsuperscript{181} Percussion, being so vastly different by nature than other instruments, requires the musical community to reassess the terms. Percussionists, in an effort to mimic aural qualities inherent in other instruments, create illusions of sustain through rolls or feelings of legato through stroke type, weight, and speed. The musical experience is not purely aural, however. Studies have repeatedly shown that other instrumental performances also benefit from visual gestures. Percussion is fully capable of expressing articulations and other expressive markings similar to any other instrument. Percussion is simply special in that the gestures used to create these variances in sound are automatically as visual as they are audible. Removing the visual aspects, therefore, also removes half of the expressivity.

\begin{itemize}
  \item \textsuperscript{178} Appendix, Table 9, Respondent 4.
  \item \textsuperscript{179} Appendix, Table 8, Respondent 2.
  \item \textsuperscript{180} Appendix, Table 9, Respondent 2.
  \item \textsuperscript{181} Appendix, Table 10, Respondent 1.
\end{itemize}
While some expert performers firmly believe it is possible to create plenty of variance through sound alone, many argue that visual elements can be nearly as integral to the sound production and perception. The notion that composers should recognize the limitations of the instruments – thereby avoiding markings that are aurally impossible on the instrument – is interesting but unlikely to catch enough support to last. Skilled composers know the sounds and limitations of percussion, yet they consistently choose to notate typical articulations and expressive markings, and percussionists pride themselves on their ability to express those markings in highly creative and dedicated manners. No one has proposed a viable alternative to standard notational methods, and until someone does, percussionists will continue to find ways to evoke expressive markings both aurally and, more effectively, visually.

In blind auditions, recordings, and other situations that prevent visual connection to percussion sounds, aural variances can be subtle. The aural expressions must be exaggerated and projected to compensate. Expressive sounds are created by expressive motions. Seeing the motions clarifies the aural expressions exponentially. The optimum situation would be to never have a blind percussion audition or always listen to percussion music live. Revoking the blind audition would cause anonymity to be lost, but musical expression would likely be significantly enhanced.

**Further Research**

Pedagogical ideas of articulation lie in the attack and release of strokes. The speed, weight, and height of a given stroke can all be manipulated through the motion leading into and away from a given note. Further research is needed to determine how each affects sound production both aurally and visually. Spectral analysis on a variety of
percussion instruments could be particularly useful to determine specifics as to how and why articulations and timbres result from various stroke methods.

Researchers and pedagogues generally agree that various articulations and phrasings come from gradations of accents. More research into dynamics, timbres, and overtone series combinations within the process of accent gradation is needed both in percussion and other instruments. Theories of how each instrument executes articulations remain as such until research beyond the naked ear can determine more solid information on the subject. Of particular use in each of these matters would be the nature of overtone manipulation.

More surveys and interviews need to be conducted to gain firmer understanding of how visual gestures affect percussion performance and perception. Further inquiry into timbre, tone, abstract expression, emotion, and weight would serve to refine performance technique even further. Though the four interviews conducted for the sake of this study served to cover much of the majority beliefs held in the percussion world, more definitive information on a wider variety of topics gain be gleaned from a much broader survey of performers and pedagogues.

Conclusion

Ancillary gesture in percussion is necessary gesture, because the visual and aural components of the performance, more so than any other instrument, are inseparable. All elements of sound production are visually accessible and consequently an integral part of the listener’s perception. Understanding the influence of visual gestures on sound production allows the skilled percussion performer to embrace and maximize the possibilities for articulations and other expressive markings. A skilled performer will be
cautious to recognize the bounds of distraction, ensuring that all motions are tied to musical meanings. Through effective application of expressive gestures, the performer can create a musical environment of expression that naturally engages multiple senses, maintaining its place in music as one of the most creative spectacles of live performance.
Appendix

Table 1.

<table>
<thead>
<tr>
<th><strong>Is it possible to hear significant variation in note length, articulation, and note connectivity in an audio recording? Why or why not?</strong></th>
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<tbody>
<tr>
<td>1. Yes. A trained percussion has the ability to manipulate sound in meaningful ways that can be audibly perceived. While the performer may have to play things differently to communicate into a microphone than they would live, they can absolutely vary things.</td>
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<tr>
<td>2. Yes, for articulation and note connectivity, in the case of a skilled and musical performer. Less so for note length, but again, depending on the skill of the performer.</td>
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<tr>
<td>3. I am not really sure about if it can be heard in an audio recording. One can hear a difference between the ring time, articulation, etc. of a bad instrument/recording and a good instrument/recording, but if one can hear the difference between one piece and another on the same CD, I am not sure. Imagination has some effect on this perhaps.</td>
</tr>
<tr>
<td>4. Yes - in my experience, anything that I am able to hear live, I am also able to hear on an audio recording.</td>
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Table 2.

