FAVORED SOUND PRODUCTION EXERCISES OF SELECTED VIOLIN, VIOLA, CELLO, AND DOUBLE BASS PEDAGOGUES: AN ANALYSIS AND ADAPTATION

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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Trust in the LORD with all your heart and lean not on your own understanding; in all your ways acknowledge him, and he will make your paths straight.

Proverbs 3:5-6 (New International Version—UK)
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Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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The purpose of the study was to identify and describe favored sound production exercises of selected contemporary violin, viola, cello, and double bass studio teachers. Once these exercises were gathered, a set of master-pedagogue-based sound production exercises suitable for middle and high school orchestra students was developed and field-tested.

This study follows the flow of naturalistic inquiry. The private studios of nine artist-string teachers comprised the natural setting. The sample had the following breakdown: three violinists, two violists, two cellists, and two double bassists. An in-depth interview format in combination with e-mail communication was used to collect data from the studio teachers in the belief that it would elicit the necessary information with the least disruption to the participants.

The exercises emerged from synthesizing the communication with the studio teachers, relevant documentary analysis, and the literature review.
exercises then entailed a field test by selected school string programs. A nine-item questionnaire was created to assess the need for the exercises and determine their potential effectiveness. A sample of nine successful school orchestra directors participated in this review. In order to further evaluate the effectiveness of the exercises over time, a structured follow-up interview occurred approximately three months after the initial trial period.

The studio teachers and school string teachers viewed their participation in the study favorably. Each studio teacher expressed personal beliefs about tone production and shared a variety of resources and activities used to teach students. Selected exercises from these private studios formed the basis for three pedagogical routines designed for use in middle and high school string classes: (1) developing right-hand finger flexibility; (2) focusing the tone; and (3) varying the bow’s speed. Participating school orchestra directors believed the exercises improved the players’ tone. They used the exercises as a warm-up activity and applied them to the music they were performing. They anticipated using the exercises in the future and indicated that they would recommend the exercises to others. They also would like to see additional, related exercises developed for heterogeneous string classes.
CHAPTER 1
INTRODUCTION

Without sound, there would be no music; and without the right hand, a string player makes no sound. The bow, called the “soul of the violin,”¹ is to the violinist what the breath is to the singer.² Stringed instrument performers and teachers have long advocated listening to singers, both live and on recordings, to gain an individual concept of sound in the mind of the student. Of one’s personal sound, cellist and “musical ambassador”³ Yo Yo Ma believes: “Your music, your sound—it’s your friend for life. . . . You will always have that voice.”⁴ Some musicians have even likened the percussive, articulated elements in string playing to consonants and the purer, singing sounds to vowels.⁵ With respect to eminent string performers, “tone quality, in a sense, is the signature of the artist.”⁶ Others echo this sentiment, “A signature sound is an evolving force that defines a performance as one of particular beauty or one of only technical


⁴ Ibid.


prowess.” Indeed, “What good comes from the ability to play the most difficult repertoire if it does not sound [good]?“

According to cello pedagogue Phyllis Young, rather than dancing to music the bow “dances to make music.” Yet when it comes to school orchestras, students and teachers can become so caught up in learning to play the notes on the page that they all too often neglect or ignore the means to produce beauty through the bow. The problem has existed for decades and is not limited to school ensembles. Violin pedagogue Carl Flesch observes,

It seems to me, therefore, that in our time the centre of gravity of tone-production has been transferred from the right arm to the left hand, and that the differentiating nuance (shading) has given way to a tempered, lukewarm, watery uniformity, minus all characteristic shadings.

Similarly, school string ensembles share “a sameness, and a routine quality of sound that suggests a disturbing lack of concern for the finer details of this elusive facet of the art.”

More than four decades ago a collegiate string educator observed that “traditional string methods, especially class methods, rarely express the same concern for tone production that they do for [left] hand position. . . .” Perhaps the leading modern series of string-class method books continues this tradition. These materials present the bow

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7 Marilyn Seelman, “From Technique-Driven Sound to Sound-Driven Technique,” *American String Teacher* 55, no. 1 (2005), 86.


12 Steg, “Tone Quality: The First Objective of String Technique,” 1.

13 Ibid.
hold and stroke in Book 1, but do not return to the right hand in a significant way until the introduction of stylistic bowings, such as *spiccato*, in Book 3.\textsuperscript{14} Even then, the exercises emphasize the new bowing style rather than the requisite skills to execute the bowing successfully. Fundamental skills, such as finger flexibility which is necessary to make a smooth bow direction change, receive minimal attention as students work their way through the techniques of new left-hand finger patterns, key signatures, and rhythms toward a false *raison d’être\textsuperscript{15}* of shifting and higher positions.

One well-known university-authored model lists the prioritization of instructional interventions as follows: (1) posture; (2) format or mechanics of playing; (3) sound; (4) intonation; (5) rhythmic structure (for older students, intonation and rhythm are exchangeable); and (6) style/speed.\textsuperscript{16} A pyramid shape illustrates this model with posture forming the base and the other layers being stacked above it in successive order.

According to the model, posture and set-up lay a foundation for sound production. Good sound production serves as a prerequisite to solid intonation. Thus, the technical development of the right hand precedes the development of the left hand, in effect resulting in a sound-driven technique rather than a note-driven technique. Along the same lines, another university pedagogue states, “Development of the bow arm and its resulting tone production should occur along with learning to play the notes. In the beginning

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\textsuperscript{14} As one example, the *Essential Elements for Strings* series Violin Book 2 devotes less than one page to right-hand related skills (simple double stops and bariolage). In Violin Book 3, near the end, three pages of exercises introduce two new bowing styles (*spiccato* and *louré*). Each violin student-book has forty-eight total pages.


\textsuperscript{16} Robert Culver, a strings specialist at the University of Michigan, developed this model in the 1980s. Culver uses the phrase “prioritization of instructional interventions” to describe this process. Robert Culver, “Excellence Is Key to Success,” *American String Teacher* 49, no. 1 (1999), 52.
stages, I believe it even precedes left-hand techniques.”

The chair of the string department of a prominent university school of music maintains that the right hand, at least at the collegiate level, is two years behind the left hand in its development and coordination. With younger students, it is three years behind and this is true in every case. Developing the right hand is a missionary thing for me.

In a descriptive study of middle school string teachers, however, “notes/intonation” topped the participants’ overall rehearsal priorities.

The pressure to produce an in-tune ensemble for a rated festival or contest setting may be a factor in a school string teacher’s priority to play in tune. “I have often overheard judges discussing the hierarchies of performance,” states one national-level string adjudicator, “but in the final analysis, adjudicators do not forgive playing out of tune.” Another observes, “Most adjudicators award superior ratings only to groups that play in tune.” Herein lies the difference in priorities. While university string pedagogues can afford to give a higher priority to sound, K-12 string teachers err on the side of prioritizing pitch lest their ensembles risk earning lower festival ratings.

17 Klotman, “Improving Orchestra Performances,” 27.

18 Lawrence Hurst (String Department Chair, Indiana University), personal communication, July 20, 2005.


The concept of “sound-driven”\textsuperscript{22} technique has not yet appeared in a heterogeneous class method. Such a project could make exercises heretofore found only behind closed studio teacher doors available to the intermediate and advanced heterogeneous school string class. Too often, only the students of studio master-teachers know of their valuable pedagogical contributions.\textsuperscript{23} String teachers and students immerse themselves in the verbiage of “an esoteric art,”\textsuperscript{24} rather than relying on the inherent logic of the instrument and bow to develop systematically an expressive technique. In the absence of expressive technique, students and ensembles muddle through their repertoire without realizing that “sound is the \textit{easiest} medium to use in a purely artistic way.”\textsuperscript{25}

\textbf{The Problem}

The absence of middle and high school string students who can utilize all sections of the bow, or who possess flexible bow fingers, presents a problem. Instead of a singing sonority, these bow strokes produce a breathlessly thin sound as the players stiffly push the bow back and forth from the middle of the stick to the tip and back again. One experienced high school string teacher expresses such a problem: “A lot of the kids, you know, kind of get stuck in the upper half [of the bow] playing light and fuzzy.”\textsuperscript{26}

Visually, the bows within the sections may move in unison down-bows and up-bows, but

\begin{itemize}
\item \textsuperscript{22} Seelman, “From Technique-Driven Sound to Sound-Driven Technique,” 86.
\item \textsuperscript{24} Klotman, “Improving Orchestra Performances,” 28.
\item \textsuperscript{26} Bill Robinson, personal communication, January 23, 2006.
\end{itemize}
to limited gain if the bow fails to reach the frog and the bow speed, placement, and weight never changes.

**Purpose of the Study**

The purpose of this study was to identify and describe favored sound production exercises of selected contemporary violin, viola, cello, and double bass studio teachers. Once these exercises were gathered, a set of master-pedagogue-based sound production exercises suitable for high school orchestra students was developed and field-tested.

The following three questions guided the study:

1. What are the favored sound production exercises of selected violin, viola, cello, and double bass studio pedagogues?
2. Can the ideas of these studio pedagogues be adapted for a heterogeneous school string class? If yes, to what extent?
3. How useful will school orchestra directors find such exercises?

The review of literature revealed that at present there are no heterogeneous method books available for secondary school string teachers and students that offer a systematic approach for developing a mature sound. Not only do the available materials lack a systematic approach, some nearly omit the right hand altogether. The present study could help lay the groundwork for such a resource by collecting the favored sound production exercises used by selected master pedagogues within the private studio. Such exercises could later be adapted for use in the heterogeneous string class.

**Delimitations**

In this study, the following matter does not receive consideration:

1. The work of string pedagogues who primarily earned their reputation through teaching children or a beginning-level of playing;
2. The work of string pedagogues largely known as researchers;
3. The work of string pedagogues principally known as group string teachers;

4. Specialized styles of bowing or music etudes unless they pertain to specifically identified exercises;

5. Books or articles mainly addressing bowing proper, such as bowing dictionaries or other stylistic bowing manuals for teachers;

6. Etudes as isolated repertoire; and

7. Lengthy exercises that require an entire class period or lesson to implement.

**Definitions**

The following phrases, used frequently throughout this study, require definition:

1. **Favored sound production exercises** refer to the most used or preferred prescriptive teaching exercises or routines employed by master teachers to develop tone quality. In this context, the terms “sound” and “tone” share a similar meaning.

2. **Studio teachers (pedagogues)** are those pedagogues who specialize in one-to-one teaching, frequently termed “private lessons.”

3. **School string teacher (orchestra director)** refers to an individual who teaches strings in school classrooms and/or directs an orchestra program.

4. **Heterogeneous school string class** refers to a K-12 school group having more than one type of stringed instrument taught simultaneously.

5. **School technique books** include string method books purporting to address technical development within the heterogeneous school string class. In the case of a multi-book series, only Book 3 and higher received consideration.

6. **Right-hand techniques** combine all the skills associated with holding the bow and pulling the bow. Thus, for the sake of textual uniformity, the bow arm as well as the wrist and fingers fall under the single phrase “right hand.”

7. **Mature sound** indicates a fully developed tone quality suitable for musical expression.
CHAPTER 2
LITERATURE REVIEW

This review of literature begins with an examination of the philosophical conceptions underlying the importance of sound production on stringed instruments. The discussion includes exploring the ramifications of viewing the teaching and learning of music, namely strings, as being dependent upon talent rather than a developed pedagogy. The role of sound in the feelings and aesthetics of music also receives attention. The discourse includes theories that focus upon how string instruction has moved from the private studio into the heterogeneous school classroom and the resultant pedagogical implications of this shift. Lastly, research literature in the following categories is considered:

1. School technique books reviewed to determine the extent to which they utilize prescriptive sound production exercises to develop tone quality;
2. Dissertations demonstrating that a string method can be successfully adapted to suit a heterogeneous string class or a different stringed instrument;
3. Important studio-pedagogues known for their prescriptive teaching exercises; and
4. Findings from searching periodicals for related articles or series of articles.

Philosophical Rationales

Public school music education—and specifically string music education—historically has been plagued by the “romantic myth”\(^1\) of music-as-talent. The phrase “music-as-talent” refers to the belief that music, particularly as experienced in a school choir, band, or orchestra class, has application only for the elite few in society who are

born with a special giftedness or “talent.” A hypothetical conversation overheard between the parent of a budding young musician and the school music teacher might be phrased as: “I don’t know where Johnny gets his music because I have no talent at all.” To which the music teacher might hold his or her tongue in check rather than reply, “Mrs. Smith, Johnny ‘gets’ his music from his music class where he learned it just like every other child!” While it is common knowledge that some students possess a more natural ability to excel in music than others do, all music students can successfully demonstrate a degree of musicianship. Similar statements pertaining to student achievement apply to any academic subject. Academic achievement in school results from more than talent or good genes.²

Music education philosopher David Elliott extends this argument by asserting: “The notion of music-as-talent is an effective way of keeping music and music education on the periphery, out of the way of ‘basic’ subjects. The justifications are political and ideological, not rational.”³ Maintaining that school music, chiefly a subject such as strings—long thought to be a luxury⁴ rather than a staple of a comprehensive music education program⁵—exists for the few, not the many, could contribute to marginalizing access to these subjects. If all students truly had access to perceived music specialties such as string instruction, school districts would need to hire more string teachers and

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⁴ In his 1995 Loyola Symposium presentation, Louis Bergonzi compared string instruction to a luxury store in a shopping mall, a metaphor based on a popular book *The Shopping Mall High School: Winners and Losers in the Educational Marketplace*. The bibliography lists both works.

purchase more school-owned stringed instruments. Keeping string instruction on the curricular fringe fosters the perception that other educational offerings are more important than music. Concerning adding a new curricular string program, one public school superintendent explains, “It would be nice if the system could afford it.”

The music education philosophies of Susanne Langer and Bennett Reimer also share consistencies with the present study. Langer’s belief that music is an expression of feeling seems to support the notion that the string player’s right hand plays an important role in developing the sounds that make string music “feelingful.” If musical sounds create a form of feeling, it would make sense for string teachers to have a bank of sound production exercises to encourage and develop the best musical sounds their students can produce so they can transmit their feelings into music.

Reimer echoes Langer’s beliefs: “Musical feelings come from within the sounds of music and how they are configured.” His early philosophy of music education championed music in schools because it provides an opportunity for aesthetic experiences, a philosophy that dominated the field of music education for decades. As aesthetics relates to a personal interpretation of beauty, a set of exercises that encourage

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9 Reimer, A Philosophy of Music Education, 72.

10 The first (1970) and second (1989) editions of Reimer’s Philosophy of Music Education book played a significant role in establishing the philosophy of aesthetic education as the widely accepted footing for the field of music education.
and develop the best sound production on stringed instruments could facilitate aesthetic education.

Elliott contends that the perception of music-as-talent has had a detrimental effect on music education as a whole. Further, the belief that curricular offerings must be both accessible and applicable to all students forms the foundation of public education.\textsuperscript{11} For subjects such as strings to be widely received into the curricular canon they must demonstrate that all students can benefit from studying them in a classroom. While contemporary methods and materials for teaching strings to large heterogeneous classes of beginning string students exist, the methods and materials to help these students acquire more advanced techniques remain erratic. The area of greatest need may be the right-hand skills leading to a more expressive use of the bow. Additionally, Langer and Reimer both stress the important role that sound plays in musical expression. The right-hand prescriptive teaching devices identified through this study ultimately may help address these needs.

**Theoretical Rationales**

Counterproductively, the string teaching profession as a whole has done its share to propagate the music-as-talent myth by rigidly maintaining a European-conservatory-model mindset toward education. For centuries, introducing and refining string skills existed only within the realm of the conservatory-trained studio teacher, reserved only for the most talented students. Who could argue with the advantages of one-on-one instruction? The perceptions that students could only learn string skills in the private studio and that these skills applied only to the talented few, however, prevailed to the detriment of classroom string study. In the modern school era, curricular offerings, which

\textsuperscript{11} Elliott, *Music Matters*, 302.
are perceived to lack universal application, either face elimination or seclusion to the periphery of the school menu\textsuperscript{12} and such has been the case for string study. Conflicting philosophies of how to approach the teaching of string technique have rather remarkably contributed to a lack of string programs nationally,\textsuperscript{13} influencing an entire ecosystem\textsuperscript{14} of string playing and teaching. Fewer school string programs result in fewer total string students. Fewer string students to take private lessons result in fewer collegiate string players, including string education majors. The sum of this regression yields fewer string teachers—both for the school and private studio.\textsuperscript{15}

If the effective teaching of string techniques relies only upon one-on-one instruction, then stringed instrument instruction does not belong in public education. No school district could afford a program requiring a teacher-to-student ratio of one-to-one in order to succeed. A heterogeneous group approach to string-pedagogy can be a difficult concept to grasp for some conservatory-trained musicians. Nevertheless, it is a reality of school string instruction and, more importantly, an essential ingredient in making string instruction equally accessible to all schoolchildren.

In this instance, members of the string profession could learn from the academic subjects traditionally considered a mainstay of the curricular core.

\textsuperscript{12} Elliott, \textit{Music Matters}, 302.

\textsuperscript{13} Previous studies by Leonard (1991), Horvath (1993), Abel (1994), Bergonzi (1995), Smith (1997, 2000), Gillespie and Hamann (1998) and Moss (2002) reveal that most school students do not have curricular access to string instruction. At most, one in five public school districts offer curricular string instruction.

\textsuperscript{14} James Kjelland, “Where Have All the Teachers Gone? Bringing the Ecosystem into Balance,” \textit{American String Teacher} 46, no. 2 (1996), 91-92.

Indeed, math, science, and English are rarely considered talents but are seen as basic ways of thinking that are accessible, achievable, and applicable to all children. . . . Not everyone who is taught how to read and write can become a Shakespeare or a Robert Frost. But schools still attempt to teach all students to read and write well. Not everyone who is taught math can become an Albert Einstein. But schools still attempt to teach everyone to do math well.¹⁶

Teachers can convey the knowledge and skills leading to a musical performance on a stringed instrument in the same manner as the skills that lead to writing a creative essay or solving an algebraic story problem. Implementing an approach to heterogeneous string instruction that can lead to artistic performance demands that both the string player’s left and right hand—both the notes and the sound—are taught well within the context of a classroom full of students. This approach includes skills, such as those related to developing one’s sound, usually set aside for the realm of the private studio teacher.

The theory reserving the introduction, development, and refining of intermediate and advanced string techniques for the confines of a private studio cannot be justified as the only way to do this in an era when public education offers curricular string classes. Contemporary strategists for teaching strings in the schoolroom must find ways to develop these techniques to a very high level for both the left and right hands. The majority of school string students do not have the benefit of private instruction; however, they should still be afforded the opportunity to develop an expressive technique within their school orchestra class. Strengthening heterogeneous approaches to teaching string technique directly relates to the purpose of this study.

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Research

Literature related to the research topic appears under the following subheadings: School Technique Books, Adaptations of String Methods, Studio Pedagogues Known for Prescriptive Teaching Exercises, and Periodicals. In the first section, the researcher reviews school technique books to determine the extent to which they utilize prescriptive sound production exercises to develop tone quality. The next section identifies selected dissertations that demonstrate the successful adaptation of a string method to a heterogeneous string class or a different stringed instrument. The third section shows examples of studio pedagogues known for their prescriptive teaching exercises, and the final section indicates findings from the periodical search.

School Technique Books

To determine if current K-12 school string methods emphasize developing tone quality through prescriptive sound production exercises, available string technique books were reviewed to determine their purposes and the respective author’s approaches to right-hand issues. The following questions guided the review process:

1. What techniques form the main point of the book?
2. Does the book address right-hand technical matters in some fashion?
3. In addressing right-hand technique, do the exercises relate to a particular bowing or style or to the prerequisite skills to perform the bowing?
4. What combination of musical notation, pedagogical description, and photos conveys the information?

The world’s largest distributor of orchestral sheet music\(^{17}\) assisted in selecting the books for review. Every book purporting to address technical development within the heterogeneous school string class was considered. In the case of a multi-book series,

\(^{17}\) Luck’s Music Library located in Madison Heights, Michigan.
Book 3 or higher received consideration as this study confines itself to an intermediate or advanced level of school ensemble playing. In all, thirteen books met the criteria. Summaries of these selected materials, listed chronologically from oldest to most recent, appear below.

The oldest available technique books for contemporary school string classes are those by Samuel Applebaum. A pupil of Leopold Auer and thirty-five-year faculty member of the Manhattan School of Music, Applebaum wrote scores of eclectic method books and supplementary materials for school string classes. Four technique-oriented books fitting the project’s criteria remain in print: *Third and Fifth Position String Builder*,¹⁸ *String Builder Book 3*,¹⁹ *Orchestral Bowing Etudes*,²⁰ and *Building Technic with Beautiful Music Volume IV*.²¹

*Third and Fifth Position String Builder* sequentially introduces the third and fifth positions (so named for the upper string positions studied). The cello and bass books include the first five positions. The work contains the following bowings, each one preceded by a brief pedagogical description: *detaché, martelé*, wrist and finger stroke, *collé, spiccato*, and *staccato*. While this is primarily a left-hand-oriented text, the author includes some right-hand techniques.

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In *The String Builder Book 3*, Applebaum presents and develops each type of shift as the primary center of attention. Brief but pedagogical descriptions introduce certain basic bowings, immediately followed by etudes or melodies that utilize the defined bowing. These are *detached*, *martelé*, wrist and finger stroke, and *spiccato*. For example, in an introduction to the melodies that will prepare for the *spiccato* stroke, Applebaum states: “The following melodies are to be played about four inches from the frog using only the wrist and fingers. There is to be a slight pause between each note. Use very little bow—no more than about two inches.”

The Addenda to the Teacher’s Manual also list several rote projects to develop the bow arm and stroke. Additionally, the heading “Rote Projects” appears in boxes at the bottom of the student pages. These include, among others, a whole note crescendo-decrescendo exercise to develop tone color and bow control and additional bowings, such as how to play the *collé* bowing.

*Orchestral Bowing Etudes* may be studied concurrently with *String Builder Book 3* or in conjunction with any standard string class method or private studio instruction. Carefully selected well-known string etudes minimize left-hand difficulty as students devote attention to performing the bowings. Applebaum introduces nineteen different bowing styles and suggests practicing the bowings first by rote on open strings and then in simple finger patterns before attempting the etudes. Pedagogical descriptions introduce each new bowing. At the time of this writing, the sheet music vendor’s 2004 print catalogue did not list this unique bowing book. The vendor’s website and telephone sales representative, however, did have the book listed as available for purchase.

*Building Technic with Beautiful Music Volume IV* presents forty-four musical selections that utilize a variety of bowing articulations and shifts between first and third

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positions. While Applebaum states, “The solid as well as the light bowings are presented in easy assignments,” no teaching exercises are employed to develop these bowings or to specifically improve a player’s sound.

Published in 1978, Forest Etling’s *Intermediate String Techniques* is a book of scales in varied rhythms, rounds, bowing exercises, rhythm studies, and technique building exercises. A number of the etudes come from recognized string studies, which are grouped into eight major keys. More attention is devoted to the right hand than in many other books. One page of rhythms and bowings appears at the very beginning of the book for use with scales. The text intersperses bowing studies, bowing etudes, and bowing exercises. In some instances, Etling uses the following bowing terms: *legato*, *staccato*, whole bow, middle of bow, near the frog, and artificial *spiccato*. Within these selections, the technical process to achieve the proper sound lacks explanation, leaving the potential for both the student and teacher to miss the main point of the etude or exercise.

*Fine Tuning: 50 Intermediate String Ensembles for Developing Solid Intonation & Tone Production* by Spinosa and Rusch is a collection of short pieces arranged primarily in four parts and organized by major and relative minor key signatures. In the introduction, Spinosa and Rusch state: “Each piece offers many opportunities to strengthen intonation, tone, and balance,” but to take full advantage of these

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25 Ibid.
opportunities the teacher must rely upon his or her own knowledge because the book does not offer any pedagogical descriptions.

As acknowledged in the Foreword, Anderson and Frost’s method *All for Strings Book 3*[^26] is “designed primarily to teach your students advanced techniques of shifting and position playing.” The text focuses on left-hand skills with the exception of two etudes (out of 147) dealing with *tremolo* and two others that address *spiccato*. The inset of the back cover lists several Galamian-type bowing variations for use with the scale studies. Their obscure placement within the text, however, could make it difficult for teachers to assign the bowings to the scales.

The basic organization of Kjelland and Dillon’s *Strictly Strings Book 3*[^27] is a four-page format for each key signature: (1) scales and arpeggios; (2) bowing, fingering and shifting; (3) well-known etude, duet and chorale; and (4) orchestral excerpts. The second area, “Bowing, Fingering and Shifting,” lists technical issues for both the right and left hands, presenting:

1. A bowing theme based on a well-known melody;
2. Rhythm, meter, and bowing variations for the bowing theme;
3. Familiar songs with variations for fingering and position work;
4. Shifting studies on all four strings through third (violin/viola), fourth (cello), and fifth (double bass) positions;
5. Rhythm and bowing variations to go with the shifting patterns; and
6. A “Composition Corner” to develop improvisation and composition skills.


The method emphasizes the value of rhythm and bowing variations in sound production, as well as providing helpful instructions on how to practice the exercises and etudes. The method, however, lacks pedagogical descriptions or illustrations of how the bow hand and stroke should work or where precisely in the bow the material should be performed for optimum results.

Gerald Fischbach’s *Viva Vibrato* method broke with string tradition in 1997 by presenting technical exercises for teaching vibrato on the violin, viola, cello, and string bass in both the private studio and the string class. According to the book’s author (in his characteristically lighthearted style):

Not so very long ago, it was still explained in hushed tones that vibrato couldn’t (or shouldn’t) be taught, that it was much too personal of a matter, and that (ahem!) when you were far enough along, you would get one.  

Fischbach, a student of Paul Rolland, assumes that vibrato exercises will occupy only a portion of any single class or lesson. The Student Book conforms to the following organizational plan: (1) Vibrato Readiness; (2) The Birth of Vibrato; (3) The Developing Vibrato; (4) The Maturing Vibrato; and (5) The Artistic Vibrato. This method demonstrates that previously intangible pedagogical concepts relating to musical sound, such as vibrato, can systematically be presented via technical exercises in a way that has broad appeal, albeit a bit gimmicky, to meet a need. The book does not address right-hand sound production issues.

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Doris Gazda designed *High Tech for Strings*\(^3\) to provide middle and high school string students with technical studies in all areas. The book has twelve sections. Section eight, titled “Bowing Styles and Techniques,” addresses the right hand. An introduction describes requisite skills, such as a relaxed bow hold or controlling the bow’s placement, speed, and weight into the string, and suggests regularly reviewing these areas. The musical exercises treat these foundational skills as prerequisites and thus do not directly address them. Preceding each bowing technique is a defining/descriptive statement: “Louré—gently pushed, slurred legato tones marked by dashes. Louré is used for an expressive quality.” There is one etude for each of the introduced bowing styles and techniques, but no description of the proper bow hand and arm motion for correct bowing performance.

*Advanced Technique for Strings*\(^2\) by Allen, Gillespie and Tellejohn-Hayes has four sections that generally adhere to the same format as Book 3: (1) Scales and Arpeggios; (2) Shifting Studies; (3) Rhythm and Bowing Styles; and (4) Musical Styles. The title “Rhythmic Studies” would better depict the content of the “Rhythm and Bowing Styles” section. The “Bowing Styles” refer only to the bow direction or articulation markings within each exercise. The scale section makes use of the Galamian 24-note (three-octave) scale system, as explained on introductory pages in the front of the book. These pages recommend how to practice the scales by changing the articulation and/or rhythms. By not including the practice recommendations on the individual scale pages, students and teachers might miss these skill-building variations.


Published in 2002, *Technicises*\(^\text{33}\) by Probasco and Swisher bills itself as “An innovative, comprehensive ensemble-based tuning, warm-up and technique book for middle and high school orchestras.” The book consists of a series of key-related scales, arpeggios, interval and rhythm studies, and chorales arranged in four voices. For the right hand, similar to *All for Strings Book 3*, the last page of text is devoted to bowing patterns with instructions on how to apply the rhythms to previous material at the frog, middle and tip of the bow. The same page introduces a controlled bounce stroke and the term *martelé*.\(^\text{34}\) It is difficult to say whether or not teachers would make an effort to apply these last-page suggestions to the previous material.

Allen, Gillespie, and Tellejohn-Hayes’ *Essential Technique 2000—Book 3*,\(^\text{35}\) published in 2004, is designed as a multi-use technique book for the string orchestra setting and has three major sections, the third being “Bowings, Rhythms and Vibrato.” While the exercises follow a carefully planned sequence, the primary focus is the rhythms, with no pedagogical information provided concerning sound production, bow changes, or bow strokes/styles. The other two sections of the book deal with “Higher Positions and Shifting” and “Keys and Scales” (the scale section does not employ *Galamianesque* bowing variations). Right hand skill development appears to be omitted.

Most technique books, which are available for the heterogeneous school string class emphasize shifting and mid to higher positions for the left hand. Bowing routines or variations, if incorporated at all, often appear at the front page of a section or in the back


\(^{34}\) Ibid., 96.

of the book rather than infused throughout the material. When included, they often stress rhythms and bow direction instead of the prerequisite skills to produce a mature sound with the bow. The most important bowing book found, Applebaum’s *Orchestral Bowing Etudes*, was not listed in the current print version of the sheet music distributor’s catalogue, thus raising a question about its future availability. In general, the attention Applebaum gave to the right hand and bowing seems to have been absent from more recent publications. What Fischbach did to unlock the skills leading to a mature left-hand sound through his *Viva Vibrato* class method has yet to be done for the skills leading to a mature right-hand sound.

These findings have implications for the present study by confirming a void in the available technique books for K-12 string teachers and students. No books found offer the kind of exercises necessary to develop a mature sound systematically. A goal related to the present study is to do for right-hand sound production what Fischbach did for left-hand vibrato. Similar to vibrato, the process of developing one’s sound need not remain a personal rather than pedagogical matter. Fischbach was able to strip vibrato of its esoteric nature by employing studio-type prescriptive exercises in a user-friendly format for the heterogeneous string class. In this way, Fischbach’s *Viva Vibrato* book serves as a model for this study.

**Adaptations of String Methods**

The presumption that pedagogical materials devised for one stringed instrument have benefit for other stringed instruments undergirds this study. Certainly examples exist of musical transcriptions such as the J. S. Bach unaccompanied cello suites routinely performed by violists and double bassists or the Kreutzer violin etudes performed by violists, cellists, and bassists. Research-based adaptations, however, could
bolster the argument that studio pedagogy has application to the heterogeneous school string class.

Three dissertations indicate that adapting a string method can benefit a heterogeneous string class or a different stringed instrument. In 1969, Brunson adapted the Suzuki violin method for American heterogeneous school stringed instrument classes by teaching twelve fourth-grade beginning string students to play the Twinkle Variations, fourteen folk songs, and several other selections using a rote teaching approach and audiotaped listening activities. Thirty-minute daily curricular school class instruction was given to four children on violin, three on viola, three on cello, and two on the double bass. Students practiced only in class so the instructor could directly supervise the progress. After a year of classes, a panel of observers deemed the method a success. Brunson demonstrates in his study that a violin method has application for the heterogeneous school string class.

In 1982, Lemonds transcribed violin pedagogy for the cello by adapting the Carl Flesch scale system believing cellists could benefit from practicing the systematic violin scale routine. Each adapted scale began on the lowest possible cello note for that scale, and Lemonds modified the original note patterns where the physical limitations of the cello predicated a reduction and relocation of the original. The consistency of the distance between the notes of the violin and cello edition remained unchanged for each scale. Lemonds provided his own fingerings as a basic reference and point of departure for the


user, employing logic consistent with Flesch’s method. He transferred the bowings directly from the violin scale system. Lemonds concluded that adopting a musically and technically satisfying violin routine for the cello could fill a void in cello technique.

Alleging that “the influence and importance of the string pedagogue Demetrios Constantine Dounis (1893-1954) is both underappreciated and under utilized,” Norman set out to acquaint violists with Dounis’s most important principles by transcribing and adapting *The Artist’s Technique of Violin Playing* for viola. The extremes of both range and left-hand extensions make the original work extremely difficult for violists so Norman rewrote, reduced, or omitted specific portions. As Dounis rarely explained his exercises, Norman expands on the ideas Dounis offers while taking care to state the differences between the original and his adaptation.

