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The Sequential Method: An Analysis of Robert Jesselson’s Cello Pedagogy

Kalim D. Alvarez Campos

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THE SEQUENTIAL METHOD: AN ANALYSIS OF ROBERT JESSELSON’S CELLO PEDAGOGY

by

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For the Degree of Doctor of Musical Arts in

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DEDICATION

This dissertation is dedicated to my father, Nelson Campos, who was my first cello professor and always supported my dreams. He has been an important example to me and a constant source of encouragement during the challenges of my life.
ACKNOWLEDGEMENTS

I would like to thank my former cello professors: Dr. Felipe Avellar de Aquino, Dr. Fábio Soren Presgrave and Dr. Marek Szpakiewicz. They always encouraged me during my cello studies in Brazil and in the United States.

I would also like to thank my University of South Carolina professors, Dr. William Terwilliger and Dr. Craig Butterfield who helped me academically and musically during my years at USC.

My thanks to Dr. Brenda Leonard for helping me innumerable times with my English in this dissertation.

I would like to express my special gratitude to my cello professor Dr. Robert Jesselson, who was essential to making this project happen and who helped me to get where I am now.
ABSTRACT

Dr. Robert Jesselson has made significant professional contributions as a cello performer and music educator. His pedagogical approaches are innovative in helping students overcome technical problems, building good work habits, instilling self-discipline, addressing kinesthetic issues, and improving practice techniques. His Sequential Method involves a systematic and logical progression of technical exercises, scale systems, etudes and repertoire. It is unique in its applications for teaching and learning left and right hand techniques, building a progression of etudes which address technical and musical issues and working through the cello repertoire in an organized and meaningful manner that is appropriate to the playing level of the student.

This dissertation explores Dr. Jesselson’s approach to cello pedagogy, technique, warm-ups and exercises. It also addresses issues such as memorization, coordination, concentration, sight reading and musicality. Finally, Dr. Jesselson’s contributions to music education in the United States are reviewed.

Musical instrument pedagogy is often based on the oral tradition. Over time, vital details can be lost. This study codifies Dr. Jesselson’s teaching philosophy in a written document that will help cello teachers improve their teaching methods and will interest students seeking to improve their understanding of cello technique. Additionally, it documents Dr. Jesselson’s contributions from his over 38 years of teaching at the University of South Carolina, including the effect his teaching has had on teachers and the level of cello playing in South Carolina and in the region.
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CHAPTER 1
INTRODUCTION

1.1 Jesselson’s Pedagogical Methodology and his Approach to Teaching Cello Technique

This document will focus on Dr. Robert Jesselson’s pedagogy and his philosophy for teaching the cello, with particular emphasis on his concept of the Sequential Method. The document will discuss Dr. Jesselson’s methodology by examining his ways of teaching cello technique, as well as his strategies for helping to improve a cellist’s musical and artistic skills. It will explore the sequential development of left-hand and right-hand techniques, as well as his approach in building good work habits, instilling self-discipline and expecting consistency. Dr. Jesselson believes the goal of creating a secure technical and musical foundation is achieved through a healthy diet of scales and arpeggios, exercises, etudes and a gradual journey through the literature. This document will help cello teachers to improve instruction on major aspects of cello technique, as well as related concepts such as relaxation, breathing, concentration, memorization and establishing high standards. It also documents Dr. Jesselson’s contributions to music education in the United States.

In Chapter 2, the author will present Dr. Jesselson’s emphasis on the importance of warm-ups that can help focus the player’s mind and establish physical readiness for playing. Chapter 3 will focus on Dr. Jesselson’s approach to cello technique, divided into four sections. The first part will be an introduction of what should be taught in the first
few lessons with a new student, since those initial meetings set the stage for the student’s subsequent development. The second part of Chapter 3 will present Dr. Jesselson’s teaching methodology for the bow hand. This will include issues such as basic tone production, bow distribution, string crossings and other right hand techniques. Dr. Jesselson plays and teaches a variant of the French style of bow technique. This includes use of wrist and fingers, collé strokes and the use of the fourth finger for balance. It implies a nuanced sound with a large palette of tonal colors. The third section of Chapter 3 will discuss left hand cello technique, including the geography of the fingerboard, the mechanism for shifting between positions, thumb position, and intonation, as well as information about articulation, flexibility, speed and of course the myriad possibilities of vibrato. The fourth part of Chapter 3 will deal with issues of coordination, concentration, sight reading and musicality.

Chapter 4 is essentially the centerpiece of this paper, focusing on Dr. Jesselson’s concept of the Sequential Method for teaching cello. In this chapter, the author will present Dr. Jesselson’s approach to teaching technique through exercises, scales and arpeggios, and etudes which are presented in a logical and systematic way. His philosophy of teaching repertoire follows a similar approach by presenting pieces that are appropriate for the playing level of a student.

Dr. Jesselson believes that exercises, scales and arpeggios are the basic operating system for playing the cello. The first part of Chapter 4 will provide detailed information about this method of teaching bow technique through exercises, including Dr. Jesselson’s use of the Feuillard *Daily Exercises*. In the second part of Chapter 4, the author will discuss Dr. Jesselson’s organized and sequential approach to the teaching of scales and
arpeggios. Information about the Sequential Method is presented by means of pictures, charts, citations, interviews and examples.

Robert Jesselson believes that etudes should be a major part of the cellist’s daily practice regimen. Etudes should be challenging, but within the scope of a student’s ability level. They build on the exercises, scales, arpeggios and technique that the student is working on. In the third section of Chapter 4, the author will present Dr. Jesselson’s sequential order for these etudes. As an example of this approach, the document will provide detailed information about the Dotzauer etudes. The fourth part of Chapter 4 will present Dr. Jesselson’s views about choosing appropriate cello repertoire according to the level of the student, while varying styles, periods and genres.

In Chapter 5 the author will discuss various issues related to Dr. Jesselson’s pedagogy and his philosophy of musical talent, teaching and practicing. Dr. Jesselson uses the theory of brain lateralization, the “left brain/right brain” metaphor, his focus on structured practicing, and his emphasis on memorization and “mentalization” in his teaching.

Chapter 6 will focus on Dr. Jesselson’s investment in string education in South Carolina, which has had a significant impact on the lives of local cellists, and also on his other important contributions to the field.

1.2 Overview of Jesselson’s Approach to Teaching and Learning

According to Dr. Jesselson, effective cello teachers must be far more than just good players on their instruments. They have to be good communicators who understand the learning process, are aware of how the brain works and recognize different personalities and various styles of learning. Effective teachers must have a well-
organized pedagogical system, including good materials and clear sequencing. They must balance technique and repertoire and understand the big picture and the small picture. A good teacher must be well organized and have both short and long term goals for the student.

One of Dr. Jesselson’s core principles is that cellists are similar to athletes in many ways. He says that cellists are “small muscle” athletes, involving use of our fingers, wrists and arms. As a result of this philosophy, Jesselson emphasizes the importance of stretching before and after playing. He also spends a lot of time with students on understanding how the body works most efficiently and effectively. He teaches that it is essential for cellists to be aware that muscles should not be fighting muscles in playing, that there are no “kinks” in the arms and that the body is aligned well, that tension is the enemy of the musician, that “if you can move a body part, the muscle is more relaxed”, and the importance of mental work in improving performance. As athletes, cellists must train for endurance as well. Another commonality between musicians and athletes is the importance of self-discipline and the requirement for patience, diligence, and perseverance.

Another important philosophical tenet in Dr. Jesselson’s approach to teaching, appears in a video. In this video, he states:

As a general principle I start with the big picture and work towards the small details. The more time we have in learning a piece, the more we can get towards the tiny details. When a sculptor carves a piece of marble, he doesn’t start with the details of an eye – he starts with the large general forms and shapes. We also start with the large body motions and work towards the smaller muscles.¹

Dr. Jesselson uses the concept of brain lateralization in understanding how different each of the students may be.

Every student I teach has a different learning style and everyone is motivated by different things. Some of my students are very left-brain oriented – meaning that they are good at getting the technical concepts of the music they are learning. They may be well organized and very concrete-sequential. But a lot of musicians are more right-brained – they are more intuitive and creative and sometimes have a harder time getting from point A to point B in a logical, sequential manner. They often have a different understanding of time and it is part of my job to help them learn how to organize themselves well. However, the challenge for the left-brain student is to leave that left-brain behind when they are performing and feel the music. When you are on-stage, you want to be in your right-brain and time is timeless. But when you are practicing we often need to be more in our left-brains to learn new tasks.  

In addition, Dr. Jesselson believes in teaching concepts rather than just specific details, so that in the future they can become their own teachers.

Another facet of my general philosophy of teaching is that I teach principles. In other words, I want to have the student understand principles of fingering choices, rather than just give him the fingerings for a particular passage. I want them to understand why we choose a particular sound for Baroque music and another kind of sound for a big Russian concerto. I want them to recognize the patterns in music and to understand the basic organizing principles of a piece or a genre of music. Another basic aspect to my teaching is that I don’t go on to a new concept until the old idea is firmly implanted – that may take more time for one student than another, but I have to help pace the rate of progress so that students are not in over their heads. One of my principles is that a students’ technique should be at a higher level than the piece he is playing – in other words, the music should be easier than the level of technique that they are working on. This is so that when they are playing the music, they can forget the technical aspects and communicate what the music is about without worrying about the technique. I have become very good at picking the right piece for a particular student to work on so that they can shine and really express the music.

The focus of this document is on the teaching and pedagogical philosophy of Dr. Robert Jesselson. The topic is of importance because of Dr. Jesselson’s successful career as a cello performer, professor, and music educator. He has had many successful students.

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2 Ibid.

3 Ibid.
who are working in the profession as cellists, performers and teachers. Dr. Jesselson’s efficient methodology deserves to be studied and published in detail for future educators and performers. This document does not propose that Dr. Jesselson’s methodology is the only system that works, or that it should be strictly followed by all teachers, but it should be seen as a teaching experience which has shown impressive results.

1.3 Professional Biography of Robert Jesselson

Robert Jesselson is a Carolina Distinguished Professor Emeritus at the University of South Carolina, where he taught cello and played in the Jesselson/Fugo Duo and the American Arts Trio from 1981 to 2018. In 2013, he was named the Governor’s Professor of the Year by the SC Commission on Higher Education. In 2015, he was appointed Carolina Trustee Professor. He is the recipient of the 2010 Mungo Distinguished Professor of the Year, the highest teaching award given by USC. He has also been awarded the 2002 Cantey Award for Outstanding Faculty, the 1992 Verner Award from the SC Arts Commission, the 1989 S.C. Arts Commission Artist Fellowship, the 1995 Mungo Teaching Award, and the first SC ASTA Studio Teacher Award in 2005.

Dr. Jesselson has performed in recitals and with orchestras in Europe, Asia, South America, and the United States and has participated in the Music Festivals at Nice (France), Granada (Spain), Santiago (Spain), Aspen (CO), Spoleto (SC), the Grand Tetons (WY), and the Festival Inverno (Brazil). His performance degrees are from the Staatliche Hochschule für Musik in Freiburg, West Germany (where he studied with Marcal Cervera), from the Eastman School of Music (where he studied with Paul Katz), and the DMA from Rutgers University (where he studied with cellist Bernard Greenhouse). He has been principal cello of the South Carolina Philharmonic Orchestra,
the South Carolina Chamber Orchestra, and the Orquesta-Sinfonica de Las Palmas, Spain. His CD of new music for cello and piano, called “Carolina Cellobration”, was commissioned to celebrate the 30th anniversary of the Jesselson/Fugo Duo.

In 1983, Dr. Jesselson was in China for a six-month residency, one of the first Western cellists to visit that country. During that time, he performed as a soloist, gave master classes, and taught at several conservatories (including in Beijing, Shanghai, and Canton). In December 2001, he led a delegation of string players and teachers to Cuba to begin professional contact with Cuban musicians. He has also taught at Sookmyung University in Korea, Sun Yat Sen University in Taiwan, the University of Auckland in New Zealand, at the Royal College of Music in London, and recently in St. Lucia in the Caribbean.

Dr. Jesselson was the national President of ASTA, the American String Teachers Association, from 2000-2002. During his tenure as president he initiated the National Studio Teachers Forums (2000 and 2002), started the National String Project Consortium (with sites now at 44 universities and grants of $3.1 million), and began the planning for the first stand-alone ASTA national convention in 2003. He was the founding Executive Director of the National String Project Consortium and is currently on the NSPC Board.

Dr. Jesselson is former conductor of the USC University Orchestra and the Columbia Youth Orchestra and he was the cello teacher at the S.C. Governor’s School for the Arts for 17 years. For 15 years he was the director of the USC String Project, building the program into one of the largest and most prominent string education programs in the country. His pioneering work on this program was recognized in an article in the New York Times in December 2003. ASTA awarded him the “Marvin Rabin Community
Service” Award in 2009 for his work with the NSPC and teacher training. Jesselson plays a 1716 Jacques Boquay cello.
CHAPTER 2
WARM-UPS

2.1 The Importance of Warming Up

It is vital to warm-up before diving into practicing or performing. According to Dr. Jesselson, warm-ups can help focus the player’s mind and establish physical readiness for playing. They can also help to relax the musician physically by putting attention on breathing and preparing the mind and the ears before playing. Warm-ups “engage the brain and the body as we prepare to focus on the day’s work.”\(^4\) According to Dr. Jesselson, “these exercises are like the hors d’oeuvres before a meal. They are ‘bite-sized’ delicacies that help to prepare a player for the main course by gently tantalizing and stimulating the mind for the possibilities of the upcoming meal. For cellists, these warm-ups can help to take the player out of the hustle and bustle of the day and into the ‘cello world’ in which we are focused, concentrated, relaxed and ready to learn.”\(^5\)

Cellists have many different ways of warming up and Dr. Jesselson teaches and demonstrates many possibilities. He provides a kind of smorgasbord of warm-up ideas

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\(^5\) Ibid.
for his students. He states, in the same way that every cellist has a different sound:

Our bodies are different, our brains are wired differently, and we have various approaches to playing the cello. A friend of mine who is a professional violinist in a major symphony orchestra says that he needs a half-hour to warm up before the orchestra rehearsal starts. Otherwise he couldn’t function. Other people seem to be able to dive in right away without any problem. I remember a morning master class with Paul Tortelier in Nice. He walked in and said he needed to warm-up before the class started. He then plunged right in playing two minutes of the fastest four-octave scales I have ever seen in my life – and that was it. He was ready.\(^6\)

It is important for students to figure out for themselves the best way for them to approach the instrument. Some people like to start the day with stretches, others with open strings, shifting exercises, cadences, or melodic improvisations. The goal may be mental focus, physical preparedness, attention to the fundamentals of tone production, vibrato, or intonation. These warm-ups should precede work on scales, arpeggios, etudes, or pieces. They serve as a little introduction for the practice session.

Warm-ups are also a good opportunity to “explore” the cello. Both students and advanced players can learn a lot about the instrument and themselves by experimenting with sound production, improvisation, cello geography and more during their warm-up sessions. Warm-ups are useful for discovering things such as: “what is the highest note on your fingerboard,” or “how many ways can I play a D on one string,” or “how many Ds are there all over the cello.”

2.2 General Warm-ups

2.2.1 Stretching

Stretching is an important part of the warm-up routine as it can “increase flexibility, improve circulation and posture, relieve stress, enhance body awareness, balance and

\(^6\) Ibid.
coordination and reduce risk of injury and irritation to joints, tendons, muscles.”

Dr. Jesselson often compares musicians to athletes, saying that musicians are “small muscle athletes” rather than “big-muscle athletes” such as football players. Thus, as athletes we need to warm up the body to prepare for a “work-out” and to prevent injury. According to Ryan George, “lactic acid build-up is what causes pain during and after intense exercise.”

Stretching is important after playing as well as prior to playing because the acid that builds up in the joints through activity can do real damage to the tendons and soft-tissue. Stretching helps to dissipate lactic acid. All exercises, including stretching, must be done without pain. The old saying “no pain, no gain” is neither applicable nor appropriate in cello playing.

There are many possible stretches available to the cellist. It is best to start with the larger muscles of the back and arms, and then to work down to the smaller muscles of the hand and fingers.

I like to focus on a couple of stretches which I think they are particularly important for cellists and other string players. The first stretch is what I call the “Under the Chair” stretch. So we start out sitting in the chair, just going underneath the chair and letting the arms flow freely and of course monitoring the breathing and then come back up. Do a few repetitions. I think this stretch is particularly good for warming up and stretching out the back, the shoulders and the arms. This is a good way to start the day.

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Sometimes cellists and other athletes share the same stretches, such as “Touching the Toes”: “I also like to do some Standing Stretches and one of the most important of those is just touching your toes with your fingers, going down as far as you can go. If you can, touch the palms of your hands to the floor, it is even better!”

Other stretches that Dr. Jesselson advocates include “shoulder shrugs,” upper body twists while sitting, arm rotations, “head rolls,” and pulling and stretching the upper arm with the opposite hand. A similar exercise involves stretching the flexor and extensor muscles by pulling the wrist with the other hand.

Some stretches are designed to help mitigate or prevent future problems such as tendonitis, which can destroy a musician’s career.

I think that one of the most important stretches for string players is what I call the Anti-Tendonitis stretch. In which you put the palms of your hands together, slowly go down, hold it for one or two seconds and then come back up and then shake it out. If it is done in a regular basis, on a daily basis, it is really good for the tendons, stretching out the tendons a little bit, together with the muscles and helping to prevent tendonitis. Doing it in the opposite direction is also good, just coming up, holding it a little bit, coming back down and finally shaking it out. All these stretches must be done with no pain at all.

There are many stretches for the wrist, which is one of the most complicated joints in the body. A good way to stretch the wrist is the “Wave Bye-Bye” stretch, in which one waves the hand up and down as if to say “bye-bye.” It is a good way to relax the wrist and get the blood flowing. Dr. Jesselson also advocates waving bye-bye horizontally, as if the wrist were flat on a table. Making “Wrist Circles” is also good for loosening up the

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11 Ibid.
wrist exercises, there should be no pain.

Warm-up exercises for the fingers include massaging the fingers, various coordination exercises in moving the fingers and “Finger Flicks” for relieving tension and increasing blood circulation.

I like to do them before performances sometimes, but of course it is good to do them anytime. A lot of times before performances, I like to massage the fingers, going to each joint and gently rubbing them, getting the blood flowing and warming up the fingers a little bit. Another exercise that I really like to do, I call the jellyfish exercise. It is just the gentle rotating of the fingers, the palms coming together, the arms going up and down, as I do this. It gets the blood flowing, it is a great way to move the fingers and keep them nice and flexible.12

As a result of stretching the fingers, the hand can become more flexible and pliable. Dr. Jesselson talks about how, when he was a student, he would walk around Freiburg with a wine cork in between the fingers in order to stretch them out for extensions. (see Figures 2.1 and 2.2). As a result, his left hand fingers are capable of having a much wider stretch than his right hand. (see Figure 2.3). The right hand requires different kinds of flexibility, which are produced with other exercises. In his master classes and workshops, Dr. Jesselson demonstrates the “Hello Cello” hand sign, which is similar to Mr. Spock’s Vulcan Salute (see Figure 2.4). The purpose is to work on an appropriate stretch for cellists’ hands.

12 Ibid.
Figure 2.1 Finger Stretches #1\textsuperscript{13}

Figure 2.2 Finger Stretches #2\textsuperscript{14}


\textsuperscript{14} Ibid.
Figure 2.3 Finger Stretches #3

Figure 2.4 Finger Stretches #4 - “Mr. Spock’s Vulcan Salute”

15 Ibid.

16 Ibid.
2.2.2 Relaxation and Releasing Tension

One of the most important overall concepts in playing a string instrument lies in finding the optimal level of muscle relaxation. As with other athletic endeavors, the body works more efficiently and effectively when it is more relaxed. The cellist should pay constant attention to releasing tension in the fingers, hand, arms and the entire body. Relaxation is important for adjusting intonation, playing fast notes with clarity, changing vibrato speeds, and in virtually every other aspect of technique.

A major cause of tension in the right hand is the thumb squeezing into the bow. The cellist should make sure that the thumb is round, with minimal pressure at the frog. Equally important for relaxation is to make sure that the shoulder and elbow are at the lowest and most relaxed places when at the frog. Dr. Jesselson asserts that “one of the major causes of pain and tension is not releasing the muscles when at the frog so they can be used effectively at the tip.”\(^\text{17}\) It is part of the cycle of tension and release.

According to Dr. Jesselson, “a good exercise is just to sensitize the feeling of relaxation at frog and then going out to the tip; feeling where the elbow has to be with the least amount of energy you need and then going back to the frog with relaxed muscles.”\(^\text{18}\)

One of the tricks in playing dotted rhythms is to make sure that the bow is releasing after the dotted eighth note and before the sixteenth note. A good exercise for this, is to say the word “relax” rhythmically when practicing dotted rhythms, with “láx” being accented and falling on the second eighth note of the rhythm. The next step is to


\(^{18}\) Ibid.
consciously relax the muscles of the right arm while saying the word in rhythm, as noted in Figure 2.5.

![Relax!](image)

**Figure 2.5** Dotted Rhythm Exercises for Relaxation

It is important to feel the muscles releasing before playing the sixteenth note. This produces a better sound with more resonance in the dotted eighth note. The bow must really get into the string before the sixteenth note is played in order to have good articulation and a clear sound on the short note.

### 2.2.3 Breathing

Conscious breathing can be used to help with relaxation; this natural activity of life can help in playing an instrument. Adults breathe between twelve and twenty times per minute, which means 17,000 to 30,000 breaths in a day when in a resting state. However, we very rarely think about how we breathe and how we can use our breathing to promote relaxation. Most people breathe very superficially – meaning that we do not fill our lungs completely. According to Gerard Egan,

The reason I referred to this breathing as “shallow breathing” is due to the fact that when you breathe high in your lungs, there is less capacity for the exchange of

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oxygen in the upper lung due to the fact that there are less oxygen exchange structures in that area of the lungs.20

We often breathe with just a small portion of our lungs. According to Dr. Jesselson, “when I ask a student to show me how they breathe, usually they take a deep breath by just breathing in. And then I have to explain that this is really very superficial breathing and taking a deep breath does not maximize our breathing potential.”21 In order to breathe for relaxation, we cannot just breathe in. First, we need to get rid of the old air in our lungs and only then we can take a deep breath with new fresh air. So, in order to consciously breathe for relaxation, the first step is to breathe out. Then the body will automatically breathe in. If one just breathes in, one can hold the breath for a long time. Most people can hold the breath for thirty seconds or so, but as a result of that one will get tense.

On the other hand if you blow the air out, you cannot really prevent yourself from breathing in. There is an automatic part of your brain, the hypothalamus, which makes you take the air into the body. You cannot really stop yourself from taking the air in. If you blow the air out, you automatically have to breathe in.22

Dr. Jesselson asks his students to notice what happens to the body as they blow out the air and then take in a breath. When the air goes out, the spine curves outward and when breathing in, the spine straightens up. In addition, when one breathes in, the shoulders go up and when one breathes out, the shoulders go down. According to Dr.


22 Ibid.
Jesselson, the body is like a large balloon that fills with air and then releases the air. This is part of the life cycle of tension and release; when the air is in, one is more intense and when the air is out, one is more relaxed. It is important for cellists to monitor themselves as they learn more about healthy breathing and that they practice this breathing cycle consciously while observing the body.

Dr. Jesselson recommends practicing breathing along with scales: “I would start with blowing out the air again and then coordinating the down-bow with breathing in and the up-bow with breathing out, so as you go to the frog, you get to the place that is the most relaxed and as you approach the tip where you need the most energy.”23 In this way, the cellist takes in an entire lung-full of air with the down-bow, which is coordinated with opening up the body. On the return to the frog with the up-bow the air is released, and the shoulder should come down. Furthermore, the elbow is lowered.

A special exercise for breathing that results in very quick relaxation is what Dr. Jesselson calls “Square Breathing.” “In Square Breathing you breathe out for four counts, then hold breath for four counts, then breath in for four counts and then hold your breath for four counts.”24 As the cellist does that, the spine, shoulders and diaphragm should be monitored. Square Breathing is a quick and efficient way to relax the body and lower the heart-rate.

When I was a principal cellist in an orchestra in Spain, I used to do Square Breathing a few measures before the solo came up, in the tempo of the piece we were playing. As a result of doing this I play much better because I am more relaxed. I almost always do some Square Breathing now before performances, because I know that it helps me to relax.25

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23 Ibid.
24 Ibid.
25 Ibid.
2.2.4 Balance

Balance is a vitally important concept for string players because it affects equilibrium, ease of playing, flexibility, agility, stability, steadiness and control. An awareness of balance can also enhance confidence while playing an instrument. Elizabeth Morrow asserts, “Balance is a necessary component to arriving at maximum energy efficiency with minimal effort, a sensation we interpret as relaxation.”26 Cellists need to be aware of the importance of balance in the bow hold, in the efficient use of the left-hand fingers, in vibrato, in shifting and especially in the large fundamental movement of the body in contrary motion, which Dr. Jesselson calls “Left-Right Motion.” In “Left-Right Motion,” the body and instrument move in opposite directions. So, in taking a down bow cellists will push with the right foot and lean to the left. For an up bow, cellists lean to the right. Cellists need to experiment and become familiar with this motion, which is further discussed in Chapter 3, page 40.

Another important balance concept involves the little finger (fourth finger) on the bow. The function of the little finger is to balance the bow like a seesaw, with the ability to raise and lower the bow from the string. As a result, the bounce in spiccato and sautillé strokes is facilitated by the little finger. In addition, string crossings are controlled by the little finger, along with the wrist and upper arm.

There are a several exercises which can help in discovering and promoting the use of the little finger for balance. For these exercises Dr. Jesselson recommends having the

little finger on the top of the stick. In this way, a cellist can enhance the use of the fingers in controlling the bow. Instead of creating a violin bow hold, in which the hand and fingers are pronated, the cellist should keep the usual square position on the bow. By placing the little finger on top of the stick, the cellist becomes more sensitive to how the little finger controls the up-and-down movements of the bow. If the joints of the little finger bend inward, they are probably not strong enough. In this situation, Dr. Jesselson recommends using isometrics to strengthen the fingers (See Isometrics in Chapter 2, page 24.) Another of Dr. Jesselson’s exercises for practicing balance with the little finger involves, “making various circles and arcs with the bow in the air, always monitoring the thumb, making sure it is round and bending. You can also spell your name with the tip of the bow.”27

A good test for finding the balance property of the little finger, according to Dr. Jesselson, is the following: cellists should hold the bow out in front of themselves parallel to the ground, with the little finger on the top of the stick. Then they should release the little finger. If the bow stays steady, it means that they are squeezing with the thumb in order not to drop the bow, which creates tension and is not good. However, if the cellists release the little finger and the bow drops down, then they are not “holding” the bow, but instead are “balancing” the bow, which is what we want.28

The little finger also controls string crossings at the frog. To promote this use of the little finger, Jesselson recommends doing various flexibility exercises. In the “Wiggle-


28 Ibid.
waggle” exercise, the cellist puts the bow on the C-string at the frog and rocks it over to the A-string and back, with the little finger doing all the work. The arm does not move, just the fingers. This makes the movement easier and more efficient. A variation on this exercise is to hold the lower arm on the side of the cello, thus preventing the arm from doing any of the movement. This insures that the string crossings are done with the fingers, when desired. String crossings can also be done with the upper arm and the wrist (See Chapter 3, page 56.) Practicing string crossings in this way helps with many passages in the repertoire. A good etude for working on this string crossing movement of the hand and fingers is the Duport etude No.7.29 Practicing it with the little finger on top enables the player to eliminate large muscle movements of the arm, thus saving energy and preventing tension and exhaustion.

The cellist’s left hand also needs balance to work properly. It is important to balance on each finger using only the minimum amount of weight needed to produce the pitch. Balance motion is also involved in vibrato. Dr. Jesselson says,

> We don’t really need to actively vibrate up and down; we can conserve energy by actively vibrating in the “up” direction, with the top of the vibrato at the desired pitch. If the arm and hand are relaxed, then the “ping” produced on the “up” motion will result in a movement in the opposite, or “down” direction. Basically, the vibrato motion employs Newton’s Third Law: every action has an equal and opposite reaction. The active motion is the “up” part of the vibrato – the reaction is passive. Since the “up” motion of the vibrato pitch is really a physical motion towards the bridge on the cello, we are using gravity as well, so we don’t have to work as hard. The “down” vibrato’s movement is the reaction to this. If the hand along with the arm and fingers are completely relaxed, the vibrato motion will bounce back without any effort.30

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Dr. Jesselson asserts, “as we think about these issues, we can find other situations where balance is important in string playing. For example, in finding the right balance in playing double-stops, or in finding the balance we want when playing with a pianist or chamber group. We also may be looking for some philosophical balance in our approach to playing Bach: we are somewhere on a continuum between playing in a historically accurate “performance practice” approach, versus a highly personal, romantic approach.”

Balance is essential for everything when playing the cello.

2.2.5 Ballistic Motion

Ballistic motion is an important movement related to balance. Dr. Frank Wilson describes the ballistic motion as “…very energetic and short lasting. It launches the limb in a set direction and ceases long before the limb will have completed its course of action. Because of the similarity of this kind of move to the firing of a gun shell, it was called ‘ballistic’.” Dr. Jesselson states that if the cellist plays a fast down-bow and wants to retake the bow, muscle power can be used pull the bow back. However, this is inefficient. Alternatively, the cellist can allow ballistics to take over by throwing out the arm. If it is relaxed, it will bounce back like a boomerang.

