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**Bowing Techniques in Prokofiev's Violin Concerto No. 2: Exploring the
Right Hand's Effect on Left-Hand Technique**

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Abstract

This critical commentary seeks to clarify ways in which bow technique can enhance left-hand technique, leading to the co-dependence of the two hands. The importance (and relative neglect) of bowing practice, is described in the Literature Review, with reference to many influential performers and pedagogues, and these views provide a context that justifies the need for further research in this area. This commentary employs a practice-led approach to research, which gives the work an accessibility and relevance to current teachers and performers. It features the research of Percival Hodgson, a pioneer of photographic experiments of bowing patterns in the early to mid 1900s. The bowing patterns analysed in his *Motion Study and Violin Bowing* of 1934 are identified and investigated through a case study based on preparation of Prokofiev's Violin Concerto No. 2, which was performed as part of the performance component of this project. Prokofiev's Second Concerto provides material for the numerous, different types of bowing described by Hodgson, while also providing a myriad of potential left-hand difficulties for the performer that can be solved with the help of an organized bow technique. By understanding the circular motions of bowing, decided for us by natural laws, deficiencies in the left hand can be addressed. My research suggests the potential for physical and mental freedom, as a result of analyzing the exact motions of the co-dependent hands. This commentary will not only help the future performer or teacher of this work, but any violinist seeking to feel more free in their practice and performance.

Declaration by author

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Keywords

bowing, co-dependence, practice, cyclegraph, motion, shifting, articulation

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Introduction

Much has been written on the topic of bow technique for the violin. Leading performers and pedagogues over many decades have provided a range of treatises, exercises and studies, the contents of which give the reader a sense of just how complex bow technique is.¹ Due to these levels of complexity, bow-technique issues are often isolated for practice purposes to solidify the separate components independently of the left hand. This commentary, however, will focus on the close relationship of the left and right hands and how they might support each other. Specifically, it will consider the effect of using bow technique to improve left-hand technique. In order to give these ideas a practical context, this commentary will serve as a guide to the preparation and performance of Prokofiev's Violin Concerto No. 2, through detailed documentation of practice methods used to coordinate the two hands, with particular reference to the first movement. The work is chosen because it is a standard repertory item and contains an exhaustive supply of suitable "problems" for the topic considered here. The documentation will include an analysis of bow movements, as classified under the headings in Percival Hodgson's neglected work *Motion Study and Violin Bowing* (1934). Specific bowing challenges identified in the Concerto will also be supported by recommendations of relevant bow technique exercises by Otakar Ševčík. Ševčík's bowing exercises can be useful to teachers and performers because his method provides a simple left-hand note-pattern, which allows the violinist to focus on a countless array of bowing variations. These studies are unique in their relevance to violinists of all ages and standards, and can supplement any repertoire, because they explore particular bowing principles in a setting where the timing of the bow with the left hand is important.

This commentary employs practice-led research methods. These methods employ the idea that insights can be gained through the creative processes that evolve in practice, which can then be written up as research (Dean and Smith 5). This particular method uses the element of practice as the primary method of research (6). The study begins with an explanation of the fundamental principles relating to both the left and right hands, articulated by leading performers and pedagogues in the literature. These principles will then be analysed in a "reflection-in-action" process where I will be experimenting in action, or, becoming a

¹ For example: Ivan Galamian, *Principles of Violin Playing and Teaching*, 3rd ed. (New Jersey: Prentice-Hall, 1985), Carl Flesch, *The Art of Violin Playing: Book 1* (New York: Carl Fischer, 1924), Lucien Capet, *La technique supérieure de l'archet* (Paris: Maurice Senart, 1916), Otakar Ševčík, *Violin Studies Opus 3: 40 variations* (London: Bosworth, 2001), Harold Berkley, *The Modern Technique of Violin Bowing* (New York: Schirmer, 1941), Simon Fischer, *Basics* (London: Peters, 1997).

researcher in the practice context (Schön 68). This performance research is documented in a practice journal, and in my own preparation and performance of the Concerto. I have chosen a selection of contrasting sections that distinctively show links with Hodgson's research into motion study. My research will offer recommendations to performers and teachers of this work as well as extrapolating the specific outcomes of the preparation to wider applications of the left-hand/right-hand principle. The performance of the Concerto in my first recital was fundamental to observing the effect of bowing motions on left-hand technique.

The body of this critical commentary will comprise of chapters on tone production, string crossings, shifting, and articulations and mixed bowings, which will be discussed in the literature review. These headings represent fundamental violin techniques, which will provide a basis for the analysis of specific musical examples. Percival Hodgson's *Motion Study* will be the main source of reference throughout the chapters in this thesis. It contains visual representations of different bow techniques in the form of "cyclegraphs" (58). These images, while not widely known, show themselves to be an important tool in the violin player's understanding of how the right and left hands work together seamlessly. Hodgson, himself, stated:

My final word is addressed to any advanced student who suffers from a feeling of insecurity when performing in public. I strongly urge him to suspect his right arm, even when failure appears to be directly attributable to the left hand; unrecognized bowing imperfections are responsible for nine out of ten cases of scrambled and blurred passages. An accurately balanced right arm is able to adapt itself to unequal left-hand finger-work in an astonishing way, as it is a simple matter to amplify or contract natural curves, and ease and security result when synchronization of the totally dissimilar functions of the two hands becomes a certainty. I assure all nervous players that control is centred chiefly in the right arm (106).

Chapter 1 Literature Review

This commentary revisits the lesser-known work of Percival Hodgson, a violinist and pedagogue who was inspired by the German scientist Dr. F. A. Steinhausen,² to record the actual movements of the bow arm (Hodgson x). In the early 1900s, the idea that bowing involved a series of inevitable curves due to natural laws was a relatively new concept and was ignored by many (x). Since the publication of Hodgson's work in 1934, performers and pedagogues have agreed that bowing is often neglected, but there is still little reference to Hodgson's *Motion Study*. This literature review will explain some of the fundamental principles of this study, while placing Hodgson's work in the context of other twentieth-century pedagogues.

Harold Berkley, author of *The Modern Technique of Violin Bowing* (1941), stated that many violinists were well aware of problems with their bowing but did not know how to locate specific faults, and therefore could not remedy them (44). He went on to say that far too many students of his time still looked upon technique as something produced exclusively by the left hand (7). He lamented the small number of students whose bow technique matched the level of their left hand and believed that one of the main reasons for this lack had to do with teachers not pursuing bowing-technique exercises as rigorously as they did with exercises for the left hand (7). In *The Modern Technique of Violin Bowing* he used excerpts from major works of the violin repertoire to show the exact bow technique involved and then discussed ways to practice these so that the bow would become the focus of attention.

In Robert Gerle's *The Art of Practising the Violin*, written in 1983, the author claimed that bow technique "will largely determine the artistic category of the player" (17). He discussed giving more attention to the bow arm in practice, claiming that because the left hand controls the very audible aspects of pitch and melody, it is prioritised at the expense of bowing (17). Gerle contended that as much as ninety percent of a student's practice time was spent on isolated left-hand issues (17). Gerle, in a later work dedicated to the discussion of bowing, stated his belief that a major difficulty with practicing bowing is that its "goals and problems are more subtle, its progress slower and harder to measure and the solutions to its problems more

² Author of *Die Physiologie des Bogenführing*, (1903).

elusive" (*Art of Bowing* 10). Carl Flesch, in volume 1 of *The Art of Violin Playing* (1924), gave another reason for bowing difficulties. He stated that "the technique of 'bowing' is more complex than the mechanism of the left arm, because in the case of the latter the finger is in direct contact with the string; while the right arm comes into contact with the string only through the medium of the bow-stick and bow-hair" (51). This statement is a reminder of the huge task designated to the bow, and the resulting importance of bow technique. The first step to understanding the fundamentals of bow technique, is to analyse the elements that make up good tone production.