Norman points out that of Dounis’s sixteen publications, *The Artist’s Technique of Violin Playing* is only one of three still in print. The *Artist’s Technique of Violin Playing* indicates a method of solving the problems of advanced technique for both hands all the while expending minimal time and energy. The first part of the book contains special musical exercises for the left hand, and the second part deals with the bow, contending that the basis of all bow technique is the simple and accentuated détaché.

Each of the previously named research projects shows the success of adapting one stringed instrument method to another stringed instrument. In all three cases, the material

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38 Jeffrey M. Norman, “‘The Artist’s Technique’ by D. C. Dounis Transcribed and Adapted for the Viola” (DMA diss., Arizona State University, 2002), viii.


41 Ibid., 72.
originated from a great violin pedagogue, which is not surprising given the depth of violin pedagogy in relation to that of the viola, cello, and double bass. Certainly many other examples of transcriptions from one stringed instrument to another exist within the repertoire, but not as formal research studies. They affect the present study by demonstrating that pedagogical concepts have relevance and application beyond the walls of the private studio where they originated.

**Studio Pedagogues Known for Prescriptive Teaching Exercises**

For more than 250 years, violinists have written books about how to play the violin. During the twentieth century, several violin pedagogues “wielded a lasting influence,” including Leopold Auer (1845-1931), Carl Flesch (1873-1944), Demetrios Dounis (1893-1954), Shinichi Suzuki (1898-1998), Ivan Galamian (1903-1981), Paul Rolland (1911-1978), and Kato Havas (b. 1920). The fields of viola, cello, and double bass pedagogy do not share the same level of depth as their violin counterparts. In the words of one Juilliard schooled professional cellist:

There is no analogous single figure in the cello world like Galamian. Not only is there no single figure who had that kind of influence on cello pedagogy, but I have always felt that the cello world has a much weaker tradition of teaching compared with the violin world.

Further, the viola and double bass worlds claim even fewer pedagogues than the cello world. For each of these instruments, a case could be made that contemporary artist-

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42 The earliest treatises were those by Francesco Geminiani (1751), Leopold Mozart (1756), and L’Abbé le fils (1761).


44 Concerning the spelling of Dounis’s first name, the Greek spelling uses an “ο” instead of the more common Roman spelling with the letter “u.” Chris A. Costantakos, personal communication, November 28, 2005.

teachers hold the highest pedagogical mantle, namely violist Karen Tuttle (b. 1920),
cellist Janos Starker (b. 1924), and double bassist François Rabbath (b. 1931).

The purpose of the present study requires that important studio string pedagogues,
at the artist level, utilize prescriptive exercises in their teaching. In examining literature
and materials related to the aforementioned pedagogues and others, two individuals
emerged as exemplars of artist-teachers who promoted exercises, teaching devices, or
routines to develop and refine an expressive tone: Demetrios Dounis and Ivan
Galamian. Additionally, two branches of their respective pedagogical trees also
emerged as individuals who conveyed right-hand sound production exercises through
influential publications: Phyllis Young and Simon Fischer.

Demetrios Constantine Dounis (1893-1954) excelled as a young violinist in
Greece but attended medical school to avoid disinheritance from his family. Throughout
and following his medical degree, he continued his violin studies, influenced most by the
eminent Belgian violinist César Thomson. With the exception of a few brief teaching
posts, Dounis traveled concertizing and giving private lessons and master classes. His
observational capacities and clarity of analysis were so profound that acclaimed violists
and cellists also sought him as their teacher. The list of performers and educators who
studied with Dounis counts among its names violists William Primrose and Karen Tuttle,
cellists Claus Adam and George Neikrug, as well as several violin concertmasters,
including Joseph Silverstein (Boston Symphony) and Paul Winter (NBC Symphony). In

46 Certainly Suzuki and Rolland also used prescriptive teaching devices, but their pedagogy
emphasized children or groups of children.

47 Chris A. Costantakos, Demetrios Constantine Dounis: His Method in Teaching the Violin, Rev.
order to honor his high-profile students’ desire for confidentiality (well-known concert artists who did not want it known that they were taking lessons), students entered his Manhattan apartment by the tenth floor stairs and exited by the eleventh floor elevator.48

Other notables knew of Dounis’s pedagogical contribution. Kato Havas refers to Dounis’s principles in her writings, and “many of her ideas seem to directly echo his.”49 Paul Rolland also knew all of Dounis’s published works.50 In unprecedented fashion, between 1950 and 1954 The Strad published eight articles about Dounis’s unique method as well as carrying advertisements for his books and Master Courses.

Costantakos, in his dissertation/book,51 offers an in-depth study of Dounis that underscores his reputation for solving technical problems through prescriptive exercises that reduced complexity to simplicity52 with magic-like results.53 Dounis devised remedial exercises to rid players of bad habits that inhibited natural instincts, such as writing some exercises at a seemingly impossible-to-play skill level to challenge the mind and thought process of the highest level of artist-performer.54 Such exercises put students into a technical knot that required heuristic problem-solving to unravel. What Dounis considers the true method of practicing engages the brain in analysis and memory


50 Michael Paul Fanelli, “Paul Rolland: His Teaching Career and Contribution to String Pedagogy and Education” (EdD diss., University of Illinois, 2001), 345.

51 Costantakos, Demetrios Constantine Dounis: His Method in Teaching the Violin.


training, directly opposing the mindless, monotonous, repetition traditionally associated with acquiring technique. The Dounis method shows that technical issues can be addressed through prescriptive exercises that engage the mind. To sum, “Without technical mastery the road to musical expression is barred.”

Cellist Phyllis Young, a thirty-five-plus-year member of the University of Texas at Austin faculty and founder of the celebrated Texas String Project, acknowledges the influence of fellow cellist Georg Neikrug, a disciple of Dounis, who taught with her for four years. Peers hold Young’s work in high regard, as evidenced by this unsolicited statement from Grammy-nominated cellist Jeffrey Solow, “Phyllis Young is certainly a pedagogue whose ideas should be considered in your research.”

Young captured her approach in two widely distributed pedagogy books, *Playing the String Game* (now in its seventh printing) and *The String Play*. The purpose of *Playing the String Game* is to share 165 “mini-games” or pedagogical teaching devices with public school and private studio string teachers, string performers who find themselves teaching, and new or less experienced teachers. Though written from a cellist’s perspective, the underlying concepts can be adapted for violin, viola, or string bass. Presented in youthful terminology and taking only moments to implement, each mini-game can aid a teacher in recognizing, predicting, and solving problems. One of the fourteen chapters deals specifically with building bow technique. Although these

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55 Ibid., 52.
57 Jeffrey Solow, personal communication, April 6, 2005.
58 Young, *Playing the String Game*.
59 Young, *The String Play*. 
imaginative teaching devices pertain to all levels of advancement, their greatest use applies to early or intermediate stages of playing.

A sequel to *Playing the String Game, The String Play* offers 185 “scenes” rooted in at least one basic principle which underlies the technique and musicianship of intermediate-through-advanced string players. The scenes in this book show a greater level of conceptual/mental imagery than the mini-games found in the first book. One of the eight chapters specifically addresses “The Drama of the Bow.” Intended for use with any music or method, these dramatic concepts require a dynamic teaching personality and the knack for inserting the most applicable scene at the right time during a class or lesson.

Two former students of Young, Donald Hamann and Robert Gillespie, collaborated to write a pedagogy book of their own, *Strategies for Teaching Strings: Building a Successful String and Orchestra Program.*60 Their book targets university students preparing to become school string teachers, but the authors note that veteran teachers may also find it useful. Three of the ten chapters present the pedagogical principles and related teaching activities for developing beginning, intermediate, and advanced string skills. Each of these chapters has a table that provides examples of some of the most common playing problems experienced by students and a teaching strategy to remedy the problem.

Pedagogical strategies address right-hand skills such as parallel bowing, smooth direction changes, tone production at different dynamic levels, *détaché, martelé, louré, collé,* and *spiccato* bowing styles. Teachers can initiate all the exercises through a rote routine. Though effective as a teaching strategy, a rote approach presupposes that

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string/orchestra teachers possess a level of performance expertise on at least one stringed instrument. Given that one out of every three individuals teaching orchestra in the public schools is not principally a string player,\textsuperscript{61} modeling some of these skills could prove difficult for teachers. Thus, the advanced-level strategies would be the least likely to be utilized in day-to-day teaching due to the level of expertise and comprehension needed to initiate them. In addition, as a resource text only for the teacher, the student does not have a book to place on a music stand during class or for home practice.

Born in Persia to Armenian parents, Ivan Galamian (1903-1981) first studied violin in Moscow with Konstantin Mostras and later spent two years studying in Paris with Lucien Capet. Known for his bowing treatise,\textsuperscript{62} Capet’s theories greatly influenced Galamian’s principles.\textsuperscript{63} After a period of concertizing and teaching, Galamian abandoned his concert career in favor of the teaching profession, becoming one of the greatest violin teachers. His pupils who won solo competitions include among their number Pinchas Zukerman, Sergiu Luca, Arnold Steinhardt, David Nadien, Kyung-Wha Chung, and Jaime Laredo. His teaching assistants included Dorothy DeLay, Sally Thomas, Margaret Pardee, and Michael Avsharian. Paul Rolland visited Meadowmount on more than one occasion to observe Galamian’s teaching and have him examine String Project materials and view the films.\textsuperscript{64}


\textsuperscript{63}Shipps, “Influence of Lucien Capet,” 69.

\textsuperscript{64}Koob II, “The Violin Pedagogy of Ivan Galamian,” 229.
In 1985, Koob asserts that too often only the students of studio master-teachers know of their valuable pedagogical contributions.\textsuperscript{65} Even then, exercises and routines may quickly fade away unless they are studied and described. To that end, Koob analyzed the violin teaching of Galamian by interviewing former students, reviewing videotaped lessons, having former students review the videotaped lessons, and examining the book *Principles of Violin Playing & Teaching*. He also studied preexisting published interviews. Koob cites Galamian’s superior ability to diagnose, analyze, and solve students’ technical problems thus giving students technical skills to develop for the rest of their lives. In a separate study, however, Curtis concludes that while Galamian’s methodology has great merit for problem-solving analysis, other pedagogues offer direction that is more musical.\textsuperscript{66}

Galamian reveals his integration of scales and arpeggios with a system of bowing and rhythm patterns in his co-authored work, with Frederick Neumann, *Contemporary Violin Technique*.\textsuperscript{67} Galamian holds that technical mastery depends upon the control of mind over muscle or mere agility of fingers. The patterns offer an almost inexhaustible supply of variations to challenge students both mentally and kinesthetically. A single pattern suits multiple exercises and combinations. Notated scales, arpeggios, and bowings have no stems, but appear only as note heads, and the rhythm patterns do not indicate specific bowings. The teacher must determine the various scales, arpeggios, bowings,

\textsuperscript{65} Ibid., 1.


\textsuperscript{67} Ivan Galamian and Frederick Neumann, *Contemporary Violin Technique* (Boston: Galaxy Music, 1966).
rhythms, and their combinations to best serve student needs, a method clever in concept but laborious in implementation.

Galamian’s *Principles of Violin Playing and Teaching* explains the guiding idea behind this integration of scales/arpeggios with a system of bowing/rhythm patterns. The work, co-authored with Elizabeth A. H. Green, offers a glimpse into Galamian’s renowned system of teaching, a system that by many accounts worked regardless of how much or how little natural talent the student possessed. The former first violinist of the Tokyo Quartet famously joked, “People always said Galamian could make a violinist out of a table.”

Galamian believed that right-hand problems cause most of the trouble for violinists, devoting the longest chapter in the book to right-hand issues. The text-oriented chapter is interspersed with a limited number of photographs illustrating fundamental hand positions and musical excerpts drawn from the solo literature to provide examples of the techniques. The chapter discussing practicing outlines some of Galamian’s famous scale routines. In the postscript, Green offers specific examples of the logical bowing/rhythmic variations and teaching devices used to learn the prescriptive etudes that formed such an integral component of Galamian’s system of developing sound. Of the specific technical areas emphasized by Galamian, the priority given to the development of the right hand and bow arm stand out and demonstrate the value of his prescriptive teaching routines.

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69 Galamian, *Principles of Violin Playing & Teaching*, 44.
Simon Fischer’s background includes violin study with Yfrah Neaman in London and the long-time Galamian teaching assistant, Dorothy DeLay in New York. He currently teaches at the Guildhall School of Music and Drama and at the Yehudi Menuhin School. His book *Basics,* first released in 1997 after taking thirteen years to write, is a collection of 300 practice methods and exercises suitable for teaching all levels of violinists. Compiled from an acclaimed series, also titled *Basics,* the book breaks down the aspects of violin playing into their individual techniques so that each foundational skill can be developed one at a time. The series has appeared in *The Strad* since 1991.

The first three of the seven sections of the book address right-hand issues: (1) Right Hand and Arm; (2) Tone Production; and (3) Key [Bow] Strokes. These exercises blend a well-balanced mix of photos, descriptive pedagogical text, and notated music toward ensuring that even novice teachers or players have an accurate understanding of what and how to practice. Each topic features a brief summary of the problem and several exercises specifically to address that aspect of technique. This one-of-a-kind resource written exclusively for violinists makes it relatively unknown among today’s K-12 string educators, save for those possessing an extensive violin background or who have encountered the articles in *The Strad.* A sequel, titled *Practice,* offers 250 sequential practice methods for the violin drawn from more than 750 musical examples from selected violin solo repertoire.

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Selected string pedagogues rely upon prescriptive teaching strategies to develop technique. In some cases, these exercises combine the challenge of a brainteaser with the pedagogy of an etude. For each of the reviewed pedagogues, engaging the brain formed an integral component in technical development. These teachers diagnose a student’s string playing like a medical doctor diagnoses a patient’s illness.\textsuperscript{73} In similar fashion to a doctor writing a prescription, such pedagogues prescribe assigned technical exercises to remedy musical flaws and do so with even the highest level of artist-performer. The process of identifying intellectually stimulating technical exercises that develop a mature sound has direct implications for the present study.

**Periodicals**

The two leading string journals, *The Strad* and *American String Teacher*, were reviewed for articles that dealt with the topic of sound production in a way that could relate to this project. If these journals emphasized right-hand techniques, then they could be a source of information to improve the classroom pedagogy of school orchestra directors. *The Strad*\textsuperscript{74} was searched from 1950 to the present while *American String Teacher*\textsuperscript{75} was reviewed in its entirety. The periodicals section of the bibliography contains a complete listing of the most relevant findings from these searches.

Several journal articles bolster other sources for this project. As previously mentioned, *The Strad’s* editors published eight articles about Dounis from 1950 to 1954 (Samuel Applebaum wrote three of them) and two more in 1989 and 1990. Beginning in

\textsuperscript{73} Especially true in the case of Dounis, who did have a medical background, with play-on-word article titles such as, “A Visit with Dr. D. C. Dounis.”

\textsuperscript{74} First published in 1890.

\textsuperscript{75} First published in 1950.
1991, a column, entitled *Basics*, featured Fischer’s violin pedagogy in every subsequent issue of *The Strad*. Both journals ran articles about the influence of Galamian.

Any series of three or more articles featuring right-hand technique were also explored. *The Strad* followed the Dounis articles of the early 1950s with a six-part series on bowing that appeared from 1955 to 1956 authored by A. A. Babynchuk. Michael Zabludow wrote about violin technique in a series consisting of more than twenty articles. Six of these dealt with right-hand issues. They appeared between 1958 and 1959. Sigmund Mark wrote a four-part series on the violin bow contact point that ran in 1966. The lone instance of a series of articles in *The Strad*, which focused on the right hand for a stringed instrument other than violin, occurred with M. B. Stanfield’s four cello-technique articles that spanned the years from 1967 to 1974.

Only two technique-based series have appeared in *American String Teacher* since its inception: Frederick Neumann’s left-hand doctrine\(^\text{76}\) and Gerald Fischbach’s approach to left-hand shifting.\(^\text{77}\) From 1953 to 1963, Neumann wrote a series of twenty-three articles based upon his dissertation. The American String Teachers Association later published these in book form (presently out-of-print). Brief by comparison, Fishbach’s shifting series began in 1980.

Left-hand techniques, as a whole, have historically received more attention in *The Strad* and the *American String Teacher* than right-hand techniques. Possibly owing to the tradition that one’s sound is a personal matter, few of the right-hand-oriented articles articulated the kind of prescriptive exercises that serve as the topic for this research.


project. The notable exception is Fischer’s *Basic’s* series, previously described in detail.

Fischer’s right-hand exercises illustrate the type of subject matter that the investigator plans to adapt for the heterogeneous string class.
CHAPTER 3
METHODOLOGY AND PROCEDURES

Methodological Rationale

This study required a qualitative research design capable of delving “in depth into the complexities and processes”\(^1\) involved. Naturalistic inquiry as a design strategy offers an alternative paradigm or “‘discovery oriented’ approach that minimizes investigator manipulation of the study setting and places no prior constraints on what outcomes of the research will be.”\(^2\) Meloy said, “If the thesis is qualitative, chances are it will not arrive headfirst. Understanding follows doing.”\(^3\) A discussion of the inquiry’s three phases follows.

Phase I: Selection of and Communication with Master Violin, Viola, Cello, and Double Bass Studio Pedagogues

The sampling strategy for this study began as a search for “information-rich cases”\(^4\) of individual violin, viola, cello, and double bass studio pedagogues nationally known for their artist-level teaching. A related concern was to have both male and female participants in the study, as well as a widespread geographical and institutional representation. Such sampling fits the description of extreme or deviant case (outlier)


\(^4\) Patton, *Qualitative Research and Evaluation Methods*, 230.
sampling. Expressed in different terms, the selected cases “are information rich because they are unusual or special in some way, such as outstanding successes.”

Of the initial twelve pedagogues contacted, five accepted the invitation to participate (42 percent). Since Patton advises that “one may add to the sample as fieldwork unfolds,” four additional pedagogues were contacted. All four of the newly invited pedagogues decided to participate, giving the study the following breakdown: three violinists, two violists, two cellists, and two double bassists ($N = 9$).

Participants communicated their selected exercises or routines via an in-depth interview or e-mail correspondence. This format for data collection elicited the necessary information with the least disruption to the “elite” participants. The approach followed Ritchie and Lewis’s textbook advice by establishing “credibility with participants by asking relevant questions which are seen as meaningful to the participant and which are based on an understanding of the research subject.”

**Phase II: Creation of Right-hand Sound Production Exercises Emanating from the Pedagogical Dialogue**

In order to best transmit the pedagogical information or “tell the story,” sound production exercises suitable for advanced middle school or high school aged orchestra students were developed. These exercises emerged from a synthesis of the

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5 Ibid., 231.

6 Ibid., 246.

7 The term "elite" refers to a specialized case of interviewing used with individuals selected on the basis of their expertise in areas relevant to the research. Marshall and Rossman, *Designing Qualitative Research*, 113.


9 Patton, *Qualitative Research and Evaluation Methods*, 450.
communication with studio pedagogues, relevant documentary analysis, and the literature review. Appendix C lists the full transcripts from each studio pedagogue. The exercises that serve as the basis for this research originate, verbatim, within this text. While this approach does not fit within the conventional paradigm of a case study, it is an emergent product of naturalistic inquiry and as such, provides the kind of “thick description”\(^{10}\) foundation for qualitative reporting. Lincoln and Guba declare that “case studies will, depending on purpose and level, result in different products.”\(^{11}\)

Patton affirms that “in many studies, the analyst will work directly and selectively from raw data to write the final case study.”\(^{12}\) The following five criteria guided the process of selecting private studio exercises to convert for the school classroom. Does the exercise or routine have the potential to work:

1. Apart from its larger pedagogical context;
2. In a group setting;
3. With all four stringed instruments? If not, could adaptations make the exercise accessible for heterogeneous string classes;
4. With teachers of varied backgrounds and experiences; and
5. With students of varied ages and abilities?

After identifying three contrasting exercises that met the previously listed criteria, other literature reviews were reconsidered. A significant amount of analysis took place through re-reading to discover additional, related exercises. The selected exercises were then logically grouped into instructional sequences. The sequences were further

\(^{10}\) Ibid., 437.

\(^{11}\) Lincoln and Guba, *Naturalistic Inquiry*, 361.

\(^{12}\) Patton, *Qualitative Research and Evaluation Methods*, 450.
Phase III: Selection of School String Programs to Field Test the Exercises Using a (1) Written Questionnaire and (2) Follow-up Telephone Interview to Assess the Need for the Exercises and Determine Their Potential Effectiveness

A purposive sample again provided the data. In this instance, twelve highly qualified school orchestra directors with successful programs\textsuperscript{13} were invited to try the exercises and complete a questionnaire. Related considerations included having both male and female orchestra directors as participants, widespread geographical representation, and an eye for suburban, rural, and urban school demographics. Nine orchestra directors agreed to participate (75 percent),\textsuperscript{14} representing ten schools.\textsuperscript{15}

**Written Questionnaire**

A nine-item questionnaire was developed.\textsuperscript{16} The first section included: (1) three questions to learn the orchestra director’s name; (2) the string ensemble or ensembles/class or classes that tested the exercises; and (3) verification that the director implemented the exercises over the specified two-week period. The next three questions indicated if the directors: (1) prior to participating had previously used any of these

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\textsuperscript{13} Appendix E describes the participating orchestra programs.

\textsuperscript{14} One additional orchestra director planned on participating, but the mailing containing the exercises never reached him.

\textsuperscript{15} One teacher implemented the exercises at both a high school and middle school.

\textsuperscript{16} To view the full questionnaire, see Appendix F.
exercises with their students; (2) believed performing these exercises benefited their students; and (3) believed whether or not the exercises worked equally well for violin, viola, cello, and double bass students. The final three questions were:

- Do you anticipate using these exercises beyond the conclusion of this study?
- Would you like to see additional, related, exercises that emphasize the right hand/sound production developed for heterogeneous string classes?
- Would you recommend these exercises to others, based on your experiences?

This final question and its choices (Probably would, Maybe would/Maybe not, Probably would not, Definitely would not) follow a textbook model. The other questions required a yes or no response, but did ask for teacher comments or explanations. The questionnaire concluded by presenting the due date and instructions for returning the form to the researcher in either the enclosed self-addressed stamped envelope or by fax.

Follow-up Interview

Three months after completing the initial questionnaire, respondents indicated by e-mail whether or not they continued using some or all the exercises. The teachers who had used them participated in a follow-up interview. A microcassette™ recorder, plugged into the telephone, captured the verbatim responses of the interviewees. Two senior secretaries transcribed the data. The standardized open-ended interview specified the following new questions:

- How did you have your students use the exercises?
- How much time were you able to spend on them?

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18 Appendix G contains the transcripts from the follow-up interviews.
• In what ways did you use them? As warm-up, for example?
• Did they work better with a certain type or level of student than they did with others?
• Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those exercises worked better?
• Will you continue to use some (or all) of these exercises in the future?
• Had you been using exercises similar to these previously?
• Did the exercises seem to improve the players’ tone?
• Were you able to apply them to the music you were performing?

**Research Model**

Lincoln and Guba portray a characteristic pattern of flow or development in naturalistic studies that seems to fit this study. Figure 3-1 reprints, with permission, the diagram of Lincoln and Guba’s model. The following paragraphs briefly describe how this model applies to the present study.

A small-scale, purposive sample \((N = 18)\) was used, representing a group of artist studio pedagogues and school string programs considered to be exemplary by American String Teachers Association (ASTA), Music Educators National Conference (MENC), or state Music Education Association (MEA) standards. Appendix C contains the biographies of the studio pedagogues. Appendix E names the school orchestra directors and describes their programs.

The natural setting of violin, viola, cello, and double bass studio teachers was their private studios. Owing to the time constraints on these individuals,^{19} this setting required

^{19} According to Marshall and Rossman, the business of “elites” makes gaining access to them difficult. Marshall and Rossman, *Designing Qualitative Research*, 113.
Figure 3-1. The Flow of Naturalistic Inquiry

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“privileged access”\textsuperscript{21} to enter. Inductive analysis was applied to the interview and e-mail transcripts to reveal core consistencies or themes in how the artist-teacher participants approach developing the tone of their students. Constant comparative analysis, a key feature of grounded theory, was used to develop sound production exercises from the emerging themes articulated by the pedagogues. In some instances, participants’ feedback changed, and findings were altered to accommodate that feedback, evidencing Lincoln and Guba’s conception of negotiated outcomes.

In this study, the case refers to the sound production exercises. The case report brings these exercises and the concepts of the studio teachers to the heterogeneous string classroom. The experiences\textsuperscript{22} of the human instrument contributed to the decision-making process, including how to convert the studio teacher data into exercises for school string classes. Rather than merely dismissing intuitive insight as subjective, the naturalist acknowledges “that tacit knowledge, like values, intrudes into every inquiry.”\textsuperscript{23} Dreyfus and Dreyfus contend that “we must foster intuition at all levels of decision making, otherwise wisdom will become an endangered species of knowledge.”\textsuperscript{24} Exploring tacit knowing,\textsuperscript{25} musical experience, and music instruction, Bowman found:

\begin{itemize}
  \item According to Lincoln and Guba, privileged access adds to the data’s validity. Lincoln and Guba, \textit{Naturalistic Inquiry}, 193.
  \item The researcher’s curriculum vita is included as Appendix H. Lincoln and Guba assert that the methodology should contain a thorough description of the credentials of the investigator. Lincoln and Guba, \textit{Naturalistic Inquiry}, 362.
  \item Ibid., 197.
  \item The concept of tacit knowing emanates from Polanyi. His defense of free scientific inquiry took the form of describing how humans acquire knowledge of the world as they move through it. Michael Polanyi, \textit{The Tacit Dimension} (1967; repr., Magnolia, MA: Peter Smith, 1983).
\end{itemize}
The primary insight emerging from the study is the centrality to all cognitive enterprise of one's tacit fund of knowledge—knowledge which by its functional nature defies explicit examination, articulation, or application. This tacit domain is no mere residue of a deficient articulate capacity in man, but the defining ground from which all perception and conception arise, the ultimate source of all meaningful propositional or explicit knowledge, to say nothing of aesthetic sensitivity.  

Related to developing the exercises, such knowing formed the basis for intuitive leaps to identify and focus on important things while dismissing the trivial.

**Application**

The exercises were then “tentatively applied” in a field test by selected school string programs. The orchestra directors of these programs assessed the need for the exercises as well as their usefulness and potential effectiveness. School directors were asked to try the exercises over a minimum two-week period. This time period was determined to be long enough to attempt the exercises with their students, but not long enough to measure differences in student performance as would be the case in an experimental pretest-posttest randomized control group design. While two weeks did not give the directors very much time to implement the exercises, these veteran teachers routinely make decisions in action. Elliott argues that

> in the real world of music teaching, music educators must know how to make moment-to-moment predictions, judgments, and decisions in action. . . . Expert music teachers often “feel” what is best to do or to avoid. I call this impressionistic educational knowledge. . . . Impressionistic knowledge makes an essential contribution to a teacher’s thinking-in-action because it facilitates the ability to assess, categorize, “time,” and “place” one’s teaching actions.

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27 The phrase “tentatively applied” refers to the heading in Figure 3-1.

The two-week field test afforded these expert string teachers the opportunity to assess the exercises according to their impressionistic knowledge or “knowing-in-action.” A written questionnaire served as the measurement tool.

To further evaluate the effectiveness of the exercises over time, a follow-up interview occurred approximately three months after the initial trial period. As an emergent aspect of the research design, this interview provided supplementary data from teachers who, of their own accord, continued using the exercises with their students.

The achievements and honors of these teachers and their programs served as selection criteria. All these orchestra programs have performed for their state’s music education conference. Seven of the nine programs have performed for regional or national MENC conferences, national ASTA conferences, the ASTA National Orchestra Festival®, and/or the Midwest Clinic. The other two programs consistently earn Superior ratings at out-of-state music festivals—one for eighteen consecutive years. All nine teachers have received Teacher of the Year recognition either at the school, state, or national level.

A description of the characteristics of these schools follows. The sample included five high schools, four middle schools, and one junior high. Five of these schools were located in suburban areas, four in rural areas, and one in an urban setting. Geographically, three schools each from the Southeast, Midwest, and West regions participated. The


\[30\] Participants completed the initial questionnaire by the end of September 2005. The follow-up interviews occurred in mid-January 2006.
remaining school was located in the Southwest. Six male and three female orchestra directors took part in the study.

Table 3-1 shows the previously named criteria as well as the characteristics of the schools. An assigned participant letter (A, B, C, and so forth) identifies these public school teachers throughout the study. The assigned letter allows for a more precise analysis of the information.

Table 3-1.
Criteria and Characteristics of Participant Teachers ($N = 9$)

<table>
<thead>
<tr>
<th>Selection Criteria and Characteristics</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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<tr>
<td>Teacher of the year</td>
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<td>Middle School</td>
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<td>Rural</td>
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<td>Urban</td>
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<td>Southeast</td>
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<tr>
<td>Midwest</td>
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<td>Southwest</td>
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</table>

*In addition to his high school responsibilities, Participant A taught the eighth grade string class at the middle school.*
As noted by Patton, “Emergent designs pose special problems for institutional review boards (IRBs) charged with approving research designs,”\textsuperscript{31} thus this second stage of the study necessitated additional IRB approval. Following the approval, as in the first stage, participants received the IRB stamped cover letter and informed consent form\textsuperscript{32} in the mail.

**Trustworthiness**

For the naturalist, the term *credibility* takes the place of the more conventional phrase *internal validity*. The most crucial technique for establishing credibility is the “member check”\textsuperscript{33} whereby data, interpretations, and conclusions are tested. The interview and e-mail transcripts in the present study passed the scrutiny of the respective studio pedagogues. Two of the studio pedagogues with public school teaching experience (one an upper string player, the other a lower string player) assessed the resulting exercises and negotiated the outcome. The exercises received further evaluation via the written questionnaire and telephone interview completed by school orchestra directors following the field test.

The technique of triangulation improves the likelihood that the findings and interpretations possess credibility. The present study involves aspects of four triangulation techniques: methods, source, analysts, and reflexive. Methods triangulation is present within the quantitative and qualitative data collection and analysis of the field test. The use of source triangulation involved comparing the related literature review,
interviews with master string pedagogues, additional documentation referenced in the interviews, and the completed questionnaires and interviews from the school orchestra directors. The multiple analysts in the study included the two purposively selected master pedagogues (those who had experience teaching strings in K-12 schools) and each of the current school orchestra directors who field-tested and reviewed the exercises. Lastly, Patton refers to the interrelationship between the qualitative inquirer, participants, and audience as “reflexive triangulation.”34

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34 Patton, *Qualitative Research and Evaluation Methods*, 66.
CHAPTER 4
RESULTS

Qualitative analysis transforms information into findings. The challenge lies in making sense of the volume of raw information. In this study, the information included: (1) an extensive literature review; (2) interview/correspondence transcripts from the artist studio teachers; (3) additional literature referenced in these transcripts; and (4) survey results and interview transcripts from the school string/orchestra teachers. Patton reassures, “In short, no absolute rules exist except perhaps this: Do your very best with your full intellect to fairly represent the data and communicate what the data reveal given the purpose of the study.”1 The framework for communicating what the data reveal is the generation of right-hand sound production exercises for use in middle and high school string classes. These exercises serve as the product or case report resulting from the analysis. This chapter has a threefold organization: (1) analysis of the transcripts and related materials from the interviews/correspondence with artist-studio teachers; (2) creation of the sound production exercises for middle and high school string classes; and (3) results and analysis of the completed field-tested survey and interview transcripts from school orchestra directors.