In order to experience the difference between pulling the arm back and letting it bounce back, a student should first try this exercise without holding a bow; subsequently the student can move the bow in the air without playing on the string. Finally, the student should play a note with a fast bow speed from the frog to the tip and let the arm bounce back through ballistic motion. In the Figure 2.6 from the Vivaldi Cello Sonata in A

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31 Ibid.
32 Ibid.
minor, the cellist can use the ballistic motion to get back to the frog when playing the top A’s and the top E’s.

![Figure 2.6 Vivaldi Cello Sonata in A minor³³](image)

Students may first encounter ballistic motion when they work on the Feuillard *Daily Exercises* No. 32, variation #27, which is discussed in greater detail in Chapter 4, page 153.

Another kind of ballistic motion is used in vibrato, in which there is an active “up” motion by the arm and a passive ballistic motion as it responds in a “downward” direction.

**2.2.6 Isometrics**

According to Jeanne Nagle, “Isometrics are exercises that build muscle by pushing or pulling against a stationary object.”³⁴ Isometric exercises can help to strengthen the muscles of the hand and arm and can be used to build strength in the fingers. Many people think that their fingers are double-jointed. In most cases, the problem is that the fingers are just not trained to be round, as they need to be for efficient and optimal

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articulation and control. A simple isometric exercise that can solve this problem involves holding the palms of the hands together and pushing the fingers against one another for a few seconds at a time. The small muscles will be trained quickly by doing many short repetitions frequently during the day. One must be careful not to overdo these exercises in order to prevent injury. In a famous example of what not to do, Robert Schumann tried to strengthen the muscles of his hand with a machine and as a result “his right hand was permanently damaged.”

These isometric exercises should be done for just a few seconds at a time. In between repetitions of the exercise, shake out the hands and relax the muscles. It usually takes no more than a week or so of doing this several times during the day to strengthen the fingers. Once all the fingers have been trained to be round together, then one can do similar isometrics with just one finger at a time to focus on training each one individually. It is important to make sure that all the joints are round to prevent training the muscles with the joints bent in the wrong way. As the fingers get stronger, separate the palms and check if the other fingers are strong enough to stay rounded. Isometrics can help to strengthen the knuckle joints and the thumb as well, and they can be done on a table top or on the top of the cello. Dr. Jesselson emphasizes, “I like to do an isometric exercise to train what I call the “Innie and the Outie” for a strong thumb position, by pressing the left first finger against the left thumb and of course always relaxing after pressing it.”


2.3 Right Hand Warm-ups

It is best to start the warm-ups with right hand exercises. Since the bow produces the basic sound, it is best to establish the sound before working with left-hand issues. In addition, the bow arm uses more of the big muscles of the upper arm and back, while the left hand uses more of the smaller muscles of the lower arm and fingers.

According to Dr. Jesselson:

I usually start with an open G string. This string is great for starting because I can feel the arm weight into the string in a healthy way. As I do this I think about some of the issues that are the basis for a good cello technique: the Three Principles of Tone Production (contact point, weight and speed); I think about the bow being parallel to the bridge; I also think about the upper/lower arm issues: the upper part of the arm controlling the lower part of the bow and the lower part of the arm controlling upper part of the bow. Moreover, I think about my bow hold; the placement of the fingers on the bow; the function of different fingers and I often do what I call Left/Right Motion or Contrary Motion.37

There are many good open string warm-up exercises. These include exercises for different bow strokes (spiccatto, sautillé, up-bow staccato, détaché, etc.), the Feuillard Daily Exercises No. 32 (see Chapter 4, page 134), the Bowing Figures (see Chapter 3, page 60) and string crossings (See Chapter 3, page 56.) A good example of an exercise for string crossings would be the Feuillard Daily Exercises No. 34.

According to Jesselson,38 another good exercise for the bow involves changing the contact point by changing the angle of the bow while playing an open string. On a down bow, move the hand towards the bridge and the bow will move to a higher contact point. On the up bow, move the hand towards the bridge and the bow will move back down close to the bridge. The opposite can also be done: if one wants to move closer to the


38 Ibid.
bridge on a down bow, move the hand closer to the fingerboard and once you get there, straighten the bow to keep it in a new contact point. And on the up bow, move the hand closer to the fingerboard to move the bow back up. This sounds complicated, but with a little bit of practice, it is not difficult to execute.

2.4. Left Hand Warm-ups

Warm-ups for the left hand involve issues of strength, articulation, speed, shifts, vibrato, endurance, intonation, flexibility, relaxation, coordination and independence of the fingers. Some of these topics will be discussed further in Chapter 3. There are hundreds of possibilities for warming up the left hand and focusing on the issues mentioned above. A few examples of left-hand warm-ups advocated by Dr. Jesselson are cited below.

1) The following exercises deal with coordination, independence of the fingers and the lifting action of the second finger. The repeats are important as they involve the reverse articulation. These exercises can be done with all combinations of the fingers and also in thumb position, as noted in Figure 2.7.

![Figure 2.7 Exercise for Independent Fingers]

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2) The Cossmann exercises work on intonation, articulation and clarity. Most cellists are familiar with the first Cossmann exercise. This exercise can be augmented by repeating the third measure, using the finger pattern 2-4-3-4. Played spiccato, it is also a good exercise for coordination, as noted in Figure 2.8.

![Figure 2.8 Cossmann Exercise #1](https://www.cellobello.com/cello-blog/in-the-practice-room/100-cello-warm-ups-and-exercises-blog-14-isometrics-strength-and-articulation-exercises/).
The second Cossmann exercise is similar, but involves string crossings:

![Figure 2.9 Cossmann Exercise #2](image)

These exercises “test our strength, relaxation and endurance; if we have difficulty getting through these exercises on all the strings and then back up we need to examine whether we are pressing/squeezing with the fingers.”

3) Strength: A good exercise for strengthening the left thumb is to rub the thumb along on the string in the upper registers. This will help to train the thumb and make it

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40 Ibid.

41 Ibid.

42 Ibid.
strong enough to keep the “inny and the outy” thumb position. It also helps to build the callus on the finger.

4) Cadence exercises: Dr. Jesselson recommends doing various cadence exercises to work on ear training, intonation, string crossings, geography and tonal issues. Here are a few that he suggests.

In this first exercise, the cellist should use the fingerings indicated in the example. After each cadence one can move a half step higher and repeat the exercise. As noted in Figure 2.10:

![Cadence Exercise](image)

**Figure 2.10 Cadence Exercise #1**

In the next exercise, the student should use the fingerings indicated in the example. Again, after the cadence one can repeat it a half step higher. As noted in Figure 2.11:

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In the next exercise, these chords should be played chromatically going from ½ position to IV position, as noted in Figure 2.12:

\[\text{Cadence Exercise} \]
\[
\begin{array}{cccc}
4 & 3 & 4 \\
3 & 1 & 3 \\
1 & 1 & 1 \\
1 & 1 & 1
\end{array}
\]

\text{Example 1:}
\[
\begin{array}{c}
\text{i} \\
\text{II}
\end{array}
\]

\text{Example 2:}
\[
\begin{array}{c}
\text{i} \\
\text{II}
\end{array}
\]

\text{Etc...}

\textbf{Figure 2.11 Cadence Exercise #2\textsuperscript{44}}

\textbf{Figure 2.12 Cadence Exercise #3\textsuperscript{45}}

\textsuperscript{44} Ibid.

\textsuperscript{45} Ibid.
2.5 Melodic Improvisations

It is important for cellists to be creative during their warm-ups as well. One of the best ways to explore the instrument and warm-up is by playing simple improvisations, focusing on the sound and phrasing. It is best to start these improvisations with a few given parameters. The students should pick a key, a meter, a tempo and a pulse. Keeping it simple, they should at first just stay within an octave and not modulate. But within those parameters they can be creative, using various rhythms, strokes, tone colors, dynamics and so on. As students become comfortable with these simple improvisations, they can widen the scope – adding octaves, changing positions, modulating, playing in thumb position, etc. They should keep a sense of proportion in the phrase groupings, using 2, 4, 8 measure phrases, etc.) in a way that makes musical sense. Young players often find it challenging to keep the improvisation simple and not to “go crazy” with complexities at first. The improvisation should not be random or overly complicated. One of the benefits of melodic warm-ups is the opportunity to be creative with the melody yet at the same time being aware of technical issues such as the bow angle, body posture, or vibrato.

Another way to approach melodic warm-ups is to take a known melody and play it in different ways.

Some people like to improvise a little before starting to practice. A clarinetist friend has a consistent warm-up melody that he plays when he first puts the instrument together – he didn’t even realize that he was doing this, but when a composer friend of ours wrote a piece dedicated to him, he used that little melody as the theme since he had always associated that melody with the clarinetist. I often warm up on a little melody that my grandmother sang to me starting at birth – she created a different
melody for each of her grandchildren and mine has stayed with me all these years! It has become a tiny warm-up “ceremony” that I do almost subconsciously.46

This is the melody created by Paula Merzbach, Robert Jesselson’s grandmother:

![Lullaby](image)

**Figure 2.13 Lullaby**

When playing this melody as a melodic improvisation, Jesselson explores it in different ways by playing in different keys, putting the whole melody on just one string, or by inventing different versions of it with different bowings or fingerings.

The next three examples developed by Dr. Jesselson are intended to help the player warm up with string-crossings using a fast bow speed and a large arc motion with the arm. They should be played quite fast.

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47 Paula Merzbach’s *Lullaby*. Edited by Sam Cavalcanti.
Figure 2.14 String-crossing Exercises

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48 Robert Jesselson’s String-crossings Exercises. Edited by Marcilio Onofre.
CHAPTER 3

CELLO TECHNIQUE

This chapter presents Dr. Jesselson’s approach to cello technique, divided into right hand and left hand technique, as well as other pertinent issues such as coordination, concentration, organization, etc. Before discussing these issues in detail, I believe it is important to consider his approach to lessons with a new student.

3.1 The First Lesson: Getting it Right From the Start

3.1.1 Preliminary Meeting:

Dr. Jesselson works mostly with intermediate to advanced level students and the pedagogical approach that will be described in this document is based on this. He does not work with beginning cello students. The student “may be a middle school or high school student who has started in a public school or Suzuki environment, perhaps with some private lessons. He/she enjoys playing and wants to be more serious about music and become a better cellist.”

Prior to the first actual private lesson, Dr. Jesselson has a preliminary meeting with a prospective student and his/her parents. He asks the student to play something for him, then evaluates whether he wants to work with this student. If he decides not to take the student, he usually gives the parents some names of other possible teachers, indicates

that he will “keep an eye out” for the student’s progress in the future and often invites the student to participate in his free Saturday classes for area pre-college cellists. If he feels that he would like to work with this student, he then asks the student what his/her goals are for the lessons. At that point Dr. Jesselson describes what he expects from the student:

- at least 1 ½ hours of practicing every day.
- weekly hour lessons, with no “excuses”.
- participation in the Saturday Pre-College classes.
- participation in recitals at the end of the semester.
- a commitment that this will take priority over other after-school activities.

Dr. Jesselson then asks that the student and parents go home and discuss the realities of these parameters so that there is a family commitment to the process. In some cases, the parents may be hesitant about a commitment to weekly lessons or another requirement listed above, or the family’s level of support. But he feels it is best to agree on these parameters before the actual lessons begin so there is no misunderstanding on both sides. If they decide to continue with lessons, Dr. Jesselson asks that the students bring the following to the first lesson: a notebook, the Feuillard *Daily Exercises* and a specific etude book (often Dotzauer Etudes Book 1).

3.1.2 The First Lesson

Following a preliminary discussion session about commitment, Dr. Jesselson recommends that the cello teacher check to see if the cello is in good condition in the first lesson. This includes checking if the cello has the correct height of bridge, decent quality
strings, a bow with sufficient hair that has is not tightened too much and is loosened after playing and so on. The cello teacher should periodically check these things in lessons, as students often do not notice these problems. The teacher will discuss repertoire with the student in a future lesson. However, Dr. Jesselson usually asks the student to send him a repertoire list showing the pieces that he/she has played, and which pieces were memorized and/or performed. This list should be updated periodically.

Many students do not have solid knowledge of the parts of the cello. The teacher can have the student draw a picture and go through all the parts, making sure students know the correct terminology. Dr. Jesselson likes to do this with a group of students rather than in the first lesson, as it takes a bit of time.

In the first lesson, the cello teacher should check the three points to look for the correct positioning of the cello. The cello should:

a) touch the body in the upper middle of the chest: not too high or too low.

b) be positioned so that the lower bouts touch the legs between the upper and lower leg, near the knee and so the bow does not rub against the instrument.

c) be placed so that three fingers could fit between the neck of the cello and the top of the left shoulder. The neck of the cello never should touch the shoulder while playing.

The end-pin height should be checked by the cello teacher occasionally in future lessons, especially when the student has a growth spurt. As the child grows, the end-pin must also “grow.” The teacher should also check that a student is using the correct height chair.

Tall cellists tend to slide their feet back near the front legs of the chair. As a result, the
cellist loses their solid base and the foundation may be wobbly. For a good sitting position, the cellist should have the hips slightly higher than the knees.

In the first lesson, Dr. Jesselson’s agenda includes the following main topics that he hopes to accomplish. By doing so, he intends to establish very clear guidelines for the student right away, with the idea that there will be an enormous change in the physical approach to playing as well as the basic sound concept. If the student perceives these changes as positive after one lesson, then the ground is set for future accomplishments. The primary focus at first is on the bow arm, since that is where the basic sound production occurs. The main topics in the first lesson will be:

- “Core sound”
- “Block of sound”
- Upper Arm/Lower Arm issues
- Elbow arc
- The “Getting into the String Exercise”; “ke” sound
- Left/Right Motion
- The Three Principles of Tone Production
- Demonstration and explanation of the 2-octave scale and arpeggio system
- Feuillard No. 32

When the student is practicing open strings, attention should be given to what Dr. Jesselson calls the “core sound.” A “core sound” is one that has a real center to it. One of the things that the teacher is doing is changing the way that the student hears the sound. The student must also learn to look for the “Block of Sound.” In this concept, the sound is the same from the frog to the tip and does not weaken when approaching the tip.
Cellists generally identify four parts of the right arm that are involved in playing: the upper arm, the lower arm, the wrist and the fingers. While playing the cello, cellists must be aware of which part of the arm they are using. (See Chapter 3, section B under String Crossings, page 56.) In particular, cellists should be aware of the elbow moving in an arc shape as they bow from the frog to the tip. After asking how the elbow works, it is sometimes useful to have the student imagine having a pencil attached to their right elbow. If the student were to draw with this pencil on a piece of paper, Dr. Jesselson often asks “what shape would be drawn?” Students often see a straight line, but the correct way of using the elbow is to envision an arc, with the lowest place at the frog and the highest part of the arc when playing at the tip.

Sometimes the string does not speak well at the beginning of the note. To avoid this kind of sound, Dr. Jesselson uses his “Getting Into the String Exercise.” This involves putting the bow on the string at the frog and using the weight of the arm to move the string back and forth without producing any sound. The arm probably has more weight than is needed; if the cellist played with that amount of weight, the sound would crunch. However, the student should first sense the ability to have that amount of passive weight. They will then be able to release it a bit. As a result, when the student plays, it will have a little consonant sound. Dr. Jesselson calls this the “ke” sound.

The next issue is one of the most important for Dr. Jesselson’s physical and philosophical approach to playing the cello: Left/Right Motion (sometimes called “Contrary Motion”). This concept is vital for a young player because it helps with balance, coordination, sound production at the tip and most importantly, relaxation. It is especially necessary at the earliest stage of development for an intermediate level cellist.
because it establishes principles that will be built on in the next lessons. In teaching
Left/Right Motion, Dr. Jesselson usually starts without the cello. The students are asked
to put weight on the right side of the body while they lift the left leg and move it forwards
and backwards. Then they change their balance to the left side and move the right leg in a
similar fashion. After they feel a good balance in the body and the sitting position, then
they do the same thing while holding the cello. Dr. Jesselson will often ask the students to
“hug” the cello very low-down, in order to magnify the feeling of relaxation and balance.
Next, he asks the students to put the bow at the frog with the weight balance of the body
on their right side. Then they put the bow at the tip with the weight balance on the left
side. After that coordination is achieved, he asks them to draw the bow using Left/Right
Motion. After a few repetitions, he asks the students what they are sensing. Usually they
will hear that they are producing a better sound at the tip and usually they will sense
some relaxation at the frog. Sometimes they will say that it feels “strange” - but that they
understand this is all new. It usually takes one or two more lessons for students to feel
completely comfortable with this motion and with applying it to almost everything they
do: open strings, scales, arpeggios and etudes. (See Chapter 2, under Balance, page 20.)

After the student has understood the basic concepts of Left/Right Motion, Dr.
Jesselson begins the discussion about the “Three Principles of Tone Production.” (See
Chapter 3, section B under Basic Tone Production, page 47.) The first concept that must
be understood and internalized is the relationship between the bow and the strings. The
bow needs to be perpendicular to the string, or parallel to the bridge so, that the bow stays
in place with one contact point from the frog to the tip. If the bow is not “straight” then it
will slip up or down the string. The students must practice the bow angle using a mirror.
Because they are behind the cello, there is an optical illusion created by the position of the cellist to the right of the neck of the cello. As a result, they cannot see the angle clearly. For cellists, playing with a straight bow means that there is a perception that the bow is angled away from the body on a down-bow and that the tip is pointed away from the player on an up-bow.

After explaining these basic important aspects of the right arm and sound production, Dr. Jesselson talks about the left hand issues. He demonstrates the two octave scale from Feuilland and explains the bowing system of one, two and four notes to a bow. (See Chapter 4, section 4.2 under A Sequential Approach to Teaching Scales and Arpeggios page 152.) He also demonstrates the two octave arpeggios, emphasizing the style which he requires: two notes to the bow for the eight notes; four notes to the bow for the 16th notes; taking repeats; tempo at about 60 to the eighth note; using full bow. He asks the student to write the names of the arpeggios in the music (see Chapter 4, section 4.2 under A Sequential Approach to Teaching Scales and Arpeggios) and to memorize these names for the next lesson.

Still in the first lesson, Dr. Jesselson explains how the Feuilland No.32 will work. (See Chapter 4, section 4.1 under A Sequential Approach to Teaching Bow Technique Through the Feuilland Daily Exercises, page 134.) The theme of Feuilland No.32 is perfect for the student to solidify basic technical issues. Dr. Jesselson says, “each variation should be polished like a gem and perfected with good sound and a mastery of the fundamental bow technique. Terms should be clearly understood, including the
difference between spiccato and staccato and the importance of a well-executed detaché or legato.”

Throughout the lesson, Dr. Jesselson writes notes in the assignment notebook. This will become the “contract” for what the student will be expected to know and to do in the next lesson. If the cello teacher cannot cover all these aspects in the first hour lesson, there is probably too much verbalization, or talking about non-cello issues.

In the second lesson, the cello teacher should review all the previous information and make sure that the student has absorbed all of it. If there are deficiencies, these must be addressed before going on. The second lesson is important for setting standards of expectations: to see how much has been learned. The teacher can ascertain how well-focused the student was during the week and address that right away. For example, the student should know all the new terminology. A very telling moment is to see if they know the names of all the arpeggios. If not, Dr. Jesselson will work with them on memorizing the names. In doing so, he is able to see how easily the student can memorize something and also show “tricks” for memorization that will be used in memorizing music. (See Chapter 5 on Memorization, page 181.) In the second lesson, Dr. Jesselson starts to talk about the basic “rules” for sound production. (See Chapter 3, section 3.2.2 under Basic Tone Production, page 47.) Afterwards, he discusses the Placement of the Fingers on the bow, the Function of the Fingers on the bow (see Chapter 3, section 3.2.1 under Bow Balance, page 44) and the Front and Back of the Hand (See Chapter 3, section 3.2.2 under Basic Tone Production, page 50.) At the end of the second lesson, Dr. Jesselson and the student write in the positions for the next scale and arpeggios together.

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The student should do that at home in the future and Dr. Jesselson just checks that it has been done correctly. Dr. Jesselson continues the lesson with the Feuillard No. 32 theme and variations and he assigns an etude. Dr. Jesselson waits to talk about repertoire until the third lesson or so, to make sure the basics are “set”.

3.2 Right Hand - Bow Technique

The bow produces the cellist’s voice. It is of utmost importance for cellists to develop their bow technique in order to play expressively and with a good sound, controlling dynamics and accessing all the tonal possibilities at their disposal. As Dr. Jesselson explains:

The bow is where the artistry lives in playing a stringed instrument. As an artist we must be able to control every aspect of the bow as we work towards our artistic goals. But we must first master our craft on the way to becoming artists. We must know all the elements for controlling the bow to produce the rainbow of colors that we need in music. We need to be able to get a good sound from all parts of the bow and to play with accurate rhythm. We need to know about bow distribution and how to play legato, detaché, spiccato, sautillé and all the other strokes. And we need to know how to shape phrases. We need to be able to sing with the bow and also to speak with it. In short we need to be able to control the bow, rather than having the bow control us. If the bow is a horse and we are the rider then we need to control the horse, not vice versa.  

As indicated previously, Dr. Jesselson teaches a variant of French bow technique, which involves the use of the fingers for balance and collé. This chapter will examine some of the important facets of bow technique as taught by him, including basic tone production, the “bow hold” (or as Dr. Jesselson describes it “bow balance”), bow distribution, various bow strokes, string crossings, bow changes and articulation. Each area is discussed in this section.

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3.2.1 Bow Balance

Most string players refer to the position of the hand on the bow as a “Bow Hold.” However, Dr. Jesselson believes that using this term implies that the player will be using muscles to grab the bow. He prefers to use the term “Bow Balance” to help convey the idea that the bow is gently balanced in the hand without using force. Each finger has a specific placement on the bow:

- The first finger is placed on the grip with the first joint or the phalange above the first joint touching the stick.
- The second finger rests on the ferrule (or the “metal tab”) with the tip of the finger hanging slightly below the ferrule so that the hand sinks onto the frog.
- The third finger goes on or near the eyelet.
- The pad of the fourth finger is placed on the junction between the ebony of the frog and the wood of the stick. It can also be placed on top of the stick when used for certain strokes and string crossings.
- The thumb rests at the juncture of the two woods. It is placed on the diagonal and should be rounded.

The fingers on the bow, with round thumb are shown in Figure 3.1.
Each finger also has a specific function on the bow.

- The first finger transfers the weight of the arm to the bow.
- The second finger is the “anchor” - it keeps the hand on the frog with the second finger on the ferrule.
- The third finger centers the hand and deals with the rotation of the stick; it is also the “centering finger.”
- The fourth finger has the important function of balancing the weight of the bow and is used for off-the-string strokes (spiccato, sautillé, etc.) and string crossings.
- The thumb is a counterbalance and helps to guide the bow. In other words, it is the “boss.”

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Jesselson studied with cellist Paul Katz (former cellist of the Cleveland Quartet and professor at Eastman School of Music and the New England Conservatory). Katz uses a little story to describe the fingers’ functions: he says that the bow is like a ship and the fingers are the sailors on the ship.

- The “thumb” is the captain; he is the leader.
- The index finger is just lazy, lying on the deck.
- The middle finger is the “captain’s first mate” because the thumb and middle finger are close to each other.
- The ring finger likes to look out of the “porthole”, so it stays on the eyelet of the bow.
- The little finger has climbed up the mast, so it is higher up on the bow.

This little story is amusing and helps students remember how to position the hand and the function of the fingers on the bow.

Various exercises can help students improve their bow hand and the use of the fingers. In balance exercises for the little finger, students are asked to draw a circle, or an arc in the air, or spell their names with the bow tip. The “wiggle-waggle” exercise is also useful. (See Chapter 2, under Balance, page 21.) Another good exercise for the bow hand is “climbing up the bow with the fingers”, which helps the fingers develop flexibility and balance. Holding the bow vertically, each finger climbs along the stick until the tip is reached and then they climb down similarly. The same exercise can be done with the bow in a horizontal position, which helps the student perceive the use of the little finger for balance.

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An important exercise for the little finger involves holding the bow out straight in front of the player with the little finger on the top of the bow. When asked to remove the little finger from the bow, the player can check whether they are squeezing or if the little finger was truly balancing the weight of the bow. If they are squeezing, the bow will remain in a horizontal position, parallel to the floor. If the little finger is truly balancing the bow, the tip of the bow will drop facing the floor when the little finger is lifted. That is the desirable “bow balance.”

As students begin to sense the release of tension from the bow when they learn this “bow balance,” they will often think that they will drop the bow. Dr. Jesselson asks them if the feel like they will drop the bow and if they answer “yes,” he asks them if this is a “good thing” or a “bad thing.” If they think it is a “bad thing,” he explains that it is actually good, because they are not squeezing the thumb onto the stick and are beginning to feel the proper “bow balance.”

**3.2.2 Basic Tone Production**

Dr. Jesselson identifies two basic types of sound: the “core” sound and the “resonant” sound. The core sound is the tone that is produced close to the bridge with a low contact point. This is the sound that is needed for projecting in a large hall, for playing a big romantic concerto, or for playing with other instruments which project sound more easily, such as the piano or violin. The “resonant” sound is produced with a faster bow speed and a higher contact point. This type of sound is used in Bach or for subtle nuances in solo playing. Obviously, this description is a vast generalization and there are gradations in sound from “core” to “resonant” that are used in virtually all literature from all periods.
Dr. Jesselson feels strongly that students need to work with the core sound first, because it is often more difficult to produce this sound and it is important for students to develop what he calls a good “sound concept.” Students are generally used to playing with a sound that is pretty under the ear but does not project in a hall. Developing the core sound means changing the way that students hear sound under their ear, and it usually takes a few weeks to get used to the “barbs” that this way of playing sounds to student.

Producing the sound and changing the color or volume of the sound requires an understanding of what Dr. Jesselson calls the Three Principles of Tone Production. These are:

1. contact point
2. weight
3. bow speed

The student must work carefully with these three elements to discover how they interact.

Dr. Jesselson has developed several “rules” which the student needs to study and internalize. These rules include:

- The higher the string, the lower the contact point.
- The lower the string, the greater the weight.
- The lower the string, the slower the bow speed.
- The shorter the string length, the lower the contact point.
- The closer to the bridge, the more weight.
- The faster the bow speed, the higher the contact point.

The cellist must control all these factors in all parts of the bow.
In order for the bow to remain parallel to the bridge, it is vital for the student to understand how the upper arm and lower arm function. Playing from the frog to the middle of the bow requires using the upper arm; playing from the middle of the bow to the tip requires lower arm movement. Dr. Jesselson uses the following “formula” in describing this: “The upper part of the arm controls the lower part of the bow and the lower part of the arm controls the upper part of the bow.”54 When students are working on sound production, they need to understand that the elbow makes an arc shape when moving the bow from the frog to the tip.

A cellist must learn to use the natural weight of the arm. This can be taught by having students hold the right arm with the left hand. When the cellist feels the right arm is heavy, drop the left hand. If the arm stays in the air, the arm is not yet completely relaxed, and muscles are being used to hold up the arm. According to Dr. Jesselson, the goal is for the arm be completely floppy. When the left hand is removed, the right arm should just drop down and swing. That is the weight needed on the bow. The arm’s weight is more than sufficient to produce a big sound. Dr. Jesselson’s “Getting into the String Exercise” teaches arm weight and the “Ke” sound. He states that “at the frog, just let the weight of the arm move the string left and right, then release some of the weight with a very slow bow speed. If you are relaxed, you actually have much more weight than you need at the frog.”55

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To improve sound, Dr. Jesselson teaches about what he calls the “front and back of the bow hand.” The front of the hand is the part closer to the thumb and the back of the hand is the part closer to the little finger. At the frog, the back of the hand is more important because it allows the cellist to relax the elbow and sink down. The first finger is not actually needed to get weight into the string at the frog, though it remains on the bow. However, at the tip, the first finger is needed to transfer weight into the string, while the little finger is not. Again, the little finger should remain on the bow. Dr. Jesselson’s exercise for sensitizing students to the use the front and back of the hand involves making several short down bows at the frog without using the first finger; then moving to the tip and making several short up bows without using the little finger. Students should feel the transference of weight from the back of the hand to the front of the hand. Finally, organize the exercise with this rhythm:

![Front and Back of the Hand Exercise](image)

**Figure 3.2** Front and Back of the Hand Exercise

Always transfer the weight from the back of the hand to the front of the hand on the down bow and vice versa on the up bow.

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3.2.3 Bow Distribution

Bow distribution is the way that a player divides the bow stroke. The definition of bow distribution includes two parts: how much bow is used, and which part of the bow is used. It is important that cellists learn to be comfortable playing in all parts of the bow. Dr. Jesselson created four basic bow distribution exercises that he uses with his students:

![Four Basic Bow Distribution Exercises](image)

**Figure 3.3 Four Basic Bow Distribution Exercises**

1. For the first exercise in Figure 3.3, draw the full bow using the upper and lower arm and then use only the lower arm to make two shorter strokes at the tip. Students can practice this exercise in their scales by playing one long note and two short notes on each pitch, paying attention to proper bow distribution throughout the scale. Using contrary motion is very important with this exercise.

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57 Ibid.
2. In the second exercise, students play one long note and four sixteenth notes on each pitch, paying attention that at the tip the bow motion is controlled by the lower arm and at frog it is controlled by the upper arm. The bow distribution is similar for these first two exercises.

3. The third exercise involves using a small amount of bow and then on the up bows working back to the frog during the triplet. The upper arm is active and moves the bow while the wrist is passive.