Flesch named the important components of tone production as being bow pressure, bow speed, point of contact between bow and string, but also commented on the crucial element of smooth bow changes (*Art of Violin Playing* 1: 81). Even though the change of bow is a fundamental element of technique, Flesch said that it was often described as one that is difficult to master, especially at the nut (59). He wrote about the discovery over time that flexibility of the wrist combined with an element of partial finger involvement was the only way to create smooth, inaudible bow changes (60). He believed that this technique caused problems across all levels of violin playing. Due to the nature of the bow (more weight at the frog, less weight at the tip) it is essential that the weight versus pressure balance is right (59). To make bow changes sufficiently smooth, the player must prepare for the bow change in a small portion at the end of the finishing bow (59). In this portion of bow, the performer creates time in which to control the circular motion that influences the bow change (59).

Gerle went on to state that "there are few human endeavours more complicated, sensitive and delicate than that of drawing a pleasing sound from a stringed instrument" (*Art of Bowing* 15). He stated that, "the importance of bow technique in string playing cannot be overestimated" and, even up to the early 1990s, believed it still to be a neglected element in the training of string players and one that was the least developed in their performance (9). In his opinion, the three mechanical aspects of tone production include bow-speed, bow-pressure and distance from the bridge (43). He wrote two rules here to show the interdependence of the three: "1. The greater the bow-speed, the lesser the bow-pressure, the greater the distance from the bridge. 2. The lesser the bow-speed, the greater the bow-pressure, the lesser the distance from the bridge" (43). He talked of the importance of distinguishing natural pressure (weight), from applied pressure (force) (44). Gerle also discussed bow technique as an

interpretative tool and named bow-speed, pressure, location and timing as the basic elements of bow technique from which every other technique stems (56).

Co-Dependence of The Two Hands

Frederick Polnauer wrote about the concept of co-dependence of the hands in the 1970s, in his *Total Body Technique of Violin Playing* (1). He was an advocate for the technique referred to as “Motion-Gestalt” (1). This was a technique that looked at links in the body, using the philosophy that “optimal performance in violin playing demands a total body technique.” (1). Polnauer wrote: “violin playing can no longer be merely viewed as the function of a system of individual segmented components which are unrelated to each other” (1).

A decade later, the psychologist Yves Guaird, described string playing as an “asymmetric bimanual activity” (Guaird 487). This particular category of motion was less researched than its counterparts: “asymmetric unimanual activity” and “symmetric bimanual activity” (488). Guaird believed it was more difficult to research this category because neither hand is dominant, but both are necessary, difficult, and of equal importance (488). He mentioned “cooperation” between the two hands and believed it necessary to question the relationship between the subtasks assigned to the left and right hands, which he referred to as “the differentiated logic of division of labor” (489). He went on to explain a concept of coordination called the “right-to-left spatial reference in manual motion” (493). This means essentially that the left hand creates “frames” which the right hand recognizes and inserts “contents” (494). This process relates to the spatial reference between the moving hands; it does not mean that the left hand is lifeless or immobile (494). This “cooperation” of the two hands, as directed by the brain through designated subtasks, is applicable in the study of each technique discussed in the literature review.

In the same decade, the eminent pedagogue Ivan Galamian wrote about the importance of understanding the interdependence of individual elements of violin technique and the mutual, organic relationship in which they are involved (2). He mentioned co-dependence when he discussed the importance of timing in *Principles of Violin Playing and Teaching*, published around the same time (22). He used the term “technical timing,” which he described as “making the necessary movements of both left and right hands at the exact moment and

precise speed that will ensure correct musical timing” (23). The concept of “technical timing” can be applied to all of the fundamental violin techniques that involve the coordination of both hands. One of those techniques is shifting.³

Shifting relies equally on both hands. Gerle acknowledged the collaborative element of left-hand and arm motions with the particular bow speed and the amount of bow chosen for a particular phrase (*Art of Practising* 17). This collaboration was again mentioned in a section dedicated to left-hand practice, in which he specifically addressed upward and downward shifts (55). To coordinate upward shifts on an up-bow and downward shifts on a down-bow, he suggested working with a natural mirror-wise movement as opposed to parallel movements (55). He believed that this “natural” state would lead to a better body balance and therefore more successful shifting (55).

Gerle dedicated a section of *The Art of Practising the Violin* to the detailed analysis of different types of shifts, labelled “A comprehensive table of shifts” (96). He listed two types of shifts: shifts for purely technical reasons and purposes, and shifts for expressive purposes (96). Technical shifts accentuate the clearly articulated instrumental characteristics of the violin, while the role of expressive shifts is more emotive (96). He explained the process involved with “expressive shifts” and noted the dependency of the left hand on the motions of the right hand (105). Again the topic of timing was mentioned, now in the context of affecting bow changes and vice versa (105). He stated, “this timing should not be left up to chance” (105). Gerle’s statement suggested that the cognitive organisation of the mechanics of both hands was the key to successful coordination and, therefore, execution of each phrase.

Hodgson’s Cyclegraph Experiments

Hodgson’s cyclegraph experiments are important tools in understanding the mental and physical challenges of violin technique. They were considered “modern science” in the 1930s, because they could record the “actual movements made by the bow arm” (Hodgson x). These cyclegraphs provided proof that the nature of bowing involved curved and circular motions, as opposed to straight lines. Hodgson believed that if these cyclegraphs were observed and understood, a violinist could solve the most complicated right-hand problems (x).

³ The topic of “shifting” is discussed in detail in chapter 4.

In Hodgson's work, the author covered anatomical, acoustic, mechanical and geometrical aspects of bowing. He believed that "bowing should begin with the visualization of the body as a machine" and viewed the arm as "a system of levers" (3). The upper arm carries the lower levers, making it the "dominating lever" that moves the rest of the arm (6). The upper arm is a large muscle and therefore has the potential to make larger, freer movements, while the smaller levers from the forearm down, have the ability to control subtle movements (6). Hodgson's approach analysed the physical movements of the muscles, joints and levers by visually representing them in his cyclegraphs. Chapter 13 defines a cyclegraph as "a photographic record of the track covered by a moving object" (58). Two points in the right arm are observed here, the second finger and the elbow (58). Through observation of this series of pictures, it becomes clear to the reader that every picture reveals circular motions of some degree. The violinist and teacher Robert Gerle agreed with the importance of visual conceptions of bowing, which is mentioned in *The Art of Practising the Violin* (61). He makes reference to "figure of 8" patterns, stating that "being able to visualise patterns like this, like finger patterns, helps greatly in learning correct bow movements which then fall automatically into place when put together with the left hand" (Gerle 61).

From chapter 8 of Hodgson's study, graphs of bow techniques were examined (35ff). This involved detailed study of "forward-curves" (35), "backward-curves" (39), "figure eight patterns" (41), "wave patterns" (45) and "loop series patterns" (49). Forward-curves are described as clockwise motions (35). An example of a clockwise motion would be produced by bowing an open D on a down-bow to an open A on an up-bow (36). Backward-curves are anti-clockwise movements (35). The bowing is switched, so, in the above example, the open A is now on a down-bow and the open D on an up-bow (39). When these two strings are repeated in an alternating pattern, a series of elliptical cycles are formed (36). The basic concepts behind forward-curves and backward-curves form the basis of all other bow strokes and bowing patterns. These will be discussed in more detail from chapter 2 onwards.

