PERFORMER’S GUIDE TO THE EXECUTION AND APPLICATION OF
KAREN TUTTLE’S COORDINATION, AS APPLIED TO
ERNEST BLOCH’S SUITE HÉBRAÏQUE

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Legendary violist and pedagogue Karen Tuttle developed a new approach to playing the viola known as Coordination. Coordination consists of a deep emotional connection to music, as well as highly specific motions of the body. This document details the execution of the physical motions of Coordination, through written descriptions and multimedia examples. A detailed discussion of the application of the motions is presented, using notated examples from Ernest Bloch’s *Suite Hébraïque*. 
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CHAPTER 1
INTRODUCTION

World-renowned violist and pedagogue Karen Tuttle used the term Coordination to describe her approach to playing the viola. Coordination represents many aspects of playing including "stance, balancing the instrument, physical releases, musical impulses, and emotional responses to the music." It is the synthesis of ideas gleaned from her interactions with William Primrose, Marcel Tabuteau, Alexander Schneider, Pablo Casals, Demetrios Constantine Dounis, and Wilhelm Reich.

The development of Coordination began in the 1940s when Tuttle began studying with violist William Primrose at the Curtis Institute of Music. Through her studies with Primrose, Tuttle learned how to approach the viola in a relaxed and natural way. During this time, Primrose selected Tuttle to be his teaching assistant at Curtis, which led to the beginning of her teaching career. Some of Tuttle’s ideas about phrasing stem from her time collaborating with Marcel Tabuteau, former principal oboist of the Philadelphia Orchestra, and former faculty member at Curtis. Tabuteau introduced Tuttle to his concept of grouping, a numbering system that indicates how notes are organized within a phrase.

Tuttle’s sense of musicality was greatly influenced by violinist Alexander Schneider. Tuttle first met Schneider in 1950 when she was auditioning for the Prades

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1 An alternate spelling, Co-ordination, also appears in the writings of Dew and Reiter.
2 http://Steinhardt.nyu.edu/music/strings/programs/summer/tuttle.
3 Rodland, In Honor, 46.
4 Ritscher, Interview, 86.
5 Rodland, In Honor, 46.
festival, and later they played together in the Schneider Quartet.\(^6\) Despite the fact that they spent a majority of their time together arguing, Tuttle highly regarded Schneider’s musicianship, and often spoke of the immense impact he had on her playing.\(^7\) Tuttle met cellist Pablo Casals at the 1950 Prades festival, and studied with him for six months afterward.\(^8\) As a result of her studies with Casals, Tuttle began to prioritize emotional expression in her playing, and learned that physical pain was unnecessary.\(^9\)

In the 1950s Tuttle studied with Demetrios Constantine Dounis, a respected violin player, pedagogue, and physician. Because of his medical training, Dounis understood the importance of physical balance, and could also explain the physical mechanics of playing a stringed instrument. This helped Tuttle to understand many of the technical skills she had learned from Primrose and Casals.\(^{10}\) In addition to studying the physical aspects of playing the viola, Tuttle also explored the emotional aspects of making music, guided by the writings and ideas of psychoanalyst Wilhelm Reich. Reich’s writings helped Tuttle to refine her ideas about character, and to relate the concepts of tension and release to playing the viola.\(^{11}\) The ideas of Reich also inspired her to create the list of emotions that she used as a teaching tool\(^{12}\).

Tuttle encountered intense resistance from the string community when she began teaching her ideas about Coordination in the 1950s. Part of this resistance was due to Coordination’s departure from Galamian violin school traditions. Tuttle

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\(^6\) Hanani, *Intuitive*, 309.
\(^7\) Dane, *Coordinated Effort*, 17.
\(^8\) Ritscher, *Interview*, 87.
\(^9\) Ibid, 87.
\(^{10}\) Dane, *Coordinated Effort*, 12.
\(^{11}\) Ibid, 16.
\(^{12}\) See Appendix B.
encouraged her students to explore technical and emotional elements of their playing, while Ivan Galamian dictated every aspect of playing, including interpretation. Tuttle was also highly analytical of the technical aspects of playing, and the great string virtuosos of the time objected to this. According to Tuttle, these players didn’t want to study and verbalize what they were doing because, they were afraid it would negate their intuition.

Another reason many people rejected Coordination was the inclusion of emotion and sexuality as topics, which were considered inappropriate for discussion at this time. Additionally, Tuttle encouraged students to seek comfort and physical health with the instrument during a time when the general philosophy was “no pain, no gain.”

Eventually the opposition to Coordination escalated to the point that the administration at the Curtis Institute of Music required Tuttle to alter the way she was teaching. Despite all of the early resistance, Tuttle and her students achieved great success, and Coordination eventually became widely respected in the string community.

The benefits and success of Coordination have been well documented. Coordination is frequently associated with the benefits of “pain-free playing,” and a “vibrant and open sound.” It is now in use worldwide by soloists, chamber musicians, and orchestral players, and is taught in leading conservatories and universities.

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13 Dane, Coordinated Effort, 37.
14 Ibid, 36.
15 Ibid, 36.
17 Ibid, 36.
18 Weinberger, Body and Soul, 67.
19 Fielding, AVS Chapters, 52.
throughout the world. The principles of Coordination are also taught at the annual Karen Tuttle Coordination Workshop by Tuttle’s former students, most recently including Sheila Brown, Susan Dubois, Jeffery Irvine, Kim Kashkashian, Michelle LaCourse, Lynne Ramsey, Karen Ritscher, and Carol Rodland.

Despite the success and popularity that Coordination has achieved, there are several problems that threaten its continued growth and longevity. The first problem lies in the difficulty of communicating the more abstract elements of Coordination’s fundamental concepts, such as impulses, releases, and emotions. As Robert Dew stated, “Coordination probably cannot be taught— not, at least in the usual didactic sense. The release, for example, is not entirely accessible through verbal description, any more than mathematics can fully capture the flight of a bird.”