4. The last exercise is a rhythm of a quarter note followed by a dotted eighth and sixteenth note rhythm. Following the dotted eighth note, the bow leaves the string in order to enhance the resonance and also moves slightly back toward the tip, in order to have more bow for the short note. It is important that the cellist places the bow back on the string each time, catching the string for the last up bow note. Again, the upper arm is active, and the wrist is passive; both upper arm and wrist make circular motions. This fourth stroke is frequently used in Baroque music, for example in the Largo from the Marcello Sonata in F Major:

\[\text{Largo con espressione}\]

\[\text{Figure 3.4 Marcello Sonata in F Major}\]^{58}

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^{58} Benedetto Marcello, *Cello Sonata in F Major* (Leipzig: B. Schotts Söhne, 1911), 1.
3.2.4 Bow Strokes

The most important strokes for an intermediate level cellist are legato, detaché and staccato, as well as basic dotted rhythms; later they add spiccato and sautillé strokes as well as up-bow staccato (also called hooked staccato). These are the primary bow strokes; while there are others, they would be addressed in a student’s later development.

Some important concepts for each stroke include:

- In the legato stroke, students must keep the connection between notes by keeping the arm weight applied to the string. When crossing strings, the student must pay careful attention in order to not break the sound.

- The detaché is perhaps the most important stroke for playing separate notes. In the detaché stroke, the cellist must be aware of using the correct part of the arm. When playing detaché at the tip, the lower arm controls the bow and when playing detache on the frog the upper arm or wrist controls the bow, depending on the type of sound or volume.

- The staccato stroke is a short on-the-string bow stroke. Dr. Jesselson uses the concept of “catch and float,” in which the bow catches and then releases the string to create a clear articulation. He describes every note as having a beginning, middle and end. The “catch” helps to focus attention on the type of articulation at the beginning of the note, while paying attention to the “float” helps to focus on what happens after the initial part of the stroke. There are myriad combinations and possibilities of how to attack and release any given note.
• Dotted rhythms are very complicated for string players to produce and the student must be aware of the common pitfall of dividing the note into thirds rather than into half or quarters. For more discussion of dotted rhythms, see Chapter 2 and the “relax” exercise, page 17.

• In spiccato, it is vital to find the proper balance in the hand for this off-the-string stroke. One type of slow spiccato is the “brushy off-the-string stroke.” In this important stroke, often used in Mozart or Haydn accompaniment passages, the upper arm controls the bow close to the frog. The faster the spiccato, the further out on the bow and the more the wrist is used. In general, the upper part of the arm is active, and the wrist is passive here. Dr. Jesselson asks his students to play the daily scale system using “off-the-string” strokes with duplets, triplets, 16th notes, sextuplets and octuplets. By doing this daily, students become comfortable with finding the correct balance in the hand, the use of the little finger on the top of the stick, the correct part of the bow for the speed of the spiccato being played and the optimal part of the arm to be used. In this way, students are already familiar with the fundamentals of spiccato before they encounter it in Feuillard and learning spiccato is more organic and natural. When they start working on Feuillard No. 32 Variations #25 and #26, they can refine the technique and play it faster.

• Sautillé is defined as a fast, uncontrolled off-the-string stroke. In other words, the arm does not control each bounce, but rather the bow is allowed to find its own bounce. The upper arm is still active, but the
motion is very small, and the wrist moves passively. Dr. Jesselson asks the students to hold the arm out in front of themselves and wave “bye-bye.” He then asks them to “wave bye-bye” from side to side, with the wrist shuttling right and left as if resting on a table. The active motion comes from the upper arm. If the motion is generated from the wrist, the arm will be very tight, and the player will be unable to be move it quickly. To help prepare the sautille stroke, Dr. Jesselson created the “Bouncy Bow” and “Bubble” exercises. The “Bouncy Bow” exercise \(^5^9\) should be played at 60 to the pulse, with two notes per beat than three, four, six and eight. As the stroke goes faster and faster, the height of the bounce gets lower and lower. When a student is comfortable at 60 to the pulse, the tempo can be gradually increased to about 80, which is the tempo required for the second movement of the Elgar Cello Concerto:

![Figure 3.5 Second Movement of the Elgar Cello Concerto\(^6^0\)](image)


The “Bouncy Bow” exercise is the only time the stroke starts from above the string. Virtually all other strokes start from the string. However, in this exercise we want to feel the drop of the bow and find the correct height for whatever tempo number of notes is being played. The “Bubble” exercise helps students find the natural bounce of the bow and understand how to stay out of the way to allow the bow to bounce by itself without interference. The bubble exercise is produced in the middle or upper part of the bow. The player drops the bow on the string beginning with big “bubbles” or natural bounces of the bow and then allowing the bubbles to get smaller and smaller while the bow moves closer to the bridge. This simple exercise is helpful in exploring the bow stroke used in the cadenza of Tchaikovsky’s Variations on a Rococo Theme:

![Cadenza from the Tchaikovsky Variations on a Rococo Theme](image)

**Figure 3.6** Cadenza from the Tchaikovsky *Variations on a Rococo Theme*[^61]

### 3.2.5 String Crossings

Effective string crossings require a sophisticated understanding of how the arm moves in an ergonomically correct manner. According to Dr. Jesselson:

String-crossings involve some of the most complicated motions in string playing. As such, they are the hallmarks that separate beginner, intermediate and advanced players. A beginner often lacks fluidity and has a stiff right arm when attempting string-crossings; an intermediate player will have a basic understanding of the mechanics and will make more rounded motions; but advanced players often

[^61]: Piotr Tchaikovsky, Cadenza from the *Variations on a Rococo Theme* (New York: E.F. Kalmus, 1965), 3.
compare to break-dancers: it’s as though they have no bones in their arms or legs and everything works smoothly.\textsuperscript{62}

Playing the cello involves movements of the arm on two planes: the horizontal plane and the vertical plane. Moving the arm horizontally results in our various strokes: detaché, legato, martelé, etc. Even the off-the-string strokes such as spiccatò or sautillé are produced by mostly horizontal motions of the arm, but the bow responds by bouncing because of the flexibility of the stick. Moving the arm vertically results in string crossings.

Dr. Jesselson analyses the various movements of the arm by dividing it into four parts: the upper arm, the lower arm, the wrist and the fingers. Each part of the arm is attached to the next part of the arm with a joint, each of which works differently:

- **The upper arm:** is connected to the shoulder with a ball-and-socket joint; this joint allows movement in all directions.

- **The lower arm:** is connected to the upper arm by the elbow, which is a hinge joint; for cellists this joint only allows movement in a horizontal direction.

- **The wrist:** is connected to the lower arm with an “articulated” joint, which allows for movement in all directions.

- **The fingers:** each have three hinge joints, which move vertically for cellists. The fingers can move slightly from side to side because the joint of the proximal phalanx (the part that is connected to the palm of the hand) is rather loose. This looseness enables extensions in the left hand.

As a result of these various joints and the different ways that the arm moves, there are three parts of the arm that can produce horizontal motions (the basic strokes) and three parts of the arm that can be used for string crossings. The three parts of the arm that move horizontally are:

**Horizontal Motions:**
- The upper arm
- The lower arm
- The wrist

The fingers cannot move horizontally because of the hinge joints. The three parts of the arm that can move vertically for string crossings are:

**Vertical Motions:**
- The upper arm
- The wrist
- The fingers.

It is important to note that the lower arm cannot move vertically. Misusing this part of the arm is one of the major causes of tendonitis in cello players. Many cellists try to play string crossings by moving the lower arm up and down, which can cause inflammation, pain and potentially serious injury. Dr. Jesselson spends a lot of time in lessons helping the students to learn how to use the arm in the most efficient, effective, and kinesthetically correct manner to prevent injury. He has often stated that he is proud of the fact that few of his students have suffered from tendonitis or other physical injuries because of the detailed attention that is paid to the physical way of playing the cello in an ergonomically correct way.
The different joint types combine to enable arm motion in all directions and on all different planes, giving a player the freedom to use pressure and weight as needed. Dr. Jesselson explains that:

If you had a ball-and-socket joint as your elbow, you would not be able to press down in the same way. Understanding how each part works is an important step towards having control of your movements. The ball-and-socket joint means that the upper arm can move in any direction; the hinge joint of the lower arm works horizontally; the wrist can be used horizontally and vertically; the fingers can only be used vertically. Many cellists develop physical problems and tendinitis because they try to play string-crossings with an up-and-down movement of the lower arm, when in fact the lower arm really only moves to the left and right. Forcing joints to work in the wrong way will cause wear and tear and painful problems with the elbow.63

All string crossing motions boil down to four basic shapes: the arc, circle, figure 8 and wave. Dr. Jesselson calls these the “Bowing Figures.” He introduces the students to these basic shapes by asking them to play the open strings and imagine holding a pencil in the bow hand. If the student cannot imagine the shapes that they are producing, then he holds a piece of paper while they are playing the open strings and the patterns emerge while they are bowing and writing the shapes on the paper.

The Arc:

![Figure 3.7 Arc](image)

63 Ibid., 49.

The Circle:

Figure 3.8 Arc

Figure 3.9 Circle

Figure 3.10 Circle

65 Ibid.


67 Ibid.
The Figure 8:

![Figure 8]

**Figure 3.11 Figure Eight**

The Wave:

![The Wave]

**Figure 3.12 Figure Eight**

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69 Ibid.

70 Ibid.
Once they have absorbed these four different motions, the students begin to work through the variations in the Feuillard *Daily Exercises* No. 34, which deals with string crossings on two strings. After No. 34 the students plays all the variations in No. 35, which deals with three strings, and then No. 36 which deals with four strings. Each variation works on a different combination of string crossings, plus various strokes, parts of the bow, parts of the arm, etc.

Learning to use the wrist and the fingers requires some special attention. Most people have never moved these parts of the hand in the ways that we need to do for string crossings. For the wrist motions Dr. Jesselson has devised a series of exercises that he calls the “Box Exercises.” For this he asks that the students hold out the arm with no “kinks” - in other words, the arm should be in a straight line in front of the body. Then he asks that they do the following:

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71 Ibid.
1. Describe a box with the wrist, moving the hand to the four corners. The student should explore the four corners of the box and make as large a box as possible. Then move between the top corners, the right side, the bottom corners and the left side. This movement should not be done with the arm - just the wrist.

2. Make a circle with the wrist, so the motions are rounded.

3. Holding a pencil in the hand make the box and then the circle.

4. Hold the bow as normal, with the little finger on the top. Have the left hand hold the upper part of the bow on the stick so that the bow can slide between the fingers. Make a box motion with the wrist as before and then a circle.

5. Without the left hand holding the bow, make a box and a circle with the wrist.

   Make sure that you feel the little finger balancing the bow and make sure that the motion is not with the arm, just the wrist.

For training the fingers, Dr. Jesselson uses what he calls the “Puppet Exercise.” Holding the arm again straight out, have the fingers pointing straight down to the floor. Then lift the proximal phalanx so it is flush with the metacarpal. Exercise the fingers going up and down, pretending that a string is attached to the fingers like a marionette puppet. Then:

   1. Hold a pencil and exercise the fingers in the same way.

   2. Hold the bow as in #4 above (with the left hand holding the stick to help support it). Move the fingers in the same way, up and down.

   3. Without the left hand, exercise the fingers with the little finger supporting the bow.

As the student becomes more comfortable with using the fingers in this way, it will be important to train the little finger to move in tandem with the third finger, so that it does
not bulge inefficiently out to the right. Most students have that problem at first, but they discover a muscle in the hand that can straighten out the movement of the finger so that it aligns with the third finger.

Once the student has absorbed the technical elements of string crossings, Dr. Jesselson requires them to work on some of the string crossing etudes in the Duport 21 Etudes for Cello. The following is the Duport Etude No.7:

![Figure 3.15 Duport Etude No.7](image)

The students work on this etude with a variety of bowings, including two notes to a bow, four notes to a bow and six notes to a bow.

Difficult and complicated string crossings appear throughout the cello repertoire. Mastering the technical demands of string crossings is a prerequisite for being able to play this literature. One example is a passage from the Saint-Saëns’s First Cello Concerto:

![Figure 3.16 Saint-Saëns Cello Concerto No. 1](image)

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This excerpt requires applying both string crossing technique and sautillé. In playing this passage, it is imperative to understand how and when to use different parts of the arm simultaneously, making use of both horizontal and vertical motions. Dr. Jesselson explains:

For spiccato string-crossings, you might choose to use the wrist for articulation and the upper arm for the string-crossing movement. You could also choose to play detaché with either your lower arm or your wrist, with the upper arm doing the string-crossing. There are many different combinations that you can try, always using a horizontal and a vertical movement together from two different parts of the arm.74

In the above passage from the Saint-Saëns concerto, the upper arm does the string crossings, while the wrist produces the sautillé stroke.

Another issue for cellists is playing legato in a passage that includes string crossings. It is relatively easy to play legato on one string but in playing legato with a change of strings there is often a bump in the sound. A different string will require a different amount of weight and possibly even a different contact point or speed. The trick to connecting two notes on two different strings is to do what pianists do in playing legato: overlap the notes slightly. But the player must always listen and adjust the weight, contact point or speed quickly in order to mask the different characteristics of the different strings.

Dr. Jesselson says that the cello teacher needs to make sure that every student understands how the mechanics of string-crossings really work. A teacher should be able


to break the motions down into their separate parts and then build them back up again.

Dr. Jesselson emphasizes:

When I get an intermediate-level student who has not thought about how the arm works at all, I go through the movements with them very carefully. This helps them to understand how to practice anything that is not working. Then I monitor them and watch very carefully when they are doing their exercises, to make sure that they are moving the correct parts of the arm. Sometimes to break through to the next level one has to be very determined. The younger the students are when they understand the need for that determination, the better they will be able to solve all kinds of problems.  

3.2.6 Bow Changes

After a student has absorbed the basic concepts of tone production (including the “core” sound, “resonant” sound, the “block of sound” and the “front and back of the hand”), they will want to focus on producing smooth bow changes. According to Samuel Applebaum, “Some pupils seem to develop this skill quite naturally, while others have to practice for a length of time to achieve it. It is, however, essential that all pupils develop a smooth bow change in all parts of the bow.”

The main problem with bow changes is that the string stops vibrating for a split second during the change of direction of the bow. This causes a “bump” in the sound. The goal is to eliminate the “bump” as much as possible. In order to minimize the sound of the bow changes, it helps to create a circular motion to change directions. For example, when driving a car one can change directions by stopping the car and backing up. However, another option for reversing directions would be to make a U-turn.

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According to Jesselson, “in string playing, you can make a U-turn in several different ways. One way is by rotating the bow hair from one side to another with the fingers. Another way is to go from one side of the string to another; for this we also use the fingers.”\(^7\)^7 See Chapter 3 page 69 for discussion of the sides of the string.

According to Dr. Jesselson, “It is helpful to make a slight diminuendo on the bow change in order to help prevent the vibrations from stopping.”\(^7\)^8 This can also help with making a smooth bow change. One can also work with bow speed. By slightly speeding up the bow before changing directions and then using a slower bow speed after the bow change, one can sometimes keep the vibrations going, thereby continuing the sound and preventing a “bump” or “hole” in the sound. Bow changes need to be practiced at the frog, at the tip and throughout the bow.

### 3.2.7 Additional Bow Techniques

Many of the basic elements of bow technique have been touched on in this chapter. However, learning to use the bow efficiently, effectively and creatively is a lifetime journey for a cellist. Below are some additional technical considerations beyond the basic elements mentioned before.

#### 3.2.7.1 The “Ring” Exercise

According to Dr. Jesselson, the secret to having a good sound is in the “ring.” If one can find the “ring” in the sound, even the core sound with its “barbs” can be


\(^8\) Ibid.
beautiful. Dr. Jesselson created the “ring exercise” to help identify and develop this sound. It consists of several steps:

1) Play a short G on the D string with the second finger, using a fast bow speed at the frog, listening to the sound of the ring after the bow leaves the string. The string keeps vibrating, especially when the open G string reacts with sympathetic vibrations. The key is to listen to the ring.

2) Play four 16th notes and a final 8th note the same way and listen to how this produces even more ring.

3) Play the four 16th notes and end with a long bow to the tip with a fast speed but making sure there is no unnecessary pressure on the string preventing the vibrations of the ring.

4) Play the four 16th notes and a long bow with a fast speed going to the tip and then do the same going back to the frog, always listening for the beautiful ring.

5) After several repetitions of this, just play the long bows with a fast bow speed, keeping the ring going. Do not press.

6) Do number 5 again, but this time add vibrato; be careful that when adding the vibrato not to put additional weight on the bow. That would squash the vibrations of the ring.

7) Repeat number 6 with vibrato and then again without vibrato alternately. One should hear a nice ring on the notes without vibrato, but the vibrato then adds luster and is the “icing on the cake”.

68
3.2.7.2 “Tirez” and “Poussez”

The French words for downbow and upbow are *tirez* and *poussez*. *Tirez* means to pull. *Poussez* means to push. It is very useful for string players to consider the real meaning of these words, rather than our more utilitarian upbow and downbow. The English words come from the violin world, where the downbow motion is truly downward, and the upbow motion is truly upwards. For cellists the words have less meaning, since we move the bow from side to side. The French words probably come from the Renaissance, and from gamba technique. Since the bows were held with an underhand grip, when a downbow was truly pulling the bow (*tirez*); on the upbow the player was truly pushing the bow (*poussez*). Using this concept helps to prevent the natural tendency for cellists to press down on the string, rather than pulling the string to the right and pushing it to the left. This helps to enhance the vibrations of the string, rather than squeezing the vibrations down by pressing.

A related concept is to think of the friction that causes the string to vibrate by pulling and pushing the bow, related to the Helmholtz principle.

3.2.7.3 Sides of the String

Another way of producing more ring in the sound is to pull the bow on the D-string side of the G-string on the downbow and the C-string side of the G-string on the upbow.
One can start with just a long downbow on the D-string side, rotating to an upbow on the C-string side, which is like an elongated figure-eight. That would be one cycle. Next, do three cycles on the downbow and three on the upbow. Then do five cycles (it has to be odd numbers, otherwise the bow change will end up on the wrong side of the string). These cycles are like string crossings - they are produced by the wrist and fingers. But the motion is smaller than when one makes an actual string crossing.

It is also interesting to do a large number of very quick motions like this with the wrist and fingers. That produces a “bow vibrato”, which was used in the Baroque period. Rather than vibrating by changing the string length with the left hand, the “bow vibrato” changes the volume, like a singer who vibrates by pulsating. This can be very effective when added to a regular left-hand vibrato.

### 3.2.7.4 Amount of Bow Hair

In the discussion about changing the sides of the string (above), it was mentioned that this motion is produced by the wrist and fingers. Another motion that can affect the sound is the rotation of the bow, with the stick moving towards and away from the player. This motion changes the amount of hair that is in contact with the string, thus changing

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79 Robert Jesselson’s design 1.
the sound. The movement is produced by the fingers and controlled by the third finger on the bow (See Bow Balance, Chapter 3, page 44.)

3.2.7.5 *Collé*

*Collé* refers to the use of the fingers in producing a stroke. It is used for marcato and martelé strokes, for the clear beginnings of notes and also importantly for bow changes. The use of the fingers can help to soften the bow changes, like the hairs on a paintbrush. The word *collé* means “glue.” *Collé* is a “short stroke that is chipped off the string. It starts with the hair set well into the string, which means that the bow is not thrown down onto the string. The hair is already well set into the string prior to the bow being set into motion.”

*Collé* has a great value for every string player because it improves the control of the right hand. In practicing *collé*, the cellist should “place the bow on the string about two inches from the frog, making sure that the thumb and the little finger are curved and with the elbow as high as the top of the hand. The bow hair should be set firmly into the string.”

Dr. Jesselson uses the Duport Etude No.7 for teaching *collé*. Instead of using the slurs, the exercise can be played with separate bows and at a slower tempo.

3.2.7.6 *Dynamics*

One of the most important facets of bow technique is the ability to control dynamics as well as tone color. This involves coordinating all the techniques mentioned earlier to produce the musical intent. Bow coordination exercises are important for the

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81 Ibid.
bow technique as well (See Chapter 3, page 122.) The cellist can work on dynamics using the Galamian son filé exercises, working with bow speed, weight, or contact point, or some combination of all of these. The Galamian son filé exercises are:

![Figure 3.18 Galamian son filé dynamics exercises](image)

**3.2.7.8 Pizzicato**

In plucking the string, cellists should usually plant their thumb on the side of the fingerboard about three or four inches from the end of the fingerboard. The goal is to get a resonant sound. However, in order for pizzicato to project well in a large hall, cellists need to play with the right hand very close to the bridge. Dr. Jesselson relates a lesson that he had with Paul Katz (his teacher at Eastman), in which Katz demonstrated a pizzicato. Close up, in Katz’s studio the pizzicato sounded harsh - even though it was played on a Stradivarius. However, a few days later Jesselson heard the Cleveland Quartet in recital and Katz’s pizzicatos were gorgeous, full-bodied, and boomed through the hall.

Most cellists usually use just the index finger to pluck the string, but other fingers can be used for different sounds. Cellists can learn more about pizzicato by watching and listening to bassists. Bass players use a variety of fingers on their right hand, especially in fast passages. First, second and third fingers can be experimented with to get the best

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sound and articulation. When playing chord pizzicatos, it may help to use three fingers. Long, ringing, pizzicato notes require a heavy left hand finger weight to help sustain the sound, otherwise the vibration will stop too quickly. It is also helpful to vibrate with the left hand after the string has been plucked to help keep the string vibrating.

3.3 Left Hand Technique

3.3.1 Overview

The left hand is essentially responsible only for playing the notes and vibrating. But years of work are required for a cellist to fully understand the geography of the fingerboard, the details of intonation and the mechanism for shifting between positions, as well as articulation, flexibility, speed and the myriad possibilities of vibrato.

The position of the left hand on the cello is divided into two basic approaches. In the lower part of the cello, the thumb is underneath the fingerboard and the fingers are spaced in half steps (or, in extensions, a whole step between the first and second fingers). In thumb position, mostly used in the upper part of the cello, the thumb is on top of the fingerboard and the fingers can be spaced in either half or whole steps.

In neck positions, the fingers should be round with a “tunnel” underneath. The thumb should be behind the second finger and kept “round.” Dr. Jesselson says that there should be no “kinks” in the arm - the arm should be in alignment, with no bends. He uses the analogy of a water bucket and a well to describe why “kinks” are harmful. He says that the rope which pulls up a bucket will fray mostly at the point that it goes around the pulley gears because of friction. The same is true with the tendons going around a “kink” in the arm. The friction in the joint will ultimately cause tendonitis if there is a bend in
the arm. The elbow placement changes for each position and is critical in determining where the hand is located on the fingerboard.

The 1-2-3-4 relationship of half-steps means the fingers should be equally separated. Although the anatomy of our hand naturally tends to keep the second and third fingers close because they are controlled by the same tendons, for good intonation on the cello it is necessary to have them spread apart for equal half-steps.

For many players the joints of the fingers tend to collapse. However, with Isometrics (see Chapter 2, under Isometrics, page 24) and a few weeks of exercises, most people can correct this problem. Very few people are truly double-jointed. For younger children playing the cello the fourth finger often tends to be flat, since the joints are not strong enough to keep it round. However, if the cello teacher corrects it and the child is diligent, in few weeks the child will be able to keep it round. Figure 3.19 shows the left hand position, as advocated by Dr. Jesselson:

![Figure 3.19 Left Hand Position](image)

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The cellist must always pay attention to the relaxation of the left hand, and should not push up with the thumb, or down with the fingers (See Chapter 2.)

3.3.2 Positions and Geography in Neck Position

Cellists need to understand the geography of all the positions on the instrument, so that they know what note they are playing and how it relates to other notes across the fingerboard on the other strings.

Learning to play a string instrument means having to figure out where the left hand goes on the fingerboard in order to play the notes. Since we don’t have a GPS system for the cello, most people initially learn where the notes are by knowing the positions. The positions are like the latitude and longitude of the cello and knowing them can help organize the grid of the fingerboard. Unfortunately, many students learn just First and Fourth positions, because then they can play almost all the notes in the lower part of the cello. However, that limits the myriad choices of fingerings that can produce different shifts, slides, string crossings, etc. It reduces the creative possibilities and it can make it almost impossible to play difficult passages that require the intermediate positions.84

There are several possible systems used by cellists. The following is the one that Dr. Jesselson teaches because it clearly defines all the notes in the neck position and their relationship across the strings. The positions are determined by the first finger. The position numbers are written with Roman numerals (with ½ used in the intermediate positions). The highest position is VII position, which is where the first finger is on an A (on the A string). This is the octave above the open string and the harmonic that divides the string into half.

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The chart below shows the positions with the Roman numerals used for the main diatonic notes and the “½” notation used for the chromatic notes.

![Position Chart](image)

**Figure 3.20 Position Chart**

Every position has both a normal and an extended variant. Therefore, first extended position is notated as Ie, or fifth-and-a-half extended is notated as V1/2 e. The thumb remains behind the neck for all neck positions. So even in VII Position and VII Extended Position, the thumb should be back behind the fingerboard, as the hand is not yet in thumb position.

Students must become completely familiar with this system. Dr. Jesselson has them ingrain the system through the systematic study of two octave scales and arpeggios (Feuillard No. 10 and No. 11). Below is an example of the 2-octave arpeggios from the Feuillard book, in which a student has written in all the positions:

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85 Ibid.
The students are required to memorize all the scales and arpeggios, writing in the positions each week before they work on a particular key. Dr. Jesselson checks what they have written, to make sure that they will learn the correct positions. The geography must become so internalized that it becomes second-nature. As a result, they greatly improve their sight-reading, intonation and speed of learning new pieces. In addition, during their practicing the students need to stop and check the intonation in every position when they shift. This helps to improve their hearing, their understanding of the keys and the physicality of each position.

3.3.3 Extensions

In extended position, instead of half steps between all the fingers, there is a whole step between the first and second fingers. For teaching extensions in the lower neck positions (1/2 position through IV position), Dr. Jesselson uses a five step process to explain exactly how the hand should move.

Step 1: release the thumb;

Step 2: pivot on the first finger;

Step 3: extend the first finger;

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Step 4: arm forward;

Step 5: fingers come down and thumb is again behind the second finger.

The very first thing that must happen before an extension can be made is the release of the thumb. If the thumb is not released, it will end up behind the first finger and there will be a lot of tension on the hand. Step two is a pivot on the first finger. This is the hardest step for many students. The important part is that the first finger extends or straightens in step three, which cannot be accomplished unless the finger makes this pivot. After this happens, the arm comes forward and finally the other fingers are set back down. It usually takes a few days or a week, for this process to become organized and internalized.

Robert Jesselson uses these three simple exercises to work on extensions. The first exercise is E-G-E-G-sharp, or 1-4 in first position changing to 1-4 in extended position. Students should also check the intonation of the fourth finger with the open string before beginning. Then in the extended position, the intonation of the third finger can be checked with the open string to be sure the extension has been successful.

**Figure 3.22 Extension Exercise #1**

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The second exercise is a good way to again make sure that the extended position is secure, by checking the Gs. Also, the student should check the intonation of the first finger by checking the E with the open A string. During the repetitions, the student must think of each of the five steps.

![Figure 3.23 Extension Exercise #2](image)

**Figure 3.23** Extension Exercise #2

The third exercise is E-G-Eb-G. Although some teachers call this a “backward” extension, Dr. Jesselson does not identify it as such. His terminology eliminates the confusion of “backward” and “forward” extensions. Positions are identified by the location of the first finger, not by the way the position is reached. For this exercise, the cellist should check the E with the open A string and the G with the open G string as well.

![Figure 3.24 Extension Exercise #3](image)

**Figure 3.24** Extension Exercise #3


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88 Ibid.
The interval between the first finger and the fourth finger in extensions is a Minor Third. It is often helpful to do what Dr. Jesselson calls an “over-extension”, which produces a Perfect Fourth between those fingers. Sometimes this is necessary for playing octaves across the strings in neck position. It is also very useful for eliminating the sound of shifts in scalar passages. In the following example, the “over-extension” happens from G# to A and also from C# to D#:

![Figure 3.25 Over-extensions](image)

In an over-extension, the fingers “fan out” and the thumb can come away from the fingerboard, as needed. Cellists should practice opening up the hand with flexibility exercises to prepare for over-extensions. People often find that the hand will “grow” through these exercises. It certainly becomes more pliable. When playing over-extensions, the hand should only be in that position for an instantaneous moment. Otherwise, it can produce unwanted tension.

### 3.3.4 Intonation

A discussion about intonation is a huge topic for string players - enough for a dissertation on just this topic alone. In this section, I will try to present some of the most important concepts that Dr. Jesselson teaches when working on intonation.

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89 Ibid.

The struggle for good intonation is an ongoing, continual, lifetime occupation for any string player. We are always working to improve how we listen to ourselves and fine tune our own intonation. Dr. Jesselson often tells the story of hearing Yo-Yo Ma coming off the stage after a concerto performance berating himself for his intonation. But, as Dr. Jesselson tells it, the performance sounded great to him in the audience, showing that Ma’s own standards for himself are set so high that he was more disturbed by his pitch than people listening.

When we are working on intonation, we are working on two important things: training our ears to hear accurately and training our bodies to know where a note lies and how to adjust quickly if it is not in tune. The first step is for cellists to be aware of the basic process for checking intonation. The best way of doing this is by using the perfect intervals: fourths, fifths, octaves and unisons. For example, to check first position, tune the first finger with the string above (producing a perfect fourth) and the fourth finger with the string below (producing a perfect octave). It is best to check the notes in this order because if you check the fourth finger first then you would have to lift the fourth finger to check the first finger. This way you “add” the fourth finger. Cellists can check notes in every position on the instrument and one of the first steps in improving intonation is to stop and check whenever a shift is made. This will help train both the ear and the body.