Chapter 5 of this commentary will look at articulations and mixed bowings, which are an extension of the bow techniques previously discussed in this literature review. Hodgson discussed articulations and mixed bowings in his chapter "Inherent qualities of the bow, and their application" (20), which contained detailed explanations of bow qualities at the heel,

point, and middle, balanced bow holds, bow movements in *spiccato* and *sautillé*, and bow movements in solid staccato. He used diagrams throughout to show the bow working as an “additional lever attached to the arm” (20). In *spiccato* and *sautillé* playing, an extra dimension in the form of movement “towards” and “away from” the string was added (22). The different roles of the forearm, upper arm and whole arm were discussed, but Hodgson’s main focus was to present a convincing argument that the most natural use of the bow is the most efficient. This means exploring the “elasticity” of the bow stick and bow hair, which contributes to the “springing” qualities of bow strokes (20).

Lauren Deutsch has worked more recently in 2011 in the area of motion study. Her doctoral study provided a comparison of the motor patterns of professional and student violinists. She continued on from Hodgson, using a combination of video cameras and motion technology software (2). She makes the point that much previous research into bowing technique has been conducted apart from considerations of repertoire and with advanced equipment, making it less than ideal for practical use by violinists and pedagogues (2). While Deutsch’s work focuses on analyzing basic bowing motions in a particular violin piece and comparing the violinists’ technical approaches, my work will definitively use Hodgson’s principles as a basis for my approach to my chosen work.

The fact that this is a repertoire-based case study makes it unique, because the technical and musical aspects of violin playing are combined to create a more comprehensive view of the work. Hodgson’s work is of particular interest to me, as he seeks to help violinists “disentangle the mass of contradictory ideas prevalent with regard to right-hand movements” (Hodgson ix). He uses his own research to explore the “inevitable” aspects of bowing, or the aspects that originate from natural laws, and the common elements of technique found in the highest level of violinists (ix). For these reasons, Hodgson is a worthy choice for consideration and commentary.

Chapter 2

Tone Production

Leopold Auer stated that tone production “must always be the most important task of those who devote themselves to mastering the violin” (18). Tone production at its highest level consists of a combination of relevant contact or sounding points, bow-speed, bow-pressure, bow distribution, and connectivity between bow strokes or changes of bow (Galamian 55). Performers constantly change and adapt these elements depending on different musical contexts, and if successfully executed in the right context, these elements will form the basis of a highly functioning bow technique. The performance research I have conducted on the first movement of Prokofiev’s Violin Concerto No. 2, leads to conclusions that tone production is not only a bowing issue but that it also directly effects the left-hand technical process and, therefore, the coordination of both hands.

The contact point or sounding point (the terms are treated here as interchangeable) relies on a straight bow stroke, parallel to the bridge, for optimum sound (Galamian 51). Drawing a straight bow, however, is complex and requires a series of subtle circular motions (51). The most natural position for a straight bow is when the forearm and upper arm are at right angles, which for most people is around the middle of the bow (52). It is at the “tip” and “frog” of the bow where problems are often faced (52). From the position of the square shape to the tip of the bow, the arm is fully extended by moving to the right and then slightly forward to create a straight bow (52). Galamian attributed the “necessary forward motion” involved here to the “circular character of the natural movements of the arm” (53). Hodgson acknowledged these “natural movements” by realising the “inevitability of curving movements” in violin bowing, and represented these movements geometrically (26). He classified bow movements according to three categories. The first is movement “across” the strings (Fig. 1). This represents the horizontal movement of pulling the bow perpendicular to the string (26). The second is movement “round” the strings (Fig. 2), which is the “across” movement with added string crossings (27). The third movement is “towards and away from” the strings which is used to create various articulations (26). Hodgson’s descriptions of the vertical and horizontal elements involved in bowing allow us to understand more clearly the connection of the bow to the string.

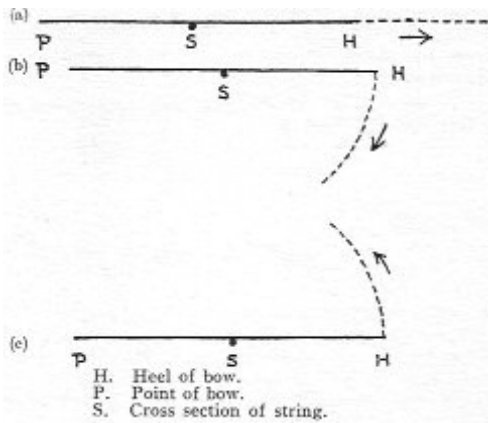


Fig. 1. Hodgson, "Across" (26).

Figure 1 shows a simple down-bow stroke on one string (26). Examples (b) and (c) in the above figure show the circular, "pivoting" motion of the stroke at the heel of the bow in both clockwise and anti-clockwise directions (27). The connection between strings occurs when the clockwise pivot connects the chosen string to the upper strings and the anti-clockwise movements leads to the lower strings, thus portraying the fundamental connectivity of bowing and the beginnings of the *legato* stroke (27).

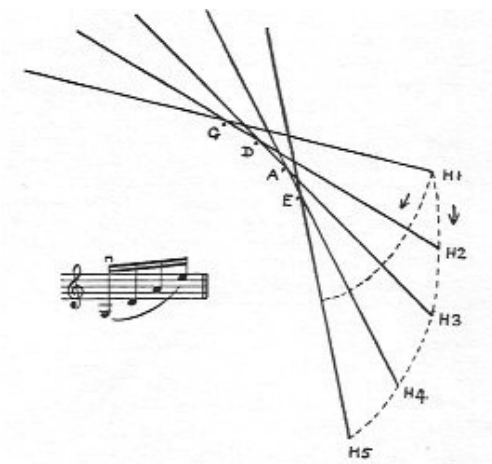


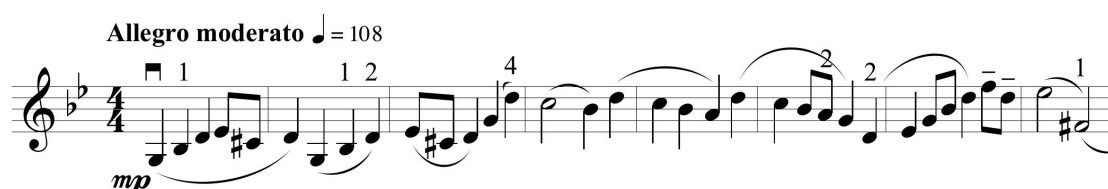
Fig. 2. Hodgson, "Round" (27).

The diagram in Fig. 2 above shows an example of four notes (one on each string) slurred in a down-bow starting at the heel of the bow (27). The dotted curve marked commencing at H1 shows the curved motion of the pivot action while the arc delineated by positions H1 to H5 shows the curved motion when the pivot is followed through with a moving bow (27). The

crisscrossed points between the G, D, A and E symbols show the point of transition between the two strings, which allows essential connectivity (27).