Analysis of Studio Pedagogue Transcripts

Of the nine string pedagogue participants, four opted to communicate by phone interview, three utilized a combination of phone interview and e-mail communication, 

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1 Patton, *Qualitative Research and Evaluation Methods*, 433.
and two chose e-mail exclusively. The phone interviews ranged from twenty to sixty minutes in length. Although the conversations were not recorded, each of the pedagogues, who earlier acted as sources, checked their respective transcript for accuracy. Those responding by e-mail also reread their text for accuracy. Four of these pedagogues accepted the transcripts as written, while the other five made changes. One e-mailed, “I have made mainly editorial changes in your draft . . . mostly for my own benefit and to make what I said a little more clear.” Another participant, in contrast, reacted with surprise that the information would appear verbatim in an Appendix. He chose to make substantial revisions to the initial submission, ultimately asking, “Can you tell me if everything is intelligible?” As an indication of the dedication of these participants, one responded: “I have clarifications. They are on my laptop [at home]. I am in [Europe] until Thursday.” In sum, the composite transcript for all nine pedagogues amounted to more than 6,000 words of text with additional references to twenty-one books (mostly etude books), four journal articles, and two handouts—in other words, “an attractive nuisance.”

The following definition best describes the process for data management. “Data management may involve the identification of initial themes or concepts within a data set; labeling or tagging the data; sorting the data by theme or concept; and summarizing

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2 Throughout this chapter, informal communication will remain anonymous. Pedagogical information, however, will credit the source.

3 The interview transcripts for each studio-teacher participant appear in their entirety in Appendix C.

4 M. B. Miles, “Qualitative Data as an Attractive Nuisance,” quoted in Qualitative Research Practice, Ritchie and Lewis, 202.
or synthesizing the verbatim material.”\(^5\) The common starting point, though, simply involved reading and re-reading the material, and keeping an eye toward recurring themes or concepts. “The process of familiarization is akin to building the foundation of the structure,”\(^6\) as expressed by one textbook author. Likewise, the following advice proved helpful:

> The best advice I ever received about coding was to read the data I collected over and over and over. The more I interacted with the data, the more the patterns and categories began to “jump out” at me. I never even bothered to use the software program I installed on the computer. . . .\(^7\)

Another author adds, “It is not necessary to include the entire data set in the familiarization process, nor would time or resources usually permit, so the researcher needs to make a careful selection of the data to be reviewed.”\(^8\) Accordingly, the initial review concentrated on the written interview/e-mail transcripts rather than the additional books and articles identified by the pedagogues. To make the data more accessible, individual transcripts were cut and pasted into one document. According to Ritchie and Lewis, “The next step is to sort the data in some way so that material with similar content or properties are located together.”\(^9\) Since a majority of the content directly related to tone production exercises, these passages were color-coded red and subsequently grouped together. The sound production concepts gleaned from this analysis appear in Table 4-1. In reading through the remaining text, two new themes emerged. First, all nine

\(^5\) Ritchie and Lewis, *Qualitative Research Practice*, 261.

\(^6\) Ibid., 221.

\(^7\) Patton, *Qualitative Research and Evaluation Methods*, 446.

\(^8\) Ritchie and Lewis, *Qualitative Research Practice*, 221.

\(^9\) Ibid., 228.
pedagogues articulated philosophical underpinnings for their beliefs about tone production. Secondly, five teachers named favored books and materials that they use to help put their beliefs into practice.\(^{10}\)

Regarding summarizing or synthesizing these data, Ritchie and Lewis state:

The final stage of data management involves summarizing or synthesizing the original data. . . . Three requirements are essential if the essence of the original material is to be retained. First key terms, phrases or expressions should be retained as much as possible from the participant’s own language. Second, interpretation should be kept to a minimum at this stage so that there is always an opportunity to revisit original “expression” as the more refined levels of analysis occur. Third, material should not be dismissed as irrelevant just because its inclusion is not immediately clear.\(^{11}\)

Adhering to this model, a descriptive narrative synthesizes the pedagogues’ beliefs about tone production. Following the narrative, Table 4-1 shows the favored sound production concepts of these individuals. The most salient statements relating to the books and materials used by these artist-teachers conclude this section.

**Beliefs about Tone Production**

The ensuing text synthesizes the pedagogues’ views about sound production into a single descriptive narrative. The exact wording reflects slight changes that allow the material to flow more naturally. Since the text emanates directly from the transcripts, it appears as a block quotation.

Fine tone production requires an inner singing voice. You can only make a sound that you hear in your head. How we manipulate the bow determines whether we produce sound by chance or design. The concept of sound production involves three components: bow weight, placement, and speed. These allow the bow to speak and sing.

\(^{10}\) The sorted studio pedagogue transcripts appear in Appendix D.

\(^{11}\) Ritchie and Lewis, *Qualitative Research Practice*, 229.
Many string players achieve a very good tone, but few have a sound so special that the pitches truly ring to their fullest capability. Beautiful tones resonate within the instrument and marvelously project. Each pitch has its own unique character and identity. Our instrument-voice comes alive through our sound.

Many modern methods emphasize the left hand. These appeal to students and teachers because they help the student gain quick access to the concerto repertoire. Unfortunately, this approach may result in a “pay me now or pay me later” shortcut to the bow and its problems. Still, not all teachers emphasize sound. Some focus on the left hand. Other teachers may have ideas about how to develop the right hand, but cannot implement them because they do not have adequate teaching time. Ultimately, developing the right hand requires a nearly missionary zeal.

Consistent with others quoted in Chapter 1, these artist-string teachers view sound production in vocal terms. Further, they point out that a good tone results from a specific design, not happenstance. Even among professionals, in their view, few players exhibit the kind of tone that sets a performance apart. The steps to achieving an artistic identity require time and energy.

**Favored Sound Production Concepts**

Further analysis of the interview transcripts (transcribed in Appendix C) yielded a conceptual organization of the sound production exercises. The categories that emerged appear in Table 4-1. Participants are identified by their first and last name initials (consistent with the sorted transcripts in Appendix D).

**Books and Materials**

The following section highlights three specific resources not previously mentioned, but relevant to the present study. These resources appeared within the sorted transcripts (Appendix D) as materials referenced by the pedagogues during the interviews. This discussion holds to a literature review format. Unless otherwise noted, quotations come from the interview transcripts.
Table 4-1.
Favored Sound Production Concepts (N = 9)

<table>
<thead>
<tr>
<th>Participant Studio Pedagogue</th>
<th>BL</th>
<th>SS</th>
<th>SW</th>
<th>KP</th>
<th>MS</th>
<th>TC</th>
<th>JS</th>
<th>LH</th>
<th>WR</th>
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<tbody>
<tr>
<td><strong>Sound Production Concept</strong></td>
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<tr>
<td>Balance/Body</td>
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<tr>
<td>Crawl bowing</td>
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*These concepts appear in alphabetical order. The three variables of sound, however, appear in the order presented by Galamian.\(^{12}\)

According to violinist Brian Lewis, “Even with my most advanced students, I use Suzuki’s *Tonalization*\(^{13}\) to emphasize ring tones and overtones. I have the students physically watch the string vibrate.” In *Tonalization*, Suzuki articulates his basic ideas about tone. Suzuki coins the term “tonalization” to describe exercises for violinists that mimic the warm-up vocalizations given to singers. In Suzuki’s own words (as translated),


I believe that tone exercises must be added to the study of the violin. I know that the most excellent teachers always devote time to tone study in their teaching. The establishment of such a system of tone production to guide the beginner—similar to systems used in voice production—is the object of my book *Tonalization*.

The book has six sections: (1) Exercises for the Natural Tone; (2) Various Bow Speeds; (3) Resonance; (4) Various Pressures of the Bow on the String; (5) Various Tone Colors; and (6) Teaching Suggestions. By emphasizing ring tones or resonances, these warm-up exercises knit the quality of sound (right hand) with accurate intonation (left hand). The resonance exercises demand exact intonation. When a left-hand finger finds the exact point of frequency vibration, the sympathetic open string will “resonate so loudly that one will know that the finger is placed at the resonance point.” Several diagrams throughout the book illustrate these resonance tones as well as other issues related to bow placement.

Violinist Stephen Shippes states that “related to sound production, string educator Bob Phillips worked with me for one year and put a session together for ASTA. See his outline [*The 3 B’s: Setting the Tone Right from the Beginning*].” Phillips’s four-page clinic handout has two subheadings: “Better Bow Hands Start with Basics” and “Better Bow Arms Can Be Built from the Beginning.” The handout adapts sophisticated right-hand sound production concepts for use in the elementary string class. Each group of rote exercises correlates to activities or songs in *String Explorer* Book 1 or 2, co-authored

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14 Ibid., 6.

15 Ibid., 23.


by Phillips. Also of interest, the handout offers quotations about how to hold the bow from Valborg Leland’s *The Dounis Principles of Violin Playing*, Simon Fischer’s *Basics*, and Ivan Galamian’s *Principles of Violin Playing and Teaching*, all primary sources for the current research.

This clinic handout indicates that Bob Phillips, a 28-year veteran school string teacher turned music publisher, recognizes the need for supplemental materials to improve the tone of string students. He fashioned a clinic\(^\text{18}\) to enhance his own co-authored method book series. As Phillips’s reputation initially stemmed from his work with large heterogeneous elementary string classes, his research on tone also targets an elementary level of student. The present study’s focus on advanced middle school or high school string students seems to complement the work of Phillips.

Double bassist Lawrence Hurst identifies “a favorite page or two of the Nanny: *Kreutzer and Fiorillo Studies*"\(^\text{19}\) that he routinely uses with his students. In the book, Nanny presents his own preparatory etudes followed by those of Kruetzer and Fiorello.\(^\text{20}\) Nanny transcribed and edited these standard violin etudes for the double bass. Hurst refers to them as “Cathedral Studies,” stating:

> I use the imagery of a cathedral to engage the students and create in their mind a huge space to fill. They must listen as if they were in this imaginary space. These etudes are in the key of G or D so it is bass oriented for maximum resonation.

Adapting exercises intended for one stringed instrument so others can benefit from them speaks to the heart of this research. Hurst’s use of imagery in combination with

\(^{18}\) Bob Phillips presented this clinic at the 2005 Midwest Band and Orchestra Clinic. I attended the session to gain a first-hand perspective on his research.


\(^{20}\) Although Nanny spells Fiorello with an “i,” the conventional spelling uses an “e.”
these studies calls to mind the mini-games of cellist Phyllis Young. Hurst’s stress on the
“maximum resonation” of the string underscores the importance of ring tones, also
pointed out by other participants in this study and in Suzuki’s *Tonalization* book.

**Sound Production Exercises**

The transcripts were re-examined with an eye for specific exercises that had
application for pre-college aged string students and could work in a classroom setting. Of
the many worthy ideas shared by the studio teachers, the following three exercises served
as cornerstones for this portion of the project: Stephen Shipps—*collé*, Tanya Lesinsky
Carey—experimenting with bow highways, and Lawrence Hurst/William Ritchie—
adding one beat to each note of a scale. Each of these exercises led to a pedagogical
sequence of study. The corresponding sequence follows the discussion. Each set of
exercises concludes with a reference list naming the most applicable source books.  

**Developing Right-hand Finger Flexibility**

According to Stephen Shipps, “*Collé* is the staple of the Galamian world. We
would warm-up every day with *collé*. Playing it slowly was more important than fast, and
we would do it in all parts of the bow: all ups, all downs, then back and forth.” The name
of the adapted sequence, “Developing Right-hand Finger Flexibility,” points toward the
importance of active/flexible fingers. To ensure that students possess the prerequisite
skills to perform the *collé* motion, three preliminary exercises precede the *collé* routine:
(1) pencil pull up; (2) bow writing; and (3) string wiggle.

The “pencil pull up” exercise emanates directly from a Dounis source cited by
Shipps in his interview. In Dounis’s words, “This flexibility of the joints is necessary for

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21 By listing the book references, school orchestra directors could choose to add these resources to
their library or simply read them if interested in further related study.
all bowing.”

Dounis describes in detail the exact motions of the fingers, wrist, and arm. Variations of this pencil exercise appear in beginning string method books. In these books, however, the exercise serves as a means to learn how to hold the bow. The variation most similar to the Dounis exercise, called “Thumb Flexers” or “Thumb Flex,” has a nonspecific description: “Flex your thumb in and out.” Performing the pencil pull up with older students, and for developing finger flexibility rather than simply placing the fingers in the right place, changes the context of the exercise. Inserting the pencil pull up preceding the introduction of collé also follows the teaching principle of starting with the familiar and moving toward the less familiar. A supplemental note for bass players using a German bow offers additional pedagogical explanation.

The “bow writing” exercise intertwines a Dounis finger exercise with a Phyllis Young mini-game. In his interview, artist-teacher Jeffrey Solow remarked that Phyllis Young’s ideas “should be considered in your research.” The adaptation brings together Dounis’s detailed description and Young’s imagination. Similar to the pencil pull up, the exercise concludes with an instructional note to clarify the exercise for bass players using a German bow.

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24 Ibid.


26 Young, Playing the String Game, 37.

27 Jeffrey Solow, personal communication, April 6, 2005.
The “string wiggle” exercise also has multiple sources. Solow suggests:

- Hold bow in air, holding stick firmly counterbalancing tip with pinkie;
- Set bow on string, wiggle string gently, feel the arm balance, allowing pinkie to release bow; and
- Lift bow and repeat to feel the pinkie support the tip.

Simon Fischer calls a similar exercise “Catching the String.” He uses the exercise as a preliminary step to performing the martelé bow stroke. In this case, Solow’s wiggle terminology and excerpts from Fischer’s description are combined to serve as a prerequisite skill for collé.

After establishing prerequisites, the practice routine consists of definitions for collé followed by wiggle, pinch, crawl, transportation, and alternation exercises. One research guide suggests:

The researcher is likely to be the originator of any underlying logic although it can often happen that one of the study participants plants the seeds of this in an analyst’s mind. More commonly, it will be because there have been implicit connections within the data which suggest some explanatory link which the researcher is left to construct either by following some logical route or because “common sense” offers a solution.29

Thus, the “seeds” planted by the interviewees and through the literature lead to the routine shown in Figure 4-1.

**Focusing the Tone**

Tanya Lesinsky Carey emphasizes experimentation and imagery to improve tone production:

Playing basic simple pieces, patterns, and scales using the five different highways from the fingerboard to the bridge while learning to manage the differences in

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29 Ritchie and Lewis, *Qualitative Research Practice*, 308.
Developing Right Hand Finger Flexibility

EXERCISE #1
Pencil Pull Up
With the right hand, hold a long pencil parallel to the floor. Place the hand in a good bowing position on the pencil. The thumb and little finger must be free of tension and bent forward. By means of the fingers only, pull the pencil upward toward the palm of your hand. Keep the arm and wrist motionless. This flexibility of the joints is necessary for all bowing. Repeat this exercise holding the pencil in a vertical position. (Note that for double bass students using a German bow the fingers point toward the floor when the pencil is held vertically).

EXERCISE #2
Bow Writing
Hold the bow conventionally, but in a vertical position. Rest your wrist on the top edge of a music stand. The bow hair should face to the left and your forearm should remain parallel to the floor. Use flexible joints in the wrist, fingers, and thumb to write your name in cursive with the end of the adjusting screw. Keep the bow stick vertical without tilting. If at first this exercise is too difficult, use a pencil instead of a bow. (Note that for double bass students using a German bow the bow tip will point toward the floor with the hair to the right. The bow tip, rather than the adjusting screw, will do the writing).

EXERCISE #3
String Wiggle
Before playing a note, set the bow into the string such that it grips the string with the hair of the bow and wiggles the string, pulling the string from side to side. This wiggle should be entirely silent and without the string snapping back. Use weight, not tension.

EXERCISE #4
DEFINITIONS

- **Collé** (French) Literally “glued.” A bowing in which the sound is produced by placing the bow on the string with a “light pinch” at the beginning of the stroke and coming off the string immediately upon completion of the finger motion.

- **Up-bow collé** – The bow, suspended slightly above the string about four inches from the frog, is set and sunk silently into the string. The fingers, in an elongated or straighter position (with the knuckles flatter), suddenly pinch and release the string while quickly assuming a curved position. The release of the sound of the up-bow is the elbow down. The resultant note rings and the bow lifts and inch or so above the string. Conceptualize this lift as an ice-cream scoop or the inward flap of a chicken’s wing. (Note that for double bass students using a German bow the finger motions will be the opposite of those students with a French bow, e.g. The up-bow will begin with fingers and knuckles curved).

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Figure 4-1. Finger Flexibility
Finger Flexibility

- **Down-bow collé** – The fingers and knuckles gently curve forward. The bow is again suspended in mid-air followed by silently setting and sinking it into the string about two inches from the frog. Make the down-bow stroke by straightening the fingers quickly whilst at the same time pinch/releasing the string and lifting the bow off an inch or so into the air. The release of the sound of the down-bow is the elbow up. Similarly imagine this lift as an ice-cream scoop or the outward flap of a chicken’s wing. (Again, for double bass students using a German bow the finger motions will be the opposite of those students with a French bow, e.g. The down-bow will begin with fingers and knuckles straighter).

**COLLÉ PRACTICE ROUTINE**

**STEP #1**

Wiggle Collé Up-bow
Practice the collé stroke on all UP-bows using the following pattern. Make sure to use primarily fingers to lift and set the bow. Apply to scales and arpeggios.

\[ \text{Set} \quad \text{Wiggle} \quad \text{Scoop} \]

\[ \text{Set} \quad \text{Wiggle} \quad \text{Scoop} \]

\[ \text{Set} \quad \text{Wiggle} \quad \text{Scoop} \]

**STEP #2**

Wiggle Collé Down-bow
Practice the collé stroke on all DOWN-bows using the previous pattern. Make sure to use primarily fingers to lift and set the bow. Apply to scales and arpeggios.

**STEP #3**

Pinch Collé
Replace the string “Wiggle” with a “Pinch” into the string and repeat Steps #1 and #2.

\[ \text{Set} \quad \text{Pinch} \quad \text{Scoop} \]

\[ \text{Set} \quad \text{Pinch} \quad \text{Scoop} \]

\[ \text{Set} \quad \text{Pinch} \quad \text{Scoop} \]

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Finger Flexibility 3 of 4

STEP #4

Crawl Collé Down-bow
Begin at the frog of the bow and play 100 collé down-bow strokes on a single pitch. Reset the bow after each stroke slightly closer to the tip so as to crawl in that direction. Set the metronome at 120 and play one stroke per beat.

Tip for Double Bass Students: On repeated note exercises, shorten the string length rather than playing open strings, e.g. play the first finger “A” on the D-string at the neck block or use the ⅓ string harmonic (third finger), which has even less resistance.

STEP #5

Crawl Collé Up-bow
Starting at the tip of the bow, play 100 collé up-bow strokes on a single pitch. Reset the bow after each stroke slightly closer to the frog so as to crawl in that direction. Set the metronome at 120 and play one stroke per beat.

STEP #6

Transportation Collé
Play one collé at the frog, the next at the tip, the bow being carried in the air between the two strokes. The goal is to produce exactly the same sound at both ends of the bow. May be applied to scales. Use a metronome to prevent rushing.

(A) Begin at the tip with an up-bow collé, then lift to the frog and execute a down-bow collé. Continue this pattern throughout the scale.

(B) Reverse the direction by beginning at the tip with a down-bow collé. Lift the bow to the frog and play an up-bow collé. Continue this pattern throughout the scale.

(C) Lastly, add the middle of the upper half (3/4) and the middle of the lower half (1/4) of the bow making the sequence: Tip (up-bow), Frog (down-bow), 3/4 (up-bow), 1/4 down-bow. Repeat this pattern throughout the scale.

(D) Play a follow-the-leader game where the leader plays the scale and places the collé in various points of the bow with everyone else watching and imitating.

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Finger Flexibility

STEP #7
Alternating Collé
Play the above named Steps with an alternating (down-up) bow direction. As proficiency improves, gradually increase the tempo and move the bow to the balance point so that the fingers do less work and the springiness of the wood of the bow creates a natural bounce. The alternating collé stroke serves as a prelude to spiccato.

Book References


pressure/speed/contact point is useful in exploring tone color differences. The more
simple the better: Twinkle (on different strings), French Folk Song, Chorus by
Handel, scales. It doesn't really matter. It just needs to be simple for the ability
level so they can focus on listening and the technique itself.

Carey’s concept of bow highways or lanes, combined with ideas drawn from a practice
method advocated by Simon Fischer,\(^{30}\) forms the basis of an exercise labeled “Shading
the Sound.” This exercise acts as the cornerstone for a set of exercises titled “Focusing
the Tone,” as shown as Figure 4-2.

The set begins with a definition of the terms “timbre” and “sounding point”
followed by a diagram illustrating Flesch’s five parts of the string situated between the
bridge and the fingerboard.\(^{31}\) As a concept, the use of bow lanes falls into the category of
common knowledge among string teachers. The literature review, however, did not find
examples of this concept implemented into exercises for students. For the purposes of this
routine, Flesch’s numbering system was reversed so that the highest number corresponds
to the lane closest to the bridge. In simplistic terms, the new numbering system has an
inherent logic that shares similarities with the volume button on a stereo.

In the words of one of the artist-teachers, “Too often in public school teaching we
tell the kids to do it, but not how to do it.”\(^{32}\) In this case, the “how” to change bow lanes
may involve subtle motions of the fingers, hand, wrist, forearm, and upper arm. To
address some of the skills required to move the bow from one lane to another, I devised a

\(^{30}\) Fischer, *Basics*, 41.


\(^{32}\) Marilyn Seelman, personal communication, August 8, 2005.
Focusing the Tone

**DEFINITIONS**

**Timbre** – The tone color of a musical instrument or voice.

**Sounding Point** – The particular place in relationship to the bridge where the bow contacts the string to produce the desired tone.

The space between the fingerboard and bridge is commonly divided into five sounding points. Many string players think of these sounding points as lanes, similar to a five-lane highway. The numbers in the diagram below indicate the bow’s proximity to the bridge. The highest number is the closest to the bridge, has the most penetrating timbre due to the greater overtone content, and can produce the greatest volume.

On thinner strings, the optimum sounding point is closer to the bridge than on thicker strings. Likewise in the higher positions, the sounding point is closer to the bridge than in the lower positions.

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**Figure 4-2. Sounding Point**
EXERCISE #1
Row Your Bow

(A) Place the middle of the bow in Lane 3 and angle the bow “out” and “in” like the oar on a rowboat. Cellists and bassists may prefer to think of the motion as “floor” and “ceiling.” The motion should be performed silently, without string noise.

(B) Repeat this rowing motion at the frog of the bow and then pull the stroke perfectly parallel to the bridge (“straight”) using the following pattern. Watch the bow, the sounding point, and the relationship to the bridge.

\[ \begin{array}{ccccccc}
\mid & 7 & 7 & 7 & 7 & | & 7, \mid \\
\end{array} \]

(C) Row the bow at the tip and pull a perfectly parallel stroke to return to the frog. Watch the bow, the sounding point, and the relationship to the bridge.

EXERCISE #2
Shading the Sound

(A) Play “Twinkle Little Star” (or another familiar melody) in Bow Lane 5. Use a slow bow speed with a heavy bow weight. Experiment to find the exact speed and weight to make the strings vibrate as wide as possible. Listen closely to the timbre.

(B) Repeat the same melody in Bow Lane 1. Apply a faster bow speed and a lighter bow weight. Again, experiment to find the exact speed and weight to make the strings vibrate as wide as possible. Concentrate on the timbre.

(C) Play the same melody, but in a different octave (higher or lower). Repeat the above exercises in the new octave (Lane 5 followed by Lane 1). Remember that in the higher positions, the sounding points compress closer to the bridge than in the lower positions.

(D) Lastly, begin the same melody on a different starting pitch (in a new key). Repeat the above exercises. Notice any differences in timbre.
EXERCISE #3
Changing Lanes
Play scales using the following patterns for each note. Begin on a down-bow; then repeat the exercises starting up-bow. Each click of the metronome corresponds to a change in the bow lane, indicated by the numbers below the notes. As the bow moves toward the bridge, use less speed and more weight. Conversely, as the bow moves toward the fingerboard, increase the speed and reduce the weight. Strive to produce the desired musical sound through an efficient motion.

(A) Audible metronome set at \( \frac{\text{d}}{\text{b}} = 60 \). Take one bow over five beats.

\[ \begin{array}{c|c}
\text{V} & \text{V} \\
1 & 2 & 3 & 4 & 5 \\
\hline
\text{\( \Pi \)} & \text{\( \Pi \)} \\
5 & 4 & 3 & 2 & 1
\end{array} \]

Sounding Point

(B) Audible metronome set at \( \frac{\text{d}}{\text{b}} = 60 \). Take one bow over five beats.

\[ \begin{array}{c|c}
\text{V} & \text{V} \\
5 & 4 & 3 & 2 & 1 \\
\hline
\text{\( \Pi \)} & \text{\( \Pi \)} \\
1 & 2 & 3 & 4 & 5
\end{array} \]

Sounding Point
Audible metronome set at \( \frac{b}{4} = 120 \). Draw one bow for every TEN counts.

(C) frog middle tip

\[ \text{Sounding Point} \]

(D) Audible metronome set at \( \frac{b}{4} = 120 \). Draw one bow for every TEN counts.

\[ \text{Sounding Point} \]

**Book References**


bow “rowing” routine based on Galamian’s analysis of motions\textsuperscript{33} and Fischer’s “out” and “in” bow angles.\textsuperscript{34} Galamian states that one method [of varying the point of contact] makes use of the fact that a stroke that is moving slightly nonparallel to the bridge will permit the bow to slide toward or away from the fingerboard, depending upon the oblique direction it assumes.\textsuperscript{35}

The rowing routine introduces the motions that make the bow nonparallel without dwelling on the complex movements involved. Likewise, Bob Phillips uses a simpler version of a bow rowing exercise in his aforementioned elementary-level handout.\textsuperscript{36}

The final section of the “Focusing the Tone” routine makes use of long, sustained tones that change bow lanes. The exercises adapt the spun tone studies of Capet\textsuperscript{37} and Flesch,\textsuperscript{38} Galamian’s son filé,\textsuperscript{39} and a changing sound-point exercise of Fischer.\textsuperscript{40}

Additionally, the amended whole notes have five counts instead of four so that each beat of time corresponds to a different bowing lane. Thus, the bow switches to a different lane on each metronome click.

**Varying the Bow’s Speed**

Lawrence Hurst uses a slow bow speed to help his students develop an even sound:

> Students must listen to the fluctuations of sound in dynamics. There can be no floating on the point of contact. I have students close their eyes to sense when the

\textsuperscript{33} Galamian, *Principles of Violin Playing & Teaching*, 47-51.

\textsuperscript{34} Fischer, *Basics*, 23, 44-45.


\textsuperscript{36} Phillips, “The 3 B’s: Beautiful Bow Arms,” 1.

\textsuperscript{37} Capet, *Superior Bowing Technique*, 100-105.

\textsuperscript{38} Flesch, *Problems of Tone Production in Violin Playing*, 15.

\textsuperscript{39} Galamian, *Principles of Violin Playing & Teaching*, 103.

\textsuperscript{40} Fischer, *Basics*, 44-45.
sound is focused through feeling the tension in the string. I have them set the
metronome at QN = 60 and hold long tones six beats at *forte* and control the string.
They are listening for fluctuations in amplitude and glitches in the sound.

William Ritchie offers this variation on Hurst’s exercise:

One exercise that comes from Lawrence Hurst helps develop this slower bow
speed. Start with QN = 60 and do 4 clicks per note, stopping for one click in
between bow changes. Gradually get up to 8, 10 and more clicks per notes, staying
as near to the bridge as possible and playing as loud as possible.

These ideas form the basis for an exercise titled “Stretching the Bow,” as well as laying
the foundation for a routine built upon varying bow speed (Figure 4-3).

Three multi-part exercises follow a definition of the terms “bow speed,” “division
of the bow,” and “slurred *staccato* bowing.” Although the concept of bow divisions,
similar to the sounding point concept, may belong in the category of common knowledge
among string teachers, the literature review does not reveal specific exercises to equip
students to change the speed of the bow. Capet, however, takes the division of the bow
and its application to scales, exercises, and repertoire to an extraordinary level of detail.41
His division of the bow as it relates to bow speed serves as inspiration for these “Hooked
on Bowing” exercises.

The final exercise of this routine, “Longest Bow Competition,” emanates from a
handout supplied by William Ritchie and created by University of Michigan double bass
professor, Diana Gannett. In discussing the slow bow, Gannett introduces the concept
that “the lower the pitch, the slower the bow. One down-bow draw on the G-string, next
to the bridge, should eventually take 25 seconds or more. Each lower string will take
about five seconds longer.”42 A timed competition, similar to an expressive bowing

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**Varying the Bow’s Speed**

**DEFINITIONS**

**Bow Speed**
The art of bowing is one of “stroking” the string, rather than “pressing” the string. At every distance from the bridge there is a certain amount of speed, combined with a certain amount of weight, that produces the freest and widest possible vibration or “swinging” of the string. To keep the string freely swinging, tone production relies on the speed of the bow, not pressure.

**Division of the Bow**
String players commonly divide the bow into sections. Marking the bow’s sections can serve as useful reference points while practicing. Dividing markers may be added on the bow stick using small peel-off stickers, automobile pinstriping, or chalk. Two marks will divide the bow into thirds while three marks will form a division of fourths.

![Divisions of the Bow](image)

Equal speed of the bow means equal division of the bow for equal time units. For instance, if four quarter notes are to be played within a whole bow, each single quarter note should be played with one-fourth of the bow.

**Slurred Staccato Bowing**
A series of two or more *staccato* (stopped) bow strokes in a single bow direction with space between the notes. Commonly called “hooked” bowing.

**EXERCISE #1**

**Hooked on Bowing**

(A) Play eight hooked bows from the frog to the tip on each note of a scale.
Evenly distribute the bow divisions while traveling the entire bow length.
Review the bow hold to ensure that the thumb bends forward and individual fingers remain tension-free.

Metronome set at \( \frac{\text{d}}{\text{e}} = 60 \).

![Hooked Bowing Exercise](image)

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**Figure 4-3. Bow Speed**
Bow Speed

(B) Repeat the hooked bowing sequence as outlined above, reducing the number of hooks from eight to six and play a scale. Note that as the number of hooks per full bow decreases, the speed of the bow increases. The tempo, on the other hand, should stay constant. Next try four, three, and two hooks per full bow while keeping the tempo steady at sixty beats per minute.

(C) Change the number of hooks for each scale degree, repeating the top note according to the pattern below. Be sure to use the entire length of the bow. Vary the chosen scale as well as the octave in which it is played.

Metronome set at \( \frac{}{} = 60 \).

\textit{Ascending}

<table>
<thead>
<tr>
<th>Hooks:</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note:</td>
<td>D</td>
<td>E</td>
<td>F#</td>
<td>G</td>
<td>A</td>
<td>B</td>
<td>C#</td>
<td>D</td>
</tr>
</tbody>
</table>

\textit{Descending}

<table>
<thead>
<tr>
<th>Hooks:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note:</td>
<td>D</td>
<td>C#</td>
<td>B</td>
<td>A</td>
<td>G</td>
<td>F#</td>
<td>E</td>
<td>D</td>
</tr>
</tbody>
</table>

EXERCISE #2

Stretcing the Bow

Play a scale in whole notes adding one beat to each successive note followed by a one-beat rest. The sounding point into the string must not drift so the bow draws parallel to the bridge for the full length of the stroke. The string should freely vibrate at its fullest the entire note, and the sound should be as loud as possible given the increasing length of the notes. Use the rest to prepare the bow fingers and thumb to set the string in motion. Begin each note with a clear articulation and a rich sound. Listen meticulously for any unwanted fluctuations in the sound.

\( \frac{}{} = 60 \)

\[
\text{simile}
\]

EXERCISE #3

Longest Bow Competition

(A) Draw one down-bow on the highest string, the bow placed next to the bridge, taking twenty-five seconds. Keep the string swinging and the tone vibrant. Repeat the exercise on the other three strings. Each lower string will take about five seconds longer, the bow placed slightly farther away from the bridge.

© 2005 Moss - May be reproduced only by research participants for use with their students.
(B) Using the above principles, draw one bow on the D-string. Keep the bow moving and the string vibrating while sustaining the note as long as possible. Strive for one minute. Since the length of the bow stick varies, there will be four winners: violin, viola, cello, and bass. The student holding the note the longest within each section wins.

**Book References**


activity presented by Hamann and Gillespie called *Timed Bowing*,\textsuperscript{43} culminates this exercise.

**Initial Survey Results**

A summary follows of the primary findings of the field-test survey regarding the respondents’ use of the sound production exercises after two-weeks. Results listed by participant appear in Table 4-2.

