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BOWING DRILLS:  
HIGHLY ADAPTABLE EXERCISES FOR ALL AGES

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BOWING DRILLS:  
HIGHLY ADAPTABLE EXERCISES FOR ALL AGES

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## ABSTRACT

In the orchestral string world, the left-hand is primarily responsible for pitch while the right-hand is accountable for much of the remaining elements of music including tone, dynamics, articulations, and phrasing. While many orchestral string methods focus primarily on pitch and reading music, tone production is often neglected. Few resources address the use of the right-hand isolated from the left-hand. Those resources that are available address only one instrument at a time, so classroom use is impractical. Furthermore, many students in the United States only receive instruction from their public school teachers, who often do not have extensive experience on a student's particular instrument. The result is dominated materials and students lacking a beautiful, resonate, stylistically appropriate sound quality.

The method introduced in this document—*Bowing Drills: Highly Adaptable Exercises for All Ages*—develops bowing technique to the equivalent proficiency of string players' left-hand skills. By isolating the bow with several exercises, teachers can quickly improve their students' tone, timing, clarity, and ensemble playing. This method focuses on bowing through string crossings aimed at helping beginners who cannot read music to advanced students who are perfecting their tone. Five basic bowing patterns that isolate string crossings on adjacent strings, skipping strings, and double stops are used to improve bowing performance at increasing tempi. The patterns are highly adaptable and can be used for individual or group warm-ups and practice exercises, or to improve basic to complex orchestral bowing passages. Variations are limitless and easily adaptable. By using the concepts found in *Bowing Drills*, teachers can create their own exercises to address any bowing, articulation, dynamic, style, adding in the left-hand and more.

Additionally, the traditional orchestra educational system in the United States is filled with barriers, including the prohibitive costs of instruments, materials, and private lessons, as well as the background knowledge needed to understand technical concepts found in many methods. *Bowing Drills* is a free-use resource suitable for school orchestras, private lessons, collegiate applied lessons, and more. Because there is no cost, students only need to know their open strings to play. Financial and knowledge-based barriers are removed from the method.

In this document I cover the need for a new method and existing materials that can be supplemented with *Bowing Drills*. I will also teach the five basic bowing patterns of the method, how to adapt the patterns for your individual teaching needs, and how to isolate learned skills and scaffold in new concepts through easily memorizable exercises. Additionally, this document contains double bass-specific bowing patterns and I apply the concepts to standard double bass literature.

**CHAPTER I:**  
**An Introduction to *Bowing Drills: Highly Adaptable Exercises for All Ages***

**I. Statement of Purpose**

Imagine going to the symphony for an evening out on the town. Perhaps your favorite piece is being played, and you have been excited for weeks. You arrive, find your seat, and wait impatiently. The conductor finally saunters out onto the podium, front and center on the stage. The orchestra brings their instruments up into position to start. The music starts, but... it is just terrible. The strings are not playing together, and the sound is screechy from some, borderline nonexistent from others. There is no sense of style, and everyone seems to be playing “to the beat of their own drum.” These are supposed to be professionals. You ask for your money back and never return.

While the description sounds fictional, it is the reality for many middle school orchestras. Musicians practice for years before reaching proficiency. Thousands of hours of practice and rehearsal are dedicated to playing a stringed instrument at an expert level. As string pedagogue Robert Gerle states, “There are few human endeavors more complicated, sensitive, and delicate than that of drawing a pleasing sound from a stringed instrument. A superior bow technique, no matter how easy and natural the artist may make it appear, is the result of an untold number of contrasting, yet complimentary motions and their combinations.”<sup>1</sup> These words illustrate the extremely technical aspects of bowing a stringed instrument.

The purpose of the project described in this document was to create a free-use bowing supplemental method for the string teaching world called *Bowing Drills: Highly Adaptable Exercises for All Ages (BD)*. The method helps improve tone and string crossing timing in almost any bowing situation. Additionally, the highly adaptive nature of the exercises allows for

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<sup>1</sup> Robert Gerle, *The Art of Bowing Practice: The Expressive Bow Technique* (London: Stainer & Bell, 2001), 15.

individual or class instruction, and work with performers of any ability on any orchestral bowed stringed instrument; from absolute beginners through professionals seeking to improve their technique.

## **II. Need for a New Method**

My own teaching background includes beginning through high school orchestra, as well as collegiate double bass studios across three states: Ohio, Oklahoma, and Texas. Additionally, I have taught clinics and led sectionals for programs across the country since my time as an undergraduate student. Everywhere I worked I noticed the same issue: for most students, sound quality took a backseat to pitch.

In orchestral string performance, the two hands each take on specified roles in sound production. Without a doubt, the left-hand is an important element of string playing. It is primarily responsible for pitch and changing notes in time. Without a fluid and confident left-hand technique, melodies, and harmonies would be limited to the pitches of the open strings of an instrument. However, the vast majority of sound production comes from the right-hand. Tone production, style, articulation, and dynamics are generated by the right-hand. In essence, without the right-hand, any pitch produced by the left-hand would never be heard. Both hands must work together, in perfect timing, to create music. In an orchestral setting, the right-hand typically utilizes a bow, making this unassuming object of wood, horse tail hair, some mother of pearl, and a few metal parts as important as the instrument itself.

The collective orchestral string instrument methods principally focus on the techniques employed by the left-hand, leaving a consistent neglect of the bow. With all this attention to the production of pitch, additional resources are desired for quality sound production. First, there are a scant few resources that fully isolate the use of the bow. Second, most methods do not work for

all stringed instruments. Third, many methods are rather limited in versatility. And fourth, financial barriers limit access to these methods—a major issue in classical music today—especially for orchestral strings.

It would stand to reason that many training exercises and methods have spread through the collective orchestral string instrument pedagogy to address bowing specifically. For as the famed violin tutor Paul Stoving stated, “the importance of regular, special bowing studies for the development of the arm cannot be over-estimated. It is a mistake to think that the same benefit can be derived from the study of etudes and pieces. Etudes are excellent and cannot well be dispensed with, but they can no more replace a routine of daily work on all styles of bowing than they can replace the study of scales, etc., for the left hand.”<sup>2</sup> However, many of the traditional teaching bowed stringed instrument materials focus on the left-hand.<sup>3</sup> Sure, they may speak of the importance of the right-hand, but careful analysis of the exercises in many method and etude books demonstrates a greater development of the left-hand.

Many orchestral stringed instrument methods lack adequate bow isolation, but the absence of bowing-specific methods is particularly glaring for double bass. Many of the materials designed to concentrate on the bow hand are rarely for the right arm alone, typically using concepts taught in conjunction with the left-hand. The student’s focus is then split between the two hands with the right-hand typically the one that suffers. As noted by double bass pedagogue and performer Jeff Bradetich, “Consistent good quality tone is the first goal of sound production. This is especially true for younger and less experienced players where the typical mental focus is on playing the notes of the left-hand. As the player matures and improves, the

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<sup>2</sup> Paul Stoeving, *The Art of Violin Bowing: A Theoretical and Practical Manual for Students, and an Aid to the Work of Professional Teachers* (Vincent Music Company, 1940), iii.

<sup>3</sup> Several methods will be discussed in the third chapter of this document.



focus shifts to the bow, where creating shape and style on each note is a much more advanced concept and vital to great musicianship.”<sup>4</sup> We can see that for young players especially the bow is often neglected in favor of focus on pitch production. Bassists Warren Benfield and James Dean (though not *that* James Dean) agree with Bradetich. “Perhaps the most important, yet often most neglected, aspect of bass playing is that of producing a good tone.... Though most bass methods, notably those of the German School, do a good job of teaching the positions, developing a good tone often depends on the luck of finding a good teacher.”<sup>5</sup> This luck mentioned by Benfield and Dean will come up again shortly when discussing the financial barriers to Western Art Music (WAM), often referred to as “classical music.” Benfield and Bradetich, each a famous double bass pedagogue and performer in their own right, comment on the neglected attention to tone production.

Back to bowed stringed instruments in general, many methods also tend to be heavily written out, leaving little room for exploration and versatility. For many materials, different exercises are needed to work on different concepts. Or, complex ideas often require equally complex etudes, scaffolding in new concepts each time the student works on the etude. Instrument-specific materials, like the forty violin etudes by Rodolphe Kreutzer, do offer bowing variations to be applied to the exercises. However, Kreutzer applies the bowing concepts in conjunction with the left-hand. As we learned from Bradetich and Benfield, the focus for many students will shift to the left-hand when both hands are in use. By not separating the hands, many students will not learn to apply the bowing concepts to other situations.

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<sup>4</sup> Jeff Bradetich, *Double Bass: The Ultimate Challenge*, 3rd printing: July 2016 (Denton, TX: Music For All to Hear, Inc., 2016), 91.

<sup>5</sup> Warren Benfield and James Seay Dean, *The Art of Double Bass Playing* (Evanston, IL: Summy-Birchard Co, 1973), 13.

As for the methods that do address the bow specifically, they are typically for one instrument. This issue makes sense, as is common for most instrument families. String instruments all have their own technical needs for performance. But an instrument specific method does not work well in a classroom setting. In the heterogeneous string classroom methods used in the United States today, most are designed for students that have no private teacher and the focus lies much more on left-hand than right-hand technique. The left-hand is much easier to teach in a mixed instrument setting. Other than the hand shape, the concept of fingering notes on a string instrument is largely similar, just the open strings are different and smaller instruments can reach more notes before needing to move up or down the neck than larger instruments. Additionally, most students who start on stringed instruments learn in the public school system, which relies on these methods. Adding to the complexity, many orchestra directors have a primary instrument that might not even be a string instrument.<sup>6</sup> What results is a system where students intrinsically prioritize the left-hand over the right and do not even realize the issues this can cause.

Lastly, a new bowing is needed because of the financial barriers that exist in WAM. The world of “classical” music operates much like athletics, the pipeline of who succeeds is heavily populated by those with access to relevant resources from early ages: who can afford the best tutors and schools, can travel every weekend to private lessons, and competitions, and who can purchase the expensive materials to participate. Of course, gifted students from any background

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<sup>6</sup> Many schools have a difficult time filling orchestral positions with bowed string players. Much of my own orchestra experience was under directors who did not perform a bowed stringed instrument as their primary instrument: High School Director (oboe), Undergraduate Director (percussion), Masters Director (guitar), Performers Certificate (percussion), Doctorate (piano). Only my Junior High Director was primarily a string player (violin). All were highly qualified musicians, but it would be highly unlikely to find a band program led by a string player, or a choir directed by a non-singer in the US. More information on the prevalence of non-string performers leading orchestra programs can be found in the article: Donald L. Hamann, Robert Gillespie, and Louis Bergonzi, “Status of Orchestra Programs in the Public Schools,” *String Research Journal* os-2, no. 1 (July 1, 2002): 9–35.

can succeed, but undoubtedly, those with access have a much better shot. Those who are lucky enough to find the right teacher to guide them through the process, or lucky enough to be discovered by a competent and philanthropic tutor may be successful, but undoubtedly this occurs at a much lesser rate than those of means.

A bowing method that offers versatility to apply concepts in a variety of situations, works for all bowed stringed instruments, and removes financial barriers to WAM is necessary for the field to grow. In method after method, authors and teachers stress the importance of the bow, yet rarely isolate its use from the left-hand. My own teaching background involved Title I schools and financially struggling college students.<sup>7</sup> For many, affording an instrument to play on was a major accomplishment. I had students who could not participate in music if there was any cost involved, leaving an already financially stressed school system responsible for students' access to music. Providing *BD* as a free resource allows financially weaker schools to benefit from the concepts and skill development not found in other methodologies. Also, with a free-use resource, students are able to access and practice materials outside of the classroom, so they are not dependent on purchasing a copy. Music is the reason some students stay in school. I had high school students decide not to drop out of school because they loved orchestra so much. I never want to see a student not join or be forced to leave orchestra because of financial constraints. Therefore, *BD* is offered as a free-for-educational-use resource to lower these barriers to success and help each student and teacher thrive.

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<sup>7</sup> Title I is a governmental program dating to 1965 to help fund public elementary and secondary schools in the US. It was most recently updated within the larger Every Student Succeeds Act passed in the US in 2015. There are many components to the law, but a general rule of thumb for a school to qualify is at least 40% of attending students must come from low-income families. The full act can be found at: <https://www.everystudentsucceedsact.org/title-i-improving-basic-school-programs-operated-by-state-and-local-educational-agencies>.

### III. Scope and Limitations of *Bowing Drills*

*BD* gives string performers of all ages and abilities an efficient and logical way to practice through easily learnable and highly adaptable exercises. The scope of this project is set around the use of the bow in orchestral stringed instruments, especially the double bass. *BD* covers material for violin, viola, cello, and double bass, including five string crossing patterns as well as bowing, meter, and rhythmic variations, all suitable for individual or classroom instruction. Free-for-educational-use classroom materials are found in the appendices at the end of this document. Additionally, *BD* includes extras for the double bass, including hundreds of extra bowing variations and applications of the concepts of *BD* to standard double bass excerpts. The ideas of the extra variations and presentations for double bass can be applied to the other string instruments for their literature but will not appear in this document.

There are several other additional limitations to *BD*. Much of the usefulness of the method is in its adaptability. The teacher can modify *BD* to meet student and class needs. Applications are discussed throughout later chapters, but ultimately, it is up to the user to find how *BD* will be most useful for their particular needs. For example, the string crossing concepts of *BD* can be performed as pizzicato patterns, especially helpful for jazz performers, but bowing will be principally discussed in this document. Additionally, many variations and adaptations are provided, but will not be fully written out in every possibility. The user must apply the slur pattern, articulation, or other concept to the exercise, meter, and rhythm desired.

The main limitation of *BD* falls in the specific technical aspects of bowing. *BD* will not tell you about bow holds, where each finger should be placed on the bow, or how much weight needs to be applied to the bow for each string of each instrument for each bow direction. It will not tell you about the optimum placement on each string relative to the bridge for every possible

dynamic or exact speed needed to achieve an optimal tone. Specific technical aspects of string playing have so many variables, that it would be impossible to account for them all. Violin, viola, cello, and double bass all have their own idiosyncrasies. Add the possibilities of different sizes of each instrument, different woods used in construction and their thicknesses, the styles and weights of bows, not to mention the plethora of materials used in the construction of the strings themselves. All these tangible aspects of the instrument alone affect tone production, and that does not include the physical characteristics of the player themselves. In short, *BD* does not teach how to use a bow but provides playing exercises to improve bowing technique.

*BD* offers a way to isolate the use of the bow through systematic practice. No method can improve a musician without hard work and dedication. But my hope is that *BD* will help all students excel in their development in all aspects of bowing an orchestral stringed instrument.

#### **IV. Outline of Subsequent Chapters**

The remainder of this document focuses on teaching the guiding principles of *BD*, how to use the method, and appendices with the accompanying sheet music for the method. Chapter II of this document will teach an overview of *BD*. To see the benefits of *BD* when used with other methods, you need to first understand the main tenets of *BD*. Chapter III is the literature review and tells how to incorporate *BD* with other materials currently used in string education. Chapter IV teaches how to use *BD*, while Chapter V discusses incorporating other bowing related concepts to the method. Chapters VI and VII explain how to use *BD* in a classroom and private instruction respectively. Chapter VIII teaches how to create your own bowing exercises using the concepts found in *BD*. Chapter IX examines extra materials available for the double bass specifically. Chapter X, the final chapter, tells of future plans for *BD*. The appendices contain sheet music for instruction. The first five appendices are for classroom use and include packets

for the director, violin, viola, cello, and double bass. Appendix 6 is an extended packet for double bass. Appendix 7 shows the written-out exercises and the relevant passages of orchestral excerpts referenced in Chapter VIII.

## CHAPTER II: The Basics of *Bowing Drills*

### I. Overview of Concept

*Bowing Drills (BD)* is an educational method to enhance the bowing technique of orchestral stringed instruments and is constructed to work for players of all abilities and experiences. Because it is designed even for those who cannot yet read music, the opening materials are simple to read. By using open-string pitch names instead of reading notes for the first page, young students can easily learn the patterns.

*BD* consists of a simple string crossing concept that fits into five basic patterns: Pattern 1 – Adjacent Strings, Pattern 2 – Skip 1 String, Pattern 3 – Skip 2 Strings, Pattern 4 – Double Stops Adjacent Strings, and Pattern 5 – Double Stops Skip 1 String. Several images from the *BD* materials available for students to use are provided in this chapter. Appendices 1-6 contain packets for teachers and students that are a helpful reference for this chapter. Appendix 6 has all five patterns of *BD* notated out for double bass with subdivisions (discussed later in this chapter) and will be used for all images in this chapter. Pattern 1 involves string crossing between two adjacent strings, or strings next to each other. Standard orchestral stringed instruments have four strings, so there are three groupings of adjacent strings possible for each.<sup>8</sup> Grouping either the two highest pitched strings or the two lowest strings together each contains an “outer” string, or where there is not an additional string on both sides. The last possibility is grouping the middle, or inner, two strings together. For this section, and Sections II and III of this chapter only think

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<sup>8</sup> The writing in this document does not account for five or even the rare six stringed instrument (more common for double basses but five string violins are also common for orchestra teachers and performers outside of WAM). All five of the patterns in *BD* will work with these instruments as well, the materials are just not written out for more than four strings. The adaptability of *BD* will make it easy to modify for these instruments as needed for personal use.

alternating down and up bows, no slurs. Adding different bowings will be discussed in Section IV.