I explored the elements of connectivity involved in these diagrams in the opening melody of Prokofiev's concerto. In addition to this, I implemented one of Simon Fischer's suggested soundpoint exercises. His efficient method involves practicing with relevant bow-speed, bow-weight, and bow distribution, all at once, identifying different soundpoints⁴ in the particular phrase (*Basics* 48). Five soundpoints are nominated within the space between the bridge and the fingerboard: (1) Near the bridge, (2) between the bridge and the central point, (3) at the central point, (4) between the central point and the fingerboard and (5) at the fingerboard (47). Fischer states that this way of practising "instantly increases your sensitivity to the feel of the bow in the string so that you immediately gain the finest control" (48). He adds, "Practising on all five soundpoints is helpful whatever the soundpoint you will eventually use, and whatever the stroke" (48).

Prokofiev's opening theme provides a passage for investigation into soundpoint techniques and *legato* playing in an easily observable way.



Ex. 1. Prokofiev, Violin Concerto No. 2, first movement, mm. 1-9.

If the fingering in Ex. 1 is fixed, the performer can begin the process of analysis into good tone production by observing the strings that will be used and how the notes on different strings correlate with Prokofiev's slurred markings. The first, second and third slurs contain notes played solely on the G string. The fourth, fifth, sixth and seventh slurs contain notes on the D string. The eighth slur contains a mixture of notes on the G, D and A strings, and the remainder of the phrase to rehearsal figure 1 (m. 9) involves one string-crossing, from the A to D the string. I used a slow bow-speed combined with weight close to the bridge to execute the opening phrase on the G-string. It is not until the segment starting on the fourth slur that I

⁴ Fischer uses this term in place of "contact points" or "sounding points".

used a faster bow speed, which I found continued an effortlessly rich sound on the D string. In the sixth and seventh slurs, an equal bow distribution on each note was used. This distribution aligns with left-hand finger articulation to produce clarity through the expressive descending line. Saving bow at the start of the eighth slur creates necessary space for a smooth upward curve leading to the two *tenuto* notes. I chose to play these notes in the lower half of the bow, to eliminate any potential unevenness in the phrase. This bow distribution not only produces a better *legato* sound, it also conveniently allows the bow to be positioned at the frog for the next two notes, which require a consistent, slow bow speed, within one whole bow.

The string crossings in Ex. 1 can be identified in Hodgson's *Motion Study*. If the passage begins on a down-bow, the first string crossing in the middle of m. 3 will be a forward-curve (a down-bow from the lower string to an up-bow on the upper string) (36). The string crossing at the end of m. 6 displays a backward-curve (a down-bow from the upper string to an up-bow on the lower string) (39). The third string crossing is a backward-curve (lower to upper strings are slurred on an up-bow) (40). The fourth is also categorised as a backward-curve (upper to lower strings under a down-bow slur) (40). Leopold Auer's writing of the co-dependence of the two hands is relevant here. He believes that the importance of "timing of left hand finger release", with the corresponding actions of the bow, must be realised in observations of *legato* playing (32). He provided the following advice to performers wanting to improve their tone production: "Do not raise the finger on one string before the tone of the next string sounds" (33). In my own practice, I found that increasing the awareness of the simultaneous actions of the bow motions with smooth, connecting movements between each placement of the left-hand fingers, created a successful *legato* effect. If the performer is able to master these connections in the opening phrase, these concepts can be applied to similar sections in this movement, for example, rehearsal figures 6, 7, 10 and 25.

The opening passage of the Concerto covers examples of curved motions in the bow. The material commencing at rehearsal figure 16 (m. 138) provides an example of extended curved motions used in *legato* playing, which then develop into circular motions or "ellipses" (Hodgson 36). The extension exists because of the frequent bow changes (every quaver note) and string crossings that occur. The first six bars of rehearsal figure 16 are as follows:

Più tranquillo

p dolce

Ex. 2. Prokofiev, Violin Concerto No. 2, first movement, R16. mm. 138–144.⁵

The first two and a half bars of Ex. 2 show backward-curve string crossings, which form circular figure-eight patterns when the bow moves between the two strings. Figure-eight patterns are described by Hodgson as “compound curves with two loops” (41), see Fig. 3.



Fig. 3. Hodgson, “Cyclegraph of Extended Figure 8 Pattern” (58).

Half way through m. 140, a change in motion creates a forward curve. This pattern then repeats itself in m. 141. The whole of m. 142 ascends in a series of forward circular motions, while the whole of m. 143 descends in a series of backward circular motions (excluding the forward motion between the 6th and 7th notes). Hodgson’s motion study provides a cyclegraph of ascending forward loops in an almost identical passage:

⁵ ‘R’ stands for ‘Rehearsal figure’ as used in the Boosey and Hawkes Edition of Prokofiev’s Violin Concerto No.2.



Fig. 4. Hodgson, “Cyclegraph of Ascending Forward Loops” (58).

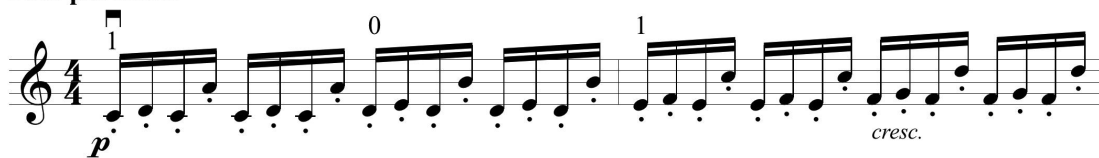
In my own preparation of this Concerto, Ševčík’s *Opus 2 Part 3* exercises helped to solidify the curved and circular motions of Hodgson’s graphs. It is helpful to work through Ševčík’s “whole-bow”, “half-bow”, “middle of bow”, “legato” and “various legato styles” exercises, as they correspond with the melodic passages in Prokofiev’s Concerto, and give the performer a head-start in practising the basics of tone production with the precise timing of coordination of the changing left hand notes (Auer 33). Ševčík’s *Opus 2 Part 1* exercises were an important part of my study into tone production, in particular the “Cresc./Dim.” variations. The No. 6 exercises are a study in quavers, which corresponds with Rehearsal figure 16. Numbers 10, 11 and 12 are variants of this exercise and also relevant as supporting technical work. It is important to begin the exercises on both up and down bows, as the opposite bowing will change the remainder of the patterns so that each and every forward-curve, backward-curve, figure eight and looping pattern is covered.

Chapter 3

String Crossings

Many passages in the first movement of Prokofiev's Violin Concerto No. 2 present the performer with different combinations of problematic string crossings. Hodgson's analyses can be applied to all repertoire, and will help helping performers solve the many obstacles they face in Prokofiev's Concerto. Three sections of the Concerto have been chosen as case studies in this chapter, and these are analysed and categorized under Hodgson's system of classifications. Through the combination of Hodgson's string-crossing classification method and my own performance research, the technical processes involved in different combinations of string crossings, will be outlined. The first section for analysis is encountered at Rehearsal figure 3 (m. 28) in the Concerto.

Poco più mosso



Ex. 3. Prokofiev, Violin Concerto No. 2, first movement, R3. mm. 28–30.

The bowing pattern in the first two bars of rehearsal figure 3 (Ex. 3) involves a series of ellipse motions.

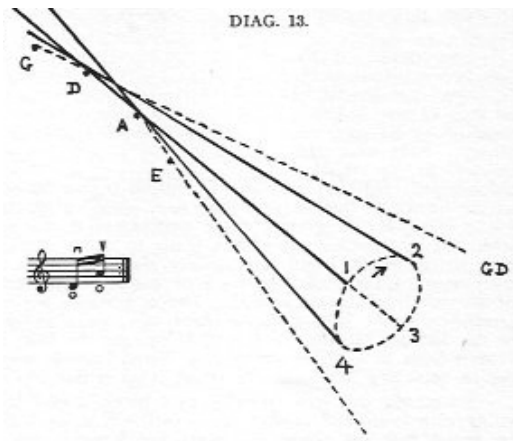


Fig. 5. Hodgson, “Movements Across and Round Two Strings” (28).