The next major concept for intonation is Expressive Intonation, which is the term used by Pablo Casals for describing how we bend pitch to play expressively. Instead of using equal tempered half-steps, when playing with melodic Expressive Intonation the cellist will play close half-steps between the leading tone and the tonic and sometimes
between the third and fourth steps of a major scale. Augmented 2nds are bent so that in the key of D harmonic minor the C# will be high and the B-flat will be low.

Dr. Jesselson studied with Paul Tortelier and subscribes to his refinement of Casals’ concept of Expressive Intonation. In his book *How I Play, How I Teach*, Tortelier identifies three kinds of semitones: two diatonic and one chromatic semitone. The chromatic semitone is the largest of the three (L). The two diatonic semitones are called “small” (s) and “very small” (vs). The “very small” semitone is the leading tone. Tortelier demonstrates these three different semitones in an example from the Haydn Cello Concerto in D Major:

![Figure 3.26 Example of the Three Different Semitones](image)

**Figure 3.26 Example of the Three Different Semitones**

Dr. Jesselson has created several exercises and practice techniques to help focus the cellist’s attention on intonation. One of these ideas is the “How to Play in Tune on the Cello” concept. Rather than taking a pill to improve intonation (if there were such a thing!), Dr. Jesselson presents a five-step process which can help a student think through intonation in a logical and sequential manner. Although the concept of “How To Play in Tune on the Cello” is somewhat “tongue-in-cheek”, since playing in tune is not that simple, this process does help with breaking down the various issues of intonation.

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The “How to Play in Tune on the Cello” process:

1) Imagine - the first step is to hear the pitch in your head. If one does not have perfect pitch, then one must develop good relative pitch and come from some given pitch (either an open string or a note played before the note to be imagined).

2) Predict - Using muscle memory, predict where the note will be.

3) Listen - playing the note, listen actively; the difference between hearing in the first step and listening in the third step is the difference between passive (hearing) and active (listening).

4) Relax - in order to adjust, one has to relax so that the finger can make the adjustment; sometimes players do the 3rd step (listening) and know that they are out of tune, but they are too tight to actually make the adjustment.

5) Adjust - the important final step is to move the finger.

Students need to experiment with the above system so that they can identify where the intonation issue is for every note that they play wrong. The more relaxed a player is, the quicker they can make the adjustment when they are really imagining the pitch, predicting and listening to themselves. The nervous system must be highly developed to make this work quickly. Dr. Jesselson points to a video of Jascha Heifetz playing a very fast passage. The video then slows down his playing and we see an adjustment happening on virtually every note. That is why Heifetz was known as the violinist with the best intonation.

Another technique that Dr. Jesselson developed for practicing intonation is the so-called “Mary System.” This is based on the first three notes of the popular song “Mary Had a Little Lamb.” Since many cello fingerings consist of groupings of three notes, the Mary system helps the student listen for the relationship between these notes in a scale
system or in pieces. For example, here is “Mary Had a Little Lamb” played starting on the fourth finger D on the A string (1/2 Extended Position):

"Major" Mary System

Symbols Used:
WB- Whole Bow
LH-Lower Half
UH-Upper Half

-When given a "WB" make sure to go all the way to either the frog or tip.

![Figure 3.27 Mary Had a Little Lamb](image)

The above example is a “Major Mary”, because the notes are the first three notes of a Major scale, which starts with two whole steps. There are four basic Marys: “Major Mary”, “Minor Mary”, “Modal (or Phrygian) Mary” and “Chromatic Mary.” A “Minor Mary” has a whole step from the bottom and then a half step. It has this name because a minor scale starts that way. The “Phrygian Mary” has a half step from the bottom and then a whole step. It is named that way because a scale in the Phrygian mode starts like that. The “Chromatic Mary” has two half steps. One other Mary is important for harmonic minor scales: the “Augmented Mary”, which has an augmented second between

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the first and third fingers and a half step between the third and fourth fingers. The following chart, describes the “Marys”:

![Figure 3.28 “Mary” Exercises](image)

Using this system can help students sort out fingering patterns. By abstracting the notes and taking them out of a particular passage, it is easier to hear the intervals; relating to them in a different way can clarify the intonation.

The following example shows three of the “Marys” in one passage from the Duport Etude No.11:

![Figure 3.29 “Marys” in the Duport Etude No. 11](image)

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93 Ibid.
When the students become aware of these patterns their intonation improves because they are listening differently and because they are recognizing the groupings of the notes and the finger spacings.

In another example from the Duport Etude No. 11, each circle denotes the three-note fingerings. This difficult passage can also be practiced with Marys, including the tricky fourth measure. In that measure, which involves string crossings, one can either play the A-string note on the D-string and create a standard Mary pattern, or one can play the notes as written with the string crossings and come up with “alternate” Marys consisting of other intervals (thirds and sixths) instead of the standard whole and half steps described below. As noted in Figure 3.30.

![Figure 3.30 “Mary” patterns in the Duport Etude No. 11](image)

Another way of thinking about intonation and intervals involves what Dr. Jesselson calls the “Configuration of the Hand.” This is the organization of the hand when playing double-stops or string crossings. Learning the intervals that are produced by various combinations of the fingers across the string is an important tool for the student. For example, if one plays the finger spacing of a whole step, but instead of

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94 Ibid.

95 Ibid.
playing it on one string one plays it on two strings, this will produce a major 6th. So, a whole step across the string makes a major 6th. Similarly, a half step across the string will produce a minor 6th. When you reverse the fingers that made a major 6th (e.g. 1-3) and play them on the opposite strings (e.g. 3-1), one gets a perfect fourth. Reversing the fingers of a minor 6th creates a tritone. The following chart shows the intervals on the cello across strings:

![Configuration of the Hand](image)

**Figure 3.31** Configuration of the Hand

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96 Robert Jesselson, “100 Cello Warm-Ups and Exercises Blog 20: Thumb Position and the Upper Registers, Part 2, cellobello, February 18, 2016, accessed September 6, 2018,
3.3.5 Shifting

Cellists need to shift between positions more often than violinists or violists because of the larger size of the instrument and the fact that the fingers can play fewer notes in any given position. Therefore, shifting smoothly and accurately is an important part of left hand’s cello technique. Dr. Jesselson uses the mantra “Preparation and Release” to describe the two basic elements of a shift. “Preparation” refers to the movement of the elbow before the actual shift. “Release” refers to the slight lift of the finger to prevent squeezing during the actual movement of the shift. The elbow should initiate the shift by moving into place for the next position. This is an active movement that happens before the hand leaves the previous note. The hand then follows passively and in a relaxed manner. Practicing shifts in this way starts with the very small shifts that a student encounters in the two octave scales and arpeggios. If this “Preparation and Release” becomes ingrained at that point in the student’s development, then the larger shifts that are necessary in playing the cello are relatively easy.

Dr. Jesselson teaches two kinds of shifts in the two octave scale system. First the students encounter the “overextension” which connects notes on the different strings. The other kind of shift is what Dr. Jesselson refers to as a “ghost shift,” which is used in coming down scales with a change of string. In ghost shifts, the finger that was last played moves to the new position on the old string with an audible shift to make sure the player hears where the finger is going, including the interval and the distance. After shifting on the old string, the next note is played on the new string. After several repetitions, the distance of the shift is internalized. Then the player releases the weight of

the bow so that the sound of the shift is only faintly heard, or not at all. The following example shows the “ghost shift” happening between the Bb (in the tenor clef) going to the Ab (on the D string), the F (on the bass clef) going to the E-flat (on the G string), and the C going to the B-flat (on the C string). The following example is in E-flat Major, starting in the treble clef). In Figure 3.32, the little “g” represents the “ghost shift”.

![Figure 3.32 “Ghost Shifts”](image)

Dr. Jesselson identifies two standard types of shifts, the “romantic shift” and the “classical shift.” In the “romantic shift” the cellist slides on the arrival finger and the shift is audible. For the “classical shift” the cellist slides on the “guide” finger which is the old finger and arrives on the “articulated” finger or new finger.

![Figure 3.33 Romantic and Classical Shifts](image)

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The chart above, in Dr. Jesselson’s handwritten handout, shows the combinations of all the fingers that a student should practice in the two types of shifts.

One way to practice long shifts is to use a circular motion. Dr. Jesselson recommends moving the elbow clockwise when shifting up and counter clockwise on the way down. In doing this, the elbow moves up, thus helping to release the finger from the string. Releasing the finger from the string is especially important in long shifts: “During the actual shift lift the finger so the harmonics are sounding and then place the finger down when the desired note is reached. The only time the finger will be holding down the string will be at the beginning and end of the shift.”

Dr. Jesselson also recommends shifting on the upper side of the finger. When cellists turn the hand and shift on the lower side of the finger they will push down onto the string and the friction will prevent a smooth motion.

Shifts can be an expressive tool for the cellist, depending on how much of the shift is audible and what kind of speed is used between notes. The bow will often control how much of the slide is audible, depending on how much weight is added or taken away during the shift. The speed of the shift is also critical. One can play many combinations of “Fast-Slow” or “Slow-Fast” shifts. “For the “Slow-Fast” shifts, start on the starting note slowly and then shift quickly to the note you want to end on. For the “Fast-Slow” shifts, quickly leave the starting note and arrive on the final note slowly.”

Dr. Jesselson often quotes his former teacher, Paul Katz, with “all shifts are slow shifts.” In other words, the key to successful shifting is being relaxed and not moving in a

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98 Robert Jesselson’s handwriting.


100 Ibid.
jerky fashion. One should not try to get to the goal note too quickly and instead to “enjoy the moment.”

3.3.6 Vibrato

Vibrato is essentially a special ornamentation of sound. It is very personal, and every player has a different kind of sound partly due to their own types of vibrato. It is somewhat like a fingerprint. Dr. Jesselson points out that, “Leonard Rose had a narrow and slow vibrato; Jacqueline du Pré had a very wide vibrato; Emanuel Feuermann had a very fast vibrato; Janos Starker had a fast and narrow vibrato; and Rostropovich had a wide and medium speed vibrato.”

There are three possibilities in how to vibrate: up to pitch, down to pitch and above and below the pitch. and two basic vibrato types: arm rotation and full arm up and down involvement.

Vibrato can be varied in different ways or not used at all, depending on the color or emotional feeling. It is therefore is an important interpretational tool, because it can depict different moods, textures, colors and the entire range of emotions.

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102 Robert Jesselson’s design 2.
There are two parameters of vibrato: speed and width. Combining these two creates the infinite possibilities of sound and emotion.

![Vibrato Chart](image)

**Figure 3.35 Vibrato Chart**

A slow vibrato that is wide can transmit craving or sorrow. A narrow vibrato at a slow speed can convey enigmatic and puzzling character, while a narrow vibrato at a fast speed can transmit a sensation of worry or tension. Finally, a fast, wide vibrato can communicate wildness and fierce moods.

There are two basic movements for vibrato on the cello. These are what Dr. Jesselson calls “Rotational” and “Longitudinal” vibrato. The rotational vibrato is a movement of the forearm. The longitudinal vibrato is a movement of the lower arm essentially up and down the fingerboard. Many students have learned one of these motions - usually the rotational vibrato. They must work on the other type in order to expand the possibilities for variety in their sound. For developing the longitudinal vibrato, Dr. Jesselson recommends the “Wow-Wow Exercise” which involves sliding up and down on the string. Another exercise, which Dr. Jesselson calls the “Chromatic Vibrato Exercise”, is to move the left arm up an octave chromatically like an up-bow staccato, using a shaking motion with both the lower and upper arm.

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103 Robert Jesselson’s design 3.
Dr. Jesselson uses a variety of exercises to teach vibrato. He suggests working on vibrato through playing different rhythmic patterns with a metronome. For instance, with the metronome set to sixty beats per minute, practice vibrating eighth notes, triplets, sixteenth notes and so on.

Dr. Jesselson also emphasizes the importance of developing a continuous vibrato. He feels that it is sometimes easier to keep the vibrato going from finger to finger while changing strings, rather than working on one string. The reason for that has to do with the slight release of the fingers that occurs in changing strings and changing fingers. He therefore advocates an exercise that works on changing fingers and changing strings without breaking the vibrato’s oscillation. The following chart depicts different fingering sequences. (1 = index finger; 2 = middle finger; 3 = ring finger; and 4 = little finger.) Each finger is played on a different string starting from the A-string and going down to the C-string, or vice versa.

![Continuous Vibrato Exercise](chart.png)

*Figure 3.36 Continuous Vibrato Exercise*  

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104 Robert Jesselson’s design 4.
Other exercises for vibrato that Dr. Jesselson teaches include:

- “Mime” exercises: in the air and on the arm. It is always useful to practice the motions away from the cello.
- Vibrato on Top of Cello Exercise: this exercise focuses attention on the longitudinal movement of vibrato.
- Clean the fingerboard with Kleenex: the up and down movement involved here helps the student to sensitize the longitudinal movement.
- Matchbox Vibrato Shakers: Dr. Jesselson has several matchboxes in his studio, filled with different kinds of rice and beans. When the student shakes the different matchboxes, they can hear the different sounds that are produced by different motions.
- 6ths vibrato exercise: this is a variant on the “Chromatic Vibrato” Exercise described above. This exercise involves a double-stop, so it is slightly more difficult to vibrate freely.
- Open string with vibrato on another string: by vibrating on another string one can hear how the open string sound is enhanced. This is useful when playing an open string in Bach; one can get a similar result by shaking the cello on an open string.
- Pulse bow to enhance vibrato: the “bow vibrato” described earlier is produced by the pulsing of the bow (See page 70.)
- Ring exercise with and without vibrato: this exercise was described earlier (See page 67.)
The vibrato can be changed by any alteration in the arm or hand. Changing the part of the fingertip being used, the angle of the hand, the slant of the finger and the angle of the arm will all change the vibrato. The shape of the playing finger, the direction of the movement and the weight of the finger will also affect the sound. Moving the thumb back further than its usual placement behind the second finger will generally widen the vibrato. Leonard Rose apparently had a vibrato that moved just the very tip of the finger and sometimes even just the skin at the tip. In general, the more parts of the arm, hand and finger that move the warmer the sound.

3.3.7 Flexibility and Strength

Cellists always look for an ideal balance between strength and flexibility in the left hand. Strength is necessary however flexibility gives the cellist more interpretative options and more control of nuance and pitch. When students begin doing flexibility exercises, they may not come easily. So, it is important that a cello teacher explains to the student that perseverance and patience are important issues in this learning process. Many of the warm-up exercises mentioned in Chapter 2 are for flexibility, including stretches, “finger flicks”, the “jellyfish” exercise, the “cork” stretches and the cadence exercises.

Another exercise that Dr. Jesselson does is a coordination and flexibility exercise: holding out the right arm and placing the first and second fingers of the left hand on top of the right arm; and the third and fourth fingers of the left arm underneath the right arm. Then quickly reversing those with 1,2 under the arm and 3,4 above the arm. Going back and forth and increasing the speed.
The second version of that is 1,4 on top and 2,3 underneath; reversing that and increasing speed.

The third version is the most difficult: 1,3 on top and 2,4 underneath; then reversing and increasing speed.

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106 Ibid.
Figure 3.39 Finger Exercise Alternating 1-3 and 2-4

Dr. Jesselson advocates Isometrics for building strength (discussed in Chapter 2, page 24) as well as exercises such as the Cossmann and Feuillard trill exercises for both flexibility and strength (See Chapter 3, page 95.) Other good left hand exercises come from the cellist and pedagogue Martha Gerschefski in her book “The Language of the Left Hand: For the Cello.”

3.3.8 Articulation

If one pays close attention to great string players performing, it is clear that there is very little pressure by the left hand fingers on the strings. According to Gerhard Mantel, “A fair distance is needed for the finger to strike the string smartly so that a clear articulation (‘percussion’) is guaranteed.” The term “percussive left hand” comes from Pablo Casals. Mantel says that “percussion therefore is a strong articulation with the

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107 Ibid.


finger. In addition to the clear separation of the two pitches, it results in a slight ‘plosive’ noise when fingerboard is hit.”

While using the left hand, cellists should use the kinetic energy for a better articulation. Kinetic energy is the energy possessed by a body because of its motion. As Dr. Jesselson explains,

Articulating with the fingers involves an active motion and a passive motion. The active motion is the finger coming up and the passive motion is the finger going down. You can hear the finger coming down on the string. A major cause of tension on the left hand is the pushing down of the fingers, instead is important to lift the finger up and then just release it. That release is enough to get the pin sound of the articulation. Just as with the rubber-band, if you want to shoot a rubber band, you stretch it and then release it. The stretching, or pulling motion, is the active motion. The release is passive. In playing the cello, the lifting motion is active, and the release automatically lets the finger come down on the string.

Cellists can use the Cossmann exercises to improve their articulation (See Chapter 2, under Left Hand Warm-ups, page 27.) Dr. Jesselson studied for a short time with the Romanian cellist Radu Aldulescu, who also created exercises for practicing left hand articulation. In these exercises, the cellist should be aware that the fingers are not pushing down or squeezing and the thumb is not pushing up and causing tension. The following chart contains all combinations of fingers. (1 = index finger, 2 = middle finger, 3 = ring finger and 4 = little finger)

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3.3.9 Speed

String players need work on their agility because they want to be able to play faster and more accurately. It is helpful to understand the necessary coordination to play fast. Playing slow and playing fast are two very different activities. It could be compared to walking and running. Certainly, both movements require the movement of the legs; however, the actual feeling is quite different. Slow playing is similar to walking in that when cellists play slowly, they feel a sense of balance as they go from one finger to another. The cellist may want to enjoy the feeling of settling down on each finger. Fast playing is very different, because the cellist is not putting as much weight on each finger.

\[\text{Figure 3.40 Aldulescu Finger Exercise}^{112}\]

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{aldulescu_finger_exercise.png}
\caption{Aldulescu Finger Exercise}
\end{figure}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
 I & II & III & IV \\
\hline
1 2 3 4 & 2 1 3 4 & 3 1 2 4 & 4 1 2 3 \\
1 2 4 3 & 2 1 4 3 & 3 1 4 2 & 4 1 3 2 \\
1 3 2 4 & 2 3 1 4 & 3 2 1 4 & 4 2 1 3 \\
1 3 4 2 & 2 3 4 1 & 3 2 4 1 & 4 2 3 1 \\
1 4 2 3 & 2 4 1 3 & 3 4 1 2 & 4 3 1 2 \\
1 4 3 2 & 2 4 3 1 & 3 4 2 1 & 4 3 2 1 \\
\hline
\end{tabular}
\caption{Combinations of Fingers}
\end{table}

\textsuperscript{112} Ibid.
and is keeping the balance more in the hand or arm rather than the finger. When playing quickly, cellists do not settle in as much on each finger. Exercises are a good way to establish a faster speed. The following exercises were created by Dr. Jesselson to improve the cellist’s agility of the left hand. In these exercises, the student should use the metronome for rhythmic precision and to graph a daily increase in speed. These exercises work on various combinations of the fingers, shifting and intonation as well as speed and agility.
Figure 3.41 Left Hand Exercises

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The Trill Rhythm Exercise below was also designed by Dr. Jesselson. In this exercise, the cellist can practice the active and passive finger concept that was discussed in the previous subchapter (See page 99.)

![Figure 3.42 Trill Rhythm Exercise](image)

The advantage of this exercise is that on the upbow repeat, the fingers are reversed with the trill rhythm. This exercise should be played with all combinations of the fingers. (1-2, 2-3, 3-4, 1-3, 1-4 and also in thumb position with the thumb (T-1, T-2, T-3, T-4, plus the combinations mentioned above. T=thumb). The exercise should be practiced slowly for articulation and then once the cellist has internalized this exercise, the tempo should be increased for agility and speed.

### 3.3.10 The Thumb

The thumb is often one of the major causes of tension for string players. People tend to squeeze with the thumb on both the bow (see discussion in Chapter 3 page 74) and on the fingerboard. One of the main contributing factors to squeezing is when cellists’ thumbs are not round. When the thumbs are round, they are flexible. When they are bent in, they become locked and the tendency is to squeeze. Because of its evolutionary importance, the thumb has lots of nerve connections to the brain. “Evolutionarily the prehensile, opposable thumb was intended to be used for holding

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114 Robert Jesselson’s handwriting 2.
things and using tools, while at the same time it can be amazingly sensitive and dexterous." A simple exercise that Dr. Jesselson teaches can demonstrate the difference in functionality when the thumb is round or bent outward versus when it is straight or bent inward.

If you hold your right hand with your left hand, with the thumb bent inward, you can squeeze hard and apply pressure. However, if the thumb is curved, you just cannot squeeze as hard which is desirable in playing the cello with both the left hand for fingering and the right hand for bowing. When the thumb is bent inward it is inflexible, it gives excess tension and a lack of flexibility. When the thumb is round and bent out, we can access the fine motor skills which are necessary for subtle nuances in playing.

Here is the correct usage for the neck positions, with a round thumb opposite the second finger:

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3.3.11 Thumb Position

Although the thumb should be bent outward on the bow and on the left hand in neck positions, when it comes to playing in thumb position, it is the opposite. In thumb position, the thumb should be bent in because we need for the thumb to serve as an anchor for the hand. It has to be strong and stable. Dr. Jesselson teaches what he calls the “inny and the outy”, in which the Interphalangeal (IP) Joint of the thumb (the joint of the finger with the nail) is bent inwards and the Metacarpophalangeal (MP) Joint (or the knuckle of the thumb) is bent outwards.

![C Shape in Thumb Position](image)

Figure 3.44 C Shape in Thumb Position


\footnote{Ibid.}
It is also important for the cellist to keep a “C shape” between the thumb and the other fingers, as seen in the above picture. This “structure” enables the fingers to articulate by lifting and dropping.

Dr. Jesselson introduces thumb position right after the student is familiar with the neck positions and the two octave scales and arpeggios. His students study all of the thumb position scales in Feuillard (No. 26 and No. 27) in order to get comfortable with using the thumb all the way up the fingerboard. For many students, this is a matter of strengthening the thumb (using Isometrics) and figuring out the spacing and contact point issues as one plays higher on the instrument (See Chapter 4 section 4.2, under A Sequential Approach to Teaching Scales and Arpeggios, page 152.)

Understanding tetrachords in thumb position is also important for the developing cellist. A tetrachord is a group of four notes separated by three intervals. The following are the main tetrachords in thumb position (W=whole step; h=half-step; A=Augmented 2nd):

<table>
<thead>
<tr>
<th></th>
<th>W</th>
<th>W</th>
<th>h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor:</td>
<td>W</td>
<td>h</td>
<td>W</td>
</tr>
<tr>
<td>Modal:</td>
<td>h</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>(Phrygian)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromatic:</td>
<td>h</td>
<td>h</td>
<td>h</td>
</tr>
<tr>
<td>Lydian:</td>
<td>W</td>
<td>W</td>
<td>W</td>
</tr>
<tr>
<td>(whole tone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Octatonic:</td>
<td>h</td>
<td>W</td>
<td>h</td>
</tr>
<tr>
<td>Gypsy:</td>
<td>W</td>
<td>h</td>
<td>A</td>
</tr>
<tr>
<td>Harmonic Minor:</td>
<td>h</td>
<td>A</td>
<td>h</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>h</td>
<td>h</td>
</tr>
<tr>
<td></td>
<td>h</td>
<td>h</td>
<td>W</td>
</tr>
</tbody>
</table>
Dr. Jesselson teaches many of the different scale possibilities by combining the tetrachords on two strings in thumb position, with the thumb on the first note in the scale. He developed the following chart for students to understand the symmetrical and non-symmetrical tetrachords in a variety of scales in order to work on efficient thumb position and intonation. It contains 15 types of scales using the basic tetrachords. (The Roman numeral I is the A string and the Roman numeral II is the D string).

**Thumb Position Scales using Tetrachords**

<table>
<thead>
<tr>
<th>Type</th>
<th>Tetrachord I</th>
<th>Tetrachord II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major:</td>
<td>W W h</td>
<td>(W) W W h</td>
</tr>
<tr>
<td></td>
<td>(Major)</td>
<td>(Major)</td>
</tr>
<tr>
<td>Dorian:</td>
<td>W h W</td>
<td>(W) W h W</td>
</tr>
<tr>
<td></td>
<td>(Minor)</td>
<td>(Minor)</td>
</tr>
<tr>
<td>Phrygian:</td>
<td>h W W</td>
<td>(W) h W W</td>
</tr>
<tr>
<td></td>
<td>(Modal)</td>
<td>(Modal)</td>
</tr>
<tr>
<td>Natural Minor (Aeolean):</td>
<td>W h W</td>
<td>(W) h W W</td>
</tr>
<tr>
<td></td>
<td>(Minor)</td>
<td>(Modal)</td>
</tr>
<tr>
<td>Harmonic Minor:</td>
<td>W h W</td>
<td>(W) h A h</td>
</tr>
<tr>
<td></td>
<td>(Minor)</td>
<td>(Harmonic Minor)</td>
</tr>
<tr>
<td>Melodic Minor (up):</td>
<td>W h W</td>
<td>(W) W W h</td>
</tr>
<tr>
<td></td>
<td>(Minor)</td>
<td>(Major)</td>
</tr>
</tbody>
</table>
Once students are familiar with these tetrachords, they can apply them to the repertoire.

Analyzing passages in the cello repertoire using Tetrachords can be very useful. For example, in this passage from the 3rd movement of the Saint-Saëns Concerto we can see that there are groupings of Major Tetrachords, Minor Tetrachords, Octatonic Tetrachords and Modal (Phrygian) Tetrachords. The numbers in this example show the fingering patterns; the colored lines show the tetrachords (not the bowings).”

![Figure 3.45 Thumb Position Scales using Tetrachords](image)


Another way that Dr. Jesselson teaches security in thumb position comes from one of his former teachers. In 1972, Dr. Jesselson’s teacher Marçel Cervera gave him Diran Alexanian’s thumb position exercises. These exercises are unfortunately not included in Alexanian’s seminal book, *Traite Theorique et Pratique du Violoncelle (Theoretical and Practical Treatise of the Violoncello)*. These 12 exercises have never been published. Dr. Jesselson hand-copied them from Maestro Cervera’s notebook. Diran Alexanian was born in 1881 in Armenia. At the École Normale de Musique in Paris, he was Pablo Casals’ assistant. Alexanian’s treatise was endorsed by Pablo Casals, when Alexanian submitted to me a well elaborated plan for the analysis of the theory of violoncello playing, based on principals that I myself accept, I recognized that I had before me a serious effort towards the casting off of the shackles of the superannuated prejudices with which the above mentioned works were replete… I would therefore recommend to all those who play or who wish to play the violoncello to imbue themselves thoroughly with the contents of this treatise... I also venture to predict that this book will be of the greatest documentary value, being as it is the only work of its kind concerning our instrument and that even experienced virtuosos will find in it food for instructive meditation.\(^{122}\)

\[\text{Figure 3.46 Tetrachords in the Saint-Saëns Concerto}^{121}\]

\(^{121}\) Ibid.

The following are Alexianian’s twelve exercises that deal with thumb position, opening up the hand in the basic thumb position.
Exercises 8 and 9: Keep fingers in same position throughout, and slide thumb along the string. Practice on all strings and positions.

[Music notation images]
Exercise 10: Keep fingers in same position throughout, and lift thumb to different position. Practice on all strings, different positions.

Exercise 11:

Descending: As the 3rd finger is put down, extend the thumb back.
Ascending: As the 3rd finger is put down, bring the thumb up. Practice on all strings, Different positions.
According to Dr. Jesselson, “a good way to strengthen the thumb is to just move it up and down on the string, building the calluses and also building the thumb’s

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strength.”124 Another good exercise for strengthening the thumb is from Tortelier’s book “How I Play, How I Teach”:

![Figure 3.48 Strengthening the Thumb](image)

**3.3.12 Geography in the Upper Registers**

Exploring the upper register of the cello requires a different understanding of geography from the lower part of the cello. Instead of using positions, cellists navigate the “High Sierras”126 by a different set of principles.

1) using the basic thumb position - meaning the spacing between the thumb and 3rd finger is generally a perfect fourth on the same string and an octave across the string.

2) using harmonic nodes as markers for different regions of the upper registers. For example, on the A string, the second harmonic A (dividing the string into two parts, the third harmonic E (dividing the string into three parts) and the fourth harmonic A (dividing the string into four parts) are the most useful of these nodes (See chart below.)

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125 Ibid.

3) measuring distances from a given note, which means using intervals and predicting the distance to the next note. The “given” note that one measures from is either a note that has been played, or one of the harmonic nodes.

The following chart shows the main harmonics that can help cellists to find positions in upper registers:

![Figure 3.49 Harmonic Nodes](image)

Security in the upper registers comes with intense work on scales, arpeggios and especially etudes. The Popper etudes are particularly useful for studying and solidifying one’s understanding of this part of the cello. Another useful tool is to work with

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tetrachords in thumb position. Dr. Jesselson’s concept of teaching the different types of tetrachords and applying them to the repertory is an efficient pedagogical strategy. This tool helps the student to connect new information in the thumb position with pieces in the repertoire (see Figure 3.46, on page 108).

