UNIVERSITY OF CALIFORNIA SAN DIEGO

# An Adaptable Approach to Expertise:
# The Application of Ivan Galamian's Violin Pedagogy to Trumpet Practice and Teaching

A dissertation submitted in partial satisfaction of
the requirements for the degree Doctor of Musical Arts

in

Contemporary Music Performance

by

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The dissertation of Rachel Allen is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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2020

## Dedication

To my teachers and students, past and present,
who inspired my interest in learning about learning.

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## Vita

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ABSTRACT OF THE DISSERTATION

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by

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Doctor of Musical Arts in Contemporary Music Performance

University of California San Diego, 2020

Professor Stephanie Richards, Chair

Ivan Galamian was a violin pedagogue whose methods were celebrated for their seemingly universal success. A key component of his pedagogy was a set of adaptable variations intended for the development of correlation, or the mind's ability to control to movements of the body. These variations could be applied to scales, arpeggios and excerpts from music to provide a virtually endless collection of challenging material.

This dissertation first explores the efficacy of this component of Galamian's pedagogical method through the lens of perceptual-motor skill acquisition and the study of

expertise. By following the technical practice guidelines set forth in *Principles of Violin Playing and Teaching* by Galamian, a performer can develop a vast bank of implicit and explicit memories, or mental representations, that can be drawn on later. The continual progression of exercises also helps minimize or avoid the plateau in development associated with automaticity, and instead expands the physical and cognitive elements of playing which will eventually, through deliberate practice, lead to expert performance.

Second, I consult with former Galamian students and published interviews to find out how his technical ideas were implemented in lessons and how they fit into the context of the other material being taught such as sound development and musical interpretation. Galamian's lessons were logical and methodical, and he communicated his ideas through a great deal of playing and very little talking.

Lastly, I explain several ways in which I have incorporated Galamian's technical variation ideas into my own practicing and teaching. While certain aspects of trumpet pedagogy benefit from repetitive, habitual action, other areas like technical development can benefit from Galamian's adaptable approach. By applying variability to create new challenges from existing trumpet methods, the usefulness and efficacy of these existing books can be expanded and extended indefinitely.

# Chapter 1

## Introduction

Ivan Galamian's approach to violin teaching has withstood the test of time and has impacted future generations of violin players. His approach to teaching violin has the ability to guide a student toward technical expertise by providing continual challenges. By fulfilling the requirements of deliberate practice and through its ability to establish a bank of implicit violin technique and knowledge, Galamian's approach works widely regardless of playing level or musical focus. This approach can also be adapted to other instruments. I show this through research of learning theories, perceptual-motor skill acquisition and expertise, as well as interviews with Ivan Galamian's students and my personal application of these ideas for both my students and myself.

Ivan Galamian's approach to teaching technique uses a series of permutations and variations of rhythm, bowing, and accents that can be applied to scales, arpeggios, and musical excerpts to create a virtually infinite collection of adaptable, challenging exercises. The Galamian method forces a performer to solve problems and constantly work on material that is new and challenging, and therefore, slightly outside their comfort zone. By following the technical practice guidelines set forth in *Principles of Violin Playing and Teaching* by Galamian, a performer develops a vast bank of implicit and explicit memories that can be drawn on later. The continual progression of exercises is representative of and in alignment with deliberate practice which is a technique that helps minimize or avoid the plateau in development associated with automaticity, and instead expands the physical and cognitive abilities which can eventually lead to expert performance. Although originally intended for

violin, this method for expanding technique can be applied to virtually any instrument, creating a framework of adaptable exercises on which technical skills can be built.

Perceptual-motor skills, such as instrumental technique, develop in a predictable pattern. They begin by being executed cognitively, with a great deal of thought about the preparation and execution of the actions. After practice and repetition, skills progress to being executed automatically; they are able to be executed with minimal cognitive attention paid to the process of the task. The brain develops a representation for the task and its subcomponents that can be drawn on when the skill is performed. By drawing on this ingrained representation, the task can be performed with increasingly minimized cognitive processing and maximal efficiency. As performance skills are developed to the point that they become automatic and clear mental representations already exist, repetition of these skills in practice will no longer lead to performance improvement. The challenge for musicians is to avoid the plateau that comes with automaticity and, instead, continue to develop and improve indefinitely. Galamian's method does this. It allows a performer to continuously practice tasks that are difficult and slightly outside their comfort zone. These tasks force the performer to solve problems and push their level of performance beyond their current capabilities, creating an ever-expanding base of technical skills to be used in performance. Though his method predates much of the research into perceptual-motor skill acquisition, Galamian taught his students in this way because he saw that it was effective and provided a tool with which his students could continually develop their technical abilities.

Galamian's students have shared their experiences. Through specific examples and humorous anecdotes, they have conveyed how he communicated his ideas and how he implemented them in his teaching. Though he was known for speaking very minimally in

lessons, he conveyed his ideas through demonstrating and setting musical assignments that constantly pushed his students past their comfort zone and he expected no less than complete mastery of the challenge. Though he adapted his method for each individual student, there was a guiding principle of expanding technique past the difficulty called on in music, thus allowing each student to have more technique than was required of a particular musical example. If a scale was required, then a scale that could be played with numerous rhythms, bowings, and accent patterns was practiced. This ensured that the skill required was truly mastered, and not merely manageable.

In my own playing and teaching, I have adopted some of Galamian's ideas regarding the introduction of progressively harder challenges in order to develop increased technique. Galamian's variation techniques have limitations as there are areas of trumpet playing, like tone production, that are best suited to automatic, habitual responses. There are, however, many areas of trumpet technique that could benefit from the implementation of adaptable variations. Though the idea of variation in trumpet pedagogy is not new, its use has been limited and I propose a number of ways it can be adapted and applied to existing trumpet exercises and repertoire.

## Ivan Galamian

Ivan Galamian (1903-1981), was originally from what is now Iran. He studied violin in Moscow and then Paris where, after a brief career as a performer, he decided to dedicate himself to teaching violin. He subsequently moved to the United States where he taught at the Curtis institute of Music. In 1944, he joined the faculty at the Julliard School, where he taught for 35 years. Also in 1944, he founded the Meadowmount Summer School of Music in

Westport, New York where scores of young string players would study and go on to become renown performers and teachers themselves. Galamian's students include Itzhak Perlman, Pinchas Zuckerman, Michael Rabin, and Glenn Dicterow, the former concertmaster of the New York Philharmonic. These are only a few names from the extensive list of world-class students who studied with Galamian and went on to become soloists, competition winners, concert masters, and highly regarded educators, many of whom are now using parts of Galamian's method in their own teaching.

Boris Schwartz described Galamian's teaching as "analytical and rational, with minute attention to every technical detail" while also "[rejecting] the enforcement of rigid rules and [developing] the individuality of each student."[1] The cornerstone of Galamian's approach to technical mastery is "mental control over physical movement," which he calls correlation. Correlation is the ability to make the mental command for a task and the subsequent execution of the task as efficiently and accurately as possible. It can be acquired through a set of increasingly challenging permutations and variations on musical material.[2]

Galamian fully recognized the challenge of creating a written document that can stand the test of time and communicate the full scope of a pedagogue's intention, seen by his original reluctance to write *Principles of Violin Playing and Teaching*. He acknowledged that "no printed work can ever replace the live teacher-student relationship" and the final version of his book took over a decade to be completed.[3] Ivan Galamian's solution to this challenge was elegant and simple: rather than implement a strict series of exercises that would

[1] Boris Schwartz, rev. by Margaret Campbell, "Galamian, Ivan," in *Grove Music Online* (2001), https://doi.org/10.1093/gmo/9781561592630.article.10510.
[2] Ivan Galamian, *Principles of Violin Playing and Teaching* (Mineola, NY: Dover Publications, Inc., 2013), 6.
[3] Galamian, *Principles of Violin*, xvii-xviii.

inevitably not be applicable to all students, he explains a method of practice that imposes variation onto practically any material. This creates an approach that can be applied to material at any level to create a method that can work for students of any ability. Galamian's method of adaptable and varied practice works because it engages the human brain's ability to develop increasingly more complex mental representations which it does by keeping the brain and body's efforts just outside the scope of their current capabilities.

## The Method

Ivan Galamian's *Principles of Violin Playing and Teaching* spells out his pedagogical approach. One of its fundamental principles is the eschewing of rigid rules that apply to all students. He acknowledges that every student is an individual with a different mental and physical constitution, a different approach to the instrument and a different musical background. He therefore believed in a natural approach to playing, with ease and comfort of the individual being essential. He accomplishes this by providing slightly different explanations of left-hand position based on the hand and arm size of the individual and emphasized that relaxation, rather than tension should be the goal. He also found that most approaches to playing and teaching violin put too much emphasis on the purely physical and mechanical aspects of technique. He believed that the focus should be on the mental control over these physical aspects.[4] In his pedagogy, a beautiful tone, absolute accuracy of pitch content, and precise rhythmic execution provide the basis of his technical training. These items represent the non-negotiable "absolute values" in musical performance along with the

[4] Ibid., 1.

musical harmonies and structure for which there are also clear correct answers. When combined with a personal interpretation, which he called the "relative values" (taste, style, and fashion), these elements create a successful, compelling and personal performance.[5]

The crux of Galamian's technical approach is the insistence that in order to address both the absolute and relative values in playing, a student must be able to "direct mentally and execute physically all of the necessary playing movements of the left and right hands, arms, and fingers." He also states that "the key to facility and accuracy and, ultimately, the complete mastery of violin technique is to be found in the relationship of mind to muscles, that is the ability to make the sequence of mental command and physical response as quick and as precise as possible."[6] Galamian called this relationship of mind to muscles correlation[7] and insisted that the muscles are subordinate to the mind with regard to executing instrumental technique. As correlation is developed a student can expect better facility and accuracy as well as more reliable technique. In order to build correlation, Galamian believed the mind-muscle system must be given "progressively harder problems to solve."[8] Problems to solve consist of variations in rhythm, bowing, a combination of these, or added accents that can be applied to any scale, arpeggio, or passage excerpted from an etude or solo. Many of these variations as well as Galamian's explanation of his scale routine can be found in Figures 1.1, 1.2, and 1.3 on the following pages.

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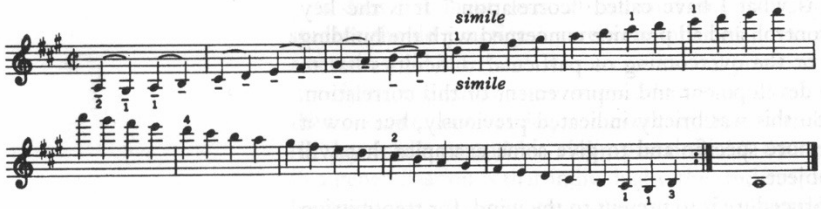
[5] Ibid., 3-4.
[6] Ibid., 6.
[7] The idea of correlation is similar to the idea of motor control in perceptual-motor skills studied by behavioral and neuroscientists. See David A. Rosenbaum, *Human Motor Control* (Burlington, MA: Elsevier, 2010), 25-29.
[8] Ibid., 6.

**Example 91: The Scale Routines**

In the following set of routines, Section IV, dealing with the mixture of slurs and separate bows, stresses the coordination of the two hands. In slow practice, the separate bows are martelé, in faster practice they become détaché. Intelligent thought must be given to solving the problems of even distribution of bow wherever possible and to the application of more of the weight-pressure factors on the slurs where the even distribution is not possible. Section V deals with accentuation. When all of the problems presented here are solved and have become efficient parts of the over-all technique, then the student should build new problems for himself, finding new rhythmical combinations and uniting into one problem several of the given examples. Such might be, for instance, the first rhythm of Section II followed immediately by the second rhythm in sequence and alternating; or, in still more advanced stages, the third, fourth, fifth and/or sixth bowings of Section II in conjunction with the accentuation patterns of Section V. As was said before, the combinations are infinite and when the student has mastered any one routine he should proceed to the next.

The A-major scale, 24-note version




Section 1: Slurs

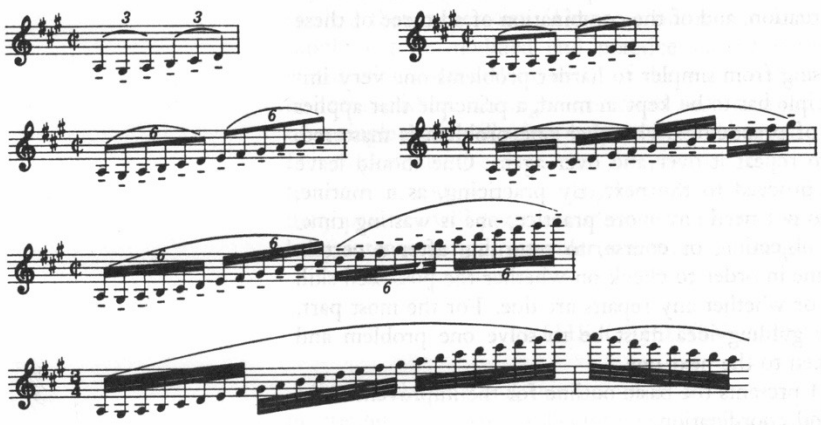


Figure 1.1 Galamian's explanation of his scale routine, an example scale, and basic rhythm variations from *Principles of Violin Playing and Teaching.*

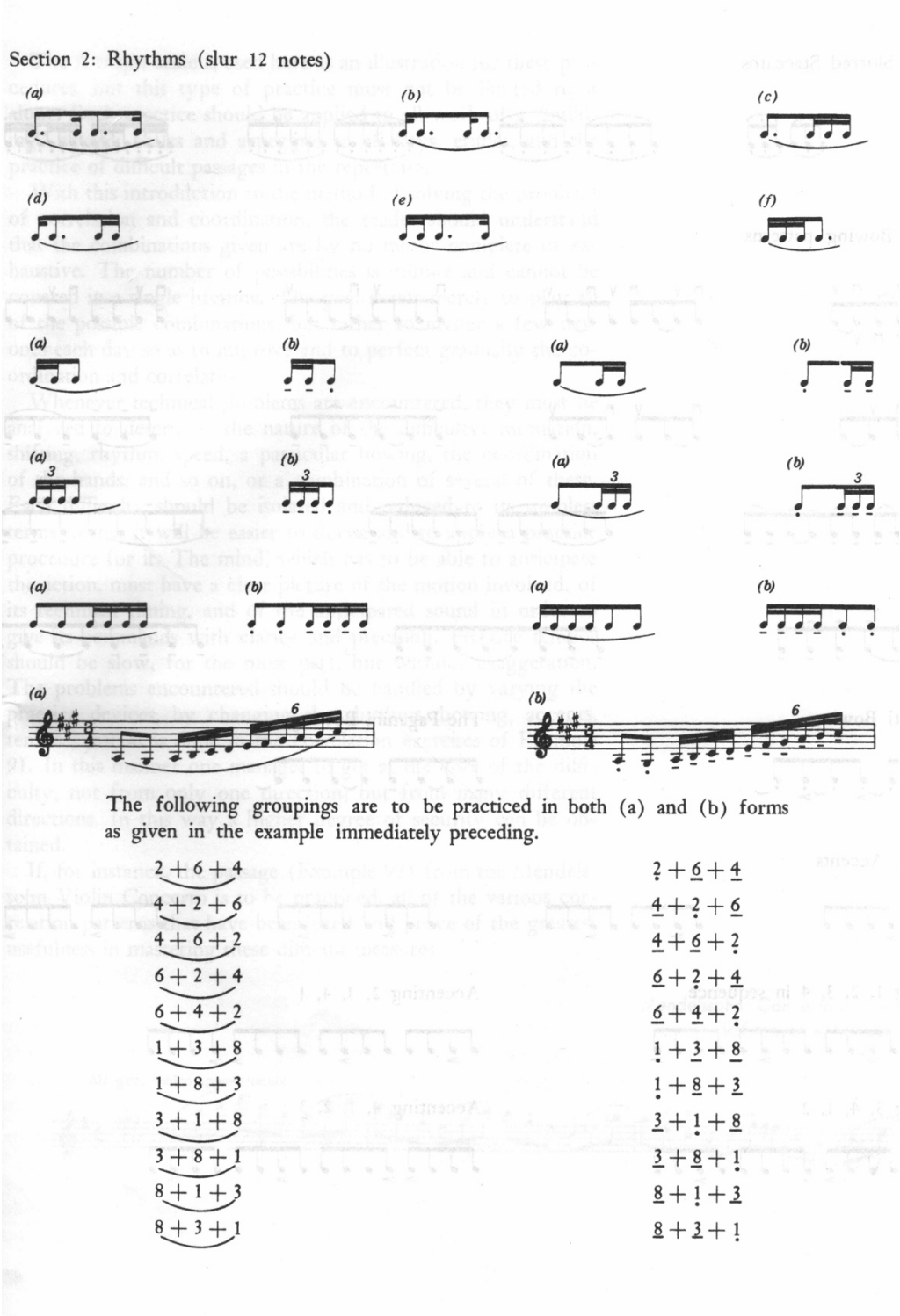



Figure 1.2 Rhythmic variations and bowing patterns for scale practice from *Principles of Violin Playing and Teaching.*

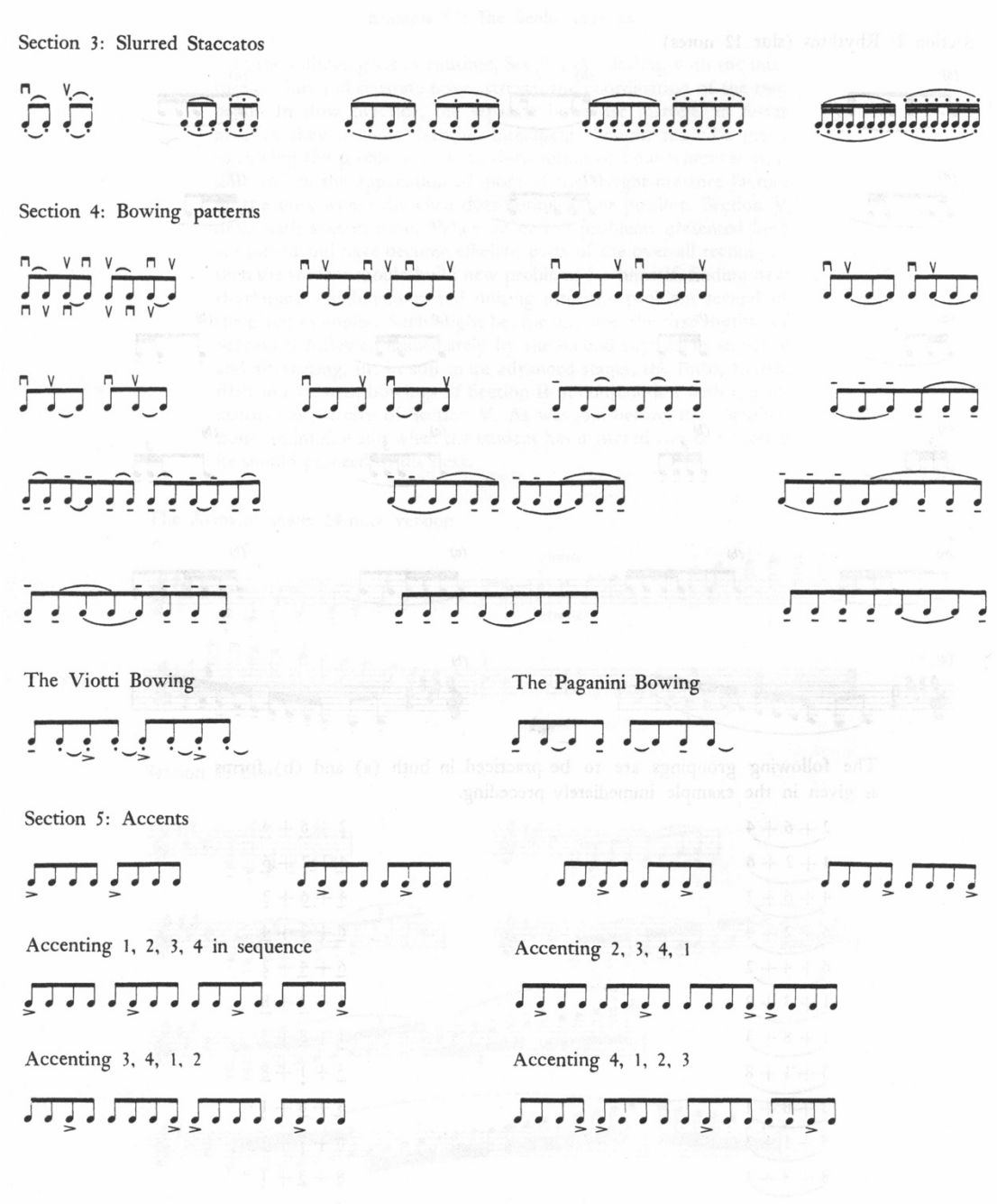



Figure 1.3 Articulation, bowing and accent patterns from *Principles of Violin Playing and Teaching.*

Galamian explains that if a player can play a scale or passage with a wide variety of rhythms, accents, and bowings then it has been learned by the mind-muscle unit. He also believed that the purpose of technique is to be able to execute a piece of music with a personal, improvisatory-like interpretation. Without adequate correlation, playing could be brilliant but not always under control – fingers move out of time, with a lack of rhythmic integrity, and interpretation is not always reliable.[9]

In a book co-authored with Frederich Neumann, Galamian presents scale and arpeggio exercises based on this method for developing technique. The preface to *Contemporary Violin Technique, Volume One* restates that "technical mastery depends more upon control of mind over muscles than upon mere agility of fingers" and that mastery is accomplished by presenting "a constant challenge to the student's thinking processes." The book provides these challenges by supplying "new problems in almost inexhaustible supply" through patterns of bowings and rhythms to be used in combination with each other.[10] In Part One of the book, various types and length of scales and arpeggios and are written out with an indication of which bowing and rhythm patterns would be appropriate to use in conjunction. Part Two consists exclusively of bowing and rhythm patterns grouped into one- through 12-note patterns and these patterns are to be superimposed on scales and arpeggios in Part One. The exercises in this book provide a student with years of potential technical practice material.