For violin, double bass, or class instruction, start with the open “G” and “D” strings. Viola and cello can start with “G” and “D” or “C” and “G”.<sup>9</sup> Starting with a simple four note pattern that involves continual string crossings, we have two options of “G, D, G, D” and “D, G, D, G.” On double bass the motion of “G, D, G, D” is high string, low string, high, low. “D, G, D, G” on the other hand in low, high, low, high. Because the double bass is tuned in fourths and the other orchestral strings are tuned in fifths, they reverse the motion. So, for violin, viola, and cello, “G, D, G, D” is low, high, low, high, and “D, G, D, G.” is high, low, high, low. Moving to other sets of strings is also possible with adjacent strings. All can play groups of “D, A, D, A” and the reverse of “A, D, A, D.” Double bass and violin can use a grouping of “A” and “E” strings, while cello and viola have groupings with the “C” and “G.” To avoid redundancy, the rest of the patterns will be given as a concept relative to the double bass. Each pattern will be discussed, but not every string crossing grouping will be debated here as they are fully written out in the packets found in the appendices at the end of this document.

Musical repertoire requires much more than performing on adjacent strings and students need a way to isolate other configurations to build muscle memory and consistent tone. The four other patterns of *BD* address this issue. Pattern 2 involves skipping over one string. For example, “G” skips over the “D” string to the open “A” string, or “G, A, G, A.” Of course, there is the option of the reverse “A, G, A, G” and the “D” to “E” strings and their reverse. This pattern always involves one outer string and one inner string. Pattern 3, on the other hand is only outer strings, or “G, E, G, E” for bass.

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<sup>9</sup> The remainder of this document will start with “G” and “D” for clarity of writing. Starting on an outer string is ideal for all instruments but not possible in class instruction for everyone to learn together.



Patterns 4 and 5 introduce double stops—performing on two strings at a time. Pattern 4 consists of combining double stops with string crossings on adjacent strings. For this, “G” and “D” will be played at the same time followed by “D” and “A” at the same time. Notation will be simplified from here on out with a slash between the notes to symbolize a double stop. The first grouping of Pattern 4 will read as “G/D, D/A, G/D, D/A.” Notice that the “second” note of the first double stop becomes the “first” note of the second. Again, this can be reversed or grouped for other strings. Pattern 5 combines double stops with skipping a set of strings. This pattern will involve both outer strings like Pattern 3. For double bass it would read “G/D, A/E, G/D, A/E.” Both outer strings are involved in Pattern 5. Therefore, only the reverse is possible, no other groupings will be found on a single instrument. All four strings are involved in the single grouping in Pattern 5.

## **II. The Five Patterns in Full**

Now that we know the basics of each pattern, we can explore the patterns in full. *BD* takes a systematic approach to string crossings. Each pattern explores every string crossing possible for the pattern, covering all four strings, high to low string(s), and low to high string(s). During practice, it is very important to cover all these possible versions of each pattern. As the next chapter will discuss in more detail, every string needs its own weight, angle, bow speeds, and more.

Bow direction also has an effect. In strings, a down bow—what we like to use on metrically strong beats—is accomplished by pulling the bow across the string. An up bow is achieved by pushing the bow across the string.<sup>10</sup> Bow direction adds more complexities that need

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<sup>10</sup> For young students try using “pull” and “push” to teach the motions before changing to “down” and “up.” Because the way the instruments are held, down and up only actually match the word for the highest two strings for both violin and viola. A down on the lower strings of violin and viola will actually move higher in space, not lower. All bow directions on cello and bass move side to side.

practice. A down bow on a higher string followed by an up bow on a lower string uses “less” bow than the reverse for cello and double bass. Upper strings are opposite of low strings because they play on the “opposite” side of the bridge (the bridge is between the performers and where the bow contacts the string). So upper strings have less motion for a down bow on a lower string followed by an up bow on a higher string.<sup>11</sup>

The image below shows Pattern 1 for double bass. Read from left to right before dropping down to the next line, just like a book, or reading music notation. Notice there are several groupings of four notes, corresponding to the open strings starting with “G, D, G, D” followed by “D, A, D, A” then “A, E, A, E” on the top line of notes. The three groupings above represent all the string crossing possibilities of alternating adjacent strings from a higher to lower string on the double bass. Still referencing *Image 1*, the bottom line reads “backward” from the top line, or “E, A, E, A” then “A, D, A, D” followed by “D, G, D, G.” This line represents all the adjacent string crossing patterns of a low to high string for double bass. In teaching I call this the “flip.” As discussed previously, different amounts of bow weight and more are required in different parts of the pattern and will be discussed more thoroughly in Chapter IV.

### **Pattern 1 – Adjacent Strings**

G D G D    D A D A    A E A E  
 E A E A    A D A D    D G D G

*Image 1: Double Bass Pattern 1 – Adjacent Strings*

*Image 2* below shows Patterns 2-5 for the double bass. In essence, Pattern 2 is a variation of Pattern 1, but with one major change. Instead of adjacent strings, Pattern 2 involves skipping over a string, but we still use groupings of four notes at a time. Pattern 3 is a variation of Pattern 2, this time moving to skipping over two strings. Another way to think about Pattern 3 is playing

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<sup>11</sup> More explanation on why found in Chapter IV.

on the outermost, or highest and lowest strings only for a four stringed instrument. Patterns 4 and 5 introduce double stops or performing multiple open string pitches at the same time. Each grouping in Pattern 4 involves one string always being performed. For example, the “D” string is always played in the grouping “G/D, D/A, G/D, D/A.” Pattern 5 is unique because each grouping covers all four strings of an instrument.

**Pattern 2 – Skip 1 String**

G A G A D E D E E D E D A G A G

**Pattern 3 – Skip 2 Strings**

G E G E E G E G

**Pattern 4 – Double Stops Adjacent Strings**

G/D D/A G/D D/A D/A A/E D/A A/E  
A/E D/A A/E D/A D/A G/D D/A G/D

**Pattern 5 – Double Stops Skip 1 String**

G/D A/E G/D A/E A/E G/D A/E D/G

*Image 2: Double Bass Patterns 2-5*

**III. Three Ways to Play the Patterns of *Bowling Drills* at Increasing Speeds**

So far, we know the string crossing portions of the five patterns of *BD*. They cover adjacent strings, crossing over strings, and double stops in different combinations. But there are also multiple ways of performing the patterns of *BD*. The three ways discussed in this chapter are gradually increasing speed and incorporating two types of subdivisions applied to the five patterns of *BD*.

The most straightforward way to increase speed while using *BD* is to simply increase the tempo gradually. You can use a metronome, but it is not required.<sup>12</sup> A group of four notes, or what I call a cell (like “D, A, D, A”), a few cells, or the entire pattern being used will work. Unless your goal is to practice an accelerando or ritard, only change tempo in-between

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<sup>12</sup> I do recommend using a metronome with students that have not internalized tempo and either tend to rush or drag.

performing passages, not while playing the section you are isolating. I also like to vamp, or repeat a cell of four notes many times, getting slightly quicker each time through. For a vamp, it is easier not to use a metronome as more time would be spent changing the speed on the device than playing the cell.

There are two other ways to increase speed in *BD* using subdivisions. I call them *Direct Subdivision* and *Indirect Subdivision*. These subdivisions are based on the idea of playing something at a slow tempo, then medium, and finally fast, or three times total. I call the slow, medium, and fast levels 1, 2, and 3 respectively. The goal is to double the speed for each subsequent level. If students can understand basic rhythms, they can think of level 1 as quarter notes, level 2 as eighth notes, and level 3 as sixteenth notes. From this point forward, I will start writing strings of notes without all the commas so you can start to see groupings easier. For example, “G, D, G, D” will now read as “GDGD.”

After students learn the basics of at least one pattern (typically Pattern 1), I teach Direct Subdivision (DS). DS performs a single cell three times at increasing speeds, or subdivisions, before moving on the next cell.<sup>13</sup> Using double bass Pattern 2 once again, “GAGA” would be performed at slow, medium, and fast tempi before moving on. “DEDE” would then follow as slow, medium, and fast, and so on through the flip. Once the student finishes the last cell of four notes at the three levels, the pattern is complete. *See Image 3 for notated example.*

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<sup>13</sup> How to teach *BD* for different ability levels will be discussed in later chapters. This chapter is for showing the what, not the how of *BD*.



because it is harder to perform. By practicing first Direct, then Indirect Subdivisions, students work up to tempo methodically instead of haphazardly.

#### **IV. Bowing and Rhythmic Variations**

Bowing variations lay at the heart of *BD* and are a major reason for the five different patterns. String crossings are necessary for string players, but we must be much more versatile than only perfecting alternating down and up bows. *BD* offers pages and pages of bowing examples covering different rhythms and meters. Once a pattern of *BD* is learned, different variations can be applied. These variations will work in both subdivisions; but, depending on the variation(s) and pattern chosen, one subdivision will typically be easier than the other. When students have perfected the desired variation(s) in both subdivision, mastery of the concept has been achieved.

*Image 3* is of the first two bowings from the double bass packet. Each bowing is written out using the first cell of Pattern 1 using DS. The bowings can be applied to any pattern or using either subdivision. Bowing 1 is alternating down and up bows and is the standard bowing for learning the patterns. Bowing 2 shows slurring two notes together.<sup>14</sup> *BD* also provides many rhythmic and meter specific bowing variations. How to use and teach will be discussed in later chapters. Variations will cover slurring samples, dotted rhythms, bowings in duple and triple meters, spiccato, and more. The appendices provided at the end of this document have free-use packets for students and teachers alike.

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<sup>14</sup> Bowing following the contour of the bridge is “easier” and requires moving a shorter distance. On low strings, moving from a down bow on a higher string to an up bow on a lower string is less movement. It is reverse for violin and viola. String performers need to be able to do both. In this case, playing all the way through the *BD* pattern will address both. Contour also applies with slurs. For low strings a slur from a higher string slurred to a low string on down bow feels “easier” but uses more bow while a slur of high to low string on an up bow feels “harder” but uses less bow. Again, this is opposite for upper strings. In this case, the “other” is immediately addressed because the *BD* patterns repeat the first two notes.



*Image 5: Double Bass Bowings 1 and 2 in Duple Meters*

The five patterns of *BD* are used to isolate string crossings through adjacent strings, skipping strings, and double stops. They can be performed using Direct Subdivision to work at tempo in small segments, and Indirect Subdivision for longer periods. Additionally, there are many rhythmic, meter, and bowing variations provided for educational purposes in the appendices. This document will also teach you how to incorporate concepts like dynamics, articulations, and musical style into the exercises of *BD*. Because of its educational purposes, the early stages of *BD* are written for those that cannot read music yet but will progress to advanced concepts as well. Even professional string players can use *BD* to better their skills and technique.

## CHAPTER III: Literature Review

### I. Related Methods and Approaches Bowing Drills Can Supplement

*Bowing Drills (BD)* is not based on any one method but does share some similarities with other string education approaches, principally the individual string instrument methods found in the Otakar Ševčík School of Bowing (particularly Harold Robinson's version for double bass entitled *Strokin'*); Frederick Zimmermann's *A Contemporary Concept of Bowing Technique for the Double Bass*; and Rufus Reid's "Etude 1: Open String Exercises" from *The Evolving Bassist*. Each method discussed below is well-known and commonly used in string pedagogy. For each method discussed in this chapter, I add a section on how to use *BD* as a supplemental method to aid in each existing method below.

#### ***Meisterwerke Fur Violine* by Otakar Ševčík, *Strokin'* by Harold Robinson**

The Ševčík School of Bowing is a six-part section of his larger violin method, *Meisterwerke Fur Violine* (*Masterwork for Violin* in English). Otakar Ševčík (1852-1954) was a very influential pedagogue whose method is still commonly used today. Where applicable, the relevant parts of his technique have been edited and/or transcribed for the other orchestral string instruments. But Ševčík's bowing approach is the only portion of his method transcribed for all orchestral stringed instruments. Double bassist and pedagogue Hal Robinson (b. 1952), editor of the double bass version of the Ševčík School of Bowing, had a long and storied career performing with several premier orchestras across the United States. Robinson is currently on faculty at the Curtis Institute of Music and retired principal of the Philadelphia Orchestra.



In the bowing portions of Ševčík’s method, Parts I-II are designed “for the right arm,” while III-VI are “exercises for developing the suppleness of the wrist.”<sup>15</sup> Almost every exercise found in the method involve combining left- and right-hand concepts. For example, Parts I-II are solely variations of two-octave scales in different meters, with several bowing and rhythmic variations provided for each. Part III addresses string crossings and double stops but not in isolation—always with the left-hand in conjunction with the right.

Because the sections on wrist movement are very specific to violin and viola, Hal Robinson’s version for double bass is not a complete transcription. Robinson covers Parts I and II but adapted for double bass. He does offer Part III on string crossings but with some significant alterations to the exercises to better suit the double bass. Because the method involves fingering pitches while practicing the bowing patterns, many of Ševčík’s original intervals would not be possible on the double bass without shifting, taking even more focus from the bow and not physically possible on the double stops. Robinson’s *Strokin’* has fewer bowing variations than the original because of these idiomatic changes for double bass.

The biggest similarity between *BD* and the Ševčík method is having a concept and then providing many bowing variations for the concept. Ševčík offers a very thorough method and gives ample practice options for bowing practice. But, his method is always used in conjunction with the left-hand. As we learned in Chapter I, when both hands are in use, focus typically shifts to the left-hand, especially for younger players. *BD* can be used to isolate the bowings used in Ševčík’s method on open strings before adding the left-hand. Additionally, because Ševčík’s method involves the left-hand, the bowing variations do not always translate to instruments other than the violin. *BD* is a pattern based on string crossings and does not involve the left-hand, so

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<sup>15</sup> Otakar Ševčík, *Meisterwerke Fur Violine, Op. 2: Schule Der Bogentechnik*, vol. 1–6 (London: Bosworth & Co., 1901), 3.

the bowings apply to all five patterns, though particular bowings are admittedly much easier on some patterns than others.

The Ševčík approach is a valuable resource, especially for violins. But, because the left-hand is involved in the Ševčík method, it would not work in a class setting. Violas and cellos could play many of the bowing portions together, but violins and basses would not work with the other instruments without making it more complicated for the left-hand. Ševčík's method would provide minimal return in a class setting due to the work required to apply the left-hand in a heterogenous string class, thus taking away focus from the bow for students.

***A Contemporary Concept of Bowing Technique for the Double Bass***  
**by Frederick Zimmermann**

Frederick Zimmerman's (1906-1967) work focuses on the bow, is only for double bassists, and is the method *BD* most closely resembles. The book is broken into the following parts: a preface explaining why the method was created, an introduction describing how to use the book, and six sections of content. Each of the first five sections include what Zimmerman calls Patterns, Etudes, Permutations, and then applies the ideas to double bass solos and orchestral excerpts.

All of Zimmerman's patterns are made up of a simple string crossing concept. Each is two beats long, but while using the left-hand. In most of the sections, the patterns are composed of string crossing variations on the highest two adjacent strings ("D" and "G") while the left-hand fingers a perfect fifth.<sup>16</sup> What is important in relation to this document is that the patterns consist of a lower note (on the "D" string) and a higher note (on the "G" string). For clarity of writing the rest of this section will simplify the pitches to "low" and "high."

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<sup>16</sup> For those that understand double bass fingerings, the notes are what the famed double bass pedagogue Franz Simandl method calls "Position IV" and consist of a fingered "A" on the "D" string and fingered "E" on the "G" string.

Each Zimmerman pattern covers every possibility for each concept. For example, Section I, Pattern I sequences starting on the lower string (“D”) and using four notes of equal value (starting with eighth notes). Each variation, grouping of four notes, is labeled with a letter. Pattern 1 is four note variations that all start on the “low” note. The first grouping, ‘A’ is three fingered “low” notes in a row followed by one fingered “high” note sounding as: “low, low, low, high.” Grouping ‘B’ is “low, low, high, low.” Grouping ‘C’ is “low, high, low, low.” Zimmerman continues with groupings until all possibilities are met for a concept. Pattern 1 contains groupings ‘A’ through ‘H.’ Each grouping is performed four times in a row before moving onto the next grouping.<sup>17</sup>

His “Permutations” are combinations of the different groupings of four notes. In the Permutations, two groupings are combined into a single measure and the measure is repeated. For example, “Permutations on Pattern 1” combines every grouping combination of ‘A’ through ‘H.’<sup>18</sup> Zimmerman starts with ‘A’ and ‘B,’ ‘AC,’... ‘AH,’ ‘BA,’ ‘BC,’ ‘BD,’... all the way to ‘HG.” His “Etudes” on the other hand are a randomized collection of the groupings and designed to be worked up to a quick tempo. These are not repeated like the Patterns and Permutations are repeated.

The first four sections of Zimmerman’s method are all meter-based with: Section I in simple quadruple time, Section II in compound duple, Section III in simple duple, and Section IV in simple triple. Section V adds a string.<sup>19</sup> Finally, Section VI applies meters and bowing variations found throughout the book on the upper two strings. It adds the left-hand playing a G

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<sup>17</sup> Zimmerman writes out his patterns as one measure of four beats. Each grouping of four eighth notes is written out twice, filling out a measure of common time. Every measure is repeated so the grouping is heard four times total.

<sup>18</sup> Zimmerman does not combine the same grouping into a Permutation (like ‘AA’) because those are found in the Patterns section of his method.

<sup>19</sup> For this section, Zimmerman changes the pitches. He moves the left-hand moves to the Simandl “Position I” and outlines a C major chord.

Major scale up and down the “G” string over the bowing variations and string crossings learned throughout the book.

There are several similarities between *A Contemporary Concept of Bowing Technique* and *BD*. Both have repetitive patterns that primarily isolate the bow over string crossings. They also offer bowing practice for rhythmic variations and slurs. Zimmerman also adds in accents that could be added to *BD*.