Sometimes when the cellist is working on a difficult passage in the upper register of the cello, Robert Jesselson recommends doing what he calls “live there.” This is a practice technique that means staying in a position on all four strings, thinking about the finger patterns, the finger spacing, the placement of the arm and the elbow in order to become comfortable in that position. For example, in the Saint-Säens Concerto there is a passage that starts on the seventh extended position going to sixth position:

![Figure 3.50 Saint-Säens Concerto No. 1](image)

In this passage, the cellist would start with the sixth-and-a-half-extended (VI ½ e) position and find the finger pattern there, playing on all four strings to process what notes are available. Playing a short improvisation would also be helpful in making the player feel comfortable in this particular position, using the same finger spacing on all four strings. This method of working means that the student is not only practicing for the Saint-Säens Concerto, but preparing for many other passages that are in VI ½ e position in other pieces.

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3.3.13 Double Stops and Chords

Working on double stops can be very helpful for improving intonation. The standard procedure is to work from the bottom up in chords and double stops. Just as in a string quartet or in an orchestra the chord is tuned from the bass note up, the same is often true on the cello itself. It is important that when working on double stops that one does not try to move both notes at once. One of the notes must stay steady and the other note must be tuned to that one. If a cellist tries to move both notes, the intonation becomes a moving target.

Dr. Jesselson has students work on sixths before working on thirds. The student must first understand the sequence of major and minor sixths and the physical relationship of sixths on the cello: major sixths are configured like a whole step across the string and minor sixths are like a half-step across the string. There are two basic fingering options for scales in sixths. Dr. Jesselson likes to introduce scales in sixths with two octave scales using Gordon Epperson’s *A Manual of Essential Cello Techniques* because he uses one fingering system going up the scale and the other system going down. Then students can use the Anatoli Krastev’s book *Basic Principles in Studying Cello Scales* for the complete system in four octaves. One of the main things to work on in sixths is finding the connecting string in order to make the string crossings as smooth as possible.

For practicing thirds, Dr. Jesselson advocates using the concept of a “hidden fourth” to stabilize the intonation. The hidden fourth is produced by the fourth and

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second fingers across the string when the hand is playing a major third in neck position. In minor thirds, there are two hidden fourths: between the fourth and second fingers and between the second and first fingers in extended position. Dr. Jesselson suggests daily practice of octaves using scales, arpeggios and various etudes such as Popper Etude #38.

![No. 38](image)

**Figure 3.51 Popper Etude #38**

One of the earliest uses of double stops for a developing cellist is in passages where there are string crossings. By creating double stops and identifying the intervals the student begins to relate the configuration of the hand with the intonation (See page 86.) For example, when working on the following passing in the Dotzauer Etude #27, double-stops can be created to work on intonation and the security of the left hand:

![Figure 3.52 Dotzauer Etude #27](image)

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Similarly, Dr. Jesselson recommends playing the entire Duport Etude #7 as chords in “block position” as the foundation of this etude. In this example, cellists should practice by making every beat a three-note chord:

![Figure 3.53 Duport Etude #7](image)

Dr. Jesselson also recommends using the following exercises to practice double stops. In these pairs, the superior line represents the A string and the second line the D string.

**Robert Jesselson Double-stop exercises**

```
2-3  2-4  3-4
1------

1-3  1-4  3-4
2------

1-2  1-4  2-4
3------

1-2  1-3  2-3
4------
```

Scales in sixths, thirds and octaves are also excellent ways to work on double-stops. The student can practice first the major and minor scales in sixths, using different fingerings going up and down, then practice major and minor scales in thirds and eventually major and minor scales in octaves. Dr. Jesselson also recommends practicing broken thirds, using the Feuillard No.12.

![Figure 3.54 Feuillard Daily Exercises No. 12](image)

### 3.4 Other Issues

In one of his articles on the Sequential Method, Dr. Jesselson lists what he considers a “Global Syllabus for a Musician.” This involves the “big picture” of all the various issues that one needs to address in order to become a competent musician. He divides the requirements into four categories: Technical, Musical, Organizational and General Musicianship:

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This subchapter will deal with some of these important issues related to playing the cello. They include coordination, concentration, sight-reading, basic musicality and musicianship and various organizational issues.

### 3.4.1 Coordination

Coordination is involved in almost every aspect of playing the cello. Dr. Jesselson often demonstrates this by patting his stomach and rubbing his head. And just like that exercise, the first time someone tries doing some of the coordination exercises they may find them to be difficult. But with repeated attempts, they can be improved.

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Exercises for coordination involve moving different parts of the body while playing. For example, coordinating the bow with movements of the head or shoulders is very useful. The concept here is the general principle that if a body part can be moved, it is less likely to get tight. In one such exercise, the cellist might play a scale and move his/her head up and down like nodding. It may be helpful to keep the eyes closed to prevent dizziness. Next, the cellist can play the same scale moving the head to the left and right. Eventually, the student can move the head in rhythms or play the scale making circles with the head in both directions. In another exercise, cellists can play scales while moving the shoulders up and down. It is important that when doing this, the student keeps the head and shoulders loose, so the muscles are relaxed. In these coordination exercises the cellist should also include “Left/Right” motion. Even when working on the left hand, adding this motion is another kind of coordination that the cellist should ingrain. Even when doing all the complicated things that cellists do (such as bowing, listening, working on intonation, vibrating, etc.) the muscles should be relaxed.

Dr. Jesselson particularly likes a Tortelier exercise that works on varying the speed of the bow. In this exercise, the cellist plays a scale and counts eight beats for the first note, seven for the second note, six for the third note and so forth until one comes to the tonic. The process is reversed coming down the scale. Dr. Jesselson recommends that students count aloud while doing this because it adds another thing to coordinate. When teaching this, the teacher should make sure that the student uses a full bow and uses “Left/Right Motion.” When changing the speed, the cellist also needs to change the contact point in order to use the full bow. After doing this exercise, one can vary the speed of each note, while still using the full bow for every note.
Dr. Jesselson created the following bow coordination exercise to explore the student's coordination. This sequence of bowings should be played with scales, using Left/Right Motion:

Figure 3.56 Tortelier Bow Speed Exercise

Figure 3.57 Bow Coordination Exercises

Other coordination exercises involve various combinations of dynamics, bow speed, arm weight, vibrato, shifting, string crossings and many other cello techniques.

3.4.2 Concentration

Concentration is a skill must be developed and deepened. Especially in the modern world, in which many young people have short attention-spans and many people suffer from ADHD, this is a critical skill which must be addressed. Dr. Jesselson believes that working on improving concentration and self-discipline happens on a daily basis in various ways. Playing open strings as a warm-up every day is a good way to bring the cellist out of the busy outside world into the disciplined world of the cello. By concentrating on specific tasks while playing the open strings, a player can learn to focus the mind. The short Feuillard bowing variations are also good daily concentration exercises for the mind, as well as good technical exercises for the right hand. Even though these variations each last only about one minute, many students have a difficult time keeping their focus at first. With practice, they are able to concentrate for longer and longer periods of time and complete more variations per lesson. As the students improve their concentration, they are able to play longer exercises, etudes, and pieces more accurately. Musicians need to have a high level of focus in order to be able to play pieces such as the Dvorák Cello Concerto, which takes 45 minutes of high concentration.

Persistence is essential for every musician. Dr. Jesselson likes to quote Albert Einstein, who said, “It’s not that I’m so smart, it’s just that I stay with problems longer.”137

136 Robert Jesselson’s design 5.

137 Ian Parberry, *Introduction to Game Physics with Box2D* (Boca Raton, FL: CRC Press, 2013), 236.
Memorization is another aspect strongly related to concentration. Dr. Jesselson requires scales, arpeggios, unaccompanied pieces and concertos to be played by memory. Every lesson with Dr. Jesselson includes some “performance” by memory. This may be as simple as the weekly scale and arpeggio, or it may involve a memorized etude or part of a piece that the student is working on. By getting used to playing from memory in front of him, the students become more and more comfortable with their own ability to perform from memory. The next step is playing from memory in class and then on stage. Most people want to improve their concentration and mental focus.

Outside of cello playing, practicing yoga can be a way to improve these skills. To allow the body to relax, it is essential that the mind be emptied for some minutes a day. “Alternate-nostril breathing” is a yoga technique which can help musicians to achieve a better concentration. Miranda Wilson explains how it works: “Block off your left nostril with your left thumb and inhale through your right nostril. Then block your right nostril with your right ring finger and exhale through your left nostril. Repeat for fifteen seconds.”138 Meditation is a higher level of concentration and can help a person focus for particular events or tasks. Meditation can be developed by means of concentration, according to Pandit Rajmani Tigunait: “Meditation begins with a simple process of concentration.”139 By means of breath relaxation, the musician can calm the nervous system. Meditation can also connect the musician’s subconsciousness for positive suggestions.


139 Pandit Rajmani Tigunait, Inner Quest: Yoga’s Answers to Life’s Questions (Honesdale, PA: Himalayan Institute Press, 2002), 143.
3.4.3 Sight Reading

Becoming adept at sight reading is very important for musicians. It is another skill that requires training and experience. Perhaps the most important thing in sight reading is paying attention to the rhythm. Without accurate rhythm, the ensemble will fall apart. It is better to play a wrong note than a wrong rhythm. Knowing a variety of rhythmic patterns helps musicians decode a musical score faster. In addition, scales are an automatic system that enable the student to choose fingerings in an efficient way, thus being able to read music better. Students should practice sight reading every day. Like any other skill to be developed, it needs practice.

There are plenty of materials which can be used to practice sight reading. Leonard Rose’s *Orchestral Excerpts from the Symphonic Repertoire for Cello*\(^{140}\) (Volumes I, II and III) are great for sight reading. Another option for practicing sight reading is the *Orchestral Repertoire: Complete Parts for Cello from the Classic Masterpieces*\(^{141}\) by the Classic Kalmus Edition. Also, cellists can use an etude book with which they are not familiar. The cello teacher can help choose these books for the student to make sure that they are using something that is at their level. In the beginning, the student may not be able to sight read difficult etudes, but as the sight reading skills grow, this should become possible. Eventually the student could sight read one of these per day. It is important to remember that the student should not feel overwhelmed by doing this, because these etudes primarily were developed to solve technical issues.

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Orchestral music is also good for sight reading. The musician should practice orchestral repertoire before rehearsals; however, sometimes one has just a few minutes to see the music before the beginning of the rehearsal. If the cellist did not have time to practice beforehand, he/she should first scan the music, pick out the hard parts and study these parts first. In this situation, the cellist should not pay attention to easy notes or easy keys, but instead go to the difficult parts such as sixteenth notes in an uncommon key, parts in tenor clef or treble clef, or passages requiring thumb position. The student does not necessarily have to play through the difficult part to be able to sight read it; mental practice can help greatly. In this situation the cellist can use mentalization (see Chapter 5, under Mentalization, page 189.) The teacher should explain that the student should not get frustrated if there are some mistakes while sight reading; instead we let go of the little mistakes and get the big picture.

3.4.4 Musicality

Musicality requires the cellist to use the right brain, exploring creativity, expression and intuition. The right brain can coordinate many things at the same time, which is a perfect approach to the musician’s musicality (See Chapter 5, under Left/Right Brain, page 179.) It is difficult to “teach” musicality. This is one of the most inborn parts of being a musician and is dependent on a musician’s ability to feel emotions strongly and express them audibly.

Playing “musically” also requires an understanding of styles, national characteristics in music, traditions and even language. A sensitive musician must have an appreciation of phrasing and color in sound. A large part of playing “musically” is also dependent on listening to recordings and live performances and knowing “performance
practices” for different periods. At the University of South Carolina, Dr. Jesselson teaches a Cello Literature Class. In this course, students are required to listen extensively to cello music from all periods, from historic recordings, from famous cellists of the past, and from cellists of different nationalities. This activity helps the students better understand sound, color, phrasing and interpretive possibilities. Listening is a good diet for the development of right brain.

One aspect of musicality is knowing stylistic elements of different periods in music. For example, in Baroque pieces, Dr. Jesselson recommends using a ringing sound and applying the concept of *messa di voce*. According to Richard Miller, the *messa di voce* “trains the singer to begin at a piano or pianissimo level, crescendo to a forte or fortissimo level and then return to pianissimo without detriment to the vocal timbre.”

In this period, vibrato is used as an ornament, so the cellist does not need to vibrate all the notes. For the expressiveness of Baroque pieces, Dr. Jesselson recommends using only a small amount of vibrato. He also finds using a Baroque bow to play Baroque music desirable. In the Baroque style, the cellist will often apply diminuendos at the end of the phrases. The enchantment of Baroque music derives from little nuances colored by the bow. In Baroque style, the grace notes are often played on the down beat. Dr. Jesselson works with concepts of rhetoric and dance styles in exploring Baroque music. In general Dr. Jesselson advocates using the Urtext versions for repertoire of all periods. In studying the Bach Cello Suites, he prefers using the Bärenreiter edition, which sticks closely to the various manuscripts that are available since the original Bach manuscript has been lost.

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Classical style expression requires a different set of mannerisms. According to Clive Brown, “performance in the Classical period was characterized by a more rigid observance of hierarchical metrical accentuation than in either the Baroque or the Romantic.” Interpreting the Classical style requires a strong metrical sense. Also, the music of the Classical period is strongly related to form and balance. For this reason, while playing Beethoven or Mozart on the cello, the student must use expressiveness with care. This music does not require a wide vibrato or too much sound. The beauty of the Classical period is the focus on simplicity and harmony. Classical cello playing must have shorter phrases played with a ringing tone and refined endings of phrases. Dr. Jesselson explores phrase groupings and the concept of the “Golden Section” in searching for shapes in Classical period music. He uses the Lee etudes to teach these concepts. Dr. Jesselson recommends generally playing music from the Classical period with a higher contact point in order to present an elegant, ringing sound.

The musicality of the Romantic style is identified by the warmth of sound, range of dynamics and expression and often long phrases. According to Bruce Haynes, “The Romantic long-line or ‘climax phrase’ is traditionally the length of a singer’s or wind player’s breath. Also called ‘the overarching phrase,’ the ‘sweeping melodic line,’ the ‘sostenuto,’ the ‘grande ligne,’ the long-line phrase is essentially a dynamic shape, starting softly and building to one or more notes, often high and usually somewhere in the middle of the phrase (these ‘goals’ or ‘climaxes’), then diminishing to the end.”


develop long lines, Dr. Jesselson recommends thinking at the largest possible level of pulse, allowing the cellist to sing within long arcs. In Romantic interpretation, a wide vibrato is welcomed along with significant dynamics contrasts and rubatos that may or may not be written. Compared to the Baroque or Classical eras, the Romantic Era offers the biggest variety of tempos. If one listens to multiple recordings of the any major Romantic period concerto, a huge variety of tempos, types of vibrato and ritardandos will be heard.

In the 20th and 21st centuries, special effects become a major part of the musical language. Expanded techniques are required and students must learn to decipher a large variety of musical notation. Harmonics are used as an essential tool, for example, rather than as just a color. Harsh sounds, unvalued in previous eras, are now used to translate feelings such as rage or anger. In this period, texture stops being environment and becomes the musicality in itself. In addition, the player can experiment with and adopt rhythm, phrasing and colors derived from popular music such as jazz and bossa nova.

3.4.5 General Musicianship

Music theory knowledge is essential for the student to become a great musician. The first thing the cellist needs to understand is the Circle of Fifths. Musicians must know instantly the order of sharps (F#, C#, G#, D#, A#, E#, B#) and flats (Bb, Eb, Ab, Db, Gb, Cb, Fb). Students must become familiar with intervals, the building of triads and seventh chords, chord construction, mode to chord relationship, scales in major, melodic minor and harmonic minor and scales in modes. Also, the student must learn to analyze form. Form analysis helps musicians understand the structure of the pieces they are working on and is a strong support for memorization. Learning “movable do” solfege will
also help the musician to hear music more accurately and understand how each note functions. In other words, the student learns to hear tonally. In “movable do” solfege, any tonic is “do.” Since most pieces emphasize certain pitches over others, using this system can help the musician recognize intervals faster.

Learning to play the piano along with the cello is a great combination as it helps the cellist to become a complete musician. Children who practice both piano and cello tend to have better intonation. Because the piano has an equal temperament, it gives intonation guidance to the student. Mstislav Rostropovich came from a family of pianists and used the piano along with the cello during his whole life. For memorization, Rostropovich would study and learn cello repertoire first on the piano. Once a concerto was completely memorized, then he learned it on the cello. This also helped him avoid using muscle memory to memorize, which is a less reliable type of memorization.

Music History helps the musician to have an understanding of how music has changed throughout time and in what situations composers created the masterpieces that are played today. It provides the student with the composer’s background, culture, style period and even how his language has influenced his or her music. At the University of South Carolina, Dr. Jesselson teaches a Cello Literature Class, which could also be called a Cello Music History Class. Cello literature and cello history are explored, including important cellists and their contributions to the cello world. Recordings, compositions and works written for specific cellists are studied. Dr. Jesselson requires weekly presentations on cello literature from all periods in music history and he makes listening assignments of recordings of cellists and cello literature from all periods, thus helping students to understand the “evolution” of the cello.
3.4.6 Organizational Issues

Organization and preparation are vital tools for achieving success. Many musicians tend to be “right-brained” and spontaneous. This is a great quality for actual performances. But most of a musician’s work is done before the performance and many students fail to prepare adequately. This has to do with time management, self-discipline and forward planning. It has to do with goal-setting and constructive practicing.

Dr. Jesselson spends a lot of time with students in helping them to organize their practicing, and sometimes even their lives. He feels that learning self-discipline on the cello can often have beneficial by-products in the rest of our lives. He cites the example of one student who was very frustrating to teach because he was so disorganized. This student had a difficult time memorizing music and made rather slow practice because he did not understand his own learning process. After several months, the student came in for a lesson one day with everything beautifully memorized and with major steps forward in his technique and performances in that lesson. When Dr. Jesselson pointed out what a difference there was, he asked the student whether anything had changed in his practicing. The student responded that suddenly his grades were better in school as well. Something had clearly changed in this student’s brain - and Dr. Jesselson attributes it to the self-discipline and focus that the cello brought to his life. He often says that one of his missions is to help “build” a left brain in right brained musicians.

When Dr. Jesselson helps his students organize their recitals, he establishes the repertoire long in advance. The students are expected to prepare during the break between terms. A cello masterclass is held every Monday. Dr. Jesselson requires his students to play their pieces in the cello masterclasses, giving students the opportunity for a real
performance with accompanist prior to recital performances. Students receive comments from their colleagues and also from Dr. Jesselson. Every masterclass is recorded and sent to the students on the same day that it happens.

When putting together a recital program, the teacher must pay attention to important issues. First, a piece should never be harder than the etudes that the student is currently practicing. Otherwise the student will not be able to approach the musical aspects of the performance and will be focused on coping with the technical aspects of the piece. During recital preparation, the pianist must attend lessons with the cello student, so the teacher can evaluate how the piece is improving. If the pianist is not practicing enough for the recital, the cello teacher can talk to the accompanist to solve the situation. Dr. Jesselson has a great talent in teaching his students with their accompanists, as he gives precise and efficient comments.

The dress rehearsal is a special moment for the cello students because this is the last lesson before the student’s recital. In this lesson, the student plays through the entire recital in the order that it will be performed. Dr. Jesselson even insists on the students practicing the entrances, bows and exits. This is also an opportunity to check the sound balance between the cello and the piano in the hall and to fix any remaining problems. The dress rehearsals are recorded, and he provides written feedback to the student.

Dr. Jesselson hopes that students leave his studio with the ability to become not only their own teacher, but also that they are able to organize their lives on a higher level in order to be more productive and successful as performers, teachers and human beings.
CHAPTER 4

A SEQUENTIAL APPROACH TO TEACHING BOW TECHNIQUE, SCALES, ETUDES AND REPERTOIRE

As discussed in the Introduction to this document, Dr. Jesselson’s philosophy of teaching technique, etudes and repertoire entails what he calls the Sequential Method. This implies having an organized system for presenting technical information to an intermediate level cellist:

I believe that it is important for an applied cello teacher to have an organized and logical pedagogical system in order to ensure that intermediate level students are exposed to all the technical and musical information that they need. Just as a math teacher or an English teacher uses a syllabus to create a logical succession of tasks for a young student, the applied studio string teacher should have a clear methodology to insure that all the requisite material is covered and that the student builds a secure technique based on a solid foundation...There is so much material for a young musician to learn and if the intermediate level teacher is not well organized then some important material may be left out or forgotten. Far too often string teachers neglect to cover important topics, thus leaving their students with major holes in their cello understanding and development. The teacher needs to have a “grand design” in taking the students through what they need in an organized sequential manner. If not, then the student may be missing the solid foundation required to continue building technique, repertoire, understanding of style, endurance, memorization, concentration, performance experiences and a career. These teachers fail their students with what I call “random teaching.” They just teach a piece and work on whatever technical issues happen to appear at the moment.\textsuperscript{145}

\footnotetext{\textsuperscript{145} Dr. Robert Jesselson, interview by author, Columbia, SC, January, 2018.}
4.1 A Sequential Approach to Teaching Bow Technique Through the Feuillard Daily Exercises

Dr. Jesselson believes that exercises are the basic building blocks for teaching and learning technique.

Exercises help focus attention on one specific aspect of technique. It is work on the molecular level of the technical and musical universe. The teacher of the intermediate level student needs to have a large variety of exercises that address both fundamental and sophisticated issues of shifting, vibrato, articulation, trills, etc. We need multiple approaches to addressing these issues because not every solution will work for every student. When I first started teaching, I kept a card file with little exercises that I collected from teachers, master classes, articles in journals and from conversations with other string players and teachers. I now encourage my own students who are starting to teach to keep their own collection of exercises so that later they will be able to draw on them as necessary. 146

Dr. Jesselson’s approach to teaching bow technique is through exercises and the Sequential Method, using the Feuillard Daily Exercises as the “syllabus.” Dr. Jesselson calls this book his “cello bible”. 147

It is set up in an organized manner as a kind of syllabus for the bow. Feuillard #32 is all in first position and it deals with basic bow control issues. #33 adds some complexity by going up to fourth position and it requires an understanding of contact point issues and son filé, in addition to building on various techniques from #32. The next three pages (Feuillard #34-36) all deal with string crossings as the main topic, with #34 using 2 strings, #35 using 3 strings and #36 using 4

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146 Robert Jesselson, “Part Two: A Sequential Approach to Exercises (for Cellists and Other String Players!),” American String Teacher 63 (May 2013): 34.

After working through the basic fundamentals of bow technique in the first two lessons, including the “core” sound, “block of sound”, etc. (see description of “The First Lesson: Getting it Right from the Start” on page 35), Dr. Jesselson starts working through the Feuillard bowing exercises (Nos. 32-36) with the students.

It usually takes about 2-3 years to get through all five pages, depending on the student. But by the time they finish, they have a good understanding of the bow and how the arm works. All along, they are using these techniques in etudes and repertoire. ①

The Feuillard exercises No. 32 offer to the cellist the opportunity to explore many different right hand techniques, including a variety of strokes (staccato, spiccato, sautilé, détaché, legato), bow distribution, different rhythms and how to use the “Front and Back of the Hand.” These exercises help the student master the basic elements of bow technique.

The Feuillard No. 32 theme is in first position and should be played by memory with a “core sound” (See Chapter 3, section 3.1.)

Theme:

![Figure 4.1 Feuillard Theme of No. 32](image)

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① Ibid.

② Ibid.

Dr. Jesselson uses this theme as an opportunity to discuss basic intonation issues, including how to check notes (using perfect intervals), how specifically to check first position (first finger with the string above to produce a perfect 4th; fourth finger with the string below to produce an octave), as well as Casals’ concept of “Expressive Intonation” (See Chapter 3, section 3.1 page 81.)

Each variation should be played following the instructions for articulation (given above the notes), and which part of the bow to use (given below the notes). The student should play each variation in its entirety because the elements of contact point, speed and weight will change on every string and with every note. On the cello, every note has different acoustical properties and cellists must train their bodies and their ears so that they can make all the notes sound the same. The goal is to use the same type of sound for every note - the same articulation, the same dynamics, the same part of the bow, etc. for the entire variation. Dr. Jesselson also listens to every variation all the way through because he feels that a student is training his/her ability to concentrate, focus and “perform” through these variations. There are no shortcuts in this. In order to “pass off” a variation, students must be able to play it accurately, and they also must be able to verbalize what the technical issues are with each variation. If these goals are not met in the lesson, then the student will have to repeat the variation in the next lesson. Since Dr. Jesselson does not want to spend more than about 10 minutes on these exercises in each lesson, the student must come to the lesson well prepared. If there are too many repetitions of each variation in the lesson, that means that the student has not prepared well enough. Most students can get through about 5-6 variations per lesson.
In the next section of this chapter I will discuss the goals for each variation, as taught by Dr. Jesselson:

Variation #1: (Eighth note = 72)

![Figure 4.2 Feuillard No. 32 - Variation #1](image)

This variation should be played using the full bow, with left/right motion, a “core sound”, proper use of the elbow and the arm and with the bow always parallel to the bridge. The contact point will vary depending on the string. On the higher strings (A and D), the contact point should be a little bit lower in comparison to the lower strings (G and C). Students will usually play this variation too fast at first, not realizing that they have to choose a tempo that will work on the low strings. If the tempo is too fast, then they will not be able to use the full bow on the low strings. Most students pick a tempo in the quarter note; however, after rethinking the variation, they realize that the tempo needs to be in the eighth note pulse.

Variation #2: (Eighth note = 72-84)

![Figure 4.3 Feuillard No. 32 - Variation #2](image)

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\[151 \text{ Ibid.}\]
Again, the tempo should be in the eighth note to make this variation work. This variation should be played in two different ways. Both ways should be staccato, but the sound will be slightly different. First, play with the whole bow on the string, but with a very high contact point. The second way is to play the downbow with a short amount of bow at the frog and then the upbow with a short amount of bow at the tip. All these variations should be played with a core sound, with the bow parallel to the bridge. The teacher should make sure that all the basic elements of tone production are working properly: the elbow arc, the correct parts of the arm, the front and back of the hand, etc.

Variation #3: (Quarter note = 84 or a bit faster)

![Figure 4.4 Feuillard No. 32 - Variation #3](image)

The important issue in this variation is to use a low contact point and a full bow, understanding the rule: “the more notes in a bow, the lower the contact point.” The contact point will be slightly higher on each string going down to the C-string in order to produce the same sounds and then slightly lower going back up to the A string in playing through the variation. Dr. Jesselson emphasizes that it must be played with a core sound.

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152 Ibid.
153 Ibid.
Variation #4: (Quarter note = 84)

![Image](image-url)

**Figure 4.5** Feuillard No. 32 - Variation #4

The main issue in this variation is bow distribution: how much bow to use and which part of the bow. This variation is a good tool with which to check if the student is using the upper and lower parts of the arm correctly. For the separate quarter notes in the first measure, the student must use the upper part of the arm and for the separate quarter notes in the second measure, they use the lower part of the arm. The instructor should ask the student what part of the arm is being used, checking to see if the student is using it consciously. In this variation, relaxation is essential. The teacher should check if the student is relaxing the shoulder and the arm, especially when playing at the frog. For the left/right motion, one should stay on the left side when playing at the tip, instead of moving back and forth; the same at the frog, staying on the right side.

Variation #5: (Quarter note = 58 is a good tempo)

![Image](image-url)

**Figure 4.6** Feuillard No. 32 - Variation #5

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156 Ibid.
This variation should be played staccato, even though at first it may seem to be ambiguous as to whether it could be spiccato. The directions indicate that it should be played in the middle of the bow and since the focus is on a core sound, staccato is implied. At this point, the student is trying to figure out how to play with a big, projecting sound. The lighter spiccato strokes will be explored later, at the bottom of this page of variations. This variation must be played at the middle of the bow and with the same attack in both the down bow and up bow. The student should explore the “Catch and Float” concept here, so that there is a good initial attack of the note and a nice ring to the float part of the stroke. With this variation, Dr. Jesselson usually asks the students to start using vibrato throughout the Feuillard. He wants them to begin to experience the coordination issue involved with doing two very different motions in the left hand and in the right hand. Also, these short notes require some help to sound more resonant.

Variation #6:

![Figure 4.7 Feuillard No. 32 - Variation #6](image)

This variation deals with the same aspects as the previous one in a slightly different rhythm. The student should be aware of the rests, listening to the space between the notes and not rushing.

Variation #7: (quarter note = 54)

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157 Ibid.
This variation involves a combination of concepts from the previous variations: bow distribution and the staccato stroke. Additionally, this variation is further “proof” that variations #5 and #6 must be intended to be played staccato: this could not be played spiccato at the tip! By combining these two concepts, the student is working on coordination. This is a good example of how the Feuillard builds technique in a logical and sequential manner. The choreography for left-right motion should be similar to variation #4: the player should stay on the left side when playing at the tip, and on the right side when playing at the frog. The contact point must be low when playing the eighth notes and higher when playing the quarter notes, because the fast bow needed for the quarter notes requires adherence to the rule “the faster the bow speed, the higher the contact point.”

Variation #8: (Quarter note = 70)

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158 Ibid.

159 Ibid.
Dotted rhythms are difficult for string players to execute precisely. The student should be aware of dividing the rhythm into two or four parts, but not three parts, as that would produce triplets. The other main issue will be giving the short note enough sound by using slightly more bow proportionally to the dotted quarter note. The long note needs to have a release in the sound and the first finger on the bow will be required to produce the staccato articulation. This variation is the first of several dotted rhythms to be explored later on this page. The student must understand these basic concepts for dotted rhythms before taking them to the next step in variations #18-21.

Variation #9: (Quarter note = 55)

![Figure 4.10 Feuillard No. 32 - Variation #9](image)

Here the cellist should apply the similar concepts to Variation #5, with triplets, using the middle of the bow with the lower arm and first finger.