The second problem is that there is a limited amount of published material that explains how Coordination is executed. Although sources on the motions of Coordination exist, a comprehensive pedagogical resource is lacking. As a result, the study of Coordination is currently limited to those who have the opportunity to study with one of Tuttle’s former students, or to attend a Coordination Workshop.

The final problem is that Coordination is not a traditional method with progressive systematic steps. Instead, it “is built on the tenet that both the end results and their means will be unique for every student.” Because of this, Tuttle’s teaching methods varied, and her students learned the components of Coordination in different orders, at

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20 Dane, *Coordinated Effort*, 39.
21 http://Steinhardt.nyu.edu/music/strings/programs/summer/tuttle.
23 http://Steinhardt.nyu.edu/music/strings/programs/summer/tuttle.
different points in their studies, with different pieces of music, and through different styles of teaching. This was documented in Matthew Dane’s interviews with several of Tuttle’s former students. Dane found that each of their experiences were “related and yet distinct.”

Coordination may seem impossible to document because of its flexible and abstract nature; however, formal study of Coordination has begun. As Dew stated, “While we recognize that a certain variability is inevitable in biological mechanical systems, it is also true that the laws of physics cannot be repealed; all fine players must ultimately be doing the same kinds of things physically.”

Many authors including Matthew Dane, Robert Dew, Hannah Hanani, Emmanuella Reiter, Karen Ritscher, Karen Tuttle, and Rozanna Weinberger have described the prerequisite techniques necessary to enable the study of Coordination. Their writings have included detailed descriptions of the posture, instrument position, and bow hold advocated by Tuttle. A smaller body of literature has focused on the execution of Coordination. From this body of literature it is apparent that the execution of Coordination includes two key areas: emotion and motion.

Those who practice Coordination seek to establish an emotional connection with their music, and to convey their ideas to the listener. Tuttle encouraged her students to have a specific emotion in mind during every moment of their playing, and for inspiration provided them with her list of emotions. Tuttle also believed performers

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25 Dane, Coordinated Effort, 53.
26 Dew, In Response, 838.
27 Dane, Coordinated Effort, 19.
29 Ibid, 62.
needed to develop their own emotional awareness, and encouraged them to “journey inward, in order to live fuller, richer lives and thereby enhance the power of their artistic expression.”

The motions of Coordination allow the emotional intentions of the performer to become audible to the listener. As Dane stated, “The physical and musical serve to transmit the emotional.” The motions of Coordination include bow changes, body movements, repull, and releases (of the legs, neck, back, pelvis, shoulders, and abdomen). Early Coordination research presented detailed information about the execution of the motions; however, each of these studies examined only a small number of motions. Because of this, the ability to see how the motions work as a system is limited.

The writings of Dane and Reiter looked at Coordination from a more comprehensive perspective. Tuttle’s influence on the current generation of leading teachers of her lineage was the main focus of Dane’s study. Consequently, the motions of Coordination were mentioned in a brief, summarized way lacking the detail necessary to be used as an educational tool. Reiter’s document was created to be an educational resource, and possesses many strong attributes, including excellent photographs and video of Tuttle playing and teaching. However, Reiter’s dominant focus was on bow changes, repull, and neck releases. More information is needed about the use of the body, and how the motions of Coordination connect.

Several of Tuttle’s students have acknowledged that they used score markings to indicate where to apply each aspect of Coordination. Susan Dubois described the

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30 Rodland, *Master Class*, 47.
31 Dane, *Coordinated Effort*, 25.
markings in her music and stated that they “[look] like a roadmap—marks for the neck release, arrows for phrase direction, roller coaster curves going to or through notes, and undulating mountains and valleys to remind me to fill up notes.”

Reiter presented three brief score examples of how Coordination could be applied visually to the music; however, she did not provide commentary to explain her choices. Therefore, it would be difficult for someone new to Coordination to apply her ideas about the motions beyond these few examples.

The only true primary source, Tuttle, passed away in 2010 and left behind a very small amount of documentation about Coordination. Creating more documentation focused on the execution of Coordination will preserve the remaining authenticity of Coordination for future generations of students, and will also open the study of Coordination to a much broader population.

The purpose of this document is to provide a comprehensive educational guide to the motions of Coordination. This guide is meant to serve those performers and teachers who seek to learn or to teach the motions of Coordination. Chapter 2 details prerequisite motions that are essential to facilitate Coordination study, and contains photo and video examples, as well as suggested exercises for implementation. Chapter 3 describes the execution of the motions of Coordination, and provides photo and video examples. Chapter 4 contains a detailed discussion of the application of the motions of Coordination to the first movement of Ernest Bloch’s Suite Hébraïque, as well as musical examples with the motions indicated. Additionally, a complete application of the motions to the Bloch appears in Appendix A.

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32 Dane, Coordinated Effort, 46.
33 Reiter, Karen Tuttle’s Heritage, 39, 68.
Suite Hébraïque has been chosen to demonstrate the application of Coordination for several reasons. First, this piece is part of the standard repertoire for the viola. Second, Suite Hébraïque is frequently used to introduce students to Coordination because of its diverse technical and musical demands. Finally, the difficulty level of Suite Hébraïque is well suited to the undergraduate music major, the targeted ability level of this guide.

This guide provides only an introduction to the execution of the motions of Coordination and is not intended to be an attempt to standardize their use, or to suggest that there is only one correct way to perform these motions. Coordination is typically introduced at the advanced level, although many of the skills are applicable to the beginning or intermediate student. This guide will be most helpful to players who have no major deficiencies in their fundamental technical skills.
CHAPTER 2
PREREQUISITE TECHNIQUE

There are several fundamental techniques that must be adopted in order to execute physically the motions of Coordination. These techniques relate to: stance, breath, bow hold, arm weight, and muscular activity. In this chapter, these essential techniques are described, and a suggested exercise for implementation of each technique is included. Readers are advised to work through each section with their instrument, practicing each exercise until it feels natural. This may take several practice sessions. It is the intention that the information in this document will make these techniques familiar; however, to develop true mastery formal study is recommended.

