

TIME, MOTION, AND EMOTION:
AN ORGANIST'S GUIDE TO CONNECTING MUSICAL STYLES AND PHYSICAL
GESTURES

by

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Preface

This project seeks to explore the relationship that links musical styles with physical gestures when playing the organ. The connection between each concept is influenced by factors, such as genre, touch, and one's interpretation of the music. These concepts can be applied to all music but for the purposes of this study the control groups are limited to Baroque and Romantic styles. A comparison of organ compositions written in lyric and perpetual motion styles is included to explore the differences in how one physically approaches the music. Common factors in each style concern, but are not limited to, how to project a sense of the phrase's breath, make decisions regarding the grouping of notes which, in turn, leads to the broader question of how to shape the phrase.

The discussion concerning physical gestures includes an overview of the body and its points of balance. Before any physical activity from the body can occur, the command must begin in the mind. Alignment at the center of the body from the head to the feet allow flexibility and healthy movement. An exploration of how one finds alignment is thoroughly examined to help organists utilize a full range of motion when playing. It is important to note that every organist has a different physique and will need to adapt these concepts. Further, it is often necessary to work with a qualified Alexander Technique practitioner or a musician well-schooled in these concepts in order to find one's freedom.

This document is not intended to serve as a performance practice resource to endorse a certain school of technique over another. For those who have already achieved both a natural and expressive facility, this document gives a framework for understanding what may already be intuitive in one's playing. For those who struggle with concepts of

musical shaping and technical freedom, this can be a roadmap for how to begin a journey of understanding. It benefits those who want to play with more freedom and musical communication and those who teach others to do the same. This study seeks to help musicians more clearly express the composer's intentions and the artistic spark of the music by making a connection between expression and choreography at the keyboard. Ultimately, the composer's intentions and expressions of what a piece is about rely on the performer and their choreography at the keyboard.

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Chapter 1: Time, Motion, and Emotion

A. What is Musicality?

The Musical Destination

Musicality can be described and defined in various ways. The term is often associated with a performance that produces a musically satisfying experience. According to Webster's Dictionary, the term first appeared in the 19th century to describe "the quality or state of being musical."¹ Iain Morley in his book, *The Prehistory of Music* describes the term as "behavior that deliberately seeks to moderate the emotional state and arousal in other's through musical activity."² In the music and dance professions, the term itself relates to gathering the senses. The visual and aural senses of the audience are engaged through the interpretation of the performer. An emotional connection is established with the audience through the intent and transmission of what they're experiencing. This form of communication is the fundamental objective and musical destination that performers strive to achieve.

What does this communication entail? Communicating with the audience through musical oratory is an amalgam of the performer's thoughts, feelings, and the composer's instructions and perceived desires regarding the music live realization. Paying attention to details such as touch, dynamics, phrase shape and direction are part of the non-exhaustive descriptions regarding musicality. Pablo Casals related music to life, stating that "Within the large structural spans there are smaller waves – expressive of melodic, rhythmic and harmonic intensities – where is contained the moment-to-moment life of music."³ These

¹ "Musicality." *Merriam-Webster*, Merriam-Webster, www.merriam-webster.com/dictionary/musicality.

² Morley, Iain. *Prehistory of Music: Human Evolution, Archaeology, and the Origins of Musicality*. Oxford University Press, 2018, 325.

³ Blum, David. *Casals and the Art of Interpretation*. University of California Press, 1980, 19.

“moments-to-moments” are similar to human speech that flows in a natural manner. It is oratory that convinces the listener of the orator’s argument or draws in the listener to the poet’s verse. A musician must understand the music’s structure and emotional content, and comprehend how to best present the music’s meaning, and align the body’s movements with the intellect and emotions to communicate with the audience. When the timing of the musical line, the motion of the body, and the performer’s emotions are aligned, the primary objective of communicating with the audience becomes attainable.

A Historical Overview of Musicality in Relation to Style

Capturing the essence of a musical style includes understanding the music’s context which includes the conception (i.e., composed for a sacred, concert, or instructional purposes), and the genre (i.e. dance, fugue, aria, toccata). When these concepts are implemented, it enables the performer to transport audiences into composer’s imagination. One may ask, “How does musicality relate to style? In other words, is someone “musical” when they approach all music from the same perspective, choosing to play a Bach prelude and fugue the same way they play a Dupré prelude and fugue? Pedagogue, Janette Fishell gives the following insights, “Different historic periods and genres of music require one to consider how best to be ‘musical’ by filtering their performance through two lenses: first the lens of the composer and second the lens of the individual performer. What one feels about the music and what one knows about the music are equally important in forming our approach to performance.”⁴ Throughout music history, composers and theorists have left information for future performers

⁴ Fishell, Janette, Insights on Musicality. September 15, 2019.

regarding musical interpretation. Although genres and performance practices differ it is interesting that so often composers tell us something about how to approach performing. One of the earliest examples is the preface to *Il primo libro di toccata* (1615) by Italian composer Girolamo Frescobaldi (1583-1643).⁵ He stated, “In this style of playing the notes should not be held hostage to beat, but that there is give and take according to the mood.”⁶ Carl Philip Emmanuel Bach (1714-1788), son the great Johann Sebastian Bach, stated in *Versuch ber die wahre Art, das Clavier zu spielen* that a good performance consists of variation in dynamics, touch, expression, and phrasing as “these factors help to reveal the true content of the piece.”⁷

Transitioning into the Romantic era, Felix Mendelssohn (1809-1847), responsible for not only the revival of J.S. Bach’s music but also a major force behind the evolution of music in the 19th century, was known for being an expressive player guided by musical inherent properties. This likely refers to Mendelssohn’s focused aural abilities and his experience as a composer that he drew from when performing. In William A. Little’s book on *Mendelssohn and the Organ*, there are firsthand accounts of Mendelssohn’s performances of his own organ works and those of J.S. Bach. “Mendelssohn always played with such a depth of expression and flow. He never interpolated a ritardando into the music. His playing served a musical purpose based on the capabilities of the organ and the acoustics of the room.”⁸ Hugo Riemann (1849-1919), German theorist, pedagogue and composer, formulated important theories of musical shaping that greatly

⁵ Laukvik, Jon. “Historic Performance Practice in Organ Playing.” Part 1., Carus Stuttgart, 1990, 120.

⁶ Laukvik, 121.

⁷ Bach, Carl Philipp Emanuel, and William J. Mitchell. *Essay on the True Art of Playing Keyboard Instruments*. Norton, 2000, 148.

⁸ A first-hand account by Elizabeth Mounsey. Little, William A. *Mendelssohn and the Organ*. Oxford University Press, 2010, 99-101.

impacted the late Leipzig Romantic School, including notable figures such as Karl Straube and Max Reger. Riemann stated, “The shaping of a musical line requires a crescendo from the beginning to its high point. An accelerando accompanies the crescendo, and a ritardando is applied to the decrescendo toward the end of a phrase.”⁹

The 19th-century and 20th-century French schools also have contributed to writings about musicality. In particular, Charles-Marie Widor (1844-1937) and Olivier Messiaen (1908-1992) channeled both technical and communicative means to achieve a musical effect. Widor, who was responsible for the formation of many great organists clearly delineated his thoughts about musical shaping on the organ when he stated, “The basis of expression in organ playing is a matter of rhythm: subtle adjustments in note length to emphasize important notes and subtle delays in the entry of a note to give it accent.”¹⁰ Widor also believed “a crescendo could be created without an expression pedal by varying the touch and duration of notes to give the musical effect.”¹¹ Messiaen, one of the most widely recognized composers of the 20th century, gave personal insights into interpreting his music when he stated, “My music was initially marked as a notated rubato, but the truth is that the notations are exact and should be performed exactly. Once one performs then exactly, they are not prevented from making a interpretative decisions that embraces freedom, love, passion, and emotion.”¹²

The information given by composers and scholars helps the performer appreciate

⁹ Laukvik, 268.

¹⁰ Ochse, Orpha. *Organists and Organ Playing in Nineteenth-Century France and Belgium*. Indiana University Press, 2000, 186.

¹¹ Ochse, 187.

¹² Gillock, Jon. *Performing Messiaens Organ Music: 66 Masterclasses*. Indiana University Press, 2010, 9.

that we function in a world that juxtaposes Freedom and Boundary. But what about the many questions one still has when looking at a new page of music? How does one achieve informed intuition when the score lacks critical information? Through a broad study of musical style and performance practices one can begin to see stylistic intentions emerge, ones that will enliven a performance and introduce to the performer a range of artistic choices. This has an effect on an interpretation by giving the performer a two-dimensional view: the notes on the page and the greater musical idea. The first view of reading the notes is processed in a literal manner, especially in the initial encounter with a piece. The second view opens a channel into reading between the lines and the rhetorical intentions the music conveys. The next section discusses the mental and emotional aspects of music that influences a performer's physical response.

B. The Physiological Impulse Behind the Musical Line, Physical Gesture and Emotional Response

Mental Command

All musical events conveyed through a physiological impulse must begin with a mental command from the player. The mental signal prepares the player to engage their body in a manner that directly impacts the music. Organists should not only think about maneuvering swell boxes and pushing pistons, but also the speed and quality of the attack and release of the note, which hereafter will simply be referred to as "touch." British pedagogue, Tobias Matthay in his book, *The Visible and Invisible in Pianoforte Technique*, devoted a chapter to the physiological challenges facing pianists. The main concept of this chapter concerns how one teaches the mind to engage specific body limbs when playing. Matthay stated, "The first objective in learning technique is how to gain

control over which limbs you desire to be active versus those you desire to be inactive.”¹³

The next layer to this process involves timing of notes. In Matthay’s book *Musical Interpretation Its Laws and Principles, and Their Application in Teaching and Performing*, he stated “In order to guide any note, one must think about its precise place and how the sound is to begin and end.”¹⁴ This particular mental command directly affects one’s gesture into and out of the key based on visual cues from the score and interpretive decisions. For example, dynamic markings will influence how one approaches the key because they elicit an emotional response (i.e. play louder equates to playing faster with more force). This mind/body connection will ultimately require a full discussion of our we make a healthy connection between the mind and physical impulse.

Some introductory concepts about the body, taken from *What Every Pianist Needs to Know About the Body*, which contains information for organists by Roberta Gary and Thom Miles. Organists are encouraged to “think joints from the head, neck, spine, pelvis, hands and legs – all parts contribute freely to one’s playing.”¹⁵ The alignment of the joints is crucial in the first stages of connection physical gestures with a musical style. If the body is not positioned to adapt to the music in an uninhibited manner, then true freedom in one’s playing cannot occur.

The Effects of Musical Gestures on Physical Movements

How does one learn to perceive a connection between musical concepts and the physical gestures required to produce desired results? Geoffrey Madell argued in his

¹³ Matthay, Tobias. *The Visible and Invisible in Pianoforte Technique: Being a Digest of the Authors Technical Teachings up to Date*. Oxford University Press, 1988, 16.

¹⁴ Matthay, Tobias. *Musical Interpretation Its Laws and Principles, and Their Application in teaching and Performing*. Forgotten Books, 2010, 30.