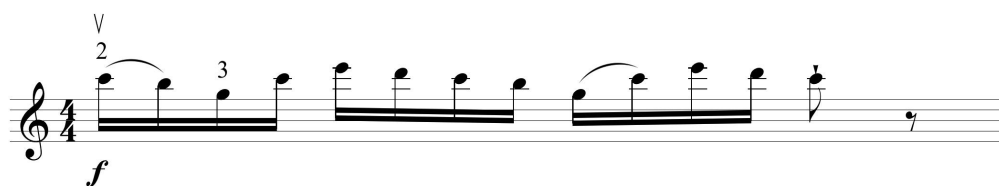
Fig. 5 shows the elliptical path that occurs when single-note semiquavers are played in rapid succession on the D and A strings (29). In this case study, the string-crossings are understood to work on any two separately bowed notes on neighbouring strings. For example, the first pattern at rehearsal figure 3 consists of an elliptical bowing motion between the G and D strings. The second variant to this bowing pattern is that the pattern in Prokofiev’s writing does not consist of alternating strings on every semiquaver. Though Hodgson advised us to assume that the alternations of D and A strings are in perpetual motion, he then explained that it is the motion between pairs of notes that is important (29). Prokofiev’s music provides us with an example of this pattern at the end of each group of four semiquavers in Ex. 3. The elliptical shape is formed here because the note following the pair of string crossing notes (the first note of the following group of four semiquavers) returns to the original string. There are two moments in this string crossing where the bow will touch both strings simultaneously (29). In Fig. 5, these points are shown as numbers 1 and 3 (29). Number 1 is where the bow starts (29). Hodgson explains the practicality of the elliptical shape, and how the shape influences movement at the heel of the bow, aiding in the execution of clean string crossings (29). Of the bow action he stated:

By merely making a down-stroke action *across* the strings, it would obviously play D and A together in double stopping. To play D alone it must simultaneously move away from A and therefore *round* D, thereby reaching some such position as that marked 2; moreover, in the course of the same stroke it is compelled to curve back again, or will not return to the double string position in readiness to begin playing A with the up bow. This curve cannot form part of a circle, as the distance of the heel of the bow from the D string, and therefore the radius, has been lengthened during the pivoting round the string. (29)

When the bow arrives at position “3” on the diagram, the bow will move *round* the A string, and on it’s return to position “1” it will have covered two pivots in the cycle, resulting in the ellipse motion (29).

To fully understand the complex nature of the string-crossing process involved here, I chose to practise this passage without the written *staccato* markings. I found that these articulations were not essential in the early stages of learning the passage. Through the process of practising the passage lower in the bow (around the balance point), and in a slow and legato manner, I found that with increased speed, the bow organisation I had practised led to the successful execution of a naturally bouncing bow. (The *spiccato* stroke will be elaborated on in Chapter 5.)

Analysis of the string crossings in m. 32 and m. 36 will conclude this case study. These two bars contain only forward-curves:



to a combination of bowing patterns that may be involved here. If the performer begins this passage in first position and continues in low positions (Ex. 5), the form of “wave patterns” will occur due to the nature of the rapid string crossings under slurs (45).

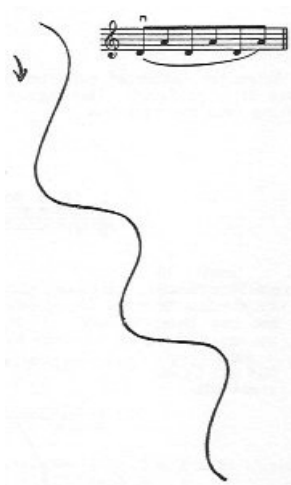
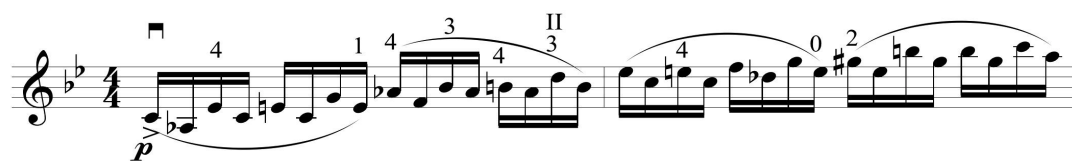


Fig. 6. Hodgson, “Wave patterns” (45).



Ex. 5. Prokofiev, Violin Concerto No. 2, first movement, R11. mm. 101-103.

My chosen fingering, however, involves numerous shifts to minimise the number of string-crossings needed.

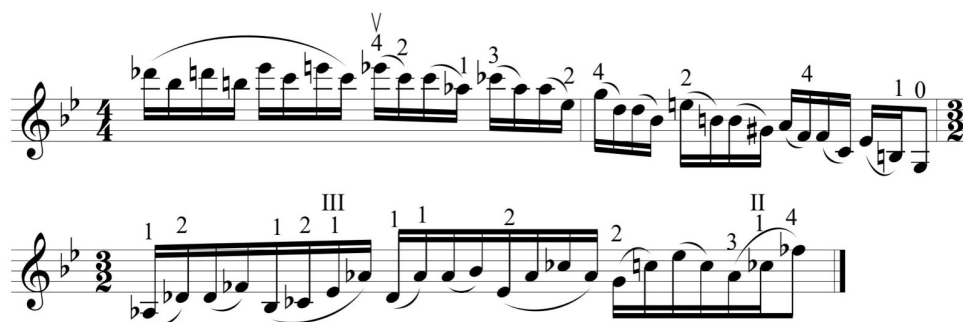


Ex. 6. Prokofiev, Violin Concerto No. 2, first movement, R11. mm. 101-103.

This fingering, shown in Ex. 6, creates patterns that resemble asymmetrical versions of the typical wave pattern, as many of the notes are played in higher positions on the string. The action involved in making the wave patterns occur, happens at the end of the slurred whole bows in this example. Wave patterns in their symmetrical form (see Ex. 5) are easy for

performers to visualise (Hodgson 45). Even though the wave pattern is elongated and fragmented in Ex. 6, the visual element of the string-crossings is still important. In sections of technical difficulty, in this case in both hands, it may be useful for the performer to observe the section in a broader sense, to be able to successfully execute the smaller details of the passage in performance. The left-hand difficulties in examples 5, 6 and 7, revolve around problematic intonation, as a result of constantly evolving hand positions. Chromatic intervals, inconsistent sequences, shifting, and extensions form the left-hand challenges. The difficulty for the right hand, is to simultaneously execute string crossings and changes of bow under differing slur lengths. Therefore, the co-ordination of both hands presents challenges to the performer.

A new two-note slurred pattern is established from the middle of m. 103 (Ex. 7).



Ex. 7. Prokofiev, Violin Concerto No. 2, first movement, R11. mm. 103-106.