Variation #10: (Quarter note = 60 is a good tempo)

![Figure 4.11 Feuillard No. 32 - Variation #10](image)

\[^{160}\text{i}bid.\]

\[^{161}\text{i}bid.\]
Again staccato, but here the duple eighth note must be slightly longer than the triplets.

Variation #11: (Quarter note = 62)

![Figure 4.12 Feuillard No. 32 - Variation #11](image)

The student must pay attention to bow distribution and left-right motion. In the first measure on the third and fourth beats, the bow must stay at the tip. After that, the student must use the quarter notes to come back to the frog. The contact point should be low for both the quarter notes (“the more notes in the bow, the lower contact point”) and the staccato notes. However, it is likely that the quarter notes will be even lower than the staccato for a good sound. The student must understand that all of the “rules” are dependent on their listening to the sound and making instantaneous decisions about what kind of contact point, weight and speed they need to use. The faster they can adjust when they get a bad sound, the better the sound will become.

Variation #12: (Quarter note = 75)

![Figure 4.13 Feuillard No. 32 - Variation #12](image)

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162 Ibid.

163 Ibid.
This variation introduces the detaché stroke, which is perhaps our most basic and important separate bow stroke. The student should first play this with no accents, making sure that there is a clear and clean detaché produced in the middle of the bow with the lower arm. This is sometimes called a “scrub stroke.” The student should be made aware of not “pumping” the stroke. Afterwards, add the accents, first with bow speed and then with first finger articulation. These two ways of accenting the notes will produce slightly different types of sound. Some students may not hear the difference at first, but that is something for them to work on to develop awareness.

Variation #13: (Quarter note = 87)

![Figure 4.14 Feuillard No. 32 - Variation #13](image)

This variation combines bow distribution with the detaché stroke. The student should be aware that the detaché at the frog is produced by the upper arm whereas the detaché at the tip is with the lower arm. The contact point will be slightly higher for the detaché and lower for the quarter notes, because the detaché stroke uses a faster bow speed and the long bow has more notes in the bow.

Variation #14: (Quarter note = 70)

\[\text{\footnotesize\(^{164}\) Ibid.}\]
In this variation, the cellist is dealing with three different strokes: detaché, staccato and full bow. The contact point will change, as the quarter note requires a faster bow speed plus a higher contact point than the staccato. The detaché will be in between in length and contact point. Note that there is an editorial error in this variation: the eighth notes on the third beat are missing the dots. Dr. Jesselson finds it is interesting to see if the student notices this discrepancy. The student must pay attention to the consistency of the sound in this variation, getting the same sound at the frog and tip and not getting louder on the quarter note. By this time, the student should not need to be reminded to use left-right motion, to have the bow parallel to the bridge and to use vibrato.

Variation #15: (Quarter note = 88)

The challenge here is playing the sixteenth notes detaché and emphasizing the staccato on the eighth note. It is important not to accent the staccato note.

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165 Ibid.
166 Ibid.
Variation #16: (Quarter note = 88)

Figure 4.17 Feuillard No. 32 - Variation #16\(^{167}\)

The player should use a lower contact point for the two slurred notes and a higher contact point for the faster notes, paying attention to the contact point through the whole variation. The student should use the full bow with the same sound at the frog and tip.

Variation #17: (Quarter note = 80)

Figure 4.18 Feuillard No. 32 - Variation #17\(^{168}\)

This variation should be played in the middle of the bow, with the whole variation using the détaché bow stroke.

Variations #18-21:

Figure 4.19 Feuillard No. 32 - Variations #18-21\(^{169}\)

\(^{167}\) Ibid.

\(^{168}\) Ibid.

\(^{169}\) Ibid.
These variations are all dealing with dotted rhythms and they are building on the concepts discussed earlier with variation #8. In variation #18, the cellist should explore how to relax after playing the first dotted-eighth note (See Chapter 2, “Relaxation and Releasing Tension” on page 16.) The other concept that should be introduced in variation #18 and similar variations is “double-dotting”, in which the eighth note is given a second dot and the 16th note turns into a 32nd note. Dr. Jesselson usually demonstrates how to do this and then asks the students to listen to pieces by Lully, Rameau or Couperin so that they hear how this double-dotting is used in the French Baroque. The student can execute this stroke in two ways: either lifting the bow after the dotted-eighth notes and bringing the arm back in the air, or by releasing the sound on the dotted-eighth note but keeping the bow on the string and then using a fast bow stroke to come back to the frog. In playing this stroke the first way, the cellist must be careful to make sure that the bow is on the string before playing the sixteenth note. This stroke is usually played close to the frog and the upper arm is active. The cellist should use a relatively short amount of bow for the longer notes so that they can get back to the frog. Tempos will vary on these:

- Variation #18, eighth note = 108.
- Variation #19, quarter note = 63.
- Variation #20, eighth note = 94.
- Variation #21, eighth note = 100. This variation is the most complicated, in that the cellist must play with the same sound on a down-bow using the whole bow and then at the tip and then with an up-bow using the whole
bow and then at the frog. Bow distribution, left-right motion and overall coordination are the major issues.

Variations #22-24:

![Variations #22-24](image)

**Figure 4.20** Feuillard No. 32 - Variations #22-24

Variations #22-24 all involve the up-bow staccato stroke, which is also sometimes called “hooked staccato” or “slurred staccato.” When Dr. Jesselson teaches these three variations, he usually says something like “these variations involve a specialty stroke. It is really not very important. But it is VERY important”\(^{171}\) and he gets the attention of the student. He asks the student to figure out why it is not important (it is a virtuosic stroke, that is not important at this point in the student’s development). But then he asks the student to figure out why it is VERY important (it deals with dividing the bow into four parts, each of which is further divided. Also, it requires that the cellist be able to control the bow and produce the same staccato sound in all different parts of the bow). He also talks about the Hora Staccato by Grigoraș Dinicu and asks the students to listen to the Heifetz recording on Youtube. The tempo for all three of these variations should be the same, around quarter note = 60+, so that the student feels the pulse relationship.

Variations #25-26:

\(^{170}\) Ibid.

\(^{171}\) Dr. Robert Jesselson, interview by author, Columbia, SC, September, 2014.
These two variations both deal with the sautille stroke. Sautillé is a fast, uncontrolled spiccato. By the time the student has reached this point in the bowing exercises, he/she will have been playing scales using the Jesselson scale system (described in Chapter 4, page 155) which includes playing scales with off-the-string strokes (duplets, triplets, 16th notes, sextuplets and octuplets at 60 = pulse). So, they will already have been playing sautille without even knowing it. Therefore, for some students, variations #25 and #26 are relatively easy to play. They will have discovered how the upper arm is active in this stroke and the wrist is passive. They will have figured out where on the bow to play this stroke, how high to let it bounce, how the little finger works for balancing and what kind of sound to use. Other students will need more detailed work to make the sautille stroke work. They often need to learn how to let the bounce just “happen” rather than working hard to make it bounce. For that Dr. Jesselson shows them the Bubble Exercise (described above, on page 55). If they need more work on how to produce the sautille stroke, the “Bouncy Bow Exercise” usually solves the problem (See page 55.) The tempo for variations #25 and #26 should start around

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quarter note = 60. Dr. Jesselson asks the students to work up the sautille to about quarter note = 80, since that is the tempo for the second movement of the Elgar Concerto. Most students can get close to that tempo, even if it takes a few weeks to build up the tempo click by click on the metronome. For others, they will get it as fast as they can and then have another opportunity to revisit the stroke several months later when they work on the variations at the end of Feuillard No. 33.

Variation #27:

![Figure 4.22 Feuillard No. 32 - Variation #27](image)

For this variation, Dr. Jesselson asks the students to play not at the frog, as indicated, but using the entire bow. The point of this is to check whether the bow angle is correct by using the full bow with a very fast bow speed. This is similar to the very first variation, except that now it is all down bows. If the bow angle is not perpendicular to the string, the bow will skate up the string. If it is correct, the contact point will remain in place. The student should use left-right motion and ballistics (See Chapter 2, page 23.) The tempo for this variation should be fairly fast: quarter note = 42.

Variations #28-30:

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\(^{173}\) Ibid.
These three variations all involve using both the upper arm and the wrist to make circular motions, as well as ballistic motions to let the arm rebound. The cellist must make sure that the eighth notes start from the string, with good articulation. Tempos should be about quarter note = 66 for variation #28; quarter note = 100 for variation #29; and quarter note = 100 for variation #30.

After the students complete the page of variations in Feuillard No. 32, they continue with Feuillard Nos. 33-36. Feuillard No. 33 deals with a scalar theme which uses positions up through fourth. This page includes thirty-three variations that cover coordination, ease of playing, different rhythms and a variety of strokes.

The Feuillard No. 34 deals with string crossings on two strings. This page includes forty variations that build on the bowing figures described earlier (See Chapter 3, section 3.2, under String Crossings, page 56.) A complete description of the goals for each of these variations is found in Appendix A.

The Feuillard Daily Exercises No. 35 deals with string crossings over three strings. This page includes fifty-nine variations. The main topic will be using the “twist” motion to involve the large muscles of the back in order to help relieve the smaller muscles of the arm and hand. Using the large muscles in this way can help with releasing

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174 Ibid.
tension. The other goal is to balance on the left hand playing finger and release the other fingers, which helps greatly with continuous vibrato.

Finally, the Feuillard *Daily Exercises* No. 36 deals with string crossings over four strings. This exercise includes forty-two variations and solidifies all of the technical information from the previous four pages of variations.

As this paper is being written, Dr. Jesselson is creating a new series of blogs on the CelloBello website. The blog, titled “The Joy of Feuillard” goes into detail about all of the Feuillard bowing exercises, with video examples from lessons with five of his pre-college students as they go through the book. The website is [http://cellobello.com](http://cellobello.com). See also Dr. Jesselson’s article: “Part Two: A Sequential Approach to Exercises (for Cellists and Other String Players!).”

### 4.2 A Sequential Approach to Teaching Scales and Arpeggios

Scales and arpeggios form the basis for most of Western music. Cellists need to be familiar with multiple systems of both scales and arpeggios, as these function as the basic operating system for playing the cello. Knowing scales and arpeggios in all keys and with different fingering systems means cellists will sight-read better, learn pieces more quickly, and have the ability to choose from several possible fingerings in a given passage.

Dr. Jesselson has a clear methodology for teaching scales and arpeggios. It is a logical process that advances from one type of scale system to another, building on concepts and techniques as the cellist moves to the next system. This is a further example of his Sequential Method.

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The following is the general plan for learning the first few systems:

1. Two octave scales and arpeggios - Feuillard No. 10 and 11 - for learning the basic concepts of positions, intonation, shifting, over-extensions, checking intonation, memory, off-the-string strokes, patterns and weekly performance goals. 1, 2 and 4 to-a-bow system of bowings.

2. Thumb position scales - Feuillard No. 26 and 27 - one octave scale and arpeggios in thumb position to develop understanding of finger spacing, intonation, contact point issues in the upper register, vibrato in thumb position. This system should be played with two notes to a bow at a faster speed than the first system because of the shorter string length in thumb position.

3. Three octave scales and Four octave arpeggios - Feuillard No. 20 and 21 - playing the whole range of the cello, with major intonation issues in shifting, contact point issues, placement of the thumb; 1, 2 and 4 to a bow system of bowings.

4. Two and three finger system - Jesselson handout - 2 octaves on 1 string; training the upper octaves; placement of the thumb either a whole or half step behind first finger; 2 notes to a bow; all strings; 2 octave arpeggios on one string (See Appendices B and C.)

5. “Around and Around” system - Jesselson handout - 2 octaves on one string; for working up speed of scales, fixing intonation during the multiple repetitions up and down; 2, 3, 4, 5, 6, 7, 8, 9, 12, and 16 notes to a bow; two octave arpeggios on one string (See Appendices D and E.)

6. Galamian system of bowings - 2, 3, 4, 6, 8, 12, 16, 24 notes to a bow.
After these basic scale systems Dr. Jesselson chooses what is most appropriate for a particular student from the huge list of possibilities (See Appendix E “Compilation of Scale and Arpeggio Systems”, page 224.) Some of the most important include chromatic scales, octaves, sixths, thirds, universal systems (Feuillard No. 19), octatonic scales, whole tone scales and the Krastev system, etc.

Below is a chart of Dr. Jesselson’s recommended sequence to scales and arpeggios:

![Figure 2 - Sequential Approach to Scales and Arpeggios](image)

**Figure 4.24** Sequential Approach to Scales and Arpeggios

For intermediate level students, Dr. Jesselson begins the process of studying scales with the two octave scale system in Feuillard (No. 10 and No. 11). He asks the

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students first to play one note per bow, then two notes per bow and then four notes per bow, using a full bow at quarter note equal to 72. He calls this system the “1, 2 and 4 notes to a bow” system. Then the students play an off-the-string stroke system with duplets, triplets, 16th notes, sextuplets and octuplets at about 60 to the pulse. The strokes are brushy-off-the-string for the slower rhythms, spiccato for the faster rhythms and sautille for the sextuplets and octuplets. Dr. Jesselson asks his students to practice the two octave arpeggios from Feuillard No.11 at eighth note equal to 68.

Figure 4.25 Feuillard *Daily Exercises* No. 11

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Jesselson expects that the students bring their scales and arpeggios to lessons memorized, at the rate of one key per week, paying attention to left/right motion (see Chapter 2, under Balance page 20), intonation (see Chapter 3, section 3.3 under Intonation, page 80) and all the left hand issues (See Chapter 3, section 3.3 page 73.) The students are expected to write in the positions for the next week’s key so that they are learning the positions, not the fingerings (as noted in Figure 4.25, page 155). This helps them understand the groupings of notes, rather than just the individual fingerings. It also helps them to see patterns in the music and in the technique.

While practicing scales and arpeggios, the cellist is working on multiple skills. Memorizing them each week builds memory. Scales help the cellist become familiar with the positions (see Chapter 3, section 3.3 under Positions and Geography in Neck Position, page 75) and work with block position (See Chapter 3, section 3.3 under Double Stops and Chords, page 116.) The off-the-string strokes should be played with vibrato in order to give the notes more resonance and work on coordination issues between the two hands (See Chapter 3, section 3.3 under Vibrato, page 91.) Working on scales using drones can help students learn to hear Pablo Casals’ “expressive intonation.” According to Miranda Wilson, “this flexible system distinguishes between diatonic and chromatic half-steps in melody: Casals believed that although the tonic, fourth and fifth degrees of the major scale must be played as strict perfect consonances against each other, the third degree of the scale is “attracted” to the fourth, as is the leading tone to the tonic. In this system, the third degree and leading tone are therefore played slightly sharp.”

use over-extensions (see Chapter 3, section 3.3 under Extensions, page 77) and ghost shifts (See Chapter 3, section 3.3, page 80.)

The second system that Dr. Jesselson uses with students is the Feuilland thumb position scales and arpeggios (Feuillard No. 26 and 27). This scale system includes the major, harmonic minor and the melodic minor scales, to which Dr. Jesselson also adds the natural minor. In the harmonic minor, Dr. Jesselson makes sure that his students clearly understand the augmented second between the sixth and seventh steps. In this system the student should check that the thumb is correctly shaped (see Chapter 3, section 3.3 under The Thumb, page 102) with no kinks. These scales should be played with vibrato as soon as the intonation is stabilized in order to improve the resonance of the sound in the upper positions. Fingers should be round, although for some people the first phalange of the first finger might be bent in if the first finger is too long. The thumb should be on both strings.

The following example is from the Feuilland Daily Exercises No. 26:

These scales are played with two notes to a bow at about 80 to the pulse (not using the rhythms in the Feuillard). The thumb position arpeggio system consists of the major, minor, dominant seventh, subdominant, relative minor, diminished seventh and the dominant seventh to the next chromatic key. The following example is the Feuillard No. 27 arpeggio system:

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These arpeggios are played with two notes to the bow for the eighth notes (not triplets as in the Feuillard) and four notes to a bow for the 16th notes, at about 80 to the eighth note pulse.

As the cellist plays each scale in ascending chromatic order, the distances between the fingers become smaller. Players should practice at a tempo that allows the use of the full bow in order to work on appropriate bow speed, which is critical for a good sound in this range of the cello. This helps reinforce the concept that the contact point should be lower as the notes go higher up the string. In addition, students need to use the full bow to develop an understanding of the necessary bow weight in the upper part of the cello. Because the string length is so short in this register, the rule about using more weight with a lower contact point does not always apply. Experimentation may be necessary to find the appropriate amount of weight, but often one actually needs less weight as we get closer to the bridge in this part of the cello.

The next scale and arpeggio system is the three octave scale system using the Feuillard No. 20 with the fingerings indicated below the notes (the fingerings on top are used for the fourth octave):
Concurrent to this, the students should practice four octave arpeggios using Feuillard No. 21:

These are played with all the repetitions, two eighth notes per bow and four sixteenth notes per bow. These arpeggios involve longer shifts and the relation of thumb to first finger must be either a half step or a whole step. Going to the upper registers, the cellist needs to lower the contact point as the string length gets shorter.

\[\text{Figure 4.28 Feuillard Daily Exercises No. 20}^{181}\]

\[\text{Figure 4.29 Feuillard Daily Exercises No. 21}^{182}\]

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\[181\] Ibid., 26.

\[182\] Ibid., 29.
In the next scale system, the cellist works on two octave scales going up one string with a system involving two fingers and then one involving three fingers: 1-3, 1-2...1-2-3, or 1-2-3, 1-2-3... These scales should be played with two notes per bow for a better tone quality. Along with that, Jesselson’s students learn the two octave arpeggios going up one string. While shifting in the arpeggios, his students use the Romantic shifts for the downward shifts to help connect to the next note. This helps with the intonation at this point in a cellist’s development (See Chapter 3, section 3.3 under Shifting, page 88.) This system should be played on all strings in all keys (See Appendix C, page 219.)

Building on the two and three finger system, Dr. Jesselson developed the so-called “Around and Around” System. The point of this scale system is to go up and down a two octave scale on one string, using the three finger system, playing 2, 3, 4, 5, 6, 7, 8, 9, 12 and 16 notes per bow. We continue going up and down until we play the initial tonic with a downbow. Keeping the pulse the same, the speed of the scale increases as the number of notes played increases. The metronome should be set to about 40 to the pulse. One of the goals of this system is not to stop and correct intonation problems when they happen, but rather to correct them during the next repetition. This is similar to the reality of playing a piece and correcting intonation rather than stopping. Another goal is to play through the entire system without stopping for endurance. This system should be played in all keys on the A string, starting with B-flat and going up chromatically (See the “Around and Around” System, Appendix D, page 220.)

The Ivan Galamian system in three octaves is well known and used extensively by violinists and other string players. This system deals with speed and coordination on all strings. It should be played with two notes per bow, then three, four, six, eight, twelve,
sixteen and finally 24 notes per bow. The following figure shows the Galamian scale pattern at the bottom and the rhythmic variations created by Jerri C. Lucktenburg and adapted by Robert Jesselson. It can be played with slurs using the whole bow, with the détaché bow stroke using the upper part of the bow and with the spiccato bow stroke using the lower part of the bow, as noted in Figure 4.30.

Figure 4.30 Lucktenburg/Jesselson Rhythmic Variations

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183 Robert Jesselson’s handwriting.
Besides the two and three finger scale system on one string already described above, there are many other possibilities for various combinations of fingerings for scales on one string. All of these possibilities should be explored and practiced by cellists. (See the “Scale Systems on One String” on the Appendix C.)

Other scale systems advocated by Dr. Jesselson include the study of octatonic scales and whole tone scales.

![Octatonic Scales](image1.png)

![Whole Tone Scale](image2.png)

**Figure 4.31 Octatonic and Whole Tone Scales**

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Dr. Jesselson created a scale system called the “Two Octave Scale System Using Marys.” This system uses the “Mary” finger patterns which were discussed in Chapter 3, page 84. It includes: Major scales, melodic minor scales and harmonic minor scales. For details please see Appendices F, G and H.

A basic fingering principle for efficiency in playing scales is to play as many notes as possible in one position. Basic cello scale systems organize the notes in groups of threes, played by three different fingers. A one octave scale played on one string can theoretically be played by one finger, but it would require seven shifts. It also could be played by two fingers; however, it would require four shifts. Most people cannot play scales with four fingers because the distances are too big, and it would cause excessive tension and the intonation would suffer. So, it is most sensible to playing a scale using three fingers in each position, which results in three shifts. This groups notes together in threes, which becomes a basic principle in cello fingering, whether in scales or in more complicated pieces from the repertory.

4. 3 A Sequential Approach to the Cello Etudes

Etudes are vital for building a student’s solid technical foundation. Etudes differ from exercises in that etudes must be approached musically as well as technically.

Exercises, along with the ubiquitous scales and arpeggios that musicians need to master, are the basic building blocks of technique. Etudes then expand on the micro-technique of the exercises. They begin to put the technical pieces together into musical shapes and should be approached both technically and musically.185


Dr. Jesselson believes that etudes must be approached in an organized, sequential manner. They should be challenging, but within the scope of a student’s ability level. They should reinforce technical concepts that the student is learning through the exercises, scales and arpeggios, building on these concepts by addressing issues of rhythm, meter, style, tone color and expression that are on the path towards real repertoire.

Dr. Jesselson requires that the students work on two etudes per week. One etude is new, and one is to be prepared for what he calls a “playthrough.” A “playthrough” is treated as a performance. The students are expected to have absorbed the technical information that is dealt with in the etude, and in the playthrough they should not stop or talk during the performance. If there are too many technical problems that have not been solved, then they will be asked to continue working on the etude for the following lesson. Sometimes Dr. Jesselson will ask the student to send a video performance of the etude during the week. In that case, he expects an even higher level of accuracy in the performance than might be expected in a live session in his studio. He is interested in seeing what the student thinks is acceptable or desirable. The students will often record the etudes multiple times in preparation, thus helping them focus their practicing and raising their own level of playing.

In “sketching” the etude for the first week, Dr. Jesselson asks the students to write in the tempos, bowings, positions or fingerings, translations of any words, and dynamics. For the tempos, he asks them to put a box at the top of the page indicating the “goal” tempo. At the left side of the page the student should write the tempo at which they actually can play it. The idea is that for the following week they should have reached the
goal tempo for the playthrough performance. If the above items are not written in the music Dr. Jesselson will often not even hear the etude in the first week. When he listens to the etude for the first time, he wants to see if the students have understood the technical issues involved. He asks them to verbalize what the etude is “about” and may spend some time discussing the main concepts, or he may just demonstrate a portion of the etude.

As a result of this system of rotating etudes every second week, the students get through a lot of material each semester. The USC Cello Syllabus indicates the required number of etudes for each semester (see Appendix I). If students have worked hard during the semester, but are unable to complete the required number, then Dr. Jesselson will often give them an Incomplete as a grade and ask them to work on the etudes over the break. Occasionally if the etudes are especially challenging and the students are behind in completing the required number, then Dr. Jesselson will give them one or two “baby” etudes at the end of the semester. These “babies” are much easier etudes, but they are still dealing with issues that need attention. They may include string crossing, double stop, or intonation etudes that are beneficial for the student to know for their own teaching, or for them to use to address a particularly sticky issue for themselves.

The 15 Easy Studies by David Popper are excellent for young students because they can all be played in first position and they have a second cello part that can be played by the teacher. They are fun pieces using a variety of meters and rhythms that are accessible by a young student.

Below is the sequence of etudes that Dr. Jesselson recommends:
Figure 4.32 A Syllabus for Intermediate Cello Studies

Book I of the 113 Etudes of Friedrich Dotzauer applies the basic technique that students study when they are dealing with core sound, bow distribution, the Three Principles of Tone Production, etc. These etudes pull together ideas previously developed in scales, arpeggios and the exercises of Feuillard. Many of the later etudes in the book are longer than one page, requiring the student to work on concentration and endurance as well. Dr. Jesselson asks students to focus on specific points in each study. He generally does not use the first 15 etudes, with the exception of #4 and #13, because many of them deal with issues that are unnecessary for students at this level. He usually starts with #16 because that etude offers several challenges with sound and bow distribution that would

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have been covered in the first or second lesson. See detailed information about the Dotzauer etudes in Appendix J.

After the Dotzauer etudes are completed, Dr. Jesselson recommends the 40 *Melodic and Progressive Etudes* by Sebastian Lee. These etudes are very different from the technical work of the Dotzauer. They deal more with musical issues, such as phrasing, shaping of lines and tone color. The Lee etudes work with concepts from the Classical Era, such as 4-4-8 phrase groupings, the “Golden Section” and forms such as Theme and Variations, scherzos, overtures, etc. These etudes should be played using the Classical style of sound and shaping.

After the Lee, Dr. Jesselson suggests using the Duport 21 *Etudes*. He usually teaches them in the following order: Nos. 11, 2, 3, 4, 5, 6, then Nos. 10, 13 and 19. Because of their difficulty for the advanced intermediate level player, Dr. Jesselson uses only about half of the Duport Etudes. Etude #11 is particularly important because it is the first etude that deals with the entire length of the cello fingerboard, along with all the associated issues such as contact point, intonation and tone production throughout the whole cello. Dr. Jesselson uses his “Practice Flow Chart” along with this etude to help students break down the difficult spots into sections that they can work on (See Practice Flow Chart page 236, Appendix K.)

Following the Duport Etudes, Dr. Jesselson teaches the Popper Studies *Preparatory to the High School of Cello Playing*, Op. 76. These etudes focus largely on left hand issues. Most are quite technical, but there are two or three that focus on musical issues of phrasing, dynamics and shapes.

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The Franchomme 12 Caprices focus on playing with a French sound. These caprices are quite beautiful and can be played as concert etudes, especially with a second cello. Dr. Jesselson uses these pieces as an opportunity to work on gestures that may appear in cadenzas or improvisatory styles of playing.

The Popper High School of Cello Playing, Op. 73 include some of the most difficult etudes for the cello. The title is misleading, as the term in German “Hohe Schule” means in essence the “expert” level of etudes. These 40 etudes are essential for any advanced cellist. They mostly deal with left-hand issues, often in thumb position, but also involving all aspects of cello technique. Popper was highly influenced by Richard Wagner’s music and the style is late 19th century German Romantic. There are many other etudes to keep cellists busy after Popper, including works by Servais, Piatti, Grutzmacher and modern etudes by cellists who are dealing with contemporary and expanded cello technique.

4.4 A Sequential Approach to the Cello Repertoire

Effective teachers need to develop a meaningful succession of pieces for their students to work on during their educational development. This repertoire should be appropriate for the level of the student and should balance a variety of styles, periods and genres. Learning to play a bowed instrument requires patience and persistence, because it is a long journey. As Dr. Jesselson has written, “just as a baby will usually crawl before walking and walk before running, developing musicians need to be gradually introduced
to concepts and music which they can successfully absorb and play before moving on to more complicated materials.”

Dr. Jesselson believes strongly that the repertoire chosen should be easier than the technical level a student has reached. For instance, if a cellist has not mastered and understand all the string crossings in the Feuillard, then this student would become frustrated if assigned to learn the Prelude to the Bach Third Suite.

Another one of Dr. Jesselson’s core principles is that when a student starts a piece, he should be able to finish playing the entire piece, not just one or two movements. Learning just part of a piece is not really learning the piece. Often the fact that a student does not finish learning a complete piece is a sign that they are “bored” with the piece and just want to move on. The teacher is responsible for setting standards that prevent this. This is part of the “self-discipline” that students need to learn: when they start a project, they need to finish it. For example, before students learn to play the popular first movement of the Haydn C-major concerto, they need to have the technique to be able to play the third movement. Although the first movement is relatively easy to play, many teachers let their students play this piece before they are truly ready. They should also have an understanding of Classical style and phrasing and the appropriate kind of sound. There are many other pieces that would be more appropriate if the student is not ready. If the music is too difficult, then students will be totally focused on the technique and cannot think of the musical issues of phrasing, sound, or style.

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There are several lists of cello repertoires available that indicate the different levels of difficulty. For example, the ASTA syllabus gives appropriate guidance to the sequence of cello pieces. The cellist John Michel\(^\text{189}\) has compiled four lists as a guidance for cello students: *Unaccompanied Cello Solos* with 38 works, *Cello Sonatas* with 87 works, *Concertos and Solos with Orchestra* with 67 works, and *Show Pieces & Shorter Compositions* with 167 works. In the ASTA list of concertos it is interesting to note that the Haydn C-major concerto is listed after the Popper Hungarian Rhapsody, Saint-Saëns Concerto and Boccherini Concertos - all of which should be played before approaching the Haydn. The list includes about 35 other concertos that could be played before attempting the difficulties of the Haydn.

Bach seems to have written his Cello Suites in a sequential way; as the suites progress, they get longer and more difficult as well. When assigning the Bach Suites, the cello teacher should essentially teach them in order, although there may be a time lapse between the third and fourth suites since the fourth is much more difficult. The last three Bach Suites are significantly harder than the first three suites.

Dr. Jesselson has created a flowchart that indicates a succession of materials for the intermediate student (See Appendix K.) He also gives an indication of sample pieces for the different semesters of study at USC. These pieces are essentially the minimal expectations for students at the university and are not intended to be inclusive (See Appendix I.)

Sometimes in specific situations a teacher will want to choose a challenge piece, even if the student has not encountered all the technique involved. A good example is the Saint-Saëns Cello Concerto in A minor. This piece has numerous challenges (such as double stops, fast sautillé strokes and artificial harmonics) that a student has probably not encountered yet. For example, the student will probably not have played artificial harmonics before encountering them in the third movement. However, this might be a reachable goal for an advanced intermediate level student.