¹⁵ Mark, Thomas Carson, et al. *What Every Pianist Needs to Know about the Body: a Manual for Players of Keyboard Instruments: Piano, Organ, Digital Keyboard, Harpsichord, Clavichord*. GIA Publications, 2003, 139.

book, *Philosophy, Music and Emotion*, that it is not solely the musical contour but the harmonic structure that truly invokes a physical gesture. He used the diminished seventh triad as an example, stating that “The triad helps to give contour to the melody it underlies, and this resembles expressive behavior of a particular kind.”¹⁶ This likely refers to the sinister nature that diminished triads represent to the listener. In addition to harmonic elements, textural musical elements can also have a natural effect on physical gestures. For example, arpeggiated ascending or descending chords will physically guide the hand in a particular direction, and double-dotted rhythms will require the hand to produce a bouncing motion. In each case, the visual representation of the musical gesture translates into the performer’s physical movements.

Concerning the physiological connection, Iain Morley in his book *The Prehistory of Music*, stated “The same activating neurons that select movements and control their energy and smoothness also cause changes in the emotions felt and the intensity of consciousness.”¹⁷ The gestures themselves serve as the technical medium that delivers the musical result. Learning how to gain control of the right motions at the right time and when to use them is the ultimate challenge. The performer must make choices concerning which physical motions will be suitable for specific musical content. Simply put, the performer’s physical movement should reflect the musical statement. Music shapes us and we shape it. One of the reasons for choosing to contrast lyrical pieces and those in perpetual motion is because of the great contrast in speed required of these two styles.

Lyric: Arabesque from the 24 pieces in free-style, Op.31, Louis Vierne
<https://www.youtube.com/watch?v=ehHJunJFKv8>

¹⁶ Madell, Geoffrey. *Philosophy, Music and Emotion*. Edinburgh University Press, 2002, 12.

¹⁷ Morley, Iain. *Prehistory of Music: Human Evolution, Archaeology, and the Origins of Musicality*. Oxford University Press, 2018, 238.

Perpetual Motion: Toccata E Minor, Johann Pachelbel
<https://www.youtube.com/watch?v=KkfPAMj3ZrY>

Engaging the Emotions of the Audience

The emotional response an audience draws from a musical experience is gained through connecting to the music. The audience reacts to the music by finding relatable aspects through the listening experience. These aspects usually revolve around emotions such as, love, happiness, and sadness. Madell stated, “Music often can evoke patterns of feelings that are very often recognizable in the human experience.”¹⁸ In the 10th chapter entitled, “Emotions and Communication in Music,” Morley summarized the findings from several studies, observed the musical features such as, “syncopations, melodic appoggiaturas, and certain harmonic changes can elicit changes in heart rate, breath rate, temperature, and skin response.”¹⁹ Mozart was quoted in *The Art of Interpretation* as saying, “The way I express the beating and loving heart is by two violins playing octaves. One can feel the trembling and throbbing breast through the violins’ crescendo.”²⁰ While it seems unanimous that musicality requires the performer to grasp the music’s emotional content and project it to the audience, what is often missing is how to do this with physical gestures. My study in chapter 2 will address the alignment of musical line and control of physical gesture which is at the heart of musical communication.

¹⁸ Madell, 128.

¹⁹ Morley, 269.

²⁰ Blum, 7.

C. Particular Challenges of Shaping Music at the Pipe Organ

Adjusting to the Console

There is no standardization of organ design. The structure and features drastically differ between one instrument and the next. For example, the proportions between the key desk and pedalboard can vary affecting one's bench placement (bench height adjustments informed by organ schools will be addressed later in the document). This can also make finding one's points of balance at each instrument difficult, (this concept will be addressed in chapter 2). The pedalboard is another variable following either the American Guild of Organist concave dimensions or a non-radiating configuration. This directly affects the placement of the sharps and flats, particularly at the extreme ends of the pedalboard. The room's acoustics is another common variable that influences one's touch as it relates to a dry versus live acoustic. A drier room will likely require less space between notes, while a live room will require more. Actively engaging one's ears while playing is the key to finding a suitable touch. Being in tune with one's body is key to finding a healthy posture at the console (further explored in chapter 2).

Winding

Above all else, it is essential to understand that the organ is a wind instrument played by keyboards, vs. a piano which is a percussion instrument played by a keyboard and the harpsichord is a stringed instrument played by one or more keyboards. What is the role of wind in making music on the pipe organ? How do the pipes speak when a key is depressed when a console is not directly connected to the pipes? In a brief overview on the structure of the organ, George Ritchie and George Stauffer explained "There are two parts to a winding system: the bellows or electric blower and the reservoir which holds

the wind.”²¹ The fact that the organ’s winding system provides a (seemingly static), never-ending stream of air has elicited criticism, most notably from Igor Stravinsky, who said “The Monster Never Breathes.”²² Although an organist is playing a wind instrument, unlike a wind instrumentalist, an organist does not physically supply air to the instrument. The question of how wind/breath is integral to phrase shape and length is obvious to a singer or oboist but often not to an organist. Understanding the organ’s breath and the phrase’s shape is key to successful musical shaping.

The structure of an organ’s winding system and amount of wind an organ uses also affect one’s playing. Wind pressures of various amount can be assigned to a particular division or stop. Higher wind pressure assigned to a large reed, like a tuba stop, requires the player to carefully listen to the attack and release when the stop is engaged. For example, abruptly releasing a high-pressured reed can unintentionally produce an unwanted effect. A thin sound can occur if a sufficient amount of airflow isn’t transmitted to the pipe. This is also determined by the amount of weight one uses to depress the key. The players intention should align with how the stop speaks, which are controlled by the gestures into and out of the key. An organ’s winding system also affects tempo. Players may discover that some instruments require a slower or broader tempo approach because the speech of the pipes requires more time to speak. This could also affect the attack of the key requiring a more broader gesture from the arm and hand rather than just a vertical attack from the finger. Listening is key to adjusting to the winding mechanisms of an instrument.

²¹ Ritchie and Stauffer, 372

²² Igor, Stravinsky, and Robert Craft. *Dialogues and a Diary Igor Stravinsky and Robert Craft*. Faber and Faber, 1968, 46.

Key Actions

An organ's key action also presents a challenge to the player in terms of controlling one's touch. The two types of key action an organist is likely to encounter are electric (electro-pneumatic or direct electric being the most common) and mechanical or tracker action. Electric action occurs through a series of pneumatic pouches and electrical contacts. Widor remarked on the disadvantage of electric action, stating that "The light key action allowed through electric action encourages players to focus more on speed and virtuosity rather than profundity and reflection."²³ Tracker action involves the player having direct control over the opening and closing of the valve which allows wind to enter the pipe. Widor referred to this as "the player's security over the attack and release of a note."²⁴ With each key action, organists have a responsibility to control the key in a manner that meets the intentions of the composer and projects the style of the music.

Physical gestures play a key role in adapting to different actions. This directly affects the attack and release of the key and how fast or slow the player maneuvers in and out of the key. For example, a fast attack will likely produce an accent, and a quick release will produce an abrupt ending to a note. There are places in the music where this is appropriate, but one must also produce a neutral touch at times to balance the use of accents. As previously stated, the player has direct control over the pipe's speech with tracker action; therefore, the attack of each note will reflect the player's motions into the key.

The amount of arm and finger weight is another factor in controlling different

²³ Laukvik Part 2, 180.

²⁴ Laukvik Part 2, 180.

actions. A heavier action will likely require more arm weight and larger rotational gestures (see link).

https://www.youtube.com/watch?v=B_I1724RQXk

Electric actions are more common and tend to feel slightly lighter than a piano action.

The player's motion into the key does not usually present a challenge, but projecting a stylistic touch requires more thought, and one must always pay attention to the releases. It is the releases from note to note that factors the touch (this will be further discussed in chapter 5). In Baroque music, the use of ordinary touch on electric actions is possible, but controlling the articulation presents a challenge. Here the player does not have direct control over the pipe's speech, but certainly still has control over touch control. In this case, one relies heavily on duration to produce varied dynamics and agogic accents that will give the music its parts of speech. As with any technical concept, intentionally listening to one's touch and how the organ responds is key to adjusting to each action. See chapter 4 below for a more detailed discussion of the connection between weight and a variety of touches.

D. Outline of Remaining Chapters

Chapter 2 discusses posture at the organ. The discussion begins with the upper and lower body and identifying the points of balance that relate to organists. Each point of balance stems from the center of the body and encourages a full range of motion. Next, the project examines body alignment of the head, spine, and sit bones and why this is essential to maintaining balance. The chapter concludes with a discussion on recognizing

signs of imbalance. Depictions of forward and backward pelvic tilts and poor back posture are included.

Chapter 3 focuses on the playing apparatus and where the motions are initiated. The discussion begins with an in-depth look at the four components of the arm and their functions. A reoccurring view of how each component is a part of the entire arm structure is also explored. Next, the discussion moves to pedal playing, focusing on the leg and the importance of utilizing the hip joint. The chapter concludes with a discussion about pivoting techniques in conjunction with pedal playing.

Chapter 4 focuses on the role of motion through rotation and weight transference at the organ. An overview of relevant material from previously cited books of Tobias Matthay and Thomas Mark sheds further light on this concept that is still rather under discussed. Approaches to keyboard playing are examined. Further commentary by Roberta Gary and Thom Miles pertaining to organists is also included. The chapter concludes with historical quotes gathered by Jon Laukvik, regarding various insights on organ technique.

Chapter 5 discusses the placement of the hands and feet, movement preparation, rhythm considerations, and organ touches are at the base of the discussion. The chapter concludes with a chart linking the planning process to the music making.

Chapter 6 gives a brief overview of the lyric and perpetual motion styles. Pieces representing both styles are included with video demonstrations of concepts discussed throughout this study.

Chapter 2: Posture: The Organist's Body in Balance

A. Body Position at the Console

Bench Height

The height of an organ bench is crucial to proper form. In the resource *But What Do I Do With My Feet*, Janette Fishell suggests, “The student allow their feet to rest on keys C and E and depress. If the student has to strain forward, then the bench is too high. If the student strains to keep their feet from playing when they do not wish them to, the bench is too low.”¹ One may find when having issues with pedal technique, the bench height is usually part of the problem. Fishell goes on to add, “this can be radically affected by the position of the bench, its proximity to the keyboards and also the place where the student must sit in order to find balance.”² An adjustment of minor or major proportions, e.g., adjusting the bench one-half inch or more, can often improve one's facility in playing the pedals. Roberta Gary and Thomas Miles suggests, "Players who are very tall or very short may need to compromise the bench height between the necessity required in playing the pedals versus the manuals.”³ From a historical perspective, when playing Baroque music on the organ it is stylistic to have the bench raised slightly higher easily facilitating use of the toes. In the resource *Introduction to Organ Playing in the 17th and 18th Century Style*, John Brock states, “The higher position is useful on historic-style flat pedalboards, especially when the sharp keys are closer to the player, just under the manuals, where the pedal keys have to be played directly beneath the knees. The

¹ Fishell, Janette. *But What Do I Do with My Feet?: A Pianist's Guide to the Organ*, Abingdon Press, 1996, 10.

² Ibid.