To understand the interdependence of the hands here, a fingering must first be chosen. The fingering shown in Ex. 7 above was used in my performance. It was chosen because it involves small shifts, which help the efficiency of the left hand in this fast passage. Continuing the bowing from the beginning of the passage, the bow direction at the middle of m. 103 will be an up-bow. The bow's point of contact will be in the upper half of the bow, resulting from the previous whole bow drawn on a down-bow. The bow can either stay in the upper half or travel towards the middle point or lower as the passage progresses. The bowing in m. 105 provides the performer with a means of travelling down the bow. The first bowed group of four and the last group of three, are places where the up-bow can help the performer move to the frog where the next figure will begin. Organised bow distribution in this passage will facilitate even-sounding and rhythmic string crossing patterns. Measure 103 is played on the E string until the last semi-quaver, which results in a backward-curve. The following two-note

groups will result in forward and backward ellipse motions. If this passage was to be represented in a cyclegraph format, it would look like a series of pivoting loops joined quite closely together, with the loops moving in both clockwise and anti-clockwise directions to represent the forward and backward-curves (53), or, like a condensed version of the following illustration.

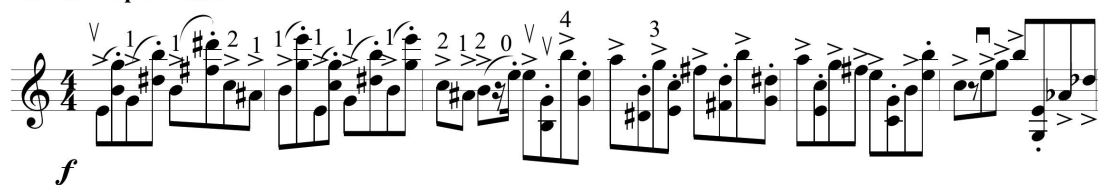


Fig. 7. Hodgson, “Forward and backward pivoting loops” (53).

The visual element of these curves is important. In Hodgson’s diagrams, the performer can see the exact point that curves happen in a particular stroke, and can then begin to replicate what they see, in real motion. Hodgson asks; “Why not teach the movements which are actually made, as proved by motion pictures, instead of describing imaginary ones which are fallacious?” (xi). In practice, the natural movements of curves, ellipses and loops become conscious through visualization, which allows them to be synchronised more accurately with corresponding left-hand mechanisms.

Rehearsal figure 13 (m. 113) features a number of the bowing motions previously mentioned in this chapter. These include forward and backward curves, elliptical loops and wave patterns. In Ex. 8 they are all combined in a single section, with the added complexity of double stopping.

Pochissimo più mosso



Ex. 8. Prokofiev, Violin Concerto No. 2, first movement, R13. mm. 113-119.

I bowed this section starting on an up-bow and then continued the bowing as dictated by Prokofiev's phrasing marks. Measure 113 contains three groups of two-note slurs. These show a backward-curve, forward-curve and backward-curve respectively. The first and second slurred groupings are connected by a forward-curve, and the second and third groupings are connected by a backward-curve. The circular activity involved here is contained under an overriding wave pattern, which occurs due to the oscillating nature of the string crossings. The final two quavers of m. 113 lead melodically to the first two quavers of m. 114, which are shaped as a forward-curve. The pattern of m. 113 is then repeated. If the dotted rhythm in m. 115 is hooked (separated notes in the same bow) with two down-bows, a series of forward-curves follow. This continues until the pattern is broken with a backward curve at the end of m. 117. From m. 118, the bowing above allows the forward-curves to continue to the end of the section in a pattern of elliptical loops that work quite comfortably in the bow arm (with one exception at the end of m. 121). Hodgson's motion study shows that a passage like this, with difficulties including double stops, shifting, mixed bowings and single to double note slurred string crossings, can be made somewhat easier with an analysis and visualisation of the right-hand technique involved.

As a supplementary study, Ševčík's *Opus 2 Part 3* variations work well not only for detailed work on tone production, but also for concentrated practice of string crossings. I found it useful to first practice the *legato* variations for the connections between bow strokes on different strings. Numerous options for practising these variations follow, as proposed in Simon Fischer's introduction to the exercises. These studies provide a base for exploration of Hodgson's looping movements, which begin in Part Three of his study. In particular, "compound curves with two loops" or "figure eight" patterns are addressed, covering the main forward and backward curved motions. Number 30 provides heightened challenges in the form of string crossings, which "jump" a string. Because these exercises reach beyond

neighbouring string crossings, it is crucial to master them with the goal that smaller crossings will then seem more efficient. The variations also move systematically through different bow-distributions. This bow organisation is an essential element of all of the string crossing passages in Prokofiev's Concerto.

Chapter 4

Shifting

Ivan Galamian clearly and directly defined the three fundamental types of shifts: “1. The same finger plays the note preceding and the note following the shift, 2. The shift (sliding motion) is performed by the finger that is on the string when the shift starts, but a new finger plays the arrival note, 3. The shift is performed by the finger that will play the arrival note” (25). In the context of this thesis, these shifts will be considered in relation to their timing and coordination with corresponding bow techniques. Throughout this chapter, the fundamental shifts will be referred to in accordance with Galamian’s numbers above (types 1, 2 and 3). As discussed earlier, Galamian believed timing to be an essential factor in the development of the left hand (22). Left-hand preparation has to be fast so that the action is not delayed in comparison to the bow (23). The bow also has its preparation in relation to placement on the string before the next bow stroke (23). Good technical timing occurs when the left and right hands are precisely coordinated (23). To be able to master technical timing, Galamian wrote of the significance of the “immediate and accurate response of the muscles to the directives of the mind” (23). I believe this concept to be directly related to the interdependent organisation of both hands.

The music commencing at rehearsal figure 2 of the first movement of Prokofiev’s Concerto No. 2 (m. 18) will serve as the first case study in this chapter. The phrasing and tone production elements of this section are similar to those of the opening phrase, but this passage contains distinct examples of the coordination of shifts and right hand technique, in the context of a legato line. It provides examples of each of the fundamental shifts described by Galamian.

Ex. 9. Prokofiev, Violin Concerto No. 2, first movement, R2. mm.18-28.

The fingering given in Ex. 9 above was used in my performance of the Concerto. It was chosen with attention to the varied tonal qualities of different strings, and the expressive possibilities of shifts in the phrase. When possible, extensions were used to enable efficient, smooth movements in the left hand, leading to a smoother connection between notes in the *legato* phrases. Measure 20 shows an extension fingering between B \flat and D, while m. 21 involves a combination of a shift and an extension. The extension element of the shift happens towards the end of the shifting action. This creates a smooth connection, while keeping an element of release in the hand's shifting motion, leading to possibilities of a freer, more resonant vibrato. I found this to result in the most physically efficient option. The first note of m. 22 is also the result of an extension. Measure 23 contains two large shifts under separate slurred markings. The first shift is an example of a "type 2" shift, where it is executed by the second finger, but the fourth finger places the new note. This shift is helped with the coordination of the right hand release in the previous semiquaver rest. In this rest, the right hand also gives the left hand time to prepare for the next note. The second shift in the bar is a "type 3" shift, where the shift is performed with the third finger. The release of pressure of the left-hand fingers on the string is particularly important here as the final note is a harmonic. The bow however, sustains the sound, so that the harmonic is clear and as "full" sounding as possible. The harmonic's sound will linger for a moment after the left hand finger is released, giving time to prepare the left hand for the start of the next phrase in 3rd position. Here, a "type 1" shift is immediately implemented between C \sharp and E. The sustained nature of the bow in the stronger *mezzo forte* dynamic marking, moves the focus from the shift and into the *legato* bow, creating a smooth left-hand mechanism. The change of bow at the end of this phrase marking can be used to the performer's advantage to create an inaudible "type 2" shift to the C \sharp . Extensions are used where possible for the remainder of this section.