Stance

To have freedom of motion and expression, playing with a balanced stance is essential. In a balanced stance, the muscles support the body without being tense or limp. The feet are hip-width apart and the body weight is centered between the heels and the balls of the feet. If it is more comfortable, either foot may be placed slightly forward.34 The body is stacked vertically so that the heels, ankles, knees, pelvis, spine, shoulders, and head all align.35 The neck should not crane forward or backward, or twist to the left to hold the instrument. Instead, the head should be allowed to look forward, and the jaw should be placed on the chinrest. This position allows the natural weight of the head to balance the instrument.36 This position should feel comfortable, and there

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34 Dane, Coordinated Effort, 28.
35 Reiter, Karen Tuttle, 6-9.
36 Ibid, 6-9.
should be no space between the neck and the instrument. A different chin-rest or shoulder-rest may be needed to achieve a proper fit.

Example 1. Picture of the Balanced Stance.

To implement this into your playing, begin by finding the balanced stance and then practice taking your instrument on and off of your shoulder without altering your stance. When this can be achieved easily and is comfortable, practice playing long bows on open strings and then progress to simple scales.

Breath

Breathing is an important component of free musculature and refined sound production, but is often overlooked or neglected by string players who tend to take sudden and shallow breaths. There should be a continuous cycle of inhaling and exhaling the breath while playing, and each breath should include the diaphragm. Tuttle
attributed inhibited breathing to tension and fear.\textsuperscript{37} She believed that inhibited breathing resulting from tension could be corrected through awareness and focused practice. However, eliminating the root cause of inhibited breathing stemming from fear would require the help of a psychotherapist.\textsuperscript{38}

To improve your breathing, begin by noticing how your stomach and chest rises in response to inhaling and falls in response to exhaling. Then progress to playing slow scales in which you allow an inhale to lead the up-bows and an exhale to lead the down-bows. Please note that this is an exercise for improvement of breathing, and that the breath does not permanently need to be choreographed into your playing. Practice this exercise only for a small amount of time so that you do not experience lightheadedness.

**Bow Hold**

In order to achieve a balanced and flexible bow hold, Tuttle incorporated elements of both the French and Russian bow holds.\textsuperscript{39} In Tuttle’s bow hold, the tip of the thumb is placed next to the frog and directly under the second finger creating a circular shape.\textsuperscript{40} The first three fingers wrap over the stick on or just behind the knuckles closest to the fingertip, while the pinky and thumb rest on their tips.\textsuperscript{41} The fingers are spaced naturally and comfortably apart, and the arm is slightly pronated. While playing, the middle and ring fingers are engaged so that they stabilize the frog.

\begin{flushright}
\footnotesize
\textsuperscript{37} Dew, In Response (2), 940. \\
\textsuperscript{38} Ibid, 940. \\
\textsuperscript{39} Reiter, *Karen Tuttle*, 22. \\
\textsuperscript{40} Dew, *Instinctive* (2), 938-9. \\
\textsuperscript{41} Reiter, *Karen Tuttle*, 23.
\end{flushright}
The hand should remain flexible at all times to allow the angle of the fingers to change in response to playing in different parts of the bow.

Example 2. Picture of the Bow Hold.

Example 3. Picture of the Bow Hold.
To implement this bow hold, hold your bow with your left hand and place your right hand gently on the bow. Prepare the bow hold, then remove your right hand from the bow, and repeat the process. When this becomes easy, practice playing open strings in the lower half of the bow and then progress to simple scales. Check the placement of your fingers frequently to ensure they remain in the desired position. As you progress, begin to expand your bow stroke into the upper half of the bow by extending the arm and fingers.

Arm Weight

By using the right arm’s natural weight, it is possible to produce a deep, intense, and sustained sound in any dynamic and with physical ease. To achieve this, the elbow is kept at the approximate height of the wrist and the muscles of the shoulder are released, which allows the weight of the entire arm to rest on the bow without needing to use force. Because every person is different, it is not possible to define an exact height or angle of the arm; however, this position can be found through experimentation.

To find your arm’s natural weight, place your bow on the string at the balance point and bring your elbow to the height of the wrist level. Engage your fingers only enough to prevent dropping the bow and ensure that the muscles of your arm, hand, and back remain relaxed. From this position experiment with raising and lowering your elbow a few degrees until you feel the weight of your entire arm transferring through your hand and fingers, onto the bow, and into the string. Practice this by bowing on an open string in the lower half of the bow while maintaining your arm and hand weight.

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42 Dane, Coordinated Effort, 30.
43 Dew, Instinctive (2), 936. Please note that the shoulder includes the collarbone, shoulder blade, and upper arm.
Because you will be playing with more weight on the bow, you may also need to adjust your bow speed to achieve a desirable tone.

Example 4. Picture of Bow Arm Height.

Because the bow weight is distributed with more weight at the frog and less at the tip, there is a natural unevenness in volume that must be compensated for in order to achieve an evenly sustained sound throughout the bow. To compensate for the decay at the tip, the elbow is brought higher in the upper half of the bow, which allows more of the arm’s natural weight to transfer onto the bow, and into the string.\textsuperscript{44}

\begin{flushright}
\textsuperscript{44} Dew, \textit{Instinctive (2)}, 936.
\end{flushright}
Example 5. Video of the Down-Bow Arm Motion.

Example 6. Video of the Up-Bow Arm Motion.
To practice an evenly sustained down-bow, place your bow in the lower half and find your arm’s natural weight. Begin a down-bow and after you cross into the upper half, slowly and gently raise your elbow. You may need to try this exercise a few times to determine how much or little your elbow needs to be raised. Once these bowing techniques can be done with ease, apply them sequentially to open strings, and work up to a simple scale.

Muscular Activity

The Reichian concept of tension and release is a core component of Tuttle’s pedagogy.\textsuperscript{45} The idea of tension and release includes both emotional and physical sensations; however, to stay within the scope of this document, only the physical motions will be discussed. The word tension is misleading when it is used to describe the physical motions, and needs clarification. The desired goal is to engage the muscles, allowing them to create movements that reflect the desired musical intensity, which creates musical tension in the phrase. The muscles should never be tensed or squeezed. For the purposes of clarity, in this document the word tension will be replaced with the word engage.