*BD* has major differences from *A Contemporary Concept of Bowing Technique*. To start, the left-hand is completely removed from *BD* in its simplest form from the beginning, while Zimmerman starts with the left-hand included. Zimmerman also only isolates the top two strings for almost the entirety of the book. He only uses all four strings when isolating open strings in specific orchestral excerpts before adding back in the left-hand immediately after. *BD* on the other hand starts with all four strings. The main reason all four strings are used in *BD* is to encourage experimentation with the changes needed for each string from the very beginning of learning the instrument. The other major difference between the two is *BD* works just as well with any bowed string instrument and can also be used in heterogenous classes as opposed to a specific instrument. A majority of Zimmerman’s work could be applied to the other string instruments but note changes would need to be made to the double bass book to work with the other instruments at the same time.<sup>20</sup>

### ***The Evolving Bassist by Rufus Reid***

Perhaps the closest source to *BD*, regarding the use of the open strings, is “Etude 1” from *The Evolving Bassist*, by Rufus Reid (b. 1944). Though, at fifteen pages, it is very long for an

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<sup>20</sup> Double basses are tuned in fourths while the rest of the orchestral bowed stringed instruments are tuned in fifths. The performing of a fifth in fourth position on a double bass is a comfortable left-hand shape for the instrument that works well with playing the same two notes over and over just in different orders. This fifth would be less comfortable for the other strings, requiring playing two strings with the same finger, or more advanced techniques.

etude. It is entirely comprised of all four open strings but by the end of the second page, it quickly moves through rhythmic variations and is not sequenced. It uses adjacent strings but is designed to be later applied to walking bass lines in conjunction with the left-hand, so the string crossings are not the primary focus.<sup>21</sup>

*BD* shares some similarities with the Ševčík/Robinson and Zimmerman methods, like bowing and rhythmic variations found within, and uses all open strings like in the Reid method. One major difference is *BD* isolates open strings without the left-hand and teaches patterns on open strings before applying to repertoire compared to the Ševčík/Robinson and Zimmerman respectively. *BD* is also formulaic and offers immediate repetitions of patterns to reinforce each concept. The primary difference is other methods only work with one specific instrument at a time, while *BD* can be used for the full string orchestra, simultaneously.

### ***Principles of Double Bass* by Michael Wolf**

In his book *Principles of Double Bass*, Michael Wolf (b. 1954) discusses the physics involved in double bass playing, so it is not a method in the traditional sense of having many exercises to practice. Rather, it is a book covering a scientific approach to double bass technique and contains descriptions of the physics on how strings move and how to achieve each style of bowing, which applies to all bowed string instruments.<sup>22</sup>

The physical layout of concepts found in the Ševčík/Robinson, Zimmerman, and Reid methods and approaches can be seen in *BD* including the hundreds of bowing and rhythmic variations in different meters in Ševčík/Robinson and Zimmerman, and the isolation of string crossings on open strings in the Reid. The foundations of string playing and how they work in

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<sup>21</sup> Rufus Reid, *The Evolving Bassist: A Comprehensive Method in Developing a Total Musical Concept for the Aspiring Jazz Bass Player*, Millennium ed (Teaneck, NJ: Myriad Limited, 2000), 24-38.

<sup>22</sup> Michael Barry Wolf, *Grundlagen der Kontrabass-Technik: = Principles of Double Bass Technique*, Studienbuch Musik (Mainz: Schott Music GmbH, 2007), 55-96.

*Principles of Double Bass Technique* also influenced *BD* with the science behind how bow weight, speed, distribution, angles of the bow across the string, and the angle of the bow hair on the string work with all bowing styles.

## **II. Additional Methods and Approaches Bowing Drills Can Supplement**

### ***Superior Bowing Technique: For Violin = La Technique Supérieure De L'archet* by Lucian Capet**

Renowned violinist, Lucian Capet (1873-1928), was especially known for his bowing technique and wrote a method for the violin. *La Technique Supérieure De L'archet (Superior Bowing Technique)* has several sections, each containing a theoretical and practical section. Regarding his approach to a beautiful tone, Capet states, “In order to obtain a resonant and flexible quality of sound, it is not enough that the bow press on the string; it must *penetrate* it, so that it *possesses* it. For that it is necessary to add to the *vertical* pressure—which is due to the resilience of the stick on the hair—a sort of *horizontal* flexibility, which increases the sensitivity of this posture” (emphasis in original).<sup>23</sup>

In Part I, “Preliminary Explanations,” Capet breaks the bow into sections (F-frog M-middle T-tip) and lengths with letters (A whole bow, B half bow, C quarters, D eighths, E thirds). He then provides examples of how passages would be notated in his system. Part II, “Quality of Sound,” describes the roulé bow stroke in detail as the basic stroke for strings as well as double stops. Parts III-VII covers individual bowing styles with many examples to try for each different stroke.

Capet certainly has valuable information on bow control for orchestral stringed instrumentalists, and even points out specific sections using each technique in the violin

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<sup>23</sup> Lucien Capet, Stephen B. Shipps, and Margaret Schmidt, *Superior Bowing Technique: For Violin = La Technique Supérieure De L'archet* (Maple City, MI: Encore Music Publishers, 2004), 28.

literature. *BD* offers a way to isolate Capet's techniques on open strings for full focus on the intricacies of the bow.

***Tone: Experimenting with Proportions on the Violin by Simon Fischer***

Simon Fischer's method uses "soundpoints," or 5 placement areas between the end of the fingerboard and the bridge. These soundpoints, combined with speed and pressure, are designed to improve tone through many exercises. The concepts of *BD* can be used with Fischer's method to isolate the right-hand placement with the bow. All of his exercises incorporate the left-hand, therefore splitting the focus of left- and right-hand considerations. To incorporate *BD*, Fischer's exercises can be practiced by removing the left-hand and playing the open strings as a note would naturally be played. Also, string crossings sections can be repeated in direct and indirect subdivisions as needed.

***Contemporary Violin Technique by Ivan Galamian and Frederick Neumann***

Perhaps one of the most influential violinists on violin education in the United States was Ivan Galamian (1903-1981). After immigrating to the United States, he taught at the Curtis Institute then at Julliard. Many prestigious violin educators studied under Galamian, including Dorothy Delay, Lewis Kaplan, and David Cerone. His book *Contemporary Violin Technique* was co-written with Frederick Neumann (1907-1994) for the violin version, though a viola and cello version were written with other musicians.

The Galamian system is well known among instrumentalists to improve tricky passages by altering rhythms and adding bowing variations to match. An interesting part of the Galamian approach is that no pitches are provided in the bowing and rhythmic sections. Rather than giving notes for practice, the user is supposed to apply the concepts to their own repertoire. The bowing

and rhythmic portions are made of note groupings of 1-12 notes, as well as 16 notes. Both bowings and rhythms can be practiced as individual concepts or in combination.

*BD* uses many of the same bowing patterns as the Galamian system, such as slur two notes, slur four notes, or one note separate plus three notes slurred. And the rhythmic patterns can also be practiced on open strings with *BD*. Some of the most basic rhythmic variations are already included in *BD* such as incorporating dotted rhythms. Galamian himself advises practicing his patterns isolated from the left-hand: “NOTE: It may be advisable to begin the rhythm patterns on open strings before applying these patterns to the scales, noting those that are troublesome for additional attention” (emphasis in original).<sup>24</sup> *BD* provides a disciplined way to incorporate these bowing and rhythmic patterns on open strings for practice. This is especially helpful for inexperienced students who need more guidance and direction on how to isolate concepts.

### ***The Art of Bowing Practice: The Expressive Bow Technique by Robert Gerle***

Robert Gerle’s (1904-2005) bowing treatise is in two parts covering technique, then applying the technique to articulations and phrasing. In Gerle’s own words, even the greatest performers need to revisit their basic technique.

“The bow in motion involves the bowing arm, the violin, as held by the left arm, and the bow itself. As various conditions change in this unit (such as dynamics, speed and amount of bow), so do all the interconnecting parts, and any change involves a whole series of consequent changes. To be in complete command, the player must understand these relationships and keep them in mind. Instead of taking them for granted, violinists should periodically review and practice even the most elementary principles, just as golfers and tennis players do with the basics of their game. (The great cellist, Pablo Casals, for example, practiced open strings for hours on end.)”<sup>25</sup>

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<sup>24</sup> Ivan Galamian and Frederick Neumann, *Contemporary Violin Technique*, vol. 1, Part 2 Bowing and Rhythm Patterns (New York: Galaxy Music Corp, 1966), 20.

<sup>25</sup> Gerle, *The Art of Bowing*, 29.



*BD* provides a way to practice Gerle's approach to articulations and phrasing with open strings in a systematic way. For advanced performers using Gerle's concepts, *BD* offers focus over the subtle changes that need to occur in weight, angles, speed, etcetera for a beautiful tone over string crossings.

### ***The Ultimate Challenge* by Jeff Bradetich**

Double bassist Jeff Bradetich (b. 1957) is currently one of the most well-known bass pedagogues. His method book *Double Bass: The Ultimate Challenge* covers technical aspects of playing the instrument in great detail, from how to hold the instrument, to various left- and right-hand techniques, to suggestions for passages in the orchestral and solo literature. Regarding the bow, Bradetich writes:

**“The Bow: Servant of the Music**

What is the purpose of the bow?

To produce sound.

What kind of sound?

A good quality of sound all of the time.

A simple concept with vast implications, the importance of which cannot be overemphasized.

The ultimate goal of the bow is to create expression through sound. In order for that to happen, complete technical control of the bow is needed so that it works for the player's musical needs, not the other way around. Too often the bow is dictating to the player how it will be used, thus creating coordination problems and unwanted results.”<sup>26</sup>

Chapter 3 of *The Ultimate Challenge* covers the right-hand for both French and German bow in detail, addressing tone production considerations. The primary factors discussed in the chapter are bow placement, weight, and speed (angle included with weight). Chapter 8 covers many common bow strokes broken down into larger categories of legato, staccato, and spiccato.

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<sup>26</sup> Bradetich, *Double Bass: The Ultimate*, 13.

*BD* can be incorporated into *The Ultimate Challenge* by isolating the right-hand from the left-hand in its accompanying “Technical Exercises Packet” until both hands are stable enough to combine. Tricky left-hand passages can be practiced pizzicato, while the bowings can be reduced to the five *BD* patterns as appropriate.

Two examples are in the “String Crossing” (pg. 6) and “Advanced Fingering String Crossings” (pg. 16) exercises. The first involves playing a scale on a higher string and alternating with the adjacent lower string (like found in *BD* pattern 1) first in slurring two notes, then with slurring variations. Any of the bowing variations can first be isolated with *BD* either direct and/or indirect subdivision until the bassist is comfortable with the bowing.

As expected, “Advanced Fingering String Crossings” is much more complicated for the left-hand but is also more complex for the right-hand as well. For this, *BD* patterns 1-3 can be used to isolate the bowings covering transitions from the “G” string to the “D, A,” and “E” strings. Each pattern can be isolated as needed, then combined in the order needed for the Bradetich exercise.

*BD* takes influence from several string education methods, including those by Ševčík, Zimmerman, and Reid while also applying the bowing principals outlined by Wolf. The Ševčík and Zimmerman methods have a wealth of information and a great number of bowing variations in different meters. Reid’s work for jazz bassists is the only one that reduces a significant exercise to just open strings, removing the left-hand, yet is designed for pizzicato. But none of these methods systematically isolate the bow in a way that can be easily varied like *BD* provides. Other string methods offer a plethora of knowledge but fall into the same trap of not separating the bow from the left-hand. While they discuss the importance of the bow in orchestral stringed instruments, they rarely separate content from the left-hand. Both sources old and new lack a true

separation of the bow from the left-hand, leaving it up to the music teacher or student to work out on their own. *BD* works to supplement the gap of isolating the bow so commonly found in string instrument education.

## CHAPTER IV: How to Use *Bowing Drills* to Improve Bowing Concepts

### I. Bowing Techniques Overview

A story I often use while teaching is about a former roommate of mine. The day we were moving into an apartment together, I heard loud banging in the living room as I was unpacking in another room. I came out to see my new roommate putting up a new shelf on the wall. They were hammering in screws to hold up a new shelf. Proud of their work after completing their task, they placed their knickknacks on the newly standing shelf. Not five minutes later I heard a thunderous crash in the living room. The shelf and all its contents were sprawled across the floor and large holes were left in the wall.

The moral of the story is we have many tools in the toolbox, but not every tool will work for every situation. The hammer may have worked with a nail. Or the screw could be stronger than a nail but needed a screwdriver to hold properly. The same is true with string performance. We have many techniques, but they will not work in every situation. String players need to depend on their ears to make sure a desirable tone is being achieved. This chapter will discuss how *Bowing Drills (BD)* provides an organized structure to practice all these bowing situations without interference of the left-hand.

Any person that teaches orchestral strings knows the importance of developing bow arm technique for their students, as a refined technique leads to better tone and aids in injury prevention. Additionally, performers of all ages and abilities are constantly refining their technique to improve their tone, timing, and more. *BD* offers these string enthusiasts a way to isolate the bow to perfect these techniques.

The general concepts that affect bow technique are bow speed across the string, distribution on the string, weight into the string, placement on the string, and angles of the bow

on/across the string. Many systems have developed over the years to help students remember what to do for each bowing situation. Common beginner to intermediate orchestral bowing acronyms are WASP—weight, angle, speed, and placement—or PAWS—just a rearrangement of WASP.<sup>27</sup> Each section below will examine a specific concept and ways *BD* can be used to enhance the technique.

While reading the sections below, please remember that bow techniques do not exist in a vacuum. One small change to one concept will affect the others as well. A change in bow speed might require a change in bow weight; or bow placement could alter the speed and weight needed for a stylistically appropriate tone for a passage. Additionally, performers are not machines. They cannot just apply four percent more bow weight or change the angle of the bow hair three degrees on a whim. These things take practice, and often are not exact. Finally, many musical passages will require less than ideal technique to play. For example, sometimes high notes and low notes alternate in quick succession. While a change in all four aspects of WASP for every note would be ideal, it is not always practical. Performers need to learn what to use in each situation.

## **II. Bow Speed**

An easy-to-understand concept, speed refers to how fast the bow travels across a string. The trick in bow speed is knowing what speed is needed when. As expected, slow speeds are needed for long notes—or at least longer durations of a single bow direction.<sup>28</sup> But after that, many variables affect needed bow speed.

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<sup>27</sup> The middle school orchestra directors I know with a cat or dog mascot tend to use PAWS over WASP.

<sup>28</sup> Many “quick” notes may be heard in a single slur. Duration here is simply how long a single bow direction of down or up lasts.

The first bow speed variable is pitch frequency. There are certainly scientific ways to calculate bow speed, like using measurements of distance over time, but that is not the focus of this project.<sup>29</sup> The general rule of thumb is the lower the note, the slower the bow—or slow bow on low frequencies. The inverse is also true: faster bow for higher notes.

Other bow speed considerations are dynamics and placement. More speed will increase the volume and less speed will sound softer. Placement has its own additional considerations, so the bow speed portion will be discussed section IV of this chapter. Also, because bow speed cannot truly be isolated from bow distribution, an exercise to practice both with *BD* is found in the following section.

### **III. Bow Distribution**

Distribution is a concept frequently overlooked in terms of teaching, often grouped in with speed. It is true that bow speed and distribution are so linked, they cannot truly be separated. But while speed refers to how fast, distribution deals with where in the bow's length is the bow being played. Common terms to refer to where to play are at the frog, tip, middle, or balance point.<sup>30</sup> These bow terms will apply for each instrument, but the dimensions will be different. Violin and viola bows are typically the same length and are the longest, but the viola bow typically uses a wider shank of bow hair. Cello bows are slightly thicker and shorter. Double bass bows are the shortest but are much thicker and heavier than the others. While the

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<sup>29</sup> Michael Wolf provides multiple ways to measure bow speed in Chapter 5, section 4 (pages 63-65) of his book *Principles of Double Bass Technique*.

<sup>30</sup> In this context, frog and tip both refer to the bow hair around those regions of the bow. The balance point is the point of the bow where it can balance the weight from the frog end and the tip end. Many bowings “live” around the balance point and will be discussed in later chapters of this document.

proportions of where the balance point is found for each will be different, the concepts remain the same.<sup>31</sup>

Young string students often struggle with consistent bow speed. To correct this issue using *BD*, use Pattern 1, Indirect Subdivision, level 1 (quarter notes). Set a metronome to something the student can comfortably perform, not fast, but not very slow either. Forty beats per minute often is a great starting point for this exercise but have a click on the eighth note as well. Work with students to focus on making sure they are halfway through the down bow on the eighth note click and at the tip by the quarter note, then the reverse for the up bow.

Where you play on the hair of the bow, or bow distribution, will affect musical concepts such as dynamics, articulations, and tone quality. Different bowings like to “live” in different parts of the bow. The faster the tempo or notes, the less bow needs to be used. Fast notes like to “live” in the areas of the bow around the balance point—where the bow can balance on a single point, or roughly a quarter to a third of the way up the bow from the frog. Specific bowings like *spiccato* are nearly impossible to perform anywhere but at the balance point. More examples regarding particular distribution necessities will be discussed as they come up throughout this document.

*BD* can help isolate where in the bow to practice bowings. Using the exercise from above, add in levels 2 and 3—or eighth notes and sixteenth notes. Adding levels 2 and 3 shifts the student’s attention to another part of bow distribution, including moving in towards the balance point, and away from the tip and frog, and how much bow should be used for shorter and shorter notes. As students learn where to play in the bow, the metronome speed can be increased

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<sup>31</sup> As discussed previously, bow speed typically is faster the higher the note. So, smaller instruments that perform higher notes will need more bow length than larger instruments on lower notes. The next section will discuss weight into the string which will affect why larger instruments also have heavier bows.

until they reach the desired tempi. Additionally, the multitude of slurring patterns provided with *BD* can be used to practice bow distribution and speed. Each variation will require its own speed and distribution considerations. *BD* bestows a way to practice these concepts independent of the left-hand.