1) One hundred percent of the respondents:
   a) Believe performing the exercises benefited their students;
   b) Anticipate using the exercises beyond the conclusion of the study;
   c) Would like to see additional, related exercises that emphasize the right-hand/sound production developed for heterogeneous string classes; and
   d) Would definitely recommend the exercises to others.

2) Seventy-eight percent of the respondents:
   a) Before participating in this study, had previously used at least one of the exercises with their students;
   b) Found that the exercises work equally well for violin, viola, cello, and double bass students; and
   c) Implemented the exercises over the requested two-week period.\textsuperscript{44}

Given the short length of the field test, the unanimous belief that the exercises benefited the students cannot be supported through this survey. Still, the statement shows that the orchestra directors responded favorably to the exercises. In addition, six of the respondents (67 percent) wrote supportive comments. Four used the space for optional

\textsuperscript{43} Hamann and Gillespie, *Strategies for Teaching Strings*, 98.

\textsuperscript{44} Participant D implemented the exercises over six class periods. Participant H tried the exercises with a seventh-grade intermediate class and had to move at a slower pace.
Table 4-2.
Survey Results ($N = 9$)

<table>
<thead>
<tr>
<th>Question</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Implement over two-weeks</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Previously used an exercise(s)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Believe exercises benefited students</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6. Work equally well (Vln, Vla, Vc, DB)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anticipate continuing to use</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8. Would like additional exercises</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9. Definitely recommend to others</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*aVln = Violin; Vla = Viola; Vc = Violoncello; DB = Double Bass

Comments beneath the question and the others used the fax cover page to write a note.

These participants’ comments follow:

- Participant A: I see immediate strengthening of the tone in general.
- Participant B: As a non-string playing teacher, I found them very beneficial.
- Participant C: The students commented that the *Focusing the Tone* exercises were possibly the most helpful. It helped them focus more on their bow placement. The *Right-hand Flexibility* exercises helped some move their fingers for the first time.
- Participant E: This orchestra is made up primarily of students who “fell through the cracks” in middle school. They tend to need the extra focus on technique the most.
- Participant G: Reinforced some of the bow techniques taught by private teachers.
- Participant H: Yes, it makes the students focus on details needed in string playing.
- Participant I: Great stuff! Thanks for including me.
A follow-up e-mail from Participant C included this statement:

I think there may be a need for an organized set of exercises that can help with the skills you focused on, and others. For those of us that attended universities that did not have good music education mentors, there are exercises/approaches that we were unable to address in a classroom setting. So we have to reach back into our own memory of how we were instructed in private lessons and translate that into how we approach certain things in the classroom. Fortunately, through workshops/clinics over the years we pick up a lot of these ideas, but it would be good to have a reference for teaching these skills.

Table 4-3 shows which exercises participants had previously used. Participant A clarified, “I use the ‘Changing Lanes’ and the ‘Wiggle/Pinch’ exercises occasionally, but have not used a concentrated two-week unit before.” Participant I indicated:

Long Bow Competition: This I just did on my own for a long time, especially before playing a slow piece.

Pencil Pull Up: I believe I picked this up (variation of it) from a Midwest presentation or workshop long ago.

String Wiggle: I think there was a variation of this in the old [1975] Learning Unlimited string method… not positive, though.

Three of the respondents (33 percent) indicated that some of the exercises required adjustments for the bass players to perform them. Specifically, teachers mentioned the German bow holds. Participant B commented that “it was confusing at times to the basses with German bows.” Participant I wrote, “Accommodations for bass are necessary, but workable.” Participant C noted, “Some of the finger flexibility exercises were a little problematic for cellos and basses. Without the pinkie on top of the stick, they had more trouble controlling the pencil/bow than the violins/violas did.”

---

45 The coauthor of Learning Unlimited, Thomas Wisniewski, worked with Paul Rolland.
Table 4-3.
Previously Used Exercises ($N = 9$)

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Participant Teacher</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing lanes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pencil pull up</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>String wiggle/pinch</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bow division/Hooked bow</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long bow competition</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

NOTE: This table shows the data from the written questionnaire.

**Follow-up Interview Results**

The finding that all the string teachers anticipated using the exercises in the future offered an opportunity to collect additional data. When contacted by e-mail, seven of the nine participants (78 percent) indicated that they had used some or all the exercises after the two-week trial period. The two teachers who did not continue using the exercises also indicated that they had not previously used any of the exercises prior to the study (teachers E and G in Tables 4-1 and 4-2). Five teachers used the exercises regularly in class for nine to twelve additional weeks, and two teachers used them periodically (Participant I) or “off and on” (Participant B).

The date varied when participating school orchestra directors last used the exercises. In personal communication preceding the interview, Participant F indicated that she “used the exercises until Nov. 16 (stopped because I went on . . . leave).” During the interview, similarly, Participant B indicated that he had not used the exercises “since, probably the end of November.” In contrast, Participant A responded, “I use warm-ups daily in which the exercises and developments influenced by them are used throughout
the year.” As a result, the ability to recall and discuss specific exercises during the phone interview also varied. Participant A referred directly to the exercises while answering the questions. In contrast, at one point Participant B stated, “Unfortunately, I don’t have them right in front of me, I couldn’t tell you.” In hindsight, asking participants to review the exercises prior to the interview and have a copy of them in-hand during the interview may have facilitated a more in-depth discussion.

The succeeding text analyzes the data. Additionally, Appendix G contains the follow-up interview transcripts in their entirety. Each transcript lists the question followed by the response.

The preliminary cover letter and field-tested questionnaire did not suggest the possibility of contacting participants at a later date. Nevertheless, 78 percent of the participants voluntarily used the exercises up to three additional months. The follow-up interviews more fully document the experiences of the individual teachers as they used the exercises. The patterns that emerge help to provide an overview of the project and its impacts.

These interviews serve as a method for accomplishing a reflective evaluation. The interviews occurred in mid-January 2006 or approximately three months after the completion of the initial two-week field test and questionnaire. All interviews were conducted by telephone. The average interview took fifteen minutes with a range from ten to twenty minutes. Interviews were tape-recorded and transcribed for analysis.

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46 Participant B gave the interview from his home.

47 See Appendix G for the follow-up interview transcripts.
The standard open-ended interviews presented nine questions:

1. How did you have your students use the exercises?
2. How much time were you able to spend on them?
3. In what ways did you use them? As warm-up, for example?
4. Did they work better with a certain type or level of student than they did with others?
5. Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?
6. Will you continue to use some (or all) of these exercises in the future?
7. Had you been using exercises similar to these previously?
8. Did the exercises seem to improve the players’ tone?
9. Were you able to apply them to the music you were performing?

Condensed versions of the questions appear as subheadings below. In the analysis, however, Table 4-4 shows the results for question numbers 2, 6, 8, and 9, and appears after the subheading for question number 7. The other subheadings appear in the order of the questions as listed above. In following text, participant responses to these questions are presented and analyzed. A major purpose of the analysis was to organize participant responses in such a way that overall patterns would become clear. The emphasis throughout allows the participants to speak for themselves. The challenge lies in presenting the material in a cogent fashion that integrates the variety of experiences and impacts, which are recorded in the interviews. The following section utilizes a textbook model from an illustrative interview analysis. Specifically, in groups of block quotations, participants are identified parenthetically following their response.

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48 Patton, *Qualitative Research and Evaluation Methods*, 526-534.
Interview Question 1: Student Use of Exercises

All the participants had their students use the exercises as a component of their warm-up routine. Participant A described in detail how he used the String Wiggle:

We actually play a call and response-type thing. During the call and response especially, we used the String Wiggle. I have the kids watch me up front and I say “Do as I do.” Without explaining any further, I simply let the weight of my arm go in the string and wiggle the string so they can see what’s going on and they do the same thing. Then we expand that just a bit by making what we call ugly sounds, getting scratchy, terrible tones and expanding the wiggle quickly to where it actually makes sound and getting back to the wiggle where it makes no sound again. And then I go into scales with using the feeling of weight into the string to make as strong and yet clean a sound as they can.

Participant I described how he used the exercises as a precursor to a scale routine:

I use them as part of the warm-up before we would play our scale warm-up. We have a standard scale pattern that we do in different keys and I usually do a reminder, something position-related prior to that, so I inserted these as a way to get them thinking about their bow hand and their bow technique, especially those that are more general as opposed to the bowing patterns, doing things like the Pencil Pull Up, the String Wiggle, the fingers flexible, get the fingers flexing, the lane change discussion and activities, prior to doing their scale warm-up. And then I would assign them a lane in our traditional scale warm-up or just ask them to continue that flexibility work through our scale warm-up.

Participant D, a middle school teacher, assigned them for at-home practice, as well as use during class: “We put them on assignment cards and did them in class, generally in the warm-up part on the assignment card.”

In addition to a warm-up activity, the exercises also served a prescriptive purpose:

After I did all the [questionnaire] responses, and mailed them back to you, I pulled them [the exercises] out a couple more times when we were having some issues like, “Okay, let’s see if one of these exercises will help.” (Participant B)

As we were playing some things . . . we could refer back to what we were doing [with the exercises] and I could say, “Where do you place your bow?” (Participant C)

The sounding point exercises, C and D, actually all four of them with crescendo/diminuendo, I used for rehearsing the Sentimental Sarabande of the Britten—*Simple Symphony*. That has three beats of crescendo/diminuendo in the
inner voices at the beginning. So sometimes before the rehearsal, as in general, sometimes I have them apply it to a piece. (Participant I)

**Interview Question 3: Teacher Use of Exercises**

Six of the respondents (86 percent) mentioned using the exercises in conjunction with scales as part of a warm-up activity. The specific activity varied from teacher to teacher.

Yes [as a warm-up]. What we would do is take, probably work on a scale, usually something that was in the key that we were going to work on and then use the exercises within that context and relate it to the music they are going to perform. (Participant B)

In playing a D scale, I used—I mentioned the other day, the exercises 8 notes on the bow then you go to 7, 6, so you end up using the whole bow stroke. So work on the scale and especially if you end up doing some scale with some of the flat keys, and it gives them a chance to review that while also focusing on the tone. (Participant C)

Yes [as a warm-up], particularly the Changing Lanes and then like on the Stretching the Bow, we sometimes made that part of our scale warm-up. (Participant F)

Yes [as a warm-up]. I would take a scale and just vary the scale each class period by doing the hooked bowing, and, you know, the lanes from 5 to 1 and 1 to 5 and we did do some of the bow exercises, like the Pencil Pull Up and Bow Writing, too. (Participant H)

As I mentioned earlier, of course, as a precursor to my scale work, but then also I use them as a warm-up if I knew I was going to be working on a passage in the music that used the lanes, the sounding point ideas. (Participant I)

In addition to scales, Participant A also used the exercises with an etude: “We first of all use the basic technique and then we try to apply it to scales and also use it with the etude.”

Participant D, the sole teacher who did not mention scales, indicated that he incorporated the exercises into a skill-based approach to warm-up activities:

Well, our philosophy is you always in your warm-up—you only do one thing at a time: the left hand, the right hand, or ear training, and this took care of the right-
hand component. We generally start with tone to start our lessons every day and whether it was putting the hand on the stand and using flexible fingers, we always did them right at the front of class.

**Interview Question 4: Type or Level of Student**

Five participants (71 percent) found, in general, that while the exercises worked with all their students, the older or more advanced students moved through them at a quicker pace.

I used them a little bit in my sixth grade advanced class, who are all kids that have played before. That group did better with it because I didn’t have as many low-end kids, and because it was a smaller class. (Participant B)

Well, it’s probably easier with my older kids. I have a ninth grade group and then I have two older classes. The older kids probably picked up on it quicker. It made sense to all of them. . . . (Participant C)

We had to make certain that we had to see where they fit into what the kids were already doing or what they could do and then, for an example, for eighth grade we would maybe up the intensity a notch or on the hooked bow exercises we would have them do more difficulty. We only altered them as they related to each level. (Participant D)

Probably [worked better with a certain type or level of student]. Well, I had to present them, you know, like much more slowly and do the same exercise for several times before my younger kids would catch on to it. With the advanced kids, we could move a little faster. . . . I teach seventh and eighth grade, and freshmen. So the freshmen were the ones that really, I was able to go pretty quickly with it. With the seventh graders, I wasn’t able to get to the more advance exercises. (Participant F)

I would say, yeah, the more advanced [middle school students]. It wasn’t very complicated what I was having them do. In other words, I made it/attached it to a scale that they really knew well, and then we just worked really on that. . . . (Participant H)

The other two teachers, both high school directors, believed that the exercises worked equally well for all their students.

Not really [work better with a certain type or level of student]. I actually work with eighth graders up to twelfth grade advanced students, and I use it for every level. I think it’s important to make sure to use it for everybody. (Participant A)
I think it was equal across. I only work with high school students, but there is a wide variety of playing levels. I think it worked equally, from freshmen through seniors, within the group that I had. (Participant I)

**Interview Question 5: Most Useful Exercises**

The teachers’ opinions varied as to which exercises were most useful. In some cases, teachers preferred the exercises most similar to what they already used: “They were things I had touched on before in my teaching. They weren’t totally new” (Participant H). Other teachers, however, preferred newer ideas: “It’s a new approach and what I noticed worked best” (Participant A). In answering the question, all the teachers named multiple exercises, hence the percentages listed below total more than 100 percent.

Five teachers (71 percent) mentioned the Changing Lanes concept. Teacher comments follow.

Well, the Lane Changes I have used for years and the kids are well used to that, and I actually probably use that once a week, as well as talking about the lanes. I actually used those quite a bit, but have continued using those. (Participant A)

The lane, the Changing Bow Lanes worked very well. That was a good visual for them. (Participant B)

Well, I think my favorite ones were the Changing Lanes, with the crescendo and decrescendo. Those just really seem useful and we could immediately apply those to the music. (Participant F)

The bow speed and the bow placement [Changing Lanes]. I really liked those. (Participant H)

I have to separate here—one of them was variations on something I already did so it wasn’t as memorable that it worked—in that I would say things, like the Changing Lanes, we just had a different terminology with some of the exercises that I already did. I find those very useful. (Participant I)

Four participants (57 percent) commented on the exercises related to Developing Finger Flexibility. Teacher comments follow.
The Finger Flexibility was the most difficult. That was the one that we had the most difficulty getting them all to be able to understand. (Participant B)

Some of the *collé* bowing things I used to get more of the wrist action into it, grabbing the string and springing off the string. (Participant C)

The hand on the stand one so the arm wasn’t moving, just the fingers, has really helped with bow flexibility. (Participant D)

The Right-hand Flexibility, obviously, is extremely useful in all kinds of bowing as well. With some of the kids who have a lot of tension in their hands, that takes a lot of time to change. (Participant F)

Four teachers (57 percent) also named the hooked bowing/bow speed exercises.

Teacher comments follow.

Again, I get to that Hooked on Bowing or the one with the number of bows in a stroke. (Participant C)

With the hooked bow . . . we still do that one quite a bit. (Participant D)

The bow speed [Hooked Bowing] and the bow placement. I really liked those. (Participant H)

The bow division—using the hooked bows from frog to tip—I like that one. I’ve done similar things, but not with the hooked. I always just used sustaining the note, not dividing the bow for that long and had not thought of breaking it up with an actual stop. I like that a lot. (Participant I)

Three respondents (43 percent) especially liked the String Wiggle exercise. Teacher comments follow.

I’d say the String Wiggle is, quite honestly, one that I’ve not used before. And so it’s one I think has helped. . . . It’s a new approach and what I noticed worked best. (Participant A)

We did the String Wiggle a lot. In fact, we still do that one. (Participant D)

The idea of wiggling-in or gripping the string with the bow silently before a clean start or especially an accent is especially a favorite of mine from there. (Participant I)

Participant D summarized the usefulness of the exercises:

You gravitate toward the ones that you think are going to help your group better. I don’t know if any . . . of your exercises are necessarily better than the others—just
the ones that I like better and that I think work better. And so I guess it has to do with my personal preferences and what I’ve seen results with. But you ask another teacher and they might like the ones we don’t do as much.

**Interview Question 7: Used Similar Exercises**

Five of the seven teachers interviewed (71 percent) indicated they had previously used exercises similar to these exercises. This finding compares to the seven of nine original participants (78 percent) who, on their written survey, indicated that before participating in this study they had earlier used at least one of the exercises with their students.

Two teachers said:

A couple of them [were similar], but certainly not all of them: not the *collé* and some of the more advanced ones. (Participant F)

Yeah, similar. I’d done the hooked bowing, and I’ve changed the lanes, and I’ve done that before, and I’ve done the Pencil Pull Up and the Bow Writing. (Participant H)

Rather than viewing the exercises as redundant, however, three teachers recognized unique values that benefited their programs.

Some of them [are similar]. I use all sorts of different ones for describing the bow hold and for describing the feeling of weight into the string. But these are a great addition to what I do, and I basically incorporated them into what I use.49 (Participant A)

Some of them [are similar], yes, and unfortunately, I don’t have them right in front of me, I couldn’t tell you. Because I’m not a string player, I would use what was in all of the different methods books that I have, and different exercises that I have had coaches come in and show, and some of these were similar to that of what they were doing (the coaches thought the exercises were good). But I, the thing about these was applying across the board—as opposed to, “Okay, violins, you are going to work on this technique.” (Participant B)

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49 Prior to the beginning of the formal interview, this teacher described how he had placed the exercises in a notebook among other handouts and materials that he used on a regular basis during warm-ups.
In some cases, yes, similar, but in some cases no, and in other cases, they are completely new to me. And in some cases there were further ideas that I hadn’t used, and in some cases, better terminology. (Participant I)

The respondents who had not used similar exercises indicated that the exercises helped refocus their teaching.

I think these exercises help remind me of some things that I can do, in general with the kids, to work on the tone. . . . I want to keep some of these going, and again, I need to—at various points—be reminded to get back to basics and work on some things. (Participant C)

Honestly, in the past I haven’t been as critical of my own teaching to make sure we always start with a tone exercise, but this year I have. . . . So this has helped our program immensely. . . . The kids now, when they play, they know whether it’s a scale or playing by ear or repertoire or whatever. They know that tone has to be the most important thing. If you don’t have a good tone, who cares? (Participant D)

Remaining Interview Questions:

The results corresponding to interview questions 2, 6, 8, and 9 appear in Table 4-4.

The time teachers spent on the exercises varied from two to twenty minutes. Participants indicated: (1) they planned to continue using some or all of the exercises; (2) the exercises seemed to improve the players’ tone; and (3) they were able to apply them to the music they were performing.

Summary

The artist-studio teachers and school string teachers viewed their participation in the study favorably. Each studio teacher embraced personal beliefs about tone production and used a variety of resources and activities to teach students. Selected exercises from these private studios formed the basis for three pedagogical routines designed for use in middle and high school string classes. Participating school orchestra directors believed the exercises improved the players’ tone and found ways to apply the exercises to the music they rehearsed. For two teachers, the exercises helped refocus their teaching to
Table 4-4.
Time Spent, Continuation, Tone, and Application ($N = 7$)

<table>
<thead>
<tr>
<th>Question</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F*</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes per class spent on exercises</td>
<td>5.5</td>
<td>Not a lot</td>
<td>15-20</td>
<td>2-4</td>
<td>5-15</td>
<td>5-8</td>
<td>5-10</td>
</tr>
<tr>
<td>Continue using exercises</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Improve players’ tone</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Apply to music</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

NOTE: Yes answers subsume the following responses: Yes, Yeah, Absolutely, Definitely, Most, and “I think they did.”

*Participants E and G did not continue using the exercises.

emphasize the right hand and tone production. Two other teachers, however, did not continue using the exercises and, unique among this sample, had not previously used any of the exercises prior to the study. Seventy-one percent indicated they had previously used exercises similar to these exercises.

All of the participants used the exercises during warm-up activities near the beginning of class. Eighty-six percent used them in conjunction with scales. Although the teachers varied in their opinion of which exercises were most useful, more teachers (71 percent) mentioned Changing Bow Lanes than any other exercise. All participants applied the exercises to the music they were performing. They indicated that they would
like to see additional, related exercises developed for heterogeneous string classes and would recommend the exercises to others.
CHAPTER 5
DISCUSSION AND CONCLUSIONS

Summary

The purpose of the study was to research, identify, and describe favored sound production exercises of selected contemporary violin, viola, cello, and double bass studio teachers. Once these exercises were gathered, a set of sound production exercises suitable for middle and high school orchestra students were developed and field-tested.

The following questions guided the inquiry:

1. What were the favored sound production exercises of selected violin, viola, cello, and double bass pedagogues?

2. Can the ideas of these pedagogues be adapted for a heterogeneous school string class? If yes, to what extent?

3. How useful did school orchestra directors find such exercises?

The private studios of nine artist-string teachers were selected. The sample had the following breakdown: three violinists, two violists, two cellists, and two double bassists. An in-depth interview format was used to collect data from the studio teachers in the belief that it would elicit the necessary information with the least disruption to the participants.

The exercises emerged from a synthesis of the interviews with studio teachers, relevant documentary analysis, and literature review. Selected exercises from these private studios formed the basis for three pedagogical routines designed for use in middle and high school string classes. A brief synopsis follows.
1. *Developing Right-hand Finger Flexibility* emphasizes the motion of the fingers through the following exercises: pencil pull up, bow writing, string wiggle, and an extensive *collè* bowing routine.

2. *Focusing the Tone* stresses the sounding point or bow lanes. Specific activities include rowing the bow, shading the sound by varying the lane, speed, and weight, and several long-tone activities that change the sounding point throughout the note.

3. *Varying the Bow’s Speed* involves dividing the bow into sections. The following drills comprise the routine: hooked bowing activities with different bow distributions, stretching the bow by lengthening note values, and drawing one long, slow bow.

The exercises were then field-tested in nine selected school string programs. A nine-item questionnaire was created to assess the need for the exercises and determine their potential effectiveness. To further evaluate the effectiveness of the exercises over time, a structured follow-up interview occurred approximately three months after the initial trial period.

The studio pedagogues and school string teachers viewed their participation in the study favorably. Each studio teacher expressed personal beliefs about tone production and shared a variety of resources and activities used to teach students. Participating school orchestra directors believed the exercises improved the players’ tone. They used the exercises as a warm-up activity and applied them to the music they were performing. They anticipated using the exercises in the future and indicated that they would recommend the exercises to others. They also would like to see additional, related exercises developed for heterogeneous string classes.

**Findings**

A discussion of the findings for the exercises and school field test follows. Answers succeed each research question.
What Are the Favored Sound Production Exercises of Selected Violin, Viola, Cello, and Double Bass Studio Pedagogues?

The ability of the studio pedagogues to articulate prescriptive teaching exercises for the right hand varied according to the teaching method and priorities of the participant. One pedagogue began the phone interview by stating, “These are my favorite tonal exercises I teach my students. Even my most advanced students find them beneficial.” She then proceeded, over the span of no more than fifteen minutes, to articulate four prescriptive exercises. Others, however, deliberated over how to convey their approach. One wrote: “I was thinking about how I was going to explain my normal approach to new students who inevitably have bow issues.” Another stated that “it is important to acknowledge that not all teachers emphasize sound. Some focus on the left hand.”

The analysis of the studio pedagogues’ transcripts did not reveal a straightforward listing of right-hand exercises from every pedagogue. It did reveal each of the pedagogues’ beliefs about sound production and the books and materials that they use to help their students achieve a better tone. Further transcript analysis revealed a listing of seventeen concepts that participants identified in their discussion. In some cases, multiple pedagogues expressed similar themes. Five of the pedagogues named bow speed, bow contact point,¹ and used imagery in conveying their approach with students. Four of the pedagogues mentioned bow weight and ring tones. Three of the pedagogues related string playing to singing. Only one or two pedagogues mentioned the remaining concepts.

¹ The term “contact point,” in this instance, includes the following similar terms: sounding point and highways or lanes.
Can the Ideas of These Studio Pedagogues Be Adapted for a Heterogeneous School String Class? If Yes, to What Extent?

The three pedagogical routines developed in this study reflect the ideas of the studio pedagogues, the books and materials referenced in the interviews/correspondence, and the literature review. While seven of the respondents (78 percent) found that the exercises work equally well for violin, viola, cello, and double bass students, the attempt to adapt exercises for double bass students using a German bow met with mixed results. I did not ask participants to clarify whether or not their bass students used French or German bows. Perhaps the exercises worked better for the bass students with French bow holds, but not the German holds. Participant B wrote, “It was confusing at times for the basses with German bows.” Participant D indicated that the exercises worked equally well, but clarified that “some adjustments [were] implemented for German bow holds.”

In conclusion, the response to the second question is “yes” with limitations. The concepts and exercises from the private studios of string pedagogues can be adapted for heterogeneous school string classes. The extent of such adaptations, however, may vary depending on the complexity of the concept. In other words, some ideas will work better than others. Furthermore, some ideas will transfer verbatim while others may need modification. As one example, double bass students using the German bow hold need careful consideration. Exercises for these students may require additional modifications to implement.

How Useful Did School Orchestra Directors Find Such Exercises?

Based on the follow-up interviews, the respondents:

- Primarily used the exercises as a warm-up near the beginning of class.
- Spent between two to twenty minutes per class on them.
• Found that the exercises, when presented in an age/ability appropriate manner, worked for students in grades 6-12. Older students, however, “picked up on it quicker.”

• Varied in their opinion of which exercises were most useful.

• Plan to use some or all of the exercises in the future.

• Varied in whether or not they had previously used similar exercises.

• Believed the exercises seemed to improve the players’ tone.

• Were able to apply the exercises to the music they were performing.

All the participants used the exercises during warm-up activities near the beginning of class. Eighty-six percent used them in conjunction with scales. Although the teachers varied in their opinion of which exercises were most useful, more teachers (71 percent) mentioned Changing Bow Lanes than any other exercise. All participants applied the exercises to the music they were performing. Participant I described how he used the changing lanes exercises to rehearse Benjamin Britten’s Simple Symphony:

The sounding point exercises, C and D, actually all four of them with crescendo/diminuendo, I used for rehearsing the Sentimental Sarabande, of the Britten—Simple Symphony. That has three beats of crescendo/diminuendo in the inner voices at the beginning.

Participant D’s comments characterize the usefulness of the exercises:

This has helped our program immensely. . . . The kids now, when they play, they know whether it’s a scale or playing by ear or repertoire or whatever. They know that tone has to be the most important thing. If you don’t have a good tone, who cares?

That the participants implemented the exercises as a component of their warm-up routine, often in conjunction with scales, seems to support the analogy between a string player’s so-called tonalization and a singer’s vocalization. Singers use
vocalizations/warm-ups to “prepare the voice for singing.” Such use speaks to the foundational role that a beautiful tone plays in all music-making. The literature review for this study, however, noted a void of right-hand exercises for the school string teacher. Throughout this research, string teachers view sound production in vocal terms, in essence equating the string player’s right hand to the singer’s voice. Although beyond the scope of this investigation, school choral teachers, it would seem, have more published exercises available to help them develop the sound of their ensembles than do their string teacher counterparts.

**Comparative Findings**

More than three decades ago, Paul Rolland had a similar, but more comprehensive, vision for teaching fundamental string skills to school-aged students. His lifetime of research culminates in *The Teaching of Action in String Playing* and the accompanying seventeen color films. Rolland attempts to shift “emphasis from the ‘teaching of notes and tunes’ to the teaching of basic concepts and ideas.” Marla Mutschler, Rolland’s research associate, avows: “Paul synthesized that which was the best from previous violin traditions and treatises with his theories and incorporated them into an approach that is applicable in the 20th century.”

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4 Fanelli, “Paul Rolland: His Teaching Career and Contribution to String Pedagogy and Education,” 226.


6 Fanelli, “Paul Rolland: His Teaching Career and Contribution to String Pedagogy and Education,” 272.
To help improve the performance quality of school string classes, Rolland collaborated with cellist Margaret Rowell and double bassist Edward Krolick resulting in a heterogeneous string class method, but the complexity and newness of the materials contributed to their gradual disuse. Collegiate music educator Judy Palac, a former student of Rolland’s at the Illinois Summer Youth Music camps and current faculty member at Michigan State University, states: “I do not believe that Rolland’s influence was as widespread in the 1970s as perhaps it is today, partially because he did not publish a public school method book series that was easy to use.” Rolland’s University of Illinois String Research Project and the present study attempt to raise the education level of string teaching through purposefully and methodically building student skills.

**Issues**

The issue of a teacher’s pedagogical priorities and method relates to this study. Even among teachers who emphasize sound, not all achieve results through prescriptive exercises. This premise may explain why some of the studio pedagogues struggled to articulate exercises in their interview. As a contrasting example, Karen Tuttle, “unquestionably a living legacy in the world of viola pedagogy,” appropriates the word *coordination* to describe her approach. She summarizes her philosophy:

> To integrate and fulfill what a healthy mind and body dictate is to live to full capacity. Few are so fortunate. Our struggle and discipline as artists is to keep open

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8 Fanelli, “Paul Rolland: His Teaching Career and Contribution to String Pedagogy and Education,” 266.

9 Ibid., 325.

and alive the center of our feeling. We must respect and trust it profoundly, for it is our only genuine sounding board, and the only honest way in which we can project.\textsuperscript{11}

Tuttle’s whole-body, gestalt approach to string playing and pedagogy simply cannot be reduced to the kind of exercises or routines that serve as the basis of this research project. Likewise, the physical efficiency\textsuperscript{12} advocated by Jeffrey Solow or the “specific movements that correlate with tempo and rhythm to produce sound and articulation,”\textsuperscript{13} as espoused by Marilyn Seelman also demand a more comprehensive pedagogical approach than afforded by a Galamian-style technical routine.

The finding that Participants E and G had not previously used any of the exercises and did not continue to use them after the initial two-week trial may suggest that the teaching style of these individuals, in general, relies less upon prescriptive teaching methods. As previously stated, not all studio pedagogues achieve results through prescriptive exercises. School string teachers, likewise, may vary in their teaching approaches. In their questionnaire responses, however, both of these participants reacted favorably to the exercises.

**Implications for Music Education**

The belief that heterogeneous school string classes should prioritize the skill development of students ahead of rehearsing music for the next concert has philosophical implications for music education. Bennett Reimer writes, “A goal is needed which focuses efforts toward something more satisfying than another concert, more meaningful

\begin{itemize}
\item \textsuperscript{12} Jeffrey Solow, “Physically Efficient String Playing,” *Seminars in Neurology* 9, no. 2 (1989), 119-121.
\item \textsuperscript{13} Seelman, “From Technique-Driven Sound to Sound-Driven Technique,” 86.
\end{itemize}
than another contest, more important than another class.”¹⁴ Equipping string students with the prerequisite right-hand skills to perform music expressively may improve student satisfaction and possibly reduce dropout. By drawing attention to selected right-hand techniques, secondary string students can perform with improved tone quality and school orchestras will benefit from a more mature sound. Demonstrating that string students can learn these techniques in classes may help advance the argument that stringed instruments have application to all students and therefore belong in the school curriculum.

The goal of a secondary school music program is not necessarily to produce collegiate music majors. If more students can attain a beautiful sound when they play, they will have more reason to continue playing beyond their high school years. Whether or not students make music a career or an avocation, they will achieve the goal of enjoying music,¹⁵ and thus this study has the potential to aid students in becoming life-long music-makers or, in the least, music-consumers or “aficionados.”¹⁶

Conclusions

A string player’s right hand shares similarities with the voice of a singer. Just as a singer vocalizes, a string player needs to tonalize or produce sound by a planned design. Studio teachers may emphasize a design for tone production with their students. Further, these teachers may use prescriptive pedagogical exercises and routines to convey their ideas. Such exercises offer suitable material to adapt for use in heterogeneous school


string classes. Adapting these exercises for the heterogeneous school string class offers classroom teachers a welcome resource. Method/technique books currently available for the heterogeneous school string class do not offer a systematic approach to developing the string player’s right hand. Lacking additional resources, developing the right hand requires a nearly missionary zeal on the part of school string teachers and their students.