Galamian viewed practice as a time of self-instruction, requiring mental alertness, without which the student runs the risk of instilling bad habits. Practice routines are individual and do not need to follow a particular order or sequence of events as long as the routine

[9] Ibid., 23.
[10] Ivan Galamian and Frederick Neuman, *Contemporary Violin Technique, Volume One*, (Boston: ECS Publishing, 1966), ii.

includes interpreting time, in which the student spends time making the music conform to their musical ideas; performing time, in which the student prepares for performance without stops; and building time, in which technical problems are solved and time is spent "advancing one's equipment," meaning technique and correlation.[11] It is in the structure of building time that Galamian made his most compelling assertions and contributions.

[11] Galamian, *Principles of Violin,* 95.

## Chapter 2

## Development of Expertise

Much of the evidence I have collected to corroborate the efficacy of Ivan Galamian's method comes from the study of expertise. While expert performers and performances have seemingly always been of interest in Western culture, as seen in the celebration of great athletes, thinkers, and artists, the specific study of the field of expertise is relatively new. It emerged in earnest in the 1960s as a result of expanding interest in artificial intelligence (AI) and cognitive psychology. When researchers, despite their best efforts, were unable to create AI that rivaled the most talented humans, particularly in the area of chess, additional research was conducted to find out the cause of this failure. When pioneers like de Groot (1966) and Chase and Simon (1973) studied expert chess players' ability, they honed in on experts' ability to recall large patterns of play rather than search broadly for the next best possible move as AI had been programmed to do. The implication of the discovery of these patterns was that there must be some special cognitive structures at play for experts.[12] This warranted additional research by scientists and led to the development and expansion of a field of study that is now informing our knowledge of expertise and how certain people come to possess it. The study of perceptual-motor skill acquisition, spearheaded by Bryan and Harter (1897/99, discussed later in this chapter), predates the study of expertise. However, during the 1960s and 1970s it began overlapping with the emerging studies in the area of cognitive skill

[12] Robert Glaser and Michelene T.H. Chi, "Overview," in *The Nature of* Expertise, ed. Michelene T.H. Chi, Robert Glaser, and Marshall J. Farr (New York: Psychology Press, 2009), xv-xvi.

development, eventually giving rise to the combined study of expert perceptual-motor skills like those seen in athletes and musicians.[13]

According to Gobet in *Understanding Expertise: A multidisciplinary approach* an expert is "somebody who obtains results that are vastly superior to those obtained by the majority of the population."[14] Expertise is, therefore, the special skills, knowledge, or experiences that distinguish someone who is an expert from someone who is not. When applied in practice these superior skills, knowledge, and experience result in expert performance.

There are a number of qualities unique to experts including the ability to understand the field as a whole, identify and solve problems, and memorize related information more easily than nonexperts. If we look at violin playing, we can see these qualities in action. Some violin students may be able to perform particularly challenging pieces of music with enough practice. The performance of a challenging piece, however, does not make an expert. Expertise requires a deep understanding of the organization of the subject matter as a whole in addition to the ability to perform a specific piece or task. In music performance this means not only being able to compellingly perform a certain repertoire of music, but also requires possessing all the technical skills required to do so, having a comprehensive understanding of physical elements of playing and structural elements of music like form, style, and tradition. An expert also has the ability to identify and solve problems as they arise in practice. Due to their complex understanding of the many levels related to their field, any problems, for example gaps in technique or structural understanding, are more easily identified and

[13] Jeffery J. Summers, "A Historical Perspective on Skill Acquisition," in *Skill Acquisition in Sport: Research, Theory, and Practice,* ed. A. Mark Williams and Nicola J. Hodges, (New York: Routledge, 2012), 12-13.
[14] Fernand Gobet, *Understanding expertise: A multidisciplinary approach* (London: Palgrave, 2015), 5.

overcome. Memorization is also more easily accomplished due to the comprehensive framework of understanding in place by experts. By having a detailed picture of a task already established, new information is more easily assimilated into this structure. This is a result of more detailed and complete mental representations, also referred to as "chunks" of information, that are stored in the long-term memory and allow the brain to process large amounts of information quickly.

The idea of exactly what an expert looks like in a specific field evolves over time. The accomplishments and abilities that define expertise in a specific field like medicine, sports, or music change as the nature of training develops, technologies change, and accomplishments by eminent experts push a field forward. In fields like running and music performance, people regularly accomplish things today that were historically considered beyond the capacity of human achievement. For example, in the field of running, the barrier of the four-minute mile was considered impossible to break until Roger Bannister did it in 1954. After his seemingly impossible accomplishment, over one thousand runners managed to accomplish the same feat in the following fifty years, making the impossible a very real possibility with the right training and equipment.[15] Similarly in violin performance, the accomplishments of Nicollò Paganini were celebrated as uniquely unmatchable feats of violin technique.[16] In the twenty-first century, young violinists, as well as many cellists and guitar players, around the world are successfully performing Paganini's impossible Caprices despite the relative similarity of

[15] Jim Denison, *Bannister and Beyond* (Halcottsville, NY: Breakaway Books, 2008), 11-12.
[16] Andreas C. Lehmann and K. Anders Ericsson, "Historical developments of expert performance: public performance of music" in *Genius and the Mind: Studies of Creativity and Temperament*, ed. Andrew Steptoe (Oxford, UK: Oxford University Press, 1998), 87.

equipment. With these accomplishments by modern athletes and musicians we can see that as experts are pushing the boundaries of their fields expert performance is evolving over time.

Some skills, like chess, require a primarily mental form of expertise, while others, like music performance, require both mental and physical skills to be highly developed. The task of performing music is physical but it is driven by the brain with regard to perception, response and execution. Music performance is therefore considered a perceptual-motor skill because it utilizes skills requiring cognitive perception and motor skills. It should be noted that with regard to practice, feedback, consolidation, and thought-processes, perceptual-motor skills and purely intellectual skills develop in essentially the same way.[17] The benefits of practice and feedback work similarly in both cognitive and perceptual-motor skills. Performance improvement over time, or consolidation, also happens similarly in both types of skills. Both perceptual-motor skills and cognitive skills also follow a predictable progression of development. They begin by requiring extensive thought, cognitive calculation and planning then progress to more automatic types of process retrieval based on a framework of mental representations. Once a skill in automatized, a plateau in development may result from the lack of cognitive effort required.

## Skill Development and Automatization

The trajectory of skill development and its subsequent plateau was noted in 1869 by Sir Francis Galton. He explained in his treatise, *Hereditary Genius,* that every person, barring some barrier to learning, would improve at a task with experience to a certain point. He also

[17] David A. Rosenbaum, Jason S. Augustyn, Rajan G. Cohen, and Steven A. Jax, "Perceptual-Motor Expertise," in *The Cambridge Handbook of Expertise and Expert Performance*, ed. K. Anders Ericsson, Neil Charness, Robert R. Hoffman, and Paul J. Feltovich (New York: Cambridge University Press, 2006), 506.

stated that the maximum amount of improvement is determined by a person's unique hereditary limitations.[18] By this reasoning, the greatest possible performance achievable by any individual is limited by that person's most basic endowments such as innate abilities, mental capacity, and natural talent. This view of experience, success, and natural ability was assumed to be true for decades and provided the baseline understanding of skill development until research into expertise began in earnest in the 1970s. The view that there is an innate upper limit to one's ability to acquire a skill is still widely accepted to be true; that certain people are just naturally wired to be experts in certain areas sounds like a plausible explanation. This is likely because there are indeed elements of truth in that after a certain amount of experience, skill does appear to level out and cease improving, so long as the type of practice and experience remains mostly the same. This phenomenon is known as automatization and is responsible for the skill plateau that most non-experts reach.

Perceptual-motor skills, like playing a musical instrument, develop by following a predictable pattern of acquisition progressing from cognitive to associative to autonomous execution of the skill.[19] The first stage of perceptual skill acquisition is the cognitive phase. This is when the skill is being actively processed by the brain as it is being performed. Tasks are performed consciously and are directed by intentional thoughts, instructions, cues, and feedback. Deliberate control of the task is needed and there could appear to be a lack of fluidity as a result. At this point, the beginner is still in the process of learning what is required, physically and mentally, to successfully execute the desired activity. Thus, they must consciously attend to the mechanics of the activity in order to avoid mistakes.

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[18] Sir Francis Galton, *Hereditary Genius* (London: Julian Friedman Publishers, 1869/1979), 2.
[19] Paul M. Fitts, "Perceptual-motor skill learning," in *Categories of Human Learning,* ed. Arthur W. Melton (New York: Academic Press Inc., 1964), 262-268.

The associative phase of skill acquisition involves demonstration of more fluidity as the execution of the task becomes more predictable and efficient. At this point some portion of the task is executed automatically while other parts remain consciously controlled. This requires less focus than during the cognitive phase. Coordination increases, skills become more deeply ingrained and the speed of execution increases during this time. The associative phase for most everyday activities is achieved by about 50 hours of experience.[20]

The third phase of skill acquisition, the autonomous phase, occurs when skills can be executed with minimal conscious control. In this phase, execution of a task is automated, as the name implies, and the task is performed smoothly and efficiently. As far back as 1899, in Bryan and Harter's observation of skill acquisition in telegraphy, automaticity was documented. It was noted that a hierarchy of habitual actions existed and this reflected an increasingly advanced organization of structures and automatization as subjects acquired more skill. Bryan and Harter explained expert telegraphers could understand and transcribe incoming messages with "practically no attention at all."[21] It was a common occurrence that urgent messages would be received and recorded by telegraphers without any actual conscious comprehension of what they had just recorded thus risking leaving urgent messages mixed in with a pile of more mundane messages. Due to the propensity for this automatic behavior, it was important for railway dispatchers to confirm that any urgent messages they sent were understood and followed as well as just received and recorded. Bryan and Harter also believed based on their observations of receiving and sending Morse code messages that automatization was important for expert performance: "Only when all the necessary habits,

[20] Fitts, "Perceptual-motor skill learning," 262-264.
[21] William Lowe Bryan and Noble Harter, "Studies on the telegraphic language: The acquisition of a hierarchy of habits," *Psychological Review 6*, no. 4 (1899): 352, https://doi.org/10.1037/h0073117.

high and low, have become automatic, does one rise into the freedom and speed of the expert."[22] Automatization of a skill does not guarantee expert performance, but expert performance requires some degree of automaticity; or as Bryan and Harter state "automatism is not genius, but it is the hands and feet of genius."[23]

There are many reasons why automatization is a helpful adaptation in performance. As skill develops, attention no longer needs to be placed on every detail of executing the task, but can be placed elsewhere. For example, in music performance, when the task of playing the instrument has been automatized attention can shift to external input such as listening to fellow musicians, taking in the sounds of the surroundings, attending to a conductor or accompanist, interacting with the surrounding space, and any number of other related tasks a musician might attend to in performance. It has been observed that when processes become automatic, secondary tasks can be introduced without impairing performance. This is not possible when tasks are still consciously controlled. While the efficiency of automatization has obvious performance benefits, it also has drawbacks. Due to the decrease in conscious control of the activity, this is also the phase when making intentional improvements to the skill becomes very difficult.[24] This is due to the way the brain is processing the information leading to the execution of the skill.

Changes in brain function at the level of synapses are responsible for this type of skill acquisition. In studies of autonomous perceptual-motor tasks, changes in brain activation

[22] Bryan and Harter, "Studies on the telegraphic language," 357.
[23] Ibid., 375.
[24] Nicole M. Hill and Walter Schneider, "Brain Changes in the Development of Expertise: Neuroanatomical and Neurophysiological Evidence about Skill-Based Adaptations," in *The Cambridge Handbook of Expertise and Expert Performance*, ed. K. Anders Ericsson, Neil Charness, Robert R. Hoffman, and Paul J. Feltovich (New York: Cambridge University Press, 2006), 655.

show the most decrease in activity in the frontal parts of the brain responsible for task control and working memory and some additional decreases in the posterior parts of the brain responsible for attention control. The central brain areas responsible for processing motor activity and perception remain active.[25] In addition to these changes, adjustments to the areas of cortical representation also take place during perceptual-motor skill acquisition. When the brains of violin players were studied, they showed an enlargement of certain areas necessary for that skill, in particular, the areas related to representation of the fingers of the left hand.[26]

The most obvious difference between cognitive and autonomous skills are the amount of energy and effort they require to execute but they also possess additional differences explained by Schneider and Shiffrin in 1977. Controlled processes are more sensitive to stressors and more easily modified than automatic processes. They also decisively result in learning in a way that automatic processes do not.[27] This last difference is of particular importance to my research on Galamian's technical pedagogical method.

During the autonomous phase of skill acquisition, performance ability reaches a plateau where improvements slow significantly. Even when the perceptual-motor skill is still being practiced, this continued automatized experience alone will not necessarily lead to statistically significant improvement. This is because the performer is no longer actively being presented with problems and challenges that need to be mastered which would increase the level of skill and mental representations. One of the biggest challenges in expert performance

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[25] A. M. Clare Kelly and Hugh Garavan, "Human Functional Neuroimaging of Brain Changes Associated with Practice," *Cerebral Cortex 15*, Issue 8 (August 2005): 1090, https://doi.org/10.1093/cercor/bhi005.
[26] Elbert et al., "Increased Cortical Representation of the Fingers of the Left Hand in String Players," *Science 270* (November 1995): 306, DOI: 10.1126/science.270.5234.305.
[27] Walter Schneider and Richard M. Shiffrin, "Controlled and automatic human information processing: I. Detection, search, and attention," *Psychological Review 84*, no. 1 (January 1977): 51-52, https://doi.org/10.1037/0033-295X.84.1.1.

is how to avoid reaching this plateau and continue to see significant improvements beyond initial skill acquisition. Galamian's technical approach establishes a means of avoiding automaticity in technical practice by constantly presenting the performer with new challenges that require practice and problem-solving skills. These constantly adapting exercises do not allow the performer to rely on automatic performance behaviors, at least with regard to technical practice,[28] because they have not been experienced before; there is no cognitive structure for this particular exercise that can be drawn on and re-executed and, thus, one needs to be created. Though there have not been empirical studies specifically on the practice of Galamian's approach to technical practice, it is representative of and in alignment with the process of deliberate practice which is a proven method for avoiding or overcoming the plateau of automaticity and developing expert performance.

## Deliberate Practice

Experience does not necessarily equate to expert performance. Deliberate focused effort applied to material that pushes the boundaries of a performer's capabilities is needed to improve beyond a baseline level. Deliberate practice is a method that is strategically designed to address particular aspects of performance and create attainable, measurable improvements. It requires the performer to be striving beyond their current comfort zone and into tasks that are just outside of current capabilities. These challenging tasks address some area that needs improvement without undermining those mechanisms in place that are currently successful.

Anders Ericsson, a pioneer in the study of expertise, developed a number of important criteria to help define the idea of deliberate practice. First, he determined that solitary practice

[28] Some elements of playing like holding the instrument and reading, may still be automatic.

was the only activity that met the definition of deliberate practice. In a study of college aged violin players, students were separated into categories by their professors at the Music Academy of West Berlin. The categories were: the best players, those whom the professors determined had the potential to become international soloists; the good players who were studying to become violin performers in some capacity; and another group of violin players who were studying to become music educators and whose academic focus was not on performance. Ericsson found that all students participated in music related activities approximately the same number of hours every week. The difference between the future educators, the good players and the best players was the amount of time spent on individual practice intended to work on improving specific aspects of playing.[29]

Another important element of deliberate practice is the fact that it causes improvement to happen gradually over a period of weeks, months, or years. Skill can be acquired through physical and cognitive means that subsequently lead to improved performance. These modifications can be physiological improvements such as strength, endurance, and speed or more advanced cognitive structures. For this reason, it is important that every new step along the way be learned thoroughly enough to provide a solid foundation for the subsequent step in the skill to be developed. Though improvement happens in a slow gradual ascent, actual individual learning rates may not be a steady curve due to periodic changes in strategy and understanding.

Another quality attributed to deliberate practice is that it requires a level of focus and concentration that is tiring and difficult to maintain for very long periods of time. This is not mindless repetition, routine playing, or playing for fun. These activities engrain behaviors but

[29] Ericsson, Krampe, and Tesch-Römer, "The Role of Deliberate Practice," 372.

do not actively increase the level of performance. Short focused practice sessions (one hour) in which there are clearly identified goals are common among those who engage in deliberate practice and practice most often takes place early in the day. Elite musicians report that the inability to maintain high levels of focus is the main limiting factor to the duration of practice and very few elite musicians or athletes practice more than five hours a day.[30]

Though mindless repetition is not beneficial in deliberate practice, certain strategies for including repetition in practice have proven to be beneficial. There is very little question that in deliberate practice some degree of repetition must take place for the acquisition of a physical skill to occur. Timothy Lee suggests that the driving force behind learning via repetition is the problem-solving that takes place while repeating a task. He says that those problem-solving operations, "especially those involved in the development of an action plan, make important contributions to the development of a skill," and that mindlessly repeating one physical task over and over can actually undermine this action planning.[31]

Some studies have shown that including elements of variation in repetition increase performance in a physical skill. In one study, 8-year-old subjects were instructed to throw beanbags at a target. One group practiced only throwing the beanbags at a target three feet away and another group practiced with targets two and four feet away. All subjects were subsequently tested with the three-foot target. Those children who practiced with the varying-distance targets performed better even though they had never practiced with the three-foot target. The scientists believe that learning how to adjust the task for varying situations

[30] Ibid., 391.
[31] Timothy D Lee, Laurie R Swanson, and Anne L Hall, "What Is Repeated in a Repetition? Effects of Practice Conditions on Motor Skill Acquisition," *Physical Therapy 71*, no. 2, (1991): 155, https://doi.org/10.1093/ptj/71.2.150.

instilled a better physical understanding of the task and this was more beneficial than simply practicing execution at one distance.[32] A similar experiment found that varying the speed at which two objects were moving during the practice of a coincident timing task produced more accurate results than practicing the task at only one speed, the speed at which the final test was administered.[33] These studies have shown that including variability in the practice of a task enhances the understanding of the rules of the task, or schemata. Variation also helps to connect the external execution of the task to the internal mental commands that are required for the task. This variability in practice causes more detailed information processing to occur that highlights the nature of how the task actually works in all settings, not just the ability to perform it under one particular setting. This method of variable repetition in deliberate practice is similar to Galamian's idea of developing correlation. Through coordinating the mind with the muscles using elements of variation, Galamian's technical method helps create a deep understanding of the rules of the task, in this case violin playing.

Ericsson asserts that the most important part of deliberate practice is that improvement happens gradually through finding appropriate challenges. These must be worked on and mastered in a logical sequence that goes from easier to progressively harder.[34] These challenges keep the student just outside their comfort-zone, at near-maximal effort. The task being practiced is prevented from settling into automaticity with its accompanying plateau. Instead, continual challenges cause slow and steady increases in performance.

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[32] Robert Kerr and Bernard Booth, "Specific and Varied Practice of Motor Skill," *Perceptual and Motor Skills 46*, no. 2 (April 1978): 396. doi:10.1177/003151257804600201.
[33] John Catalano and Brian Kleiner, "Distant Transfer in Coincident Timing as a Function of Variability of Practice," *Perceptual and Motor Skills 58*, no. 3 (June 1984): 855-56, doi:10.2466/pms.1984.58.3.851.
[34] K. Anders Ericsson, "Attaining Excellence Through Deliberate Practice: Insights From the Study of Expert Performance," in *The Pursuit of Excellence in Education,* ed. Michel Ferrari (Mahwah, New Jersey: Lawrence Erlbaum Associates, 2002), 50-51. https://doi.org/10.1002/9780470690048.ch1.

Galamian's method does exactly this; it continually provides the brain with challenges to solve by presenting "problems that progress from the simple to the ever more complicated." Galamian insists that "whenever one problem is mastered it is useless to repeat it over and over again."[35] The evolving combinations of rhythm, articulation, accent, and/or bowing challenges prevent the practice from settling into the automated comfort zone and force the student to practice at near maximal effort. Practicing in this way involves building on or modifying previously acquired skills and this creates a steady gradual improvement in technical ability according to the ideas of deliberate practice.

Deliberate practice requires intense focus and attention, the willingness to make mistakes and fail, the ability to adapt and make corrections, and patience for gradual improvement. Although the exact principles had not been laid out at the time of its inception, Galamian's pedagogical approach works because it follows these principles of deliberate practice. Through his experience playing and teaching Galamian devised his own principles for improving technique. His method of progressive problem solving worked and provided students the tools they needed to succeed. We can retroactively look back on Galamian's teaching and say that it was successful because it followed the principles of deliberate practice but when he was teaching, it was successful because his methods motivated his students to overcome technical hurdles and guided them through ever expanding challenges.

## Mental Representations

The cognitive mechanism by which deliberate practice produces improvement is the mental representation. Expert performance is driven by these representations which involve a

[35] Galamian, *Principles of Violin*, 95.

system of complex, interconnected pieces of information. Ericsson defines a mental representation as "a mental structure that corresponds to an object, an idea, a collection of information, or anything else, concrete or abstract, that the brain is thinking about."[36] Mental representations can be visual, aural, kinesthetic, proprioceptive, involve any of the other senses, or be conceptual and abstract in nature.[37] When told to imagine the Mona Lisa, a person with a basic mental representation of the painting may conjure images of a woman with dark hair half smiling; a person with a more highly honed mental representation of the painting may be able to see in their mind the way she is holding her hands slightly crossed in front of her, the way her robe is over her shoulder and the sleeves slightly bunched around her forearms, or the rocks, water, and winding road behind her. This more detailed depiction is the result of a better, more complete mental representation. These representations are the cognitive mechanisms by which preparation, execution, and evaluation of performance occur.