Releasing the muscles can also help release the musical tension in a phrase, and facilitate a flowing and deep sound. The word release is also somewhat misleading, as the muscles should never be allowed to release so much that they become lifeless and cause the body to droop.\textsuperscript{46} A continued discussion of engaging and releasing the muscles will be discussed in detail in chapters 3 and 4.

\textsuperscript{45} Dane, \textit{Coordinated Effort}, 23.
\textsuperscript{46} Dew, \textit{Instinctive (1)}, 837.
As a preparatory exercise, practice engaging your abdominal muscles slightly inward and then squeezing them to the point of tension. Notice the difference between engaging and tension. Then, engage your muscles and release them. Experiment with how much you can release before your posture droops. In a simple scale, try engaging your abdominal muscles on the up-bows, and releasing them on the down-bows.

Before beginning study of the next chapter, it is imperative that you incorporate the technical elements detailed in this chapter into your playing. As each individual element is mastered, it should be combined with another until you are able to play a simple scale incorporating all of these elements. Once this can be accomplished, study of the motions of Coordination can begin.
CHAPTER 3
MOTIONS OF COORDINATION

The motions of Coordination include small movements throughout the body that result from engaging and releasing specific muscles. This chapter presents information on how to execute each motion, and how to apply the motions within the context of consecutive legato bow strokes. For the remainder of this chapter, this will be referred to as the legate stroke. It should be noted that Tuttle did not have a method for introducing Coordination, and this is not an attempt at standardization. The layout of this chapter was chosen because it allows the motions to be presented in the order that they occur during a legato stroke.

Describing these motions through words requires that they be presented as if they occur in a chain reaction, but in practice, many of the motions occur simultaneously. Every effort has been made to describe the timing of the motions clearly; however, study of the video examples is encouraged to increase understanding. It is important to note that the size of the gestures in the videos has been exaggerated to provide a clear visual aid. Once these gestures are mastered, their size may become so subtle that they are imperceptible to the audience, and only felt by the performer.

The motions have been separated into three groups in order to convey the timing of the motions without presenting an overwhelming amount of information at one time. These groups include the downward gesture, the upward gesture, and the bow changes. These groups were chosen because each of them begins and ends at the balanced stance. The balanced stance naturally provides a resting point for the body, and facilitates the connection of the gestures.
The Downward Gesture

The downward gesture is used to create depth and direction in the sound. It consists of multiple motions including repull, release, and a concave right arm motion. Within the context of a simple legato stroke, the motions of the downward gesture will all occur on a down-bow. Begin this gesture at the frog with the body in the balanced stance and an even amount of weight on each of the bow fingers.

Repull

The repull is a versatile tool that can be used to sustain the sound, give depth to the sound, or to intensify the sound. Within the Coordination community there is some variation regarding the advanced execution of this stroke, but the fundamental principals remain the same. The repull is executed as the bow is traveling and is most often used at the balance point; however, it can occur at any point in the bow. During a down-bow, the balance of the hand naturally changes, and near the balance point there is an increase of weight felt on the first finger. To perform a repull, when this transfer of weight is felt, the weight of the hand is rolled back to the pinky, and then the bow is pulled again.47

47 Ritscher, Interview, 88.
Example 7. Video of a Repull

*Release*

As the bow is pulled downwards there is a gradual release of the legs, abdomen, and shoulders. This release can occur at any time, but is usually in the middle third of the bow and follows a repull. 48 Remember that this is a release of muscle effort, not a total collapse of the body. In the upper half of the bow, there is a return to the balanced stance by gradually re-engaging all released muscles. Beginners may find it helpful to exhale on the release and inhale as you engage. As mastery is developed, the breath will be internalized and will not need to be thought of so consciously.

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Arm Motion

When the shoulder releases, it facilitates a concave scooping of the arm, that helps to increase the amount of arm weight being transferred through the hand and fingers, onto the bow, and into the strings. The downward part of the scoop occurs in the lower half of the bow as the body releases, and the upward part of the scoop occurs in the upper half of the bow as the body returns to the balanced stance. In the lower and middle part of the bow, the elbow and the wrist are kept at approximately the same height, and as the bow travels toward the tip, the elbow is brought above the wrist to maintain an even volume.

Combining the Motions

Each of these motions can be practiced separately, but in reality they are part of a sequence of motions that are most effective when executed as one gesture with the body leading the arms and hands. The amount of repull and release, and the depth of the arm motion are directly proportional to the amount of depth or direction desired in the sound. Those new to the motions of Coordination may find it helpful to exaggerate the size of the motions during initial study, and to minimize their size as mastery is developed.

The following video depicts the timing of the motions of the downward gesture when playing a legato bow stroke. This step should be practiced until it can be done with ease. More advanced applications of the downward gesture will be presented in chapter 4; however, it should be noted that the downward gesture is not limited to a down-bow, a long-bow, or to one note.
Example 8. Video of The Downward Gesture.

The Upward Gesture

The upward gesture results in an increase in the intensity and direction of the sound. It consists of three motions: engaging the muscles of the torso, a convex arm motion, and repull. Within the context of a simple legato stroke, the motions of the upward gesture will all occur on an up-bow. Begin the upward gesture in the upper half of the bow with the body in the balanced stance.49

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Engaging

As the bow is pulled up-bow there is a gradual upward engaging of the belly, chest, and shoulders. If you are a beginner, you may find it helpful to inhale as your body expands upwards. Engaging can begin at any point, and usually occurs in the middle third of the bow. As the bow nears the frog, you will return to the balanced stance. You may find it helpful to exhale as your body lowers. Remember that engaging does not mean tension. Ensure that you engage from the shoulder blade, and that you do not raise your shoulder joint closer to your ear.