**Suggestions for Further Research**

The following questions could help guide future research:

1. How would the results of a pretest/posttest control group design compare to the present study?
2. Are the exercises more useful for players who do not take private lessons?
3. In what ways can teachers apply the exercises to the music being rehearsed?
4. How can the exercises better meet the needs of bass players using the German bow?
5. Would the exercises prove more or less useful in average, instead of exceptional, string programs?
APPENDIX A
FIRST COVER LETTER AND INFORMED CONSENT FORM
Dear

I am a doctoral fellow at the University of Florida (Gainesville) completing a Ph.D. in Music Education researching and writing a dissertation in partial fulfillment of the requirements for my degree. My topic involves researching, identifying, and describing the favored sound production exercises of selected violin, viola, cello, and double bass studio teachers. I hope to develop a set of research-based, master-pedagogue developed sound production exercises suitable for use in a heterogeneous high school orchestra class.

I am asking you to share with me your favored (right hand) sound production exercises. The phrase "favored sound production exercises" refers to the most used or preferred prescriptive teaching exercises or routines that you employ in the private studio to develop tone quality. In other words, when a new student enters your studio, what are the initial right hand (including the fingers and arm) exercises or routines that you are likely to prescribe to develop the student’s sound?

You may communicate the selected exercises or routines to me in whatever format seems most expeditious for you including but not limited to e-mail description or attachments, manuscript handouts, VHS or DVD video excerpts, and phone conversations. In the end, a combination of communication methods may prove to work the best. Regardless, I anticipate that we will need to maintain a correspondence about your submission to ensure that I have accurately captured the information.

Please return the signed release form in the enclosed stamped and addressed envelope at your earliest convenience. Completion of the final phase of my project is dependent upon analysis of the data you provide so I am asking that we complete your pedagogy portion by March 31, 2005. Given your expertise and prominence in string pedagogy, I look forward to receiving your commentary and thank you for your time and contribution.

Sincerely,

Kirk D. Moss
E-mail: mosskirk@mnstate.edu
Office Phone: 218-477-4099
Home Phone: 218-359-8467
Web Page: http://www.mnstate.edu/music/orch/Orcindex.html
Informed Consent

Protocol Title:
The favored sound production exercises of selected violin, viola, cello, and double bass pedagogues: An analysis and adaptation

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study:
The problem of the study is to research, identify, and describe favored sound production exercises of selected violin, viola, cello, and double bass studio teachers.

What you will be asked to do in the study:
I am asking you to share with me your favored (right hand) sound production exercises. The phrase “favored sound production exercises” refers to the most used or preferred prescriptive teaching exercises or routines that you employ in the private studio to develop tone quality. In other words, when a new student enters your studio, what are the initial right hand (including the fingers and arm) exercises or routines that you are likely to prescribe to develop the student’s sound?

You may communicate the selected exercises or routines to me in whatever format seems most expeditious for you including but not limited to e-mail description or attachments, manuscript handouts, VHS or DVD video excerpts, and phone conversations. In the end, a combination of communication methods may prove to work the best. Regardless, I anticipate that we will need to maintain a correspondence about your submission to ensure that I have accurately captured the information.

Time required:
The time required will vary among participants, but is estimated to be one to four hours.

Risks and Benefits:
There are no anticipated risks, compensation or other direct benefits to you as a participant in this study. You are free to withdraw your consent to participate and may discontinue your participation in the study at any time without consequence.

Compensation:
No compensation is offered for participation.

Confidentiality:
Your input to this research will be recognized in conjunction with the exercises you contribute. A brief biographical sketch will also be included in the appendix of the final document.

Voluntary participation:
Your participation in this study is completely voluntary. There is no penalty for not participating.

Approved By
University of Florida
Institutional Review Board 02
Protocol # 2005-U-0082
For Use Through 1/31/2006
Right to withdraw from the study:
You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:
Principal Investigator:
Kirk D. Moss, Doctoral Fellow in Music Education, University of Florida (Gainesville)

WORK:
Minnesota State University Moorhead
1104 Seventh Avenue South
Moorhead, MN 56563
Office: (218) 477-4099
E-mail: moskirk@mnstate.edu

HOME:
1218 18th Street South
Moorhead, MN 56560
Home: (218) 359-0467
E-mail: kdmoss@bsnl.net

Research Supervisor:
Timothy S. Brophy, Ph.D., Music Education, University of Florida (Gainesville)

WORK:
School of Music
University of Florida
P.O. Box 117900
Gainesville, FL 32611-7900
Office: (352) 392-0223
E-mail: tbrophy@arts.ufl.edu
Fax: (352) 392-0461

Whom to contact about your rights as a research participant in the study:
UFIRB Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; ph 392-0433.

Agreement:
I have read the procedure described above. I voluntarily agree to participate in the
procedure and I have received a copy of this description.

Participant: ___________________________ Date: ___________________________

Principal Investigator: ___________________________ Date: ___________________________

Approved By
University of Florida
Institutional Review Board 02
Protocol # 2005-U-0082
For Use Through: 1/31/2006
APPENDIX B
SECOND COVER LETTER AND INFORMED CONSENT FORM
Dear

I am a doctoral fellow at the University of Florida (Gainesville) completing a Ph.D. in Music Education researching and writing a dissertation in partial fulfillment of the requirements for my degree. My topic involves researching, identifying, and describing the favored sound production exercises of selected violin, viola, cello, and double bass studio teachers. I hope to develop a set of research-based, master-pedagogue developed sound production exercises suitable for use in a heterogeneous high school orchestra class.

I am asking you to field test a sampling of favored sound production exercises of selected violin, viola, cello, and double bass studio teachers as adapted for heterogeneous school string class. The phrase “favored sound production exercises” refers to the most used or preferred prescriptive teaching exercises or routines employed in the private studio to develop tone quality (exclusive to the right hand including the fingers and arm).

My expectation is that you will integrate the sample exercises into your normal string class teaching routine over a two-week trial period. The exercises should be implemented with advanced middle school or high school aged students. At the end of the trial period, you will be asked to complete and return a brief questionnaire summarizing your perceptions as to the applicability and effectiveness (or potential effectiveness) of each exercise to meet a pedagogical need by further developing the sound of your ensemble.

Please return the signed release form in the enclosed stamped and addressed envelope at your earliest convenience. Completion of the final phase of my project is dependent upon analysis of the data you provide so I am asking that we complete your questionnaire by June 1, 2005. Given your expertise in string teaching, I look forward to receiving your commentary and thank you for your time and contribution.

Sincerely,

Kirk D. Moss  
E-mail: mosskirk@mnstate.edu  
Office Phone: 218-477-4099  
Home Phone: 218-359-0467  
Web Page: http://www.mnstate.edu/music/orch/Orchindex.html

Approved By  
University of Florida  
Institutional Review Board 02  
Protocol # 2005-U-0082 (Revised 4/28/05)  
For Use Through 01/31/2006
Informed Consent

Protocol Title:
The favored sound production exercises of selected violin, viola, cello, and double bass pedagogues: An analysis and adaptation

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study:
The problem of the study is to research, identify, and describe favored sound production exercises of selected violin, viola, cello, and double bass studio teachers.

What you will be asked to do in the study:
I am asking you to field test a sampling of favored sound production exercises of selected violin, viola, cello, and double bass studio teachers as adapted for heterogeneous school string class. The phrase “favored sound production exercises” refers to the most used or preferred prescriptive teaching exercises or routines employed in the private studio to develop tone quality (exclusive to the right hand including the fingers and arm).

My expectation is that you will integrate the sample exercises into your normal string class teaching routine over a two-week trial period. The exercises should be implemented with advanced middle school or high school aged students. At the end of the trial period, you will be asked to complete and return a brief questionnaire summarizing your perceptions as to the applicability and effectiveness (or potential effectiveness) of each exercise to meet a pedagogical need by further developing the sound of your ensemble.

Time required:
The time required may vary among participants, but is estimated to be between five to ten minutes per class for two-weeks.

Risks and Benefits:
There are no anticipated risks, compensation or other direct benefits to you as a participant in this study. You are free to withdraw your consent to participate and may discontinue your participation in the study at any time without consequence.

Compensation:
No compensation is offered for participation.

Confidentiality:
Your input to this research will be recognized in conjunction with the questionnaire you complete. A brief overview of your orchestra program will also be included in the appendix of the final document.

Voluntary participation:
Your participation in this study is completely voluntary. There is no penalty for not
participating.

Right to withdraw from the study:
You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:
Principal Investigator:
Kirk D. Moss, Doctoral Fellow in Music Education, University of Florida (Gainesville)

WORK:
Minnesota State University Moorhead
1104 Seventh Avenue South
Moorhead, MN 56563
Office: (218) 477-4099
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HOME:
1218 18th Street South
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Home: (218) 359-0467
E-mail: kdmoss@bsn1.net

Research Supervisor:
Timothy S. Brophy, Ph.D., Music Education, University of Florida (Gainesville)

WORK:
School of Music
University of Florida
P.O. Box 117900
Gainesville, FL 32611-7900
Office: (352) 392-0223
E-mail: throphy@arts.ufl.edu
Fax: (352) 392-0461

Whom to contact about your rights as a research participant in the study:
UFIRB Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; ph 392-0433.

Agreement:
I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Participant: __________________________ Date: ______________

Principal Investigator: __________________________ Date: ______________
Professional Biography of Violinist Brian Lewis

Named National Artist of the Year in 1998 by Young Audiences, Inc., Brian Lewis has established himself as one of America's most gifted and charismatic young artists. Acclaimed performances include concerto debuts in both New York's Carnegie Hall and Avery Fisher Hall, as well as performances with the Berlin (Germany), Wichita, Syracuse, Amarillo, Greenwich, Fort Wayne, Topeka, Hartford, Cedar Rapids, Saginaw, Eugene, Sioux City, and American Symphony orchestras, among others. In Asia, Mr. Lewis has appeared as soloist with the Taejon City Symphony in Korea, the Royal Metropolitan Orchestra in Japan, and the Taipei Conductors Orchestra in Taiwan. Activities in Central and South America include a residency in San Jose for the U.S.-Costa Rican Cultural Center, recitals and master classes throughout Honduras for the United States Information Agency, and concerto performances with the Philharmonic of Lima in Peru. His numerous solo recitals include performances in Australia, Canada, Denmark, England, the French West Indies, Puerto Rico, the Mostly Mozart Festival in New York, and cities across the United States. Recently, Mr. Lewis made highly acclaimed recital debuts at both Wigmore Hall in London, and New York's Lincoln Center on the Great Performers Series. Radio and television appearances include performances on WNYC, WFMT (Chicago), National Public Radio, and CBS "Sunday Morning" in a feature story on Dorothy DeLay. He has also performed at the Aspen Music Festival, the Sunflower Music Festival, the St. Barth's Music Festival, the Casals Series, the Cape May Music Festival, the Evian Music Festival as soloist with the Juilliard Orchestra conducted by Mstislav Rostropovich, and at the Cabrillo Festival performing The Red Violin for composer John Corigliano's 60th birthday celebration. An advocate for music education in the schools, Mr. Lewis frequently presents concerts, workshops, and master classes for Young Audiences of Houston. Mr. Lewis is Associate Professor of Violin at The University of Texas at Austin School of Music where he is the Fellow to the David and Mary Winton Green Endowed Chair in String Performance and Pedagogy. He is also the Artistic Director of the Starling-DeLay Symposium on Violin Studies at The Juilliard School in New York City.

Mr. Lewis has won numerous young artists' competitions, including the grand prize in the Mid-America Violin Competition. In addition to the Waldo Mayo Talent Award, he holds Juilliard's Peter Mennin and William Schuman Prizes for outstanding achievement and leadership in the field of music. Mr. Lewis was one of the first recipients of the Sony ES Award for Musical Excellence, and he has received an Elizabeth B. Koch Fellowship, a career development grant awarded by the Kansas Cultural Trust. Known for his variety in programming and ability to communicate with audiences of all ages, Mr. Lewis has
performed frequently as a member of the Kansas Arts Commission Touring Program and the Mid-America Arts Alliance Regional Touring Program. As a student of Eleanor Allen, Mr. Lewis began his violin studies at the age of four, and participated in the Ottawa Suzuki Strings program under the direction of his mother, Alice Joy Lewis. He later studied with Tiberius Klausner, and twice traveled to Japan where he studied with Dr. Shinichi Suzuki at the Talent Education Institute in Matsumoto. He holds both the Bachelor and Master of Music degrees from The Juilliard School, where he was a scholarship student of Dorothy DeLay, Masao Kawasaki, and Hyo Kang. Mr. Lewis has also recorded three CD's, most recently "The Music of Robert Avalon" on the Centaur Records label.

**Phone Interview with Brian Lewis**

July 27, 2005

For me, it’s tone, not just sound production. There’s a semantic difference between the two words that I like; they are not interchangeable. Sound is the basis of what we do. People relate to the sound. With my students, I use analogies to singers—in all genres. Our instrument voice comes alive through our sound. That is our voice, just like our vocal chords.

Even with my most advanced students, I use Suzuki’s *Tonalization* to emphasize ring tones and overtones. I have the students physically watch the string vibrate. Any note has three [pitch] locations. We are aiming for the center, but have higher or lower depending on the context within the scale. Like a *Twinkie* [snack food] with a cream center, we want the creamy center of the tone. Start with whole bows, then a quarter note followed by two eighth notes (full bow, quarter-quarter distribution). Students play the tonalizations in first, second, third, fourth, and fifth positions, maintaining the ring tones. Next we apply the ring sounds to the G-major scale. Then we examine the other tones, such as placing the leading tone. Intonation has a certain ebb and flow.

Next I use the Ysaïe string crossings from *Exercises and Scales* (edition by Szigeti). The balance of the right elbow is key. Students really don’t make a big enough difference between the string levels. Each string has three potential angles or elbow positions: (1) to the right of the string; (2) centered; and (3) to the left of the string.

In terms of solo repertoire, I use the Kreisler *Tempo di Minuetto* or the slow movement of a concerto. My goal is to immerse students into the concept of sound as being the most important element. Most students need to refocus on the fine art of the right hand; that is getting lost today.

Going back to the ring tones, they play what I call, “Advanced Ring Tones (A-R-T).” These continue the listening and develop the “fastest ears.” Vibrato amplifies the ring tones and we practice how to best apply the vibrato for maximum tone.
Miss Delay worked with her students on the sounding point. She had us stay on a forte sounding point but with piano weight so the overtones are still there. A quality sound has overtones. As a performer we represent the composer’s voice as well as where the music is going. There is a weight difference between playing Mozart and Tchaikovsky, but both require a quality sound. Quality sound equates to a successful performance.

Delay had us work on a G major scale with a forte sounding point but piano weight gradually increasing the weight while staying on the same sounding point. The goal is maximum string vibration or finding the “golden” or “sweet spot.” I think of the sound point as a highway à la Suzuki’s “Kreisler Highway.” Then we’d start piano to forte, followed by each gradation, e.g., piano, mezzo piano, mezzo forte, forte. Keeping the sounding point constant translates into power in front of an orchestra.

Regarding weight, she worked with me on the opening of the Saint-Saëns Concerto No. 3 in B-minor. She wanted me to have the same intensity with more air in the sound. I practiced with flat hair, a straight bow, and a whistle tone. Not weight, but bow speed. With my students, we use chalk to mark the bow in quarters and practice full bow, quarter-quarter, etc., like Galamian.

I should also mention that I like to take the student away from the mechanics and into their imagination. Practice for tone color. I have students close their eyes and envision what the color blue would sound like and then play a passage; now change it to brown. Think about tone as color. Imagination is the key to ownership of tone production.

Professional Biography of Violinist Stephen Shipps

Stephen Shipps, M.Mus., studied with Josef Gingold at Indiana University. He also studied with Ivan Galamian and Sally Thomas at the Meadowmount School and with Franco Gulli at the Academia Chigiana in Siena, Italy. He is a former member of the Meadowmount Trio and the Amadeus Trio and has appeared as soloist with the symphony orchestras of Indianapolis, Dallas, Omaha, Seattle and Ann Arbor, as well as the Piedmont Chamber Orchestra and the Madera Bach Festival. He has been a member of the Cleveland Orchestra, Associate Concertmaster of the Dallas Symphony and Concertmaster of the Dallas Opera, Concertmaster and Associate Conductor of the Omaha Symphony and the Nebraska Sinfonia, and guest Concertmaster for the Seattle and Toledo symphony orchestras. Mr. Shipps has recorded for American Gramophone, Bay Cities, NPR, RIAS Berlin, Hessiche Rundfunk of Frankfurt, Melodiya/Russian Disc and Moscow Radio. His work on the Mannheim Steamroller Christmas Albums has yielded a dozen gold and two platinum records. He has adjudicated major national and international competitions for three decades and serves on the International Advisory Panel for the International Violin Competition of Indianapolis and Board of Directors of the Sphinx Competition. He is former Director of the American String Teachers Association National Solo Competition. Prior to joining the University of Michigan
faculty in 1989 he served on the faculties of Indiana University, the North Carolina School of the Arts, and the Banff Centre in Canada. He currently serves as Associate Dean for Academic Affairs and Professor of Violin.

**Phone Interview with Stephen Shipps**

May 17, 2005

Related to sound production, educator Bob Phillips worked with me for one year and put a session together for ASTA. See his outline [*The 3 B’s: Setting the Tone Right from the Beginning*].

In terms of my background, Gingold was my main teacher. I studied with his assistants in high school and saw him once a month. He taught at a very artistic level. Technically, we worked in great detail on the left hand and then he sent me to Meadowmount with Galamian [for the right hand]—although I primarily worked with one of Galamian’s assistants, Sally Thomas. We played étude after étude: Gavinies, Dont, Paganini, among others. My own research with DeLay pointed me toward Dounis. She had studied with both Galamian and Dounis, though they were at opposite ends of the spectrum. As a physician, Dounis knew the muscles. Dounis held the bow differently. Galamian was influenced by Capet.

Resource books include:
- Ševčík, Op. 3 with the bowing variations
- Galamian
- Dounis (the Valborg Leland book)
- Flesch, Art of Violin
- Auer, Book I

In terms of specific exercises, collé is the staple of the Galamian world. We would warm-up every day with collé. Playing it slowly was more important than fast, and we would do it in all parts of the bow: all ups, all downs, then back and forth. He prioritized détaché, staccato, martelé, and collé.

**Professional Biography of Violinist Shi-Hwa Wang**

Shi-Hwa Wang has been concertmaster of half a dozen professional orchestras including the Taipei Symphony Orchestra in Taiwan (1997-98) and is currently concertmaster of the Ballet West and Utah Chamber Orchestra in Salt Lake City and the Classical Music Festival Orchestra in Eisenstadt, Austria (every summer).
Shi-Hwa Wang is a graduate of Soochow University, Taiwan where he studied violin with Cheu-Sen Chen. He holds Master of Music and Doctor of Musical Arts degrees from the University of Illinois (Champaign-Urbana) where his teachers included Yuri Mazurkevich, Catherine Tate, and Peter Schaffer. During the summer of 1985 he studied with the late Raphael Bronstein in New York. In 1988-90 he studied string pedagogy and violin with Robert Culver and Paul Kantor at the University of Michigan. He studied with Camilla Wicks and Stuard Canin at the San Francisco Conservatory of Music during his sabbatical in 2002. He also performed in master classes for Jaap Schroeder, Edward Melkus, Gerald Fischbach, Igor Ozim, Ivan Straus, Donald McInnes, and Camilla Wicks.

Dr. Wang has been the violinist with the Essex Piano Trio at Wayne State University, and concertmaster of the Melkus Ensemble, Scandinavian Symphony Orchestra, Ann Arbor Symphony Pop Orchestra, and Illinois Opera Theater. In 1994, concert tours by the Formosan Duo and Wasatch Piano Trio included performances at the National Concert Hall in Taipei, cities of Kaohsiung, Taichung, Singcheu, and at the University of Singapore. He has performed as guest concertmaster/soloist with the Oklahoma Philharmonic Symphony Orchestra, Taipei Symphony Orchestra, Kaohsiung City Symphony Orchestra, Weber State University Symphony Orchestra, and New American Symphony Orchestra. A performing tour as soloist with the Weber State Symphony Orchestra brought him to Shanghai, China in March 2000.

He is a founding member of the Formosan Violin-Piano Duo and the Wasatch Piano Trio and the Kismarton String Quartet. He has done teaching and performing at the University of Michigan's American String Workshop, the Eastman School of Music's Summer Music Academy, and the University of Illinois. He was also on the faculty of the International Workshops at Graz, Austria in 1996 and Stavanger, Norway in 1997, and the Banff International Youth Orchestra Festival in Canada. He has been invited to adjudicate and conduct master classes in the Kiwanis Festival in Calgary, Canada in 1997 and 2002.

Considered as one of the most prolific violin teachers of his generation, Dr. Wang's violin students have been in the national finals of the Music Teachers National Association Performance Competitions three times. Many of his students are state competition winners of the Utah Music Teachers Association and the Utah American String Teachers Association. Every year his students are represented in the Concerto Night Concert of the Weber State University Orchestra. A resident of Ogden, Utah where he has been a violin professor of the Weber State University since 1990, Dr. Wang has students not only active as performers and teachers around the state of Utah, many have gone on to graduate schools for their Master of Music or Doctoral of Musical Arts degrees. Dr. Wang is a past president of the Utah American String Teachers Association with National School Orchestras Association (ASTA with NSOA) and the Educator of the Year recipient for 2003-2004.
Phone Interview and E-mail Communication with Shi-Hwa Wang

April 9, 2005

Time is a problem for the class string teacher. They may have ideas about how to develop the right hand, but can’t do it because there is not as much time as is needed. Good musicianship is the key to teacher success. The teacher must play well.

Books that Shi-Hwa Wang uses to address right hand technique include:

* Basics* by Simon Fischer
* The Principles of Violin Playing and Teaching* by Ivan Galamian
* The Art of Violin Playing* by Carl Flesch
* Contemporary Violin Technique—Part II: Bowing and Rhythm Patterns* by Ivan Galamian
* Kreutzer—42 Studies or Caprices*: No.2; No.5; No.7; No.8; No.13 (Bach Suite)
* Dont—24 Etudes and Caprices, Op.35*: No.1 (triple stops); No.10 (collé); No.19 (ricochet)
* Ševčík—40 Variations, Op.3:
* Ševčík—Op.2 (School of Bowing Technic) Part I: after No.7 go to Kreutzer; Part II not necessary
* The Art of Bowing* by Tartini
* The Artist's Studio for Strings: Bowing Development Studies* by Frank Spinosa and Harold Rusch
* The Etudes-Caprices*, Op.10 by Henryk Wieniawski: applications (real pieces) of *sautille*, *staccato*, etc.
* Paganini—24 Caprices*
* Dictionary of Bowing and Pizzicato Terms* by Berman, Jackson, and Sarch

These are just some thoughts on tone production:
A lot is dependent on how sensitive the student is for tone quality production, but the very first thing of having a good tone has to come from a straight bow and the use of the full bow. I inherit many transfer students [at the university] who come with the so-called "Russian" bow grip where the pinky is very stiff or "straight." This bow grip prevents the student from bowing straight because the right hand pinky is pushing the bow tip towards the body. I also have students who cannot keep the right hand firm and play with loose fingers so the bow stick is loosely running among the fingers. There are also students who are very "unmusical." So even when they are bowing straight their tone is coarse. Only if the student wants to play sensitively can they produce a good tone.
Professional Biography of Violist Kathryn Plummer

Kathryn Plummer, violist, is widely recognized for her recital artistry throughout the United States and Europe. She has performed as soloist at the National Gallery of Art in Washington, DC, on National Public Radio, and in Alice Tully Hall. She gave the world premiere of Variations for Viola, Harp and Strings by Alan Shulman at the XIV International Viola Congress and was a featured soloist with the XXIII International Viola Congress. She has appeared as soloist with the Nashville Symphony Orchestra and has performed with the Smithsonian Chamber Players in Washington, DC, the Seattle Chamber Music Festival, the St. Cere Festival in France and the Sitka Chamber Music Festival in Alaska. Each summer she performs with the Festival der Zukunft in Switzerland and the Chamber Music Festival in Heber Springs, Arkansas with the Kapelle Trio. Ms. Plummer has taught at the Aspen Music Festival, the Curs Internacional de Musica de Vic in Spain and the Wahlwieser Musikwochen Festival in Germany.

Ms. Plummer studied with David Dawson at Indiana University and with Walter Trampler at the Juilliard School. She was Assistant Principal Violist with the Cincinnati Symphony Orchestra and Principal Violist with the Aspen Chamber Orchestra and the Peninsula Music Festival Orchestra.

Ms. Plummer is an Associate Professor of Viola at the Blair School of Music, Vanderbilt University. She has also been on the faculty of the Oberlin Conservatory of Music, Oberlin College. She is a frequent adjudicator with national string competitions.

As former violist of the Blair String Quartet, she recorded several highly acclaimed albums and presented several world premieres. Ms. Plummer has recorded for the Orpheus, Red Mark, Varese Sarabande, Pantheon and Gasparo labels. Her live performance of the Telemann Viola Concerto from the Festival der Zukunft was issued on CD. She plays a viola made by Giovanni Grancino in 1707 in Milan.

Ms. Plummer is especially interested in developing exercises, methods and tools which allow string players to safely and efficiently increase their technical abilities. In 1994 she received a US Patent for her invention The Practice Bow. This unique device enables students to better learn how to draw the bow in a parallel path to the bridge.

More recently, she designed a device to isolate and practice all the motions in the left hand, simply called The Fingerboard. It can be carried in a purse, small backpack or even in a coat pocket. According to Ms. Plummer, “Necessity is the mother of all inventions . . . I designed The Fingerboard when I was making radical left hand position changes. I needed and wanted to practice and reinforce the changes at every opportunity I had. As a busy teacher, performer and parent, I knew there were not enough hours in a day to devote to successfully making these changes so I came up with the idea of an easily accessible device that could be held while I read books, watched television, talked on the phone, watched my kids at the park, flew on airplanes, sat in the hook up line at my children's school, etc. The progress I made replacing old muscle memory with new better
habits was quick and secure and without any strain to my hand. I had always played with a very stiff 4th finger and by using The Fingerboard, I was able to align and strengthen my fourth finger during "off hours" of practice without decreasing time reserved for learning new music and rehearsing. Whether making big or little changes in finger alignment, vibrato, finger actions, double stops, shifting, etc. or simply wanting to find an easy way to stay injury free and maintain muscle tone and fingertip calluses, The Fingerboard works. You'll find your strength, flexibility, endurance and athleticism on the fingerboard greatly improve as you use The Fingerboard while the time spent does not take away from your designated practice routine.”

**Phone Interview with Kathryn Plummer**

May 12, 2005

These are my favorite tonal exercises I teach my students; even my most advanced students find them beneficial.

There are many string players who achieve very good tone, but few achieve tone that is really special because their pitches don’t truly ring to full capability. Beautiful tones resonate within the instrument and marvelously project; each pitch has its own unique character and identity. To help students realize each tone’s unique ring and character, I do the following exercises:

1) The student holds the instrument in playing position and places a finger on an easily ringing tone: for example, G above middle C (easily ringing because of the adjacent open G-string). I bow the student’s instrument while experimenting with the variables of sound . . . bow speed, weight and point of contact. I continue drawing the bow experimenting until I find an intensely focused, perfectly ringing tone. I watch the student’s facial expression as he/she hears the sound ring (many students clearly have never heard this sound before and that new awareness is obvious by their expressions). Once a student hears it from his/her own instrument under their ears, I let them try to reproduce it on their own. As a student’s tone improves, we experiment getting less naturally ringing tones to ring such as B flat, F sharp, etc.

2) Another experiment I do with my students: I have each student hold the viola as if it were a cello. At first I demonstrate on my own viola playing it like a cello. As I play I tell them what I am doing with my bow (experimenting, changing the weight, speed, and point of contact). I play slow, full fingerboard length glissandi, up and down first on the D string with my left hand cupped over the string as if I was holding a small ball (curved, rounded fingers, no fingers collapsed). This left hand position is important so that there is a natural arm and hand weight into the string. Keeping the hand in the cupped position prevents the fingers from spreading apart during the glissandi thus weakening the natural gravity into the string. I emphasize how gravity works for both arms so naturally in the cello position. Occasionally I stop on a ringing tone during the glissando and apply my best vibrato. After the observation period, I have the student copy me on his/her
instrument using an open string (no glissandi). At first the student’s bow travels recklessly over many different sounding points and tends to be flimsy, but with time, the student begins to understand the necessary adjustments for better alignment and sound. Next I have the student put down a finger on the D string, cupping their left hand completely over the string to play the long glissandi up and down with a slow bow speed, heavy weight and a focused contact point. I direct him/her to experiment with bow speed and the other variables of sound and make appropriate corrections. We take turns matching sounds. This experiment is difficult for some students and I encourage the students to practice this exercise everyday until they can produce a great sound.

3) Next, I have the student hold the viola in the normal playing position and repeat the second exercise. There must be a heaviness of both arms, without becoming tight. Moving the left hand in glissandi helps the student stay loose in both left and right arms.

4) One other exercise: I have my students try to hear below the “string veneer sound” in a pitch—I think of pitches as having layers and that the top layer has a metallic string sound and the second layer under the top layer is the rich core tone, the “chocolate sound.”(Electronically produced tones also have an upper electronic, buzzing tone, but underneath is the true warm full tone). I tell the student to only listen deeply and disregard the top string pitch. I have the student play half steps between A and G-sharp to listen to how differently G-sharp sounds from A (on the D string in 3rd position). The chocolate sound has a tuning fork purity, fullness, no edginess. I tell them to imagine hearing the pure sounds of a glass harmonica, like the sound one gets by rubbing a wet finger around the top edge of a fine crystal glass. Some string players play listening to only the top of the sound instead of inside of it. When they hear below the surface of the overall pitch, tone and intonation greatly improve. Once they realize this special sound, they need to train themselves to hear it in all instances. Staying focused on that layer during fast playing is especially difficult.

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**Professional Biography of Violist Marilyn Seelman**

Marilyn Seelman is Assistant Professor of String Education at Georgia State University. She received her Doctorate of Musical Arts in Conducting from the University of Miami, Coral Gables, Florida and her Master of Music in Viola from Boston University. She has held the position of Director of Orchestras and Violist at Trinity University in San Antonio, the University of New Mexico-Albuquerque and Georgia State University, Atlanta. Dr. Seelman has served as Georgia All-State Conductor, been a faculty member at the Interlochen Arts Camp and is listed in the International Who's Who in Music. She is currently Music Director of the Metropolitan Youth Symphony Orchestra of Atlanta who has performed at Carnegie Hall, Mid-West Band and Orchestra Clinic, Piccolo Spoleto and Georgia Music Educators' Association. In March 2006, they will be performing in Beijing, China. She maintains an active viola studio and has adjudicated festivals throughout the United States. Her pre-college viola students continue to earn
principal chair positions in All-State and Governor's Honors Orchestras, place in the ASTA National Solo Competition, and have been accepted into prestigious music schools such as the Curtis Institute of Music and New England Conservatory. One of her former students, Jennifer Stumm, won the 2005 Primrose International Competition.

E-mail Correspondence from Marilyn Seelman

May 18, 2005

I was thinking about how I was going to explain my normal approach to new students who inevitably have bow issues. This appears to be universal. A new student played for me yesterday . . . there were obvious sound issues . . . and I mean as it relates directly to first, the bow hold and secondly the motion that is being produced as a result. You've heard me say many times that the bow is our voice . . . how we manipulate this voice/bow produces sound whether by chance or design. I try to encourage design that begins with the hold. The viola bow hold that I teach is different from traditional violin bow holds that often encourage pronation. My bow hold looks very much like a cello bow hold but with the pinky on top. I emphasize a balanced and shared responsibility of all fingers that sink into the string, from the knuckles, to cause the vibration that produce sound. The viola is different from the violin in that it does not speak as easily and does not respond well to force (pressing, especially with 1st finger) as the violin. We've all watched fine violinists who hold the bow and manipulate it in a manner we would not always advocate. I think these are "sound-driven" (see my recent AST article) individuals who have been taught traditionally with little attention to the bow as an instrument and who have found a way to produce the sound they hear in their head and heart.

After the bow hold, which, by the way, takes constant monitoring on the part of the student and me (this is the beginning of being a musical athlete, i.e., unlearning inappropriate position and movement, relearning appropriate position and movement and correct repetition until it becomes a natural position and movement of the bow). The emphasis is on "natural" since great emphasis is put on relaxation of the shoulder, jaw, upper arm; any place tension can manifest itself.