#### **IV. Bow Weight**

Bow weight has two different connotations. When buying a bow, the weight is often given in grams and in general, the larger the instrument, the higher the weight. Unless there is another factor like using a carbon fiber shaft instead of Pernambuco wood, violin bows are the lightest, then viola, followed by cello, and double bass bows being the heaviest. Regarding the *use* of the bow however, bow weight refers to the amount of weight applied into the string from the bow hand, arm, and bow itself.

Lower notes require more bow weight. The higher a note goes; the general tendency is less bow weight. For those keeping track, bow speed and weight are inverted for “best practices.” An easy way to remember for students is low is heavy and slow, high is light and fast. Another way for students to remember this is an analogy to football. The offensive line is low notes (typically the biggest and slowest), and the wide receivers are the high notes (typically the smallest and fastest). Positions like linebacker back fall somewhere in the middle of weight and speed just like notes in the center of an instrument’s range require middling weight and speed.

Yet again, we cannot fully isolate each bowing concept. In the world of physics, the bow operates as a moving fulcrum of the simple machine of a lever. When the bow is properly held, the hand is at least partially over the frog.<sup>32</sup> When the bow hair is touching the string near the frog, the most bow weight can be applied into the bow. As you move closer to the bow tip, less

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<sup>32</sup> Violin, viola, cello, and double bass all have different “schools” of bow hold, but all standard orchestral holds are around the frog.



and less weight will be applied without more effort from the player. Because of the tendencies of bow weight paired with distribution, a smooth, consistent tone requires performing with *less* weight at the frog, moving to *more* weight at the tip.

You can practice *BD* at a slow tempo like described previously (40 bpm with an eighth note click), but this time focus on bow weight, particularly how the bow contact with the string feels “heavy” close to the frog and “lighter” the closer to the tip you get. Recording and listening to the practice can ensure desired results are achieved, or if there are tendencies like breaks at the changes in direction. If there is a break in the sound, bow weight is probably being released at the changes of bow directions—sometimes needed for a specific bowing styles, but not desirable for beginners learning to play smooth and evenly.

#### **IV. Bow Placement**

The next concept we will discuss is bow placement, or where the bow makes contact with the string relative to the bridge and fingerboard. Bow placement has a major effect on tone production and dynamics, while also affecting bow speed and weight. The closer the bow is placed to the bridge, the more overtones are “drawn” out of the string, causing a brighter tone. In contrast, bowing closer to the fingerboard, or even bowing over the fingerboard will have a duller sound. Specific bowing styles take advantage of this principle. *Sul ponticello*, or “on the bridge,” calls for a string performer to play as close to the bridge as possible, giving a squeaky, high pitched and metallic sound. This bowing brings out many overtones that overpower the fundamental note being played. *Sul tasto*, or “on the touch,” tells a musician to play over the fingerboard, with a dull yet more pure sound with less overtones, making the fundamental pitch more prominent. “Normal” playing though involves having the bow in-between the fingerboard and bridge giving the characteristic bowed string instrument tone.

The “standard” placement of the bow can be found by a formula. For a traditional sound, take the vibrating string length and move the bow seven eighths closer to the bridge on the string from the note being played. So, a fingered note would change the vibrating string length, but the proportion remains the same. This would translate to placing the bow three octaves above the desired pitch. But again, many variables can change this. Placement also affects dynamics. The closer to the bridge, the louder and vice-versa.<sup>33</sup>

No matter the desired placement for any situation, consistency is key for a beautiful tone. Students often play with their bow placed incorrectly on the string (either too close to the bridge or fingerboard), or even moving all around the string while performing in the same register. One visual solution to this problem is to make two sharpie marks on each string around where the student should place the bow on the string.<sup>34</sup> The dots represent the students’ “driving lanes.” Because the students are looking at the bow or “car” from the side, they should see the dot closest to their face when they play. From here, upper and lower strings break. Violin and viola should see the dot closest to the bridge when bowing correctly. If they see no dots, they drifted too close to the bridge. If the student sees both dots, they strayed too close to the fingerboard. Cello and double bass are reversed from upper strings when using dots. When using the bow with correct placement, they will see the dot closest to the fingerboard. No dots here mean they drifted too close to the fingerboard, while seeing both dots means they floated too far towards the bridge. Since *BD* is made of patterns, students can practice staying in their “lane” with a visual aid and no left-hand to worry about, so they can watch specifically for placement. The more advanced the student is, the narrower the lane gets, so the closer the dots are placed until students

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<sup>33</sup> The book *Tone: Experimenting with Proportions on the Violin* by Simon Fischer is focused entirely on bow placement. A great resource for more detailed information.

<sup>34</sup> Sharpie marks can easily be removed from strings with a clean rag and few drops of rubbing alcohol without causing damage to the string.

can keep the bow in a consistent placement through down and up bows.<sup>35</sup> The dot method can also work with Simon Fischer’s “soundpoints,” his five zones of bow placement for dynamics and tone considerations. Different colored sharpie marks can be used to represent each of his five “soundpoints.” Follow the same process described above, but now different colors represent different dynamics.

## **V. Bow Angles**

The last bowing technique concepts to be discussed in this chapter focus on the two different angles formed from use of the bow. The two types of angles relative to the bow are the angle of the bow across the string, and the angle of the bow hair on the string. First is the angle of the bow across the string. While the bow is moving, angle and placement are linked together like speed and distribution are often combined. For the best sound production, the bow should remain perpendicular to the string being used, in addition to a consistent bow placement.

What makes keeping the bow perpendicular to the string more challenging is that the strings are not parallel to each other. The strings are much closer together at the nut—or where the left-hand fingers notes in the lowest position. As you get closer to the bridge, the strings get farther apart. The larger the instrument, the more dramatic this distance becomes. For example, the distance between two strings at the bridge for a double bass is almost as large as the distance from highest to lowest string for a violin. In orchestral playing, the bow is used in this area near the bridge. What results in terms of bow angle is every string will require a different adjustment of the bow to stay perpendicular.

Assuming students have proper body/instrument position, the bow angle is greatly affected by how the student holds the position of their fingers and hand combined with the

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<sup>35</sup> For those teachers who use straws in the F holes to keep bows from straying, the two dots method is a nice reminder of bow placement after the straws are removed.

movement of the right-arm wrist and arm through bow strokes. Often a student will have a decent bow hold near the frog but needs help adjusting all the moving parts as they get closer to the tip.

*BD* can be used to focus on the bow angle across each string. Each of the five patterns provides students opportunities to isolate the changes needed for each string in context of string crossings. Playing on adjacent strings in Pattern 1 will involve small adjustments, while Patterns 2 and 3 will require larger adjustments. Additionally, changing strings near the frog will imply small adjustments, while string crossings at the tip will necessitate much larger angle alterations. Combining the angles needed for four separate strings with the differences between bowing near the frog, tip, and every point in-between means lots of bowing practice is needed to ensure proper technique. To practice using *BD*, incorporate the age-old idea made popular by Suzuki of “stop, think, play.”<sup>36</sup> I prefer the slight adaptation of “stop, prepare, play.” With *BD*, use any pattern. Play the first note—or slurring pattern if desired—and freeze, or stop, at the end of the note. Prepare the bowing changes needed for the next note. Change the angle of the bow and prepare the arm for the change in bow direction while “paused.” Plan the movements coming up for the wrist and arm. Then play the next note or slur. This process can be vamped, reducing the amount of time to prepare each cycle through until all pauses are removed. As students move through the patterns with this concept, the angles all change—caused by a curved bridge combined with non-parallel strings—but they can instantly see if they adjusted correctly and decrease the time between changes.

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<sup>36</sup> An example of stop, think, play from a Suzuki teacher is: “Dr. Suzuki recommends that the shift be made in a detached way, with a slight stop after each note; the shift is made smoothly but deliberately. The exercise should be made very slowly at first. Only after the student feels very secure in shifting should it be played quickly.” Quote from: Lousie Behrend and Anastasia Jempelis, “Chapter 6: Left Hand-Techniques,” in *The Suzuki Concept: An Introduction to a Successful Method for Early Music Education* (Berkeley: Diablo Press, 1973), 71.

The second type of angle for a bow refers to the bow hair angle or amount of bow hair on the string. Hair angle is determined by the “roll” of the bow in the fingers. Of all the bowing techniques discussed in this chapter, bow hair angle is the most determined by the teacher’s philosophy. Some teach that bow hair should always remain flat on the string—as much hair as possible touching the string at all times. For these teachers, changes to tone, styles and dynamics are determined by bow weight, speed, distribution, and placement. Others have a more flexible idea of bow hair angle, using changes to how much is touching a string at a time in addition to other WASP considerations. Whatever your preference, the “stop, prepare, play” method can be used in conjunction with *BD* to practice bow hair angle.

## **V. Examples of Bowing Considerations in Different Musical Situations**

As previously discussed, changing one bowing concept will affect the others. Also, musical situations will often dictate certain aspects of what needs to happen with the bow. A note or combination of notes causing a long duration of a single bow direction will require the bow to slow down or run out of bow before completion. In this situation, the performer can move the bow placement closer to the bridge, where the bow can move slower. Also, a little more weight can be applied to make up for the lack of speed. Changing placement or weight will alter tone and style differently. Different situations will require different solutions, so use *BD* to practice each to make a musically sound decision every time this problem is presented. If the sound desired is brighter, then move closer to the bridge. The change in bow placement will bring out more overtones causing a more intense sound. If, however, you want a darker tone, use more weight. Or you can use a combination of both placement and weight to pinpoint a specific tone quality.

Playing long and short notes in alternation causes many bowing issues the student will need to overcome for consistent tone. This is especially prominent when playing in three—such as a half note followed by a quarter note. In this situation of alternating long duration down and short up bows, the player would get “stuck” at the tip of the bow where tone is weak. Bow speed is the issue but in turn causes a bow distribution issue. Bow speed will need to change as follows: on the half note the bow will have to move twice as slow as on the quarter note so that the bow always returns to the same spot. But as we learned above, faster speed will cause louder notes. Now we hear loud “jabbing” notes on beat three which is stylistically displeasing. So, we need to reduce bow weight on the single beat up-bows to fix the style. A change in one bowing technical concept might require multiple changes to others to hear the desired stylistically appropriate effect. Use the dotted rhythms provided in the Appendices to isolate the bow in these circumstances.

Double stops, or playing two notes on adjacent strings at the same time, in particular, need practice with bow speed and weight. Bow speed physically needs to stay the same, even if the bow would sound better on the higher string moving faster than the lower string. There are several bow speed possibilities in this situation. You can cater to the higher string with a faster speed, cater to the lower string with a slower speed, or split the difference as a compromise. Conversely, you can apply more bow weight to one string than the other. What is needed might change depending on the musical context. If the lower string is a drone, it can typically take the second stage to the line with motion. But, moving lines on one or both strings will need to be heard. Practicing *BD* Patterns 4 and 5 are particularly useful for double stop balance and the variety of situations that may arise.

Varying note durations and speed and weight needed for double stops are just two examples of bowing considerations needed in different situations, but there are countless others. Furthermore, weight, speed, angles, placement, and distribution must be considered to form a beautiful sound. *BD* can be used in any way the teacher or student needs to isolate these concepts. The next several chapters deal with the variations available using *BD* and incorporating other musical aspects like dynamics and articulations. Additionally, the subsequent chapters explain how to incorporate *BD* in both the orchestra classroom and private instruction before discussing use with double bass specifically.

## CHAPTER V: Incorporating Other Performance Concepts into *Bowing Drills*

### I. Bowing Drills with Bowing Specific Concepts

In orchestral string performance, the right-hand initiates many of the concepts needed for musically satisfying playing. Dynamics, articulations, and style are all primarily determined by the changes of speed, distribution, weight, angles, and placement of the bow. Additionally, bowing techniques are based on changes to the same. The following section will discuss these concepts in addition to playing in different meters and practicing long tones with *Bowing Drills (BD)*.

There are several ways to move between dynamics on bowed stringed instruments. Changes in bow weight, speed, and placement all influence volume, but also will affect tone. Generally, more weight or speed (or both) will increase the dynamics and so will moving the bow closer to the bridge. Again, the inverse of each is generally true as well: less weight, speed, or moving the bow closer to the fingerboard will decrease the loudness. As discussed in earlier chapters, changes in each elements cause sound quality fluctuations. A string performer needs to be versatile enough to use weight, speed, and placement to change dynamics in many situations.

To use *BD* for practicing dynamics, first isolate weight, speed, and placement one at a time using any of the five *BD* patterns and bowing variation desired. Practice *pp* up through *ff*, each dynamic at a time then with crescendos and decrescendos until comfortable. Then using the same process, combine weight and speed, followed by weight and placement, next speed and placement, and finally all three together. From there, students can practice even more complex concepts like crescendo on down bows for a measure, decrescendo for a measure, and the reverse



with up bows.<sup>37</sup> Using this method to practice dynamics will ensure the flexibility needed for achieving dynamic contrasts in any situation as determined by the musical and technical needs of the passage.

Articulations like accents, staccato, and tenuto affect tone, note length, and dynamics. Articulations can be found for single, multiple, or a long series of notes and are performed by changes in speed, distribution, weight, and placement, often in combination. When the same articulation(s) are found in succession, it often is a bowing technique, often called a bow stroke. The broad categories of *legato*, *staccato*, *spiccato*, and “other” bowings are all made from specific mixtures of bow speed, distribution, weight, and placement.<sup>38,39</sup> For my definitions, the first three bowing categories are primarily determined by one or two bowing aspects of weight speed, distribution, and placement. The individual bowing strokes found within each category involve changes to the other aspects of bowing making them unique.

*Legato* bowings are determined by continual bow speed, only changing when the bow needs to change direction. Some *legato* bowings are *detaché*, *accented detaché*, *portato*, and *tremolo*. *Staccato* bowings on the other hand are primarily determined by weight and times where bow speed on the string stops. *Staccato*, *shurred staccato*, *collé*, *martelé*, and *marcato* are all *staccato* strokes. *Spiccato* bowings are shaped by bow distribution (near the balance point) and often accompanied by quicker bow speeds (especially when grouped with musical style to be discussed shortly). *Spiccato* is signified by a “bouncing” bow stick, with the hair often coming completely off the string between each note. *Spiccato* strokes include *spiccato*, *ricochet*, and

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<sup>37</sup> More complex practice like this helps with bringing out the phrasing in passages with multiple lines like the ones so commonly found in the solo works of Bach.

<sup>38</sup> There is much debate on what bowing falls under each category. In the end, it does not really matter for the purposes of practicing with *BD*. Whether you prefer to group *portato* as a legato or staccato based stroke is semantic in regards to having a way to practice isolating each bowing from another.

<sup>39</sup> There are too many bowings to discuss here in this document. Some “standard” bowings will be discussed for each category and are some of the most commonly encountered in Western Art Music.

*sautillé*.<sup>40</sup> “Other” bowing strokes do not easily fit into a category or are a specific technique that can be performed with the main three of *legato*, *staccato*, or *spiccato*. *Col legno* for instance involves hitting the stick of the bow against the string instead of the hair and closely resembles *spiccato* in “bouncing” the bow on the string, but with a different part of the bow and different sound. *Sul ponticello* is performed very close to the bridge while *sul tasto* is performed over the fingerboard, both determined by placement but can be combined with *legato*, *staccato*, or *spiccato*. And *flautando* involves very little weight with lots of bow speed, often performed *sul tasto*, but not required.

Musical style is often determined by a bow stroke, sometimes in conjunction with a specific pattern like a slur. Slow Baroque Era movement accompaniments are often performed *portato* (or slurred tenuto notes) while faster movement accompaniments are typically closer to *staccato* and not slurred. Fast Classical Era notes tend to be *spiccato* but broaden out as music progress through the Romantic Era.<sup>41</sup> The Classical Era is also known for a stress release and often joined with a slur of two notes combined with two separate notes, where the bow ends up feeling like it is performing a long note followed by two short notes while the left-hand is in constant short notes.

For practicing purposes, I will group performing articulations, bowing techniques, and musical style with *BD* together because they are so closely linked. Like isolating dynamics, start simple. Try one concept like all accents or all marcato before making practice more complex. Articulations should start with one concept like accent or staccato before alternating for each

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<sup>40</sup> *Spiccato* itself is often performed with differing amounts of bow hair contacting the string determined by composer. For example, the “Mozart *spiccato*” is often described as a “V” with the hair touch the string very briefly, while “Beethoven *spiccato*” is more of a “U” and in contact with the string slightly longer.

<sup>41</sup> So, the bow in the quick notes of Mozart spends less time on the string than Beethoven spending less time on the string than Brahms.



The last bowing specific concept that will be discussed in this chapter is long tones. Long tones are crucial to beautiful tone development. Slow lyrical string playing can be as or more technically difficult than quick passages because of the muscle control needed for the smooth, even bowing. They also make the pacing of concepts like dynamics more difficult.

Bow speed will naturally need to slow down for longer notes, so adjustments to weight and placement are necessary to achieve a characteristic string tone. Unlike the rest of *BD*, where the point of practicing is to work towards playing faster, long tones can be worked in reverse. The same five patterns can be used, but now, start with level three, and work through to level two, then level one so the notes get longer each time. Additionally, work towards slower metronome markings instead of faster so the bow works towards longer and longer notes.

## **II. Bowing Drills in Conjunction with the Left-Hand**

While everything I have discussed so far in this document is right-hand based, I do recognize the importance of the left-hand in string technique. Without it, only a few notes would be possible, and music would be rather boring. While *BD* can help immensely with tone, precision, and more, eventually, both hands will need to perform together. *BD* can help with the steps between fully combining both hands and completely isolating one including the practice of harmonics, to tuning unisons, octaves, and chords.