Another basic principle for teachers is to choose pieces from a variety of style periods. Students must be exposed to the differences in playing pieces from the Baroque, Classical, Romantic and Modern periods. Dr. Jesselson often starts new students with a Baroque piece, such as those of Vivaldi or Marcello. Many of the basic technical concepts that he works on with them in scales, arpeggios and bowings are directly applicable to this literature. In this way the concepts that they are learning can be applied immediately to repertoire that is not too difficult. After that he usually picks a contrasting piece from the Romantic period that works with a big, sustained sound, such as the Bruch Kol Nidre or the Faure Elegie.

Dr. Jesselson believes students should memorize a lot of music while they are young, including etudes, scales and arpeggios and repertoire. He believes that teachers should not allow their students to perform Bach or concertos using music. If they do it once they will want to do it again. It is important to start training the brain when people are young. Learning the tricks of memorization and getting comfortable playing for people from memory is best started at a young age. In the music field, memorization is a
powerful tool which students must use (See discussion on Memorization in Chapter 5, page 181.)

Dr. Jesselson does not generally give his own music for students to copy. He believes that the learning experience is enhanced when the students make a first attempt at their own bowings and fingerings. He calls this “sketching” an etude or piece. He then works with them to come up with different or better solutions. He believes it is more important to go through the process of students experimenting before he explains the advantage or disadvantage of particular bowings or fingering. Dr. Jesselson recommends that his students try several different fingerings, bowings and phrasings while they are discovering what they are trying to say in a particular piece.

The knowledgeable teacher must be familiar with a large amount of repertoire in order to pick the right pieces for the students to play. They also should be able to demonstrate adequately in lessons. If the cello teacher cannot play the passages, the student will probably not respect him/her as a cellist and consequently the student's development will be slower.

Concertos, sonatas and pieces with piano accompaniment should be performed with piano in recitals. This often takes considerable planning on the part of the teacher, as well as the student. But the teacher should not lower standards for the sake of convenience. If the repertoire is at the right level for a student and if they have enough time to prepare, recitals should not be “scary” for the students. Proper preparation for recitals should include asking the student to video-tape themselves, play for other people, and play in master classes. Dr. Jesselson insists that they go through the routine of bowing in dress rehearsals in preparation for recitals. He has found that even if they are
somewhat experienced performers, they will often forget to bow if they do not practice it on stage in rehearsal.

Great teachers challenge their students. They will often put them out of their comfort zone. No one likes to move beyond their comfort zone, but that is often when the magic happens. It is where we can grow, learn, and develop in a way that expands our horizons beyond what we thought was possible.”190 If the teacher believes this, his students can grow weekly and consistently.

Dr. Jesselson likes to quote Aristotle (or more accurately Will Durant) who wrote that “Excellence is a habit.” The idea is that performing at a high level is not a one-time experience, but the result of an expectation and a personal standard of excellence on a regular basis, starting with small details and building to entire pieces and an entire program. Donald Sheffield adds, “excellence has its roots in the manner in which tasks are accomplished, above and beyond the outcome or end result. High Performance, or the proper (maximum) use of resources (ability), becomes an important component in determining the efficacy of the task.”191


CHAPTER 5

CELLO PEDAGOGY

During his more than forty-five years of teaching, Robert Jesselson has developed a comprehensive philosophy of cello pedagogy. In this chapter the author will focus on some of the underlying themes of his teaching methods. These include his use of the theory of brain lateralization, the “left brain/right brain” metaphor, his focus on structured practicing, and his emphasis on memorization and “mentalization.”

5.1 The Beginning, Intermediate and Advanced Cello Student

Dr. Jesselson works largely with intermediate and advanced level students. Much of his pedagogical ideas are geared towards these levels, rather than beginning students.

According to the philosopher Alfred North Whitehead, “the rhythms of education are in three stages: romance, precision and generalization.” Studies of successful performers have shown that many of them have been taught by a succession of teachers who embody these three stages. The beginning teacher nurtures the romance of the instrument and the joy of music; the second teacher is the technician who helps to build technique and instill discipline; and the third teacher is the artist-teacher who is able to inspire the student to artistic heights and may be more of a coach.

This country has wonderful teachers in the first category, including in public school and Suzuki programs, who help to nurture young musicians. These teachers spread the joy of playing a string instrument and provide the basic technical information that these young musicians need. We also have fantastic artist-teachers who fit into the third category. These are teachers at major conservatories, as well as performers in orchestras, chamber groups and orchestras who serve as inspirational teachers and coaches. However, I feel that we are lacking teachers who serve in the second category mentioned above. These are the teachers who can delve deeply into the details of playing an instrument, helping to build the craft of playing an instrument, while instilling self-discipline and technical competence on a high level. These are the teachers who guide a student through a healthy diet of scales, arpeggios, etudes
and appropriate repertoire. Their role includes building good work habits, demanding high standards, expecting consistency and providing a thorough understanding of left-hand and right-hand techniques.¹⁹²

The intermediate student can be defined as a cellist who can play in the neck positions, who already has some years of experience playing the cello and one who is beginning to learn thumb position. This type of student should be taught in a methodical way. The cello teacher should explore all the technical aspects of playing with students of this level, emphasizing self-discipline, consistency, and accuracy. The teacher should cover the technical issues that were discussed in Chapter 3, explaining right hand technique including basic tone production, bow distribution, bow strokes, string-crossings and bow changes. There are also important issues related to the left hand to be addressed, including scales and arpeggios, speed, intonation, shifting, thumb position, double stops, articulation and vibrato. Furthermore, the intermediate cellist must learn cello “geography,” coordination, strength, concentration and relaxation. All of these skills must be integrated with the musical aspects of playing, such as the character of the piece, use of rhythm, shaping phrases, tone color, performance practice issues, style, making appropriate choices and having a musical voice or “something to say.” Additionally, there are issues related to the organizational side of playing which the cello teacher must cover, including how to practice, how the brain “works,” memorization, preparing for performance, how to put together a recital program, working with an accompanist and stage deportment. General musicianship skills such as theory, history, solfege/ear

training, piano and form analysis must also be taught in order to improve young musician’s level.

The following chart (which was presented in Chapter 4 as part of the topic on etudes) is intended as a general guideline for the intermediate cello teacher, showing the relationship between the technique, etudes and repertoire:

![A Syllabus for Intermediate Cello Studies](image)

**Figure 5.1** A Syllabus for Intermediate Cello Studies

### 5.2 On Practicing

One of the most important topics for teachers to cover with intermediate level cellists is “how to practice.” Teachers should address this issue with students on a
continual basis, with new ideas to improve the efficiency and effectiveness of their practicing. Since students are with the teacher for only an hour a week but they are with themselves for 20-30 hours a week of practicing, they need to know that they are using their time well.

Dr. Jesselson uses a variety of techniques to help students improve their practicing. Here are a few ways to approach practicing:

- Using practice charts - Dr. Jesselson often asks his students to keep a practice chart in order to observe the way they are practicing. He has several different types of practice charts, but one of the most basic and effective charts is what he calls the “What and When” chart, in which the students write down in list form what they practiced and when they practiced. Another practice chart that he uses divides the practice time into 5 or 10 minute slots. The students write what they hope to accomplish in a short period of time and at the end of that time they indicate whether they accomplished the task.

- “Practically Perfect Practicing”\textsuperscript{194} is an article that Dr. Jesselson wrote and gives to his students. It is also the basis of a seminar session that he often gives in master classes or Pre-College class. This article goes into detail about effective practice techniques.

- In lessons Dr. Jesselson often talks about specific techniques for improving practice. These include:
  - Using video or audio recordings to become more aware of what students are doing.

● Using metronome and tuner to check on tempos and intonation.

● Demonstrating in the lesson how to work on hard spots, which is the key to improving the difficult parts of an etude or piece.

● Understanding the difference between “workout” sessions and “playthrough” sessions in practicing. In the “workout” sessions the student practices the details of a passage or spot. In the “playthrough” sessions the students are practicing for performance, which includes a performance of the scale or etude in a lesson.

● Making sure that they are using their practice time in the best way - dividing the practicing so that they cover all the assignments from the lesson: scales, arpeggios, exercises, etudes and pieces - plus possible sight-reading, chamber music, orchestra music, etc.

● Using the so-called “Jesselson Doll.” Very often students are more focused and seem to have the ability to solve problems more quickly and effectively in a lesson when Dr. Jesselson is present. If so, he sometimes will give them the “Jesselson Doll” which is a puppet that looks somewhat like Dr. Jesselson (with round glasses!) and asks them to position the doll to stare at them when they practice. The idea is for them to imagine that Dr. Jesselson is present and that they have to focus and problem-solve as if he were there.

● Using the “How to Practice Flow Chart.” Dr. Jesselson created “The How-to-Practice Flow Chart” to help his students improve their practicing techniques. This chart is a step-by-step process, based on a
computer flow-chart. In this chart, the student does not go to the next step until the previous step is accomplished. The most important part of the chart is the section on the right side, which deals with working on difficult spots in an etude or piece. The centerpiece of the chart is the “Bag of Tricks” box, which means playing a short passage using various bowings and rhythms. The idea is to put the attention on the right hand to check. By taking attention off of the left hand, the cellist can determine if the left hand is secure and the intonation is accurate. This chart is very helpful because it separates the problems, thus the student can focus on particular problems one at a time. It can be used with etudes or with pieces and can be used by all musicians, not just cellists (see Appendix K.)

5.3 Left Brain/Right Brain

According to Joseph Hellige, the brain’s “left hemisphere controls symbolic processing and rational thinking whereas the right hemisphere is more artistic, intuitive and creative.”195 In general, musicians tend to be more right-brained, so they need to work to use their left brains more efficiently and effectively. Although recent neuroscience research has cast some doubt on the popular conception of the left brain/right brain dichotomy, Dr. Jesselson uses it as a metaphor for different ways of learning, teaching and performing. He describes a critical episode in his understanding of this dichotomy. When he was living in Bozeman, Montana, he was driving during a

snowstorm on a road that was high above a gorge. A truck was in front of him and a car behind him. The truck slowed down very quickly and Dr. Jesselson slowed down as well, but he could see in the rear-view mirror that the car behind him was not slowing down enough. As the car approached closer and was about to hit him, everything seemed to slow down in his brain and when the car hit him from the rear, he was able to react slowly in a way that prevented him from going over the edge of the gorge. In retrospect, that incident clarified for Dr. Jesselson that his conscious left-brain cut out at the moment of crisis and the right brain took over in slow motion. That is a similar feeling to being onstage for a performance and feeling like the entire recital was over in “no time.” It is good for things to slow down in a performance and yet feel like there was no sense of regular time. One of the characteristics of the left brain is that it perceives time in regular seconds, minutes and hours. The right brain has a feeling of timelessness.

Another important characteristic of the left brain is that it can only learn one new piece of information at a time. So, when working on a new etude or piece, cellists should be careful about learning a complicated new fingering and bowing at the same time. They should first learn one and then the other, building one concept at a time and then adding another.

The left brain deals with the analytical part of our brain. In an article about practicing, Dr. Jesselson asks:

Are you using your left-brain to think about what you are doing and to learn a new task, or are you just relying on your creative right-brain? Remember that the left-brain can only handle one new piece of information at a time. Are you giving yourself time to absorb that one piece of new information before going on to the next, or are you overloading yourself and getting frustrated? Are you moving sequentially through the new tasks as you learn a passage of music? Are you analyzing the technical difficulties in a passage and breaking them down into bite-sized chunks that you are able to solve? Just as a successful military strategy, a
useful musical strategy is to work on small sections of a difficult passage by tearing them apart before putting them back together. Are you questioning your own solutions to the problems – your fingerings, bowings, phrasings, intonation, etc.? Are you thinking, or just playing?\textsuperscript{196}

The right brain is the artistic part of the brain. Dr. Jesselson asks rhetorically:

\begin{quote}
Are you using your right-brain to solve musical problems? Are you thinking metaphorically and using images to elicit a variety of tonal colors? Do you have a story, philosophy or other extra-musical concept for your piece that will help you connect it to something larger? Are you thinking of color, pulse, motion, architecture, energy and/or expressivity in your playing? Are you practicing mechanically – if so, you will probably play mechanically. Superachievers can switch from the left-brain to the right-brain as needed. This is called “integrative” brain usage, in which the intuitive and imaginative right-brain can work together with the analytical left-brain to maximize the outcome.\textsuperscript{197}
\end{quote}

5.4 Memorization

The human brain is like a muscle that needs to be exercised and strengthened. It should be trained slowly, building up endurance and strength in a healthy way. With constant work, its capabilities and possibilities will be considerably enhanced. Dr. Jesselson asserts that, “our brains are wired in slightly different ways and some students will have no problem with memorizing music. However, others will need help in figuring out how best to memorize and how to use memorization to their advantage in performance.”\textsuperscript{198}

Some people are blessed with an amazing ability to memorize a variety of different things, including what they see, music they hear, words, or numbers. As Dr. Jesselson suggests, “the point is that we can train our brains to improve our abilities from

\footnotesize

\textsuperscript{197} Ibid.

whatever starting point we have. One thing is clear: developing a good memory is possible for everyone.\textsuperscript{199} In some cases this seems to be a natural talent, however it really involves training and persistence. Dr. Jesselson talks about the memorization system in American schools:

Things may be changing now, but students in the recent past were rarely expected to memorize poetry, famous quotations, or paragraphs from novels. On the other hand my father, who grew up in Germany in the 1920’s, had memorized so much literature as a child, that 40 years later he could still quote huge passages of Goethe’s \textit{Faust} or entire poems by Heine at the dinner table. This was not just a nice party trick – it was a wonderful training of his mind that added dimension to his abilities for critical and analytical thinking, provided depth and color to his opinions and helped keep his brain active throughout his life.\textsuperscript{200}

Dr. Jesselson never memorized any music until he entered the conservatory in Freiburg, where his teacher regularly expected him to memorize etudes and repertoire. In the beginning, he found it difficult, but eventually he discovered techniques which enabled him to bring in memorized etudes weekly, along with the traditional cello repertory.

According to John R. Anderson, “no special abilities are necessary for the development of memory skill. Practice, in conjunction with an appropriate mnemonic system and retrieval structure, is all that is necessary for the development of memory skill and there is apparently no limit to improvements in memory skill with practice.”\textsuperscript{201} Memorization has no boundaries, it just depends on how you exercise your brain. The famous chess player Bobby Fischer studied a book containing 353 chess games.


\textsuperscript{200} Ibid.

According to Benjamin Hale, “you could give Bobby any number between 1 and 353 and he could tell you all the moves to that game, the analysis of the game given in the book and Fischer’s own improved analysis.”\textsuperscript{202} In part, technology may have hurt our ability to memorize. Lex Hixon says:

\begin{quote}
Before cell phones, we memorized the phone numbers and addresses of family and friends. Before the internet, we remembered what book or magazine we had read something in. Today, we are more likely to skim-read whatever we are interested in and expect that if we need that information later, we can Google it with a few search words. Though we have nearly infinite access to all kinds of information on the web, turning it into knowledge requires effort. Information becomes knowledge when we “know” it, which means that we have it at our disposal via memory.\textsuperscript{203}
\end{quote}

However, teachers make the choice whether memorization is important in their pedagogical system. It clearly is a very important part of Dr. Jesselson’s teaching strategies.

Here are some tips from Robert Jesselson:

\begin{itemize}
  \item Students must memorize new music daily; it can be a phrase or a page, but the brain needs to exercise every day.
  \item Students should start the memorization habit with simple structures like arpeggios and scales, rather than with big pieces.
  \item Students should play something by memory in every lesson. The cello teacher can use the memorization assignment as a way to check about the level of practicing that is happening during the week. It is impossible to “fake” memorization.
\end{itemize}

\textsuperscript{202} Benjamin Hale, \textit{Philosophy Looks at Chess} (Chicago, IL: Open Court, 2012), 216.

\textsuperscript{203} Lex Hixon, \textit{Offering a Garland of Universal Religions} (Honokaa, HI: Sarada Ramakrishna Vivekananda Associations, 2016), 22.
● One memorization assignment can be a short theme that will be repeated with variations, as for example, the Feuillard No. 32. Students will get into the habit of starting to memorize more exercises and eventually etudes.

● The student must consciously memorize every detail, using a “left brain” approach. The teacher should do not just let the memorization “seep in” by the student having played a piece for a long time, as this type of memorization does not usually work well under pressure.

● All the details in the score must be memorized accurately. This should be done note by note and phrase by phrase, including fingerings and bowings, along with the composer's expressive indications. Sometimes the teacher can “test” the student to see if he or she is aware of a particular accent or articulation, or if the student knows the tempo marking in the score. The students should not memorize their pieces until all the fingerings and bowings have been set. It can be time-consuming and frustrating to re-memorize a piece if changes are made in these areas during the learning process.

● Some students think they cannot play from memory. To convince them that they can memorize easily, the cello teacher might ask students to play a few notes from their current piece, using the music, then tell them that they can use the music one more time before playing the passage by memory. When the teacher takes the music away, the student may or may not get it right away. The teacher can give them another chance to just look at the music (mental practice), then have them to play it with the music one more time. Finally, the teacher takes the music away
and lets them try it again by memory. These steps may need to be repeated once more, but the student should be able to play the passage by memory.

- Children who start memorizing music aurally while very young will often have developed great abilities to memorize music this way. They can listen to something and copy it easily.

According to Dr. Jesselson, “One of the recent discoveries about memory is called ‘chunk theory.’ This involves grouping information together in order to retain more information. Research has shown that the average person can hold about five to seven bits of information in their short-term memory.”\(^\text{204}\) Chunk theory teaches us that learning information by groupings is fundamental to memorization. Dr. Jesselson believes that superior memorization in great players does not just happen. It is acquired through many years of practicing, also known as “expert working memory.” Milton Dehn explains that, “Extended working memory seems to depend mainly on grouping items into chunks and then associating the chunks with familiar patterns, such as schemas, already stored in long-term memory. Encoding information into long-term memory needs to happen rapidly. Encoding also requires a large body of relevant and chunks for the particular type of information involved, which is why experts appear to have a greater working memory.”\(^\text{205}\)

Using the “chunk theory” can be very helpful for performers at all levels. The brain works more efficiently when it associates something new with some old retained


information. For instance, if students are learning and memorizing the first page of the Haydn Cello Concerto in C Major, they can connect many C major scale patterns with scales systems that they have done in the past. This system is better than memorizing note by note without any previous connection. Dr. Jesselson writes:

that is one of the main reasons we emphasize that our students should study, learn and memorize scales and arpeggios in all keys and in various systems. They are the “building blocks” of music. We must know a variety of scale and arpeggio systems, so we can quickly pick the best one for a particular passage of music. This will help with sight-reading, the ability to learn new music easier, playing faster and memorization of music. Instead of “reinventing the wheel” for every new piece, we can build on the foundations that we have already studied and learned. The more easily we can recognize patterns that are deeply embedded in our memory, the easier we can learn new music.\(^{206}\)

Dr. Jesselson recommends using “our left brain to learn fingerings and bowings, then after that we can use our right brain to put all together and make music. Our right brain can do many things at one time.”\(^{207}\) Chris Lewis writes about our brain: “The left hemisphere specializes in picking out the sounds that form words and working out the syntax of the phrase, for example, but it does not have a monopoly on language processing. The right hemisphere is more sensitive to the emotional features of language, tuning in to the slow rhythms of speech that carry intonation and stress.”\(^{208}\)

When students come in to a lesson with part of a piece memorized Dr. Jesselson usually asks them to point on the music exactly which section was memorized and up to which place. If the student says “I have the whole piece, kind of” that is likely not solid memorization. If they cannot show exactly what was memorized, it is likely that the


\(^{207}\) Ibid.

memorization is not rock-solid. He would rather hear a smaller section that is well memorized, rather than a longer part that is shaky.

According to Dr. Jesselson, memory techniques can be approached in different ways. There are several different types of memories that can be accessed in learning music. These include: kinesthetic, aural, visual, rote, and analytical memory. With kinesthetic memory, a cellist can imagine the music by relating it to the physical motions, thinking about the string-crossings, the left-hand position he is using, identifying the shifts. Kinesthetic memory is also known as “muscle memory” or physical memory. Aural memory is used when the cellist tries to sing the piece, or plays it on another instrument, such as the piano. The visual memory is also known as photographic memory. Dr. Jesselson takes the idea further, asking, “See if you can visualize your latest piece of music. Can you see whether it is on the left side of the page? Can you visualize the typeface of the title? What is the dynamic marking at the beginning? From there, look closer at the music and see the outline of the phrase. Conductors often use photographic memory to see the score and the instrumentation.”

Rote memory is perhaps the most basic kind of memory. It is less secure and often takes more time than the other techniques. It uses constant repetition and has the issue that if the player becomes lost in the middle, it is possible not to know where he was in the piece. According to Rebecca Shockley, “many have also recommended reinforcing them with “analytical memory” — analysis of harmony, form, or other features — for greater security and efficiency in

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learning. Simple techniques, such as having students locate and label chords, scales, or other patterns in a score, can improve analytical skill and help in memorizing.”

Dr. Jesselson recommends not to “rely on just one of these memorization techniques: the more different parts of the brain that are engaged in the memory process, the more secure the memory. Try writing out the music to check on how well it is stored in this particular area of the brain; I am often amused when I ask students to write out the first phrase and find out that they do not even know what meter of their piece is, or how the rhythm is actually notated.” Bonnie Blanchard says, “Write out the part you are trying to memorize...write a story for your piece.”

Memorizing music at a very slow tempo is another strategy to build a solid result. Robert Jesselson suggests that when the students are playing by memory, the teacher should move the music stand away from them, so they do not have the psychological feeling of hiding behind the stand. There is a big difference when students play their repertory by memory. According to Dr. Jesselson,

One great advantage of playing from memory is that you are forced to listen to yourself. When we play with the music, we often look at a note on the page, recognize that we are playing that note and then move on, satisfied. By playing from memory, we listen to ourselves in a different way. Memorization requires a deeper understanding of the ‘meaning’ of a particular note and how it relates to the surrounding notes in a phrase. Memorization takes constant work and review; I take a cue from Casals and play an entire Bach suite every day, in part for the mental and physical exercise involved and in part for solidifying my memory. Do not be surprised if something new that you memorized yesterday has slipped; you

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will find that if you review it today, it will take less time than when you first started memorizing it yesterday.\textsuperscript{213}

Memorization requires patience and discipline. Robert Jesselson says, “The learning curve in memorization ebbs and flows, but there is clearly an improvement from day to day if you are consistently working at it.”\textsuperscript{214} According to Rebecca Shockley, “As music teachers, we must find ways to help more students acquire effective learning skills, including skill at sight-reading, playing by ear and memorizing.”\textsuperscript{215} Dealing with the same challenges that one’s students face is the best way to find the solutions for the teacher and the students simultaneously. Jesselson asserts, “You will learn a lot about how your brain works by putting yourself through this daily routine and in the process you will learn a lot about how to teach this to your students.”\textsuperscript{216}

\section*{5.5 Mentalization}

Mentalization is Dr. Jesselson’s term for the mental process of memorizing and visualizing music, as well as imagining the physical gestures involved without actually playing. Renee Timmers writes that:

\begin{quote}
The imagery tends to be multi-modal and dependent on individual preferences. Some performers’ mental image is reflective of their physical movements developed during repeated practice, or an image of the score; some may focus on their inner hearing, “picturing” the sound ahead of producing it while others prefer
\end{quote}

\begin{footnotesize}
\begin{enumerate}
\item Ibid.
\end{enumerate}
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metaphorical or emotional images. Such extra-musical analogies can aid the processing of the memory-intensive task of performance.217

Mentalization can help cellists to prepare and memorize their music. Dr. Jesselson discusses this technique:

you go through the music in your mind, imagining every step of the way. Your fingers do not actually move, and your arms do not actually bow, but you can feel these physical motions. You go through the process in real time, or perhaps even under tempo. If you can do this accurately, you will feel confidence in knowing the piece deeply and securely. Feel the shape of the first phrase and what you need to do with the bow to achieve the musical line that you are imagining. You may find that you can only do a few measures this way, even in a piece that you “know” very well. That’s fine - just take a look at the music and then try it again. After a few days of this kind of work you will find that you have built up the concentration and endurance that you need to get through larger and larger sections of the piece.218

Dr. Jesselson thinks that mentalization is a critically important process in learning a piece so that it becomes deeply ingrained. It also saves time in practicing, because instead of playing something with bad intonation, when one mentalizes one is not actually playing out of tune. One has to go very slowly through a passage, making sure everything is correct.

Dr. Jesselson tells about his first experience with this way of practicing. He had to take a train from Freiburg to Basel every Wednesday to teach in Weil am Rhein. At first, he was concerned about losing valuable practice time while on the train. But then he decided to take along his music and work on his etudes and pieces mentally. Soon he realized that he was learning much more efficiently by not playing. Just thinking through

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the music seemed to produce better results. Off course one still needs to play the instrument, but only after one has learned and absorbed the music mentally.

In another experience some years later, Jesselson was at the Aspen Music Festival studying with Alan Harris. Mr. Harris assigned the Bach Suite No. 5 in c-minor, to be played scordatura. And he required that Jesselson learn each movement of the Suite away from the cello, putting in fingerings and bowings, and memorizing the piece before playing a note. As a result of the slow conscious learning process, the Suite was deeply ingrained and very solid. Apparently, Pablo Casals and Mstislav Rostropovich learned music this way, playing it at the piano and studying it mentally before playing it on the cello.

5.6 About Talent

The concept of talent in music is very misunderstood. There are clearly some musicians with skills that are simply much greater than the average. Listening and watching musicians like Rostropovich and Yo-Yo Ma can lead one to believe in their superhuman abilities. Obviously, a natural gift is involved but there are so many other factors as well. Some of these factors are genetic and some are the result of life situations. These may include: having parents who are musicians or musically inclined; having parents who can afford an instrument and lessons; starting music at a very young age; having the physical properties appropriate for a given instrument; having perfect pitch; having the right succession of the “three teacher rule” discussed earlier (page 174); going to the right school; meeting the right people; having a sponsor; winning a competition; having a genial personality; having the self-discipline required for this art form; having a good balance of left and right brain thinking; having a great instrument, etc. There are
also many different types of “talent.” Some people are gifted with a good sense of pitch, some with an expressive ability, some with a high intellect and some with great communication skills. Dr. Jesselson believes that hard work is as important as many of these factors. In his experience, having started studying the cello at a relatively late age, he noticed that many of his “talented” colleagues from conservatory ended up not going very far in the profession. In his case, hard work and self-discipline surmounted a special gift and an early start.

Dr. Jesselson has also noticed that many so-called “child prodigies” later have issues that prevent them from fulfilling their potential. Dr. Jesselson has noticed that often these prodigies have some sort of life crisis in their late teens and their abilities seem to wane. Perhaps it is the discovery of life outside of music, or perhaps they fall in love. Sometimes the security of being able to depend on the accuracy of a shift that they had been doing all their lives is undermined and they don’t play on as high a level as they had when they were younger. This happened, for example, in the cases of both Janos Starker and Yehudi Menuhin. Starker’s response was to analyze his technique and figure out how “learn” how to play the cello again. As a result, his playing became even better and more secure. Starker was known as the cellist who played more in tune than anyone else of his generation or before. Menuhin never seemed to regain the level of playing that he had achieved when he was young. According to Dr. Jesselson, “There is in fact a path leading from the state of our own abilities to that of the greats. The path is extremely long and demanding and only a few will follow it all the way to its end. No matter how far one
goes, however, the journey is always beneficial and begins by applying the elements of the process.”

One factor that seems to determine success, related both to an early start and self-discipline, is the “10,000 hours” of “deliberate practice” that Malcolm Gladwell discusses in his book “Outliers: The Story of Success”. Zhongxiong Fang mentions it also, writing that “in any field that has been studied so far, it takes at least ten years for an individual to progress from being a beginner to becoming a proficient individual who has independent innovative abilities. Similarly, it will take another ten years for him or her to achieve a second significant innovation.” Dr. Jesselson likes to quote Albert Einstein, who said: “It’s not that I’m so smart, it’s just that I stay with problems longer.” Needless to say, Albert Einstein was brilliant, but in his own estimation it was his determination to stick with the issues that led to his discoveries and his success. As Dr. Jesselson says, “the price of top-level achievement is extraordinarily high. Maybe it’s inevitable that not many people will choose to pay it. But the evidence shows also that by understanding how a few become great, all can become better.”

5.7 Cello Teacher’s Self-Examination Checklist

In some ways Dr. Jesselson’s philosophy of cello pedagogy can be summarized by the series of questions that he developed called the Cello Teacher’s Self-Examination

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Checklist. Published in Strings magazine in 2009, this list of 86 questions is based on a pedagogical protocol by former University of South Carolina professors Georgia Cowart and Jerry Curry called “Teaching Mania.” Jesselson’s list of questions is intended for studio teachers. The idea is for applied instrumental teachers to think about various aspects of their teaching, asking themselves questions about their teaching styles and effectiveness. The Checklist is divided into three broad categories: Preparation before a lesson, what happens During the Lesson, and aspects of one’s Teaching Personality. The Checklist addresses issues such as planning for lessons, establishing goals for a student, thinking about technical problems and solutions, finding a rhythm in a lesson, dealing with different learning styles, creating a healthy learning atmosphere in the lessons, thinking about the chemistry between teacher and student and many more.