Originally Bryan and Harter, who studied telegraphy, believed that perceptual-motor skill acquisition was caused by progressively more complex and inclusive routines. Mental structures for low-levels routines combine with those for high-level routines in a nesting fashion to create the mental blueprint for a skill.[38] They were able to determine that advances in telegraphers' abilities were a result of mentally restructuring of units of information from smaller to larger chunks. When transcribing incoming messages, novices listened for and copied individual letters while more advanced telegraphers were able to recognize entire

[36] Anders Ericsson and Robert Pool, *Peak: Secrets from the New Science of Expertise* (Boston: Houton Mifflin Harcourt, 2016), 58.
[37] Ibid.
[38] Bryan and Harter, "Studies on the telegraphic language," 357.

words. The most advanced, in addition to being more accurate and consistent were able to listen to and recognize whole phrases and gather an idea of their meaning before transcribing.

Later, the idea of storing "chunks" of information was popularized by George Miller in a 1956 paper where he showed that large groups of numbers could be remembered if they were stored as larger informational chunks rather than long strings of numbers.[39] This chunking process is the same for mental or perceptual-motor skill acquisition.[40] For perceptual-motor skills, this would mean that patterns of skill execution are ingrained as routines or subroutines rather than as every individual component. Over time the chunks of information that are stored become larger and more inclusive, encompassing and taking over smaller chunks of information. The chunking process is another way of describing the sequential building of mental representations.

Mental representations are stored in the long-term memory and allow the brain to process large amounts of information quickly. This is necessary when executing complicated activities like playing a musical instrument or other activities that require more information to be processed at once than the short-term memory can handle. Experts have a better quality and greater quantity of representations than novices, and it is estimated that an expert in a given area may have over fifty thousand pieces of information relating to their field of expertise.[41] Mental representations are highly specific to the task they represent. A violin player may have mental representations corresponding to the sound and feel of diatonic scales

[39] George A. Miller, "The Magical Number Seven: Plus or Minus Two: Some Limits on Our Capacity for Processing Information," *Psychological Review 63*, no. 2 (March 1956): 93.
[40] Rosenbaum et al., "Perceptual-Motor Expertise," 507.

[41] Herbert A. Simon and Kevin Gilmartin, "A simulation of memory for chess positions," *Cognitive Psychology 5*, no. 1 (July 1973): 41. http://dx.doi.org/10.1016/0010-0285(73)90024-8

and rhythm patterns that they have practiced numerous times and encountered in music. They would not have mental representations for those patterns that they have not practiced. If the notes of a passage or music appear in a combination that does not follow a traditional pattern that the player has practiced or seen before, execution will not be automatic or immediately accurate.

In music performance and other perceptual-motor skills mental representations serve at least two integral functions. First, they mediate the ideal performance. The second function is to provide the information on what is happening in real time during actual skill execution.[42] Using musical performance as an example this means there is a stored mental representation of the sound and feel of the ideal performance of a note, interval, phrase, or passage. The representation may encompass the aural information as well as the physical and cognitive means to execute the particular passage. In expert performance, these mental structures provide the aspirational image of the skill execution against which actual performance is compared and modeled. It serves as the tool that can incite gradual change to improve performances. By holding in one's head the image of the actual performance and comparing it the image of the ideal performance one can, through deliberate practice, make adjustments to improve performance.

The Galamian technical approach provides a clear and meaningful method for establishing and maintaining mental representations for note patterns, fingerings, intonation, rhythms, bowings, and accents for violin playing. The method takes a player through countless patterns of scales, arpeggios and excerpts over years of practice, ideally mastering a few different patterns each week through the entire length of a violinist's career. Over time

[42] Ericsson, "Attaining Excellence Through Deliberate Practice," 39-41.

with extensive practice representations for these patterns become more complex and complete. Though not every pattern ever practiced will be stored in long term memory as a mental representation, many will be. If a scale, arpeggio, or excerpt is practiced with a number of different rhythmic and bowing variations, the performer will have developed a stronger, clearer mental representation for that scale/arpeggio/excerpt. Additionally, as rhythms, bowing styles or patterns, and placements for accents are repeated on different scales/etc. strong mental representations will develop for these elements also. Over an entire career, the mental representations accumulated and maintained will be strong and vast.

## Implicit Memory

In addition to the array of mental representations for scales, arpeggios, and musical excerpts created by Galamian's technical approach, there is the added benefit of the vast implicit memory bank created by the years of practicing the many permutations. An implicit memory is something that is remembered from past experience but is not consciously available for recall. Previous experiences create these implicit mental impressions that guide or influence behaviors without explicit thought. An important type of implicit memory is called procedural memory. Procedural memories allow physical tasks like walking to take place without conscious thought of how to execute the task. Another type of implicit memory, priming, involves being exposed to a particular stimulus so that the next time one is required to process the same or similar stimuli again, it is easier or faster.[43]

[43] Henry Roediger, "Implicit Memory: Retention Without Remembering," *American Psychologist 45*, no. 9 (September 1990): 1048, DOI: 10.1037/0003-066X.45.9.1043.

An explicit memory is an intentional thought that can be conjured when trying to remember something.[44] This includes recalling a piece of information, remembering a fact or experience that can be conjured and reported, or describing something specific. These memories can be consciously brought back to awareness when needed. An implicit memory, on the other hand, is something that is known but cannot be retrieved for use like an explicit memory. It is the quiet knowledge that can be difficult to explain. It does not highlight a specific experience in the past for recollection, but might be able to reenact a particular experience through performance without explicit intention of retrieval by the performer. In other words, an implicit memory is something that is "learned but not remembered."[45]

After practicing using Galamian's technical approach for a period of time, some scales, arpeggios, and musical excerpts will be stored as mental representations in the long-term memory. These are explicit memories and can be actively recalled when needed. Some patterns that are practiced may not be stored explicitly in long term memory but they do not just disappear. They become implicit memories, both procedural and priming. The implicit memories are those patterns, articulations, accents, and movements that are learned through practice but are not stored in long term memory and are not available to be consciously recalled. In Galamian's technical approach when a scale is practiced with variety of rhythms, the notes and fingerings for that scale are likely be remembered and recallable on demand. A variety of the more familiar rhythms will also be acquired as conscious memories, but it is likely that for most people not every combination of scale, rhythm, articulation, bowing, and

[44] Thomas Fuchs, "The phenomenology of body memory," in *Body memory, metaphor and movement,* ed. Sabine C. Koch, Thomas Fuchs, Michela Summa, and Cornelia Müller (Amsterdam/Philadelphia: John Benjamins Publishing Company, 2012), 10.
[45] Roediger, "Implicit Memory," 1044.

accent will be explicitly remembered. These experiences do not simply go away after they have been practiced. They are stored in the brain as implicit memories. Due to the implicit memory priming effect, when something resembling these patterns shows up in music in the future, it will be executed more easily and require less learning time due to fact that it has been done before, even if it is not consciously remembered.

The existence of implicit memory was noted as early as 1885 by Hermann Ebbinghaus when he classified memory into three categories of recollection: voluntary recollection, or those memories that can be conjured on demand; involuntary recollection, or those memories that appear in one's head without having been intentionally recalled; and unconscious knowledge, or implicit memory, that which a person knows but cannot specifically recall.[46] Ebbinghaus proved the existence of implicit memory using nonsensical syllables. Subjects were instructed to read a series of nonsensical syllables. After a period of time, these syllables were forgotten by the subjects, but when presented with them again, the subjects were able to read and learn them more fluently than they had upon first experience. Ebbinghaus called this improvement "savings measures" that were obtained through this implicit knowledge.[47] Savings measures in this case meant learning the syllables faster and with a fewer number of trials than when initially introduced to the material.

Fendrich et al showed similar savings measures attributed to implicit memory in a perceptual-motor task in which the existence of implicit and explicit memory was being tested. Subjects were instructed to type eighty sequences of numbers into a number pad or

[46] Herman Ebbinghaus, *Memory: A Contribution to Experimental Psychology*, trans. Henry A. Ruger and Clara E. Bussenius (New York: Teachers College, Columbia University, 1885/1913), under "Chapter 1. Our Knowledge Concerning Memory," https://psychclassics.yorku.ca/Ebbinghaus/memory1.htm.
[47] Ibid.

row. Without practicing, they returned a week later to do the same task. Some number sequences were repeated from the first week and some were not. Those sequences that had appeared in the first trial were typed faster overall when performed during the second trial than those sequences that were new and presented for the first time in the second trial.[48] This shows that the improvement seen in the second week was not due to some form of general consolidation but was more likely to have been caused by having seen and entered those specific number sequences before, even if the number sequences were not explicitly memorized.

Parallels from this experiment can be drawn with Galamian's approach to technical practice. Instead of number sequences, violin players practice a scale or arpeggio with a specific rhythm, bowing, or set of accents. Once mastered over the course of a week, this pattern will most likely not be practiced again as the violin player moves on to a different variation on that scale or arpeggio. If some version of that scale, rhythm, bowing, or accent pattern appears in music in the future, the fact that there is prior experience with its components, or priming, makes it more familiar and fluidly executed. Galamian insisted that once a pattern was mastered the first time, it rarely if ever needed to be practiced again. Only in rare circumstances for review would it be necessary to go back to relearn patterns. Without specifically saying so, Galamian was describing the staying power of implicit memory on perceptual-motor skills.

[48] David W. Fendrich et al., "The Contribution of Procedural Reinstatement to Implicit and Explicit Memory Effects in a Motor Task," in *Learning and Memory of Knowledge and Skills: Durability and Specificity*, ed. Alice F. Healy and Lyle E. Bourne, Jr. (Thousand Oaks, CA: Sage Publications, Inc., 1995), 18, http://dx.doi.org/10.4135/9781483326887.n3.

It would be ideal if every pattern of combined notes, rhythm, bowing, and accents was explicitly remembered and stored in long term memory forever and a formal mental representation was established for that pattern. Inevitably, some scales, rhythms, and bowing combinations will become the explicit long-term memories but some will not. Practicing these patterns, however, is not in vain. These patterns become implicit memories that when encountered in music, are silently drawn on and allow the pattern to be executed and engrained more easily on subsequent encounters.

## Chapter 3

## Galamian's Ideas in Practice

In this chapter I will illustrate how Ivan Galamian implemented his pedagogical ideas in lessons. Through technical instruction using scales and arpeggios and musical instruction using repertoire he methodically and scientifically developed his students' physical and mental abilities. He molded his students into competition winners, professionals, and sought-after teachers in their own right using both the adaptable technical practice method explained in the previous section and a novel and comparable approach using etudes and solos. My research focus has been on ideas of building technique, like Galamian's scale and arpeggio variations. This chapter shows how these ideas were integrated organically into his teaching where he also spent a great deal of time on musical ideas and sound production. Technique building was just one part of a comprehensive method. The method as explained by former students closely aligns with that which was written in his book but his students' accounts illuminate how these ideas were integrated and varied in practice and how they were adapted for individuals' needs. Galamian's students also shed light on Galamian's quiet and intense character as a person and teacher and how these qualities proved to be essential elements in his students' experiences.

To inform this depiction of Mr. Galamian, as his students respectfully called him, I conducted interviews with two of his former students, Gerardo Ribeiro and Daniel Heifetz. Mr. Ribeiro studied with Galamian at Julliard between 1968 and 1974. He is currently a violin professor at Northwestern University and for the last 16 years he has been on faculty at the Meadowmount School of Music which was established by Galamian in 1944. He has

appeared as a soloist with major orchestras throughout the world including the Philadelphia Orchestra, Montreal Symphony Orchestra, and the National Orchestra of his native Portugal.[49] Daniel Heifetz was a student of Galamian's at the Curtis Institute of Music and is the founder of the Heifetz International Music Institute. He has had an extensive career as a soloist touring throughout North, South and Central America, Europe and Asia. He can be heard on the Canadian Broadcast Company's performance of the Tchaikovsky Violin Concerto with the Montreal Symphony Orchestra as well as in the documentary *The Mind of Music* on which he performed the Brahms Violin Concerto.[50] In addition to these informative interviews, I supplemented this account of Galamian's approach with previously published articles and interviews recounting the experiences of additional Galamian students including Itzhak Perlman, David Nadien, Arnold Steinhardt, James Buswell, Peter Oundjian, and Pauline Scott.

## Building Time

In his book, Galamian separates practice into three sections: building time, interpreting time, and performing time. In my interviews I asked if this sort of structural break-down was also employed in lessons. As I learned, Galamian did not always focus on all three of these areas in lessons. Building time, the witling away at scales and arpeggios with various adaptations and variations, was expected to be conducted in one's personal practice time. If he saw that you were executing your music correctly and had a functional mastery of the

[49] "Meadowmount Violin Faculty – Gerardo Ribeiro," Meadowmount School of Music, accessed April 16, 2020, https://www.meadowmount.com/inner.php?pageid=529.
[50] "Daniel Heifetz, Founder," Heifetz International Music Institute, accessed on April 16, 2020, https://www.heifetzinstitute.org/about-us/daniel-heifetz/

technique needed for your music, he would not spend much, if any, lesson time working on building foundational technique. Conversely, if Mr. Galamian saw that a student was struggling technically, even if this student had already embarked on a successful solo career, he would restart technique building from scratch if he deemed it was necessary[51] as he did when Pauline Scott began studying with him at Julliard.[52] In their interviews, Mr. Ribeiro and Mr. Heifetz both expressed that they did much of their technique building prior to their studies with Galamian, however, Mr. Ribeiro also said that the building time he did do mostly took place in his practice time at home and not during lesson time.

Though the players I spoke with came to Galamian with their technique already well established, some did not and Galamian was known for his ability to develop the technical performance of these students. One way he earned this reputation was with those students that began their studies with him still needing technical development. These students were younger or they had not received extensive training in this area prior to their work with him. One such student who did do prolific building work with Mr. Galamian was Pauline Scott. One important method that Galamian used for achieving this technique building was the scale and arpeggio variants in which rhythms, bowings, slur patterns and accents were applied to creating an adaptable collection of exercises. See Figures 1.1, 1.2, and 1.3 in Chapter 1 for examples. Ms. Scott who studied with Mr. Galamian for five years while at the Julliard School explained that upon beginning her work with the pedagogue, he said, "You're very musical, but you have no technique." She agreed and proceeded to spend the next two months working on scales and Kreutzer etudes with particular emphasis on bowing technique to begin

[51] Gerardo Ribeiro, telephone interview by author, March 1, 2020, transcript in Appendix 1.
[52] "Pauline Scott recalls Ivan Galamian's Inspirational Teaching," *The Strad*, February 25, 2013, https://www.thestrad.com/pauline-scott-recalls-ivan-galamians-inspirational-teaching/4278.article.

closing this gap. As a dedicated student, Scott followed Galamian's assignments which were not overtly complex or fast. They were intended to be simple so that close attention could be placed on the sound, bow movement, and function of the whole arm-bow-string relationship.[53] This intense focus was something that Galamian emphasized which will be discussed later.

The scale exercises given by Mr. Galamian were commonly assigned to younger students who were still early in their technical development. Because of this, Gerardo Ribeiro explained that Galamian was a really great teacher for students between the ages of 13 and 16.[54] That is the time when technique practice, or building time, was occurring with the most fervor. The structure of Galamian's assignments in this area were drawn from the book *Contemporary Violin Technique*. In this book, there is a supplemental insert containing 4,000 rhythm, bowing, and accent possibilities for variations on scales and arpeggios. According to Ribeiro, Galamian instructed students through scales and arpeggios in two then three then four octave versions. To these scales he would regularly assign only six or seven progressively more challenging rhythmic and bowing variation possibilities, not the 4,000 available in *Contemporary Violin Technique*.[55] These six or seven variations that he assigned when combined with four different scale types and two, three, and four octave versions would result in nearly a thousand different iterations of these scales for students to master. Students would often make up their own variations or pursue the more complicated rhythms and bowing variants in their own practice. Ribeiro said that the good students made sure to do many of these possibilities.[56] The book *Contemporary Violin Technique* could be used to

[53] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.
[54] Ribeiro, telephone interview by author.
[55] Ibid.
[56] Ibid.

supplement technical practice and was able to provide many more practice options than most people would be able to cover in one lifetime. It was expected that this type of scale work would take place outside of lessons, regardless of whether or not time was spent on this during lessons.[57]

In his own teaching, Mr. Ribeiro has seen great success in adopting a version of Galamian's scale practice with variations and has added the extra challenge of beat dislocation. In a scale made up of sixteenth notes, the first note of the scale typically falls on the beat. In Mr. Ribeiro's adaptation, the second, third and fourth notes of the scale all take their turn occurring on the beat. This changes where the emphasis and bow changes occur in relation to the notes of the scale and provide an added challenge for the student. These modifications are useful in many musical settings in which a scale may not start with the tonic note on the beat, as is the case in a great deal of tonal music. This added challenge, in addition to the rhythm and bowing variations implemented by Galamian, activates the problem-solving skills that are necessary for continually advancing one's technical abilities according to the study of skill development and deliberate practice and shows that Galamian's scales have been creatively and successfully implemented and adapted by his former students.

In addition to scale variation practice, Galamian would often assign etudes to students to supplement their technical development, sometimes four or more in one week.[58] Some favorite assignments of Galamian's included the book of etudes by Rodolphe Kreutzer. Odin Rathnam[59] notes than Galamian often assigned etude number two and recommended applying

[57] Ibid.
[58] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015, https://www.thestrad.com/playing-and-teaching/studying-the-violin-with-ivan-galamian/5194.article.
[59] Rathnam was a student of Sally Thomas who was a student of and assistant to Galamian. He travels and gives a master class series called *Galamian Principles in Action*.

a variety of rhythms in much the same way he recommended for scales.[60] Odin explained this etude could be used to practice anything if you "just plug in the rhythms."[61] This etude in its original form consists of 25 measures of straight sixteenth notes and a half note at the end. In the printed edition, see Figure 3.1 on the next page, prior to the etude is a list of possible blow slurs and articulations that are recommended to provide a variety of playing challenges to the sixteenth notes. This is one reason this etude lends itself to Galamian's pedagogy. These articulations combined with the application of various rhythms would have created a set of exercises and challenges much like those that Galamian devised for scale practice. Many other Kreutzer etudes provide a list of possible articulation variations and some also recommend bowing styles.

Gerardo Ribeiro recounts spending an entire year working through the Kreutzer etudes in addition to the Pierre Rode and Niccolò Paganini Caprices while studying with Galamian. In conjunction with his weekly lesson with the pedagogue, Ribeiro was assigned an additional weekly lesson with Galamian's assistant and former student, Sally Thomas, to work through these studies. These additional studies were intended to bolster technical abilities and improve physical and mental stamina. Despite his initial reluctance, Ribeiro appreciated the year of etude practice and recalls he was "really in great shape" by the end of his etude work with Sally Thomas.[62] Pauline Scott also recalls studying etudes with Galamian: "We went through all the studies, from Kreutzer to Paganini, every single one."[63] The weekly challenges that

[60] Laurie Niles, "Pedagogy Class with Odin Rathnam: Galamian Principles in Action," *Violinist.com*, June 4, 2013, https://www.violinist.com/blog/laurie/20136/14707/.
[61] Laurie Niles, "Pedagogy Class with Odin Rathnam," *Violinist.com*, June 4, 2013.
[62] Ribeiro, telephone interview by author.
[63] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.