³ Mark, 53.

higher position also helps to adjust to pedal-keyboards with different spacing and foot crossing is also easier because the heels are slightly elevated.”⁴

Bench Placement

In determining bench placement, Ritchie and Stauffer state “The feet should naturally rest on the pedalboard with the toes next to the front of the black keys.”⁵ This indicates that the position of the bench must be at a comfortable distance from the pedal keys without having to overexert the lower legs to reach the pedals, particularly, the sharps and flats. At the same token, the naturals of the pedalboard should be positioned in front of the player rather than behind. In addition to the placement of the bench, it is also important where the player sits on the bench. It is obvious that nearly 100% of the time one sits centered on the bench, evenly between their left and right side of the console. This allows the body’s core to move left-to-right, reaching the extreme ends of the keyboard and pedalboard when necessary. In the discussion below concerning sit bones we will learn that optimum freedom of movement is only achieved when one can balance the body over the sit bones, which will place a substantial portion of the thigh on the bench. Fishell said, “Depending on the length of one’s legs, both upper (from the knee up) and lower (from the knee down), an organist must strive to sit where the entire body can achieve balance on the sit bones. Someone with very short legs will likely have to compromise and sit well forward with a very low bench: a tall person will have not only a higher bench but may sit quite far back on the bench itself. Proof that one has achieved a good balance is in one’s posture and the alignment one can maintain between the points

⁴ Brock, John. *Introduction to Organ Playing in 17th and 18th Century Style = Einführung in Das Orgelspiel Des 17. Und 18. Jahrhunderts*. W. Leupold Editions, 2

⁵ Ritchie and Stauffer, 3-4.

of balance.⁶ According to Mark, if a student is sitting too close to the keyboard, this will be indicated by a restrictive use of the arms held close to the body and a sitting position that favors tilting the upper body backward.⁷

B. Identifying Points of Balance

A-O Joint

Thomas Mark explained that the point of contact where the head meets the spine is referred to as the *atlanto-occipital* joint. “The top vertebra of the spine (atlas) is connected to the lowest bone of the skull (occiput).”⁸ This indicates that the spine supports the connection between head and neck. Healthy movement involving the (A-O) joint consists of the head leading, the neck supporting rotation, and the spine following. The (A-A) joint between the first and second cervical vertebra in the neck is also shown in figure 2.1. “The (A-A) joint allows the neck to pivot from side-to-side allocating rotation and flexibility under the head.”⁹

⁶ Fishell, Insights on Musicality.

⁷ Mark, 48.

⁸ Mark, 37.

⁹ https://www.physio-pedia.com/Atlanto-axial_joint

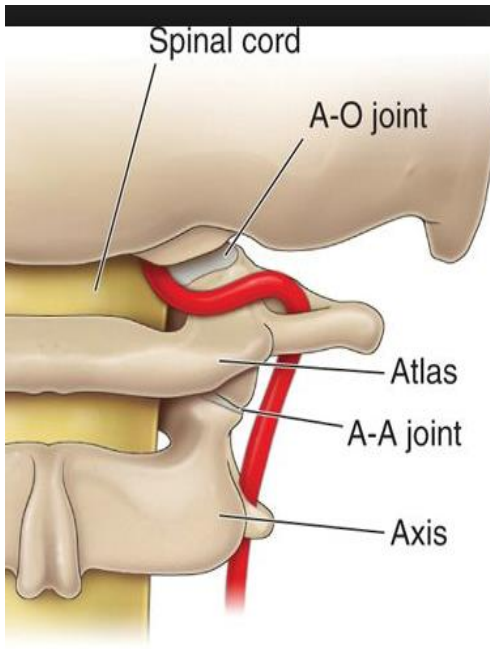


Figure 2.1. Atlanto-Occipital Joint¹⁰

Shoulder Joint

The shoulder joint is an essential point of balance because it connects to the body's center at the sternum. The humerus (outlined in Figure 2.2.) connects the arm to the shoulder blade through the glenoid fossa indicated by number 2. According to Mark, the glenoid fossa takes on a "ball in socket" formation that allows for a wide range of motion, and is not constricted by the surrounding joints.¹¹ The shoulder blade connects to the sternum via the collarbone, labeled by number 1 in Figure 2.2. The center of the body and arms, therefore, comes into balance via the shoulder joint. Mark states, "When in

¹⁰ Trescot, Andrea. "Atlanto-Occipital Joint." *Anesthesia key*, WordPress theme by UFO themes, 12, February 2017, <https://aneskey.com/atlando-axial-joint-injections/>.

¹¹ Mark, 77.

balance the arm structure is centered to the ribs, giving maximum freedom to the arms.”¹²

The arm, shoulder joint, and collarbone should operate together. Janette Fishell

instructs students to “think of their fingertips beginning at the collar bone.”¹³

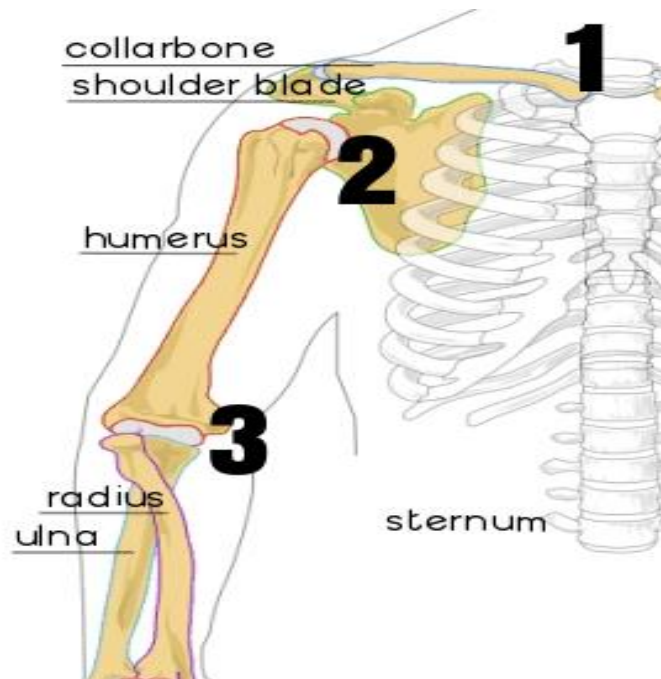


Figure 2.2. Diagram of the Shoulder Joint and Arm¹⁴

Lumbar Spine

The lumbar spine is at the center of the body in the lower back region. Curving the back or over-extending comes from the flexibility of the lumbar spine. According to Mark, “the curves of the spine permit it to absorb impact.”¹⁵ See the lumbar spine area marked in pink in Figure 2.3.

¹² Mark, 42

¹³ Fishell, Insights on Musicality.

¹⁴ Villarreal, Mariana Ruiz. “File:Human Arm Bones Diagram.svg.” *Wikipedia*, Wikimedia Foundation, 3 July 2019, en.wikipedia.org/wiki/File:Human_arm_bones_diagram.svg.

¹⁵ Mark, 43.

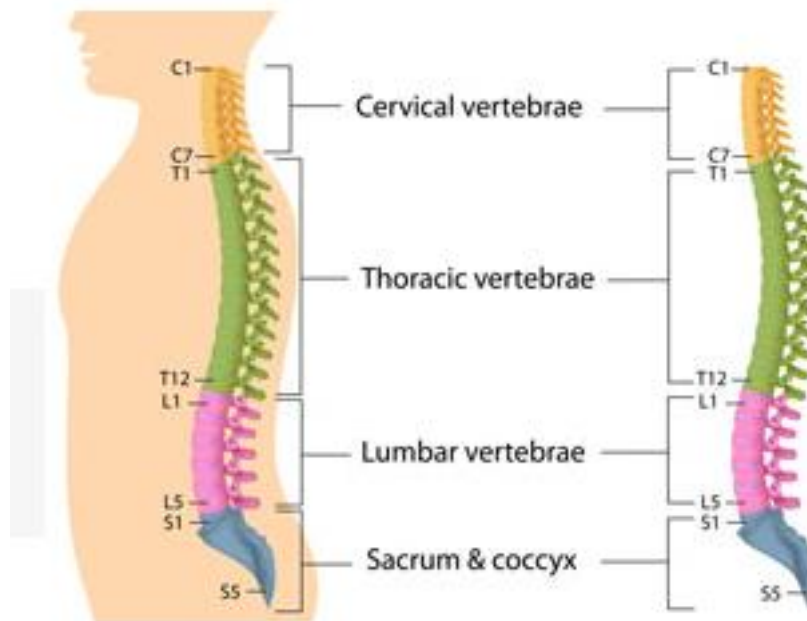


Figure 2.3. Diagram of the Spine¹⁶

Gary and Miles explain that for organists, “because the feet are not firmly planted on the floor and the requirement of playing on multiple keyboards, organists often round the lumbar spine and rock back onto the tailbone.”¹⁷ This is often referred to as back-oriented sitting, which directly causes restrictive movement in the lower body and arms. Thinking of the lumbar spine in a lateral manner versus front-to-back encourages freedom of motion. The sacrum outline in blue in Figure 2.3. “is a part of the pelvis and does not participate in spinal movement,” according to Mark.¹⁸ Fishell suggests, “Find your point of balance on the bench and then try to touch your forehead to the music desk without

¹⁶ Nicholson, Sherwin. “Your Lumbar Spine.” *Low Back Pain Program*, SN Health Resources, Sherwin A. Nicholson, 15 Dec. 2019, lowbackpainprogram.com/your-lumbar-spine/.

¹⁷ Mark, 43.

¹⁸ Mark, 18.

losing balance. When one can do that you've found balance."¹⁹ Correct spinal placement not only encourages proper alignment but also allocates freedom in movement. Both lead to freedom of expression and shaping in one's playing.

Hip Joint

One of the most mobile joints in the body is the hip joint. According to Mark, the hip joint allows for three types of motions:

- “1. Moving the leg forward and back
- 1. Moving the leg from side-to-side and back
- 3. Rotating the leg at the hip joint”²⁰

After properly mapping the hip joint, “one realizes it is lower and further out to the side, taking on a ball in socket structure that connects to the pelvis.”²¹

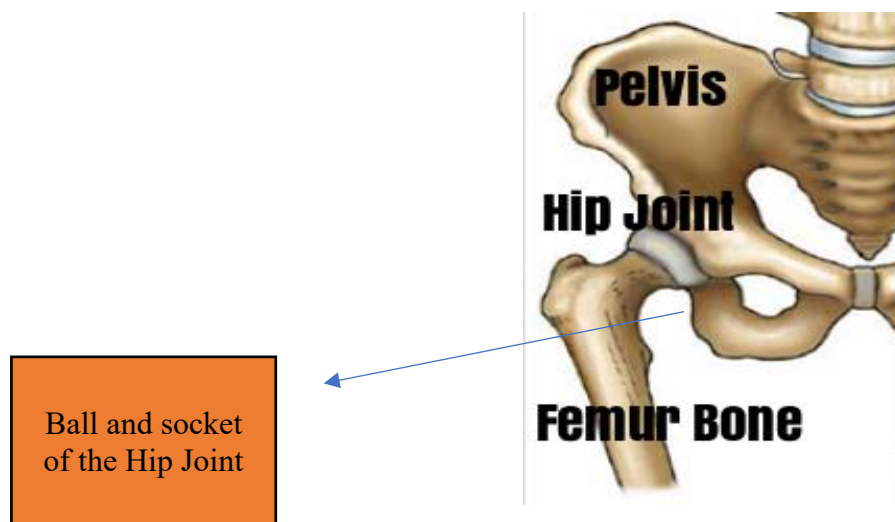


Figure 2.4. Diagram of the Hip Joint²²

¹⁹ Fishell, Insights on Musicality.