Some “left-hand” concepts involve changes with the bow for optimal performance. Harmonics are achieved by touching a vibrating string in specific places, but not holding the

string all the way down against the fingerboard as is done in “normal” playing.<sup>42, 43</sup> Pressing the string down to the fingerboard creates what we call a stopped note for stringed instruments. Stopped notes have a bright, direct tone. Harmonics, on the other hand sound as a “pure” note, devoid of overtones.<sup>44</sup>

Several technical bowing aspects need to be considered when performing harmonics. First, harmonics are high in pitch by nature and more bow speed is needed for them to speak clearly. The bow speed is typically faster than the same pitch of a stopped note for the characteristic “harmonic” sound. They also require less bow weight adding to the light and uplifting tone.<sup>45</sup> Lastly, harmonics are often played high up on the string, so bow placement is typically close to the bridge. You can also play closer to the bridge to reduce bow speed, so harmonics longer in duration will need to account for this.

*BD* can be used to practice harmonics in a few different ways. Begin with only harmonics in isolation. Any of the five patterns can be used with any of the bowings found in the appendices by adding in harmonics. Start with playing each string at the harmonic one octave above the open string. You can experiment with other harmonics as desired. Often string players

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<sup>42</sup> The most basic harmonics are played by touching a string following the overtone series. These are called natural harmonics. From the fundamental (open string) the first seven sounding harmonics are (higher): octave, octave plus a perfect fifth, two octaves, two octaves plus a major third, two octaves plus a perfect fifth, two octaves plus a minor seventh, three octaves. From an open string these overtones technically move indefinitely higher, but practically the width of the finger, needing the bow ever closer to a bow to the bridge, and ever faster bow speed for higher notes creates a limit to how high a note will sound. What harmonics are achievable will be dependent on the player, instrument, and practice, but typically more larger instruments can play more natural harmonics. They have notes farther apart on the string, so students are typically capable of playing higher natural harmonics before the notes get too close together to practically perform. Harmonics also work as a mirror image on a string. Other than the first octave, each harmonic is playable the same distance closer to the bridge and the nut from that point.

<sup>43</sup> Artificial harmonics are also possible on stringed instruments and are created from playing a harmonic over a fingered note (effectively shortening the string length). Smaller instruments are capable of playing more artificial harmonics because the notes are closer together. Small instruments can reach a larger range of intervals above a stopped note.

<sup>44</sup> Remember that bow placement affects the number of overtones with “normal” playing. The closer the bow is to the bridge, the more overtones will sound. Harmonics remove this tendency regardless of placement.

<sup>45</sup> This fast bow speed and little weight resemble the *flautando* discussed earlier, but *flautando* is not restricted to harmonics.

will need to perform one note as a harmonic with an open string or lower stopped note before or after, causing a discrepancy with weight and speed between the two notes. Use *BD* to isolate the bowing changes necessary and find the best solution for whatever the music demands. These ideas can be incorporated with artificial harmonics as well.

While harmonics are a left-hand concept, a performer does not need to focus on tuning. If the finger is close enough to the spot on the string where the harmonic “lives,” it will sound. Stopped notes do require a focus on tuning but require changes in bowing considerations as well. Open strings and harmonics create sound with less resistance than a stopped note, and by nature like to resonate longer. In almost every lesson I teach, from middle school to college students, we address a passage involving stopped and open strings and what needs to adapt in the bow to make them sound even.

Below are several ideas for incorporating the left-hand for tuning practice with *BD*. Students can practice tuning unison notes while also the bowing motion of stopped notes alternating with open strings. Simply play the lower of each string pairing at the same pitch of the higher string. This is easily achievable with adjacent strings, but also good practice with skipping strings and involves playing a high note on a low string followed by an open string. Octave tuning practice also works well with *BD*. The easiest way is to play an octave on the string above the lower string of the string pair. But just like unisons, octaves can be formed with a lower string played in position to a higher string.

For any stringed instrument, but double bassists in particular, shifting is a left-hand skill that has right-hand implications. Choose any notes desired to shift between and apply to the bowing variation and string crossing pattern needed. Chords can also be practiced with *BD* in simple to complex ways. For a simple chord, choose something that contains one or two open

strings and block out the fingering. An example of a simple chord on double bass is “e” minor (open “E” string, closed “B” on the “A” String, closed “E” on the “D” string, and open “G” string). A more complex chord could involve shifting for certain notes or a difficult hand position. *BD* provides excellent practice opportunities for the chords found in the literature, especially the solo works by Bach.

Recently, I worked with a collegiate double bass student on the arpeggios found in the “Gigue” of Bach’s *First Cello Suite*. The arpeggios crossed through different combinations of stopped, harmonic, and open string notes. We had to isolate the bowing motion of a stopped note releasing to an open string or harmonic and the exaggerated bowing changes needed to accommodate the situation and make every note speak with the same intension and style through the dynamics contour chosen by the student. Chapter VIII of this document will teach you how to create your own exercises using *BD* to isolate tricky bowings for any playing situation. Appendix 7 has exercises developed using the concepts of *BD* applied to several common double bass audition excerpts.

**CHAPTER VI:  
Bowling Drills in the String Classroom**

**I. *Bowling Drills* Adapted for Classroom Use**

*Bowling Drills (BD)* is designed to work for individual use up through full strings in a classroom setting. We will discuss classroom teaching first because all techniques learned here will also apply to private lessons. The first item to notice is the slight change to the *BD* patterns to accommodate full strings as seen in *Image 7* below. Now, with full strings, the “C” string instruments of viola and cello start and end the pattern while the “E” string instruments of violin and viola rest. At the end of line one and the beginning of line two, viola and cello rest to accommodate the violin and bass while using their “E” strings. Everything else works the same as introduced for double bass in earlier chapters. Each cell or grouping of four notes progresses onto the next in a left to right, top line down manner like before. Direct and indirect subdivisions will work the same way, just with a few rests added in. All patterns reflect these changes, but there is one thing to note about Patterns 3 and 5. Because these patterns use both outer strings for each instrument, “C” string and “E” string instruments will never play at the same time during these patterns.

**Pattern 1 – Adjacent Strings**

<i>Viola/Cello</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C G C G	G D G D	D A D A	A E A E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E A E A	A D A D	D G D G	G C G C

*Image 7: Pattern 1 from Bowling Drills Director and Instrument Packets*

**II. *Bowling Drills* as Classroom Warm-Up**

*BD* works well as an addendum to traditional classroom materials and one of the easiest ways to use is during the warm-up routine. Because the patterns are so easy to memorize,



students can perform them with little intervention—providing the teacher with one-on-one time with individual students.<sup>46</sup> Playing through all five patterns in both direct and indirect subdivisions in a classroom takes a little over five minutes at sixty beats per minute.<sup>47</sup>

These five minutes a day isolating bowing technique will quickly improve the sound quality and control of your ensemble, but you can do double duty with the warm-up. After students have learned the patterns, they make a great way to learn new or review previously learned concepts that are initiated from the bow. Scaffolding can be used to introduce new concepts like dynamics into the previously learned patterns. Depending on class ability, you as the teacher might need to guide the students through the bow weight, speed, angle, and placement changes that can affect dynamics or let them experiment and discuss as a class.

Previously learned material can also be practiced during warmups. Let's say you just taught dotted rhythms or have a new piece that uses them. Incorporate dotted rhythms into your warmup with whatever bowing you need, like hooked or separated. Slurs, retakes, staccato, or practically any bowing related concept can be introduced or reinforced with *BD* and often non-verbally, if so chosen. Furthermore, the five patterns are just a starting point. When the class has mastered the patterns, young students, in particular, enjoy creating their own variations for the class to try.

### **III. Student Assessment and Accommodations**

One of the great benefits of *BD* in a classroom setting is how it can be used for student evaluation in both formative and summative assessment. In the case of *BD*, assessment can be used to make accommodations for every student in the class. Accommodation is normally a

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<sup>46</sup> More on this in the student assessment section of this chapter.

<sup>47</sup> Of course, you do not need to play every pattern if it is not helpful for your situation. For example, I would not have students play double stops until they can comfortably play on each string individually first.

daunting task for teachers, but when using *BD* as a class warm-up, they happen quickly. The key is to use a “bottom up” approach when teaching *BD*. Teach to the most basic level of understanding for your class, then accommodate up for students that can handle it. The examples below show how formative and summative assessment provide next steps for improvement. Additionally, these quick assessments provide documentable accommodations for those on Individualized Education Plans, 504 Plans, and those with Gifted and Talented programming.

Read the following example to see how formative assessment can be utilized daily with a class warm-up. Once the *BD* patterns are learned, students only need to be given a start and what order/variations to play and a steady pulse to follow. This frees the teacher to go around the room and spend a few seconds with each student to give instantaneous feedback. For example, walking through the class could sound like: “Marcella your string crossings are right on time! Start focusing on keeping your bow weight into the string while playing near the tip. Jared, try using less bow for shorter notes. Quarter notes will use much more bow than sixteenth notes. Zeke, start playing the higher string on each pattern as a harmonic two octaves above the open string. Experiment and find what you need to do with bow speed, weight, and placement on the change of registers.” In this example students of all abilities are given something appropriate for their level of comprehension to improve and could be documented if required. Even though all students have individualized instructions, the entire class can easily play together without getting distracted by too much information.

Summative assessments can be done in two ways, both using the traditional playing test format. These can either be live or recorded. Because every student has their own unique combination of concepts and bowing issues that change over time, grading needs to reflect this. Once a baseline is established for each student, assessment grades are made on progress, not

ability. The primary way is to assess students on patterns from *BD* directly. For this, a teacher chooses which patterns/variations to play and assesses each student on their progress toward assigned concepts. A teacher can either assess progress in a single category, multiple, or all categories, depending on the needs of the class. The secondary way to assess students is to apply bowing considerations from other sources (like excerpts or solos) during *BD* warmups, then assess in the source material. Chapter VIII will teach you how to create your own exercises based on musical works.

#### **IV. Introducing *Bowing Drills* in Age and Ability-Appropriate Ways**

The five patterns found in *BD* can be used with any age level, but how to teach these concepts to students depends on their age, abilities, and goals. Beginners can reinforce proper bow technique before bad habits form, while more experienced students can isolate their individual bowing issues and work on ear training. These drills also provide a way to introduce new ideas to students by adding to their existing knowledge. By teaching all students how to play the five *BD* patterns, and how to use direct and indirect subdivision, any teacher has a built-in mechanism for quickly isolating any concept related to performing with a bow.

Below are ways to introduce the patterns to a variety of ages and abilities. For all the ideas below, students must pay attention to proper bowing techniques (speed, distribution, weight, placement, and angles) while simultaneously learning how to play the patterns.

Ideally, *BD* will be taught before even using the bow in class. Teaching *BD* early will prevent bowing issues from ever forming and is beneficial before students can read music. When introducing the concept of *BD* in a class of absolute beginners, very slowly introduce the patterns as they learn their open strings. A great way to get younger students to learn the patterns is to use the unwritten “Pattern 0 – Same String.” Teach direct subdivision by using “call and response

playing” beginning with only the G string. Start with the four quarter note “Gs” a few times in call and response until the class is playing along.<sup>48</sup> Then play the four eighth notes “Gs” until the class is performing together with the teacher, then the sixteenths. Next is four quarter notes followed by four eighth notes. Continue adding little pieces of the pattern until the class can play Pattern 0 in direct subdivision. Then, teach indirect by playing the four “G” quarter notes followed by four “D” quarter notes, and, with repetition and mastery, the students will learn indirect subdivision. This entire pattern learning process can be non-verbal and is ideal for developing young ears to play together. Once the class has learned rhythms, the *BD* patterns function equally as well in a pizzicato warmup as a bowing one and allow the director to walk through the class checking posture and position.<sup>49</sup>

Because the students learn the patterns as they learn each string, and then internalize the patterns, introducing the bow becomes simpler. If using *BD* as a class warmup, instructors can take this time to check in with each student for a few seconds on their individual “bowing issues” and offer any suggestions needed.

Additionally, *BD* is effective for teaching students who have already started using the bow but have developed bad habits. When introducing *BD* to young, but not complete, beginners (around year two of playing), have the class repeat just the open “G” and “D” strings in quarter notes until they can all start, play, and stop together.<sup>50</sup> Then, have them play the pattern in four quarter notes and pause. Then, four eighth notes and pause. Then, sixteenth notes. Then, the three groups of four quarter, eighth, and sixteenth notes with no pauses. Through this exercise, the

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<sup>48</sup> This can be pizzicato or arco, depending on when in the process of learning their instruments *BD* is introduced to students.

<sup>49</sup> Consider having the exercises student led when a few have learned a pattern well enough.

<sup>50</sup> Or beginners if they can handle it. Depending on how quickly the class learns, many small steps in this process can be glossed over or skipped entirely.

class learns direct subdivision without having to learn a definition. A simple lesson to continue teaching these patterns might look similar to the one outlined below.

“Well, this seems like a pattern, so why not do the same thing but just move over a string to start (so “D” and “A” strings). Oh, these two patterns can be played back-to-back, the “GDGD” group then the “DADA” group.” After a few times through the two groups played consecutively, reverse the pattern to “ADAD DGDG.” To introduce indirect subdivision, have the students play “GDGD DADA” as just quarter notes, then reverse the pattern. Now play the first two groups together and then reverse with no breaks, so “GDGD DADA ADAD DGDG.” Then, try as eighth notes. By this point, several students will guess that sixteenth notes are next. Then, group the three levels together. After a few days reinforcing these concepts, add in how to play the entire pattern with all strings.

Teaching *BD* early on in string education is highly beneficial but is not always practical. Some beginning classes are so short, even getting instruments tuned before class ends can be a challenge. Often there is a change of teachers between grades, so students receive different kinds of instruction. However, the *BD* patterns can be played as part of the daily warmup routine, taking less class time while reinforcing foundational technique. In this way, students are focused on their bowing from the beginning of the rehearsal and can maintain that focus throughout the session. As the students grasp the concept of all the adjustments needed for string crossings, the skills learned in class can be applied to the patterns. For example, if the students are working on dynamic contrast, the teacher can write the “rules” on the board— such as forte on the odd numbered notes and piano on even, or crescendo the first half of a pattern and decrescendo the second half. The teacher should continue adding concepts as students master techniques. Playing through all five patterns once direct and once indirect can isolate up to ten different bowings,

articulations, and dynamic contrasts, and have a very productive six minutes by constantly adding to mastered skills.

For more advanced classes like those found in late high school, use *BD* for isolating tricky bow passages and work on style. The more experienced a musician is, the easier they learn the patterns of *BD*. Most upper-level high school classes can learn the basics in under ten minutes when rehearsal time is at a premium. For these cases, I use *BD* as either a warm-up or to isolate a tricky passage found in their repertoire in a much more condensed version. Consider the dotted eighth, sixteenth, eighth passages found in the first movements of Beethoven's Symphony No. 7 and Tchaikovsky's Symphony No. 4. A few indirect subdivision repetitions through selected dotted rhythms bowings in triple meters will cover all string crossing possibilities for all instruments.<sup>51</sup> From there, the left-hand can be added back in, but the bowing will be more solid.

The examples above follow the standard string education system found in the United States. But not every situation matches those already described. For others, adapt *BD* as needed for your own particular needs. Very young students will need more time on each skill before moving on. There is no rule that says you must teach all five patterns immediately. Stick with the unwritten Pattern 0 described above and Pattern 1 as long as needed. Older beginners might learn quicker, so skip steps as necessary.

In my own teaching of string education classes to university students, I teach how to teach *BD* in a classroom. My students come with a knowledge of reading music, and performing on instruments, but most are not string players. Those that do play a stringed instrument spend the class on one that is not their primary. We only use Pattern 1 as a quick warm-up during class where they choose a bowing concept we have been discussing in class to isolate each day. I later

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<sup>51</sup> Chapter VIII will give more ideas on how to create exercises using the concepts found in *BD*.

give them a very brief run-through of the remaining patterns, but the students are assigned to teach Patterns 2-5 to the class. In this way I can assess my music education students' comprehension and teaching skills of weight, angles, speed, distribution, and placement in different situations. My end goal is for them to be able to figure out what is needed on their own without me teaching specifics in every situation.

## **CHAPTER VII: *Bowing Drills for Private Instruction***

While a major influence on the creation of *Bowing Drills (BD)* was to help address the financial barriers to classical music, I do not discount the benefit of private lessons. Of course, one-on-one instruction will yield quicker and more in-depth learning than group instruction on different instruments. As discussed in earlier chapters, methods that focus on a single instrument tend to have more detail and specifics which can lead to better understanding than broad approaches. *BD* is no different. It works great for classroom instruction but is even more versatile with private instruction. The following chapters will give more detail on how to use *BD*, particularly for double bass, but any concept can be applied to the other bowed string instruments.

Any way of using *BD* in the classroom can be used with an individual instrument. All patterns, subdivisions, bowing variations, and methods discussed in the previous chapter and in the classroom packets found in Appendices 1-5 will work with a single instrument. The only change absolutely needed is to ignore the rests written out while other instruments play, though more adaptations are provided below. You can see what each pattern looks like written out for a single instrument in the “Bowing Drills Double Bass Extended Packet” that makes up Appendix 7. Violin, viola, and cello can follow the ideas of Appendix 7, but they are not written out for these instruments.<sup>52</sup>

There are two main differences of using *BD* between classroom and individual instruction with the first being flexibility. In a classroom setting, exercises need to be rather regimented so the class can perform together. Every instrument needs to know when to play what so they can

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<sup>52</sup> More detail about Appendix 7 will be discussed in the next chapter. Violin, viola, and cello extended packets are not currently written out as they fall outside of the scope of the current project.



stay together. Repeating a pattern, grouping, or even vamping just a single crossing is possible with classroom instruction. But with private lessons, you can be much more flexible with execution. When a student is workshopping the bowing intricacy differences between each set of strings (like weight, angle, speed, and placement), it is much easier to jump around as an individual than as a group.