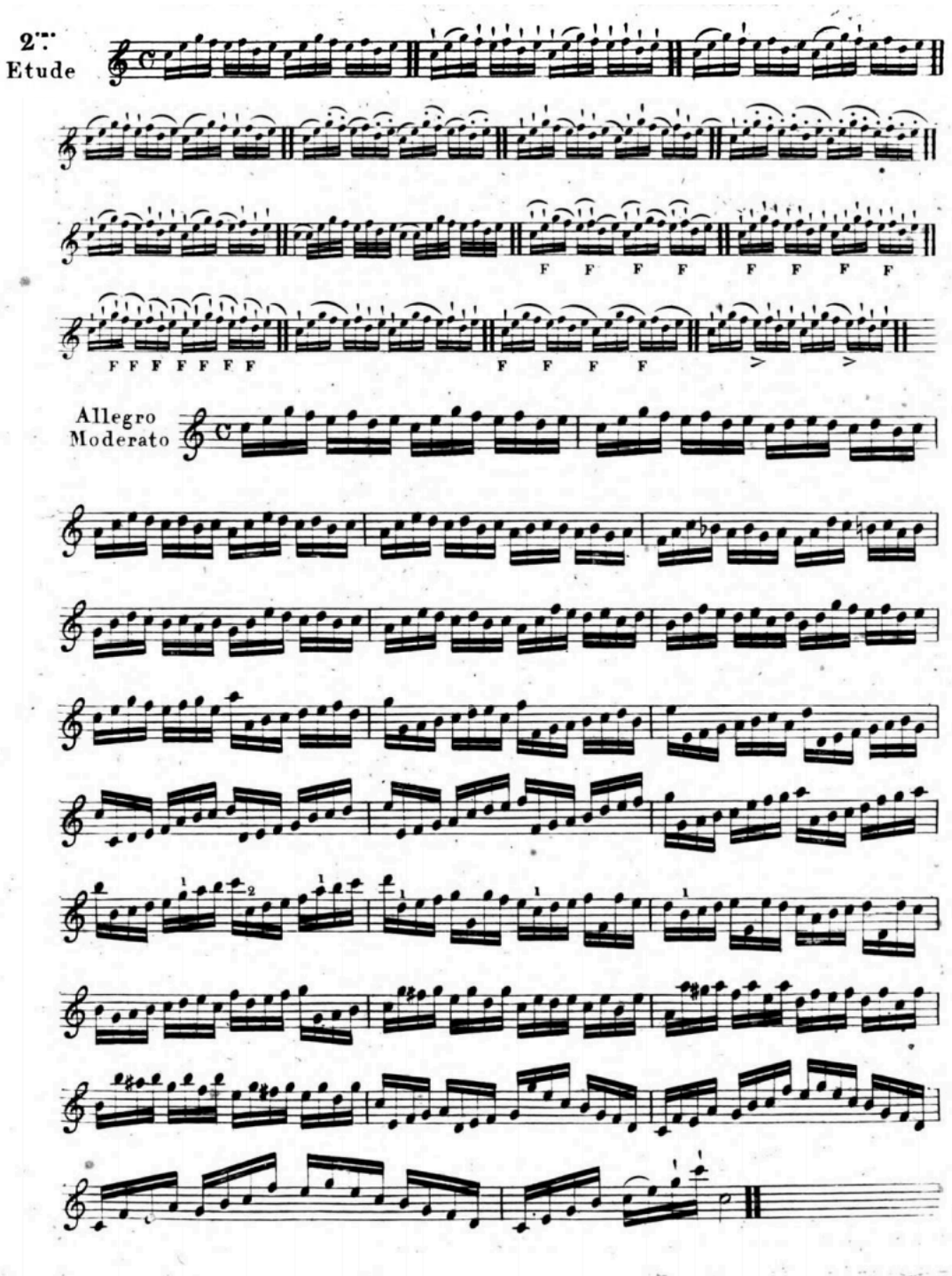



Figure 3.1 Etude 2 from Rodolphe Kreutzer's *42 Études ou Caprices.*

etudes and caprices provide address Galamian's recommendation that in order to develop technique and correlation, the mind must continually be provided with challenges to solve. Etudes and caprices inherently provide melodic, rhythmic and bowing challenges to be solved in addition to the supplementary rhythmic and bowing challenges that could be super imposed on the original part. In practice, these etudes provided Galamian with a sizable collection of easy to access material for developing correlation and technique.

When I asked Daniel Heifetz about his experience practicing building-type exercises with Mr. Galamian he explained that by the time he began studying with the pedagogue, he had already spent several years building his technique with his previous teachers at the Curtis Institute of Music. The building work that Heifetz did participate in with Galamian was centered around building his sound. This building work was also done through the use of etudes, in this case by Pierre Gaviniès. These *24 Matinées* provided the material for the sound building musical exercises in which Heifetz learned to "pull the sound." This is a technique for producing the sound that Galamian worked on with many of his students. Heifetz recalls spending "a tremendous amount of time" on the sound production using the first three etudes when he finally experienced a "eureka moment" that was hugely transformative in his approach to playing. He was able to conceptualize and produce the type of sound Galamian had been seeking.[64] This demonstrates another example in which Galamian used etudes to develop a specific technical aspect of playing without using the previously discussed method of variation. In this case, the technique being developed was sound production and the challenges being solved were related to producing a particular quality of sound. Galamian's work on sound production will be discussed in more detail later in this chapter.

[64] Daniel Heifetz, telephone interview by author, March 17, 2020, transcript in Appendix 2.

## Repertoire

Galamian, of course, did not exclusively work on technical scales and etudes with his students. Most students also worked on solo violin repertoire including concertos and sonatas. The transition to repertoire did not mean that attention to technical development was finished. Instead, it was shifted and technical challenges in repertoire could be manipulated and solved in much the same way as the variations to scales and etudes. Through shifts in approach, with special attention paid to bowing technique, Galamian was able to produce competition winners who would not miss when the pressure was on. According to Gerardo Ribeiro, in competition there were inevitably difficult passages that performers would frequently miss; not by a lot but by enough to make a difference. He assured me that Galamian's students would never miss these passages because of the way Galamian incorporated additional challenges and problem solving in the preparation of these passages.[65]

Ribeiro remembers Galamian's use of technical building exercises in a musical context during his preparation of the Mendelssohn Violin Concerto in E minor. In the second movement, seven measures before 'B' there is a high C that is supposed to last six beats, pictured in Figure 3.2 on the next page. Ribeiro explains that one must save the bow so the C would "sound exquisitely" the entire time. In order to train Ribeiro to save enough bow for the duration of the note Galamian would force him to sustain the note longer than required without telling him ahead of time to do so. For example, as Ribeiro counted in his head, when he arrived at beat five out of six, Galamian would count out loud and say "four." This forced Ribeiro to "excruciatingly play that extra beat" and he learned to save his bow more efficiently for future attempts. Of course, Ribeiro explained, during subsequent runs, when

[65] Ribeiro, telephone interview by author.

you were expecting the extra beat Galamian would not alter the counting because he saw that the bow was being adequately prepared.[66] By surprising his student with the added challenge of the extra beat, Galamian forced his student to activate his musical problem-solving skills and ensured he would be prepared above and beyond the actual challenges of the music. This works in much the same way that variations on scales and arpeggios provide an extra challenge above and beyond the immediate needs of playing a basic scale.

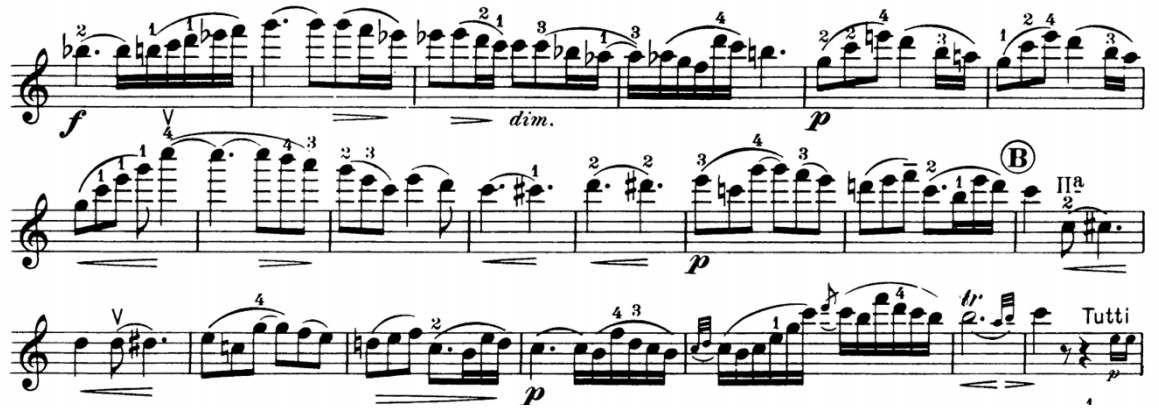



Figure 3.2 Excerpt from Mendelssohn's Violin Concerto in E minor, Movement 2.

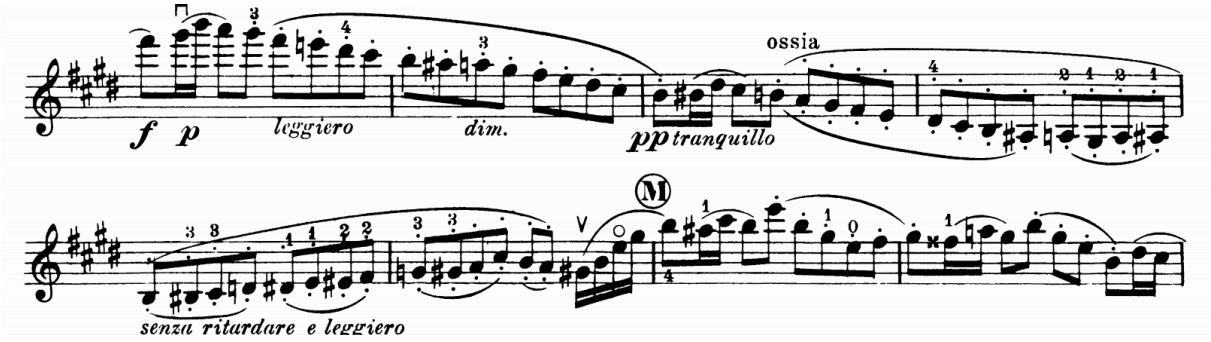



Figure 3.3 The up-bow spiccato passage from Mendelssohn's Violin Concerto in E minor, Movement 3.

[66] Ibid.

Ribeiro encountered another technical building exercise in the third movement of the Mendelssohn Violin Concerto, again having to do with his use of the bow. The passage can be seen six measures before 'M' in Figure 3.3 on the previous page. It requires up-bow spiccato many times in a row; so many that Ribeiro said it was "never-ending." Due to the nature of the continual up-bows, one must retake the bow in the middle of the passage to avoid ending up at the frog and having no more room to play the up bows. Mr. Galamian's challenge to Ribeiro was to play the up-bow passage and keep the bow in the same spot or even regain bow—start in the middle of the bow and end the passage at the tip. If this was mastered in practice then in a high-pressure competition the pitfall of running out of bow could be avoided.[67]

In my interview with Daniel Heifetz he corroborated the account of applying problem-solving techniques in the context of music. He explains that problem solving in lessons might look like finding an effective fingering combination for a difficult passage or solving a problem of bow distribution in a particular passage. In fact, Heifetz ventured that Galamian approached all aspects of violin playing and teaching in terms of how to solve problems—technical, musical, or otherwise.[68]

Gerardo Ribeiro, while extremely complimentary of Galamian's teaching, did mention that his highly technical training did leave room, on occasion, for more musical emphasis. In some cases, such as his own, Galamian focused so intensely on developing students' technique that the more musical aspects, even when working on repertoire, may have taken a back seat. Ribeiro explained that Galamian's friend and colleague Felix Galimir

[67] Ribeiro, telephone interview by author.
[68] Heifetz, telephone interview by author.

acknowledged that Galamian was too busy building people's technique but this had its benefits. This led to other musicians wanting to work with Galamian's students. They knew they would encounter few problems with technique and they would be able to focus on musicality.[69] David Nadien had a different experience with regard to musical focus. He explains that Galamian gave him "a general musical approach to understanding repertoire" which he had not received from his previous teacher.[70]

Daniel Heifetz explained that Galamian taught him how to approach music and violin playing more scientifically. These scientific ideas were then applied to musical decisions. I have explained how Galamian's ideas about developing scale and arpeggio technique follow a logical pattern. In music he managed to use similar logic and apply it to musical aspects like phrasing, rubato, and vibrato. One specific example of this logical, scientific approach was Galamian's explanation of bowings. If a phrase goes up, use up-bow; if a phrase cadences down, use down bow. Cadencing down to the tip of the bow results in less weight and a more graceful ending. This logical, scientific reasoning was eye-opening for Heifetz who was astounded that this sensible rationale had not been mentioned by previous teachers. Heifetz gave the specific example of the second theme in the Tchaikovsky Violin Concerto. He explained that most examples he had heard started the phrase, which is pictured beginning in the third measure of Figure 3.4, with a down bow but Mr. Galamian insisted it must start up-bow and finish down so that the building and relaxing of the phrase coincides with natural intensity in the bowing. Galamian also used a scientific approach to assigning fingerings in a way that felt as easy and natural as possible. Heifetz says he now uses Galamian's scientific

[69] Ribeiro, telephone interview by author.
[70] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.

approach constantly in his own teaching. Due to the fact that he studied with several teachers prior, he developed his own approach that is not identical to that used by Galamian, but his adoption of the logical deductive reasoning is inspired by him.[71]

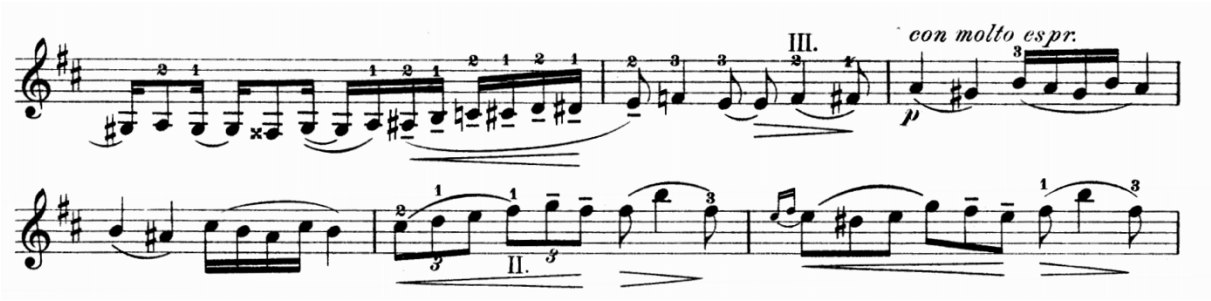



Figure 3.4 The third measure above depicts the beginning of the second theme from Tchaikovsky's Violin Concerto, Movement 1.

A number of other students have also commented on the logic of Galamian's approach. Pauline Scott reiterated that "his teaching was methodical: his principles were logical and simple," although that does not mean they were easy. She remembers that Mr. Galamian would spend as long as he felt necessary to work on a particular idea. These ideas, however logical and simple still required "a lot of painstaking work."[72] James Buswell, formerly on faculty at New England Conservatory and Indiana University, described Galamian as "a man with an analytical mind who tried to instill in his students his profound philosophy of order."[73] This analytical approach allowed Galamian to create standard rules that informed his musical decisions and provided structure on which to build the technique necessary to execute these ideas.

[71] Heifetz, telephone interview by author.
[72] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.
[73] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.

In order to achieve advances in their playing, Galamian required an incredibly high level of focus, alertness, and performance from his students in lessons and in practice. Ribeiro remembers Galamian explaining to him that it was important to "do a routine" and practice what needed work, but it should not "become routine." In other words, stay focused and alert and always listen carefully to what is being played. Mindless repetition was not encouraged and when an exercise was mastered, the student should move on to something else. If an exercise was repeated it should feel like the first time or like being on stage. This applied to work during lesson times as well as practice. Galamian insisted that you perform the exercise or music during lessons, not merely play it. Regardless of the material, whether it was a scale or etude, expression was required. Often some superlative instructions, such as "play the scale as fast as possible" would be employed to illicit complete engagement in the material. Ribeiro explained that this made the transition between technical exercises and repertoire easier. Galamian also exhibited this same level of intense focus when he observed his students playing. Pauline Scott said that in lessons the focus was "entirely on what you were doing."[74]

The need for intense focus is in line with the explanation of deliberate practice from chapter one. Success is typically a result of highly focused individual practice. The mental demands of deliberate practice result in most people being unable to maintain this high level of focus for more than four or five hours in a day.[75] This is the kind of focus that is required when the mind is engrossed in the process of actively solving problems, which Galamian's method requires of his students.

[74] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.
[75] Ericsson, Krampe, and Tesch-Römer, "The Role of Deliberate Practice," 391.

## Sound Development

Though the focus of my work has been on studying Galamian's approach to technique through the use of scale and arpeggio variants, I must acknowledge his work in the area of sound production. Galamian took a holistic approach to teaching in which technique, repertoire, and sound production were all very large components. Technique can take a student only so far. They must also possess the ability to produce a sound that people want to hear and a sound that can carry and project over an orchestra to the back of a performance hall.

Many of his former students noted Galamian's insistence on an innovative approach to sound production during lessons. Students frequently commented on this important aspect of his teaching both in the interviews I conducted as well as in previously published material. Though each student describes it slightly differently there was a general agreement that Galamian instructed students in a particular bow technique in which the goal was to achieve the most volume and resonance with the most efficiency. As mentioned previously, when Daniel Heifetz worked with Galamian, his building work was mostly centered around this idea of building sound production technique. Through the use of etudes, Heifetz worked on the idea he referred to as "pulling the sound" as opposed to pressing on the string.[76] Gerardo Ribeiro also spent a significant amount of lesson time with Galamian on this sound producing idea. Ribeiro called it "carrying power" and explained that the goal was not loud or forced and was not even exactly the same as projecting. This concept of tone production, of which volume was just one part, involved "the sounding point." Galamian introduced this idea that combines the spot on the bow, spot on the string, dynamic, bow speed, pressure or arm

[76] Heifetz, telephone interview by author.

weight, and the contact point. All of these elements must be working together to create a resonance that was required for a soloist.[77]

A number of other students have commented on Galamian's insistence on sound production. David Nadien said that Galamian "stressed warmth and good sound" in everything he worked on. Arnold Steinhardt recounts a slightly different experience in this area. He said Galamian gave all his students two guiding principles: "More bow!" and "Play so the last person in the last row of the hall can hear you."[78] While this seems like good advice it does not seem to mesh entirely with Ribeiro's recollection that Galamian's concept of sound production was not the same as simply volume or projection but had to do more with many elements working together to create maximum resonance.

James Buswell's description of Galamian's approach to sound production and projection technique took on a much more scientific quality which seems appropriate given Galamian's propensity toward a scientific approach to playing. Buswell called Galamian's bow arm instruction "a revolutionary technique, which was based on his knowledge of the laws of physics and anatomy." Buswell also said that Galamian's goal was "the acoustic survival of the stringed instrument" which would "make the violin soar over an orchestra."[79] This would have been an important skill for Galamian to impart on his students considering how many of them were destined for careers as competition winners and international soloists.

Dorothy Delay, a former student of Galamian's who later became his teaching assistant, did not always agree with Galamian on his teaching methods but she noted that "his

[77] Ribeiro, telephone interview by author.
[78] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.
[79] Ibid.

area of expertise was the bow" and he was extremely skilled at working with students on this. His students all had "big healthy sounds" and their technique was "beautifully organized."[80] This occasionally came as a critique in the form of some saying that Mr. Galamian's students all sounded alike, according to Ribeiro. While he did not agree, he acknowledged why some might feel this way. The sheer number of students and the strong emphasis placed on technique and sound production could have led to these ideas. Ribeiro also mentioned that he heard the critique that with regard to Galamian's students "all they want to do is play loud," but he insisted this was a result of the power and resonance Galamian's students were able to achieve through working with him.[81]

Pauline Scott described her work in the area of sounds production as well. She explained that Galamian's priority "was to develop what he called the springs." This involved a keen awareness of the relationship between the bow and the strings in an effort to achieve the best resonance. Rather than a factor of loud or soft, it was about finding the clarity, "like a bell," Scott explained. She said that much of her work, a very long time, involved achieving this tone quality through mental control.[82]

## Additional Observations About the Galamian System

The concept of mental control was another important factor in the way Galamian taught during lessons. In his book, Galamian mentions that technique is determined by the mind's control over the body, or correlation, and he often reiterates the idea of "mind over

[80] Ibid.
[81] Ribeiro, telephone interview by author.
[82] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.

muscles."[83] I asked Ribeiro to what extent this idea was present during lessons and he explained that this concept was paramount and ever-present in Mr. Galamian's teaching. Ribeiro stressed Galamian's insistence on the superiority of the mind and the subordinate nature of the muscles. According to Ribeiro, Galamian believed that if playing was not going well, it was a problem with not thinking correctly. A student might be hearing but not truly listening.[84] The emphasis on mental focus with regard to deep listening is an idea that Ribeiro has adopted in his own teaching with tremendous results. When improvement and mastery are a result of "mind on top of everything" his students make quick progress particularly in their ability to make their own observations and adjustments.[85]

A common theme agreed upon by many Galamian students is that his method of teaching could make anyone sound good on the violin. A remarkable number of Galamian's students became internationally successful and his students have at some point won most of the major international competitions.[86] While this is a notable feat, equally striking was his ability to produce excellent results from those students who appeared to have less promise upon their first interactions with the pedagogue. Peter Oundjian jokes that "people always said that Galamian could make a violinist out of a table." He also believed that it was Galamian's method for working with the bow arm that helped accomplish this.[87] Arnold Steinhardt said that Galamian's basic belief was "that anybody could become a fine violinist."[88] Itzhak Perlman confirmed that Galamian was a "virtuoso teacher whose system of

[83] Galamian, *Principles of Violin*, 95.
[84] Ribeiro, telephone interview by author.
[85] Ibid.
[86] Galamian, *Principles of Violin*, viii.
[87] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.
[88] Ibid.

teaching the violin was both ingenious and logical. He applied that system to all of his students, and it worked, no matter how much or how little talent the student had – a true sign of a great pedagogue."[89]

Galamian's high success rate is likely due to the implementation of his system of technique and sound development that seemed to work for nearly every student, as Perlman referred to. The way in which this system was applied, though, is not agreed upon by all of Galamian's former students. Perlman believed "his teaching method was 'Scare You To Death.'… There was almost no room for give and take because he had a particular system that he applied to everybody."[90] Robin Stowell, violin teacher and editor of the Cambridge Companion to the Violin, sums up the method as "a flexible method with no rigid rules" that "promotes the maximum musical and technical development in each individual." These statements seem to be irreconcilable opposites but I believe there is a way that both of them describe Galamian's approach. With regards to Galamian's rules about the physical aspect of playing the instrument like holding the instrument and bow and corresponding hand and body positions, Galamian was cognizant of the differences between individuals and respected those. Thus, each student was not held to rigid rules with regard to these more physical aspects of playing.[91] This justifies Stowell's perception. With regard to Galamian's scientific approach to technique building, musical expression, and sound production, it seems that there were more rigid rules, as Perlman seems to remember. Pauline Scott reiterates this rigidity when she quotes Galamian saying "You do it my way and then you do it however you want" with

[89] Steffany Ann Shock, "Violin pedagogy through time: The treatises of Leopold Mozart, Carl Flesch, and Ivan Galamian," (DMA diss., James Madison University, 2014), 3. https://commons.lib.jmu.edu/diss201019/92/
[90] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.
[91] Galamian, *Principles of Violin*, 1.

regard to those musical and technical playing elements such as rubato and fingerings. She explained that there was a reason for everything he did and he would be furious if he saw you performing in a way that was not how he had indicated.[92] This rigidity, while maybe not as acceptable of a practice today, helped Galamian to produce a large quantity of successful students over the course of his career.