Rehearsal figure 6 (m. 52) also contains shifts under *legato* phrasing marks. Due to the lyrical nature of the melodic material, this section contains many opportunities for expressive shifts. Prokofiev marked a new tempo in this section—*meno mosso* (crotchet = 80)—and I took the *piano* marking to imply a significant "colour-change" for the solo violin line.

Meno mosso $\text{♩} = 80$

p

Ex. 10. Prokofiev, Violin Concerto No. 2, first movement, R6. mm. 52-61.

From the first note of m. 52, the chosen fingering of this passage allows for expressive playing in the way that the shifts and vibrato are executed. I chose to start the passage on the 3rd finger, which in my case, enabled a freer sounding vibrato than using a 4th finger. The 3-3 fingering on the first two notes of the phrase can be played with *portamento* between the chromatic notes. I chose to use “type 2” shifts from mm. 53 to 55. These shifts coordinated with the written phrase marks/changes of bow, allow for inaudible shifts, and therefore a cleaner execution. The timing of the shift to the C# in m. 53, and the corresponding place in m. 57, is dictated by the timing of the bow movement in the phrase. Although the phrase is *legato*, these two-note slurs can be slightly phrased-off, creating a miniscule space for the left hand to release its pressure on the string between shifting mechanisms. Here, the two hands can work together to create a graceful musical line. The remaining shifts in this phrase were chosen for musical purposes. I preferred an audible difference between the extension of the first note of m. 55, and the expressive shift to the climactic first note of m. 56. The phrase continues to the end in a sustained manner, with a concluding “type 2” shift up to the E in m. 58.

The following case studies will provide short examples or “snapshots” of shifting principles that can be applied to other sections throughout the work. Rehearsal figure 8 (m. 69) shows shifts in mixed bowing patterns. I interpreted the *piano* marking to suggest a more whimsical sound, which is achieved if the lightness in the bow corresponds with the lightness of the left hand shifts.

Ex. 11. Prokofiev, Violin Concerto No. 2, first movement, R8, mm. 69-73.

The shift to fourth position on the E in m. 69 was chosen because it metrically aligns with the quaver pulse of this scalic passage. Because the shift falls on the first note of a triplet figure, the natural articulation of the shift under a slur helps the clarity of the left-hand notes. The fingering in m. 70 works together with the right-hand motions to create cleaner, easier shifts. The shift up to the high D, on beat one of bar 70, is the largest shift in this passage, and dictates the “reset” of the hand in a high position. If the performer concentrates on the motion of the bow moving from a lighter up-bow to a slightly more weighted down-bow, the shift moves towards the body and into place with a feeling of gravitas. The resetting of the hand in 6th position also involves an immediate “opening” action from the base knuckle joints at the moment the D is placed, to prepare for the extension to the high A. The hand then contracts into 6th position until it shifts back to first position on the low A. The cleanliness of these mechanisms is helped by the articulation markings in the bow. Frequent bow changes and *tenuto* markings allow crucial time in which to finish previous left-hand actions and prepare new ones. Similarly, left hand articulation can aid the rhythmically timed shifts in m. 71. The shift down to second position on the B is again helped by the bow’s *tenuto* markings.

The importance of the timing of motions in both hands is easily observable in the first two bars of rehearsal figure 13 (see Ex. 8). As the player executes the string crossings discussed in Chapter 3, the motions in the left hand play an integral role in the coordination of the technique as a whole. The double-stopping figures on the second quaver of each group pose a challenge to the performer. The difficulties arise from the string crossing from a single string to a double-stop on two higher strings in the same bow, while having to immediately prepare for the next sequence. The staccato articulation, however, works in favour of the performer as it offers a slight bow release that allows the left hand to prepare the next note quickly in

advance. The accents necessitate the bow to prepare the stroke from the string, and also support the shifting impulse, helping the shifting finger to feel anchored accurately (ideally without tension), enabling the following double-stop to sit comfortably in position. The performer must markedly articulate the accented up-bow gestures so that they do not sound weak in comparison to the down-bows. An even articulation enhances the mechanical quality that may be musically appropriate to the passage. This is an excellent example of left and right hands working together to create a successful technical result, which in turn will produce the desired musical outcome.

Ševčík's Op. 8 studies for changes of position provide a series of useful shifting exercises. The exercises present a combination of shifts between hand positions, ranging from varied shifts between 1st and 2nd position, through to shifts from 1st to 8th position. Each exercise includes shifts on each string. In my practice, these exercises were not only used for the analysis of shifting mechanisms, but also to concentrate on achieving pure intonation on every note. The first exercises in this volume contain various shifts (up and down) between first and second position, including finger-replacement exercises. These are an excellent foundation for exploration into lightness of the left-hand finger connection to the string, while keeping an even, consistent bow speed. From exercise 4, "type 2" shifts are introduced. To be able to hear the detail in each shift clearly, I practiced these in a slow tempo and changed bows only after shifts. With a "type 2" shift, the release of the "old finger" on the string must be perfectly timed so that the placement of the "new finger" is precise. This mechanism can be practiced repeatedly, keeping an even bow speed, so that the hands and arms begin recognize the feeling of this movement. It is only through repeating the correct mechanism in practice that the shift can be replicated accurately at will. While working through each variation of these exercises the performer will explore the different mechanisms used in shifts of all sizes, using these exercises as a template. The smaller shifts will require a heightened sense of touch and, as the movement gets bigger, more of the hand and arm become involved.

Chapter 5

Articulation and Mixed Bowings

In his book, *Principles of Violin Playing and Teaching*, Galamian discussed articulation in the chapter titled “Technique and Interpretation” (9). He considered articulation to be an extension of tone production, describing the importance of balancing “consonants” with “vowel” sounds (10). He makes particular reference to Prokofiev’s Second Violin Concerto, illustrating a variation of *detaché* in the form of *detaché porte* which is found at figure 16 (m. 138) in the first movement (68). According to Galamian, the notes in this passage with *tenuto* style markings are to be played with a slight swelling at the beginning of the note with a gradual release towards the end (68). This type of *detaché* is specifically used to give expression and should have a *portato*-like quality (68).

The *martelé*, *spiccato* and *sautillé* bowings in this movement require many different types of attack (84). Galamian described three different types of bow attack (84). These include: (1) the very smooth, vowel-like beginning, (2) the clearly defined consonant-like attack and (3) the accented attack (85). Bow attacks and articulations incorporate elements of bow speed, bow pressure, point of contact and change of bow. Variations to these elements create dynamics, contrast and phrasing through a diverse range of vertical and horizontal movements (85). Galamian believed that the left hand plays an important role in the quality of different articulations (85).

The articulation symbols in Prokofiev’s Violin Concerto No. 2 are made diverse by their placement in passages containing complex mixed bowing patterns. Rehearsal figure 4 (m. 37) is an example of *staccato* articulations within mixed bowing patterns. Whereas a normal *staccato* action is a bouncy, off-the-string type bow stroke, Galamian described the bow technique used here as “the clearly defined consonant-like attack” (85). This type of attack is appropriate in this section because the *staccato* markings need clear definition, even though they are not accented (85). Galamian suggested that this attack is achieved by placing the bow on the string with the same pressure that will be used for the successive bow stroke (85). Hodgson advised the slow practice of *martellato* (*martelé*) in a passage requiring this type of *staccato* (from the string) (81).

Ex. 12. Prokofiev, Violin Concerto No. 2, first movement, R4. mm. 37-40.