The second bow exercise I have them do is open strings. I first define for them the articulation we are practicing. I define the motion we will produce as connected (I feel that there are two basic articulations, with many variations, they are: connected and stopped—with the vast majority of bow sound having to produce a connected sound). This connected sound is produced from a flexible bow hand (described above) and at the frog on a down-bow that is led by the wrist. This is very important: the wrist leads the bow on a down-bow with the elbow level with the wrist. As the bow travels toward the tip the elbow is gradually elevated even more (mid-point of the bow to tip) in order to balance the weight and keep it constant. The transition of the bow, from the up-bow to down, is accomplished with an elevated elbow that pulls through—with flexible fingers and wrist.
In order for a sound to be connected there can be no stop to the sound which means the motion must not stop. The moving bow hand at the tip produces that motion as the wrist and bow hand produces the continuity of motion as it transitions at the frog. The speed of that motion is the same as the bow speed or slightly slower or there will be an accent to the sound. The motion of the hand and wrist is a small motion that matches the time and space of the bow transition. If the motion is too big for the amount of space and time in which it works, it will produce extraneous sound that is not compatible with this exercise. The neat thing about this movement (wrist and flexible hand) is that it also transitions into stopped motion, such as *spiccato* and *staccato*. This motion, being a small, short motion, is produced by starting on the string near the balance point of the bow to slowly produce an off the string stroke. Really it boils down to: Motion = space and time.

Also see:

**Professional Biography of Cellist Tanya Lesinsky Carey**

Tanya Lesinsky Carey, Cellist Artist Teacher at DePaul University, Roosevelt University, and Wheaton College in Chicago, has presented master classes and concerts in over thirty states and fifteen foreign countries. Her experience includes assistant principal of the Milwaukee Symphony, prize-winning recordings with the Rochester Philharmonic, concerts in Tully and Carnegie Halls, concerto performances, and recordings with the Lydian Trio. Education includes BM and MM from Eastman and DMA from the University of Iowa. Illinois ASTA awarded her the 1993 "Outstanding Studio Teacher of the Year" award. She is professor emeritus from Western Illinois University, teacher-trainer for the SAA, past-President of SAA, and listed in Who's Who in America. She has also taught at the University of Illinois SS, Michigan State University, Knox College, and the Meadowmount School. She has served on the boards of ASTA, ISA and SAA. She is associate principal of the Quad City Symphony and maintains an active schedule of clinics and workshops. She has trained teachers in 11 countries in South America.

**E-mail Correspondence from Tanya Lesinsky Carey**

May 12, 2005

**TONE PRODUCTION**

I feel you can't make a sound you don't hear in your head. The inner singing voice is crucial to fine tone production. Ask the student to sing the sound they want to make. You will often hear: (a) their natural voice; (b) an airy unsupported sound; and (c)
inappropriate articulation. Clarify the sound in the head and instantly the tone improves. Sometimes this means getting a young child to sing/think with a "Pavoratti" voice. Immediately the tone deepens.

Allied with this is listening to the sound. Ringing sounds of the resonance tones are "breakfast" for the cello. Play each of these twice followed by a rest to listen for the ring: A string D-4, D string G-4, G string C-4, G string A-1, C string D-1. When attention is drawn to produce the ringing/resonance sounds in simple pieces, the tone improves. This then should be the pattern for more complex pieces. I also love harmonics for tone production. If the harmonic is right, the tone production is right.

A third point is intonation. Tone quality and intonation are completely allied. One does not have a high level without the other.

A fourth point is experimentation and imagery. Playing basic simple pieces, patterns, and scales using the five different highways from the fingerboard to the bridge while learning to manage the differences in pressure/speed/contact point is useful in exploring tone color differences. The more simple the better: Twinkle (on different strings), French Folk Song, Chorus by Handel, scales. It doesn't really matter. It just needs to be simple for the ability level so they can focus on listening and the technique itself.

As to technical concerns, arm weight of course needs to be balanced on the string at all times. This means a supported/supportive body and free joints. A tight neck, out of balance head, and shoulder sockets that are not free de-contribute to good tone. There is an arch from the elbow to fingertips underneath the forearm that needs to be maintained to support the weight to produce the sound. Wrist up, elbow down disengages the direct weight and allows spiccatto and subito pianos to happen. Wrist engaged, elbow down, re-connects the major tone source. If you held the bow in playing position on the cello with two hands, one at the upper half and one at the frog the arms usually balance well. Next, pull back with the arms toward the center of the body while leaning forward with the body as in a quasi-rowing motion. This connects the whole body in tone production. Finally, the same feeling is achieved with only the right arm and body and the left hand/arm transferred to the cello string.

Professional Biography of Cellist Jeffrey Solow

Cellist Jeffrey Solow maintains a busy schedule traveling throughout the United States and Canada, Europe, Latin America, and the Far East as recitalist, soloist, chamber musician, and teacher. His concerto appearances include performances of more than twenty different works with the Los Angeles Philharmonic (also at the Hollywood Bowl), Japan Philharmonic, Seattle Symphony, Milwaukee Symphony, Los Angeles Chamber Orchestra, and the American Symphony (with whom he also recorded).
Mr. Solow has been guest artist at many national and international chamber music festivals and for 10 years he was a member of The Amadeus Trio. His has recorded for the Columbia, ABC, New World, Centaur, Delos, Kleos, Everest, Music Masters, and Telefunken labels and two of his many recordings were nominated for Grammy Awards. A prolific writer, Strad, Strings, and American String Teacher magazines have published his reviews and articles.

Mr. Solow was born and raised in Los Angeles where he studied with the distinguished cellist Gabor Rejto. Later, he earned a degree in Philosophy magna cum laude from UCLA while studying with and then assisting the legendary Gregor Piatigorsky at USC. Recognized as an authority on healthy and efficient cello playing, Mr. Solow is professor of cello at Temple University in Philadelphia.

**Phone Interview and E-mail Correspondence with Jeffrey Solow**

April 6, 2005

It is important to acknowledge that not all teachers emphasize sound. Some focus on the left hand. Phyllis Young is certainly a pedagogue whose ideas should be considered in your research.

Solow cited two articles he has written and one that summarizes a national conference session he gave as resources that covered the research topic in-depth. He also shared the handouts “Right Arm Principles” and “Right Arm Exercises” from a pedagogy course he teaches.

Also see:


**Right Arm Principles**

General principles:

- Basic bow arm theory: Player raises mass (arm) in gravity increasing its potential energy. As arm swings and bow moves, this potential energy is converted into kinetic energy. The cello transforms the kinetic energy it receives into another form of kinetic energy—sound. (It is analogous to a pendulum-powered clock: the arm swings
to and fro but doesn't continuously drop lower because the muscles keep "winding" it.

- Raising arm does not mean suspending (holding) weight and vice versa—the two are separate things.

- Arm "floats" on string like a boat on water (the boat is heavy but buoyant and gravity is always pulling it down even if the boat is rising up on a swell or with the tide).

- Cause and then allow the string to vibrate. It takes more energy to overcome inertia and set the string (and cello) vibrating at the beginning of a note than to sustain it. After beginning a note, get out of the way and let the note vibrate and ring—like striking a bell and letting it ring.

- Relaxation (promotes sensitivity but lack of control)—vs.—firmness (promotes control but lack of sensitivity). Start from too relaxed, add firmness until you reach the desired amount of control. Bow hold should be firmer when bow is in the air and more relaxed when bow is on the string. Primary function of "pinky" finger is to support the tip when the bow is in the air. This function basically disappears when bow is on the string (except in very soft dynamics or when bowing at the frog for prolonged periods).

Position and movement:
- Deltoid muscles raise arms, not trapezius muscles.

- Keep arm as low as possible without being too low. The elbow should never point up.

- Arm always "wants" to swing down and under, not up and over.

- Don’t lean on the cello. Your torso weight should go into the floor primarily through the chair and, when you need it, through the cello via your arms resting on the strings and fingerboard.

- Pronation of forearm is produced passively by holding upper arm at proper height and relaxing muscles which always the forearm to roll downhill towards the string, not by active rotation of forearm

- All parts of arm stay basically oriented in same plane in relationship to each other—No part of the arm (or bow) falls independently. Bow stays in a single plane on each string (don't "roll" around the string)

- Sensation does not always correspond to appearance—for example the player feels that the arm is being "held up" when playing at the frog and "let down" when approaching the tip, but the arm actually is lower at the frog and higher at the tip.

- Use as little weight as possible but much weight as necessary: hand weight first, then
forearm weight, and finally upper arm weight

- String's "point of view" (received weight/pressure) should remain constant—arm's "point of view" (applied weight/pressure) which must continuously change.
  - At frog: primarily the bow weight and hand weight rest on string with loose wrist and suspended arm weight (approx. 90% (?) hand/bow weight, 10% arm weight)
  - In upper half: primarily arm weight rests on string with firm wrist (approx. 90% arm weight, 10% hand/bow weight)
  - In middle of bow: a blend of (a) and (b)—a smooth transition between the two.

- Location of movement—large mass moves before small mass (see Gerhard Mantel Violoncello Technique)
  - Generally, whole (or long) bow strokes are initiated with the body and in the upper arm
  - Faster and shorter bow strokes predominantly involve movements further down the arm, in the forearm and the hand
  - Very fast bow strokes (sautillé) primarily use the hand and fingers (although the whole arm is moving in a wave motion)

- Fast bow strokes need a wrist that is loose enough to allow the motions in the various parts of the arm to be out of phase with each other

- Wrist and finger motions during bow changes are passive for most bow changes

- When the bow touches the string at the start of an initial stroke, the arm keeps moving continuously but the bow stops for an instant. (You should feel the weight of the bow itself at the moment of contact with the string.) Feel "touch/release" not "release/touch." Very soft attacks may be "touch/hold/release" or in prolonged pp "touch/hold."

**Right Arm Exercises**

1. a) Hang arm at side
   b) Rest arm on hip to feel 'directed' weight
   c) Relax upper arm muscles to let arm drop to side

2. a) Balance arm on fingerboard, without bow, starting at upper arm and moving progressively nearer to hand (distinguish between forearm weight and upper arm weight)
   b) Do the same with bow in loose fist
   c) Balance bow/arm on G and D strings; imagine that contact point is a ball bearing or wheel; allow balanced arm to move from to and fro rolling on the contact point (image of garden gate whose weight rolls along on a wheel as it opens and closes)

3. Balance arm on the string using extended index finger (Do the same holding a pencil instead of bow).
4. a) Hold bow in air on its side, feel pinkie finger balance weight of tip on fulcrum of thumb
   b) Rotate hand so that the bow hair is oriented down, feel fulcrum between forefinger and thumb

5. a) Hold bow in air, holding stick firmly counterbalancing tip with pinkie
   b) Set bow on string, wiggle string gently, feel the arm balance, allowing pinkie to release bow
   c) Lift bow and repeat to feel the pinkie support the tip

6. a) Hold forefinger of left hand out straight and grab it with right hand; push and tug on it. Notice which muscles in the right arm are working.
   b) Do the same with bow instead of forefinger

7. a) Hold bow in air with left hand, move right hand above bow
   b) Lower right arm to drag hand on bow from friction
   c) Rest bow on string; move right arm; feel hand dragging from friction

8. a) Grab bow with left hand before each bow change
   b) Feel friction from string contact accomplish the same

9. “Elephant Trunk”—stand leaning over slightly with arms dangling loosely. Shift torso weight from side to side and feel arms begin to swing on their own (and out of phase because they have a different period of oscillation). Then swing whole arm freely in a horizontal plane at shoulder height.

10. Raise elbows without raising shoulders (deltoid muscles vs. trapezius)

11. 'Suspend' arm with forearm horizontal and hand dangling; raise and lower arm, keeping forearm in same plane (don't raise shoulder)

12. a) Suspend arm as in #11; lower arm to feel hand weight on thigh
    b) Feel forearm weight on thigh (notice necessity to firm up fingers)
    c) Feel upper arm weight on thigh

13. a) Hold bow vertically in air in loose fist; toss vertically to feel relaxation of hand and fingers allowed by weightlessness
    b) Hold bow horizontally in air in loose fist; "toss" from place to place horizontally in ballistic arc
    c) Do the same with normal bow hold

14. a) Bow legato strokes holding bow in fist (let stick angle toward floor)
    b) Bow legato strokes holding bow between thumb and forefinger
15. a) Bow short legato strokes at frog; continuing short strokes, work progressively toward the tip feeling continuous balance

b) Bow short legato strokes at frog, whole bow stroke, short bow strokes at tip, whole bow, etc.

16. Bow short legato strokes using different arm heights; start with the arm much too high, lower the arm slowly (while continuing to bow) until the arm is much too low, slowly raise the arm again until it is barely too high, then lower to find that position where any lower would be too low

17. Bow legato strokes; feel strings "shift" to the side as the bow changes direction; hear the sound as the string "shifts" smoothly; feel the bow hair rest continuously on the string during bow changes; feel stroke begin in body then pass progressively from the arm through the wrist, hand and forefinger; feel distal joint of forefinger straighten on the down-bow change at frog. Feel upper arm change direction before bow and hand

18. Chair Exercise: Stand beside chair; press down on chair back vs. leaning on chair

19. Balance bow on string in upper half; feel equilibrium of elbow/wrist position direct arm weight to point of contact with string.

20. a) Hold bow above strings parallel to the floor, lower arm till hair contacts string, continue to lower arm until wood meets the hair (keep stick parallel to the floor), feel arm weight on string (through passive pronation).

b) Contrast with starting with stick held vertically (tip pointing at the ceiling) and rotating the bow into the string through pronation of the forearm (pressure through active pronation--an incorrect method).

21. Balance bow on D and G-strings at balance point, hold it there with forefinger only (no thumb). Feel arm weight resting on the strings with the bow "caught" between arm and strings.

22. a) Place middle of bow on strings. Hold the bow at upper half with left hand and rest the right forefinger on the stick near the frog, feel the arm weight resting on the stick.

b) Pivot the bow to different strings with the left hand, on each string wiggle the right arm back and forth and allow the arm to find the proper height.

23. Sit, rest hands on knees, find best arm position in which to catch back weight on knees (actually on floor through legs).

24. Think of bow as telescoping extension of arm--as if you are holding different length sticks--with tip of stick resting on string. (Imagine that part to left of string doesn't exist.)
Professional Biography of Lawrence Hurst

Lawrence Hurst is Professor of Music (Double Bass) and Chair, String Department, at Indiana University. He is the former principal double bass of the Dallas Symphony Orchestra. He previously served as faculty member of Southern Methodist and Eastern Michigan Universities as well as faculty member, associate dean, and chair of the string department at the University of Michigan School of Music. He was honored with the Alumni Award from the University of Michigan School of Music in 1998 and the Artist Teacher Award from the American String Teachers Association in 2005. He also received the International Society of Bassists distinguished award in 2005 for the category of Teaching.

Professor Hurst is the former director of the University Division of the National Music Camp and is a long time summer faculty member of the Interlochen Arts Camp.

He is past chair of the American String Teachers Association National Solo Competition, and past president of the International Society of Bassists.

His former students can be found in many prestigious orchestras, including Chicago, Philadelphia, San Francisco, Indianapolis, and Atlanta, Lyric Opera of Chicago, and the Metropolitan Opera Orchestra.

Phone Interview with Lawrence Hurst

July 20, 2005

To discuss sound production we really should sit down for a four to eight hour recorded interview, but I’ll try to condense my thoughts to one phone conversation.

I have always maintained that the right hand, at least at the collegiate level, is two years behind the left hand in its development and coordination. With younger students, it is three years behind and this is true in every case. Developing the right hand is a missionary thing for me.

Historically, violinists have a much more refined pedagogy for the bow. Many bass players have no idea that the pedagogy for the bow has been so refined. There was a time in bass playing when many teachers and promoters of the bass said that the bass should be approached and taught differently from the other strings, but I’ve always espoused that the basic principles of tone production and playing are the same as for the other members of the string family.

I’ve always approached the right hand as being more important than the left. The Simandl book is almost all left-hand oriented. On the other hand, Nanny devotes 20-30 pages at the beginning of Bk.1 to the bow. Billé has a sizeable amount of his method devoted to bow control. Many modern methods, however, are still, for the most part, basically left-
hand oriented—pleasing for the students—and easy for teachers to “sell” so the students can get to the concertos. Unfortunately, this approach will result in what one could say is a “pay me now or pay me later” approach to the bow and its problems.

With incoming freshmen, I immediately start working with the bow. I use a combination of things, not method books as they were intended [i.e., from page one consecutively progressing forward through the book]. My approach is interactive with the student and involves demonstration. I have a favorite page or two of the Nanny: *Kreutzer and Fiorillo Studies*. One of them is the infamous “Jack Benny exercise” [Etude No. 1]. The two particular ones I use for sound production are Etude No. 10 and Etude No. 12. I use the Nanny edition because I think it is in better keys. I call these studies the “Cathedral Studies.” I use the imagery of a cathedral to engage the students and create in their mind a huge space to fill. They must listen as if they were in this imaginary space. These etudes are in the key of G or D so it is bass oriented for maximum resonation.

The first element we deal with is the placement of the bow on a particular point on the string, or point of contact. I have students think about, “Why do we play where we do?” This discussion always entails harmonics, which are weakest in the center of the string. There are more harmonics near the ends, like when we play sul ponticello. These concepts must be reviewed because most students have never thought about the string vibrating from the center out and that the player must find the most pleasing amount of overtones and colors for each note they play. They must maintain the sound throughout the stroke through scale work and then through arpeggios (which necessitate that the point of contact changes dramatically).

The second element is how to stroke the string. The French language has one meaning for each direction: *Tiré* and *Poussé* or Pull and Push. It’s not up or down in a literal sense [the English language is imprecise]. I teach this through a lot of scale work that involves the point of contact and the pulled string. I also ask the student to consider the friction surface of the bow (hair), along with the distention of the string (weight), and the speed with which the bow engages the string. Gravity/angles for bass are not good—sitting produces a better angle for use of gravity in most cases. How much speed? How much hair? Full hair with a short string length actually mutes the string. Students discover the principles of moving the string first with scales and arpeggios, then “Cathedral Studies.” The “Cathedral Studies” have a simple harmonic palate and use as many open strings and harmonics as possible. That might take a month to work through. Students take two or three bars at a time at a very slow tempo to learn to hear the evenness. That’s the key: It’s not enough to move the string, you have to listen to it.

Students can actually see the amplitude of the string at work on the bass (not as obvious on the violin). Loudness is amplitude; closeness to the bridge is projection—the harmonics in the sound. In Europe, amplitude seems much more important. They tend to use more bow and keep the string swinging.

Bass players usually start later than violinists and haven’t done the basic work with sound production. I deal with sound the entire first semester.
For speed, and tricky bowing patterns, I use the Zimmermann: A Contemporary Concept of Bowing Technique for the Double Bass. He isolates patterns similar to Galamian.

For *spiccato*, I use the Nanny: Three Caprices and the Goens: Scherzo, as well as etudes in Storch-Hrabe and the Kreutzer-Fiorillo studies cited earlier. These pieces start easy, but once they begin moving around they become more complex, requiring bow control. *Spiccato* is usually the last skill coming. It’s a lot of careful work for both French and German bows.

Students must listen to the fluctuations of sound in dynamics. There can be no floating on the point of contact. I have students close their eyes to sense when the sound is focused through feeling the tension in the string. I have them set the metronome at QN = 60 and hold long tones six beats at *forte* and control the string. They are listening for fluctuations in amplitude and glitches in the sound.

The premise of both the German and French bow holds is that of a workable fulcrum. With the German bow, the fulcrum is on the side of the hand and the fingers embrace the bow like holding a pencil (more or less). With the French bow, the thumb itself is the fulcrum.

For direction changes with the bow, I describe them as an “aural illusions.” The string does in fact change direction and make a sound, but students need to learn how to “hide the change.” There are several things I have students do to learn how to “hide the change;” (1) hold the bow like a baseball bat and wrestle with the question, “How would you make an inaudible bow change;” (2) practice retrieving the string at the change; (3) learn to hear what an ugly direction change sounds like; (4) experiment; (5) pronation exercises (French bow)/cross stringing exercises (German bow). Direction changes are easier with a German bow, but string crossings are easier with a French bow.

This sounds like a noble research project and one that is long overdue.

**Professional Biography of Double Bassist William Ritchie**

William Ritchie has served as the Assistant Principal Bass of the Omaha Symphony since 1983 and taught double bass at the University of Nebraska Omaha for twenty years, in addition to maintaining a large private studio. He is active at both the state and national levels of the American String Teachers Association with National School Orchestra Association (ASTA with NSOA), having been the president of the Nebraska ASTA unit and the organizer of the Central States Workshop held at UNOmaha. Ritchie is a past Chair of the ASTA with NSOA National Solo Competition, served on the Editorial Committee of the *American String Teacher*, was a contributing editor of the ASTA String Syllabus, and served on the Committee for Studio Instruction. He has made presentations
at conventions of the International Society of Bassists, American String Teachers Association, and the Nebraska Music Educators Association. Bill frequently contributes articles for the professional trade journals *American String Teacher*, *Bass World*, and *Double Bassist*.

Ritchie earned his Bachelor of Music degree in Secondary Music Education from Western Michigan in 1975 and his Master of Music in Stringed Instruments from The University of Michigan in 1977. His teachers on double bass include Lawrence Hurst, Robert Gladstone, Marshall Hutchinson, and Paul Ellison.

Bill performs frequently as a substitute bassist with the Detroit Symphony Orchestra in Orchestra Hall in Detroit, as well as joining the DSO 1998 & 2001 European tours. A former member of the Grand Rapids Symphony and the Florida Orchestra, he has also performed with the Kansas City Symphony. Ritchie performed at the Montreux Jazz Festival with the Nebraska Jazz Orchestra in 1997 and leads his own jazz quartet. He is frequently called upon to back up jazz and pop artists with the Omaha Symphony, and has performed with artists such as Richie Cole, Eddie Jefferson, the Fifth Dimension, Rosemary Clooney, Roger Williams, and Steve Allen. His summers have been spent performing with the Grand Teton Music Festival in Jackson Hole, Wyoming since 1983.

**Phone Interview with William Ritchie**

April 21, 2005

The concept of sound production involves three components to using the bow: weight, placement, and speed (refer to the Robert Gladstone article). Generally, more bow is not good for bass. Larry Hurst discussed the ratios of bow length to string length as a means to determine how much bow should be used. The bow should move even slower the lower the string. Bass teachers frequently help their students play with a slower bow by “digging-in” (but not pressing).

One exercise that comes from Lawrence Hurst helps develop this slower bow speed. Start with mm = 60 and do 4 clicks per note, stopping for one click in between bow changes. Gradually get up to 8, 10 and more clicks per notes, staying as near to the bridge as possible and playing as loud as possible. In this specific exercise, tone quality is secondary to the slow bow and volume.

Also see:

APPENDIX D
SORTED STUDIO PEDAGOGUE TRANSCRIPTS

These interview transcripts, from the studio pedagogues, have been sorted into four categories: (1) Philosophy; (2) Resources; (3) Exercises; and (4) Favored Concepts. The uppercase letters indicate the first and last initials of the contributing artist-teacher.

PHILOSOPHY

BL
For me, it’s tone, not just sound production. There’s a semantic difference between the two words that I like; they are not interchangeable. Sound is the basis of what we do. People relate to the sound. With my students, I use analogies to singers—in all genres. Our instrument voice comes alive through our sound. That is our voice, just like our vocal chords.

SS
In terms of my background, Gingold was my main teacher. I studied with his assistants in high school and saw him once a month. He taught at a very artistic level. Technically, we worked in great detail on the left hand and then he sent me to Meadowmount with Galamian [for the right hand]—although I primarily worked with one of Galamian’s assistants, Sally Thomas. We played etude after etude: Gavinies, Dont, Paganini, among others. My own research with DeLay pointed me toward Dounis. She had studied with both Galamian and Dounis, though they were at opposite ends of the spectrum. As a physician, Dounis knew the muscles. Dounis held the bow differently. Galamian was influenced by Capet.

SW
Time is a problem for the class string teacher. They may have ideas about how to develop the right hand, but can’t do it because there is not as much time as is needed. Good musicianship is the key to teacher success. The teacher must play well.

A lot is dependent on how sensitive the student is for tone quality production, but the very first thing of having a good tone has to come from a straight bow and the use of the full bow. I inherit many transfer students [at the university] who come with the so-called "Russian" bow grip where the pinky is very stiff or "straight.” This bow grip prevents the student from bowing straight because the right hand pinky is pushing the bow tip towards the body. I also have students who cannot keep the right hand firm and play with loose fingers so the bow stick is loosely running among the fingers. There are also students
who are very "unmusical." So even when they are bowing straight their tone is coarse. Only if the student wants to play sensitively can they produce a good tone.

KP
There are many string players who achieve very good tone, but few achieve tone that is really special because their pitches don’t truly ring to full capability. Beautiful tones resonate within the instrument and marvelously project; each pitch has its own unique character and identity.

MS
I was thinking about how I was going to explain my normal approach to new students who inevitably have bow issues. This appears to be universal. A new student played for me yesterday . . . there were obvious sound issues . . . and I mean as it relates directly to first, the bow hold and secondly the motion that is being produced as a result. You've heard me say many times that the bow is our voice . . . how we manipulate this voice/bow produces sound whether by chance or design.

TC
I feel you can't make a sound you don't hear in your head. The inner singing voice is crucial to fine tone production. Ask the student to sing the sound they want to make. You will often hear: (a) their natural voice; (b) an airy unsupported sound; and (c) inappropriate articulation. Clarify the sound in the head and instantly the tone improves. Sometimes this means getting a young child to sing/think with a "Pavoratti" voice. Immediately the tone deepens.

JS
It is important to acknowledge that not all teachers emphasize sound. Some focus on the left hand. Phyllis Young is certainly a pedagogue whose ideas should be considered in your research.

LH
To discuss sound production we really should sit down for a four to eight hour recorded interview, but I’ll try to condense my thoughts to one phone conversation.

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RESOURCES

BL
Even with my most advanced students, I use Suzuki’s Tonalization to emphasize ring tones and overtones. I have the students physically watch the string vibrate.

Next I use the Ysaÿe string crossings from Exercises and Scales (Szigeti edition). The balance of the right elbow is key. Students really don’t make a big enough difference between the string levels.

In terms of solo repertoire, I use the Kreisler Tempo di Minuetto or the slow movement of a concerto. My goal is to immerse students into the concept of sound as being the most important element. Most students need to refocus on the fine art of the right hand; that is getting lost today.

Regarding weight, she worked with me on the opening of the Saint-Saens Concerto No. 3 in B-minor. She wanted me to have the same intensity with more air in the sound.

SS
Related to sound production, educator Bob Phillips worked with me for one year and put a session together for ASTA. See his outline [The 3 B’s: Setting the Tone Right from the Beginning].
Resource books include:
- Ševčík, Op. 3 with the bowing variations
- Galamian
- Dounis (the Valborg Leland book)
- Flesch, Art of Violin
- Auer, Book I

SW
*Basics* by Simon Fischer
*The Principles of Violin Playing and Teaching* by Ivan Galamian
*The Art of Violin Playing* by Carl Flesch
*Contemporary Violin Technique—Part II: Bowing and Rhythm Patterns* by Ivan Galamian
Kreutzer—*42 Studies or Caprices*: No.2; No.5; No.7; No.8; No.13 (Bach Suite)
Dont—*24 Etudes and Caprices*, Op.35: No.1 (triple stops); No.10 (*collé*); No.19 (*ricochet*)
Ševčík—*40 Variations*, Op.3:
Ševčík—*Op.2 (School of Bowing Technic)* Part I: after No.7 go to Kreutzer; Part II not necessary
*The Art of Bowing* by Tartini
*The Artist's Studio for Strings: Bowing Development Studies* by Frank Spinosa and Harold Rusch
*The Etudes-Caprices*, Op.10 by Henryk Wieniawski: applications (real pieces) of *sautille*, *staccato*, etc.
Paganini—*24 Caprices*
*Dictionary of Bowing and Pizzicato Terms* by Berman, Jackson, and Sarch

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With incoming freshmen, I immediately start working with the bow. I use a combination of things, not method books as they were intended [i.e., from page one consecutively progressing forward through the book]. My approach is interactive with the student and involves demonstration. I have a favorite page or two of the Nanny: *Kreutzer and Fiorello Studies*. One of them is the infamous “Jack Benny exercise” [Etude No. 1]. The two particular ones I use for sound production are Etude No. 10 and Etude No. 12. I use the Nanny edition because I think it is in better keys. I call these studies the “Cathedral Studies.” I use the imagery of a cathedral to engage the students and create in their mind a huge space to fill. They must listen as if they were in this imaginary space. These etudes are in the key of G or D so it is bass oriented for maximum resonation.

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EXERCISES

BL
Even with my most advanced students, I use Suzuki’s Tonalization to emphasize ring tones and overtones. I have the students physically watch the string vibrate. Any note has three [pitch] locations. We are aiming for the center, but have higher or lower depending on the context within the scale. Like a Twinkie [snack food] with a cream center, we want the creamy center of the tone. Start with whole bows, then a quarter note followed by two eighth notes (full bow, quarter-quarter distribution). Students play the tonalizations in first, second, third, fourth, and fifth positions, maintaining the ring tones. Next we apply the ring sounds to the G-major scale. Then we examine the other tones, such as placing the leading tone. Intonation has a certain ebb and flow.

Going back to the ring tones, they play what I call, “Advanced Ring Tones (A-R-T).” These continue the listening and develop the “fastest ears.” Vibrato amplifies the ring tones and we practice how to best apply the vibrato for maximum tone.

Miss Delay worked with her students on the sounding point. She had us stay on a forte sounding point but with piano weight so the overtones are still there. A quality sound has overtones. As a performer we represent the composer’s voice as well as where the music is going. There is a weight difference between playing Mozart and Tchaikovsky, but both require a quality sound. Quality sound equates to a successful performance.

Delay had us work on a G major scale with a forte sounding point but piano weight gradually increasing the weight while staying on the same sounding point. The goal is maximum string vibration or finding the “golden” or “sweet spot.” I think of the sound point as a highway a la Suzuki’s “Kreisler Highway.” Then we’d start piano to forte, followed by each gradation, e.g., piano, mezzo piano, mezzo forte, forte. Keeping the sounding point constant translates into power in front of an orchestra.

Regarding weight, she worked with me on the opening of the Saint-Saëns Concerto No. 3 in B-minor. She wanted me to have the same intensity with more air in the sound. I practiced with flat hair, a straight bow, and a whistle tone. Not weight, but bow speed. With my students, we use chalk to mark the in quarters and practice full bow, quarter-quarter, etc, like Galamian.

I should also mention that I like to take the student away from the mechanics and into their imagination. Practice for tone color. I have students close their eyes and envision
what the color blue would sound like and then play a passage; now change it to brown. Think about tone as color. Imagination is the key to ownership of tone production.

SS
In terms of specific exercises, collé is the staple of the Galamian world. We would warm-up every day with collé. Playing it slowly was more important than fast, and we would do it in all parts of the bow: all ups, all downs, then back and forth. He prioritized detaché, staccato, martelé, and collé.

KP
To help students realize each tone’s unique ring and character, I do the following exercises:

1) The student holds the instrument in playing position and places a finger on an easily ringing tone: for example, G above middle C (easily ringing because of the adjacent open G string). I bow the student’s instrument while experimenting with the variables of sound . . . bow speed, weight and point of contact. I continue drawing the bow experimenting until I find an intensely focused, perfectly ringing tone. I watch the student’s facial expression as he/she hears the sound ring (many students clearly have never heard this sound before and that new awareness is obvious by their expressions). Once a student hears it from his/her own instrument under their ears, I let them try to reproduce it on their own. As a student’s tone improves, we experiment getting less naturally ringing tones to ring such as B flat, F sharp, etc.