Arm Motion

As a result of the torso and shoulder engaging, the back muscles are activated, which causes the arm to move in a convex arc. This change in the height of the arm allows more of the arm’s natural weight to fall onto the hand and be transferred onto the bow. Throughout this arm motion the elbow will be slightly higher than the wrist. The upward part of the arc occurs in the upper half of the bow as the body engages, while the downward part of the arc occurs in the lower half as the muscles begin to disengage and return the balanced stance.

Repull

Although the repull is most commonly used in conjunction with a down-bow, it is possible for a repull to occur on an up-bow; however, the motion will be significantly different. An up-bow repull has no rolling of the hand weight, which leaves no need to pull the bow a second time. Instead, when an increase in intensity is desired, the arm can pronate more, the elbow can be brought higher, or the fingers can engage more. Because the up-bow repull lacks a second pull, it could be described as a reenergizing
instead of a repull. Although the motions differ between the up-bow and down-bow repull, the resulting sound will be the same.

*Combining the Motions*

The following video depicts the timing of the sequence of the motions of the upward gesture when playing a legato bow stroke. This step should be practiced until it can be done with ease. Those new to Coordination may find it helpful to exaggerate the size of the motions and minimize their size as mastery is developed. More advanced applications of the upward gesture will be presented in chapter 4; however, it should be noted that the upward gesture is not limited to an up-bow, a long note, or to one note.

![Example 9. Video of the Upward Gesture.](image)

**The Bow Changes**

Bow changes should sound continuous and uninterrupted. This is achieved by incorporating a neck release and staggering the timing of the change of direction in the
elbow, wrist, and fingers.\textsuperscript{50} For the purposes of this chapter, the bow changes will be described at the tip and the frog; however, they can occur at any point in the bow.

\textit{The Neck Release}

A neck release is used to aid in the execution of bow changes, large shifts, string crossings, sustained notes, and preparatory gestures. Immediately before these events occur, the muscles of the neck release which allows the head to gently tilt backward.\textsuperscript{51} After the completion of the event the head returns to the balanced stance.\textsuperscript{52} Outside of these events the neck remains relaxed and may subtly nod in response to movements in the body. Neck releases are very versatile, and can occur at any point or direction of the bow, and may encompass a large or small number of notes. The following section details neck releases as they relate to bow changes. More advanced use of neck releases will be discussed in Chapter 4.

\textit{The Down to Up Bow Change}

The bow change from down-bow to up-bow is often referred to as over-the-bow, and is comprised of a bow circle and a neck release.\textsuperscript{53} During initial study, it is recommended that this bow change be practiced at the tip in conjunction with a complete breath.

To perform this bow change, complete a downward gesture. As your body is returning to the balanced stance and your bow is approaching the upper half, begin the bow circle. The bow circle is achieved by inhaling and allowing your bow arm to

\textsuperscript{50} Dew, \textit{Instinctive (2)}, 939.
\textsuperscript{51} Reiter, \textit{Tuttle}, 48.
\textsuperscript{52} Ibid, 49. Refer to Chapter 2 for more information regarding instrument set up, and jaw placement.
\textsuperscript{53} Ritscher, \textit{Interview}, 89.
continue traveling past the balanced stance and to extend upward in a clockwise circle. As the circle curves down, your elbow will begin to travel down first, followed by your wrist, followed by your fingers.\textsuperscript{54} Once your fingers complete the circle, the exhale and change in direction will occur.

The neck release occurs simultaneously with the bow circle and is a natural reaction to the arm being in an extended position. Begin the neck release as the bow circle begins, and complete the neck release just after the bow circle and change of direction is completed.\textsuperscript{55} Practice this in the upper half of the bow until it feels natural. Once mastery is achieved, this bow change and neck release can be applied to any part of the bow.

Example 10. Video of a Down to Up Bow Change.

\textsuperscript{54} Dew, \textit{Instinctive (2)}, 939. \textsuperscript{55} Reiter, \textit{Tuttle}, 49.
The Up to Down Bow Change

The bow change from up-bow to down-bow is also comprised of a bow circle and a neck release; however, the bow circle is in the opposite direction from the down-bow to up-bow change. During initial study, it is recommended that this bow change be practiced in conjunction with a complete breath.

To perform this bow change, begin an upward gesture at the tip of the bow. The bow circle and neck release will occur as your body is returning to the balanced stance, and your bow is approaching the lower half. To perform the bow circle, exhale and allow your bow arm to continue traveling past the balanced stance and extend downward in a counter-clockwise circle. Your elbow will initiate the circle by dropping, which will initially push your wrist and fingers upward. As your elbow continues to travel down your wrist will be pulled down, followed by your fingers.\(^{56}\) Do not allow your elbow to droop too far below the wrist height. Once your fingers complete the circle, the inhale, completion of the neck release, and change in direction will occur.

\(^{56}\) Dew, *Instinctive (2)*, 939.
Example 11. Video of an Up to Down Bow Change.

Sequence of the Gestures

Once the downward gesture, upward gesture, and bow changes can be performed separately with ease, they can be practiced in sequence with each other to create a legato down-bow and up-bow. To develop this stroke, practice combining the downward gesture and the tip bow change in the upper half of the bow on an open string. As this begins to feel easy, begin closer to the frog until you are using the entire bow. Reverse this step for the bow change at the frog. When each of these steps can be completed with ease, practice combining them. When the gestures are executed sequentially, the body and the breath should remain in a constant fluid motion. As the gestures become easy within the context of the legate stroke, they can be applied to simple scales.
The following video depicts the timing of the gestures when combined into a full legato stroke. This step should be practiced until it can be done with ease. Once this is accomplished, study of the application of the motions of Coordination can begin.

Example 12. Video of the Legato Stroke.
CHAPTER 4

APPLYING COORDINATION

The motions of Coordination are used in countless ways beyond the simple legato stroke. Coordination is unique because performers determine the application of the motions based on their interpretation of the musical phrases. Essentially, once the basic principles of Coordination have been internalized, the possibilities for application are endless.

This chapter presents a detailed discussion of my application of the motions of Coordination to the first movement of Bloch’s *Suite Hébraïque*. This discussion reflects the use of motions that felt natural to me, and allowed me to convey my personal ideas regarding the shape and direction of the phrases. This is meant to serve as an educational tool and is not an attempt to standardize the application of Coordination.