²⁰ Mark, 43.

²¹ Mark, 44.

²² Numb, Danny. "Hip Pain Relief." *Dr.Numb*, Weebly, 19 Aug. 2015, drnumb.weebly.com/.

The hip joint connects the upper body to the lower body and also directly supports playing the pedals. Rotating the leg inward places the foot in a proper position and favors playing with the ball of the foot. From a balance perspective, placing the full weight of the hip on the bench provides a solid foundation for sitting at the organ. The player can shift their weight at the organ without losing balance, such as in pivoting, which is discussed later in the document. Keeping one's hip joints free is beneficial to distributing the weight of the upper body evenly over the lower body. A sense of expansion in the lower back occurs when the hips rest freely on the bench. This freedom also allocates flexibility in the legs to maneuver around the pedal board given the demands of the music.

The placement of the hips also affects the knees. Gary and Miles referenced the period in organ pedagogy when one was encouraged to keep their knees together while playing. This was applicable to the interval no greater than an octave. The reason likely concerned being able to measure intervals while maintaining a proper leg placement for technical purposes. The pedagogical field recently has begun to research the opposing effects of keeping the knees together. This relates to freedom of the hip joint, as keeping the knees together can cause tension and strain on the hips versus rotating the leg inwards. This also forms a rigid structure of the hips and legs which in turn affects one's motion the same manner. Freedom is synonymous to flexibility regarding the hips shifting the weight from side-to-side as discussed in the previous paragraph.

Head/Spine/Pelvis-Sit Bone Alignment

Proper body alignment at the organ is critical to the success and longevity of player, because it allows the body to function most healthily and efficiently throughout one's playing career. When the body is not aligned and balanced, muscles try to over-compensate for the misalignment. The muscles will likely begin to strain as a result of attempting to operate outside of their natural functions. Thomas Mark gave the following insights about the head: "If the head is off balance, it will deliver weight unevenly, to the wrong place, or in the wrong direction, obliging various muscles to work in compensation."²³ It is beneficial remember that the "head rests on top of the neck and the balance of weight occurs in the middle and not at the back of the head"²⁴ will encourage an even alignment.

In congruence with Mark's resource on mapping the places of balance in the body, organists should also incorporate "The Laws of the Spine."²⁵ The laws state that the head leads, followed by the vertebrae, encouraging equal distribution of movement, and a free adjustment and expansion of the spine.²⁶ This mantra illustrates that the spine carries the weight of the head that passes down into the neck. The head, neck, and spine are connected, but one should avoid what Mark called a "head-neck-unit."²⁷ The head leads, and the neck follows; moving both units likely would cause restrictive movements.

For organists, the points of balance and alignment stop at the pelvic floor. The reason for this, according to Gary and Miles, relates to the fact that "organists are not able

²³ Mark, 18.

²⁴ Ibid.

²⁵ Mark, 26.

²⁶ Ibid.

²⁷ Ibid.

to rest their feet firmly on the ground, like pianists.”²⁸ Organists have to manipulate foot pedals, expression pedals, and often rest the toes on the bar underneath the bench. Gary and Miles suggests, “transferring the weight of the leg upward into the hip joint and then to the sit bones. By activating the muscles of the upper leg, buttocks, and groin an extra sense of support is added to the upper body, otherwise provided by the feet being planted on the floor.”²⁹

Discovering the full range of motion available at the keyboard requires balance and a sense of freedom in the upper body. Aligning the head from the center and letting the weight pass down the neck and into the spine, prepares the alignment of the hip joint at the center of the body. Mark reiterated that one should think of the body’s center first, and then adjust accordingly. It is the center that brings the rest of the body into balance.

²⁸ Mark, 52.

²⁹ Ibid.

C. Signs of Imbalance

The Pelvis and Sitting Posture

Two signs that indicate an out-of-balance position on the bench are anterior and posterior pelvic tilts. The pelvis initiates the position and the upper body follows. See Figure 2.5.

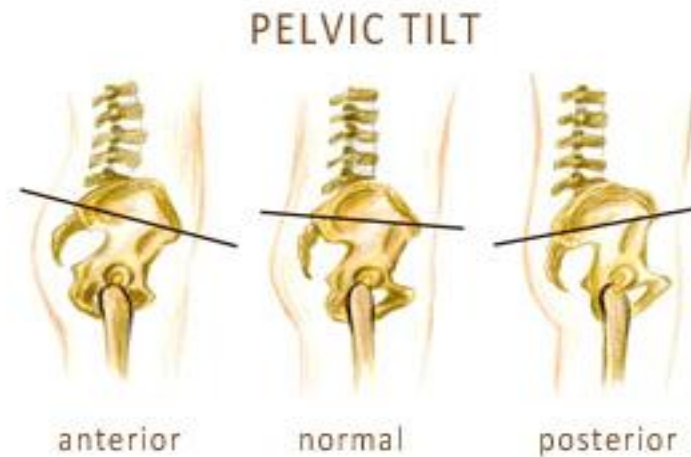


Figure 2.5. Pelvis Positions³⁰

In the anterior position labeled in Figure 2.5., the pelvis tilts forward and the upper body is likely to follow. The back is encouraged to take a C-shaped position, affecting the points of balance labeled in Figure 2.5. on the next page, particularly the head, lumbar spine, and hip. The pelvis is also unbalanced on the surface, which directly affects the sit bones by not allowing the player to engage the full weight of the leg. The player may feel as if they will fall forward. Lateral movements of the body would also reveal the off-balanced nature of this stance.

³⁰ Nicholson, Sherwin. "Your Lumbar Spine."

In the normal position labeled in Figure 2.5., the pelvis is balanced and the upper body can freely move. Torso rotations and lateral movements are easier to manage because the full weight of the leg is on the bench and sit bones are grounded. The head and spine alignment are in sync with the pelvis and hip, and a sense of freedom is given to the lumbar spine, as shown in Figure 2.5. This freedom is essential to properly mapping the lumbar spine at the center of the body rather than the back.

In the posterior position labeled in Figure 2.5., the pelvis moves away from the console and the upper body follows. As the head leans slightly backward it throws the postural alignment completely off kilter, as shown in Figure 2.6. This type of posture encourages the mismapping of the lumbar spine by placing it at the lower back instead of the center of the body. Lateral movements from side-to-side become restricted to a minimal range of motion. One may also feel a strain in the neck muscles and arms when playing.

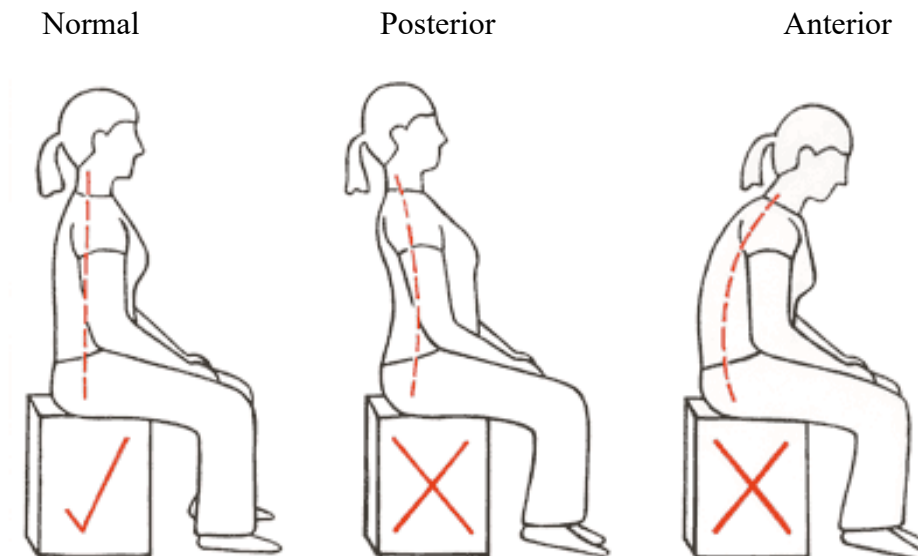


Figure 2.6. Sitting posture³¹

³¹ Canac-Marquis, Antoine. "How Should I Sit To Have Good Posture." *Quora*, Quora, 3 June 2017, www.quora.com/How-do-I-improve-my-sitting-posture?redirected_qid=15804986

Chapter 3: The Playing Apparatus

A. Not just your fingers! The four “Motors” of Manual Technique

Upper Arm

Use of the upper arm in one’s playing includes not only the arm itself but also the shoulder blade and collarbone. These components connect to the body’s center at the sternum where motion from the arm begins. According to Mark, in his chapter on mapping the arm and hand “the sternoclavicular joint provides a connection to the collarbone, permitting it to move in three ways: up and down, forward and back, and by rotation.”¹ When the shoulder blade and collarbone operate together the movement of the arm is more visible compared to the collarbone moving alone. Gary and Miles encourage the player to experiment with mapping this movement and the range of motion. They suggests “placing one’s opposite hand on each bone while moving in a small circular manner both backward and forward to feel the range of motion.”²

In the previous paragraph, Mark discusses how to encourage a free range of motion in the upper arm. This implies that space is maintained between the upper arm and center of the body. If the upper arm is held inward at the body’s center, the full range of motion is restricted likely causing other sections of the arm to overcompensate. Keeping the upper arm poised allows flexibility and support in the whole arm. This is particularly important for organists because of the need to move vertically between keyboards or push pistons – it is the choreography of performance spoken of in the introduction. Engaging the upper arm in this movement, initiated at the sternum will provide stability and ease of movement

¹ Mark, 71.

² Mark, 76.

because the motion is grounded in the body's center. The next section about the forearm will further explore this concept.

Forearm

The forearm connects to the upper arm via the elbow joint, allowing both components to move as one unit rather than separately. Motions of the forearm begins in the shoulder blade, similar to the upper arm. Mark reminds us that “the place where one thinks of initiation in movement is different from the joint where the movement occurs.”³ The forearm can move up and down initiated at the elbow joint and supported by the entire arm structure. A full range of rotation also occurs in the forearm, initiated at the shoulder joint (chapter 4 will extensively discuss rotation). One can angle the forearm vertically to the right and left in order to access the extreme ends of the keyboard. This allows the body's center to remain aligned and balanced when playing away from the keyboard's center. The forearm allows for the arm to extend while properly supporting the hand and fingers.

Hand

The hand connects the wrist to the forearm and also controls the thumb. The wrist is connected to the hand in two ways. Mark explains, “when the wrist moves up and down in a waving motion concentrated at the end of the forearm, this is a hinge movement.”⁴ In contrast, Mark explains, “when the wrist is released in an elongated and flexible manner, like a snake, the up and down motion is changed.”⁵ Releasing the wrist while the motion is occurring avoids rigidity in one's movements and tightening of the limbs. The other

³ Mark, 78.

⁴ Mark, 89.

⁵ Ibid.

motion of the wrist is side-to-side. The up/down and side-to-side motions combine to equal a wrist “rotation” even though it is not technically a ball and socket joint, the real rotation occurs at the shoulder (wrist placement will be further discussed in chapter 5). Mark further states, “the radius connects to the wrist joint allowing the hand to rotate with the forearm, not apart from it.”⁶ See figure 3.1. for a diagram.