2) Another experiment I do with my students: I have each student hold the viola as if it were a cello. At first I demonstrate on my own viola playing it like a cello. As I play I tell them what I am doing with my bow (experimenting, changing the weight, speed, and point of contact). I play slow, full fingerboard length glissandi, up and down first on the D string with my left hand cupped over the string as if I was holding a small ball (curved, rounded fingers, no fingers collapsed). This left hand position is important so that there is a natural arm and hand weight into the string. Keeping the hand in the cupped position prevents the fingers from spreading apart during the glissandi thus weakening the natural gravity into the string. I emphasize how gravity works for both arms so naturally in the cello position. Occasionally I stop on a ringing tone during the glissando and apply my best vibrato. After the observation period, I have the student copy me on his/her instrument using an open string (no glissandi). At first the student’s bow travels recklessly over many different sounding points and tends to be flimsy, but with time, the student begins to understand the necessary adjustments for better alignment and sound. Next I have the student put down a finger on the D string, cupping their left hand completely over the string to play the long glissandi up and down with a slow bow speed, heavy weight and a focused contact point. I direct him/her to experiment with bow speed and the other variables of sound and make appropriate corrections. We take turns matching sounds. This experiment is difficult for some students and I encourage the students to practice this exercise everyday until they can produce a great sound.
3) Next, I have the student hold the viola in the normal playing position and repeat the second exercise. There must be a heaviness of both arms, without becoming tight. Moving the left hand in glissandi helps the student stay loose in both left and right arms.

4) One other exercise: I have my students try to hear below the “string veneer sound” in a pitch—I think of pitches as having layers and that the top layer has a metallic string sound and the second layer under the top layer is the rich core tone, the “chocolate sound.” (Electronically produced tones also have an upper electronic, buzzing tone, but underneath is the true warm full tone). I tell the student to only listen deeply and disregard the top string pitch. I have the student play half steps between A and G-sharp to listen to how differently G-sharp sounds from A (on the D string in 3rd position). The chocolate sound has a tuning fork purity, fullness, no edginess. I tell them to imagine hearing the pure sounds of a glass harmonica, like the sound one gets by rubbing a wet finger around the top edge of a fine crystal glass. Some string players play listening to only the top of the sound instead of inside of it. When they hear below the surface of the overall pitch, tone and intonation greatly improve. Once they realize this special sound, they need to train themselves to hear it in all instances. Staying focused on that layer during fast playing is especially difficult.

MS
The second bow exercise I have them do is open strings. I first define for them the articulation we are practicing. I define the motion we will produce as connected (I feel that there are two basic articulations, with many variations, they are: connected and stopped—with the vast majority of bow sound having to produce a connected sound). This connected sound is produced from a flexible bow hand (described above) and at the frog on a down-bow that is led by the wrist. This is very important: the wrist leads the bow on a down-bow with the elbow level with the wrist. As the bow travels toward the tip the elbow is gradually elevated even more (mid-point of the bow to tip) in order to balance the weight and keep it constant. The transition of the bow, from the up-bow to down, is accomplished with an elevated elbow that pulls through—with flexible fingers and wrist.

In order for a sound to be connected there can be no stop to the sound which means the motion must not stop. The moving bow hand at the tip produces that motion as the wrist and bow hand produces the continuity of motion at the frog. The speed of that motion is the same as the bow speed or slightly slower or there will be an accent to the sound. The motion of the hand and wrist is a small motion that matches the time and space of the bow transition. If the motion is too big for the amount of space and time in which it works, it will produce extraneous sound that is not compatible with this exercise. The neat thing about this movement (wrist and flexible hand) is that it also transitions into stopped motion, such as spiccato and staccato. This motion, being a small, short motion, is produced by starting on the string near the balance point of the bow to slowly produce an off the string stroke. Really it boils down to: Motion = space and time.
TC
Allied with this is listening to the sound. Ringing sounds of the resonance tones are
"breakfast" for the cello. Play each of these twice followed by a rest to listen for the ring:
A string D-4, D string G-4, G string C-4, G string A-1, C string D-1. When attention is
drawn to produce the ringing/resonance sounds in simple pieces, the tone improves. This
then should be the pattern for more complex pieces. I also love harmonics for tone
production. If the harmonic is right, the tone production is right.

A fourth point is experimentation and imagery. Playing basic simple pieces, patterns, and
scales using the five different highways from the fingerboard to the bridge learning to
manage the differences in pressure/speed/contact point is useful in exploring tone color
differences. The more simple the better: Twinkle (on different strings), French Folk
Song, Chorus by Handel, scales. It doesn't really matter. It just needs to be simple for the
ability level so they can focus on listening and the technique itself.

JS
Right Arm Principles
- Arm "floats" on string like a boat on water (the boat is heavy but buoyant and gravity
  is always pulling it down even if the boat is rising up on a swell or with the tide).
- Cause and then allow the string to vibrate. It takes more energy to overcome inertia
  and set the string (and cello) vibrating at the beginning of a note than to sustain it.
  After beginning a note, get out of the way and let the note vibrate and ring—like
  striking a bell and letting it ring.
- Don’t lean on the cello. Your torso weight should go into the floor primarily through
  the chair and, when you need it, through the cello via your arms resting on the strings
  and fingerboard.
- Use as little weight as possible but much weight as necessary: hand weight first, then
  forearm weight, and finally upper arm weight.
- Wrist and finger motions during bow changes are passive for most bow changes.
- When the bow touches the string at the start of an initial stroke, the arm keeps moving
  continuously but the bow stops for an instant. (You should feel the weight of the bow
  itself at the moment of contact with the string.) Feel "touch/release" not
  "release/touch." Very soft attacks may be "touch/hold/release" or in prolonged pp
  "touch/hold."

Right Arm Exercises
4. a) Hold bow in air on its side, feel pinkie finger balance weight of tip on fulcrum of
    thumb
    b) Rotate hand so that the bow hair is oriented down, feel fulcrum between
       forefinger and thumb
5.  a) Hold bow in air, holding stick firmly counterbalancing tip with pinkie
    b) Set bow on string, wiggle string gently, feel the arm balance, allowing pinkie to release bow
    c) Lift bow and repeat to feel the pinkie support the tip

15.  a) Bow short legato strokes at frog; continuing short strokes, work progressively toward the tip feeling continuous balance
    b) Bow short legato strokes at frog, whole bow stroke, short bow strokes at tip, whole bow, etc.

16.  Bow short legato strokes using different arm heights; start with the arm much too high, lower the arm slowly (while continuing to bow) until the arm is much too low, slowly raise the arm again until it is barely too high, then lower to find that position where any lower would be too low

17.  Bow legato strokes; feel strings "shift" to the side as the bow changes direction; hear the sound as the string "shifts" smoothly; feel the bow hair rest continuously on the string during bow changes; feel stroke begin in body then pass progressively from the arm through the wrist, hand and forefinger; feel distal joint of forefinger straighten on the down-bow change at frog. Feel upper arm change direction before bow and hand.

LH
I use the imagery of a cathedral to engage the students and create in their mind a huge space to fill. They must listen as if they were in this imaginary space. These etudes are in the key of G or D so it is bass oriented for maximum resonation.

The first element we deal with is the placement of the bow on a particular point on the string, or point of contact. I have students think about, “Why do we play where we do?” This discussion always entails harmonics, which are weakest in the center of the string. There are more harmonics near the ends, like when we play sul ponticello. These concepts must be reviewed because most students have never thought about the string vibrating from the center out and that the player must find the most pleasing amount of overtones and colors for each note they play. They must maintain the sound throughout the stroke through scale work and then through arpeggios (which necessitate that the point of contact changes dramatically).

The second element is how to stroke the string. The French language has one meaning for each direction: Tiré and Poussé or Pull and Push. It’s not up or down in a literal sense [the English language is imprecise]. I teach this through a lot of scale work that involves the point of contact and the pulled string. I also ask the student to consider the friction surface of the bow (hair), along with the distention of the string (weight), and the speed with which the bow engages the string.
For direction changes with the bow, I describe them as an “aural illusions.” The string does in fact change direction and make a sound, but students need to learn how to “hide the change.” There are several things I have students do to learn how to “hide the change:” (1) hold the bow like a baseball bat and wrestle with the question, “How would you make an inaudible bow change;” (2) practice retrieving the string at the change; (3) learn to hear what an ugly direction change sounds like; (4) experiment; (5) pronation exercises (French bow)/cross stringing exercises (German bow). Direction changes are easier with a German bow, but string crossings are easier with a French bow.

WR
One exercise that comes from Lawrence Hurst helps develop this slower bow speed. Start with mm = 60 and do 4 clicks per note, stopping for one click in between bow changes. Gradually get up to 8, 10 and more clicks per notes, staying as near to the bridge as possible and playing as loud as possible. In this specific exercise, tone quality is secondary to the slow bow and volume.

FAVORED CONCEPTS

BL
Tonalization
Ring tones
Sounding point
Bow highways
Bow weight
Bow speed
Imagination

SS
Collé

SW
Flexible bow hand

KP
Ring tone
Variables of sound: weight, speed, point of contact
Core tone/“Chocolate sound”
Imagery

MS
Flexible bow hand
Motion = space and time
Voice
TC
Singing voice
Ringing/resonance tones
Five bow highways/point of contact
Pressure
Speed
Body/balance
Imagery

JS
Body/balance
Feel pinkie finger balance weight
Feel fulcrum between forefinger and thumb
String wiggle
Crawl bow
Feel the bow change direction
Imagery

LH
Cathedral resonance
Contact point
Pulled string: friction, weight, speed
Hide the direction change

WR
Bow weight
Bow placement
Slow bow speed
APPENDIX E
ORCHESTRA PROGRAMS

Bozeman Public School Orchestral Program—Bozeman, MT
Director: Michael Certalic

Public instruction on stringed instruments in Bozeman begins in the fifth grade where roughly 1/4 to 1/3 of the total student population participates. The remaining students take part in band instruction making for nearly 100% instrumental music participation. There are three full time orchestra positions in the Bozeman Schools, covering the fifth grade orchestras, seven middle school orchestras in two school buildings, four high school orchestras, and an auditioned Middle School Honor Orchestra that meets once a week.

The Bozeman High Orchestras include an entry level string Concert Orchestra numbering 30-40 members, an auditioned second level string orchestra, called Symphony II, numbering 40-50 members, an auditioned Symphonic Orchestra numbering 75, including 24 winds/brass/percussion, and a chamber orchestra called Kamerata, numbering 34. The Kamerata is a unique orchestra that performs extensively as a concert ensemble, pit orchestra, and accompaniment group. The orchestra divides into small ensembles twice a week and performs four separate chamber music concerts every year. On average about half of all Bozeman Orchestra students study privately, with the top orchestras nearing 100% private lesson participation. The program has enjoyed 500% participation growth in the past decade.

The Bozeman orchestra program has received many awards and honors over the past decade. The Symphony won first prize at a Festivals of Music competition in San Francisco in 2000 and was invited to the All Northwest Music Educators Conference in 2002 to perform as an exhibition group. Both the Kamerata and Symphony were accepted to perform at the 2005 ASTA with NSOA National Orchestra Festival™ where the Symphony won 3rd place in their division. The Bozeman Honor Orchestra was invited to play the All Northwest Music Educators Conference in 2005.

Chaparral Middle School Orchestra—Diamond Bar, CA
Director: Greg Rochford

The String Orchestra program began at Chaparral 15 years ago with 6 students meeting twice a week after school. The following year these students were enrolled in the seventh Grade Band class and met in the hallway outside of the band room. Mr. Rochford would move between the hallway and the classroom to work with both the band and the string students. The next year a separate seventh/eighth Grade Orchestra class was added to the
schedule with 17 students, 12 of which were beginners. Two years later the class topped 40 students. The sixth Grade Orchestra class was added during the Spring of 1994. In 2001, with another increase in enrollment, the seventh/eighth Grade Orchestra was divided into two classes, one for seventh grade and one for eighth grade. There are currently over 260 students enrolled in five orchestra classes. Over two-thirds of the students have NO EXPERIENCE prior to coming to Chaparral. There is no string instruction at the elementary school level. The orchestra has performed three times for the California state music education conference. In 2003, the Chaparral orchestra played for the ASTA/NSOA National Conference in Columbus, OH. The group has also performed in Carnegie Hall in 2002, 2004, 2005 and will again in 2006 and 2007.

Music Commissioned by the Chaparral Orchestra:
- Amazing Grace: Fantasia for Solo Viola, Solo Piano, and String Orchestra
  by Daniel Ramos (2002)
- Burkina Faso Suite
  by Dr. Craig Naylor (2003)
- Psalm Variants
- The Mansions of the Lord Suite
  arranged by Dr. Collette Hausey (2005)
- Suite #1 of Ancient Irish Songs
  by Daniel Ramos (2006)
- Prelude and Scherzo for Solo Viola, Piano, and String orchestra
  by Daniel Ramos (2006)

Maryville High School Orchestra—Maryville, TN
Director: Bill Robinson

The Maryville High School Orchestra is under the direction of Bill Robinson, currently in his 2eighth year of teaching in the Maryville City Schools. Maryville, Tennessee is located just south of Knoxville. Maryville High School has a total enrollment of 1400 students, including 120 who play a stringed instrument in the orchestra program. One unique feature of the program is that the school owns two concert pedal harps. Each year, between 6-9 students play harp as part of their orchestral experience. The orchestra gives four major concerts per year, with additional performances for other schools, civic organizations, and community events. In January of 2006, the Knoxville Chamber Orchestra will perform a side-by-side concert with the upper-class members of the orchestra.

Moorhead School Orchestra Program—Moorhead, MN
Director: Brian Cole

Orchestra instruction in Moorhead begins in the fall of the fifth grade year and continues through the twelfth grade year. Currently there are over 600 students in the Moorhead
string program. Moorhead has three K-5 buildings, a 6-8 middle school, and a 9-12 high school. Fifth grade orchestra students receive one 25-minute group lesson a week. Students are pulled from their music or gym class in like instrument groups of 6 to 12 students. The sixth, seventh, and eighth grade orchestras each meet on a daily basis for 25 minutes. Each grade has three separate orchestra classes, making nine separate orchestras that meet at the Middle School.

The middle school orchestra maintains an active performance schedule throughout the school year. These performances include: playing the national anthem at area sporting events, “marching” in the Moorhead homecoming parade, performing pre concert lobby music for a Fargo Moorhead Symphony Orchestra concert, playing for all Moorhead 4th graders, performing at rural elementary schools, playing for the city picnic, and giving nursing home concerts. Moorhead’s orchestras have been chosen to perform at Orchestra Hall in downtown Minneapolis. In February of 2001, they were invited to perform for the Minnesota Music Educators State Convention. In December of 2001, they were one of four orchestra in the country invited to perform at the Midwest International Band and Orchestra Clinic (Chicago), and in March of 2003 the orchestra appeared at the American String Teacher’s National Conference held at The Ohio State University in Columbus. Most importantly, the string players are committed to bringing orchestra music to schools throughout the region. Over the course of the last seven years, string students from Moorhead have performed more than 40 concerts for nearly 10,000 school-aged students.

**Norcross High School Orchestra—Norcross, GA**
**Director: Cathie Hudnall**

While many schools have areas of pride, Norcross High School has outstanding programs throughout. Some of the successes from the 2004-2005 year confirm why NHS continues to be a School of Excellence.

- NHS has four students who were named National Merit Scholarship Finalists in 2004-2005.
- NHS has twenty current seniors who have perfect scores on the SAT or PSAT exams.
- NHS improved its SAT scores to an average of 1057 with 95% of the students taking this exam. This far exceeds the state and national averages not only in score but, most significantly, for the number of students taking this college entrance exam.
- NHS is the only high school in Gwinnett County to offer the highly acclaimed International Baccalaureate program. There are over 250 students enrolled in the International Baccalaureate program for and already that number has grown to 290 students for 2005-2006.
- NHS Athletic Director, Mike Emery, was selected as the State of Georgia Athletic Director of the Year.
- NHS Student Council Advisor, Kirsten Mixter, was selected as the State Advisor of the Year.
- NHS Student Council is the State Student Council for 2005 - 2006. Norcross High students, Lindsay Eiermann and Michael Dermer, are the State Student Council presidents.
• Norcross High One-Act play was selected third in the entire state of Georgia.
• NHS Band won numerous competitions throughout the school year, and received perfect scores from every judge at the Georgia Music Educators Association adjudication with a flawless performance.
• NHS Orchestra achieved acclaimed "Superior" status in competitions and activities throughout the year.
• NHS held its second annual "Taste of Norcross High" event that brought over 3500 guests to our school and netted our booster clubs $80,000 to assist our students in the programs.
• NHS Boys Varsity Basketball Team for the second year in a row had an undefeated regular season.
• NHS Boys Varsity Basketball Team won the 7 AAAAA Region Championship.
• NHS Boys Varsity Basketball Team went to the State Finals and was the State Runner-up.
• NHS Boys Varsity Soccer Team won the 7 AAAAA Region Championship
• NHS Boys Baseball Team won runner-up for the 7 AAAAA Region.
• NHS Boys Track Team won runner-up for the 7 AAAAA Region.
• NHS raised $61,000 for the Relay for Life, the most of any school in the Gwinnett County Public School System.
The incredible Norcross High community of students, parents, teachers, and community members insures that Norcross High will continue to be a school where accomplishments like those above will continue to flourish.

Cathie R. Hudnall received her bachelor’s degree in Music Education from the University of Cincinnati’s College-Conservatory of music in 1983. After graduating, she founded and directed the Orchestra program in Pickens County, SC, where she taught for three years. She moved to Atlanta in 1986 and has taught in Gwinnett for the past sixteen years. She studied cello with Martha Gerschefski and received her Master’s degree in Music Performance from Georgia State University in 1990. In 1997, she was chosen to teach at the Iolani School in Honolulu, Hawaii. Ms. Hudnall has taught at Norcross High School for the past thirteen years where she was the Teacher of the Year in 2001. She is a regular conductor and clinician for honor ensembles throughout the Atlanta Metro Area and was the conductor of the SC All-State String Orchestra in the spring of 2002 and the Mississippi All-State Orchestra this spring. She was a guest conductor with the Gwinnett Philharmonic Orchestra in 2004. She is currently one of the directors of the Gwinnett Youth Symphony. A cellist, Ms. Hudnall performs with the Gwinnett Philharmonic and the Candler String Quartet. She has performed with the 1st International Cello Congress Cello Choir, the Maui Symphony, the Florence Symphony, the Columbia Philharmonic Orchestra, the Charleston Symphony, the Augusta Symphony, the Spartanburg Symphony, the Gainesville Symphony, and the Brevard Music Center Festival Orchestra. She teaches private cello lessons in her home.
**Poston Junior High School Orchestra—Mesa, AZ**
**Director: Beth Gilbert**

“I changed schools a few years ago and took over an orchestra program in need of rebuilding. It has doubled in size and we were selected to play at the state conference once in that time. While I don't have anything written up about it, I will attach the bio I just wrote to run for the National ASTA Board. I hope that helps.” (E-mail communication)

Beth Gilbert, a twenty-five year veteran string teacher, has taught in the Mesa, Arizona Unified School District since 1983. Beth earned a Master’s degree in Music Education from the University of Arizona in 1981. An active music educator, Beth has served as Secretary and President of Arizona ASTA with NSOA as well as Vice President of the Arizona Band and Orchestra Directors Association. For National ASTA with NSOA, Beth most recently served on the planning committee for the 2005 ASTA with NSOA National Orchestra Festival. In the past, Beth has served on the Committee on School Orchestras, the Special Project Grants committee, the 1998 National Conference planning committee, and the School Task Force. She co-authored “Getting Started with Strolling Strings”. Beth received the O.M Hartsell Excellence in Teaching Award from the Arizona Music Educators Association in 1995. Her orchestra and strolling string groups have performed at numerous AMEA conventions as well as at several national MENC conferences. In 1994 both groups performed at the Mid-West International Band and Orchestra Clinic and in 1999 they represented Arizona at the American Musical Salute in Washington, DC.

**St. Joseph High School Symphony and Chamber Orchestra—St Joseph, MI**
**Director: Steven Reed**

Steven L. Reed has been teaching instrumental music in the St. Joseph Public Schools since 1977. Starting out teaching band only, he began teaching strings in 1982 and is now the Conductor of Orchestras and chairman of the Fine Arts Department. He also conducts the Lake Michigan Youth Orchestra program, a local youth symphony sponsored by the Southwest Michigan Symphony Orchestra. Mr. Reed holds a Bachelor of Music Education Degree - cum laude - from Western Michigan University and Graduate credits from the University of Michigan. Mr. Reed was elected "Michigan Orchestra Teacher of the Year" in 1997 by the membership of the Michigan School Band and Orchestra Association (MSBOA). He has served on the Executive Boards of MSBOA as Vice President of Orchestral Activities and as President of District VI for two terms. The Michigan American String Teachers Association (MASTA) honored Mr. Reed with the MASTA Teacher of the Year award for 2003-04. He has held the office of Member at Large for MASTA and is presently the President-Elect for MASTA.

Under Mr. Reed's direction, the St. Joseph Orchestras have received top ratings at Michigan School Band and Orchestra Festivals for the past 23 years in a row, and have performed four times at the Midwest Conference on School Vocal and Instrumental
Music in Ann Arbor. In the fall of 2004, the St. Joseph High School Symphony Strings were one of two orchestras from Michigan invited to perform at the Western Michigan University Invitational String Festival in Kalamazoo. The St. Joseph High School Symphony Orchestra has participated in the International Youth and Music Festival in Vienna, Austria in 1994, touring Austria, Germany and Switzerland for two weeks after the festival. The St. Joseph Orchestra has also toured Canada performing in concert venues and cathedrals in Toronto, Montreal, and Quebec City in 1998 and 2002. The next major trip for the Orchestra is planned for the summer of 2006, to Italy and Austria celebrating Mozart’s 250th anniversary.

The St. Joseph Public Schools Orchestra program has grown from a little more than 50 students grades 5-12 to over 350 in the past 23 years. There are now three orchestras at the middle school including an after school Symphony Orchestra with seventh & eighth Grade winds and percussion, and three at the high school, a grades 9-12 string orchestra, a grades 10-12 Symphony Orchestra, and an advanced 27 member Chamber Orchestra.

Mr. Reed remains active as a professional musician with the Southwest Michigan Symphony Orchestra, the Symphony Brass Quintet, and the Renaissance String Quartet. He lives in St. Joseph with his wife Susan, the Fine Arts and Education Director for the Salvation Army and professional cellist, and sons Jonathan (18), and Alex (17) who play the string bass and cello respectively.

St. Joseph High School serves approximately 1000 students, is accredited by the North Central Association of Colleges and Secondary Schools, and sends approximately 92% of its graduating class to a two or four year college or university. The St. Joseph High School Music Department enrols over 450 students in music classes, grades nine through twelve, representing 45% of the high school enrollment. Daily credited music classes include two symphonic bands, three string orchestras, jazz ensemble, marching band, music theory, and three choirs. After school offerings include Symphony Orchestra, Show Choir, Pep Band, a very active solo and ensemble program and approximately 12 in-house private lessons instructors. The music staff includes two full time band conductors, one full time and one part time orchestra conductor, two full time choir directors, two full time elementary music teachers, and artist in residence for percussion, brass, woodwinds, and two for strings. Additionally, the National Association of Recording Arts and Sciences have awarded the St. Joseph High School Music Department finalist awards in the GRAMMY Signature Schools both in 2000 and in 2004, identifying St. Joseph High School as one of the top 100 schools in the nation for Fine Arts.

**Sutton Middle School Orchestra—Atlanta, GA**

**Director: Natalie Colbert**

The Sutton Middle School Orchestra Program serves 186 students in grades 6-8. It is the largest orchestra program, on any level, in the Atlanta Public Schools system. Students are engaged in chamber music study, composition, jazz, and classical studies. Each
semester, students complete a curriculum of string playing skills, history, and theory of music that follows the Georgia Quality Core Curriculum.

The program is the only middle school strings program in the Atlanta Public Schools system to have students participating in the Georgia All-State Orchestra, Atlanta Symphony Youth Orchestra, and the Atlanta Symphony Orchestra Talent Development Program. These activities require students to demonstrate a high level of playing skills throughout the audition process. Students in the program also utilize technology skills to maintain an orchestra web page.

Community involvement is an integral part of the program. Small ensembles frequently perform for agencies and business partners to build bridges between the school and community. Performance venues include: The Food and drug Administration, The Hispanic Heritage Celebration, the grand opening of the Kids in Need Free Store for teachers, the National Democratic Party Jefferson Jackson Dinner, and the Buckhead Business Association Banquet. Smaller ensembles are taught to perform without the presence of a director. Students also develop leadership skills by assisting younger students in the Orchestra Tutorial Program.

The Sutton Orchestra has consistently received Superior ratings for the past twenty years at the Georgia Music Educators Association’s District Orchestra Festival, entering more large ensembles than any other school in the system. The Orchestra has won First Place honors at the All-American Music Festival in Orlando, Florida for four consecutive years.

Owing to the high level of participation and consistent success of the program, the Atlanta Public School system built Sutton Middle School a new state of the art orchestra facility that includes acoustically treated rehearsal rooms, an orchestra pit, a music library, and a complete recording and audio production studio.

Recent recognition includes:
Best Middle School Orchestra in the Atlanta Public Schools 2004-2005
Best Middle School Teacher in Atlanta Public Schools 2004-2005
Atlanta Constitution Honor Teacher Award 2000 (Statewide)
Sutton Orchestras have received Superior ratings in GMEA festival performance for 20 consecutive years
Sutton Orchestras have received Superior ratings for 18 consecutive years at the All-American Music Festival in Orlando, Florida
Sutton Orchestra selected multiple times to perform at the GMEA Conference
York Community High School Orchestra Program—Elmhurst, Illinois
Director: Ray Ostwald

Elmhurst, Illinois (population 47,439) is located 16 miles west of Chicago. District 205 serves the community of Elmhurst and small parts of Bensenville, Oak Brook, and Addison.

A small-town atmosphere is maintained in Elmhurst, with a great emphasis placed upon quality family life. Elmhurst is a stable, tradition-oriented community with high expectations for and distinct pride in its schools. York Community High School, established in 1917 and accredited since 1925, is a four-year comprehensive high school with a campus of 37 acres and current enrollment of 2,400 students.

The Orchestra Program at York consists of three separate orchestras that each meet for one period every school day. The enrollment currently includes 136 string players. Every orchestra student performs in a February solo recital, and chamber music experience is available to all students. A high percentage of the orchestra’s membership studies with a private instructor.

The CADET ORCHESTRA (26 members) is the entry-level orchestra where fundamentals of musicianship and string technique are emphasized in addition to ensemble performance. Students must pass a series of technical requirements that include major scales, minor scales and rhythm studies.

The CONCERT ORCHESTRA (50 members) is a performing orchestra that performs both as a string orchestra and as a symphonic orchestra when combined with principal winds from the Concert Band. Members of this ensemble perform on four public concerts yearly.

The SYMPHONY ORCHESTRA (60 members) is the performing orchestra exhibiting the highest level of musical skills at York Community High School. String, wind and percussion players are selected by audition only and perform advanced symphonic orchestral repertoire. Each member participates in a performing chamber ensemble, and attends a weekly sectional rehearsal after school. This ensemble accompanies winners of the Concerto Competition, and performs on at least four major public performances.
APPENDIX F
QUESTIONNAIRE
Sound Production Exercises
Field Test Questionnaire

1. Participant Name: ____________________________
   (Please Print)

2. Please list the string ensemble or ensembles / class or classes with which you implemented the sample exercises:

<table>
<thead>
<tr>
<th>Name of group</th>
<th>Grade level of students</th>
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3. Were you able to implement each of the exercises over a two-week period?

   YES  NO

   If NO, please explain:

   ____________________________
   ____________________________
   ____________________________

4. Before participating in this study, had you previously used any of these exercises with your students?

   YES  NO

   If YES, please explain:

   ____________________________
   ____________________________
   ____________________________
   ____________________________
   ____________________________
5. Do you believe performing these exercises benefited your students?

   YES  NO

Optional Comments:

________________________________________________________

________________________________________________________

6. Did the exercises work equally well for violin, viola, cello, and double bass students?

   YES  NO

If NO, please explain:

________________________________________________________

________________________________________________________

7. Do you anticipate using these exercises beyond the conclusion of this study?

   YES  NO

8. Would you like to see additional, related, exercises that emphasize the right hand/sound production developed for heterogeneous string classes?

   YES  NO

9. Based on your experiences, would you recommend these exercises to others?

   ______ Definitely would
   ______ Probably would
   ______ Maybe would/ Maybe not
   ______ Probably would not
   ______ Definitely would not

Please return this completed survey by September 16, 2005 in the SASE or FAX (both front and back) to Kirk Moss at 218-477-4097.
APPENDIX G
FOLLOW-UP INTERVIEW TRANSCRIPTS

FOLLOW-UP INTERVIEW

NAME: Michael Certalic DATE: Jan. 23, 2006

1. How did you have your students use the exercises?
   Every morning or everyday with each class, we actually do a warm-up for about
twenty minutes and for two of the days we actually do scales and in a repeated
form. We actually play a call and response-type thing. During the call and
response especially, we used the String Wiggle. I have the kids watch me up front
and I say “Do as I do.” Without explaining any further, I simply let the weight of
my arm go in the string and wiggle the string so they can see what’s going on and
they do the same thing. Then we expand that just a bit by making what we call
ugly sounds, getting scratchy, terrible tones and expanding the wiggle quickly to
where it actually makes sound and getting back to the wiggle where it makes no
sound again. And then I go into scales with using the feeling of weight into the
string to make as strong and yet clean a sound as they can. We do different
various bowings usually using staccato.

2. How much time were you able to spend on them?
The thing is, of course, it’s a continuing process. We spend, usually on that
particular one—I’d estimate it to be about a minute and a half. And then with the
scales, we’re using the weight/feeling the wiggling techniques, about another 4
minutes.

3. In what ways did you use them? As warm-up, for example?
Just what I said. We first of all use the basic technique and then we try to apply it
to scales and also use it with the etude on one of the days for a basic warm-up and
using any of the Kreutzer etudes that we have right now for all the orchestra.

4. Did they work better with a certain type or level of student than they
did with others?
Not really. I actually work with eighth graders up to twelfth grade advanced
students, and I use it for every level. I think it’s important to make sure to use it
for everybody.
5. Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?
Well, the Lane Changes I have used for years and the kids are well used to that, and I actually probably use that once a week, as well as talking about the lanes. I actually used those quite a bit, but have continued using those. I’d say the String Wiggle is, quite honestly, one that I’ve not used before. And so it’s one I think has helped.

Actually, I just gave you the best results [String Wiggle], simply because I haven’t used it before. It’s a new approach and what I noticed worked best.

6. Will you continue to use some (or all) of these exercises in the future?
Oh, absolutely

7. Had you been using exercises similar to these previously?
Some of them. I use all sorts of different ones for describing the bow hold and for describing the feeling of weight into the string. But these are a great addition to what I do, and I basically incorporated them into what I use.

8. Did the exercises seem to improve the players’ tone?
Absolutely

9. Were you able to apply them to the music you were performing?
Absolutely

FOLLOW-UP INTERVIEW

NAME: Greg Rochford DATE: Jan. 24, 2006

1. How did you have your students use the exercises?
If I understand correctly, I led them through. What we did them a little bit at the beginning of classes and then after I did all the [questionnaire] responses, and mailed them back to you, I pulled them out a couple more times when we were having some issues like, “Okay, let’s see if one of these exercises will help.”

2. How much time were you able to spend on them?
After the initial trial, it wasn’t a lot. It was, to be honest, I want to use them, but because I’m not as familiar with them as I want to be, I don’t use them on a regular basis, and my plan is, basically this summer, I’m going to sit down with
them and go through it and integrate them into my plan. I actually haven’t used them since, probably the end of November.

3. **In what ways did you use them? As warm-up, for example?**
   Yes. What we would do is take, probably work on a scale, usually something that was in the key that we were going to work on and then use the exercises within that context and relate it to the music they are going to perform.

4. **Did they work better with a certain type or level of student than they did with others?**
   It’s hard to say, because my classes are pretty much mixed, and I used it with two classes. I used it with my, what is called the eighth grade advanced orchestra, but really—because it’s the first year we were really able to pull the brand new beginners into their own class. There are several second-year players who are kids that only had a semester and all the way to kids that have been taking lessons for years. And then I used them a little bit in my sixth grade advanced class, who are all kids that have played before. That group did better with it because I didn’t have as many low-end kids, and because it was a smaller class.