The goal of this chapter is for you to understand the possibilities of Coordination, so that you may apply it to other pieces in the future. For the most successful experience working through this chapter, you should be comfortable executing the motions detailed in the previous two chapters and should have familiarized yourself with the notes, rhythms, and phrasing of the Bloch.

Notational System

Although Tuttle never published a notational system for Coordination, she frequently marked the motions in her students' scores, and this notational system is based on those markings. Because of the irregularity in the height and spacing of printed music, it was not possible to indicate the size of the gestures. In general, if more volume and intensity were desired, then more exaggeration in the gestures would occur.
However, for many masters of Coordination, these motions are completely internalized and may not be prominently visible to the audience.

In the score, downward gestures, upward gestures, repulls, and neck releases are indicated. The symbol for the downward gesture represents a release of the legs, torso, and shoulders, and a concave motion in the right arm. The symbol for the upward gesture represents the engaging of the torso and abdomen, and a convex motion in the right arm. Because they occur with such frequency, neck releases accompanying a preparatory gesture or a normal bow change are not indicated. Neck releases supporting large shifts, string crossings, and sustained notes are indicated. The motions of the bow change should be applied at all times, unless you have a very specific musical reason not to. Because of this, the bow changes were unnecessary to indicate. Throughout the score, a small grey line is included and indicates the balanced stance. This is intended to clarify where each gesture begins and ends, as well as how the gestures connect to each other. The notational system appears as follows:

- The Downward Gesture: \\
- The Upward Gesture: \\
- Repull: R
- Neck Release: N

Musical Examples

Using specific musical examples from *Suite Hébraïque*, the remainder of this chapter presents a detailed discussion of common musical and technical events, as well as my ideas about how Coordination can be applied to them. *Suite Hébraïque* presents ample opportunity for discussion; however, to remain within the scope of this project,
only the most pertinent examples have been included. To get the maximum benefit from this discussion, you will need to play these examples on your instrument. All of the musical examples have been used with permission by G. Schirmer, Inc.

**Entrances**

Including a preparatory gesture before an entrance allows the muscles of the body to begin a phrase in a free and relaxed manner. This facilitates a consistent start to the sound and gives immediate warmth and direction to the phrase. These preparatory gestures are a cue for the body and can occur on a downward or upward gesture.

An example of a downward preparatory gesture can be seen in example 13. This is a delicate entrance beginning on an up-bow with an upward gesture that has a high likelihood of sounding thin or unclear. Adding a downward gesture on beat 3 relaxes the body, which puts the body in an ideal position to begin the upward gesture naturally and facilitates a clean and warm start.

![Example 13. Measure 2.](image)

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57 SUITE HÉBRAÏQUE by Ernest Bloch. Copyright © 1953 (Renewed) by G. Schirmer, Inc. (ASCAP) International Copyright Secured. All Rights Reserved. Used by Permission.
An example of an upward preparatory gesture can be seen in example 14. This measure begins on a rapid fourteen-note run, which is a musical event that many players approach with tension. Adding an upward gesture on beat 2 allows the body to begin the run in a relaxed manner and facilitates the downward gesture of the run, allowing it to flow naturally.


Phrasing

Applying the basic principles of Coordination to a phrase can enhance its natural shape. In simple phrases, the body remains in constant motion and up-bows will be paired with upward gestures and down-bows with downward gestures. The size of the gestures may be large in phrases of high intensity, or may be miniscule in subtle phrases.

Examples 15 and 16 provide excellent examples of Coordination as it is applied to simple phrases. In each of these examples the shape of each gesture parallels the direction of the bow, and the size of the gesture increases with the crescendos, and decreases with the diminuendos. Additionally, neck releases and repulls are used to maintain depth and direction in the long notes in these phrases.
In many cases, several *detached* notes are grouped within a single gesture, instead of one gesture per bow. Multiple notes grouped into a single gesture create a longer musical line, while individual notes grouped into a single gesture place more emphasis on each note. Grouping notes together helps to keep the body relaxed. Examples 17 and 18 demonstrate two areas with multiple options for grouping the notes and applying Coordination.

Examples 17 and 18 contain a simple phrase that begins with a sweeping downward gesture on beat 3, two eighth notes on beat 4, and leads to an upward gesture in the next measure. There are two main options for applying Coordination here. The first option allows the phrase to be shaped so that more emphasis is heard on the last two notes of the measure, as seen in example 17. In this option, beat 4 would be grouped so that there is a separate gesture on each note.
The second option allows the phrase to be shaped so that it flows to the next measure as seen in example 18. In this option you would group beat 3 in a downward gesture, and beat 4 in an upward gesture.

I chose to group the two eighth notes together within an upward gesture because it creates more of a flow in the phrase and I felt it was too early in the piece to use a heavy amount of emphasis.

Examples 19 and 20 present a delicate phrase marked a tempo, with a hairpin crescendo and three tenuto eighth notes. The three tenuto notes create two options for consideration. The first option, seen in example 19, is to place a separate gesture on each tenuto note, which creates a bigger crescendo and increases the emphasis on the tenuto notes.
The second option, seen in example 20, is to group the *tenuto* notes in the same gesture, which creates more forward motion in the phrase. Because beat 2 contains notes of the same pitch, it may provide more clarity if it is divided into two gestures, which requires that the two sixteenth notes be grouped with the *tenuto* notes.

In making my decision I considered the phrase preceding this one, which has a bold character and an *accelerando*, and the following two phrases, which are more intense and present another *accelerando*. I chose to group the *tenuto* notes in one gesture to reflect the simplicity of this phrase and to provide more musical contrast.