Galamian managed to convey this system of teaching in a unique way with remarkably little talking. Gerardo Ribeiro described Galamian as "the most practical person" who would never waste time in lessons and who spoke maybe two or three minutes during the duration of a 60-minute lesson. His comments were small and demonstrative, he "just said what was absolutely necessary," but "what he said was something that you remember for the rest of your life."[93] David Nadien provides a slight discrepancy as he believed "one had to use a grain of salt with some of the things he said."[94] Arnold Steinhardt confirms this characterization saying, "He didn't speak a lot in lessons and hardly ever smiled" yet regardless he still managed to have an "enormous presence."

Though Galamian was known for his minimal talking, when a situation called for it, he was able to explain his ideas further. Daniel Heifetz remembers that in a typical lesson, Galamian communicated with very few words, but unlike many other students, he refused to accept this quality in Galamian's teaching and, in his words: "I forced him to teach me; I made him work." Admitting that he was one of the few students to argue with Galamian, the pedagogue affectionately referred to Heifetz at "the kvetch." When Heifetz felt like he needed to know more on a particular topic or wanted a better idea of a musical passage, he would

[92] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.
[93] Ibid.
[94] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.

implore Galamian to explain further or show him exactly how something should sound and admitted he would not be satisfied until his teacher obliged. Galamian would do as Heifetz asked and despite his reluctance this led to the two developing a very close, dynamic relationship as a teacher and student and later as friends. The fact that in this situation Galamian was able to accommodate this particular student's needs is a testament to fact that he was able to explain his ideas in a way that the student needed, presuming a student had the nerve to ask him to. Though most students did not, when Heifetz did ask for his teacher to dig deeper into ideas, Galamian was able to, if only to appease his persistent student.

Ribeiro emphasized several times that Galamian was "the most practical person you could imagine"[95] and Pauline Scott confirmed that "he was a practical man."[96] Mr. Galamian said what needed to be said to convey his ideas and did not waste time saying anything extra. When conveying his technical or musical ideas, after getting his point across, there was no need to carry on as there would be no benefit to these additional words. In most cases this seemed to work.

In a typical lesson, Galamian was able to communicate his important ideas to his students with so little talking, yet the general sentiment from his students' statements is that they learned a tremendous amount from their teacher. He communicated his ideas using two techniques that worked together—demonstration and small, impactful statements. David Nadien confirms that "he taught by demonstration."[97] The irony of teaching by demonstration in this case is that a number of students have expressed that, despite their great respect and admiration of him as a teacher, Galamian was in fact not a great performer. Daniel Heifetz

[95] Ibid.
[96] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.
[97] "Studying the Violin with Ivan Galamian," *The Strad*, April 30, 2015.

recounted a story of Galamian demonstrating three various vibrato speeds, though the punch line of the story was that the three speeds were exactly the same.[98] Pauline Scott said that Galmian was not "a very exciting player" or "an inspirational performer" but he knew the repertoire from memory and he could play everything.[99] Despite his lack of excitement or performative prowess, Galamian was able to demonstrate the ideas that needed to be communicated through his playing. He gave the student the technical and musical ideas they needed without any exaggerated behaviors that would attract attention to himself and away from the point he was communicating. This is part of what made him such a great pedagogue despite his less than remarkable playing as described by his students. Visual and aural demonstrations are an important part of the process of developing mental representations and Galamian had enough performance ability to provide this example for his students. He was capable of succinctly demonstrating the necessary technical improvements or musical ideas for his students which facilitated their continued development. The remainder of the lesson provided a student the opportunity to demonstrate the work they had done in practice for the week or put the ideas that Galamian had shown or explained to use. In a lesson, this would give maximum time to allow students to play and try out these ideas while also allowing opportunities for additional feedback or demonstrations from Galamian. Providing a maximum amount of time for playing allows students opportunities to problem solve and develop mental representations for new ideas with supervision in a setting where they could immediately get feedback on the success of their efforts.

[98] Heifetz, telephone interview by author.
[99] "Pauline Scott recalls Ivan Galamian," *The Strad*, February 25, 2013.

Despite the fact that Galamian did not have the reputation of an internationally famous soloist and he did not give long drawn-out lectures to his students, he garnered the utmost respect and dedication from those he worked with. Gerardo Ribeiro said that "even people that probably did not care much for his approach or were jealous because he had the best students; they were always respectful of him because he demanded it." Galamian demanded respect from students and expected that students worked hard in and out of lessons. "There was no such thing as coming to lessons unprepared" according to Ribeiro, who also said that he practiced diligently resulting in much of his technique building time being done during practice at home.[100] The respect that motivated his students was imperative to Galamian's success as a teacher. The information and demonstrations provided in lessons are only effective if students bring the guidance they received into practice to apply his ideas. In a study of violin players, the amount of time spent in individual, deliberate practice is possibly greatest indicator of performance success[101] and motivating his students to do this was one of Galamian's most crucial attributes.

Galamian's systematic approach to developing his student's technique and similarly scientific perspective on addressing musical elements and sound production were pivotal to his pedagogical success. The accounts from his students illuminate his approach to teaching during lessons and explain how his scientific approach influenced their own practice and performance. They also gave important insight into Galamian, the person, with regard to his discipline and restraint and the ways this impacted his teaching. The quantity and content of Galamian's assignments—scale/arpeggio variations, prolific etudes, and repertoire—put his

[100] Ribeiro, telephone interview by author.
[101] Ericsson, Krampe, and Tesch-Römer, "The Role of Deliberate Practice," 391.

students in a position where they were constantly encouraged to address challenges in their playing and solve problems. This sheer amount of deliberate practice combined with his strategically implemented guidance on issues of technique, musical execution, and sound production helped create his reputation as a renowned pedagogue and in part led to the success of many of his students.

## Chapter 4

## Application of Ideas to Trumpet Pedagogy

In *Principles of Violin Playing and Teaching* Galamian established what he calls the "absolute values" of violin playing.[102] These are the non-negotiable elements of playing that must be in place regardless of who is playing and what is being played. Absolute values include knowledge of the details of the music and those elements required for complete technical control over what is being played. This encompasses clarity of tone, pitch, rhythm, and bowing. Galamian's absolute values of musical knowledge and technique translate to the similar non-negotiable values required of trumpet playing. Absolute values of trumpet playing include clarity of tone, pitch, rhythm, finger technique and articulation. Differences arise in the nature of violin and trumpet technique due to the great difference in mechanisms of sound production between the two instruments. The most fundamental aspect of technique on trumpet is the production of a clear, resonant, and efficient sound. Once this sound production has been established, something that most players take time to practice on a daily basis, one must be able to apply it to all manner of materials regardless of the nature of that material.

According to Galamian building the technique necessary to execute these absolute values requires the development of correlation. He defines this term as "the correct relationship of mind to muscles" and the "smooth, quick and accurate functioning of the sequence in which mental command elicits the desired musical response." His rhythmic and bowing variations help to develop this correlation which he explains is not about strength of

[102] Galamian, *Principles of Violin*, 4.

muscles, but about the mental control over these muscles.[103] The variety of exercises allows for continual problem solving which promotes development of technique and correlation and prevents the stagnation associated with automaticity.

I have found in my own trumpet practice and teaching that the most important aspect of trumpet technique is the execution of a clear, resonant, efficient sound regardless of the material being played. In this one aspect of technique, habitual action and automaticity are actually the desired outcomes. Once this facet of playing has become automatic, the ability to apply it habitually to all variety of materials becomes the next challenge. Galamian's variations of bowing and rhythm, or in the case of trumpet playing articulation and rhythm, can provide the material for developing this ability to play many varieties of musical material while maintaining the desired sound production technique. The execution of progressively more challenging material while maintaining this habitual efficient production of sound is at the crux of how I believe Galamian's technical method can best serve the development trumpet technique. By presenting the trumpet player with increasingly challenging problems to solve, this method has the ability to help the trumpet player develop the correlation to make a beautiful sound regardless of the technical complexity of the material being played. It also has the added benefit, or perhaps its intended benefit, of developing correlation with regard to fingering technique and tonguing articulation on a variety of material. These benefits also include the development of strong mental representations for scales, arpeggios, and patterns and the development of the implicit memory bank that contributes to musical success under the surface. Once sound production has been addressed and established for a given practice

[103] Ibid., 6.

day, technical practice can then turn to the use of these variations, either with scales and arpeggios as Galamian has suggested, or with a variety of other materials as explained below.

## Implementing Variation in Practice

Galamian scales and arpeggios as outlined in *Contemporary Violin Technique* translate quite easily to trumpet practice and provide many of the same benefits as they do on violin. The main difference is that in Galamian and Neumann's book the focus is on three and four octave scales and arpeggios and this is not realistic or possible for most trumpet players. By taking the same scale patterns in a more limited range, usually one or two octaves, and applying the articulation and rhythm variations provided in the book, scale practice takes on new purpose. In my own practice I have played scales daily for years rotating through a different type of scale every day and playing it in a steady rhythm in both one, two, and occasionally three octave versions. Having played these in a similar way for so long I no longer needed much conscious thought of what I was doing but I assumed I was still receiving the benefit of strengthening muscles, ingraining patterns and playing through the range of the instrument. After studying Galamian's approach and researching why it worked, I began implementing elements of his variations into my own practice. I incorporated short one- and two-note rhythm patterns first. This alone brought a new intensity of focus in this practice since I could no longer execute the scales without thinking. I subsequently began adding bowing patterns, or in my case articulation patterns, that were applicable to trumpet playing. Of course, there is no up or down bowing in trumpet practice but the practice of slur, staccato, tenuto, and accent translate directly. The biggest change I noticed when implementing this new technique into my daily scale practice was the amount of focused effort it now took to

accomplish this task that had felt so easy prior to adding variation. I felt as though I were truly learning something and figuring out how to execute something that I had not previously been able to do. My practice in this area went from mindless repetition, something Galamian and Ericsson have explained is of little use, to something resembling problem solving and deliberate practice which Galamian claims and Ericsson corroborates is essential for the continued development of correlation and perceptual-motor skills.

Though there are many pedagogical method books available whose intentions are similar—building a variety of technique on a framework of good sound—they provide only a finite amount of material that, once mastered, is of little use in the continued development of skills. Applying Galamian's adaptable approach to these methods would allow them to continue serving their intended purpose far beyond the initial mastery of the material. However, the idea of applying variability in the context of trumpet pedagogy is not actually new and has been practiced by trumpet pedagogues over the last century. There are a number of trumpet pedagogy books and approaches to playing that seem to be ever-present in the practice and teaching of classical trumpet students in the United States. Max Schlossberg, James Stamp, and Herbert L. Clarke are just a few names and methods that appear in the lives and on the shelves of many trumpet students, including in my own experiences with trumpet in academic institutions. As has been noted, when exercises in the books by these pedagogues are practiced in the same way on daily basis automaticity develops and exercises lose their ability to elicit continuous improvement, resulting in initial improvements followed by a plateau. Trouble arises from the fact that when printed in a book, it appears that exercises are to be taken at face value and practiced only as written. This is a logical conclusion when there is minimal or no instruction on variations incorporated into the method book. The exception

to this is if a student is studying with a teacher who studied with the pedagogue who wrote the book.

Max Schlossberg (1875-1936), a trumpeter from Russia, had a career as an international soloist, a 26-year member the New York Philharmonic, and a successful teacher.[104] He is considered to be the founder of American trumpet playing and is famous for teaching virtually all the professional trumpet players of the generation after him at some point during their careers.[105] His method of teaching was different from those that came before, like those of the French school like Arban and St. Jacome, in that he did not use a fixed, consistent series of prescribed exercises for each student. Instead he wrote hundreds of individual exercises, maybe more, that were based on a set of master copies that he drew from. Each exercise was modified to meet the needs individual students and target some particular deficiency he noticed in their playing.[106] Modifications included articulations, starting pitches, dynamics, and register. If a student was having trouble playing quiet attacks in the high register, Schlossberg would assign an exercise with quiet dynamics and light articulation in the upper register. If another student was working on building power, they might have the same exercise with regard to pitches but it would be assigned with fortissimo accents. Thus, each exercise was variable and could be modified to present each student with a specific challenge to overcome. This allowed each student to engage in individualized deliberate practice and build those skills which most needed improvement. When he wrote out exercises for students, Schlossberg also gave them verbal instructions for modifications on

[104] Max Schlossberg, *Daily Drills and Technical Studies* (New York: M. Baron, Inc., 1965), introduction.
[105] Edward H. Tarr, *East Meets West: The Russian Trumpet Tradition from the Time of Peter the Great to the October Revolution with a Lexicon of Trumpeters Active in Russia from the Seventeenth to the Twentieth Century* (Hillsdale, NY: Pendragon Press, 2004), 231.
[106] Thomas Stevens, *After Schlossberg: Trumpet Studies* (Switzerland: Editions Bim, 2011), 7.

how the exercise should be practiced. These included various keys, valve positions, repetitions, and articulations allowing the exercise to be practiced in a variety of ways. Exercises were also expected to be learned in all keys without being written out.[107]

Many of Schlossberg's master copies of exercises were compiled in *Daily Drills and Technical Studies for Trumpet* in 1959. This was compiled by his former student and son-in-law, Harry Freistadt, over twenty years after his death, and although the book provides a good resource for a variety of exercises, it is far removed from the actual pedagogical approach that Schlossberg employed. Exercises in the compilation are grouped by the technique they address: long note drills, intervals, octave drills, lip drills, chord drills, scale drills, chromatic scale drills, and etudes. In the book, exercises are printed with one dynamic and usually one rhythm and articulation. There are no suggestions of alternative approaches to the exercises like those that Schlossberg might actually have used. There are only a few exercises that are printed with any options regarding variability of articulation. If taken at face value, the material in the book provides a number of exercises that provide an initial benefit but when mastered provide little value to the student. However, according to Thomas Stevens "their true value lay in how Professor Schlossberg wanted them to be played rather than how they were written."[108] Many exercises in the book can be assigned and practiced with different dynamics, articulations, rhythms and accents to provide additional challenges for individual students. Much like Ivan Galamian's constantly varied scales and arpeggios, Schlossberg's exercises were meant to be adapted to ensure that students were constantly practicing those skills which were at the edge of their abilities and, thus, effectively expanding their repertoire

[107] Ibid.
[108] Ibid., 8.

of skills. In my own practice with this method, I choose variations on exercises that provide me with a challenge relevant to repertoire I am studying. One exercise I have used with a number of variations is number 72 from *Daily Drills and Technical Studies*, pictured in its original form in Figure 4.1 below. On an occasion that I needed to hone delicate, pianissimo articulations I opted to practice the exercise pianissimo and articulated. On a different occasion I practiced the same exercise fortissimo and changed the rhythm to a dotted-sixteenth/thirty-second note rhythm to accommodate the development of a different skill. Using Galamian's adaptable practice method, this one exercise can be modified to provide innumerable technical challenges to be solved. This was actually the intended purpose of these exercises based on accounts from Schlossberg's students.

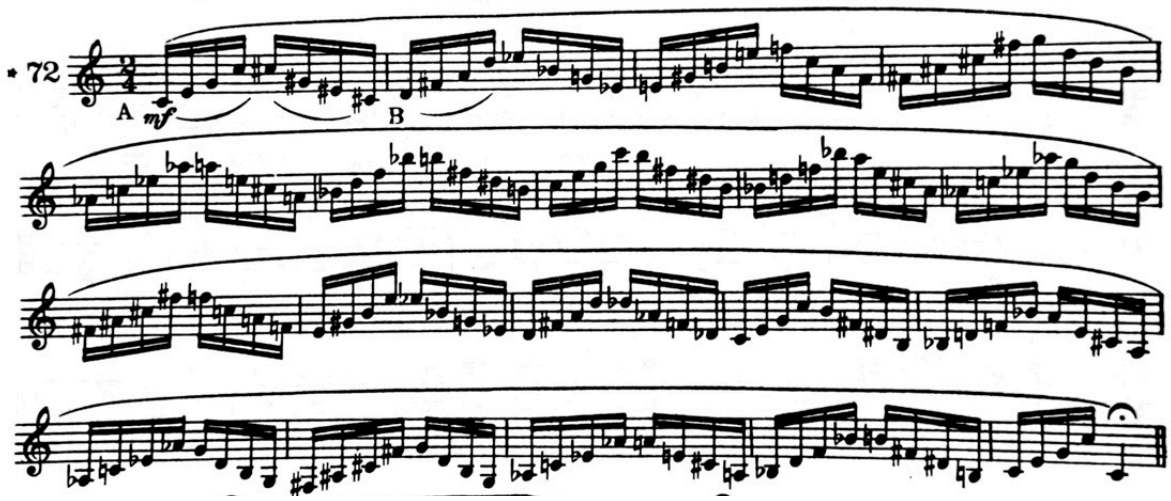



Figure 4.1 Exercise 72 from Schlossberg's *Daily Drills and Technical Studies.*

James Stamp (1904-1985), a long-time student of Max Schlossberg, became a well-known trumpet pedagogue in his own right. He was a member of the Minneapolis Symphony Orchestra for 17 years before moving to Hollywood to play for film studios. Due to health problems in 1954 he cut back on playing and spent more time teaching, eventually earning the

reputation as a "trouble shooter" for any trumpet playing problems.[109] Some of Stamp's early teaching material was based on Schlossberg studies but he later went on to develop some of the most iconic and well-known trumpet warm-ups and drills that we use today. Stamp was initially hesitant to write a book for the very reason that Schlossberg's book has received so much criticism. In practice, exercises were often modified and adapted for individual students and he felt that publishing them in a book would detract from their effectiveness and intended purpose. Eventually he consented to having his studies published by a trusted student and insisted that he be consulted on the project during every step.[110] The resulting book provided a representation of some of the basic exercises that Stamp used in teaching but barely scratched the surface of the extent to which he used them in lessons. This book includes a number of buzzing and playing warm-up exercises that progress into the pedal and upper registers. There are also flexibility and scalar exercises to address some of the fundamental elements of technique on the instrument. There is one hint at variation in the instructions for the scale exercise in which he suggests it be practiced "in all major, minor, whole tone, and three diminished scales."[111]

In a follow-up book entitled *James Stamp Supplemental Studies to the Original Warm-ups and Studies,* Thomas Stevens, a long-time Stamp student, expands on exercises as they were originally published by writing them out in different the modes like natural minor, harmonic minor, whole tone and diminished. This was one variation that was frequently implemented by Stamp. Stevens also explains that exercises are not only to be played as

[109] "James Stamp," Editions Bim & The Brass Press, accessed April 28, 2020, https://www.editions-bim.com/composers/james-stamp.
[110] James Stamp, *Warm-ups and Studies* (Switzerland: Editions Bim, 2005), 2.
[111] Ibid., 6.

written but should also serve as a model for students to create their own exercises.[112] This novel idea would increase student engagement and induce variation in these exercises, and as explained, variation is important for developing expertise.

In my own practice and teaching, I have seen the benefit of applying variation to Stamp's material. My initial introduction to the material was during warm-up class at the Oberlin Conservatory. Early in the morning, four days a week for the first two years of school, trumpet students were required to attend this class that involved lip and mouthpiece buzzing as well as some of the basic Stamp exercises. Stamp's exercises involve starting in the middle register, playing down far into the pedal register, then ascending into the upper register through a set of progressive exercises. There is also a series of scale patterns that are to be buzzed and then played. The intended benefit of these exercises is to facilitate moving around the range of the instrument on one stable embouchure set-up. For the first few weeks of class, I found the experience engaging because I was learning new material and patterns and was receiving their intended playing benefits of embouchure development. In addition I appreciated the fact that I had an opportunity to warm-up my muscles for the day. After doing this for several weeks, I could perform the entire thirty-minute routine while thinking about something completely unrelated and thus, the routine was no longer providing a benefit beyond the basic warming-up of the muscles. Had variations in key, tonality, and patterns been applied like in the adaptable method of Galamian and in the way Stamp had originally intended, I believe this morning routine could have provided the much greater benefit of continued development and engagement over time resulting in continued improvement.

[112] James Stamp and Thomas Stevens, *James Stamp Supplemental Studies to the Original Warm-ups and Studies for Trumpet,* Compiled by Thomas Stevens (Switzerland: Editions Bim, 2009), 6.

In my daily practice, after an initial warm-up, I begin implementing elements of variation in a daily set of exercises from Pierre Thibaud's *Méthode pour Trompettiste Avancé*. From this book, I practice the section called 'Flexibility exercises working from the double pedal range' (page 17-28). When first beginning my work in this book, I practiced the first five Flexibility exercises everyday exactly as printed as part of my warm-up and technical development practice routine. I initially found the exercises useful for helping improve ease of moving around the range of the instrument with consistency in tone. After a few weeks of practice, I believed that I was no longer seeing improvement from these exercises as they were not getting any easier (or harder). I began using a Galamian-inspired variation method, and while not proven in a controlled study, I anecdotally noticed continued improvements in my ability to navigate between low and high registers on the instrument similar to those I had seen when initially beginning these studies.