Bow distribution and bow speed contribute largely to the success of tone production in passages containing mixed bowing patterns. For example, in the section marked *pp* above, alternating fast and slow bows occur, which the performer must achieve without losing a good, even tone (Galamian 86). The bow speed on the *staccato* note has to be quite fast, yet light, and the contact point should be slightly further from the bridge (86). It is important to “catch” the string on the first note, so that the necessary bow speed is established at the start of the note (87). This “catch” can be described as a slight pressure and release in the bow-hand fingers when the bow touches the string, allowing a clear start to the note. I played this section in the upper-half of the bow, which resulted naturally from bowing out the previous section as written. I used a full quarter of the bow length to enable the following three notes to have enough bow to “speak”. The upper-half of the bow is preferable in this section because naturally there is less weight at the tip, which facilitates the *pianissimo* dynamic. This means however, that the contact point should be closer to the bridge, and the “catch” action will need slightly more bow pressure to produce the same clarity as in lower parts of the bow.

In contrast, rehearsal figure 3 (see Ex. 3) demonstrates a *spiccato* movement, which is an off-the-string *staccato* bow stroke (see Hodgson 79). The bow movements required for this stroke include movements towards and away from the string, and across the string (22). Hodgson analysed these movements in the middle of the bow (appropriate to rehearsal figure 3) (22). He believed that “forearm rotation” is the key to off-the-string bow strokes (22). Through his own motion studies, he showed that forearm rotation generates “greater rapidity than is possible in any other *active way*” (22). When an “upper arm swing” is added to this action, the result is *spiccato* (22). He goes on to show the circular motion that still occurs in a *spiccato* stroke (23).

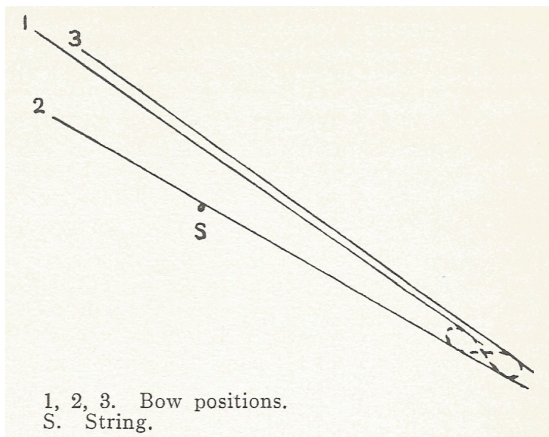


Fig. 8. Hodgson, “Bow Movements in *Spiccato* and *Sautillé*” (23).

Figure 8 shows the figure-eight path of the hand as it plays two *spiccato* notes (down-bow to up-bow) (23). Hodgson explained the meaning of the three numbers on this graph as follows: 1 indicates the bow position *before* impact, 2 is the position *at* impact and number 3 is the rebound *after* impact (23). These three motions happen within the first down-bow stroke and in each successive stroke (23). The figure-eight pattern occurs in every part of the bow while it is airborne (23). To grasp the concept that this circular motion exists in off-the-string bow strokes, is to realize the relationship between each of the bow strokes. The left hand preparation time is extended by the time it takes to execute this circular movement. This time allows for potential connectivity between the bow strokes and corresponding left-hand notes.

Rehearsal figure 13 (see Ex. 8) is an example of a combination of different articulations (in this case, *staccato* and accent markings) and mixed bowing patterns. These bowing patterns occur in a series of detached and slurred single notes and double stops. In Chapter 3 of this commentary, the forward and backward curves involved here were analysed, leading to some solutions on connectivity between the bow strokes in this section. Hodgson developed this further in his writing on “modifying curves” (76). He wrote, “the bowing of double strings will prove efficacious in keeping curves within bounds” (76). By practicing exercises containing single to double note transitions, the performer can calculate the precise amount of bow length and pivot action needed for optimal efficiency (76). These principles can also be applied to mm. 128-130.

Ševčík *Opus 1, Part 1* contains important and relevant studies that highlight mixed bowings and articulations. Exercise 29 is titled “Exercises in various styles of bowing” (40). I found these exercises particularly helpful to practice as part of my preparation for this particular concerto. This exercise is useful because it explores bow distribution in different parts of the bow with different note lengths, variations on slurred and separate dotted rhythms, and thoroughly covers many of the articulations used in Prokofiev’s concerto. The extensive array of mixed bowing patterns provided in this exercise are completely bow-orientated. Any difficulty with left-hand technique is more to do with preparing string crossings and being wholly organised in the bow. With 170 bowing variations, the student is likely to find a challenging project in this exercise alone. Exercises 14, 15 and 16 in this book are also relevant. They include exercises in sixths, octaves, ninths and tenths. This preparatory exercise is an exercise in string crossings that corresponds with rehearsal figures 13 and 14. Ševčík writes double-stopping options to promote the practice of absolute connectivity in the bow and between the left and right hands. Ševčík’s *Opus 2, Part 3* exercises are also very useful to practice in this context. In the area of mixed bowings and articulations, I found the “various legato style” exercises particularly helpful. I personally like the methodical approach of working through the various bow styles in Ševčík’s order. As the rhythms and techniques change and diversify, the performer is constantly adapting to the new variations. The bowing style is originally *legato* but moves through a series of “off the string” strokes. These patterns are directly relatable to the concerto, making them useful complementary studies of this work.

Conclusion

In Hodgson's own conclusion of his motion study work, he specifically discussed its level of significance. Through gathering motion study data and collecting numerous cyclegraphs, he felt that he had proved a connection between bowing movements and the natural movements of the human body and that in itself, this was enough to validate a new way of thinking (103). Lauren Deutsch mentions some limitations of Hodgson's work in her doctoral thesis. She states that "Hodgson does not explain his data collection methods clearly, and it is unknown whether he studied many violinists or just one violinist to come up with his conclusions" (10). She also points out our lack of knowledge regarding the technical level of the violinists in question, and believes that we can only draw limited conclusions from his work (10). Due to the fact that Hodgson studied the numerous violin schools, analysed the techniques of the greatest violinists in the world, and took literally thousands of cyclegraphs of every possible bowing, I believe that his study (even if not diligently recorded) is an invaluable educational source (xi). It leads to the conclusion that all bowing movements are arguably governed by natural laws of circular motion. By becoming more familiar with Hodgson's writing, I have found the importance and relevance of his work to be clear.

In the preparation and performance of this Concerto, one particular performance stood out in my mind. It was a practice-performance in which I experimented with channeling 100% of my focus on my bow arm. As opposed to my expectation that I would miss many shifts and that much of the passage work would be out of tune, many of the usual left-hand technical problems actually fell into place, and the freedom I felt in this performance was unmatched by any previous experience. It was more difficult to perform with this level of ease in the high-pressure situation of my Master's recital, but on reflection, I see that studying the Concerto in this way has solidified my technique, specifically the coordination of my two hands, and changed my violin playing for the better. Fundamentally, my own personal experience of the physical and psychological aspects of this approach will inform my practice, performance and teaching methods henceforth. Hodgson maintained that his analyses were to be used as a guideline for future teachers in their quest to realize and solve students' problems as they arise (103). The ideal outcome for any student or performer is to be able to execute the fluid, circular bowing movements with complete ease and committing these basic, natural movements to the subconscious (103).

I believe that this case study sheds light on the co-dependence of the two hands, and presents a case for the thorough preparation and organization of the right hand. Only through such organization can a link be attained with the left hand, and the two hands then work together to produce a highly functioning collaborative result. I believe that this collaboration is one of the keys to exceptional violin playing and is a significant move towards technical and, therefore, musical freedom.

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