When determining the application of the gestures in a more complex phrase, it may be more helpful first to identify the location of the gestures that feel natural and then look for ways to connect those gestures. Measures 39-43 provide an example of a phrase like this. In this phrase there are many different bowing patterns, many rhythms, multiple meters, a dynamic change, an *animando*, and a *calando*. Because of all of these components, it is difficult for the body to find a rhythmic pattern of movement, and some careful planning is required so that the passage does not feel awkward.
I began by identifying the main gestures that felt natural to me in the phrase. These gestures appear in example 21, and include measure 39, beat 2; measure 40, beats 1-2; measure 41, beat 1; measure 42, beat 1; measure 42, beat 3; measure 43, beat 1; and measure 43, beat 3.


After determining these gestures, I looked for ways to connect the gestures using the notes in-between. The two notes of measure 39 beat 3 were grouped in two separate gestures, as seen in example 22.

Example 22. Measure 39.

The second beat of measure 41 had two options. This beat could have a separate gesture on each note (example 23), or one upward gesture across both notes (example 24). I chose to group the notes within one gesture to help drive the *animando*. 
The first three notes of measure 42 have two possibilities for grouping. Each note could be placed in a separate gesture (example 25), or the first note could conclude the gesture of the preceding measure and the second note could begin the next gesture (example 26).
The separate gestures slowed down the pace too much and felt awkward to me. I chose to place the first note on an upward gesture and the next two notes on a downward gesture, because it created a natural pace for the *animando*.

The last beat of measure 42 was clear to me. Beat 3 of measure 42 was previously placed on a down gesture, and the first note of measure 43 feels best on a downward gesture, which means that the last note of measure 42 must occur on an upward gesture, as seen in example 27.

Example 27. Measure 42, beat 3.

After arriving on a down gesture on beat 1 of measure 43, I decided to group the next three notes on an upward gesture to finish the *animando* and then use a down gesture on the last two notes to achieve the *calando*, as seen in example 28.

Example 28. Measure 43.

The final result of this passage appears in example 29.
String Crossings

Coordination can be used to make a large string crossing sound more connected. This is achieved by changing the body height and beginning a neck release just before the crossing occurs. In general, during the note or gesture before a string crossing, the body expands upwards and a neck release begins. As the next note and gesture begin, the body lowers and the neck release concludes.

Between the first two notes of measure 9, there is a string crossing from the a-string to the c-string, as seen in example 30. The first note is an up-bow that occurs on an upward gesture, and the second note is a down-bow that occurs on a downward gesture. As the first note is being completed, the neck will release and the body will fall to the balanced stance as the hand crosses the string. Despite this downward gesture, the elbow will remain high, to make the crossing to the c-string more efficient.
Between beats 2-3 of measure 9, there is a string crossing from the c-string to the a-string, as seen in example 31. Beat 2 is a down-bow that occurs on a downward gesture, and beat 3 is an up-bow that occurs on an upward gesture. This string crossing is timed so that the clockwise bow circle begins just before the bow arrives at the new string. Additionally, at the end of beat 2, the neck will release and the body will spring upward beyond the balanced stance, and then fall to the balanced stance as the arm is lowered to the a-string.

![Example 31. Measure 9, beats 2-3.](image)

**Chords**

Incorporating a neck release and an upward gesture helps chords to feel more natural and sound more connected. Example 32 contains three and four note chords that occur on down-bows and up-bows. Each chord will have an upward preparatory gesture and neck release followed by a downward gesture on the arrival.

![Example 32. Measures 34-35.](image)
Shifting

Coordination can also be used to facilitate a large shift by placing large ascending shifts on an upward gesture and large descending shifts on a downward gesture. A neck release will also aid a large shift in either direction and should begin on the note before the shift and end after the shift is complete. Examples 33 through 35 provide excellent examples of how Coordination can be used in conjunction with a shift.

In Example 33, I placed beat 3 on the d-string to convey the soft character of this phrase, which creates a large shift upward between beat 2-3. At the end of the downward gesture on beat 2, an upward preparation gesture is added to facilitate the shift. As the left hand arrives on the new note, the body returns to the balanced stance, and the upward gesture of beat 3 can begin.

Example 33. Measure 10, beats 2-3.

The largest shift of the piece occurs between measures 63 and 64, as seen in example 34. Measure 63 has been arranged so that the last note of the measure occurs on an upward gesture, which encourages the left hand to spring upward with the body. As the hand arrives at the new note, the downward gesture begins, which gives a feeling of stability in the high position.
A large downward shift occurs between measures 82 and 83, as seen in example 35. By adding a preparatory upward gesture at the end of measure 82, the body can release downward as the hand shifts downward, which makes this shift feel very natural.

Example 35. Measure 82 to Measure 83, beat 1.

Rapid Notes

During extended passages of rapid detaché notes, several notes will be grouped into one gesture. This allows the body to stay relaxed and allows the phrase to keep moving. This piece presents an added challenge because each rapid passage has an unpredictable combination of bowing patterns. Examples 36 and 37 provide clear examples of this.

To determine my application of Coordination in each of these passages, I began by identifying the main gestures that felt natural to me. The main gestures I identified in
measures 5-6 are seen in example 36, and include measure 5, beat 1; measure 5, beat 2; measure 6, beat 1; and measure 6, beat 4.

Example 36. Measures 5-6.

For the remaining notes I wanted to gradually increase the number of notes within the gestures to help the accelerando move forward; however, the printed bowing for the remainder of the passage made that difficult. Because of this, I chose to group my gestures to align with the direction of the bow, as seen in example 37.

Example 37. Measures 5-6.

In measures 61 to 67, the main gestures I identified are seen in example 38 and include measure 61, beat 2; measure 62, beat 1; measure 63, beat 1; measure 63, beat 2; measure 64, beat 1; measure 65, beat 1; measure 65, beat 2; measure 66, beat 1; and measure 66, beat 2.
Some of the gestures in this passage were simple to connect. Measure 6, beat 3 easily lent itself to be grouped into an upward gesture. Beats 1-2 of measures 62, 64, and 66 were easily grouped as one gesture per beat, as seen in example 39.