<table>
<thead>
<tr>
<th><strong>To what extent do you believe visual gesture affects audience perception?</strong></th>
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<tbody>
<tr>
<td>1. People like to look at things and visual gesture can have a profound effect on some people.</td>
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<tr>
<td>2. Greatly, in combination with aural gesture.</td>
</tr>
<tr>
<td>3. They can definitely affect audience perception if they are just listening with the eyes closed, or listening with the eyes observing what is being presented. Perception has so much to do with it, because no two people hear the same thing in the same performance. Their own perceptions, experiences, and &quot;baggage&quot; have a lot to do with how they hear.</td>
</tr>
<tr>
<td>4. I believe that audiences often hear based on what they see. When I studied recording arts in undergrad, we were taught that when an audience member is looking at a particular musician in orchestra, they will &quot;hear&quot; that musician more clearly. In mix audio for live performance videos, producers will often slightly turn up the sound of a particular musician when the camera is focused on them, in order to imitate our expectations of hearing that performer more clearly if we are focused on them in a live setting.</td>
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I think this translates into real results for performance. For example, I don't think that crash cymbals actually sound any louder by being held up in the air after a crash. But the act of holding them up draws the audience's attention to the sound of the crash as the resonance hangs in the air. And that might heighten the intended effect of that moment.

Table 3.
Other than muting, how can one change note length on timpani? For each method, is the change primarily aural, visual, or both?

1. Mallet choice and beating spot can also effect resonance.

2. No, note length can ONLY be changed through muting or muffling. Articulation is conveyed through changes in the quality of the attack and subtle dynamic control. Dynamics are controlled by the height of the stroke, while articulation is controlled by the speed of the stroke. Great care is required to combine the two properly, as increased speed requires less height to maintain a constant dynamic.

3. The primary method of stopping a drum from ringing is muffling. Did you include that in "muting"? Muffling can change the sound aurally. Stoke type/release can effect is visually.

4. I think sympathetic resonance and the room in which the timpani are being performed can have dramatic impacts on the length of resonance for any particular attack. Also, different beating spots will produce a different combination of overtones - and these can decay differently.

Table 4.
Can one vary note length on snare drum? If so, is the variation perceived aurally, visually, or both?

1. Same as timpani answer.

2. No.

3. No. Variation is perceived visually. I suppose playing back and forth on two drums could make the variation aurally.

4. I believe so, but only by a very small amount by manipulating beating spot and head tuning.
Table 5.

How can one alter note length on other instruments? Is the change primarily aural, visual, or both?

1. same as timpani answer. The effect is more notable if the instrument is more resonant.

2. Only through dampening.

3. The perception of note length can certainly be changed visually, and sometime aurally.

4. [No response]

Table 6.

Other than changing mallets, how can one affect articulation on timpani, snare drum, etc.?

1. stroke type and beating spot.

2. Articulation is controlled by the speed of the stroke, however, as stated above, percussion articulation is mainly conveyed by changing the quality of the attack, not the sustain.

3. Articulation can be affected in numerous way, such as stroke type, stroke speed, volume and accent gradation.

4. For me, beating spot is a great way to manipulate articulation.

Table 7.

Is it possible to change articulation aurally alone, or do you think it is a timbral difference that fools others into thinking it is articulation?

1. Articulation is partially a timbre change.

2. Yes, as per the above. However, a timbral difference is aural, so the question is poorly worded.

3. Yes, it is possible. People have told me for years that they can HEAR the kind of articulation that wind players achieve with legato and staccato. What they are actually hearing is very careful control of accent gradation, making the effect of longer and shorter notes.

4. I'm not sure I understand this question. In my experience, articulation is always something that can be changed, with enough attention to detail.
Table 8.

Can percussion performance create true legato, or is it an illusion? How is either achieved?

1. Resonant instruments can be legato by the nature of their resonance.

2. Define "true" legato. Percussion, in general and absent dampening, does not vary the length of the notes, but achieves variation in articulation through changes in the quality of the attack and subtle dynamic control. A series of notes played at a constant dynamic will sound more staccato; the same notes with dynamic inflection will sound more legato.

3. It can never be truly achieved. It can be effective created as an illusion.

4. I think that depends on what exactly you take legato to mean.
   https://en.wikipedia.org/wiki/Legato
   This article translates legato in Italian as 'tied together'. In that sense, any performance in which the notes are compellingly 'tied together' by the performer is legato. So yes, I think true legato is possible for percussionists.

I would point to piano as a percussion instrument. Most musicians wouldn't question the ability of a pianist to play legato - but they are performing by striking strings with hammers in the same way percussionists are performing by striking wood or metal or skins.

Table 9.

When do you believe visual gestures become inauthentic?

1. Of course they can. That is a problem for all musicians.

2. When they contradict the musical phrasing and/or when they occur in a drastically different time frame from the aural element.

3. When they have nothing integral to do with the musical gestures and vision.

4. That's a tough question.
   Just off the top of my head right now, I think I would say that gestures in the service of the music, even if they are extraneous, feel ok. If they are genuinely intended by the performer to better communicate the music to the audience, then I think it's ok (even if I would sometimes draw the line differently than other performers).
   I think I would feel a gesture to be inauthentic when it isn't intended to communicate something in the music, but rather is intended to communicate something extramusical.
### Table 10.

**Are there any other contributions you would like to make to this study?**

1. I think you are misusing the word legato or need to better define it. I feel like you are trying to problemitize percussion for lacking the sustain of a voice or wind instrument but may be asking the questions in an odd way.

2. No.

3. [No Response]

4. I feel like I might be able to better communicate some of my ideas in person. If you'd like to chat over the phone sometime, let me know! You can email me at xxxx@xxxxxxxxxx.xxx
References