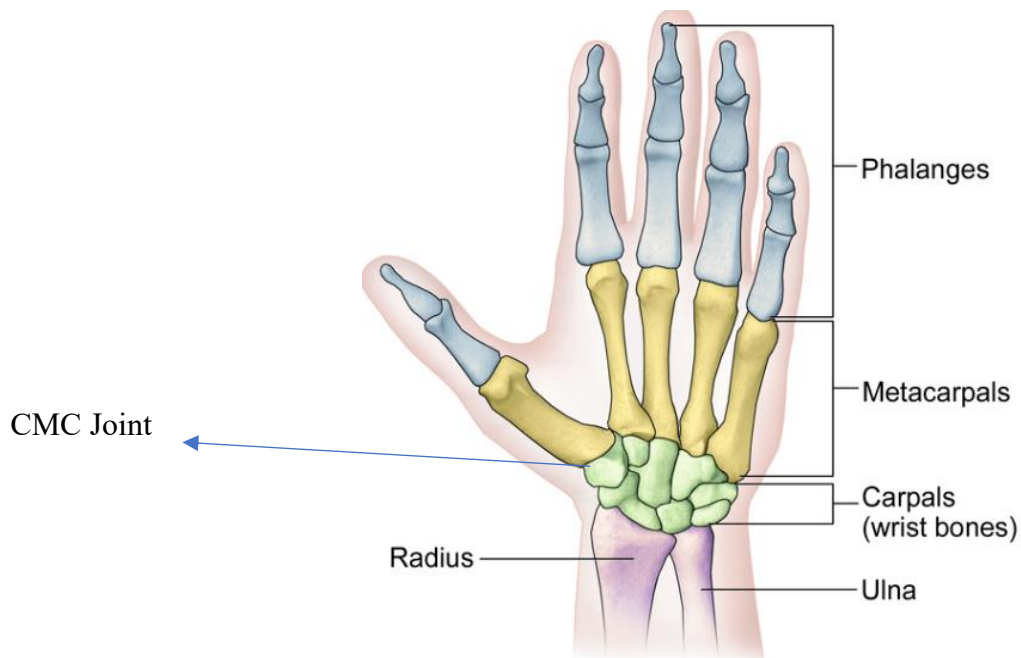


Figure 3.1. Diagram of the Arm and Hand⁷

As Mark observes, the thumb’s motions begin in the hand at the “carpometacarpal joint or CMC”.⁸ This is located at the base of the thumb and also connects to the wrist (see Figure 3.1.) Properly mapping the thumb according to Mark, “requires that the CMC joint, metacarpals, and the phalanges all move as one unit.”⁹ Mark also suggests

⁶ Mark, 88.

⁷ Singh, Arun Pal. “Hand Anatomy and Function.” *Bone and Spine*, Boneandspine.com, 12 Nov. 2019, boneandspine.com/hand-anatomy-and-function/.

⁸ Mark, 94.

⁹ Ibid.

“practicing the motion by touching the tip of each finger with the thumb and carefully initiating the motion at the CMC joint.”¹⁰ This also allows the thumb to achieve full range of motion. Mark concluded, “the thumb can remain free with the muscles around it relaxed and supported by the arch of wrist and forearm.”¹¹

Fingers

The fingers contrast from the thumb’s motion because they swing from the knuckle, whereas the thumb moves from its base at the Carpometacarpal joint. Mark stated, “motion from the fingers also involve the CMC joint, but the largest movements occur in the metacarpal joints.”¹² The base of the Metacarpophalangeal joint is located at the knuckle, and “the fingers move in two ways: up and down and sideways, and the Phalanges joints allow the fingers to bend and unbend also known as curling.”¹³ He elaborated, “it’s important to recognize that the fingers cannot spread and curl at the same time.”¹⁴ In this case, the arm structure should support the fingers in large reaches through rotation between the thumb and little finger. This translates to the use of “rotation” providing a foundation for finger support in large stretches. Otherwise, the fingers are likely to go limp affecting the attack and release into and out of the key. This is especially important in avoiding injury or causing unnatural positions in the hand. One should also avoid over-curling the fingers and support the first joints by engaging the whole arm behind the fingers.

An overview of the four components and how they function has been addressed in this chapter. Chapter 5 will cover body placement and physical gestures at the keyboard.

¹⁰ Mark, 96.

¹¹ Ibid.

¹² Mark, 97.

¹³ Mark, 98.

¹⁴ Mark 98-99.

B. An Approach to Pedal Playing

The Role of the Leg

Mapping the hip joint is critical to understanding the role of the leg regarding pedal playing. As discussed previously, the weight of the leg is supported on the bench via the hip joint at the bottom and outer sides of the pelvis. The hip joint also permits the leg to rotate inward, positioning the feet to turn inward and favoring the inside of the foot. Ritchie and Stauffer suggests, in their book regarding pedal technique, “The inside edge of the toe or the heel rests in the groove between the pedal keys and is in contact with the key of the note next to the one being played.”¹⁵ This concept will be demonstrated in chapter 5. If the leg is not placed properly on the bench to support the lower body or extend weight into the feet, this will cause a hindrance in one’s pedal technique.

Motions of the Ankle and Foot

Control over the ankle and foot relates to both the economy of motion and shaping of the pedal line. Ritchie and Stauffer described the ankle as a " fulcrum that controls the motions of the feet."¹⁶ The ankle is the beginning point where the feet transfer motion between the toe and heel, both up and down and from side-to-side. Gary and Miles encouraged organists to notice that “the ankle joint is located at the front of the heel bone and the pivot is at the back.”¹⁷ This supports engaging the ankle to initiate motion in the heel and toe. Thinking about how to effectively connect this motion concerns visualizing the motions direction. A mental preparation that encourages a forward motion into the toe

¹⁵ Ritchie and Stauffer, 77.

¹⁶ Ibid.

¹⁷ Mark, 58.

and backward motion into the heel may be useful. In addition to the motion, preparation over the note before playing it will allocate precision and control in one's technique. See Figure 3.3. for a reference to the foot, ankle joint, heel bone, and pivot (calcaneus).

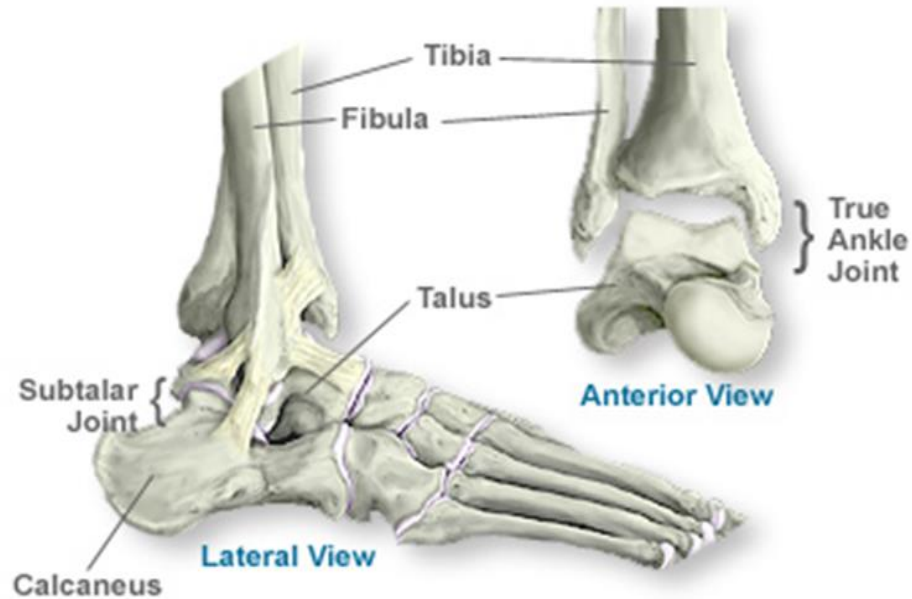


Figure 3.2. Lateral and Anterior View of the Ankle Joint¹⁸

One must understand where the weight shifts in the foot and how it relates to the toe and heel. Janette Fishell recommended “When the toes play, one’s heels remain relaxed, not raised; the opposite is also true when the heel plays.”¹⁹ This statement supports staying connected with the keys and preparing the foot before the motion occurs. The weight in the foot shifts in three distinct manners. The first pertains to a forward motion aimed toward the ball of the foot (see #3 in Figure 3.4.). The second shift pertains

¹⁸ Southern California Orthopedic Institute. “Anatomy of the Ankle.” *Southern California Orthopedic Institute*, Southern California Orthopedic Institute, 16 Jan. 2018
www.scoi.com/specialties/ankle-doctor/anatomy-ankle.

¹⁹ *Ibid.*

to the heel of the foot (see #1 in Figure 3.4).²⁰ The third type of shift pertains to the foot's motion from side-to-side between #2 and 3 in Figure 3.4., while the heel and ankle remain relaxed.²¹ This is applicable to playing a glissando in the pedals.

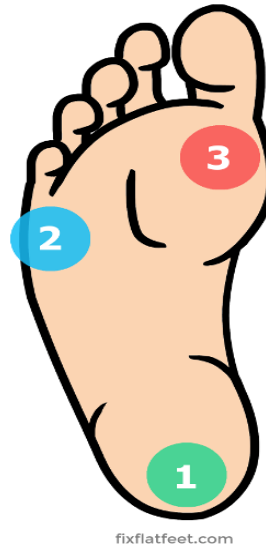


Figure 3.3. Bottom View of the Foot Pedal Playing Shifts²²

Proper organ shoes ordinarily have a flexible body, leather sole and heel that allows for ease of movement around the entire span of any pedalboard. According to Ritchie and Stauffer, "shoes made with a thin sole allows for the player to feel the pedals with their toes."²³ Both the toe and heel are connected within the structure of the feet. Approaching movement between the toe and heel as a sequential gesture, will likely favor the development of a fluid pedal technique (this concept will be demonstrated later in the document).

²⁰ In the first two examples, one should aim to turn the foot inward favoring number 3 in figure 2.4.

²¹ The third type of weight shift from side-to-side is used to achieve a legato touch between the sharp keys of the pedalboard. Otherwise, the first and second types of weight shifts are most commonly required in organ music.

²² James, Speck. "The Foot Tripod." *Fix Flat Feet*, 7 Nov. 2018, www.fixflatfeet.com/foot-tripod/.

²³ Ritchie and Stauffer, 74.

Position Shifts: Pivoting

To maneuver around the pedalboard, particularly the extreme ends, one must utilize a methodical pivoting system. Choosing a note to pivot from is critical to the sequence of events. Ritchie and Stauffer suggests, that “the pivoting note is usually the last note played by the ‘pushing foot.’”²⁴ After the note is chosen, one depresses the note, followed by a push while the note is engaged in the direction they want to pivot. Ritchie and Stauffer gave this insight: “When ascending the legs pivot to the right initiated by a push from the left foot and vice versa.”²⁵ Mapping the center of the body before pivoting is crucial to maintaining balance. The hip joint and pelvic floor provide flexibility in the legs, while the upper body aligns at the center. See the following links for a video demonstration of shifting.