Other gestures in this passage were more complicated to connect. Beats 2-3 of measures 62, 64, 65, and 66 could be grouped all on an upward gesture (example 40), or as two consecutive upward gestures (example 41).
Placing these two beats within one gesture makes them flow more easily; however, I felt that this would take away from the accelerando in the next measure. I chose to use two consecutive upward gestures with a small release between beats to create the desired pace.

Beats 2-3 of measure 63 may all be grouped within an upward gesture (example 42), or may be grouped with four notes on an upward gesture, two notes on a downward gesture, and two notes on an upward measure (example 43).
This measure has an *accelerando* and is building up to the highest note of the piece. I chose to group all of beats 2-3 in an upward gesture, because it builds intensity and speed into the next measure.

Measure 67 has several options for grouping. The first option is to group beats 1-2 within an upward gesture, as seen in example 44. The second option is to group beat 1 on an upward gesture, and beat 2 on a downward gesture, as seen in example 45. The third option is to group beat 1 on a downward gesture, and beat 2 on an upward gesture, as seen in example 46. The final option is to group beat 1 on an upward gesture, and beat 2 on an upward gesture, as seen in example 47.
Because each beat is preceded by a string crossing that feels more stable being approached from above, I chose to place each beat on an upward gesture. My final decisions for this passage appear in example 48.
Coordination also aids in executing dynamics and dramatic articulations. Measure 25, seen in example 49, contains two long notes marked *forte* that I want to be very intense. Using a repull on the first note, and an upward gesture on the second note can allow this to be achieved. Between measures 25 and 26, a change from *forte* to *piano* occurs. In order to achieve this, the body will continue to engage upward throughout the last note of measure 25, and immediately before measure 26 will complete an exaggerated release downward to the balanced stance. This allows measure 26 to begin with a soft dynamic and relaxed body.
Accents can be intensified by exaggerating the upward and downward gestures so that they are larger vertically and their motions are more pronounced. This can be applied in measure 47, seen in example 50, where you could easily group the eighth notes within one gesture. Although this would help the phrase slow down evenly, I chose to group each eighth note within its own gesture in order to make more percussive accents.

Example 50. Measure 47.

It is also possible to increase the amount of ring a note has after it has been cut off. If the gesture on the final note of a phrase is stopped upon returning to the balanced stance, a natural tapering will occur. If the body continues to follow through the balanced stance with an upward gesture as the bow releases from the string, the sound will ring more intensely. An example of this is seen in example 51.

Example 51 Measure 29.
Challenges in Application

Two passages in this movement were challenging to determine the application of Coordination and thus they presented an enormous learning opportunity. It was especially difficult to apply Coordination to measure 81, seen in example 52, because the bowing patterns change so sporadically. I began by finding the main gestures that felt natural. Beat 2 and beat 3 felt best on a downward gesture, and measure 82 felt best arriving on an upward gesture. I tried many different groupings in-between these areas, but ultimately decided to follow the pace of the phrase and grouped the \textit{accelerando} within an upward gesture, and the end of the \textit{cede} within a downward gesture. This allowed for constant motion and didn’t complicate the phrase.

Example 52. Measure 81.

Another passage to which the application of Coordination was difficult occurs in measure 77, seen in example 53. This measure feels best when it begins on a down-bow with a downward gesture, but the following string crossing would feel more natural as an up-bow to down-bow on an upward gesture. Additionally, I chose to finger the double-stop on a harmonic, which creates a downward shift that also needs to be accommodated and would feel best with the body going from high to low. This creates
one technical aspect that feels better on an upward gesture and one technical that feels better on a downward gesture.

One obvious solution would be to change the bowing to suit the physical demands, but changing a bowing is not always the best option, so I would like to demonstrate how to use Coordination to solve this problem area. I chose to start the measure on a downward gesture, and to add an upward gesture between the notes. This upward gesture allows the string crossing to feel natural, and also allows the downward shift to occur as the body travels back down. This solution satisfies the composer’s musical intention while accommodating the body.

Example 53. Measure 77.
CHAPTER 5

CONCLUSION

This document serves as a guide to the motions of Coordination; however, it in no way captures its full essence. The emotional component of Coordination is what infuses the motions with the complex sound Tuttle’s students are known for, and is also the key to creating captivating musical performances. The emotional component of Coordination has not been discussed in detail in this document because it would be exceedingly difficult to describe such a personal and creative process with words, and certainly impossible to do so in any concise manner.

In the wake of Tuttle’s death in 2010, it has become increasingly important that Coordination be thoroughly documented in order to preserve its remaining authenticity for future generations to study. Additionally, putting Coordination into words creates a kinesthetic and conscious look at largely instinctive concepts. Tools of this nature are especially important in the teaching studio where many learning styles need to be accommodated.

Writing about Coordination does present some challenges. Because one of the core goals of Coordination is to achieve physical comfort and ease, each person experiences the motions of Coordination differently and thus the motions cannot be standardized for instruction. When working one-on-one with a student this provides little challenge; however, when writing about Coordination for a large audience, the absence of precise measurements can make the descriptions seem vague. Additionally, writing about Coordination obscures the timing of the motions. While the video examples do help with this, it has become increasingly clear that no amount of words or videos can
fully capture the essence of Coordination. In an age where society is becoming increasingly dependent on technology and online resources, it is my pleasure to say that where Coordination is concerned, the artist teacher is irreplaceable.

I sincerely hope that this guide will serve as a helpful resource to those people at the beginning of their study of Coordination. I encourage you to work through the descriptions and experiment until you find what is natural for your body. I would also like to reiterate that Coordination is not concrete, and your use of it will change over time. As such, I ask that you do not look at my interpretation of the *Suite Hébraïque* as a definitive source, but rather a starting point. After all, even after 50 years of playing and teaching Coordination, when Tuttle was asked about how she approached it she responded by saying, “Actually, I just changed my mind.”

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APPENDIX A

BLOCH SCORE
APPENDIX B

LIST OF EMOTIONS
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<thead>
<tr>
<th>Love</th>
<th>Joy</th>
<th>Anger</th>
<th>Fear</th>
<th>Sadness</th>
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59 Dane, Coordinated Effort, 62.
BIBLIOGRAPHY