The second difference with individual instruction is it is much easier to meet a single student where they are than meeting the needs of an entire class. When adapting *BD* for one, it is possible to give much more detail as a teacher and break down bowing components one at a time. For example, the precise wrist, forearm, elbow, upper arm, and shoulder movement of each bow stroke is much easier to critique on an individual than an entire group. It is also easier to skip steps or move ahead when a student understands a concept and is ready to isolate the next. Classroom teachers cannot move on unless a majority or all students comprehend. In music classes this is particularly important because everyone needs to perform together.

## **CHAPTER VIII: How to Apply *Bowing Drills* to Musical Passages**

### **I. Introduction**

Up to this point, this document has primarily discussed *Bowing Drills (BD)* as a method that uses the bow separate from musical literature. Isolating the bow is great for improving technique and learning the intricacies of right-hand movement through physical space and coordinated in time. But this practice has its limitations, particularly for those already experienced players. Chapter VIII brings *BD* full circle by showing ways to apply the learned concepts to the existing literature. I will analyze five double bass orchestral excerpts that are commonly used for auditions to show how to incorporate *BD* concepts into difficult passages.

Before delving into the excerpts, we need to discuss the scope and limitations of this chapter. “Sections II-VI” of this chapter give ideas for creating open string exercises based on five double bass excerpts. The excerpts were chosen for a variety of reasons. First, the techniques employed for practicing the passages use the three ways to practice bowing drills at increasing speeds found in Chapter II, Section III of this document. Exercises will be created using the vamping, direct subdivision, and indirect subdivision so you know how for your own needs. Second, the excerpts chosen are from the Baroque, Classical, and Romantic Eras thereby covering the common practice period styles commonly performed in orchestras today.<sup>53</sup> And third, all the excerpts are common double bass audition sections. Auditions are notorious for asking for some of the most difficult passages found in the canon. Because this document is bowing and string crossing centered, the excerpts selected have difficult string crossing patterns.

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<sup>53</sup> Music composed after the Romantic Era often uses stylistic techniques found in previous eras or is rather specific. The exercises provided in this document are from well-known and frequently performed composers whose music is found in the public domain. You can apply the process discussed in this chapter to many more pieces to suit your own needs.

Because this document is primarily focused on the double bass, the literature used in this chapter is for the instrument. The processes used to create the exercises discussed below can be applied to repertoire for all orchestral bowed stringed instruments, including many more passages for double bass. As you might expect from reading this far, the following sections concentrate on isolating the bow, not the left-hand. Fingering is not discussed other than very simple terms will only relate to the double bass. Lastly, there will always be alternative ways to perform the passages utilized below. The point of this chapter is to show how to create bowing exercises based on the literature, not to be a definitive source or cover all possibilities.

## **II. Johann Sebastian Bach: “Badinerie” from Orchestral Suite No. 2 in B minor, BWV. 1067**

Along with the “Double” from the same suite, Bach’s “Badinerie” is one of the few Baroque excerpts commonly found on double bass auditions. As such, it is critical to display proper Baroque style during an audition. What makes this excerpt particularly difficult is the frequent string crossings on sixteenth notes over arpeggiations at a fast tempo. Because the double bass is tuned in fourths, arpeggios require more string crossings or shifting than the other stringed instruments.<sup>54</sup> Now, there are many ways to perform the passages that use repeated figures of eighth note followed by two sixteenth note (see Appendix 7 for the full excerpt).<sup>55</sup> But the feeling is driving forward, so I prefer to think of the gesture starting on the sixteenth notes and moving to the eighth note.

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<sup>54</sup> In lower positions on the double bass, the normal left-hand spread covers a major second. Cello covers a minor third, and upper strings cover a perfect fourth. There are techniques like extensions that help, but the larger the instrument, the more distance between notes. By nature, arpeggios skip over notes, so larger instruments have to move farther to achieve the same interval.

<sup>55</sup> One note on the excerpt: Bach goes down to a “D” below the standard open E string of double bass. If you have an extension or five string bass, you can play as originally written. These few arpeggios are written in a higher octave as well in Appendix 7. They appear as double stops but choose the option that fits best for your instrument.

To create exercises for this Bach excerpt, look for the many recurring patterns. You can stay all on the same string and shift (or use an extension or pivot). This concept would be easiest for small intervals like the minor third or on an arpeggio containing an open string. You can play the two sixteenth notes on the same string then the eighth note on an adjacent string. Or play one sixteenth on a higher string, and the next sixteenth and eighth note on the lower adjacent string. Perhaps you need to play on three strings like “G, D, A.” Or you might start with a sixteenth on one string, drop down an adjacent string for the second sixteenth note, then return to the original string for the eighth note. All five of these bowing variations are seen in the exercises in the image below. There are other possibilities, but in my own playing experience, these are most used for this excerpt.

#### Exercises

Vamp and gradually increase tempo



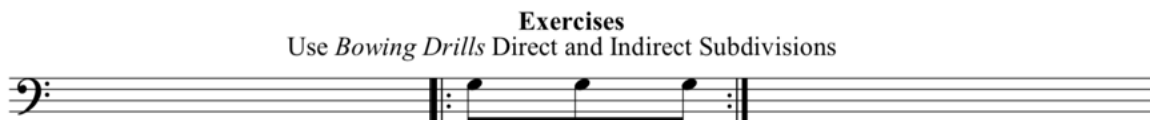
Image 8: Bach “Badinerie” Open String Exercises Based on *Bowing Drills*

Now that we have identified several patterns found in the Bach “Badinerie,” we need ways to practice the patterns. Because the patterns are so short, I recommend using the vamp and gradually increase speed method discussed in Chapter II. Practice each pattern until comfortable and up to the desired tempo. As you set your fingering for the excerpt, these same patterns can be used on different strings, so vamp those as needed as well. You can also use direct and indirect subdivision for these exercises. Once your fingering is set try the subdivisions over a few measures. After the bowing feels solid, add in the left-hand (full excerpts found in Appendix 7). Because a new variable is being added in, you might need to slow down and work back up to speed, but your bowing will now be better coordinated with the left-hand.

### III. Ludwig van Beethoven: “Mvt. III, Trio” from Symphony No. 5 in C minor, Op. 67

The trio from Beethoven’s Symphony No. 5 is one of the most common excerpts appearing on double bass auditions (see Appendix 7 for the full excerpt). The “trio” is so standard, it is typically found in the first round of an audition. Without clear execution of this excerpt, you probably will not make later rounds.

The difficulty in this excerpt lies in the eighth note passages involving string crossings. Like in the Bach “Badinerie,” we will reduce passages to simple gestures. While the Beethoven excerpt is written in triple meter, the eighth note passage patterns better reduce to compound duple. But we can reduce compound duple further to three notes. The first pattern to practice is three notes on a single string. Add in repeats and practice using the concepts of *BD*. As seen in the image below, play the pattern and repeat the first three notes, making a pattern of six notes total. Play on all strings in both subdivisions to work up to performance speed. For direct subdivision play on the “G” string as slow, medium then fast before moving to the “D” string and repeating the pattern. Continue through all the strings like in the *BD* patterns. For indirect subdivision, play the six notes slow on the “G” string, then “D” and so on down to the “E” and back up to the “G” string. Then repeat at a medium tempo, then repeat one last time at a fast tempo.



*Image 9: Beethoven Open String Exercise 1 Based on Bowing Drills*

The other three note patterns that appear in the excerpt are variations of the first. They just apply an adjacent string instead of using a single string. Now, in this excerpt the pattern only appears as a low string to high string motion. So, we can skip the first half of the adjacent string Pattern 1 and just play from the “flip” described in Chapter II. *Image 10* below shows the

gestures. Practice like the first exercise for this excerpt but only use the second half. We have now isolated the bowing of the simple three note gestures found in the excerpt.

Use *Bowing Drills* Direct and Indirect Subdivisions Starting on Lowest String

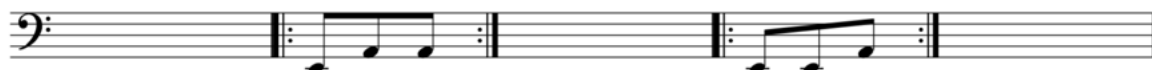


Image 10: Beethoven Open String Exercises 2 and 3 Based on *Bowing Drills*

The next step is to combine the simple gestures into a full measure. They can be practiced from the flip like exercises 2 and 3, but just remove the repeat because they are already six notes long. We also introduce a new notation to the exercises. Looking at the image below, you will see symbols, or “special characters” over the measures (\*, %, and &). These characters correspond to where the bowing patterns appear in the excerpt as seen in Appendix 7. When you create your own exercises, you do not need to use symbols unless they help you identify patterns. The symbols used in this chapter and Appendix 7 were chosen because they do not have any musical meaning associated with the character.

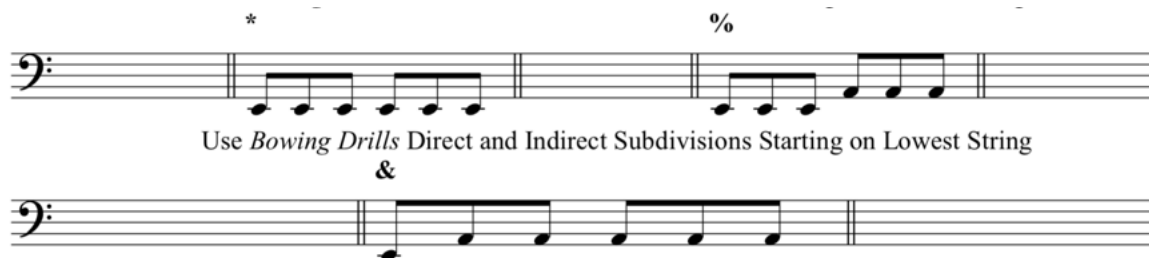


Image 11: Beethoven Open String Exercises 4, 5, and 6 Based on *Bowing Drills*

Exercise 7 (seen in the image below) is a variation of Exercise 6 (in the image above). The difference is the two groups of three notes are switched between the patterns. You can still play using direct and indirect subdivisions. Now the six-note gesture will be: “AAAEAA” (*Image 12* below) then move up a string and repeat the high, high, high, low, high, high motion or “DDDADD”. Move up to the “G” string and play the same pattern. Now you have isolated all the string crossings found in the eighth note sections of the “Trio” of Beethoven’s fifth

symphony. All that is left is to incorporate the left-hand back in as well as the dynamics (full excerpt seen in Appendix 7).

Use *Bowing Drills* Direct and Indirect Subdivisions Starting on A and E Strings  
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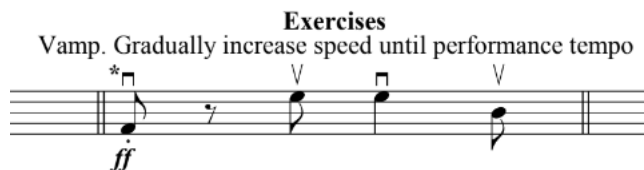


*Image 12: Beethoven Open String Exercise 7 Based on Bowing Drills*

#### IV. Johannes Brahms: “Mvt. 1, measures 161-189” from Symphony No. 1 in C minor, Op. 68

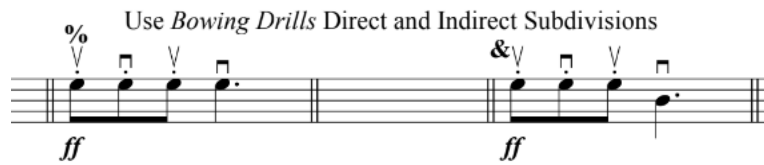
In the double bass world auditions can be won or lost on the performance of the very specific articulations called for in Brahms auditions. The first and fourth movements of both his first and second symphonies are common excerpts. I chose to include this particular excerpt because it entails many string crossings with articulations, requiring coordination and accuracy in the bow to pull off a musically convincing performance.

The first exercise addresses the opening measure of the excerpt (*Image 13*). The string crossing pattern only occurs one time in the passage, so you do not need to practice the gesture on other strings. You can vamp and increase tempo up to performance tempo as seen in the image below. When practicing, pay special attention to the articulations and note lengths. The first note is a staccato eighth note followed by an eighth rest. It is also on a lower string than the other notes in the passages, so you will have to play even shorter to compensate for the natural resonance of lower notes on a double bass. The other two eighth notes in the measure are not staccato but are on different strings from each other.



*Image 13: Brahms Open String Exercise 1 Based on Bowing Drills*

The second and third exercises seen in *Image 14* are dependent on the fingering you choose. Both will work throughout the passage. *Images 15* and *16* are from the excerpt itself and reflect the fingering possibility with the symbols separated by a slash (%/&). I recommend you use the same variation every time you play the gesture for consistency of sound. *Image 16* contains the same pattern, but this time starting on big beat two of the measure instead of big beat one like in *Image 15*.



*Image 14: Brahms Open String Exercises 2 and 3 Based on Bowing Drills*



*Image 15: Brahms Exercises 2 and 3 Based on Bowing Drills in context*



*Image 16: Brahms Exercises 2 and 3 Based on Bowing Drills in context offset a beat*

Now you might have noticed in the images above that I start the gesture with an up bow. In normal situations, you want to start a measure with a down bow. But as seen in the context of the music (shown in *Image 15*) we have other musical factors influencing the bowing decision. When the gesture starts on big beat one, big beat two has an accent. And when the gesture starts on big beat two, the dotted quarter note lands on big beat one of the next measure. Whichever fingering/bowing you choose, be sure to practice the feeling of the dotted quarter note having an



accent and landing on a down beat. Both will be a larger event than the previous eighth notes, but in different ways.

#### **V. Gustav Mahler: “Mvt. 1, measures 12-13 and 27-28” from Symphony No. 2 in C minor**

There are several Mahler excerpts commonly used in double bass auditions. From the solo starting the third movement of his first symphony to several movements of his fifth symphony, all have their own difficulties. The opening page of the double bass part of his second symphony contains a particularly difficult string crossing gesture that must be played with changing dynamics.

Now that I have walked you through several excerpts, we will take a more general look at the Mahler example as seen in the image below. Like in the previous excerpts, first find the smallest gesture you can. Here it is a three-note gesture starting on the “D” string, then “A” string, followed by “G” string. The gesture can be transcribed down a fourth moving to the “A,” “E,” and “D” strings. As with all short gestures, vamp and gradually increase speed. Next, we move up to the measure level and add in dynamics. Because it is longer than just a few notes you can practice with vamp or subdivisions. Here the possibilities are the original “D, A, G” gesture three times in a row before the transcribed “A, E, D.” In the music this string crossing pattern is seen with two different dynamics that should both be practiced. In some cases, it is *piano* the entire measure. Other times it starts *forte* and decrescendos for the entire measure. The second measure found in the passage is “D, A, G” gesture four times in a row and always *forte* with a decrescendo. The next step is to combine the two measures as seen in the fifth exercise. Refer to Appendix 7 to see the gestures as written with pitches included.

**Exercises**

Vamp. Gradually increase speed until performance tempo

Vamp. Gradually increase speed until performance tempo  
Or use Direct and Indirect Subdivisions

Vamp. Gradually increase speed until performance tempo  
Or use Direct and Indirect Subdivisions

*Image 17: Mahler Exercises 1-5 Based on Bowing Drills*

**VI. Wolfgang Amadeus Mozart: “Mvt. IV, measures 146-181”  
from Symphony No. 35 in D Major, K. 385**

The final excerpt we will look at in this document is the fourth movement of Mozart’s thirty-fifth symphony. It is notorious in the double bass community as one of the most difficult in Western Art Music canon. It is extremely fast and the difficulty for double basses is the near constant string crossings or shifts required to play each note. Most professionals find a solution that incorporates both as strategically as possible. The solutions offered here are pattern based to make learning the excerpts as streamlined as possible.

Again, look for small, recurring gestures. Careful analysis on the excerpt finds that the same gestures and their inverse are found throughout (see *Image 18* for the gestures I identified).

Because many of the gestures reduce to four notes, are often inversed (like high, high, high, low inverted to low, low, low, high), and are found on several strings, direct and indirect subdivisions are perfect bowing practice for this Mozart excerpt. As with the Mahler and Beethoven excerpts, these gestures can often be combined with others to create eight note gestures. *Image 18* shows the exercises I created to practice the string crossings found in the fourth movement of the symphony. One last note on the exercises: some gestures are variations of previously learned ones. Look at the last two exercises on the page. Both have a pattern of high, low, high, high. The first is on adjacent strings (like *BD* Pattern 1). The second involves skipping one string (like *BD* Pattern 2). You can consider these as separate exercises, but because they are so similar, I chose to mark them as “@” and “@” in the music to show their relationship. Both ways are fine. Choose what works best for you and your practice. You can see the exercises applied to the excerpt in Appendix 7.

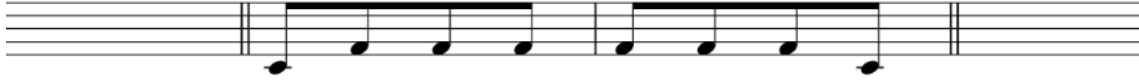
**Exercises**

Use *Bowing Drills* Direct and Indirect Subdivisions



Use *Bowing Drills* Direct and Indirect Subdivisions

\*



Use *Bowing Drills* Direct and Indirect Subdivisions

%



Use *Bowing Drills* Direct and Indirect Subdivisions

&



Use *Bowing Drills* Direct and Indirect Subdivisions

\$

@

@'



Image 18: Mozart Exercises 1-9 Based on *Bowing Drills*

**CHAPTER IX:**  
***Bowing Drills Additions for the Double Bass***

**I. Double Bass Extended Packet**

Appendix 6 of this document contains an additional packet specifically for double bass that covers many more bowing variations than found in the classroom packets that make up Appendices 1-5.<sup>56</sup> There are a few slight changes to first few pages of the extended packet from the classroom packet. Namely, the removing the written-out rests while other instruments rest, and fully written out examples of all five patterns in direct and indirect subdivision instead of just Pattern 1. The main changes though are additional bowing variations.