5. **Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?**
   I can tell you this way. The Finger Flexibility was the most difficult. That was the one that we had the most difficulty getting them all to be able to understand. The lane, the Changing Bow Lanes worked very well. That was a good visual for them.

6. **Will you continue to use some (or all) of these exercises in the future?**
   I plan to, yeah.

7. **Had you been using exercises similar to these previously?**
   Some of them, yes, and unfortunately, I don’t have them right in front of me, I couldn’t tell you. Because I’m not a string player, I would use what was in all of the different methods books that I have, and different exercises that I have had coaches come in and show, and some of these were similar to that of what they were doing (the coaches thought the exercises were good). But I, the thing about these was applying across the board—as opposed to, “Okay, violins, you are going to work on this technique.”

8. **Did the exercises seem to improve the players’ tone?**
   We talked about that, but it turned out to be more bow control. What I really was doing with them when I got into them was to get them to understand the areas of the bow and what each area of the bow sounded like, so yeah, I guess it is working with the tone, but it was more to get them to understand how to play in
the lower half and how to play in the upper half, and where on the string to play, so the coordination and the uniformity across the ensemble.

9. **Were you able to apply them to the music you were performing?**
Yes. And it was easy for me to go back and say, “Okay, this section here, remember that exercise that we did,” and for some that’s all they had to do, but we would go back and maybe address it with what was actually happening in the music. It gave me one more thing to be able say: this is a fundamental skill and this is how works in real music.

**FOLLOW-UP INTERVIEW**

**NAME:** Bill Robinson  
**DATE:** Jan. 23, 2006

1. **How did you have your students use the exercises?**
We spent the first few weeks of school—there as we were just getting back into things—working on scales, rhythms, all that stuff. We used those as part of warm-up exercise type things. So as we are working on tone we used some of those, on scales as we were reviewing the scales we were working on—so mainly as warm-up time at the beginning of things and then later, I used a few of them just to remind them of things: “Okay we’ve worked on this,” and we’ve worked on tone and everything. Maybe we’re working a certain lane or we were doing a certain bowing, so I reminded them of using some of those, but mainly as a warm-up exercise.

2. **How much time were you able to spend on them?**
We probably spent 15-20 minutes maybe 25 on the different days for the first few weeks incorporating those into all of this general getting back into the groove of everything so at least probably 15-20 minutes at least a day for the first few weeks.

3. **In what ways did you use them? As warm-up, for example?**
In playing a D scale, I used—I mentioned the other day, the exercises 8 notes on the bow then you go to 7, 6, so you end up using the whole bow stroke. So work on the scale and especially if you end up doing some scale with some of the flat keys, and it gives them a chance to review that while also focusing on the tone. Some of the warm-up exercises, some rhythmic reading exercises, I have “A Rhythm a Week” and harmonized rhythms and different things, we can add some crescendos/decrescendos on some things and talk about where the bow is placed and that type of thing. Being consciously aware: “Is your bow near the fingerboard or bridge and what lane are you in?” And I usually just say fingerboard and bridge and hadn’t used that 1, 2, 3,—three for the middle—hadn’t
used that much and they seem to kind of pick up on the numbers and it makes it a little bit easier for them.

4. **Did they work better with a certain type or level of student than they did with others?**
   Well, it’s probably easier with my older kids. I have a ninth grade group and then I have two older classes. The older kids probably picked up on it quicker. It made sense to all of them, so it wasn’t, it didn’t seem like none of them couldn’t pick up on it. The ninth graders picked up on it, so it’s like it wasn’t above their head or anything so it seemed to work for all of them.

5. **Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?**
   Again, I get to that Hooked on Bowing or the one with the number of bows in a stroke. Some of the collé bowing things I used to get more of the wrist action into it, grabbing the string and springing off the string.

   Because I probably hadn’t paid as much attention to it like I should. One thing I mentioned earlier when I did this, I have a young teacher at the middle school who got his undergraduate at Florida State and worked with Michael Allen and worked with Gail Barnes at South Carolina so he’s coming in and they’ve done this. When I was in school years ago, I didn’t have any good string methods approach and it’s kind of been a hodge-podge of different things I do and so I think that by having some of these, you do these things off and on, but if I focus on some of these I think it is a good thing for me to help the technique of the students and helps me to organize a little bit better so I think a variety of them worked and it’s good for me because sometimes I’m just working on the music and I’ll think of a certain thing that we’re doing to work on the particular piece of music. But I think these exercises help remind me of some things that I can do, in general with the kids, to work on the tone and things.

6. **Will you continue to use some (or all) of these exercises in the future?**
   I want to keep some of these going, and again, I need to—at various points—be reminded to get back to basics and work on some things. Yes, I’m sure some of these I will continue to use.

7. **Had you been using exercises similar to these previously?**
   Not a whole lot. We have done some things working on tone with the bow and some of the hooked bow related exercises. Hadn’t focused on lanes as much and on crescendos/decrescendos things. In pieces I’ve done, but probably not as an exercise as such. So, not a whole lot.

8. **Did the exercises seem to improve the players’ tone?**
   I think they did. I think it made them more conscious of their bow placement and more aware of getting a solid tone. The good players, I mean the ones who
studied privately for years and everything, it probably didn’t affect them as much as it did kids who haven’t studied lessons and everything. I think maybe they were even more conscious of it than if I hadn’t done some of these.

9. **Were you able to apply them to the music you were performing?**
   Yes. As we were playing some things, like I said, we could refer back to what we were doing and I could say, “Where do you place your bow?” And trying to do this crescendo, or playing lighter here, and I think the exercises help them use all of the bow more. A lot of the kids, you know, kind of get stuck in the upper half playing light and fuzzy; so I think it helped them use more of the bow. So as we do the music, I can refer to that.

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**FOLLOW-UP INTERVIEW**

NAME:  
DATE: Jan. 23, 2006

1. **How did you have your students use the exercises?**
   We put them on assignment cards and did them in class, generally in the warm-up part on the assignment card.

2. **How much time were you able to spend on them?**
   The warm-up period is usually 2-4 minutes, maybe longer at some points, but always at the beginning of class.

3. **In what ways did you use them? As warm-up, for example?**
   Well, our philosophy is you always in your warm-up—you only do one thing at a time: the left hand, the right hand, or ear training, and this took care of the right-hand component. We generally start with tone to start our lessons every day and whether it was putting the hand on the stand and using flexible fingers, we always did them right at the front of class.

4. **Did they work better with a certain type or level of student than they did with others?**
   We had to make certain that we had to see where they fit into what the kids were already doing or what they could do and then, for an example, for eighth grade we would maybe up the intensity a notch or on the hooked bow exercises we would have them do more difficulty. We only altered them as they related to each level.
5. **Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?**

We did the String Wiggle a lot. In fact, we still do that one. The hand on the stand one so the arm wasn’t moving, just the fingers, has really helped with bow flexibility.

With the hooked bow (and I don’t know if this was on yours, but I think you mentioned it during the Michigan workshop) using phone numbers, using social security numbers, using addresses, things like that, we still do that one quite a bit.

I think with any of this, its no different than getting one of the method books from one of the three publishing companies, or when you go to a workshop, you know––you gravitate toward the ones that you think are going to help your group better. I don’t know if any or none of your exercises are necessarily better than the others––just the ones that I like better and that I think work better. And so I guess it has to do with my personal preferences and what I’ve seen results with. But you ask another teacher and they might like the ones we don’t do as much.

6. **Will you continue to use some (or all) of these exercises in the future?**

Yes, some.

7. **Had you been using exercises similar to these previously?**

Honestly, in the past I haven’t been as critical of my own teaching to make sure we always start with a tone exercise, but this year I have; probably for multiple reasons: having your exercises to start the year, listening to others in Ann Arbor [American String Workshop], and hearing what works for other teachers around the country. So this has helped our program immensely.

8. **Did the exercises seem to improve the players’ tone?**

Definitely

9. **Were you able to apply them to the music you were performing?**

Yes

The kids now, when they play, they know whether it’s a scale or playing by ear or repertoire or whatever. They know that tone has to be the most important thing. If you don’t have a good tone, who cares?
FOLLOW-UP INTERVIEW

NAME: Beth Gilbert  DATE: Jan. 25, 2006

1. How did you have your students use the exercises?
We did it as part of our warm-up at the beginning of the class. Is that what you mean? And then I would also make it applicable to the music they were playing, however I could.

2. How much time were you able to spend on them?
It really varied. You know, some days maybe 10 to 15 minutes and other days, maybe 5 minutes.

3. In what ways did you use them? As warm-up, for example?
Yes, particularly the Changing Lanes and then like on the Stretching the Bow, we sometimes made that part of our scale warm-up.

4. Did they work better with a certain type or level of student than they did with others?
Probably. Well, I had to present them, you know, like much more slowly and do the same exercise for several times before my younger kids would catch on to it. With the advanced kids, we could move a little faster, but I had always talked about the different lanes, the different sounding points, 1, 2, 3, 4, 5, so the older kids were already used to that. I teach seventh and eighth grade, and freshmen. So the freshmen were the ones that really, I was able to go pretty quickly with it. With the seventh graders, I wasn’t able to get to the more advance exercises.

5. Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?
Well, I think my favorite ones were the Changing Lanes, with the crescendo and decrescendo. Those just really seem useful and we could immediately apply those to the music, and the Right-hand Flexibility, obviously, is extremely useful in all kinds of bowing as well. With some of the kids who have a lot of tension in their hands, that takes a lot of time to change.

I don’t know. The kids picked up on them quickly. And maybe just because they had more previous knowledge and more background because I had already used the lane numbers, and I spent a lot of time talking about bow placement.

6. Will you continue to use some (or all) of these exercises in the future?
Yes
7. **Had you been using exercises similar to these previously?**
   A couple of them, but certainly not all of them: not the collé and some of the more advanced ones.

8. **Did the exercises seem to improve the players’ tone?**
   Yes, definitely

9. **Were you able to apply them to the music you were performing?**
   Absolutely

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**FOLLOW-UP INTERVIEW**

**NAME:** Natalie Colbert  **DATE:** Jan. 24, 2006

1. **How did you have your students use the exercises?**
   Well, I didn’t use all of them, first off. There was quite a lot of information there. For my purposes, I did the Lane Changing exercise and the, I can’t remember what it is, as the warm-up each day, I mean each class.

2. **How much time were you able to spend on them?**
   I would say about eight, or five to eight minutes.

3. **In what ways did you use them? As warm-up, for example?**
   Yes. I would take a scale and just vary the scale each class period by doing the hooked bowing, and, you know, the lanes from 5 to 1 and 1 to 5 and we did do some of the bow exercises, like the Pencil Pull Up and Bow Writing, too.

4. **Did they work better with a certain type or level of student than they did with others?**
   I would say yeah, the more advanced. It wasn’t very complicated what I was having them do. In other words, I made it/attached it to a scale that they really knew well, and then we just worked really on that to get in tempo.

5. **Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?**
   The bow speed and the bow placement. I really liked those.

   They were things I had touched on before in my teaching. They weren’t totally new.
6. **Will you continue to use some (or all) of these exercises in the future?**
   Yes, all of them.

7. **Had you been using exercises similar to these previously?**
   Yeah, similar. I’d done the hooked bowing, and I’ve changed the lanes, and I’ve done that before, and I’ve done the Pencil Pull Up and the Bow Writing.

8. **Did the exercises seem to improve the players’ tone?**
   Yes

9. **Were you able to apply them to the music you were performing?**
   Definitely

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**FOLLOW-UP INTERVIEW**

**NAME:** Ray Ostwald  
**DATE:** Jan. 20, 2006

1. **How did you have your students use the exercises?**
   I structure my rehearsals and their large group orchestra rehearsals with anywhere from 25-55 strings in the room. I use them as part of the warm-up before we would play our scale warm-up. We have a standard scale pattern that we do in different keys and I usually do a reminder, something position-related prior to that, so I inserted these as a way to get them thinking about their bow hand and their bow technique, especially those that are more general as opposed to the bowing patterns, doing things like the Pencil Pull Up, the String Wiggle, the fingers flexible, get the fingers flexing, the lane change discussion and activities, prior to doing their scale warm-up. And then I would assign them a lane in our traditional scale warm-up or just ask them to continue that flexibility work through our scale warm-up.

2. **How much time were you able to spend on them?**
   I would say on any one day when I’m doing one of the activities, it was probably about 5-10 minutes on that activity. We have a 50-minute rehearsal. And that was about 15 minutes at the beginning, I use as warm-ups.

3. **In what ways did you use them? As warm-up, for example?**
   As I mentioned earlier, of course, as a precursor to my scale work, but then also I use them as a warm-up if I knew I was going to be working on a passage in the music that used the lanes, the sounding point ideas. The sounding point exercises, C and D, actually all four of them with crescendo/diminuendo, I used for rehearsing the Sentimental Sarabande of the Britten—*Simple Symphony*. That has
three beats of crescendo/diminuendo in the inner voices at the beginning. So sometimes before the rehearsal, as in general; sometimes I have them apply it to a piece.

4. **Did they work better with a certain type or level of student than they did with others?**
   I think it was equal across. I only work with high school students but there is a wide variety of playing levels. I think it worked equally, from freshmen through seniors, within the group that I had.

5. **Did you find that certain exercises were more useful than others? If so, which ones? Why do you think those worked better?**
   I have to separate here—some of them were variations on something I already did so it wasn’t as memorable that it worked—in that I would say things, like the Changing Lanes, we just had a different terminology with some of the exercises that I already did. I find those very useful. The idea of wiggling-in or gripping the string with the bow silently before a clean start or especially an accent is especially a favorite of mine from there. The bow division—using the hooked bows from frog to tip—I like that one. I’ve done similar things, but not with the hooked. I always just used sustaining the note, not dividing the bow for that long and had not thought of breaking it up with an actual stop. I like that a lot.

   I think the last one I mentioned, the hooking of the bowing works a little better because the students have a hard time visualizing using 1/6 or 1/8 of the bow per beat when their bow is just going steadily as opposed to when it stops, when they have more of a concept of that. I like the bow speed in bow division; I think that works better than sustaining.

6. **Will you continue to use some (or all) of these exercises in the future?**
   I would say most. Some of which are new and some of which are variations on what I have been doing.

7. **Had you been using exercises similar to these previously?**
   In some cases, yes, similar, but in some cases no, and in other cases, they are completely new to me. And in some cases there were further ideas that I hadn’t used, and in some cases, better terminology.

8. **Did the exercises seem to improve the players’ tone?**
   Definitely

9. **Were you able to apply them to the music you were performing?**
   Yes, the Britten—*Simple Symphony* was an example of that. I was working on accents in a piece with one of the younger orchestras using the wiggling-in, the
String Wiggle, and that friction feeling directly on a day when I was working on accents in a piece.
KIRK D. MOSS
Assistant Professor in Music

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EDUCATION
Ph.D. University of Florida (Gainesville) 2006 Music Education
3.94 GPA
(Cognate in Conducting)
M.M. Cincinnati College-Conservatory of Music 1991 Music Education
3.95 GPA
(Cognate in String Pedagogy)
B.M. University of Michigan (with High Distinction) 1987 Music Education
3.86 GPA
(instrumental)

CONDUCTING TEACHERS
- Primary Teacher: Raymond Choban
- Workshop Teachers: William LaRue Jones, Marvin Rabin, Josep Giunta, David Becker, Eugene
  Corporan, Frank Batista, Jack Stamp, Robert Culver
- Additional Teachers: Gustav Meier, Carl St. Clair, Larry Rachleff, H. Robert Reynolds, Gerald Doan

CONDUCTING WORKSHOPS ATTENDED
2000 Conductors’ Workshop of America, University of Iowa, Dr. William LaRue Jones
1994 Conducting Symposium, University of Wisconsin, Dr. David Becker
1990 Conducting and Wind Music Symposium, University of Cincinnati, Prof. Eugene Corporan
1988 The National String Workshop, University of Wisconsin, Dr. Marvin Rabin
1987 The Art of the Orchestra Teacher, University of Michigan, Prof. Robert Culver

TEACHING EXPERIENCE
2004 - Present Minnesota State University Moorhead Assistant Professor of Music
Orchestra Director
2002 - 2006 University of Florida (Gainesville) Doctoral Fellow in Music Education
Grad. Associate Orchestra Conductor
2001 - 2004 Valdosta State University, GA Assistant Professor in Music
Education (Area Chair)
1998 - 1992 Walton High School, GA Orchestra Director
Dickerson and Dodgen Middle Schools, GA Assistant Orchestra Director
1991 - 1993 Davidson Fine Arts Magnet School, GA Orchestra Director
1989 - 1991 Cincinnati College-Conservatory of Music, OH Graduate Teaching Assistant
1987 - 1989 Jefferson County Public Schools, KY Orchestra Director
SCHOLARSHIP AND CREATIVE ACTIVITY

MINNESOTA STATE UNIVERSITY TEACHING
MUS 158 – Violin/Viola Lessons
ED 205 – Introduction to Education and Technology (for music majors)
MUS 210 – Survey of Western Music (for non-majors)
MUS 234 – String Methods
MUS 300 – Conducting/Instrumentation
MUS 329 – University Orchestra
MUS 590/595 – String Pedagogy (Ugrad/Grad)
MUS 441 – Orchestra Literature
Student Teaching Supervision
MSU Moorhead String Project (a member of the ASTA National String Project Consortium)

VALDOSTA STATE UNIVERSITY TEACHING
MUE 2000 – Introduction to Music Education
MUE 3720/3780 – String Methods (Instrumental Track and Vocal Track)
MUE 4640 – Lab Ensemble
MUE 4720 – Advanced String Methods
MUE 4790 – Student Teaching in Music (Placement and Supervision)
MUE 4800 – Student Teaching Seminar
MUE 7000 – Issues and Trends in Music Education (Graduate)
MUE 7900 – String Methods (Graduate)
South Georgia String Project (a member of the ASTA National String Project Consortium)

UNIVERSITY OF FLORIDA (GAINESVILLE) TEACHING
University of Florida Symphony Orchestra, Graduate Associate Conductor

Dissertation:
The Fevered Sound Production Exercises of Selected Violin, Viola, Cello, and Double Bass Pedagogues: An Analysis and Adaptation

CINCINNATI COLLEGE-CONSERVATORY OF MUSIC TEACHING
Taught or assisted in String Techniques, Brass Techniques, Instrumental Methods, Tutorial Sight Singing, Cincinnati Junior Strings (CJS) youth orchestra

Master’s Project:

PUBLICATIONS

• JOURNALS AND BOOK SECTIONS


Moss, K. D. (2002). When more is less: High school music and class rank. *Principal Leadership*, 7 (6), 6-7.


**OTHER**


**FEATURED OR QUOTED WITHIN**


**FROM GRADUATE STUDENT PAPERS**

PRESENTATIONS


Moss, K. D. (February 2006). “Strings are Instrumental: If you can teach woodwind, brass, and percussion, why not string?” Minnesota Music Educators Association, Minneapolis, MN.

Moss, K. D. (February 2006). “Selected Rote Strategies for Middle/High School Strings.” Minnesota Music Educators Association, Minneapolis, MN.

Moss, K. D. (October 2005). “Keep the Fun in the Fundamentals.” Minnesota ASTA Chapter Fall Clinic, St. Paul, MN.

Moss, K. D. (August 2005). “How to be the Architect of a First-rate Program.” Minnesota ASTA All-State Teacher’s Workshop, Gustavus Adolphus College, St. Peter, MN.

Moss, K. D. (June 2005). Faculty Appointment, American String Workshop, Ann Arbor, MI.

Moss, K. D. (June 2005). String Pedagogy Course, Meredith College, Raleigh, NC.


Moss, K. D. (June 2004). Faculty Appointment, American String Workshop, Ann Arbor, MI.


Moss, K. D. (June 2003). Faculty Appointment, American String Workshop, Ann Arbor, MI.

Moss, K. D. (June 2003). “Orchestra Head-Adjudicator Training.” Georgia Music Educators Association, Jonesboro, GA.

Moss, K. D. (March 2003). “Beyond Good: Making Your String Program the Best.” American String Teachers Association National Conference, Columbus, OH.


Moss, K. D. (January 2003). “Strings are Instrumental: Wind Players and Percussionists as Successful String Teachers.” Michigan Music Education In-Service Conference, Ann Arbor, MI.


RECORDINGS (trombone)


GRANTS

2005 Fargo-Moorhead Symphony Orchestra Educational Outreach:
Awarded $5,000 for the MSUM String Project.

2005 Dille Fund for Excellence:
Awarded $1,760 for the MSUM String Project (one of eight funded projects out of eighteen applicants).

2004 Minnesota State University Moorhead Faculty Release Time for Spring Semester 2005:
Awarded release time equivalent to one four-credit course to further develop the String Project (one of three awards given college-wide).

2004 Valdosta State University Center for Faculty Development and Improvement:
Awarded grant to attend the *Music Educators Journal* Editorial Committee annual meeting. ($500)

2003 Valdosta State University Center for Faculty Development and Improvement:
Awarded grant to present at the Midwest Clinic: An International Band and Orchestra Conference. ($500)
2003 Valdosta State University Center for Faculty Development and Improvement:
   Awarded grant to present at the American String Teachers Association National Conference. ($500)

2002 Valdosta State University Center for Faculty Development and Improvement:
   Awarded grant to present at the Florida Music Educators Association Conference. ($500)

2002 National String Project Consortium:
   Awarded a $10,000 annual grant to be matched by Valdosta State University for the South Georgia String Project. The grant primarily funds scholarships for undergraduate teaching assistants to gain pre-service field experience under the supervision of a master teacher. (Not funded)

2002 String Industry Council:
   Awarded a national grant to support a beginning string class sponsored by The Colquitt County Arts Center in Moultrie, GA under the administrative umbrella of the South Georgia String Project. ($1,000)

2002 CodaBows for America Community Outreach Program:
   Awarded a new CodaBow for use in the Valdosta Symphony Youth Orchestras. ($275 value)

2002 Valdosta State University Center for Faculty Development and Improvement:
   Awarded grant to present at the Georgia Music Educators Association Conference. ($250)

2001 Valdosta State University Center for Faculty Development and Improvement:
   Guest Speaker: Don Devito, University of Florida. Topic: "Quick and Adaptive Techniques For Inclusion of All Special Learners in Public School Music Programs," ($299)

1992 Southern Bell mini-grant recipient for "Around the World with Chamber Music." ($500)

INDIVIDUAL AWARDS AND RECOGNITIONS

2005 The Chancellor’s List®
2004 Who’s Who Among America’s Teachers®
2004 National Citation for Leadership & Merit, American String Teachers Association
2004 Who’s Who in America®
2003 National Citation for Leadership & Merit, American String Teachers Association
2002 Who’s Who in America®
2002 - 2005 Doctoral Alumni Fellowship in Music Education, University of Florida (Gainesville)
2002 Who’s Who Among America’s Teachers®
2001 Kirk D. Moss Scholarship ($500) created and named in my honor to be presented annually at Walton H.S. to a graduating string player pursuing a collegiate music degree.
2000 - 2001 Outstanding Teacher Recognition Program, University of California, San Diego
2000 Who’s Who Among America’s Teachers®
1998 Who’s Who Among America’s Teachers®
1989 - 1991 Graduate Teaching Assistantship, Cincinnati College-Conservatory of Music
GUEST CONDUCTING

2005  Midwest Clinic (Chicago, IL) – Dickerson Middle School Orchestra, Atlanta, GA
2005  Lamar Stringfield Music Camp, Raleigh, NC
2005  42nd Annual Montana All High School Orchestra Festival
2004  North Dakota State High School Orchestra Festival
2004  University of Florida (Gainesville) Symphony Orchestra (February) – First graduate student to conduct
2003  a UF Concerto Competition winner in concert.
2003  University of Florida (Gainesville) Symphony Orchestra (December)
2003  Clayton County, GA Eighth-Grade Honor Orchestra
2003  University of Florida (Gainesville) Symphony Orchestra (February)
2003  East Tennessee High School All-State Orchestra
2003  Escambia County, FL (Pensacola) All-County High School Honor Orchestra
2002  Georgia Governor’s Honors Six-Week Summer Program Orchestra
2002  University of Florida (Gainesville) String Project
2001  University of Florida (Gainesville) String Project
2001  Broward County (Ft. Lauderdale) High School Honor Orchestra
2001  South Carolina Jr. High All-State Orchestra
2000  Cobb County, GA Middle School String Clinic
1999  Suzuki Strings of Augusta (GA) Workshop
1999  Cobb County, GA Middle School String Clinic
1998  Fulton County (Atlanta, GA) High School Honor’s Orchestra
1997  Midwest Clinic (Chicago, IL) – Metropolitan Youth Symphony Orchestra
1996  Suzuki Strings of Augusta (GA) Workshop
1996  Muscogee County (Columbus, GA) Middle School Honor Orchestra
1995  Columbus, GA All-City High School Honor Orchestra
1994  Clayton County, GA Seventh-Grade Honor Orchestra
1991  Cincinnati Junior Strings Youth Orchestra
1990  Cincinnati Junior Strings Youth Orchestra – First graduate student to conduct the CIS in concert.

ADJUDICATION

2006  North Dakota All-State Strings. Minn, Bismark, and Fargo, ND
2005  North Dakota All-State Strings. Minn, Bismark, and Fargo, ND
2004  Georgia State University Invitational Orchestra Festival. Atlanta, GA
2004  Indiana (ISSMA) Orchestra State Finals. Indianapolis, IN
2003  Hawaii ASTA Orchestra Festival. Honolulu, HA
2002  GMEA District XII Orchestra Festival. Norcross, GA
2001  GMEA District IV Orchestra Festival. Druid Hills, GA
2001  GMEA District III Orchestra Festival. Columbus, GA
2000  GMEA District V Orchestra Festival, Section B. Roswell, GA
1998  Cobb Orchestra Directors’ Middle School Festival. Smyrna, GA
1996  GMEA District V Orchestra Festival, Atlanta, GA
1996  Cobb Orchestra Directors’ Middle School Festival. Smyrna, GA
1994  GMEA District V Orchestra Festival, Section B. Atlanta, GA
1994  GMEA District V Orchestra Festival, Section A. Atlanta, GA
SERVICE

INSTITUTIONAL SERVICE

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  Co-authored the Music Department’s program report for the Spring 2004 Georgia Professional Standards Commission (PSC) continuing accreditation review (35,000 words of text in addition to 140 pages of rewritten and newly aligned music education syllabi). Additional responsibilities included preparing the on-site evidence, selecting the interviewees, and interviewing with the Visitors. The report earned high praise from the Dean of the College of Education and the program met all PSC standards.


  Authored the music education sections for the Music Department’s NASM Self-Study report (7,500 words of text) and participated in an individual interview with the Visitors. The Department received a continuation in membership.


  Co-authored a four-pronged midpoint assessment to provide a holistic picture of pre-service teachers. The four components are: performance barrier, a general assessment by faculty, student professional writing samples, and an interview with the Music Education Committee. This new assessment addresses requirements established by the Georgia Professional Standards Commission.
COMMUNITY SERVICE
Director, Minnesota State University String Project
Education Director, Valdosta Symphony Orchestra
Administrative Leadership Team, Valdosta Symphony Orchestra
Coordinator, South Georgia String Project
Director, Valdosta Symphony Youth Orchestras

Other contributions to the community:
School Board Vice President, Southland Christian School, Valdosta, GA
Sound technician and substitute worship leader, local church, Valdosa, GA

OTHER SERVICE
Georgia Governor’s Honors Program – Instructor and Audition Interviewer
GMEA All State Orchestra – Adjudicator and Sectional Clinician
GMEA District Honor Orchestra – Chair
GMEA District Orchestra Festival – Site Host and Chair

PROFESSIONAL ASSOCIATION ACTIVITIES

NATIONAL
Editorial Committee (2002-06) – Music Educators Journal, circulation 75,000
Chair, 2004-06 National Orchestra Festival™ – American String Teachers Association (ASTA)
Elected Secretary, National Executive Board (2002-04) – ASTA, 11,500 members
Conference Planning Committee for 2003 National Conference – ASTA
Performance Group Selection Committee for 2003 National Conference – ASTA
Consulting Editor (1997-99) – American String Teacher
Member – Music Educators National Conference
Member – College Music Society

STATE
Past-President (1994-96) – Georgia Chapter, American String Teachers Association
Appointed Board Member (2004-present), Minnesota String Teachers Association (current member)
Member – Minnesota Music Educators Association
Past Member – Florida Music Educators Association
Past Member – Georgia Music Educators Association
Past Member – Kentucky Music Educators Association
ENSEMBLE AWARDS AND RECOGNITIONS

WALTON HIGH SCHOOL ORCHESTRA

Description:
Directed three high school orchestras involving 150 string students plus occasional wind sections. Assisted teaching 250+ middle school string students. Co-led an active parent booster group ($110,000 annual budget), ran a one-week annual orchestra camp on a college campus ($35,000 budget), scheduled professional guest artist performers and teachers throughout the year. Program growth from 79-150 high school string students.

- Summer 2001: Named GRAMMY Signature School
- May 2001: High School Piano Trio - Quarterfinalist Fischoff National Chamber Music Competition
- December 2000: Midwest Clinic (Chicago) performance
- April 2000: 10-day, 4 concert tour of Italy for Jubilee 2000
- January 1999: GMEA state convention concert performance
- Fall 1998: Commissioned and premiered Walton Overture by Richard Bell
- March 1998: Orlando Festival of Music “Grand Champion”
- January 1998: 30-member viola choir performance for a GMEA state convention clinic
- April 1997: San Francisco International Music Festival “Gold Award”
- 1996: Commissioned and premiered Variations on an Appalachian Hymn by William Dyson (now published by Kjos)
- January 1995: GMEA state convention concert performance
- October 1994: Georgia State University Invitational String Festival performance
- October 1993: Georgia State University Invitational String Festival performance
- 1993-2001: “Superior” GMEA District Festival Ratings for each orchestra entered

DAVIDSON FINE ARTS MAGNET SCHOOL ORCHESTRA

Description:
Taught grade 5-12 string program. Conducted two musicals.

- January 1993: GMEA/Southern Division MENC concert performance
- October 1992: Georgia State University Invitational String Festival performance
- October 1991: Georgia State University Invitational String Festival performance

JEFFERSON COUNTY PUBLIC SCHOOLS - ITINERANT STRING TEACHER

Description:
Taught two elementary schools, one middle school and one high school string program.

- March 1989: Tennessee Tech University Invitational String Festival performance
- December 1988: Local television appearance
- 1987-89: First time school participation in district orchestra festivals
LIST OF REFERENCES

School String Technique Books


**Dissertations**


**Books**


**Periodicals**


———. “A Visit to Dr. D. C. Dounis.” *The Strad* 64, no. 764 (1953): 244.


———. “Further Lessons with Dr. Dounis.” *The Strad* 64, no. 761 (1953): 140-142.


BIOGRAPHICAL SKETCH

Kirk D. Moss is an Assistant Professor of Music at Minnesota State University Moorhead where he leads orchestral and string education activities. He previously held a Doctoral Fellowship in Music Education at the University of Florida (Gainesville), having served as Associate Conductor of the University of Florida Symphony Orchestra. For three years he concurrently worked as Area Chair in Music Education at Valdosta State University, GA, where he led the South Georgia String Project. Moss recently completed a two-year term on the National Executive Board of the American String Teachers Association, and he is a past-president of the Georgia Chapter, thrice receiving a National Citation for Leadership & Merit. He has twelve years experience leading elementary, middle, and high school orchestras. One of his former schools awards an annual college string scholarship in his name. School orchestras under his direction have performed for The Midwest Clinic, Jubilee 2000 (Italy), earned the Gold Award at The San Francisco International Music Festival, the Grand Champion Award at The Orlando Festival of Music, and played three times for the G.M.E.A. State Conference (including a performance/clinic by the school’s thirty member viola choir). Moss holds a Master of Music degree, with a cognate in string pedagogy, from the Cincinnati College-Conservatory of Music as a graduate teaching assistant for Gerald Doan and a Bachelor of Music degree, with high distinction, from the University of Michigan under the guidance of Robert Culver. He served on the Music Educators Journal Editorial Committee. Professor Moss is married and has three children: Bethany, Luke, and Lydia.