In Thibaud's Flexibility exercises, the first five studies consist of a double pedal note that is slurred to a lip-slur exercise. This exercise is pictured in Figure 4.2. These initial exercises are followed by exercises consisting of double pedal notes slurring to two-octave major scales, melodic minor scales, major scales in thirds, and melodic minor scale in thirds; an example of which is pictured in Figure 4.3. There are no instructions for additional variation. In my own practice I have implemented these written variations on the exercises as well as incorporated my own variations. These have included slurring from the double pedal to natural minor, harmonic minor, whole tone, diminished, and blues versions of the scales and thirds as well as doing similarly structured exercises with major, minor, diminished and augmented arpeggios. In addition, each time I practice these exercises, I extend the range to the maximum of my ability on that given day. The original intended purpose of these

exercises is to establish an embouchure setting that is efficient and conductive to moving around the instrument with minimal extraneous movement. Adding variations to the material provides the consistency of establishing this important skill of efficiency in daily playing with the added benefit of building explicit mental representations or implicit memories for additional scales and arpeggios beyond those initially written. Adding variation in this case also helps to maintain focused mental engagement with the material, a quality which Ericsson explains is imperative to seeing benefits from deliberate practice.

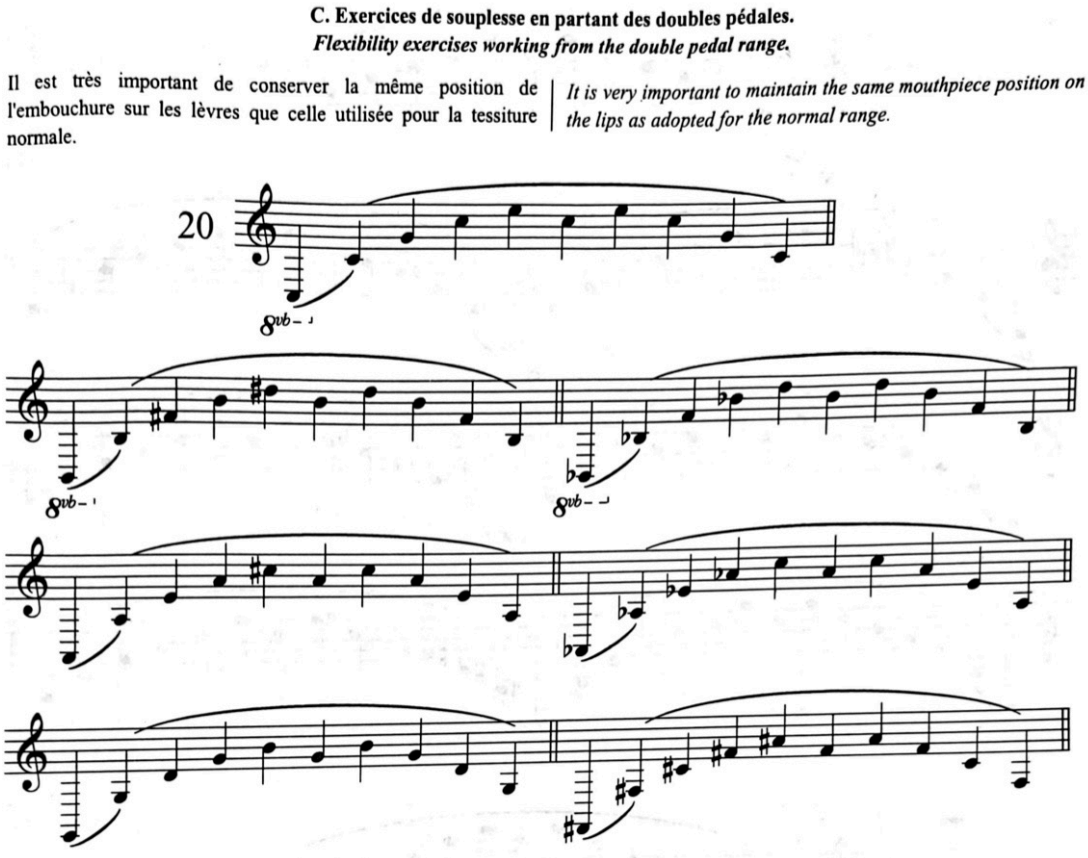



Figure 4.2 The first of Thibaud's Flexibility exercises which consists of a double pedal note that is slurred to a lip-slur exercise.

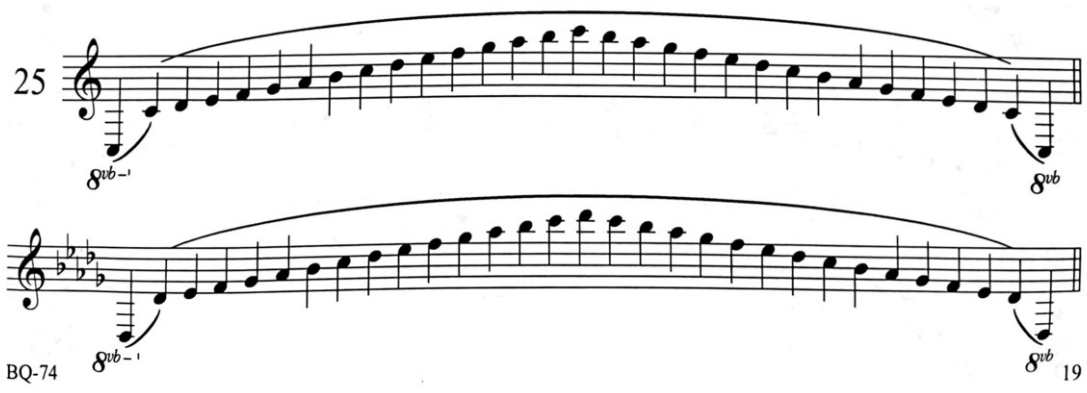



Figure 4.3 A Thibaud Flexibility exercise consisting of double pedal notes slurred to two-octave major scales.

In my daily practice a significant amount of time is spent developing technical skills using various exercises and etudes. One collection of exercises, Herbert L. Clarke's *Technical Studies for the Cornet*, provides a collection of material that I use on a daily basis and to which I apply a number of Galamian-inspired variations. The book consists of ten studies, each based on the chromatic scale, diatonic scale, or arpeggios in increasing range and complexity. These exercises have been part of my practice for nearly two decades. Initially I practiced each of these exactly as they were written in the book. Eventually, even before my familiarity with Galamian's method, I began adding basic variation in articulation patterns and multiple tonguing to the exercises to provide added challenges, help develop new skills, and keep the exercises from getting tedious. Some exercises, like the second study, actually contain instructions to do this. After becoming familiar with Galamian's techniques for variation, I began expanding the modifications on these exercises for both myself and my students.

Clarke's exercises provide an ideal canvas on which Galamian's variations of rhythm, articulation, and accents as well as my own additional variations in tonality and multiple

tonguing can be superimposed. All of these possible variations result in a number of possibilities that, as Galamian explained, is more than one can cover in their lifetime.[113] In my own practice I focus on studies one through seven and practice a different study each day of the week—Number 1 on Monday, Number 2 on Tuesday, etc.[114] Each time I practice one of these studies, I use one or two different combinations of variations which I keep track of in a notebook. I will use Clarke's second study to demonstrate some of the ways that I vary exercises from this book to help continually expand my technical ability. The second study consists of a diatonic scalar pattern in four note groupings and a limited range, pictured in Figure 4.4.

[113] Galamian, *Principles of Violin*, 99.
[114] I have alternatively practiced studies 1 though 10 cyclically so I would encounter each study three times per month. I have modified to only the first seven exercises because I find that the material from the last three exercises is material I address elsewhere in my practice.

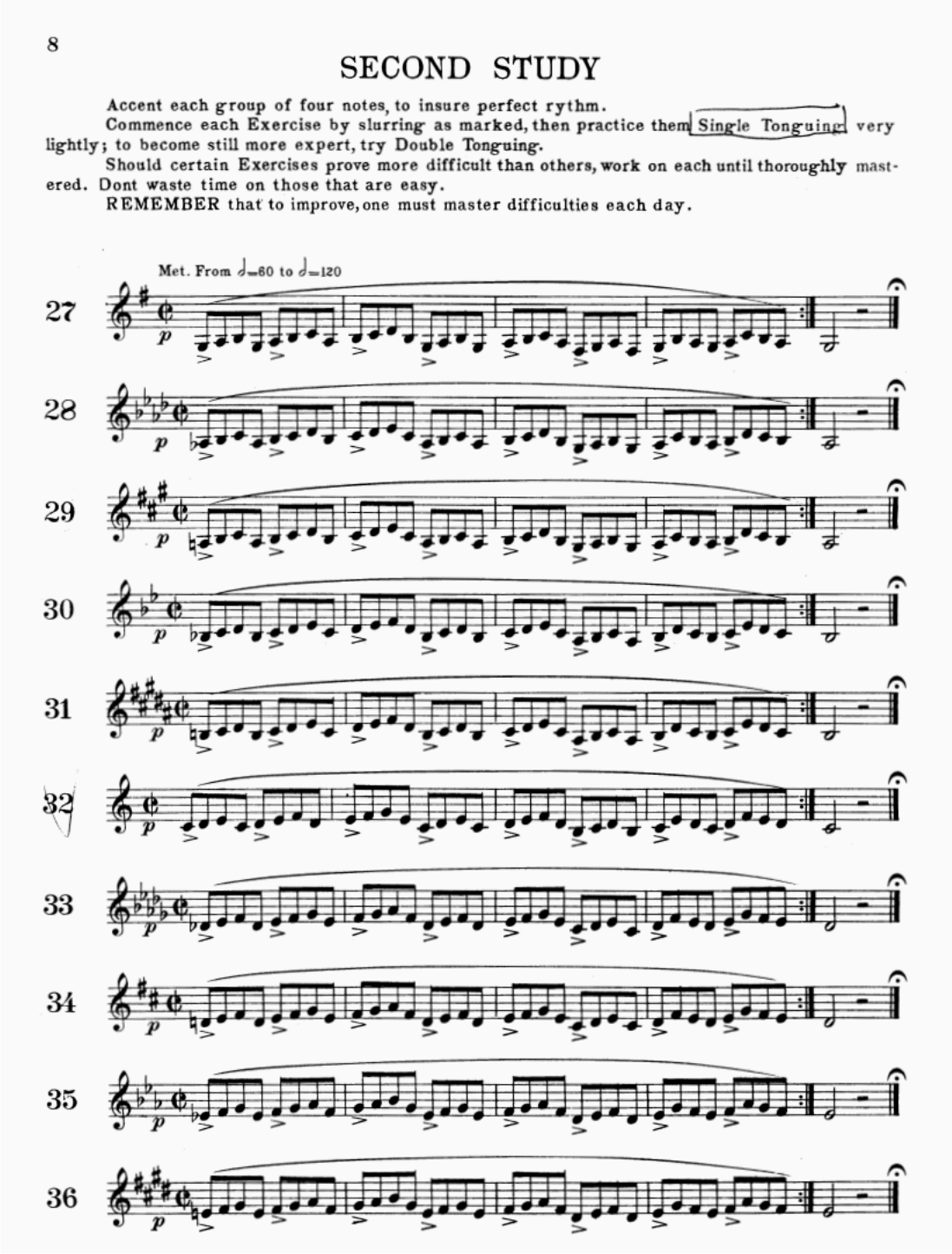



Figure 4.4 The first page of the Second Study from Clarke's *Technical Studies for the Cornet*.

For articulation, accent and rhythm variations, I frequently consult Galamian's *Contemporary Violin Technique, Volume One, Part 2.* In it, I refer to the four-note bowing patterns (Figure 4.5) and one-, two-, and four-note rhythm patterns (Figures 4.6, 4.7, and 4.8 respectively). I use these in combination to create a new pattern for the day's practice. Alternatively, if there is a particularly tricky four-note rhythm or articulation pattern in any repertoire I'm working on, I might extract the pattern from there to be applied to the study. Initially, I chose only unfamiliar articulation patterns with no variation in rhythm. I have also practiced various rhythm patterns with one consistent articulation (all slurred or all tongued) throughout. I try to make sure that each pattern or combinations of patterns is something that is not executed easily right away and requires focus and practice to master but is not so far out of my abilities that I cannot master it in one or two practice sessions. If a particular pattern proves especially difficult, I will occasionally return to it the following week to continue to solve the problems it poses. Though I have not yet applied these in my personal practice, Galamian's 8-, 12-, and 16-note groupings would also provide more advanced challenges for this type of technical variation practice. The combination of rhythm patterns would create a displacement of the original note pattern in some cases but, as they are all multiples of four, these patterns would still provide opportunities for further development of the variations. I have also practiced this exercise with additional modifications including playing in minor keys, using "K" tonguing, and adding multiple tonguing where applicable in the rhythmic variations. Before adding variations to this study, this was an exercise that I had mastered and could play automatically while barely thinking about it at all. Adding variation brought new life to this study and now it serves as the basis for an adaptable weekly challenge.

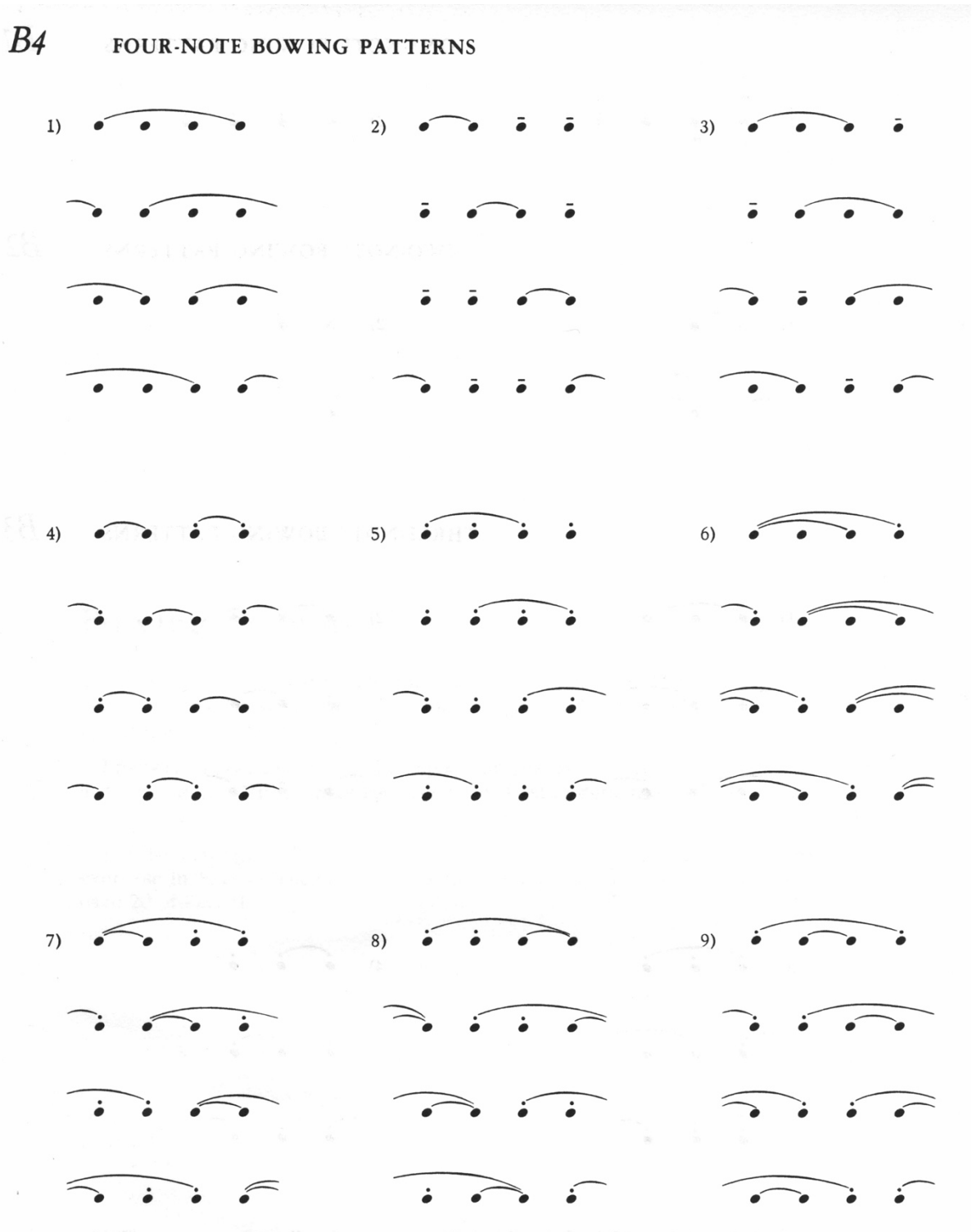
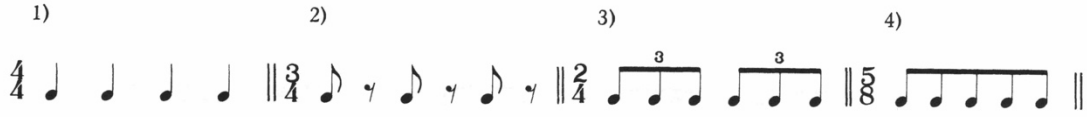



Figure 4.5 Four-Note Bowing Patterns from *Contemporary Violin Technique.*

Every sequence of equal notes represents a one-note rhythm pattern, to be defined as the repetition of a single note, or of a note and a rest:




All Primary Patterns in Part I belong to this category. There is no need for further examples except for afterbeats and syncopations like these:

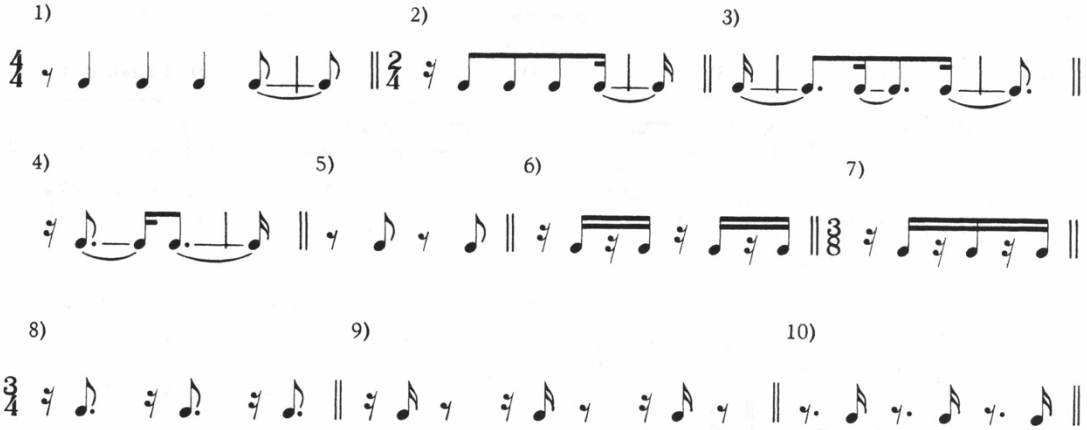



Figure 4.6 One-Note Rhythm Patterns from *Contemporary Violin Technique.*

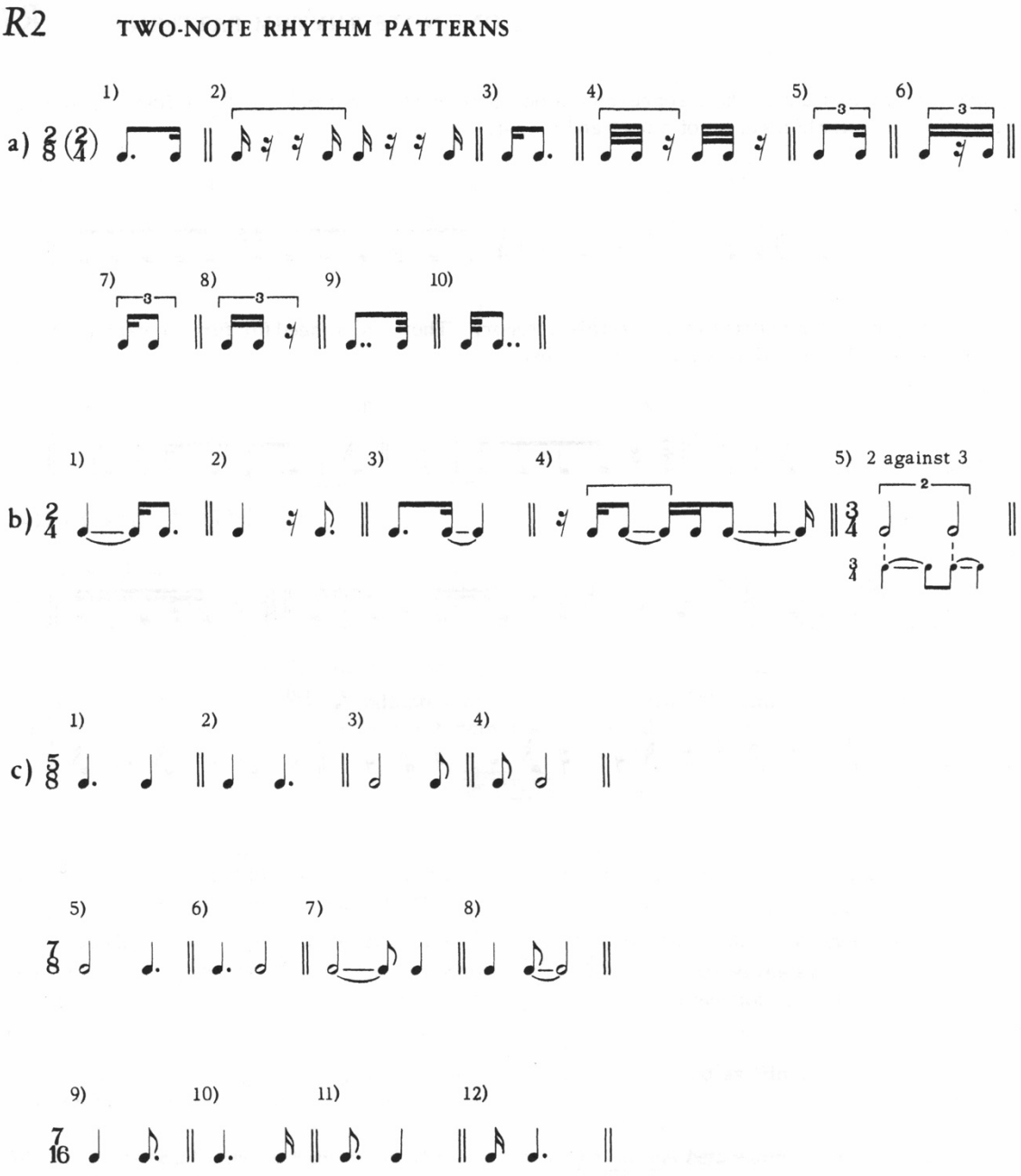



Figure 4.7 Two-Note Rhythm Patterns from *Contemporary Violin Technique.*

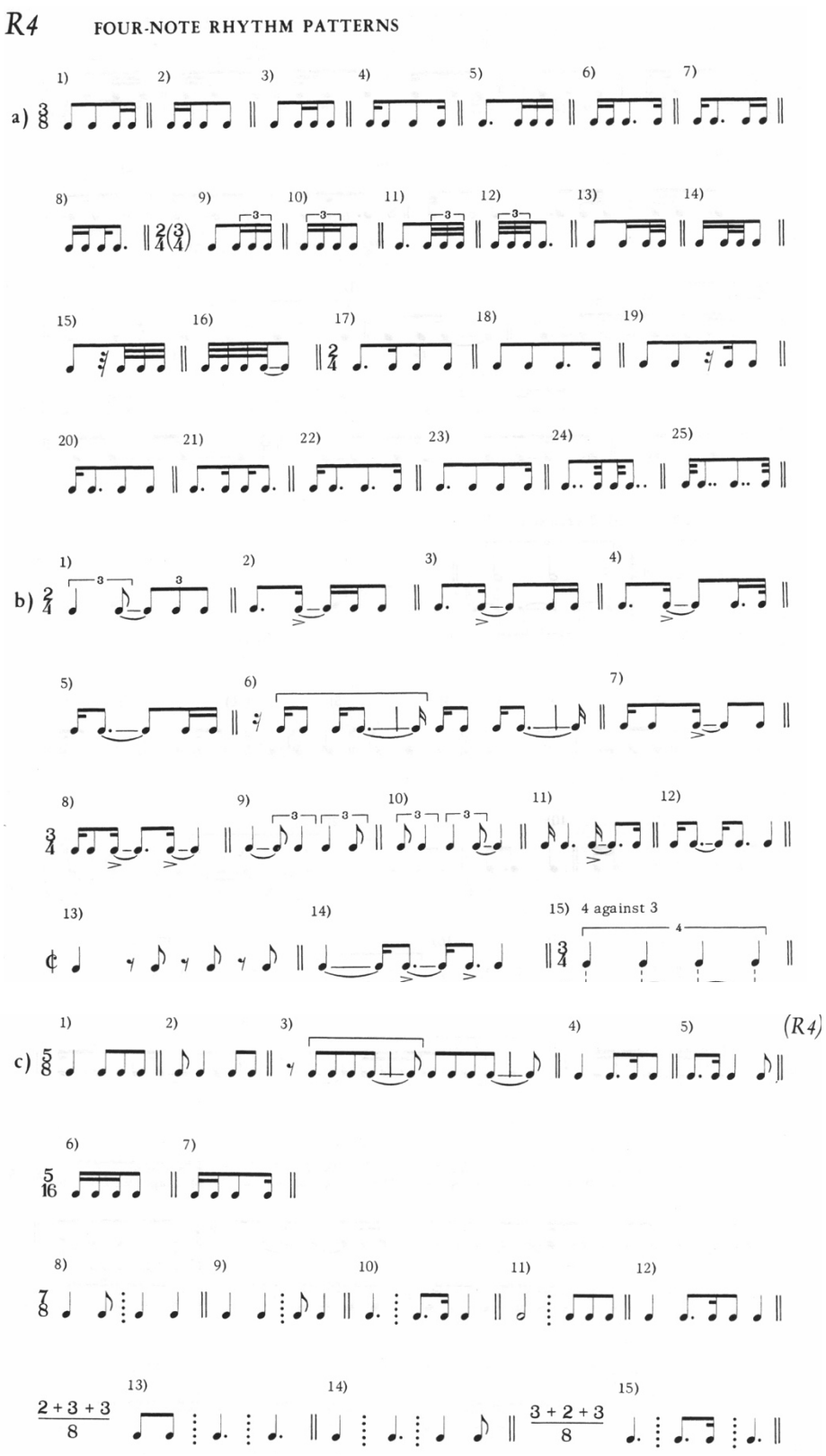



Figure 4.8 Four-Note Rhythm Patterns from *Contemporary Violin Technique.*

I also use etudes in my daily practice in much the same way that Galamian assigned etudes to his students. In my own practice I use a rotation of ten etude books. Although the number of etudes I practice in a single day or week varies significantly, I am always working through at least two, often more. The benefit of practicing these etudes is two-fold. First, learning the etude provides opportunities for addressing and solving a variety of challenges including fingering coordination, articulation, accuracy, range challenges, and phrasing practice. The process of learning and mastering this revolving door of etudes means that there is always a musical study that I am being challenged by and working to master. As soon as the challenges in a particular etude have been solved, meaning I can play through the etude accurately, musically, and consistently I move on to a new challenge. The constant input of challenges ensures that I do not allow my technical and musical development to plateau.

Second, excerpts from these etudes can provide the raw material for adaptable variations as Galamian suggests to do in his book. When I come across a particularly challenging pattern, either because of difficult fingerings, intervals, or articulations, this pattern can be extracted and given the variation treatment. This means I can practice the difficult passage with a variety of rhythms and articulations or I can play it higher, lower, or in a different tonality. Adding variations to a pattern helps to ingrain the different elements of the pattern—pitches, intervals, fingering, rhythms, or range—while also providing opportunities to further expand technical development. According to Galamian, "any scale or passage that the player can perform with a great many different rhythms, accentuations and bowings is one that has been completely assimilated into the mind and muscles."[115]

[115] Galamian, *Principles of Violin*, 6.

An important quality to note about Galamian's variation adaptations is that they can be applied to a variety of musical material, not just scales or passages from tonal music. I have applied the method to difficult passages from contemporary music with great success. In particular, I find Galamian's variations helpful when practicing passages with difficult fingering patterns or intervals. In one passage from Matthias Pintscher's *Shining Forth*, pictured in Figure 4.9, an extended series of triplets proceeds in a pattern that is deceptively close to a chromatic pattern but is different enough to create confusion. The fact that it is so close to a familiar pattern makes it especially difficult when small changes to the pattern arise; in this case a few whole steps and leaps interspersed into a mostly chromatic pattern make it a particularly challenging passage with regard to finger coordination. My initial approach to this passage was to practice it slowly and speed it up—my go-to solution for most fast, tricky passages. In this case, I found that to be helpful to a point but once I reached a moderately fast tempo, I began making recurrent mistakes due to my propensity to want to fall into the familiar chromatic pattern. My mental representation for this chromatic pattern was far stronger than the mental representation I had begun developing for this passage. In order to try to build a stronger representation for this pattern I began implementing Galamian's variation patterns in hopes that, as he mentioned, if I could play the pattern with many variations, it would be more firmly ingrained. I used a combination of rhythm and articulation patterns to provide additional challenges. I practiced two or three increasingly challenging variations of this passage each day in an effort to continue to familiarize myself with the fingering patterns and build a stronger mental representation for the passage. After four weeks of this sort of practice I had the pattern memorized and I could execute it as written very quickly. I cannot say if I would have reached the same point of familiarity if I had simply

practiced the pattern with increasing tempo each day without variation but I know the process of varying the pattern worked for assimilating the passage and it was a much more dynamic experience than playing in the same way each day.

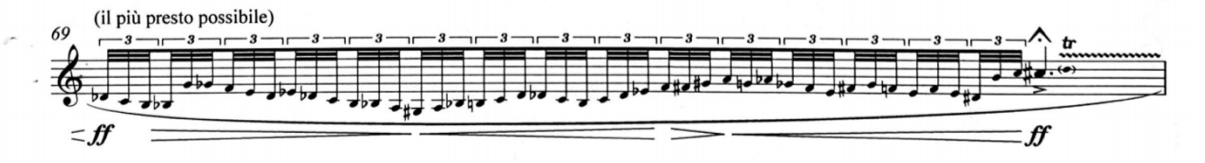



Figure 4.9 Measure 69 from Matthias Pintscher's *Shining Forth.*

Figure 4.10 Measure 54 from Matthias Pintscher's *Shining Forth.*

Another passage from *Shining Forth* to which I have applied Galamian's ideas is measure 54, pictured in Figure 4.10 above. This measure consists of a number of large and small ascending and descending intervals. These intervals make accuracy in this measure challenging and provide an opportunity to use some of Galamian's variation tactics. The measure consists of eight notes which provide the raw material. I isolated the most challenging aspect of the measure, those eight notes and the intervals between them, and began using some very basic variations to help deepen my understanding and mastery of this excerpt. The eight-note pattern makes it ideal for applying Galamian's one, two, four, or eight note rhythmic patterns. I began with some of the most basic variations, quarter notes with a variety of articulations and progressively incorporated more challenging rhythmic ideas. By

starting simple I was able to focus on the challenge and create a strong mental representation for what it physically felt like and aurally sounded like to play these notes correctly. I slowly increased complexity in rhythmic patterns and practiced combinations of slurring and articulating notes making sure that I was staying in the realm of challenging but not impossible. After practicing three to five variations per day I would revisit the actual excerpt to assess my progress. After a week of practicing variations, I experienced significant improvement in my accuracy for this passage and moved on to isolate a different difficult passage.

## Implementing Variation in Teaching

In addition to using these variations extensively in my own practice, I have introduced varying degrees of the ideas to my private students who have seen similar success with the process. In these individual lessons I apply variations in much the same way as I do in my own practice but I cater the type of variation to the abilities of my students. I use simpler rhythms and articulation patterns for beginning students and use the opportunity to introduce new rhythm patterns. I apply patterns to scales or for beginners what I call mini-scales, the first five notes of a diatonic scale, and I often use the opportunity to reiterate or expand on recent rhythms learned in music or method books. Variations on scale practice are also good opportunities to introduce and practice styles of articulation like slur, staccato, tenuto, and combinations of these as well as practice patterns of accents. I encourage students to pick or make up their own variations in order to increase personal engagement with the material. This can also be accomplished by adding variations to or creating variations based on students' favorite songs, either popular songs or from method books. Similar to my own use, I also

apply the adaptable variation method to excerpts from etudes or repertoire that students need extra practice on to master. Using Galamian-inspired variation methods in this way provides many benefits including introducing or reiterating rhythmic or articulation concepts, providing challenges of finger and articulation coordination, and allowing opportunities for extra practice of difficult interval or fingering challenges in repertoire.

I have also implemented Galamian-inspired variability in the brass methods class I teach at a university. In this class music education majors learn to play a variety of brass instruments in a short period of time, usually spending four to five weeks per instrument. Students learn scales, study and play from a method book, and perform brass ensemble repertoire on three instruments over the course of the semester. During my first two years teaching the course I did not intentionally use variation techniques. The typical structure of the class consisted of a warm-up of breathing, buzzing, and some kind of long tone and lip slur exercises. This was followed by scale work. Generally, on each round of instruments we would work through the required scales, a few per class meeting, and practice them in decreasing note values (whole note to half note to quarter note). This worked well enough and by the end of each instrument rotation students were generally proficient enough to pass their scale test and music performance.

After becoming familiar with Galamian's pedagogy I decided to try implementing some of his techniques into the class in order to evaluate its success in this group setting while also introducing these future music educators to another way of teaching. I modified the way I introduce and rehearse scales to include adaptable variations. Variations allow students to become familiar with the scale material while also providing an opportunity to introduce or develop additional important brass playing skills. Now, after a warm-up comparable to that

which I implemented before, I take the class though the scales using various articulation patterns on each note. Articulation patterns are often drawn from musical material used in class. Thus, the added practice prepares the students for the musical material while also helping establish solid foundational skills like clear articulation and familiarity playing in different keys. Student progress from playing rhythm patterns that stay on one pitch for four beats to faster patterns, one or two beats per pitch, that challenge their familiarity with the scale fingerings and speed of articulation. I frequently also incorporate accented notes into these patterns because the process of accentuating notes can be very challenging for beginning brass players. The sudden increase in air speed required for an accented note can cause an incorrect pitch to sound, usually one partial too high. Developing the mental representations for the physical effort needed for this skill is an important benefit of this process. After a few rounds of variations, I invite students to create their own modifications for the class to try out. This gives students a chance to challenge their peers as they often choose harder variations than I do. I notice this increases interest and focus for the students who are usually more entertained by their peers than by me. By the time of the scale exam students have learned nine scales using practice with variations. Students have told me this type of practice makes learning scales more entertaining and engaging than simply practicing long notes and provides the added benefit of building mental representations and implicit memories for innumerable articulation patterns. I believe this type of practice also helps the class establish a stronger sense of time and rhythm as a group which benefits their ensemble performances. The success of these additional challenges has shown me that Galamian's adaptable approach can be implemented in a number of ways for ensemble as well as individual setting.

## The Importance of Consistency

Though variation is an important element for developing technique, I believe there are certain areas of playing in which establishment of well-formed habitual actions is of vital importance and variation is notably not ideal. In particular, the mechanisms involved in the initiation and production of the sound should be consistent, habitual, and efficient regardless of the material being practiced. In order to engrain consistent habits of sound production, I suggest that a series of daily warm-up exercises can be practiced without variation. These exercises should address the most fundamental aspects of playing including breathing and tone production – those elements that must be well-established and virtually automatic for the remainder of technical ability to be built on.

The essential mental and physical coordination required for breathing and tone production are addressed by Carmine Caruso's practice of coordinating the body and breath. Caruso was a professional saxophone player which makes his ascent as a master trumpet pedagogue rather unusual. When he began teaching brass in the 1940s, his system of exercises worked so well for the needs of trumpet and other brass players that within a year of teaching his first trumpet student he had over forty brass students.[116] The crux of Caruso's system lies in what he called "the conditioned reflex action," which is basically another way of saying habitual or automatic action beyond the need to think. He wanted his students to coordinate the embouchure and breath with the physical sense of time so that sound production would become automatized. In order to achieve this, certain rules had to be followed, the most important being "Tap your foot." All the muscles in the process of executing sound

[116] "A conversation with his long-time student Charly Raymond," Carmine Caruso – the master teacher, accessed January 21, 2019, http://abel.hive.no/trompet/interview/caruso/.

production needed to be tied to the precise sense of time established by the foot. Caruso called the foot the "metronome for the body."[117] He knew that the actions of the body all work in relation to each other and that he could set up a system in which "one muscle controls all other muscles."[118] By breathing in time—out for two foot taps, in for two for taps—before playing, a system of coordination can be established so that the initial production of sound is consistent across all playing.

Caruso's coordination of body, breath, time, and sound provide a system for synchronizing the movements of the body and mind in preparation for playing. The Caruso method is intended to overcome the habit of poor execution of sound production and establish a new, coordinated response. For this reason, I advocate for a consistent daily warm-up where the coordinated elements of tone production can be checked and reestablished. Markus Stockhausen's *The Basic Caruso: Five exercises for trumpet* provide one method for doing this. Through a combination of long-tones, small intervals, harmonic slurs, pedal tones and chromatic scales tone production is established and maintained on a framework of breathing and foot tapping. Once established, this consistent execution can then be applied to other material. Regardless of whatever subsequent technique one is practicing, this consistent and efficient tone production should be applied as it allows for consistency in the whole of playing.

Caruso's method is a personal favorite for developing habits and consistency, but I have also recently used James Thompson's *The Buzzing Book* to establish a similar consistent habit for executing a centered, resonant tone and maintaining a stable embouchure with great

[117] Carmine Caruso, *Musical Calisthenics for Brass* (Milwaukee: Hal Leonard Corp: 1979), 7.
[118] Markus Stockhausen, *The Basic Caruso: Five exercises for trumpet* (Cologne: Activraum Musikverlag, 2004), 4.

success for myself. The first four exercises are often used as a daily warm-up in much the same way as the Caruso exercises. It is recommended that these exercises be played with patterned breathing and an accompaniment to help establish consistent timing, like Caruso's, to help establish a clear sense of intonation and rhythm.[119] In addition to the first four exercises, in my own practice and teaching, I include exercise eight which takes the principles of consistency in breathing and embouchure set-up that are established in the first four exercises, and expands them to a wider range on the instrument. I find that beginning the practice day with these exercises helps to establish habitual consistency in embouchure set up and tone production that can then be automatically drawn on when it is time to begin addressing technical challenges in practice for the day.

## Areas for Expansion

I have seen Galamian's adaptable approach work in my own practice of both technical and musical material. Presumably, a similar process could be adapted and applied for any instrument with variations based on rhythm, articulation, and the idiosyncrasies of each instrument. The nature of the challenges created by Galamian's variations establish a framework for deliberate practice and the building of mental representations regardless of the instrument being used.

Similar ideas could be applied to other musical endeavors including aural skills, where progressively more challenging listening or singing variations could be implemented; transcribing or learning by ear, where a curriculum of variations based on increasingly challenging melodies could be studied; or even ensemble rehearsals, where increasingly

[119] James Thompson, *The Buzzing Book* (Vuarmarens, Switzerland: Editions Bim, 2003), 10.

difficult variations of tempo (accelerando, ritardando, largo, presto) challenge group coordination and communication.

# Chapter 5

## Conclusion

When Ivan Galamian began teaching his students the ideas of correlation through variation, he had no idea that decades later the study of expertise and perceptual-motor skill acquisition would prove the efficacy of his method. He did not need science to prove to him that practicing scales with progressively harder problems created an expansion of the technical skills of his students and that these technical skills were a result of a strong mental command, not just strong muscles. As it turns out, the study of expertise and perceptual-motor skill acquisition did in fact prove his assumptions correct. Perceptual-motor skills are based on a framework of mental representations and implicit knowledge that is built by a decade or more of deliberate practice. This very specific type of practice creates slow, progressive increases in skill accomplished through focused practice that keeps the student just outside their comfort zone. With enough of this type of work, the plateau that accompanies automaticity of skills can be avoided and replaced by ever increasing ability.

Galamian's students corroborate that he used this method of variation on scales and arpeggios to help develop the technique of those students that came to him needing work in this area. Though he did not require students to learn every variation presented in his books, a number of them were implemented regularly and students diligently practiced these assignments. Some students who were more advanced in their technique spent their time addressing challenges and solving problems from etudes rather than scales. This body of technical musical challenges provided additional opportunities for deliberate practice and skill development. Even those students who exclusively worked on repertoire with Galamian still

commented on his scientific approach to skill development and noted how he would implement additional challenges in repertoire. These additional challenges were significantly harder than those of the actual music so when it came time to perform, the music did not seem so hard. Regardless of the material being practiced, Galamian insisted on a type sound production that would allow the sound of the violin to carry over an orchestra and throughout a performance hall. The technique, no matter the complexity, was to be built onto this idea of sound. Galamian managed to challenge and inspire his students despite his minimal talking, something that many of his students commented on. Regardless of his demeanor, his students respected him greatly and experienced a great deal of success based on his pedagogical methods.

I have implemented elements of Galamian's technical approach in many ways in my own practice and teaching. This idea of variation and problem solving in trumpet pedagogy is not new. Trumpet pedagogues like James Stamp and Charles Schlossberg implemented comparable ideas in their own teaching but when their method books were published, the ideas of adaptation and variation did not translate to the written or musical text. The flexible nature of variation and problem solving as a means of expanding technique allow it to be applied to a variety of material including warm-up material, technical practice, and both classical and contemporary solo material. There are, however, some situations in my own practice, such as establishing tone, where I find the adaptable approach of Galamian's method to be less useful. In much the same way that Galamian focused on sound production independently of technique, I believe a similar approach is required in trumpet pedagogy. In teaching, I have found Galamian's ideas applicable in both individual and group settings and have observed my students, both beginner and more advanced, benefitting from the structure

of the variable method. In my exploration of these ideas, I have come to the conclusion that there are yet other ways the ideas of variation can be applied to build and refine skills related to music. Applying Galamian's ideas to other instruments' methods would be a straightforward application while applying principles of variation to aural or ensemble skills provide another avenue for exploring these ideas.

## Appendix 1 Interview with Gerardo Ribeiro

**Rachel Allen:** Thank you for taking the time to talk to me today. As I mentioned in my emails, I'm doing some research on Galamian and his method and in particular his approach to developing technique skills. I'm really interested in hearing from people who studied with him how he actually approached these ideas in his teaching. All I've done is read in his books what his approach was. First, can I ask when you studied with Galamian and for how long?

**Gerardo Ribeiro:** Well I studied with him for about six years and those were between 1968 and 1974.

**RA:** Was that while you were in school?

**GR:** Yeah. Well I can from Europe like everyone did specifically to study with him and that was the number one thing. It just happened that he taught at Julliard so I was at Julliard studying with him. He also taught at Curtis.

**RA:** Ok. In lessons was there specific reference to "building time" and "interpreting time" or was that something he mostly wrote about in his book?