Before we continue, there is one disclaimer. As bowing variations become more advanced, not every pattern, bow stroke, or other concept will work with every variation. Specific examples will be brought to your attention below on a case-by-case basis.

The first addition for the double bass extended packet are some examples of syncopations with a few different rhythmic, bowing, and string crossing examples. Looking at *Image 19*, the first two bowings are single syncopations following a metrically strong beat (like beat one and three in quadruple time). Strings of syncopations are found in the second two bowings.



*Image 19: Double Bass Extended Packet Syncopations*

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<sup>56</sup> All the original content is found in the classroom packets is also in the double bass extended packet.

Another addition to the extended double bass packet is a series of bowings that cover all four strings in a single cell. The four string examples are excellent for practicing broken chords and other situations where strings are crossed quickly.<sup>57</sup> But, the double stop parts of *BD*, Patterns 4 and 5, will not work with the four string exercises. Also, the four string exercises will work for every instrument, but do not appear in the classroom packets for one simple reason: not everyone can play together at all like in Patterns 3 and 5. When using *BD* as a warmup in a classroom setting, Patterns 3 and 5 only take a brief percentage of the time playing and students are focused on coming back in to the pattern on time (another invaluable skill). An entire series of exercises on all four strings would not be as feasible for classroom settings because it would take more time away from individuals having more time with bow on string.

The heart of the extra material for the Double Bass Extended Packet is one-hundred-eighty bowing variations over basic and dotted rhythms in duple meters. Extra bowings include different combinations of a quarter note combined with two eighths over all possible groupings of two adjacent strings. There are also all possible combinations of sixteenth, dotted eighth, and quarter notes on two adjacent strings provided.

There are several constraints in the extended packet. Several bowings need articulations, bow stroke, or style applied or will not make sense to a performer. For example, if *Image 20* was played *legato*, it would sound of straight half, quarter, and eighth notes. But if the stroke was a bowing like *portato* or slurred staccato, or accents marks applied, changes to bow weight, speed, distribution, or placement would need to occur for each individual note. Straight *detaché* is not a

---

<sup>57</sup> Crossing strings quickly is very common on double bass. Take a “G Major” arpeggio in first position as an example. Each note either requires performing on a different string or a shift into a higher position. Even starting an arpeggio on the open “E” string (the lowest note without an extension or five string bass) requires three strings or a shift for the arpeggio to fall on two strings.

valid bowing for the images below, because the slur would make the rhythm simplify to a longer note, but many other strokes or articulations are valid.



*Image 20: Double Bass Extended Packet*  
Bowing 3, Variations on Basic and Dotted Duple Meter Bowings



*Image 21: Double Bass Extended Packet*  
Bowing 147, Variations on Basic and Dotted Duple Meter Bowings

One more note about notation. If the musical context requires, ties of the same note are often if not typically played without rearticulation. So, bowing variations like those found in *Image 22* could be performed with or without articulations. Depending on what a teacher wants to isolate, either interpretation is acceptable.



*Image 22: Double Bass Extended Packet*  
Bowing 155, Variations on Basic and Dotted Duple Meter Bowings

Linking a *BD* bowing variation to specific musical contexts found in the repertoire, the image above shows a bowing that would be good practice for double bassists to work on a common audition piece from Shostakovich's Symphony 5, Movement I. In the excerpt, the exact rhythm from this bowing pattern is used on adjacent strings: a long sustained note on a higher string followed by a short note on a lower string. Additionally, there are some small shifts in the left-hand, but bowing is much more difficult than the left-hand. Other bowing considerations to add would be knowing the interpretation is a tied note that is not rearticulated, there are accents

over the moving notes, and the notes should be as connected as possible. The shifts in the left-hand will add in the slight separation needed between notes. In this case, the left-hand and right-hand are synced in rhythm, but not exactly in style.

## **II. *Bowing Drills Applied to Common Double Bass Audition Excerpts***

Appendix 7 of this document contains bowing exercises for several common double bass audition excerpts using the concepts of *BD*. Referring to Chapter 3, these exercises will somewhat resemble the ones found in Zimmerman's *A Contemporary Concept of Bowing Technique*. The main difference is the exercises here move from individual bowing to full excerpt, sometimes taking several steps along the way. The Zimmerman examples just isolate open strings in context of the full excerpt before adding in the left-hand.

For each of the excerpts, I have isolated at least one “tricky” bowing pattern down to open strings and created bowing exercises based on the properties of *BD*. Some excerpts need only a single exercise before putting into context with the left-hand, while others have multiple steps of isolation. Chapter VIII details how the exercises were created, but Appendix 7 contains all the exercises and the excerpts they apply to. The following excerpts are found in Appendix 7:

- Johann Sebastian Bach: “Badinerie” from Orchestral Suite No. 2 in B minor, BWV. 1067
- Ludwig van Beethoven: “Mvt. III, Trio” from Symphony No. 5 in C minor, Op. 67
- Johannes Brahms: “Mvt. 1, measures 161-189” from Symphony No. 1 in C minor, Op. 68
- Gustav Mahler: “Mvt. 1, measures 12-13 and 27-28” from Symphony No. 2 in C minor
- Wolfgang Amadeus Mozart: “Mvt. IV, measures 146-181”  
from Symphony No. 40 in D Major, K. 385



## **CHAPTER X: Conclusions and Future Plans**

### **I. Conclusions**

*Bowing Drills (BD)* is designed for string performers to isolate their right-hand and bow to improve their tone, timing, dynamics, articulations, and phrasing. It was created to give students and teachers alike a supplemental method to existing resources and methods that often neglect the bow or do not work for all strings. By providing *BD* as a free-for-educational-use method, students of all backgrounds have access to the method.

The method focuses on bowing through string crossings aimed at helping beginners who cannot read music to advanced students who are perfecting their tone. Five basic bowing patterns that isolate string crossings on adjacent strings, skipping strings, and double stops are used to improve bowing performance at increasing tempi. The patterns are highly adaptable and can be used for individual or group warm-ups and practice exercises, or to improve basic to complex orchestral bowing passages. Variations are limitless and easily adaptable. By using the concepts found in *Bowing Drills*, teachers can create their own exercises to address any bowing, articulation, dynamic, style, adding in the left-hand and more.

### **II. Future Plans**

*BD* is a project years in the making and will continue to evolve. I have presented on *BD* at several conferences and have an upcoming presentation with the American String Teachers Association (ASTA). In the near future I hope to publish an article on the main tenets of *BD* with a large reaching education focused group like ASTA. I also would like to offer clinics and workshops to public schools and universities.

A *BD* related project I have been mulling over is a wind and brass compendium so the method could be used in full orchestra rehearsals. So far, I have a name, *Blowing Drills*, and

some concepts like brass playing between partials and woodwinds playing across registers to relate to string crossings. *Blowing Drills* would need a lot of help from wind and brass professionals to make sure the concepts are not too complicated to make sound good with open strings.

One of my main goals of *BD* moving forward is to have it available as an online resource for teachers and students alike. I would like to find a reputable company, organization, or university to host and help promote the resources. In addition to the written materials provided in this document, I also have play-along mp3 tracks for string orchestra and double bass of the five patterns in both subdivisions. These were created in response to Covid-19 quarantines for at home students to have something to play along with instead of only hearing themselves at home. Before my doctoral studies, I worked at a non-profit association management company. Many companies in the music industry host educational materials for free distribution and I could foresee a string or instrument maker, organization, or university willing to become involved. Long term I would love for other string professionals to add to *BD*. I believe a database of bowing variations and open string exercises applied to excerpts and solo literature for all bowed stringed instruments would be a beneficial addition. I would also like to add videos on a platform like YouTube to show the concepts of *BD* in action, with all bowed orchestral stringed instruments. Overall, I believe *Bowing Drills* has a lot of potential to help string performers improve bowing technique and I hope to see it continue to grow in use.

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**Appendix 1:**  
***Bowing Drills* Director Packet**

The packet that makes up Appendix 1 is the Director Packet for string orchestra classroom instructors and contains the following:

- *Bowing Drills* Patterns 1-5 written out to play with violin, viola, cello, and double bass
- Brief description on how to use *Bowing Drills*, including Direct and Indirect Subdivision
- Pattern 1 notated score of both Direct and Indirect Subdivision
- Violin, viola, cello, and double bass, bowing variations that match across all the instruments

# Bowing Drills

Highly Adaptable Exercises for All Ages

*Created by Nick Barnaby*

**Director**  
**String Classroom Packet**

# BOWING DRILLS

## Pattern 1 – Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C G C G	G D G D	D A D A	A E A E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E A E A	A D A D	D G D G	G C G C

## Pattern 2 – Skip 1 String

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C D C D	G A G A	D E D E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E D E D	A G A G	D C D C

## Pattern 3 – Skip 2 Strings

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C A C A	G E G E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
E G E G	A C A C

## Pattern 4 – Double Stops Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C/G G/D C/G G/D	G/D D/A G/D D/A	D/A A/E D/A A/E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
A/E D/A A/E D/A	D/A G/D D/A G/D	G/D C/G G/D C/G

## Pattern 5 – Double Stops Skip 1 String

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C/G D/A C/G D/A	G/D A/E G/D A/E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
A/E G/D A/E G/D	D/A C/G D/A C/G

# BOWING DRILLS

After pattern is learned, practice playing as quarter notes, eighth notes, and sixteenth notes. Can be used with **Direct Subdivision** (complete each group of four notes as quarter, eighth, sixteenth before moving on to the next) or as **Indirect Subdivision** (complete entire pattern as quarter, then eighth, then sixteenth). Gradually increase tempo to improve string crossings. Try adding in slurs, articulations, rhythms, dynamics, strokes, styles. Have students create own patterns when they have mastered the technique.

Some things to consider: bow hold, angle(s) of fingers/wrist/arm, fingers/wrist/arm movement, bow speed, what part (frog, middle, tip) and amount of bow used per stroke, bow placement on the string (close to fingerboard, bridge, in between, other), bow weight (into the string), and angle of bow across string.



# Bowing Drills

Pattern 1 - Direct Subdivision

Nick Barnaby

Violin

Viola

Cello

Double Bass

The first system of the musical score features four staves. The Violin staff (treble clef) begins with a whole rest, followed by a rhythmic pattern of eighth notes. The Viola (alto clef), Cello (bass clef), and Double Bass (bass clef) staves all play a consistent eighth-note pattern throughout the system.

The second system continues the rhythmic patterns from the first system. The Violin staff (treble clef) plays a rhythmic pattern of eighth notes. The Viola (alto clef), Cello (bass clef), and Double Bass (bass clef) staves all play a consistent eighth-note pattern throughout the system.

The third system continues the rhythmic patterns from the first system. The Violin staff (treble clef) plays a rhythmic pattern of eighth notes. The Viola (alto clef), Cello (bass clef), and Double Bass (bass clef) staves all play a consistent eighth-note pattern throughout the system.

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# Bowing Drills

## Pattern 1 - Indirect Subdivision

Nick Barnaby

Violin

Viola

Cello

Double Bass

The first system of the musical score features four staves. The Violin staff (treble clef) begins with a whole rest, followed by a sequence of eighth notes: G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. The Viola, Cello, and Double Bass staves (all bass clefs) play a rhythmic accompaniment of eighth notes: C3, D3, E3, F3, G3, A3, B3, C4, B3, A3, G3, F3, E3, D3, C3.

The second system continues the musical score. The Violin staff (treble clef) plays eighth notes: D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. The Viola, Cello, and Double Bass staves (all bass clefs) continue with the eighth-note accompaniment: C3, D3, E3, F3, G3, A3, B3, C4, B3, A3, G3, F3, E3, D3, C3.

The third system concludes the musical score. The Violin staff (treble clef) plays eighth notes: C4, B3, A3, G3, F3, E3, D3, C3, B3, A3, G3, F3, E3, D3, C3. The Viola, Cello, and Double Bass staves (all bass clefs) continue with the eighth-note accompaniment: C3, D3, E3, F3, G3, A3, B3, C4, B3, A3, G3, F3, E3, D3, C3.

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Violin

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

*Bowing 1*

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Violin

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Violin

# Bowing Drills

## Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1

3

5

7

9

11

Copyright © Nick Barnaby 2021

Viola

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Viola

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Viola

# Bowing Drills

Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1

3

5

7

9

11

Copyright © Nick Barnaby 2021



Cello

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Cello

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12 13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Cello

# Bowing Drills

## Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

3

5

7

9

11

Copyright © Nick Barnaby 2021

Double Bass

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Double Bass

# Bowing Drills

Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Double Bass

# Bowing Drills

Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

The image displays 12 numbered bowing drills for double bass, arranged in six pairs on a single staff in bass clef. Each drill is written in 3/4 time and features a dotted quarter note followed by an eighth note. The drills are numbered 1 through 12. Drills 1-4 are grouped under the heading "Bowing 1". Each drill consists of two measures, with the second measure often containing more complex rhythmic patterns or slurs. The notation includes various bowing directions (up and down bows) and slurs to indicate phrasing.

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**Appendix 2:**  
***Bowing Drills Violin Packet***

The packet that makes up Appendix 2 is the Violin Packet for string orchestra classroom students and contains the following:

- *Bowing Drills* Patterns 1-5 written out to play with violin, viola, cello, and double bass
- Brief description on how to use *Bowing Drills*, including Direct and Indirect Subdivision
- Pattern 1 notated violin part of both Direct and Indirect Subdivision
- Violin bowing variations that match across all the instruments

# Bowing Drills

Highly Adaptable Exercises for All Ages

*Created by Nick Barnaby*

## Violin

String Classroom Packet



# BOWING DRILLS

## Pattern 1 – Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C G C G	G D G D	D A D A	A E A E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E A E A	A D A D	D G D G	G C G C

## Pattern 2 – Skip 1 String

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C D C D	G A G A	D E D E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E D E D	A G A G	D C D C

## Pattern 3 – Skip 2 Strings

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C A C A	G E G E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
E G E G	A C A C

## Pattern 4 – Double Stops Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C/G G/D C/G G/D	G/D D/A G/D D/A	D/A A/E D/A A/E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
A/E D/A A/E D/A	D/A G/D D/A G/D	G/D C/G G/D C/G

## Pattern 5 – Double Stops Skip 1 String

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C/G D/A C/G D/A	G/D A/E G/D A/E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
A/E G/D A/E G/D	D/A C/G D/A C/G



Violin

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Violin

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Violin

# Bowing Drills

## Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1

3

5

7

9

11

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**Appendix 3:**  
***Bowing Drills Viola Packet***

The packet that makes up Appendix 3 is the Viola Packet for string orchestra classroom students and contains the following:

- *Bowing Drills* Patterns 1-5 written out to play with violin, viola, cello, and double bass
- Brief description on how to use *Bowing Drills*, including Direct and Indirect Subdivision
- Pattern 1 notated viola part of both Direct and Indirect Subdivision
- Viola bowing variations that match across all the instruments

# Bowing Drills

Highly Adaptable Exercises for All Ages

*Created by Nick Barnaby*

## Viola

String Classroom Packet

# BOWING DRILLS

## Pattern 1 – Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C G C G	G D G D	D A D A	A E A E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E A E A	A D A D	D G D G	G C G C

## Pattern 2 – Skip 1 String

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C D C D	G A G A	D E D E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E D E D	A G A G	D C D C

## Pattern 3 – Skip 2 Strings

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C A C A	G E G E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
E G E G	A C A C

## Pattern 4 – Double Stops Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C/G G/D C/G G/D	G/D D/A G/D D/A	D/A A/E D/A A/E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
A/E D/A A/E D/A	D/A G/D D/A G/D	G/D C/G G/D C/G

## Pattern 5 – Double Stops Skip 1 String

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C/G D/A C/G D/A	G/D A/E G/D A/E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
A/E G/D A/E G/D	D/A C/G D/A C/G



After pattern is learned, practice playing as quarter notes, eighth notes, and sixteenth notes. Can be used with **Direct Subdivision** (complete each group of four notes as quarter, eighth, sixteenth before moving on to the next) or as **Indirect Subdivision** (complete entire pattern as quarter, then eighth, then sixteenth). Gradually increase tempo to improve string crossings. Try adding in slurs, articulations, rhythms, dynamics, strokes, styles. Have students create own patterns when they have mastered the technique.

Some things to consider: bow hold, angle(s) of fingers/wrist/arm, fingers/wrist/arm movement, bow speed, what part (frog, middle, tip) and amount of bow used per stroke, bow placement on the string (close to fingerboard, bridge, in between, other), bow weight (into the string), and angle of bow across string.