Lyric: “Durch Adams Fall ist ganz verderbt” Bwv 637

<https://www.youtube.com/watch?v=zs9ArKmlbCU>

Perpetual motion: “Herr Christ, der einge Gottes-Sohn” Bwv 601

<https://www.youtube.com/watch?v=VgpgwymQfZE>

²⁴ Ritchie and Stauffer 89.

²⁵ Ibid.

Chapter 4: The Role of Motion

A. Rotation and Weight Transference at the Organ

How is Rotation Used?

“Rotation is used when you turn a door-handle or key in a lock. String players use rotation to bring the bow to the string.”¹ British pedagogue Tobias Matthay discussed the concept of rotation in his book, *The Visible and Invisible in pianoforte Technique*, where he draws parallels between physical rotations used in musical performance with everyday actions. Organists also reap the benefits by thinking about and using healthy rotational habits in their physical gestures at the keyboard. Whether this happens consciously or not, “all keyboard players use rotary movements to bring their hand into playing position with the palm faced down.”² Once the hand is in playing position the question concerning how rotation is used in correlation with the music remains. The next link provides a visual/aural demonstration of rotation. In it, a brief excerpt is played twice, one without and the next with rotation. Notice in the first performance how I rely on “finger technique,” and in the second achieve a different sound from the same instrument through the application of weight transference/rotation. Arabesque (excerpt) from the Twenty-Four Pieces in Free Style, Louis Vierne.

<https://www.youtube.com/watch?v=hnFexIFwh0Y&t=4s>

An organist who plays using rotation is aware of the “weight” that is transferred from the entire playing mechanism through the forearm, wrist, joints and fingertips. The touch used to make this excerpt more lyrical and less “crisp” is “over legato” (or Über

¹ Matthay, 52.

² Matthay, 53.

legato to the German Romantics). Each note is connected to the next in a highly legato manner, and the motion in and out of each key is slow, sometimes to the point of overlap. Rotation pulls the notes of the phrase together with a beginning, high point, and end of the phrase through the physical movement of the arm. Rotation also physically guides the hand and naturally allows freedom of motion between notes. To quote Janette Fishell, “The notes literally ‘ride’ on the line of the motion and rotation ‘rides’ on the line of the gesture or phrase.”³ The timing of the musical line is not just controlled by the fingers but linked to the speed of the rotation(s); for example, the half note at the beginning of the piece has a slower rotational movement because it is longer.

Visible vs. Invisible

The verb “to rotate” is defined by the Oxford dictionary as “to move or cause movement in a circle around a center or axis.”⁴ Rotation is commonly associated with circular motions, but it can also involve unseen movements. Matthay states, “rotation involves repetitions of stress and relaxation.”⁵ This relates to the visible and invisible based on the size of movement that can be seen and the energy used behind the limbs. The energy relates to when we are using “strong versus weak muscles” in the hand.⁶ Could we look at the strong and weak muscles of the hand as serving active versus inactive functions? Matthay states “to turn the hand over into playing position requires the use of both strong and weak muscles, but for the hand to remain in that position, only

³ Fishell, *Insights on Musicality*.

⁴ “Oxford and the Dictionary - Home: Oxford English Dictionary.” *Rotate*, en.oxforddictionaries.com/definition/rotate.

⁵ Matthay, Tobias. *The Visible and Invisible in Pianoforte Technique: Being a Digest of the Author's Technical Teachings up to Date*, Oxford University Press, 1988, 50.

⁶ Matthay, 53.

the weak muscles are needed.”⁷ Is this to say that both strong and weak serve a purpose, because without either being engaged a physical action cannot occur? If this is the case, when do you use one versus the other? Matthay summarized that when a visible action requiring large physical actions is needed, then the strong muscles are active. When the arm is in position and maintaining a light weight to produce a bright and light effect, then the weak muscles are active and strong muscles are inactive. Using either at the wrong time leads to sending the wrong signal to the brain and causing the body to overcompensate. This can lead to unwanted tension and bodily injury.

Rotation and the Arm

A more recent study by Thomas Mark stated, “arm rotation is initiated at the shoulder joint.”⁸ He further clarified “one must be careful to not isolate rotational movements in the shoulder joint, but to evenly distribute the motions between the sternoclavicular joint, as allocated by properly mapping the arm.”⁹ Gary and Miles added that “rotational movement in the shoulder joint is essential for organists to move between keyboards at various heights.”¹⁰ This implies that the whole arm structure is involved in rotational movements. Matthay and Mark agreed regarding the radius movement in the forearm and the purpose of rotation in connection with the fingers. Matthay stated, “when turning the hand into playing position with the palm facing downwards, you turn the outer bone, known as the radius upon the inner bone known as the ulna.”¹¹ See Figure

⁷ Matthay, 54.

⁸ Mark, 79.

⁹ Ibid.

¹⁰ Mark, 75-79.

¹¹ Matthay, 53.

4.1. on the next page for a diagram of the bones. Mark said, “the ulna bone remains stationary while the forearm rotates. Knowing which forearm bone rotates and which is stationary can make the difference between healthy playing habits versus injury.”¹² He further explained that “The forearm permits movement of about 180 degrees from fully supinated to fully pronated.”¹³ Mark suggests “mapping from the top of the hand, rather than the palm side, which encourages the hand to rotate with the radius. Trying to rotate the hand at the wrist always results in strain or inflammation.”¹⁴

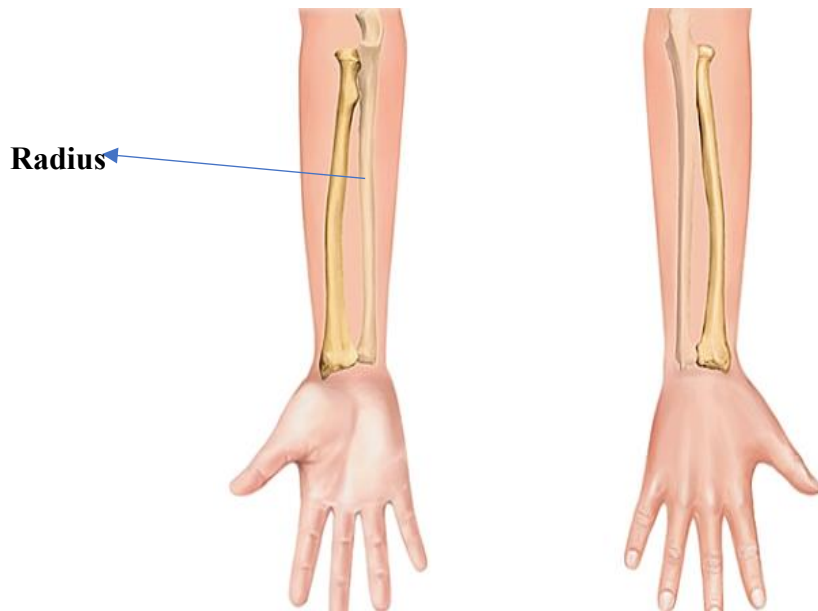


Figure 4.1. Rotation of the Radius and Ulna¹⁵

When organist “mismatch” the forearm bones they are subjected to limited motion and can also injure themselves. Organist are likely to “mismatch” the hand in two ways:

¹² Mark, 83.

¹³ Mark, 80.

¹⁴ Mark, 89.

¹⁵ Jeuge-Maynard, Isabelle. “Radius.” *Encyclopédie Larousse En Ligne*, Éditions Larousse, www.larousse.fr/encyclopedie/medical/radius/15740.

focused toward the thumb or the little finger. Mark suggests, “Thumb-oriented movement directed toward the little finger is harmful versus orientation around the little finger.”¹⁶ Each case concerns how movement is being used or more specifically rotation when playing. Mark called the thumb-oriented movements “ulnar deviation.”¹⁷ This relates to the direction one rotates the hand. A clockwise direction supports ulnar deviation and a counter-clockwise direction supports radial deviation. The latter opens up the hand to more freedom in movement because as discussed in the previous paragraph, it is the radius bone that actually rotates versus the ulna which remains stationary. One begins to access the full benefits of rotation when both the hand and radius move together in a counter-clockwise direction.

Rotation and the Fingers

Concerning the use of rotation in connection to the fingers, Matthey agreed that the motions must correlate with the direction of the music. He said, “The direction of a rotation is always from the last finger used toward the finger being used. Rotation will either involve alternate motion (up and down) or in the same direction. When rotation involves motion in the same direction, one must give special attention to thumb rotating inward when it plays.”¹⁸ Mark states that “rotation is used in conjunction with finger movements.”¹⁹ For example, when rotating inward the little finger is down versus outward where the little finger is up. The Oxford dictionary states concerning rotation

¹⁶ Mark, 84.

¹⁷ Ibid.

¹⁸ Matthey, 56-57.

¹⁹ Mark, 80.

that “movement is organized around the axis of the ulna and little finger.”²⁰ The ulna bone maintains an alignment between the elbow and shoulder line. This why understanding the concept is crucial to hand position and rotation. Mark further stated that “rotation allows the hand to remain centered versus leaning toward the little finger because of its short length causing ulnar deviation.”²¹ As previously mentioned, it is not possible for the fingers to curve and spread at the same time. Yet playing over wide-spread distances are often required in the music while maintaining the shape of the line. This is particularly true for organists regarding the legato touch, which consists of a smooth and connected touch (discussed in the next chapter).

B. The Application of Weight

Applying Pressure to the Key

As previously discussed in Chapter 2, pressure from the fingers begins in the shoulder joint and pressure from the legs begins in the hip joint. A degree of weight behind every finger and pedal note is needed for the organ to sound. One applies weight to the key by the amount of pressure used to play the key and speed of attack.²² For example, one may use more pressure to create a louder dynamic versus a softer dynamic. The arms and feet touch the key first, followed by the motion down or through into the key. Matthay said, “these two actions can be carried out as one event, rather than two separate motions.”²³ The organ’s action – heavy or light – will determine how much weight is needed for accuracy and tone production. Mark suggests that “The finger pads

²⁰ Mark 83.

²¹ Mark, 79.

²² Think of bouncing a ball on the ground: the more force behind the ball, the faster it will fall and the impact is greater when it touches the ground.

²³ Matthay, 65.

are a source of information that receives feedback from the keys.”²⁴ The same applies to the big toe and heel in the feet. Playing different repertoire on the same organ will also require a change of approach – sometimes within the same measure you will use a light and facile touch for clarity on detached lines and a heavy touch for emphatic chords. In summary, the organ’s action and the music’s style will determine how one uses weight.

Style Considerations and Finger Movements

The style of music is another factor that determines how weight is applied. One chooses where to apply weight based on passages that are musically appropriate. Matthay suggested, “Scalar and arpeggio passages that are not too fast.”²⁵ Style and touch directly effects how active or inactive the finger is in every context. It is beneficial to ask does a style warrant more weight and less finger (Arabesque) or more finger and less weight (Pachelbel). When playing a legato line, it is likely that one is more aware of the weight being passed from finger to finger, because the slower tempo allows one to monitor how weight is being distributed. Here the forearm is active and leads the physical direction of the musical line (addressed in the next section on rotation.) In baroque pieces where a lighter touch is used, there is still weight behind the finger, but the finger movements are facile and targeted, and, as in the case of performing delicate ornamentation, “light.” This produces a clear and bright sound that supports the virtuosic passages in Baroque music. In the case of the lightest of touches or “light” actions, Janette Fishell suggests, “One should keep the wrist high and allow the fingers to dangle more freely. The wrist can guide the hand but there is not an actual rotation between smaller musical units

²⁴ Mark, 130.