**GR:** Well it's really a combination of both. It all depends when you studied with him, and how old you were. You know Mr. Galamian was a terrific teacher for kids. If you were really talented and you were ten years old obviously, he would have been fantastic for that kid. But basically, he taught people in their teens, early teens, like 13-16. I think these were great ages to study with Mr. Galamian because that's when that building time that you read about is all about. So, when I came to study with Mr. Galamian, I was 17, almost 18, college aged. So, I was in Europe before I can here and I was really concertizing before I came to him. So maybe it's not so typical of what you do with a 14-year old. When I came, I was already playing concerts. But never the less, with other people such as me coming at that age from

everywhere to study with him, really if he felt that he had to he would get you right to practically start practicing just open strings and of course the building, not because you're a bad violinist but because he wanted to make sure that his ideas and his sense of tone and everything would be solidly indicated to you. So, I did work on lots of his ideas of technique and that was after playing with pretty well-known orchestras in Europe as a soloist. So, the building time is something that you would not spend too much time at the lesson time or any time at all if he saw that you were doing it correctly. Or let's put it this way, was reflecting well on what you were performing, then you'd leave it alone. Because number one thing, Mr. Galamian was the most practical person that you can imagine. He would not waste any time with anything. He probably spoke for two minutes, three minutes at the most, in a 60-minute lesson. But what he said was something that you remember for the rest of your life. Then, of course, with students as myself went to many international competitions and we won quite a few of them so there was a nucleus of maybe ten, twelve people. It was like a tennis tournament when you meet everywhere and invariably, you'd place. It varied. Someone who would win first prize in one competition probably lost against someone who won third on the previous one. It's sort of the same groups. We all knew one another and these were people from the former Soviet Union and the greatest people in the world. I'll give you an example. If you go to these competitions and you had to play various pieces, places that are extremely difficult that invariably many people miss somewhat, not by much. Everyone played at a very high level. With Galamian students, you bet that they would never miss those things. I'll give you two examples. Like on the Mendelsohn concerto, second movement, there is a long C. First a C an octave lower and then there is a C on the top which is the most beautiful thing one could play it, and it must be played just divinely otherwise it's not at all what one wants. So,

as you'd be playing that C in the lesson, that C has seven beats, like 1, 2, 3. About this tempo. You'd be playing that C to him and then when it when it was time to, like in the middle of the C, let's say, you were counting to five, he'd say four so you had to play that C with an extra beat (laughs). So that means you save your bow because you, invariably, if he saw that you didn't save the bow very well, not exquisitely, because otherwise it wouldn't sound divinely then he would immediately start, when you thought it was six beats and you only had one more to go he'd say five so you had to excruciatingly play that extra beat and you learned your lesson. Next lesson you'd go there. You already knew but when you think he was going to say it of course he wouldn't say it because you did it right. So that would be one example. That example alone explains many things.

Another example was on the Mendelsohn concerto, and in many other things, but just giving you two examples, like on the third movement of the Mendelsohn Concerto there is a place where you play up bow spiccato. It's many of them. It goes (Sings the part). It never ends that thing. What you have to do is to retake your bow in the middle part of the bow otherwise you run out of bow and you go to the frog. So of course, in the lesson he'd make sure, "Okay. Play me that passage. And not only are you going to keep the bow in the same spot but you're actually going to regain bow." By the time of that passage you start in the middle and you'd have to regain bow to finish the passage at the tip. Of course, when you go to a competition and you are nervous and everything, you'd never miss those things because you have done so many things. But this is just two small examples.

He was a man of very small demonstrative talking and he just said what was absolutely necessary. Because basically just the respect that you had for him, you'd bring

everything to the lesson very, very well prepared. So, in my particular case the building time was something that I did at home.

And Sally Thomas was his assistant. He said 'You play very well everything. The left hand is great and everything but I think it would be a good idea if you played all the etudes from the Kreutzer to the Paganini Caprices. So, I spent one year having an extra lesson with his assistant where I played for her all the etudes by Kreutzer, Rode. I mean there were about five or six books. I felt so bad for that poor lady to have to listen to so many etudes. But that was very smart of Galamian. I mean I hated that. He knew I played with the orchestra from the radio in Paris, a soloist. Why do I have to do this stuff? And then I thought my goodness after that first year I was in such great shape. I tell you I was really in great shape. That's your answer for your first questions, I guess, right?

**RA:** Yeah. That shows what a typical "building" exercise would look like.

**GR:** So, the building time, you asked me what it was, and basically, I don't know if you have his book for the *Contemporary Violin Technique*, Vol. 1; Volume 2 did not exist when I studied with him, just volume 1. And you can see from that auxiliary book there, there are 4,000 possibilities of what you can do with the rhythm and the bow slurs. He insisted that you knew very well maybe 6 or 7 out of those but there were over 4,000 possibilities. So basically, you would play three octave scales like in his book. You started with two octave scales but I would say the normal thing to do would be three. All the keys of the three octave scales, three octave arpeggios, as far as you could go on the finger board. And then four octave scales and four octave arpeggios was a big thing of his. And of course, a tremendous amount of double stops which I know for you trumpets you don't have that. For strings that's a wonderful thing

that teachers even today don't stress enough and that's the key of success for so much technique building.

**RA:** So, when you did these scales, did you do them with the different bowings and techniques?

**GR:** If you were an advanced student let you do all this. Anyone who was good made sure to do all the possibilities. I'm not talking about the 4,000 ones. I'm talking about the, you know– It's amazing how much stuff you would then add yourself to all that. That's why I'm in the teaching world. Because I was doing nothing but concertizing and I still do concertize, but I was very successful with my teaching because I just started logically adding up things. And what I departed from Galamian is to really explain much more clearly to students what is important, what to do. I started adding that in addition to the rhythms with the scales the beat dislocation. That would be a great thing to do. In other words, when you play a passage let's say of groups of four, making sure that, yeah, we spend our life knowing that the first note is the beat, but then place the beat on the second note and do it again on the third, and on the fourth. I don't know if you do that on the trumpet.

**RA:** Yes. I know what you're talking about.

**GR:** But these are things that string players usually don't do much. They work so hard and at the end of the day they don't get half of what they should be getting because a routine is a great thing. That's one thing that Mr. Galamian taught me and that's great. You should have a routine but do a routine. In other words, have a routine of having to do whatever you have to do but then when you do it you have to spend the least amount of time doing it by being very alert, listening to yourself, and when you master something, to move on to the next and the next. So then if you really feel like you want to repeat something that you know very well,

every time you do it is like the first time. If you do it ten times then you don't do it for the sake of repeating. It's like you're on the stage and you have to do that. The other thing that Galamian always helped a lot with which most people don't do is perform the technique. You're going to perform the C major scale. You're not going to play it. You're going to perform it. So, it could be with expressiveness. It could be just as fast as you can possibly play it. That made everything so much easier for when you went to the repertoire.

**RA:** Right. So, it's not automatic. Ok. Are these ideas that you now use in your own teaching?

**GR:** As I said, I have added lots of things. I really believe, including Mr. Galamian, that teaching has evolved incredibly. I mean, these days these kids, they don't know how good they have it. I remember thirty years ago, people saying there's no such thing as bad students, but bad teachers. Not bad students. I really feel now that it's almost the opposite. I think you go anywhere, any university and I know many people teaching everywhere, and of course many teachers that are wonderful and pretty well known, are teaching at institutions that are not very well known because there are so many. I'm very happy that I started when I started and I'm at Northwestern. All my very good friends are at NEC, or Rice, or Julliard, and so on. But I must stress that there are so many wonderful people teaching everywhere and many that studied with Galamian, many didn't, but good teachers that communicate to the student almost too much and the students got lazy. With Mr. Galamian it was the complete opposite. You almost had to guess what he was trying to tell you. And you brought things because you strived at home to go beyond what you were told. So, I try to really use that wonderful training and impact my students with it.

I think the only criticism that people even those days said about Galamian, "Oh Mr. Galamian's students, they all sound alike." I don't agree with that but to a certain extent. Yes, The one's that were talented, like in between, not terribly gifted, but talented, maybe that's true. But I must say that the product that he could produce was unbelievable. I mean it was the most solid players that you can imagine. Players that easily got into the best possible orchestras. Of course, he had so many students and that's why that may be a bit of a criticism. It is true that he could have gone a bit more into a specialized field where he would help people attain the most incredible musical things based on the wonderful technique that he gave to them. He probably did not stress enough the musical part, maybe, on some. So that was my main criticism. Coming from Europe, I said "Oh my goodness. Mr. Galamian, he could certainly speak a little bit more." He could tell me a bit more about these musical ideas here and there. But he didn't because he felt the technique was not good enough so that I would not derail with those musical ideas. (laughs) You can see that now but maybe not then. You would be the first one to say, "Oh this is the Beethoven sonata. I studied this with Mr. Galimir," which Felix Galimir was a great teacher chamber music at Julliard. And they were best friends and he acknowledged that he was just too busy building the technique of many people. And then of course these so-called wonderful musicians that we would work with, they would be delighted to work with people that offered no problems whatsoever technically speaking so they could musically bring almost anything. It helped a lot. So invariably he would say go study the Beethoven sonata now. After I had the fingerings and the bowing with Felix Galimir then you'd go to a competition and you would win the best prize for the Beethoven sonata, you know? That's how it worked those days.

**RA:** Thank you. That answers a lot of my questions and gives me a good idea of working with Galamian. Am I missing anything? Is there anything else you would like to share about your experiences?

**GR:** Well, there were things that he would say that would impact you incredibly. Maybe I should just mention a few things. I even wrote down a few things so that I would not forget. I wrote things that perhaps you should know. Of course, the idea that when you practice that mind is over muscles, the mind being the superior element and the muscles the subordinate.

**RA:** Is that something he would talk about? I read about his ideas on that in his book but I'm curious if he talked about it in lessons.

**GR:** Of course. The mind was everything. If you don't play well it's because you're not thinking right and you're not listening. Actually, you are hearing but you are not listening to yourself. You hear what you're doing but you have no idea what you're doing because you're not really listening to it. That's something I am very successful with my students. They make progress very quickly because I demand that they listen to everything and that means it's ok to make mistakes as long as you know. Otherwise in the lesson the teacher says so many things and then at the end of the lesson it's a waste of time because if they don't hear then they don't even know what they're doing. Or they don't know what to listen to. So that was a very good thing. The improvement and the mastery is when the mind is completely on top of everything. And your ears of course. Playing an instrument extremely well is much easier than not playing it well. Because if you don't play it well, it's because you are stiff or your muscles are not right, your mind is not doing its proper job telling the muscles what to do, or the muscles are not responding as they should. Loudness was another thing. You go to the concert hall and you want to project. This business of projecting is something that was very

badly understood by the students. “Oh, Galamian’s students, all they want is to play loud.” It’s not true at all and it’s not what he was saying. He always talked about carrying power. Carrying power was more important than projecting. This is sort of the same thing but carrying power meant if you force your sound, you’re not even going to have the carrying power you should have. It is the tone production that is so important that you know all aspects of it. Loudness is certainly not the only thing. It’s just part of it perhaps. The so called ‘sounding point’ is a great expression he was very well known for. And that’s really genius because the sounding point is the spot of the bow on the string for any given time depending on the dynamic you want. It’s the bow speed, the – pressure is a thing that one could not say because pressure probably meant that we would be tight. So instead of that it was arm weight. And the contact point. So, if you did everything right the sounding point was terrific. You would be projecting in the most beautiful manner and not forcing the sound and being a real artist. So, people that played loud obviously didn’t understand that and they just thought that force would be what made the difference when it was not.

One more thing is that he always stressed the vowels and the consonants. A beginning. A vowel. String players, you probably heard, it’s terrible what we like. We like bow changes which we should not like. We like accents everywhere. Oh downbow? I cannot wait until I change to upbow and there will be a really nice accent there. When it is the sustaining, the connecting. Most of the time no accent unless you have an accent. Even if you have an accent you still need the sustaining and the connection. Then he would be talking about Chaliapin all the time, the singer who happens to be an old friend of his from his old days in Russia and how important it was for people to go to the opera listening to singers instead of listening to other violinists. Even if they are fine, they still have traits that were not most commendable. If

you really imitate a singer in everything you can play big *and* smooth, not big and rough. Violinists and cellists, they like to play rough. They think that is a real great thing to do. And I just don't think so. So, this was a very important thing. The bow distribution, it's like if you are a singer you inhale as much air as you need to sing whatever you sing. Even if you're a public speaker. The bow distribution is very much the same. If you run out of bow then it's like you ran out of breath. String players run out of bow all the time. They don't know any better. They don't know that in order to sound natural they have to do unnatural things. So maybe that helps you for the trumpet.

**RA:** I can see a lot of parallels.

**GR:** Good, good. I'm glad you're doing this study. That's wonderful. Congratulations.

**RA:** Thank you. I read Galamian's book on violin playing and I found it so interesting. I really found a lot of parallels and things that could overlap to different instruments.

**GR:** Exactly.

**RA:** There are a lot of general ideas that are so applicable. The was that he frames them is an elegant way to pose these ideas. I think it makes it sort of universally applicable. I think there is an opportunity there to get some new ideas for other instruments.

**GR:** Additionally, he was a very nice soft spoke person. Very shy and really a wonderful human being. That really, of course, helped. Even people that probably did not care much for his approach or were jealous because he had the best students, they were always incredibly respectful of him because he demanded that. He really demanded respect and when you came to the lesson that's it. You really worked hard for it. There was no such thing as coming to a lesson unprepared like these days' kids do. They have no idea what – of anything really.

(laughs) How the world is. All these kids are just with their phones on and they live in a different world. It's not their fault. It's just a different world now.

**RA:** It definitely is.

**GR:** Ok. Is that ok?

**RA:** Yes. That's great. Thank you so much for taking the time to talk to me about Mr. Galamian and your experiences. I really appreciate it.

**GR:** You're welcome.

–End of interview–

## Appendix 2 Interview with Daniel Heifetz

**Rachel Allen:** I am a trumpet player but I've been studying pedagogy in different areas. I have been studying Mr. Galamian and his approach to technique development. His ideas seem simple and widely applicable but also incredibly effective. That's what drew me to this area of study.

**Daniel Heifetz:** Interesting. Ok. So, you're really learning a lot about violin technique.

**RA:** I am. Yes. I've been working with a few violin players as well so that helps. Can I ask you when and for how long you were a student of Mr. Galamian?

**DH:** I was a student of Mr. Galamian for three years at Curtis.

**RA:** Ok. What I'm interested in knowing is what an actual lesson might have been like, how it functioned in practice, not just in the book. In his book, Mr. Galamian talks about building time and interpreting time for musical ideas. In practice, how were these two categories balanced? Were they explicit ideas or were they combined?

**DH:** For me it was more fluid. I already came to him after three years at Curtis with Efrem Zimbalist and Jascha Brodsky. So, my work with him did not really include a lot of the scale work and that core foundation of building work. Where the was building work was on sound. We spent a tremendous amount of time on that. He taught me the concept of pulling the sound rather than just pressing the bow into the string. He used the Gavinies advanced book, the second etude in there, working with him on that. The first three etudes I worked on and worked on and then there was a eureka moment. I finally felt what it meant to pull the sound. It was a huge transformation in my playing. The other thing in terms of technique that he taught me – I was with Efrem Zimbolist for three years and that was being in touch with another generation. You're talking about the generation of Mel Stein and Heifetz and a whole

different world that was quickly dying away. I had my lessons with Efrem Zimbolist in front of this picture of his teacher, Leopold Auer, to whom Tchaikovsky dedicated his concerto. When I make my debut at Lincoln Center playing the Tchaikovsky concerto thank god I didn't hear the announcer introduce me because he said Tchaikovsky originally wrote the violin concerto for Leopold Auer whose prized student was Efrem Zimbolist whose prized student was Daniel Heifetz who will now play the Tchaikovsky Concerto. (laughs) I would have been too terrified to walk out on stage at Lincoln Center and play. (laughs) So, I was with Zimbolist who taught me the concept of elegant nobility and approaching the instrument artistically. I worked on some basic technique with Jascha Brodsky but Galamian taught me how to approach the music and the violin more scientifically. That was an illumination that was profound for me. For example, no one ever talked to me, it never occurred to me, in doing the bowings that if the phrase goes up, go up bow, and if the phrase cadenced down, go down bow. I never thought about that. I mean, that is science. That is obvious. He showed me in the second theme of the Tchaikovsky concerto, which goes (sings). So many people start down bow which is a cadence way because there's less weight at the tip. So Galamian said "No, Danny. Go up bow. (sings) Then go down bow." It was unbelievable. You can imagine how logical that sounds.

**RA:** I can. And musical. It makes sense.

**DH:** It never occurred to me to approach phrasing and its relationship to the technique of violin playing in a more logical scientific concept. And he did the same things with fingerings that would make sense and make it more natural. My only disagreement was – Well, we had a very special relationship. I was one of the few students that ever argued with him. I was so seriously wanting to fix everything that when he said something sounds better, which most

other students would just be happy he made that compliment, I would say "No, Mr. Galamian. It may sound better but I feel like I'm just not totally on top of it. Show me. Show me." I made him. I would hear a kid come out of a lesson and the kid would never say anything. And I feel there is an artistry to being a student. I forced him to teach me. I made him work. (laughs) He ended up calling me the kvetch. (laughs) That's Yiddish for complainer because I was never satisfied. So, he knew when I came to the lesson that I was going to be kvetching and making him show me, show me, show me. Whereas other kids would come out of the lesson just trying to process what he told them. But then he always appreciated the fact that he would tell me to do something and I felt that it was really important to show him that I had the technique to do it exactly how he wanted. But then I had my own musical ideas about something. So then I would say, "But Mr. Galamian. What do you think of this way of doing it that I hear?" He would either say, "I accept that. That's a good idea," or, "No it's not and this is why." I'll never forget I was once in a lesson. *Look* Magazine was doing an article about me after I did my debut and we were doing the Mendelssohn concerto and there was a phrase. Do you know the Mendelssohn concerto? It goes (sings).

**RA:** Yes, I do know that one.

**DH:** He told me that the emphasis should be on the downbeat. (sings) But my heart felt it should be (sings) stretching those two pickup notes. So, I did it both ways and then I insisted on doing it my way. He once said to me, "If you're not going to listen to me why are you studying with me?" I said I'm studying with you because I love you. He broke down laughing. We had that close relationship. It was very rich and beautiful. What he taught me in terms of how to think about the violin playing logically, scientifically, and how to approach music with the logic in terms of how that relates to the instrument with a tremendous effect.

**RA:** Very good. Do you use any of Galamian's ideas now in your own teaching?

**DH:** Oh, constantly. Unfortunately, I was already pretty advanced by the time I came to him so I lost out on some of that basic technical ideas and foundational things that he would do with students. I developed a lot of my own approaches but using the scientific way of thinking about it. There was a great European violin player named Henryk Szeryng, and he invited me to Europe and I toured with him and he showed me some things in holding the bow. I remember going to Galamian, having lunch with him with my wife, I had just been married, and I said, "Mr. Galamian, look what Henryk Szeryng showed me and the bow. He said, "What are you talking about Danny? I showed you that." (laughs) So he didn't remember what he had or had not shown me. I just kept learning from different people as I progressed.

**RA:** Since you didn't really a lot of the technique work, did the idea of correlation or problem solving ever get discussed?

**DH:** Problem solving was discussed in terms of how you solve an efficient way to finger that passage so that you can accomplish it.

**RA:** Oh ok. I see.

**DH:** The problem solving is how do you distribute the bow in order to... the whole idea of understanding bow distribution. He approached all aspects of violin playing in terms of solving these problems.

**RA:** Ah ok. Are there any holes or things you think just really didn't work in your studies?

**DH:** His approach to Mozart and Bach, stylistic things, were things that were totally thrown out the window because I'm very dedicated to the scholarship of the original instrument and baroque style. I've thrown out all the fingerings he taught me in Bach. I believe in more open strings and first position and the original bowings from the manuscript. I believe in not doing

what violinists would say is logical, but rather than doing what stylistically Bach was hearing in his own ear. So that's I guess my answer. But that's scholarship that happened after him. I still have beloved colleagues that still play Bach like Brahms, just in detaché in even, separate notes. In baroque you do down bow and the up bow is the release. So, it's never like a machine gun. I hear many beloved colleagues still playing them like that. Mozart, I've thrown out so much of his approach because I now only play Mozart from the manuscript and I look at what Mozart wrote with his articulations. So, there are stylistic things that I've disagreed with in terms of my approach to certain musical things. One of his geniuses was knowing when to send the student out of the nest. When I was at Curtis, I was practicing 8 hours a day.

**RA:** Wow.

**DH:** I felt that I did not have the best teaching younger and so I just sat down and put myself in jail. In my second year with Galamian he wanted me to audition to do the student competition to solo with the Philadelphia Orchestra. And I refused. I said, "No, I'm sorry but I just want to practice." And then the following year he wanted to go into the national Merriweather Post Competition in Washington, D.C. And I refused. He insisted. He forced me to do it. And I did not want to. I did not want to stop practicing. He forced me to do it and I won. It was the first time I had ever played with a professional orchestra. I had no experience and that led the following season to my debut at Lincoln Center.

**RA:** So, he must have known you had the ability to do that.

**DH:** He knew it was time and that's the genius of a teacher that's not going to hold on and hold on.

**RA:** Ok. That's great information and background. Is there anything else I just have to know about Mr. Galamian as a teacher?

**DH:** Do you know some of the stories? I don't know who you've spoken to. Did you ever hear the stories about him teaching vibrato? I was told this story and I didn't believe it. This is another scientific thing. No one ever talked to me about the speed of the vibrato in terms of how that relates to the emotional phrase. There you have it right there. He picked up the violin and he demonstrated. He said there was the slow vibrato for Brahms, the medium speed for Tchaikovsky, and then the fast, vibrant speed for Mozart. And then when he would demonstrate they were all the same. Slow. But underlying it was a scientific approach to vibrato and its relationship to musical expression.

**RA:** Well this is great. It really gives me an impression of what your experience as a student with Mr. Galamian was like. Thank you for your time and sharing your stories.

**DH:** If you have any more questions feel free to let me know.

–End of interview–

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