### Pattern 1 - Direct Subdivision

### Pattern 1 - Indirect Subdivision

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Viola

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Viola

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Viola

# Bowing Drills

## Dotted Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1

3

5

7

9

11

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**Appendix 4:**  
***Bowing Drills Cello Packet***

The packet that makes up Appendix 4 is the Cello Packet for string orchestra classroom students and contains the following:

- *Bowing Drills* Patterns 1-5 written out to play with violin, viola, cello, and double bass
- Brief description on how to use *Bowing Drills*, including Direct and Indirect Subdivision
- Pattern 1 notated cello part of both Direct and Indirect Subdivision
- Cello bowing variations that match across all the instruments

# Bowing Drills

Highly Adaptable Exercises for All Ages

*Created by Nick Barnaby*

## Cello

String Classroom Packet

# BOWING DRILLS

## Pattern 1 – Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C G C G	G D G D	D A D A	A E A E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E A E A	A D A D	D G D G	G C G C

## Pattern 2 – Skip 1 String

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C D C D	G A G A	D E D E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E D E D	A G A G	D C D C

## Pattern 3 – Skip 2 Strings

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C A C A	G E G E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
E G E G	A C A C

## Pattern 4 – Double Stops Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C/G G/D C/G G/D	G/D D/A G/D D/A	D/A A/E D/A A/E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
A/E D/A A/E D/A	D/A G/D D/A G/D	G/D C/G G/D C/G

## Pattern 5 – Double Stops Skip 1 String

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C/G D/A C/G D/A	G/D A/E G/D A/E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
A/E G/D A/E G/D	D/A C/G D/A C/G

After pattern is learned, practice playing as quarter notes, eighth notes, and sixteenth notes. Can be used with **Direct Subdivision** (complete each group of four notes as quarter, eighth, sixteenth before moving on to the next) or as **Indirect Subdivision** (complete entire pattern as quarter, then eighth, then sixteenth). Gradually increase tempo to improve string crossings. Try adding in slurs, articulations, rhythms, dynamics, strokes, styles. Have students create own patterns when they have mastered the technique.

Some things to consider: bow hold, angle(s) of fingers/wrist/arm, fingers/wrist/arm movement, bow speed, what part (frog, middle, tip) and amount of bow used per stroke, bow placement on the string (close to fingerboard, bridge, in between, other), bow weight (into the string), and angle of bow across string.

### Pattern 1 - Direct Subdivision

### Pattern 1 - Indirect Subdivision



Cello

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021

Cello

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12 13 *Spiccato* 14 15

Copyright © Nick Barnaby 2021

Cello

# Bowing Drills

## Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1

3

5

7

9

11

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**Appendix 5:**  
***Bowing Drills* Double Bass Packet**

The packet that makes up Appendix 5 is the Double Bass Packet for string orchestra classroom students and contains the following:

- *Bowing Drills* Patterns 1-5 written out to play with violin, viola, cello, and double bass
- Brief description on how to use *Bowing Drills*, including Direct and Indirect Subdivision
- Pattern 1 notated double bass part of both Direct and Indirect Subdivision
- Double bass bowing variations that match across all the instruments

# Bowing Drills

Highly Adaptable Exercises for All Ages

*Created by Nick Barnaby*

**Double Bass**  
**String Classroom Packet**

# BOWING DRILLS

## Pattern 1 – Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C G C G	G D G D	D A D A	A E A E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E A E A	A D A D	D G D G	G C G C

## Pattern 2 – Skip 1 String

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C D C D	G A G A	D E D E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
E D E D	A G A G	D C D C

## Pattern 3 – Skip 2 Strings

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C A C A	G E G E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
E G E G	A C A C

## Pattern 4 – Double Stops Adjacent Strings

<i>Viola/Cello</i>	<i>All Strings</i>	<i>Violin/Bass</i>
C/G G/D C/G G/D	G/D D/A G/D D/A	D/A A/E D/A A/E
<i>Violin/Bass</i>	<i>All Strings</i>	<i>Viola/Cello</i>
A/E D/A A/E D/A	D/A G/D D/A G/D	G/D C/G G/D C/G

## Pattern 5 – Double Stops Skip 1 String

<i>Viola/Cello</i>	<i>Violin/Bass</i>
C/G D/A C/G D/A	G/D A/E G/D A/E
<i>Violin/Bass</i>	<i>Viola/Cello</i>
A/E G/D A/E G/D	D/A C/G D/A C/G

After pattern is learned, practice playing as quarter notes, eighth notes, and sixteenth notes. Can be used with **Direct Subdivision** (complete each group of four notes as quarter, eighth, sixteenth before moving on to the next) or as **Indirect Subdivision** (complete entire pattern as quarter, then eighth, then sixteenth). Gradually increase tempo to improve string crossings. Try adding in slurs, articulations, rhythms, dynamics, strokes, styles. Have students create own patterns when they have mastered the technique.

Some things to consider: bow hold, angle(s) of fingers/wrist/arm, fingers/wrist/arm movement, bow speed, what part (frog, middle, tip) and amount of bow used per stroke, bow placement on the string (close to fingerboard, bridge, in between, other), bow weight (into the string), and angle of bow across string.

### Pattern 1 - Direct Subdivision

### Pattern 1 - Indirect Subdivision

Double Bass

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021



Double Bass

# Bowing Drills

## Basic Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Detailed description: The image contains 15 musical staves for double bass. Staves 1-12 are labeled 'Bowing 1' and contain various bowing drills in 3/4 time. Each staff starts with a bass clef and a key signature of one flat. The drills are numbered 1 through 12. Drills 1-12 feature a variety of bowing patterns, including slurs, accents, and different rhythmic groupings. Staves 13, 14, and 15 are labeled 'Spiccato' and contain exercises with rapid, repeated notes, characteristic of spiccato bowing.

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Double Bass

# Bowing Drills

Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1 2 3 4 5 6 7 8 9 10 11 12

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**Appendix 6:**  
***Bowing Drills* Double Bass Extended Packet**

The packet that makes up Appendix 6 is the Double Bass Extended Packet for individual instruction students and contains the following:

- *Bowing Drills* Patterns 1-5 written out to play for double bass alone
- Brief description on how to use *Bowing Drills*, including Direct and Indirect Subdivision
- Pattern 1 notated double bass part of both Direct and Indirect Subdivision
- Double bass bowing variations. Many additional variations are added compared to the classroom packet.

# **Bowing Drills**

**Highly Adaptable Exercises for All Ages**

*Created by Nick Barnaby*

**Double Bass  
Extended Packet**

# ***BOWING DRILLS*** **FOR THE DOUBLE BASS**

## **Pattern 1 – Adjacent Strings**

G D G D D A D A A E A E  
E A E A A D A D D G D G

## **Pattern 2 – Skip 1 String**

G A G A D E D E E D E D A G A G

## **Pattern 3 – Skip 2 Strings**

G E G E E G E G

## **Pattern 4 – Double Stops Adjacent Strings**

G/D D/A G/D D/A D/A A/E D/A A/E  
A/E D/A A/E D/A D/A G/D D/A G/D

## **Pattern 5 – Double Stops Skip 1 String**

G/D A/E G/D A/E A/E G/D A/E G/D

After pattern is learned, practice playing as quarter notes, eighth notes, and sixteenth notes. Can be used with **Direct Subdivision** (complete each group of four notes as quarter, eighth, sixteenth before moving on to the next) or as **Indirect Subdivision** (complete entire pattern as quarter, then eighth, then sixteenth). Gradually increase tempo to improve string crossings. Try adding in slurs, articulations, rhythms, dynamics, strokes, styles. Have students create own patterns when they have mastered the technique.

### **Bowing considerations while using Bowing Drills:**

Bow hold, angle(s) of fingers/wrist/arm, fingers/wrist/arm movement, bow speed, what part (frog, middle, tip) and amount of bow used per stroke, bow placement on the string (close to fingerboard, bridge, in between, other), bow weight (into the string), and angle of bow across string.

*Bowing patterns help students learn to control the bow during string crossing.  
They can be used with any slur, articulation, rhythm, dynamic, or at any tempo.*



# Bowing Drills

## Indirect Subdivision 2 Note Entire Sequence

Nick Barnaby

### Pattern 1: Adjacent Strings

Three staves of musical notation for Pattern 1: Adjacent Strings. The first staff shows a sequence of eighth notes across adjacent strings. The second staff shows a sequence of eighth notes with a different string sequence. The third staff shows a sequence of eighth notes with a different string sequence.

### Pattern 2: Skip 1 String

Two staves of musical notation for Pattern 2: Skip 1 String. The first staff shows a sequence of eighth notes skipping one string. The second staff shows a sequence of eighth notes skipping one string.

### Pattern 3: Skip 2 Strings

One staff of musical notation for Pattern 3: Skip 2 Strings, showing a sequence of eighth notes skipping two strings.

### Pattern 4: Adjacent Strings Double Stops

Two staves of musical notation for Pattern 4: Adjacent Strings Double Stops. The first staff shows a sequence of eighth notes with double stops. The second staff shows a sequence of eighth notes with double stops.

### Pattern 5: Skip 1 String Double Stops

One staff of musical notation for Pattern 5: Skip 1 String Double Stops, showing a sequence of eighth notes with double stops skipping one string.

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Double Bass

# Bowing Drills

Basic and Dotted Duple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 *Spiccato* 12 13 14 15 16 17

Copyright © Nick Barnaby 2021



Double Bass

# Bowing Drills

Basic Triple Meter Bowings

Nick Barnaby

**Bowing 1**

1 2 3 4 5 6 7 8 9 10 11 12

13 *Spiccato* 14 15

Detailed description: The page contains 15 musical exercises for double bass. Exercises 1 through 12 are in 3/4 time and feature various bowing patterns, including slurs, accents, and dynamic markings. Exercises 13, 14, and 15 are spiccato exercises, characterized by short, detached notes. Each exercise is numbered and includes a double bar line at the end.

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Double Bass

# Bowing Drills

Dotted Triple Meter Bowings

Nick Barnaby

*Bowing 1*

1 2 3 4 5 6 7 8 9 10 11 12

Copyright © Nick Barnaby 2021

# Bowing Drills

Syncopated Duple Meter Bowings

Nick Barnaby

*Bowing 1*

2

3

4

# Bowing Drills

Basic and Dotted 4 String Bowings

*Bowing 1*

The image displays 17 numbered musical exercises for a string instrument, specifically focusing on bowing techniques. Each exercise is written on a single bass clef staff. Exercises 1 through 16 are grouped under the heading "Bowing 1". Exercises 1 through 16 consist of two measures each, separated by a double bar line. Exercise 17 is titled "Spiccato" and consists of a single measure. The exercises feature various rhythmic patterns, including dotted rhythms, eighth notes, and sixteenth notes, often with slurs and accents. Exercise 16 includes a sequence of sixteenth notes with accents. Exercise 17 features a series of sixteenth notes with a slanted line above them, indicating a spiccato bowing style.

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# Bowing Drills

Variations on Basic and Dotted Duple Meter Bowings

Nick Barnaby

*Bowing 1*

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

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2

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37  38

Musical notation for measures 37 and 38. Measure 37 contains ten eighth notes with accents. Measure 38 contains ten eighth notes with accents.

39  40

Musical notation for measures 39 and 40. Measure 39 contains ten eighth notes with accents and slurs. Measure 40 contains ten eighth notes with accents and slurs.

41  42

Musical notation for measures 41 and 42. Measure 41 contains ten eighth notes with accents and slurs. Measure 42 contains ten eighth notes with accents and slurs.

43  44

Musical notation for measures 43 and 44. Measure 43 contains ten eighth notes with accents and slurs. Measure 44 contains ten eighth notes with accents and slurs.

45  46

Musical notation for measures 45 and 46. Measure 45 contains ten eighth notes with accents and slurs. Measure 46 contains ten eighth notes with accents and slurs.

47  48

Musical notation for measures 47 and 48. Measure 47 contains ten eighth notes with accents and slurs. Measure 48 contains ten eighth notes with accents and slurs.

49  50

Musical notation for measures 49 and 50. Measure 49 contains ten eighth notes with accents and slurs. Measure 50 contains ten eighth notes with accents and slurs.

51  52

Musical notation for measures 51 and 52. Measure 51 contains ten eighth notes with accents and slurs. Measure 52 contains ten eighth notes with accents and slurs.

53  54

Musical notation for measures 53 and 54. Measure 53 contains ten eighth notes with accents and slurs. Measure 54 contains ten eighth notes with accents and slurs.

4

55 56

57 58

59 60

61 62

63 64

65 66

67 68

69 70

71 72



Musical score for bass clef, measures 73-90. The score consists of ten lines of music, each containing two measures. The notes are primarily eighth and sixteenth notes, often beamed together. Many notes have a 'V' above them, indicating vibrato. The key signature has one flat (B-flat), and the time signature is 4/4. The piece concludes with a double bar line and repeat dots at the end of measure 90.

6

91 92

93 94

95 96

97 98

99 100

101 102

103 104

105 106

107 108

109 110

111 112

113 114

115 116

117 118

119 120

121 122

123 124

125 126

Detailed description: This block contains nine lines of musical notation, each representing a pair of measures. The notation is written on a single bass clef staff. Measures 109-110, 115-116, and 125-126 feature a rhythmic pattern of eighth notes with accents. Measures 111-112, 117-118, and 123-124 feature a pattern of eighth notes with slurs. Measures 113-114, 119-120, and 121-122 feature a pattern of eighth notes with accents and slurs. The notation includes various articulation marks such as accents, slurs, and breath marks.

8

127 128

129 130

131 132

133 134

135 136

137 138

139 140

141 142

143 144

145 146

147 148

149 150

151 152

153 154

155 156

157 158

159 160

161 162

10

163 164

165 166

167 168

169 170

171 172

173 174

175 176

177 178

179 180

**Appendix 7:**  
***Bowing Drills Applied to Common Double Bass Audition Excerpts***

The exercises and excerpts found in Appendix 7 are commonly used for double bass auditions.

The exercises are created by Nick Barnaby and the orchestral excerpts are from the following composers and pieces:

- Johann Sebastian Bach: “Badinerie” from Orchestral Suite No. 2 in B minor, BWV. 1067
- Ludwig van Beethoven: “Mvt. III, Trio” from Symphony No. 5 in C minor, Op. 67
- Johannes Brahms: “Mvt. 1, measures 161-189” from Symphony No. 1 in C minor, Op. 68
- Gustav Mahler: “Mvt. 1, measures 12-13 and 27-28” from Symphony No. 2 in C minor
- Wolfgang Amadeus Mozart: “Mvt. IV, measures 146-181”  
from Symphony No. 40 in D Major, K. 385

# Bowing Drills

Applied to: Bach *Orchestral Suite No. 2, Badinerie*

Exercises by Nick Barnaby

Excerpt by Johann Sebastian Bach

## Exercises

Vamp and gradually increase tempo



## Excerpt



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# Bowing Drills

Applied to: Beethoven *Symphony No. 5, Movement 3*

Exercises by Nick Barnaby

Trio (Pickup to measure 141-218)

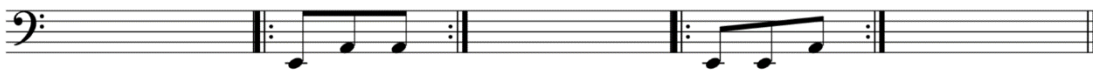
Excerpt by Ludwig van Beethoven

## Exercises

Use *Bowing Drills* Direct and Indirect Subdivisions



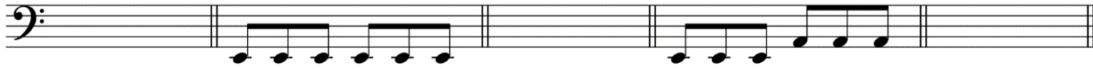
Use *Bowing Drills* Direct and Indirect Subdivisions Starting on Lowest String



Use *Bowing Drills* Direct and Indirect Subdivisions Starting on Lowest String

\*

%



Use *Bowing Drills* Direct and Indirect Subdivisions Starting on Lowest String

&



Use *Bowing Drills* Direct and Indirect Subdivisions Starting on A and E Strings

\$



2

16

Excerpt

Musical staff 1: Bass clef, 3/4 time signature, starting with a whole rest followed by a quarter note. Dynamics: *f*

Musical staff 2: Bass clef, measures 141-149. Includes symbols \$ and % above the staff.

Musical staff 3: Bass clef, measures 150-158. Includes symbols \* and & above the staff.

Musical staff 4: Bass clef, measures 159-166. Includes first and second endings, dynamics *f*, and symbols \* and &.

Musical staff 5: Bass clef, measures 167-175. Includes symbols \$, \*, and & above the staff.

Musical staff 6: Bass clef, measures 176-186. Includes symbol % above the staff.

Musical staff 7: Bass clef, measures 187-195. Includes symbol & above the staff.

Musical staff 8: Bass clef, measures 196-203. Includes symbols & and \*, dynamics *f*, *dimin.*, and *p*.

Musical staff 9: Bass clef, measures 204-211. Includes symbols \$, \*, and & above the staff.

Musical staff 10: Bass clef, measures 212-219. Includes symbol % above the staff.

# Bowing Drills

Applied to: Brahms *Symphony No. 1, Movement 1*  
Rehearsal E to 8 measures before Rehearsal F (Measures 161-189)

Exercises by Nick Barnaby

Excerpt by Johannes Brahms

## Exercises

Vamp. Gradually increase speed until performance tempo

Use *Bowing Drills* Direct and Indirect Subdivisions

## Excerpt

# Bowing Drills

Applied to: Mahler *Symphony No. 2, Movement 1*  
Measures 12-13 and 27-28

Exercises by Nick Barnaby

Excerpt by Gustav Mahler

## Exercises

Vamp. Gradually increase speed until performance tempo

Vamp. Gradually increase speed until performance tempo

Or use Direct and Indirect Subdivisions

Vamp. Gradually increase speed until performance tempo

Or use Direct and Indirect Subdivisions

## Relevant Measures from Excerpt

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# Bowing Drills

Applied to: Mozart *Symphony No. 1, Movement 4*

Exercises by Nick Barnaby

(Measures 146-181)

Excerpt by Wolfgang Amadeus Mozart

## Exercises

Use *Bowing Drills* Direct and Indirect Subdivisions



2

Excerpt

146 \* % \*

150 @ %

155 % & %

160 & % &

165 % & \$

170 \$ @' @' @' @'

174 @' @'

177