²⁵ Matthay, 95.

because of the music's nature."²⁶

Pedagogical Discussions on Weight

Weight transference regarding the arms, according to Matthay, is defined as “passing weight from key-to-key using continuous motions and an even amount of exertion.”²⁷ This involves the arm being active in what Matthay refers to as, “rotational stresses of the forearm.”²⁸ The technique also requires the weight to rest on the key. The disadvantage of using weight transference concerns the touch. Since continuity in sound is required, every note will likely sound the same. Mark agreed with Matthay on this, further stating, “the point of sound comes before the key reaches the keybed.”²⁹ This is especially true of organ tone production because on a sensitive tracker action organ we attempt to play the “pluck point” rather than “bed the key.” Knowing the pluck point is key to sensitive attacks and releases. The variable factor pertains to the speed or velocity of attack into the key. Mark said “The speed and only the speed of attack determines the quality of sound.”³⁰

In *Historical Performance Practice in Organ Playing Part II*, Laukvik referred to weight transference when talking about the duration of sound. He included a quote from Hugo Riemann that states, “Hand weight must suffice; that is the wrist is freed up and the hand rests on the fingers, which play down into the key.”³¹ Czerny is also quoted, stating, “weight transference is accomplished by the hand remaining still, while engaging its full

²⁶ Fishell, *Insights on Musicality*.

²⁷ Matthay, 90.

²⁸ Matthay, 91.

²⁹ Mark, 128.

³⁰ *Ibid.*

³¹ Laukvik, *Part 2*, 44.

weight through an inner, invisible pressure.”³² Matthay views align with this statement. Widor gives the following image which suggested “one should think of physically kneading the sound mass.”³³ One must be careful when engaging their weight to err on a light and open position versus cramping or pushing the arms downward. Fishell suggests, “One prepares to play a note by breathing before the attack and playing through the note.”³⁴ The mental preparation regarding weight is essential to positioning the body and carrying out the physical motions as they relate to the music.

³² Ibid.

³³ Ibid.

³⁴ Fishell, *Insights on Musicality*.

Chapter 5: The Purpose of Technique: Facility/Dexterity + Imagination/Expression

A. The Relationship between Physical Motion and Music's Pulse

Thus far, the document has discussed two important areas related to expressive organ performance: the body, its construction and points of balance, and the concept of weight, and weight transference. Now we turn our attention toward how one combines technical freedom and weight transference with understanding music's pulse to project an expressive and thrilling performance. This chapter provides an exploration of touch (i.e. how one depresses and releases the key, in other words, the manner of "articulating" the music), and how touches are linked to the stylistic interpretation of a piece. Refining one's approach to touch, phrasing, and musical timing are essential to mature musical study and a performance, both for the musician and the audience.

Each decision a musician makes starts in the mind and is carried out in the body. For organists, this decision is based around an active or inactive approach at the keyboard, depending on the desired musical result. For example, an over-legato touch requires an inactive finger but active forearm/elbow/shoulder movements; a bright touch requires active fingers but less active shoulder/elbow/forearm movements. Understanding how these actions or inactions affect all of our interpretative decisions is at the basis of this chapter. The previous chapters of this document have established the connection between the body and control of touch. Understanding how each limb works, from the sternum through the arm into the hands, gives the performer access to an array of nuanced touches that can be utilized in the final step of our journey – making beautiful music. Mastering control of one's physical movement is essential to freeing oneself from just the notes on the page toward an artistic display of the composer's intentions. To demonstrate these

concepts, both lyric and perpetual motion styles will be examined from the baroque and romantic repertoire listed below.

Baroque

Nun Bitten Wir den heiligen Geist, BuxWV 208 Dieterich Buxtehude (1637-1707)

Tocatta in E minor Johann Pachelbel (1653-1706)

Romantic

From Vingt-quatre Pièces en style libre pour Orgue ou Harmonium, Op. 31

No.15 Arabesque(1913) Louis Vierne (1870-1937)

From Six pièces d'orgue: avec pédale obligée

No.6 Grand chœur dialogue(1881) Eugène Gigout (1844-1925)

B. Creating Dynamics through Touch:

Baroque Touches: The Many Shades of “Ordinary Touch”

Ordinary- a joining of the notes between non-legato and staccato. Janette Fishell suggests, “Many dynamic gradations are possible and the degree of separation will then have much to do with creating accent in the music.”¹ Scholars often compare Baroque articulation to vocal and woodwind tonguing techniques from that period.

Groupings of Notes/ Slurring- while Ordinary Touch is the “usual” method of playing music, exceptions abound, and legato playing was known. This applies to groups of 2 or more notes and can be traced back as far as Samuel Scheidt’s organ pieces, in which he uses slurs to imitate string bowings with the inscription “imitation violinistica.”²

¹ Fishell, Insights on Musicality.

² Brock, 139.

Pulling Out, or “*schnellen*”³ where the finger draws back rapidly toward the palm of the hand to achieve brightness and clarity. The wrist maintains a high position and the fingers swing from the knuckle toward the palm.

Vibrated Non-Legato- a fast and firm attack from the first finger joint supported by small impulses delivering weight to the finger from the forearm/shoulder unit. In this touch the wrist moves up and down as the weight is transferred. Janette Fishell gives the following insights, “While a sensitivity to nuanced, ‘cushioned’ key releases is a hallmark of Baroque Ordinary Touch, there are instances when for various reasons a performer must play with a larger degree of weight transmitted from the forearm through to the finger. This could be due to heavy organ actions or to secure a particularly difficult musical passage. In these instances, it’s possible to sense pulses that transmit support to the finger or hand. This touch has been termed “vibrated”⁴ and it can be used in either legato or non-legato touches. In the context of Baroque music we limit ourselves to the non-legato variety, and emphasize that is the exception, rather than the rule, to how one approaches achieving control and clarity.”⁵

Romantic Touches: The Wide-Range Possibilities in the Realm of “Legato Playing”

Legato- “Notes are connected with no discernible space between them or overlap between attack and release. This is the Romantic “default touch” when none is noted, either in a direction by the composer or as implied by the style (i.e. the brilliant touch of the

³ Laukvik part 1, 26. “*Schnellen*” –The drawing back of the finger, and the rapid transfer thereby effected of the force of one finger to that following, produces the highest degree of clearness in the attack of single notes, so that every passage performed in this manner sounds brilliant, rolling and rounded, as if each note were a pearl.

⁴ Matthay, *The Visible and Invisible in Pianoforte Technique*, 27.

⁵ Fishell, *Insights on Musicality*.

toccata genre).”⁶ There is an evenness of touch as each note is depressed. The release falls on the slower end of the spectrum.

Over Legato- a simultaneous slow release of one key and slightly slow or “inactive” playing of the next, producing a degree of overlap. It is often noted in the score as “legatissimo.”⁷ One can vary the attack by the finger speed into the key.

Bright or Clear Legato- an attack that reflects an articulate (“bright”), yet still connected, sound. This touch is useful when a basic legato touch needs more clarity. Most appropriate for quick finger movements.

Non-Legato or Staccato- detached with gradations in the speaking length of a note from short to very short. The range varies from a light to sharp attack of the key.

Detached Chords- according to Wilma Jensen, “A physical approach using impulses from the arm that moves upward and forward allocated through an unlocked wrist position. The shape of the chord is set in the hand before playing and the forearm carries through the direction of the chord.”⁸

Vibrated Legato- similar to vibrated non-legato, but in this instance the notes remain connected.

The Concept of “Implied Dynamic” and Touch:

It has been said that the pianists are concerned with the attack of the key and the organists are concerned with the release. The way in which the player releases the note in correlation to adjacent notes reveals the perceived “touch.” An accented note is likely to have a sharp release and an unaccented note a soft release. Baroque touches support a

⁶ Ibid.

⁷ Ibid. “Legatissimo” representing the closest degree of connection in legato touches.

⁸ Jensen, 4. “Detached Chords”

firm release of the finger from the knuckle versus legato touches, using a softer release supported by the arm and hand. When the player applies loud or abrupt releases in a legato context it will likely disturb the natural flow of the music. One must ask is this intentional and does it align with what the music reflects?⁹ Janette Fishell gives the following commentary, “It is one of the ironies of articulation at the organ that a short note can sound both loud or soft, depending on factors such as the quality of the release (e.g. a harsh release may sound like an accent whereas the same length of note may sound soft if released gently), note duration, general tempo and the presence of rubato, among other contextual properties. Certain “stock figures,” such as slurs, have an almost universal property of producing an accent on the first note and a non-accent on the final note(s) but all touches can, at times, be used as a mean to emphasize or de-emphasize. The art of interpretation is developing a convincing plan for what one wants to convey, and then using touch as an important vehicle for projecting the dynamic quality of the music.”¹⁰ To summarize, the musical and rhetorical figures (later addressed in the pieces chosen for the document) determine the dynamic within the context of what the artist wants to say.

⁹ A similar question can be asked concerning baroque articulation and the use of legato out of context. How does it affect the music?

¹⁰ Fishell, Insights on Musicality.

C. How Timing and Touch Reflect Musical Shape

Baroque Pieces

Table 5.1. Nun Bitten Wir den Heiligen Geist- Dieterich Buxtehude

Touch Concepts	<ol style="list-style-type: none">1. Ordinary Touch2. Baroque Slurring3. Articulation's Affekt: Subtle and lyrical
Timing Concepts	<ol style="list-style-type: none">1. Timing of the finger which swings from the knuckle.2. Slow attacks into the key with a clear release.3. Metrical strong versus weak beats.4. Timing the rhetorical gestures.
Physical Movement Questions	<ol style="list-style-type: none">1. What are the prepared hand-shapes?2. Are the fingers active or inactive?3. Does the music require small or large physical motions?
Summary	The spaces between note grouping and motifs following the ties requires special attention. See Appendix for listing of ornamental figures.

Table 5.2. Toccata E Minor- Johann Pachelbel

Touch Concepts	<ol style="list-style-type: none">1. Ordinary touch: Vibrated.2. Pulling Out Touch.3. Articulation: Weighted and Bright.
Timing Concepts	<ol style="list-style-type: none">1. Timing of the finger which swings from the knuckle.2. Fast attack and release.3. Metrical strong versus weak beats.4. Timing the rhetorical gestures.
Physical Movement Questions	<ol style="list-style-type: none">1. What are the prepared hand-shapes?2. Are the fingers active or inactive?3. Does the music require small or large physical motions?
Summary	<p>More than one touch at a time is required to clearly project the counterpoint. The heavier touch requires the full weight of the hand and the lighter touch requires the hand to be weightless with the wrist in a high position.</p>

Romantic Pieces

Table 5.3. Arabesque- Louis Vierne

Touch Concepts	<ol style="list-style-type: none"> 1. Legato: over legato 2. Continuous Legato Slurs 3. Articulation: non-articulate while implementing a clear legato to 16ths. Emphasizes on the first 16th supports the clarity.
Timing Concepts	<ol style="list-style-type: none"> 1. Timing of the rotation determines length of note 2. Slow attacks and releases 3. Legato phrasing achieved through emphasizing the downbeat without a break between phrases. 4. “Agogic”¹¹ accent as another means of defining phrases.
Physical Movement Questions	<ol style="list-style-type: none"> 1. What are the prepared hand-shapes? 2. Are the fingers active or inactive? 3. Does the music require small or large physical motions?
Summary	<p>In the score, the composer has indicated “continuous legato slurring” over each phrase.¹² According to the performance practice of French Romantic organ playing, placing an emphasis on the beginning of each phrase allows one to distinguish the phrases without breaking the legato.¹³</p>

¹¹ Thiemel, Matthias. “Agogic.” *Grove Music*, 8 July 2019, www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000000296?rskey=20mp5z.

¹² Laukvik, Part 2, 239.

¹³ Laukvik, Part 2, 275-76.

Table 5.4. Grand chœur dialogue- Eugène Gigout

Touch Concepts	<ol style="list-style-type: none"> 1. Detached Chords. 2. Expression marks: staccato, slurs, and tenuto marks. 3. Articulation: accent on downbeats and differentiate between slurs and staccatos. 4. Is a staccato an articulation mark or dynamic indication?
Timing Concepts	<ol style="list-style-type: none"> 1. Timing of the rotation determines length of chord. 2. Fast attacks and releases except for longer note values. 3. Strong accent on the downbeat of each phrase.
Physical Movement Questions	<ol style="list-style-type: none"> 1. What are the prepared hand-shapes? 2. Are the fingers active or inactive? 3. Does the music require small or large physical motions?
Summary	<p>In the score, there are clues that suggest articulate playing indicated by the expression marks over every note. The information in the score is supported by Gigout’s recording of the piece.¹⁴</p>

¹⁴ Gigout Eugène. “Grand chœur dialogue.” *BRITANNIC ORGAN (THE)*, Vol. 4, <https://bsu-nml3-naxosmusiclibrary-com.proxy.bsu.edu/catalogue/OC843>. Oehms Classics, 2012. CD.

D. The Levels of Shaping

Nun Bitten Wir den Heiligen Geist

Concepts: <https://www.youtube.com/watch?v=Oa3FjbumIe0>

Piece: <https://www.youtube.com/watch?v=qfleF1TkhSI&t=10s>

Score: [http://imslp.eu/files/imglnks/euimg/7/70/IMSLP484237-PMLP23919-46_56aa-PMLP12576-Dietrich_Buxtehude_-_S%C3%A4mtliche_Orgelwerke_\(Hedar\),_Vol._4_\(music_only\),_as_scanned.pdf](http://imslp.eu/files/imglnks/euimg/7/70/IMSLP484237-PMLP23919-46_56aa-PMLP12576-Dietrich_Buxtehude_-_S%C3%A4mtliche_Orgelwerke_(Hedar),_Vol._4_(music_only),_as_scanned.pdf)

Tocatta E Minor

Concepts: <https://www.youtube.com/watch?v=kRn92bqZUpI&t=14s>

Piece: <https://www.youtube.com/watch?v=yDomTp9gv1s>

Score: http://ks4.imslp.info/files/imglnks/usimg/d/d9/IMSLP452997-PMLP733612-10.9_toc_IMSLP02652-Pachelbel_-_Toccatas.pdf

Arabesque

Concepts: <https://www.youtube.com/watch?v=hh3ERb2JmJY&t=7s>

Piece: <https://www.youtube.com/watch?v=zkrDg7FzniU>

Score: http://ks.imslp.info/files/imglnks/usimg/5/5e/IMSLP133893-WIMA.1f53-Vierne_Pieces_Style_Libre2_15_Arabesque.pdf

Grand chœur dialogue

Concepts: <https://www.youtube.com/watch?v=dtceKWkMxHo>

Piece: <https://www.youtube.com/watch?v=LpPtsizu3Yo>

Score: http://ks.imslp.info/files/imglnks/usimg/2/23/IMSLP130184-WIMA.b88d-Gigout_Gr_Choeur_Dialogue.pdf

Conclusion: The Musical Goal in Progress

A. It Takes the Whole Body

In the first chapter of *What every Pianist Needs to Know about the Body*, pedagogues Roberta Gary and Thom Miles state in their commentary for organists, “Playing the organ comfortably and efficiently requires whole-body awareness, inclusive attention from head to toe and from fingertip to fingertip.”¹ Gary emphasizes that one’s position on the organ bench is critical because organists cannot plant their feet on the floor like pianists. The position and height of the bench are equally critical as described at the beginning of Chapter 2. In the upper body, one’s center of gravity begins in the sternum and extends outward through the shoulder joint. The head balances on top of the spine just as the upper body balances on top of the pelvis. If the body’s position doesn’t allow optimal freedom of movement restrictive motion is likely to occur, resulting in the player projecting unnatural movements. This is caused by a sense of imbalance and produces strain on the limbs and muscles. Often musicians attempt to “fight through” this scenario rather than re-aligning the points of balance, which are described in Chapter 2. Taking a moment to gain feedback from the body is vital to the longevity of a player’s career. As one’s body experiences change throughout a lifetime of playing the organ, adjustments will need to be made to maintain healthy posture and playing habits. After all, one’s greatest teacher is the body itself, and it can teach us to avoid or correct problems such as misalignment and undesired tension. Therefore it’s obvious that our goal should be to prevent injury and modify awkward motions at the outset of our careers! These concepts are at the base of all technique and physical requirements one utilizes to play the organ. Only from this point

¹ Mark, 8-9.

can the proper technical “choreography” take place, enabling organists to achieve desired musical goal.

B. Unlocking Technique for A Musical Purpose

In Tobias Matthay’s summary of *The Visible and Invisible in Pianoforte Technique*, the meaning of technique, mental preparation, and knowing how to produce the desired sound are emphasized as necessary skills for the player.² Technique is only as useful as its intended purpose. One’s musical intentions have an impact on the decisions made by the player. Prior to these decisions being made, the player goes through a mental process both away and at the keyboard. Concepts such as style, touch, timing, and phrasing are a part of the player’s mental thought. Mapping the proper hand and foot positions is also critical to naturally achieving the desired sound or more specifically touch. Where exactly do the motions begin? It may be the sternum connected to the shoulder joint for the hands or the pelvis and hip joint connected to the legs for the feet. Understanding the playing motors outlined in Chapter 3 gives insight into the specific use of the arm, hand, and fingers in the process of playing the organ, and where the initial movement or impulse that eventually ends with the depression of a key begins. Applying weight and rotational concepts from Chapter 4, allows one to incorporate natural motions into playing. Research supports that humans use rotation in our daily lives without knowing; discovering how to incorporate this habitual action into playing is the challenge. Recognizing how one’s body can work in harmony with our instrument’s demands is key to determining the amount of energy needed to play. We are not all the same from a physical perspective, therefore what constitutes

² Matthay. “Epitome.” *The Visible and Invisible in Pianoforte Technique*.

‘good use’ may look slightly different for each individual. This is a highly personal and life-long journey, but one that is infinitely worthwhile because it leads to healthy playing habits at the organ.

C. What Does the Artist Want To Say?

The celebrated conductor Nikolaus Harnoncourt stated, “We have to know what music intends to express to understand what we want to say with it.”³ A central question within this document concerns the very matter of what it is an artist wishes to express. Harnoncourt, who has devoted his life to authentic performances of the Baroque and Classical orchestral music, gives insight as to where one might find answers to this question. The organ field benefits from exciting research by contemporary scholars who shed light on performance practice issues spanning the full history of our instrument. Learning more about the music increases the likelihood that decisions we make regarding musical choices and the physical movements needed to achieve them will be based on firm ground, leading to an outcome rooted in both information and musical intuition. Further, musicians possessing the ability to fully explore nuance in touch are freer to experiment with decisions in music, as was shown in regard to rhetorical and ornamental figures of Buxtehude’s *Nun Bitten Wir den Heiligen Geist*, *BuxWV 208*. In Vierne’s work the student will use these insights to find expressive and convincing ways to phrase, and in the extrovert, perpetual motion works by Gigout and Pachelbel we are asked to consider how a variety of touches are produced and the role that meter plays in showing important points in the music’s structure. In each case, applying a particular touch through the finger or foot,

³ Harnoncourt, Nikolaus, and Reinhard G. Pauly. *Baroque Music Today: Music as Speech*. Amadeus Press, 1988. 23.

initiated by the supporting joints and aligned through proper body usage, sets one up for musical success. This is the artist's primary physical tool of expression which is at its best when combined with the all-important musical concept, starting in the imagination and informed by research. While much more can be said on any of these topics, the exploration of fundamental concepts demonstrated by the four contrasting pieces serve to offer insights regarding how to procure a desired touch in relation to musical style. The information one gleans will both solidify approaches or beliefs while also raising new questions regarding one's interpretative decisions. When such concepts are internalized, one becomes enabled to create music that combines the voice of both performer and composer.

Appendix: List of Rhetorical Gestures

Nun Bitten Wir den Heiligen Geist, BuxWV 208 Dieterich Buxtehude

Pick-up Measure	<i>Accentus</i> - “a slide figure following a dotted note.” ¹
m.1 beat 4	<i>Tremulus ascendens</i> – “a trill beginning on the main note with the note above.” ²
m.2 (a) beat 2	<i>Gropo</i> - “a four-note motif in arch formation with a common first and third note.” ³
m.2 (b) beat 4	<i>Gropo ascendente</i> – “a four-note motif in arch formation where the fourth note ascends.” ⁴
m.3 beat 3	<i>Tremulus descendens</i> - “a trill beginning on the main note with the note below.” ⁵
m.4 (a) beats 1-2	<i>Anabasis</i> - “an ascent or sense of elevation toward heaven through a rising musical line.” ⁶
m.5 beats 2-4	<i>Vorimitation</i> - “a passage of imitative counterpoint that anticipates a cantus firmus, based on all or some of its notes in rhythmic diminution.” ⁷
m.10 beat 4	<i>Circulatio</i> - “a short group of notes which ends on the note with which it began” ⁸
m.11 beats 1-3	<i>Messanza</i> - “a series of four notes of short duration, moving either by step or by leap” ⁹
m.22 beats 3-4	<i>Corta</i> - “a three-note figure in which one note’s duration equals the sum of the other two.” ¹⁰

¹ Laukvik, 143.

² Laukvik, 141.

³ Bartel, Dietrich. *Musica Poetica: Musical-Rhetorical Figures in German Baroque Music*. University of Nebraska Press, 2009. 299-305.

⁴ Bartel, 303.

⁵ Laukvik, 141.

⁶ Bartel, Dietrich. 192-193. Refer to chorale text for word image.

⁷ Grove Music. “Vorimitation: Grove Music.” Vorimitation | Grove Music, Oxford University Press, 10 July 2019, www.oxfordmusiconline.com/grovemusic/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000029687.

⁸ Bartel, 229-231.

⁹ Bartel, 330-331. 17th century German theorist, Wolfgang Caspar Printz noted six hundred four-note *messanza*.

¹⁰ Bartel, 245-246.

m. 25 beats 3-4	<i>Catabasis</i> - “a descending musical passage representing lowly or negative.” ¹¹
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¹¹ Bartel, 225-227. Refer to choral text for word image.

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