CELLO TEACHER’S SELF-EXAMINATION CHECKLIST

I. PLANNING THE LESSON

1. Do you have a clear idea of your short-term, middle-term and long-term goals for the student?
2. Do you think about these goals and revise them from week to week?
3. Do you spend some time thinking about your lessons and the students, visualizing yourself in action, imagining your students’ possible responses, etc.?
4. Do you have a clear idea of your priorities from lesson to lesson?
5. Do you make these priorities clear to your students?
6. Are you aware of the balance of aural, visual and sensory-motor approaches in planning your lesson?
7. Do you experiment with new approaches to old problems (even if they don’t always work)?
8. Do you have three or four solutions for the same problem in case the first one does not help the student.
9. Are you planning ahead with several exercises or tricks to help solve a musical problem?
10. Are you coming up with new exercises to solve problems? New metaphors for addressing technical and musical issues?
11. Are you always aware of the technical concepts you are working with?
12. Are you thinking carefully about how to analyze the technical problems you are encountering in your student’s playing?
13. Do you practice the music that your students are playing so that you can demonstrate adequately to them?
14. Have you planned clear, step-by-step directions as to how the students should work and practice at home?
15. Do you plan for the lesson ahead of time, or are you winging it?

II. IN THE LESSON

16. Do you have a “plan” for a lesson, which might include:
   - Scale / arpeggios
   - Exercises
   - etudes
   - Pieces
17. Are you aware of the “rhythm” of the lesson; are you pacing the lesson correctly?
18. Are you requiring that the student memorize something every week?
19. Are you always working on a variety of things with your students? Left hand technique and right hand technique?
20. Are you letting the student play rather than dominating the lesson with talk?
21. Are you having the student checking notes for intonation?
22. Are you asking the student questions, using the “Socratic method”?
23. Do you check the student’s knowledge of key signatures, musical terms, periods of history, etc?
24. Are you only having the student do “playthroughs” of pieces, or are you working on the details?
25. Are you only working on the details, or are you letting the student do “playthroughs” of pieces?
26. Are you praising your student when he/she has done something well, even if it is only a little thing?
27. Are you aware of the different learning styles that people have?
28. Are you aware of accessing the student’s Left and Right brains for technical and musical issues?
29. Are you giving the student too many Left Brain things to think of at one time – overloading him/her?
30. Are you just teaching through the Right Brain and not giving the student the technical information, he/she needs?
31. Does the student know his assignment?
32. Has the student practiced? Is he/she prepared?
33. Is the student getting through an adequate amount of material?
34. Is the student progressing from week to week?
35. Is the student keeping a notebook?
36. Are the lessons being held on a regular basis?
37. Are you making up or rescheduling lessons that you had to miss?
38. Is there someone who can take your student if you cannot make up the lesson, so he/she does not lose a week’s worth of material?
39. Are you communicating with the parents if there is a problem?
40. Does the student feel good about him/herself?
41. Are you clear in your language and your directions?
42. Do you have long-term goals for your students, such as recitals, master classes, performances?
43. Does your student have a clear idea of what is expected from him/her?
44. Do your lessons begin and end on time?
45. How musically are your students playing?
46. Do you cover a lot of material at a comfortable level, or do you get “bogged down” and spend too much time on something?
47. Does your student have enough material to practice – or maybe even too much to do well?
48. If you spent lots of time in the lesson on one detail, will the student “spin his wheels” during the week with material that came into the lesson already prepared but not heard?
49. Do you demonstrate occasionally so the student hears a model of sound, tempo, etc?
50. Do you sometimes throw out all of the above ideas and do something spontaneous?
51. Do you spend time in the lesson discussing practicing, sometimes even “pretending” that they are practicing seeing how they work on a problem?
52. In other words, do you make them independent of you rather than dependent on you as their teacher?
53. Are you prepared to “pass them on” to the next teacher when you feel that you have nothing more to teach them at this level?

III. YOUR TEACHING PERSONALITY

54. Are you creative in your teaching?
55. Do the students feel free to talk to you about their problems?
56. As a teacher, are you yourself? Is your teaching a comfortable reflection of your personality?
57. Does the student have a sense of having accomplished something after the lesson?
58. Do you have a sense of having accomplished something after the lesson?
59. Do you feel totally involved in your teaching?
60. Are you enthusiastic? Do you think you have a real spark in every lesson?
61. Are you flexible as a person and as a teacher?
62. Do you communicate to the students accurately what you mean to say?
63. Do you admit when you are in the wrong, or do you project a false image of being perfect?
64. Would you teach the same way if you were being observed by someone?
65. Is your relationship with your student a good one?
66. Are you reaching your students?
67. If not, what can you do to get through to them?
68. Are you able to deal with occasional frustration?
69. Have you thought about the student as a person, not just a cello-machine that you see once a week?
70. Are you varying your style and approach to conform with the student, or do you treat your pupils as if they come to you in one mold?
71. Are you “getting inside the student’s head”, trying to understand what makes him/her “tick”?
72. Are you being too harsh?
73. Are you being too lenient?
74. Is there a rich sense of enjoyment in the lesson?
75. Do you use humor in the lesson?
76. Is the atmosphere of the lesson a positive one, or is it consistently negative?
77. How musical are you in your teaching?
78. Do you speak with a pleasing voice quality?
79. Does your teaching have energy? Are you dynamic?
80. Do you leave your problems at home when you step into a lesson?
81. Do your students trust you implicitly? Have you established the kind of relationship in which they feel safe about following you into the unknown?
82. Are you working to improve your communication skills?
83. Do you keep a balance between holding their hand and pushing them off the diving board?
84. Do you really care about your teaching, or are you just doing it for the money?
85. Are you learning from your students?
86. Do you realize that if you are not changing for the better as a person, you are not changing for the better as a teacher?

Great teachers are constantly learning. During his years teaching cello at the University of South Carolina, Dr. Jesselson feels that he is constantly learning from his colleagues and from his students as well.
CHAPTER 6

JESSELSON’S OTHER CONTRIBUTIONS

Dr. Jesselson has been an advocate of music education throughout his career. He has profoundly impacted his students with his cello teaching. His investment in string education in South Carolina has had a significant impact on the lives of local school children. His presence in South Carolina has created the opportunity for numerous local cello students to have access to high level musical training. His work in creating the USC String Project and the National String Project Consortium (NSPC) has impacted the training of string teachers nationally. As President of ASTA (American String Teachers Association) he helped move the association from a “mom and pop” organization to a professional organization with a national stand-alone conference. On the local level he has influenced the direction of the USC School of Music by helping to create several new string positions, by writing the grant that started the Parker Quartet residency, by supporting the Suzuki Program, by creating the Pre-College Cello Class, and by starting the SC Cello Choir. Most recently he set the stage for future progress in Columbia with the creation of MAC (Midlands Arts Conservatory).

Robert Jesselson started playing the cello seriously at age 21, which is considered late for a professional musician. Ultimately when he was in college, his decision to try to become a musician was in large part the result of serendipity and the influence of several important mentors who helped change the direction of his life. Dr. Jesselson wrote:
Why did I become a musician? It’s largely because of the influence of great teachers, mentors, role models and friends. I have been fortunate to have had several important mentors in my life. People like other inspirational cello teachers: Paul Tortelier, Paul Katz and Bernard Greenhouse and mentors like Marcia Goldsmith, Pam Gearhart. With the kind of one-on-one studio teaching that I do, I get to know my students very well. I often get to see them growing and changing almost before my eyes. Musicians often tend to be very right-brained type people. In some cases, my job is almost literally having to help them build a left brain: helping them organize themselves, planning ahead, figuring out strategies for practicing and being productive. It is very rewarding to have former students come back and tell me how much they were influenced by our work together.

My first contact with Dr. Jesselson was in 2008 on the occasion of my audition at the University of South Carolina. After the audition Dr. Jesselson asked me to play some Bach for him and I was immediately impressed by Jesselson’s inherent willingness to help improve my cello playing. I began at the University of South Carolina in 2014, pursuing a doctorate in cello performance. During this time, I experienced Dr. Jesselson’s teaching through my own lessons, observation of his teaching of other students and occasionally working with some of Dr. Jesselson’s students when he was away.

Dr. Jesselson’s teaching impact can be noted in the comments from his colleagues and former students. Dr. Theodore Buchholz explained the impact of Dr. Jesselson’s teaching:

Perhaps the brilliance of Robert Jesselson’s teaching is the combination of a master musician’s knowledge of musicality and technique, a psychologist’s understanding of the mind, a master pedagogue’s effective teaching strategies and a life coach’s ability to motivate students to fully dedicate themselves to not just music, but to becoming the best version of themselves. I began lessons with Dr. Jesselson when I was fifteen years old. I began playing cello four years before that in public school music programs and while I did have a decent ear, there was a tremendous amount of work to do if I was to pursue music in college. Through several years of systematic work, Dr. Jesselson built up my technique, musicality

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224 Dr. Theodore Buchholz teaches cello at the University of Arizona.
and performance confidence using concepts, resources and repertoire. He believed in his method and had a celebrated track record of using it with a generation of students before me. We worked systematically through technical resources including Feuillard’s *Daily Exercises for Violoncello*, Dotzauer’s études, Lee’s Melodic études and Duport’s études and Popper’s études. The materials were, of course, well-chosen and sequenced, but it was Dr. Jesselson’s ability to extract and highlight essential concepts that enabled getting the absolute most out of the experience. Dr. Jesselson set high and clear expectation. The criticism he offered was specific, helpful and framed in an enabling manner. When I was commended for something, the praise was often pointed towards the effort put into a task. Dr. Jesselson set up many ways for me to succeed and nurtured an atmosphere where going above and beyond. Regardless of whether or not I was going to become a professional musician, the experience set me on a path towards understanding who I am, how I learn and how to motivate myself to giving everything I had to offer. While I have been successful as a professional musician and educator, I am confident that had I become anything else, from a salesman to a medical doctor, it would still be Jesselson who guided me the most in any profession. Dr. Jesselson achieved success teaching all student levels, from beginner to post-professional, because of his mastery of music, pedagogy, psychology and motivation. Now that I’ve entered my professional career on faculty at a large university, Robert Jesselson still serves as my mentor and professional model.”

Each semester, members of the University of South Carolina cello studio have the opportunity to listen to and play for prestigious guest cellists who visit the campus. The university students also have the opportunity to hear performances by the Grammy Award-winning Parker Quartet, the Quartet-in-Residence at USC and to play in their masterclasses. Dr. Jesselson was instrumental in creating this residency at the university.

Mr. Kee Kim discusses Jesselsohn’s work:

I have had the great fortune of working with Dr. Jesselson, both as a musical collaborator, as well as observing him teach his large cello studio. I am always struck by how methodical Dr. Jesselson is in his pedagogical approach. He seems to have a clear structure and objective for his teaching, complimented by his choice of repertoire, that brings up particular aspects of cello playing, whether it be your physical approach to the cello; hand positions; vibrato; different bow strokes etc. Having a visiting residency that brings us to USC twice a year, I can really see how much progress the students have made on their technique and musical maturity each time we visit. In my opinion, perhaps Dr. Jesselson’s

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226 Kee Kim is a founding member of the Grammy Award winning Parker Quartet.
Dr. Jesselson has the determination to deal with difficulties and challenges, the self-discipline to address problems and issues and a desire for high standards in cello playing. Robert Jesselson came to USC in 1981. Mary Lee Taylor Kinosian, concertmaster of the South Carolina Philharmonic Orchestra and a native of Columbia, South Carolina remembers:

Dr. Jesselson joined the faculty when I was a senior at the University of South Carolina. Right away, his dedication was obvious and though it took some adjustments for us to raise our standards, we had a great experience in this first year of his tenure at USC.228

Until beginning at USC, Dr. Jesselson had thought of himself primarily as a professional cellist. As he had been trained in the traditional one-on-one European method, he never thought that he would be involved in the training of string teachers for the public schools. In fact, at that time he did not realize that strings could be taught in large heterogeneous groups – violins, violas, cellos and basses together, or that by teaching in this way teachers could train young string teachers who would teach in the public schools and build string and orchestra programs which would affect the lives of thousands and thousands of young people in Columbia and nationwide.

When Jesselson came to USC in 1981, there were no string programs in the Columbia public schools. In 1982 Dr. Jesselson took over as director of the USC String  

227 Kee Kim, private email message to Kalim Campos (7 September 2017).

228 Mary Lee Taylor Kinosian, private email message to Kalim Campos (18 September 2018).
Project, a program that provided about 25 students with private lessons and small classes. Gradually, he built this into a program which served about 300 children and 30 teachers, with homogeneous and heterogeneous classes, orchestras, chamber music and private lessons. All of the teachers were undergraduate students. The idea was that by having undergraduate students lead these classes under the supervision of a master teacher, they would gain valuable teaching experience and be better prepared to teach in the public schools. Dr. Jesselson felt that more people could be attracted to the teaching profession if they were given hands-on, supervised, practical training during their college years. The student teachers actively participated in all the activities of a professional teacher: recruiting students, planning lessons, conducting orchestras, leading beginning classes, teaching private lessons and organizing recitals. By the time they graduated, these students had four or five years of practical training and experience and would be ready to be independent teachers.

As a result of the success of the USC String Project, all five local school districts in Columbia had created their own string and orchestra programs by 1987. The program was able to interest students in string playing and also to produce teachers to teach in them. The teachers were well prepared to succeed in a public school setting.

Dr. Jesselson was the director of the String Project for 15 years. The USC String Project became nationally recognized as a model for how to successfully train string teachers. This South Carolina program has trained hundreds of teachers, and thousands of young children have had the opportunity to study a string instrument. Dr. Jesselson feels like he has many string “grandchildren” (and by now “great-grandchildren”) all over the country. Jesselson says that is very proud of the USC String Project – probably prouder
of that then anything he has done in his career. Dr. Jesselson says, “if ones compare the current USC with the USC from 1981, it is really amazing to see how this university and this community have grown and changed.”

As a result of the growth of the program, USC was able to create a new tenure-track position for a string music education professor.

Dr. Jesselson became the national president-elect of ASTA (American String Teachers Association) in 1998. He brought with him the idea of using the USC String Project as a model for addressing the acute national shortage of string teachers by creating similar programs at universities all over the United States. Dr. Jesselson wrote a FIPSE grant from the US Department of Education. This $514,302 grant, awarded to ASTA, funded the first 10 sites. The grant created the National String Project Consortium (NSPC). According to the current NSPC Director, Elizabeth Reed

Dr. Jesselson’s countless hours of contacting funders for donations and writing grants warranted the start of providing String Projects across the United States. The initial grants Dr. Jesselson wrote, between 2000-2001, funded 16 sites and contributed over a million dollars in the course of five years to establish the emerging String Project sites. Since that time, funding of approximately four million dollars has helped to build a total of 44 National String Project sites across the country.

Dr. Tayloe Harding, Dean of the School of Music at the University of South Carolina says that Dr. Jesselson’s:

dynamic and visionary leadership with the creation of the National String Project Consortium when he served as president of the American String Teachers’ Association in the 1990s and his tireless and deeply committed efforts to

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230 Elizabeth Reed is the current Director of the NSPC (National String Project Consortium).

231 Elizabeth Reed, private email message to Kalim Campos (16 September 2018).

232 Dr. Tayloe Harding is the Dean of the School of Music at the University of South Carolina.
permanently establish the National String Project Consortium as a private enterprise in the 2000s, one would be hard-pressed to identify anyone who has meant more to the education of string teachers in America than Bob. We are all truly advantaged and enriched by his work and his example.\textsuperscript{233}

Dr. Jesselson’s work in the String Project was recognized in an article in the New York Times in December of 2003.

In addition to his String Project legacy, Dr. Jesselson also created the South Carolina Cello Choir in 1981. This annual event includes cello masterclasses, rehearsals and performances of a mass cello choir. It culminates in a concert with more than 200 cellos playing together on the stage. Dr. Richard Thomas,\textsuperscript{234} a former Jesselson student says:

I believe I was the first DMA graduate in cello at USC – that was in 1999. There have been many more since then. From my time at USC I always participated in the South Carolina Cello Choir, which Dr. Jesselson started nearly 40 years ago. It has always been an important cello event in the region and now I have the pleasure to give Master Classes regularly at the SC Cello Choir. The South Carolina Cello Choir has been successful and popular for decades. It is interesting to see the same kind of event created in the last few years as annual events in South Carolina and nearby states with workshops and choirs for Violin/Viola and for Bass.\textsuperscript{235}

Joanne Mosquera,\textsuperscript{236} a public school teacher who graduated from USC, talks about her experience at the South Carolina Cello Choir, saying:

I cannot say that I have had any other experiences in my life like the SC Cello Choir. It is such an amazing feeling to be on stage with 200 cellists. This event alone demonstrates Dr. Jesselson’s passion for the cello and how he shares his love for the instrument to all those cellists on the stage.\textsuperscript{237}

\textsuperscript{233} Dr. Tayloe Harding, private email message to Kalim Campos (16 September 2018).

\textsuperscript{234} Dr. Richard Thomas is Associate Professor of Music at Presbyterian College.

\textsuperscript{235} Dr. Richard Thomas, private email message to Kalim Campos (16 September 2018).

\textsuperscript{236} Joanne Mosquera conducts the Dutch Fork Middle School Capriccio Orchestra, Concert Orchestra and Honors Orchestra.
In 1981 the University of South Carolina music department was known primarily as a band school. When Dr. Jesselson first joined the faculty, he had one cello student - and she left after one semester and went into the army. But the cello studio grew to include about 20 students regularly. Each year Dr. Jesselson felt he could look back and see some positive change at USC and in Columbia including the building of the Koger Center, a new School of Music building and eventually a dedicated String Project building. He oversaw the growth of the cello studio, the creation of the USC Graduate Quartets, the hiring of an orchestra conductor and a full-time faculty bass teacher. Eventually there was need for second violin faculty member in violin pedagogy and the creation of a Suzuki Program. Dr. Jesselson\textsuperscript{238} is grateful to have had the opportunity to help shape the program at USC through all these changes. He has been involved in the hiring of all of the current string faculty.

Currently Dr. Jesselson writes two blogs for the CelloBello website: one called “100 Warmups” and a second named “The Joy of Feuillard – A Sequential Approach to Teaching Bow Technique.” In this way, Dr. Jesselson passes his knowledge to the cellists around the world.

Throughout this intensive teaching career, Dr. Jesselson remained an outstanding performing musician in his own right, as a much sought-after recitalist, chamber musician and soloist and thus his teaching was informed by his own performing life. His meaningful achievement as the father of the String Project “movement,” has brought the powerful academic, cultural and psychological benefits of classical music instrument

\textsuperscript{237} Joanne Mosquera, private email message to Kalim Campos (23 September 2018).

\textsuperscript{238} Dr. Robert Jesselson, interview by author, Columbia, SC, January, 2018.
teaching to American public schools. Due primarily to his vision, leadership and tireless dedication. Dr. Jesselson is making another impact in South Carolina now as a board member for the Midlands Arts Conservatory in Columbia, which was inaugurated in August 2018. This new institution offers a free public school education to middle and high school students interested in the arts, ranging from music, theater, dance to the visual arts.

As a musician, teacher, innovator and humanitarian, Robert Jesselson’s contribution to music education in the United States has been significant, varied and far-reaching. His effect on the field would be substantial if it merely comprised his long and influential tenure as the cello professor at the University of South Carolina. A masterful teacher, with a clear pedagogical system, he is able to present his ideas with both insight and clarity. He is an astute and inspiring mentor and his training has produced scores of accomplished cellists who perform and teach at the highest levels.
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APPENDIX A: FEUILLARD DAILY EXERCISES No. 34

The following are the main points of Feuillard No. 34, which deals with string crossings, including the four Bowing Figures (Arc, Circle, Figure 8 and Wave) as described in Chapter 3.

Variation #1 - Figure 8, full bow, left/right motion, upper arm, bow parallel to bridge, tempo quarter note=60.

Variation #2 - Arc figure, full bow, left/right motion, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #3 - Arc figure, full bow, left/right motion, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #4 - Reverse Arc figure, full bow, left/right motion, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #5 - Figure 8, full bow, left/right motion, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #6 - Figure 8, full bow in the first and second beats + upper part of the bow in the third and fourth beats + full bow in the next two beats + lower part of the bow in the following two beats, bow parallel to the bridge, tempo quarter note=60.
Variation #7 - Figure 8, full bow in the first and second beats + upper part of the bow in the third and fourth beats + full bow in the next two beats + lower part of the bow in the following two beats, bow parallel to the bridge, make sure string crossing with upper part of arm; tempo quarter note=60.

Variation #8 - Wave figure, full bow, upper arm, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #9 - Circle figure created by string crossing, middle of the bow, lower arm for détaché, bow parallel to the bridge, tempo quarter note=60.
Variation #10 - Circle figure, first two beats in the frog+full bow in the third and second beats+next two beats on the tip+full bow in the following two beats, left/right motion, bow parallel to the bridge, bow out to next string; tempo quarter note=60.

Variation #11 - Circle figure, middle of the bow detaché, lower arm, bow parallel to the bridge, tempo quarter note=60.

Variation #12 - Arc figure, left/right motion, first two beats in the frog+full bow in the third and second beats+next two beats on the tip+full bow in the following two beats, bow parallel to the bridge, tempo quarter note=60.

Variation #13 - Arc figure, middle of the bow, lower arm, bow parallel to the bridge, tempo quarter note=60.

Variation #14 - Arc figures, first two beats in the frog+full bow in the third and second beats+next two beats on the tip+full bow in the following two beats, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #15 - Arc figures, middle of the bow, lower arm, bow parallel to the bridge, tempo quarter note=60.

Variation #16 - Arc figure, first two beats in the frog+full bow in the third and second beats+next two beats on the tip+full bow in the following two beats, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #17 - Circle figure, upper part of the bow, upper arm string crossing, lower arm detaché, bow parallel to the bridge, tempo quarter note=60.

Variation #18 - Circle figure, middle of the bow, upper arm string crossing, lower arm detaché, bow parallel to the bridge, tempo quarter note=60.

Variation #19 - Wave figure, full bow, left right motion, upper arm, wrist and fingers do string crossings; wait to do this one until student has done wrist and finger exercises; bow parallel to the bridge, tempo quarter note=60.
Variation #20 - Circle figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #21 - Circle figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #22 - Circle figure, middle of the bow, upper arm string crossing; bow parallel to the bridge, tempo quarter note=60.

Variation #23 - Circle figures, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #24 - Arc figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #25 - Wave figure, full bow, left right motion, upper arm, wrist and fingers do the string crossings; wait until student has completed wrist and finger exercises (box exercises, etc.), bow parallel to the bridge, tempo quarter note=60.

Variation #26 - Circle figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #27 - Arc figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #28 - Arc figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #29 - Circle figure, middle of the bow, upper arm, bow parallel to the bridge, tempo quarter note=60.

Variation #30 - Circle figure, the first three beats on the frog+full bow in the following beat+three beats on the tip+full bow in the following beat, left/right motion, bow parallel to the bridge, tempo quarter note=60.
Variation #31 - Arc figure, the first three beats on the frog+full bow in the following beat+three beats on the tip+full bow in the following beat, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #32 - Arc figure, the first three beats on the frog+full bow in the following beat+three beats on the tip+full bow in the following beat, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #33 - Circle figure, the first three beats on the frog+full bow in the following beat+three beats on the tip+full bow in the following beat, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #34 – Arc figure, middle of the bow, bow parallel to the bridge, tempo quarter note=60, upper arm.

Variation #35 – Figure 8, middle of the bow, bow parallel to the bridge, tempo quarter note=60, upper arm.

Variation #36 - Figure 8, middle of the bow, bow parallel to the bridge, tempo quarter note=60, upper arm.

Variation #37 – Arc figure, middle of the bow, bow parallel to the bridge, tempo quarter note=60, upper arm; up-bow staccato (first finger important, low contact point).

Variation #38 - Arc figure, the first three beats on the frog+full bow in the following beat+three beats on the tip+full bow in the following beat, left/right motion, bow parallel to the bridge, tempo quarter note=60.

Variation #39 - Wave figure, full bow, left/right motion, wrist and fingers, bow parallel to the bridge, tempo quarter note=70.

Variation #40 - Wave figure, full bow, left/right motion, wrist and fingers, bow parallel to the bridge, tempo quarter note=100.
APPENDIX B: TWO AND THREE FINGER SCALE SYSTEMS

Two - Finger
+ Three - Finger Systems

- 2 octaves
- on 1 string
- All keys
- All strings

I. Scales

2 Fingers:
1-2, 1-2, 1-2 ... 1-2-3

3 Fingers:
1-2-4, 1-2-3 ... 1-2-3

II. ARPEGGIOS

Maj. + Min.: 1, 1-4, 1-3 ...
Dim 7th: 1-4, 1-4 ... 1-2-3
Dom 7th: 1-4, 2-4, 1-3, 1-2-4
APPENDIX C: SCALE SYSTEMS ON ONE STRING

1) 2-4, 1-2 . . . . . . . . . . . 1-2-3
2) 1-2-4, 1-2 . . . . . . . . . . . 1-2-3, 3
3) 2-4, 1-2-4, 1-2-3 . . . . . . 1-2-3, 3
4) 1-2-4, 1-2-3 . . . .
5) 2, 1-3-4, 1-2-3 . . . . . . 1-2
6) 2-4, 2-3 . . . . . . . . . . . 2-3, 3 (no 1st finger)
7) 1-2-4, 2-4, 2-3 . . . . . . 2-3 (no 1st finger except in beginning)
APPENDIX D: THE AROUND & AROUND SYSTEM

"Around and Around" System

The point of this scale system is to go "around and around" a two octave scale on one string, using a three finger system, keeping the pulse the same and increasing the speed of the scale as you add the number of notes, playing 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, and 16 notes per bow.

Directions:
1) set the metronome at 40 and play the scale with 1 beat per bar, starting with 1 note per bow, and then repeating the scale over and over up to 16 notes in a bow
2) use the three finger scale system, going up the string for 2 octaves
3) play each scale "around and around" until you reach the tonic (C) on a downbow, and then go on to the next grouping of notes

Goals:
1) To play through the entire system without stopping, for endurance
2) To gradually increase the speed of the scale as you increase the number of notes in a bow
3) To correct intonation problems during the next repetition, rather than stopping to correct
4) To do in all keys on the A string (B-flat, B, C, etc).

Go around once:

Go around 3 times:
4. Go around 2 times:

5. Go around 5 times:

6. Go around 3 times:

7. Go around once:

8. Go around 4 times:

9. Go around 9 times:

10. Go around 6 times:

12. Go around 8 times:

etc
APPENDIX E: COMPILATION OF SCALE AND ARPEGGIO SYSTEMS

Compilation of Scale and Arpeggio Systems
Robert Jesselson
University of South Carolina

I. Basic Scales

1) 1 octave scales / 1 octave arpeggios (selectively by ability level)
2) 2 octave scales / 2 octave arpeggios - (Feuillard 10 and 11)
3) 3 octave scales / 4 octave arpeggios - (Feuillard 20 and 21)
4) 4 octave scales / 4 octave arpeggios - (Feuillard 20 and 21)

II. Bowings

1) Basic Four - Bow Distribution Bowings - with I-1 and I-2
2) Off-the-string Bowings - with I-3 and I-4
3) Lucktenburg-Jesselson Bowings - for 3 octave scales - (Galamian system)
4) Jensen compilation of bowings
5) additional bowings

III. Alternate Systems

1) 2 octaves on 1 string with alternate fingerings - (Feuillard 17)
2) on one string with all 1-2 or 1-3 - (RJ-1)
   1-2-3, 1-2, 1-2-3
   1-2, 1-2-3, 1-2-3
3) on one string with all first finger; second finger; third finger - (RJ-2)
4) on one string 1-2 in all keys
5) on one string 1-2-3 in all keys
5a) on one string 1-2-3 in all keys – “around and around” – 2, 3, 4, 5, 6, 7, 8, 9, 12, 16
6) 2 octaves with same fingerings for all major and minor keys - (Feuillard 19)
7) 3 octaves with same fingerings for all major and minor keys - (Feuillard page 34)
8) 4 octaves with same fingerings for all major and minor keys -
(Feuillard page 34)

9) Scales in modern music - (Feuillard 23)  
10) Thumb position scales - (Feuillard 26)  
11) Scales alternating 1/2 and whole steps on one string  
12) Scale pattern 1-2-3, up major and down minor (Freiburg pattern)  
13) Modal scales (Forbes)  
14) Whole step shift (Gerschefski)  
15) Three finger system with no open strings (Krastev)  
16) Scales in harmonics  
17) 3 octaves “speed fingering” (top octave up 12, 12, 123, down 3321, 321) (provenance?)  
18) Geber system (end second octave on 2, then three finger system, with 3-3 at top in fourth octave) (David Geber)  
19) Whole tone scales on one string (12,12,123) (RJ)  
20) Richard Aaron System

IV. Scales in 6ths, 3rds, Octaves

1) Major Scales in 6ths - different fingerings up and down (Epperson system)  
2) Major, Minor Scales in 6ths - (Krastev)  
3) Major, Minor Scales in 3rds - (Krastev)  
3) Major, Minor Scales in 8vas - (Krastev)  
4) Major, Minor Scales in 6ths - (m6=2-1, M6=3-1) (system with numbers written out- provenance?)  
5) Major, Minor Scales in 3rds -(system with numbers written out- provenance?)  
6) Broken Thirds (Feuillard 12)

V) Arpeggios

1) 2 Octaves - (Minor, Major, Dominant 7, Subdominant, Relative Minor, Diminished 7, Dominant 7 to new key) (Feuillard 11)  
2) 4 Octaves - (Major, Minor, Diminished 7, Dominant 7 to new key) (Feuillard 21)  
3) 2 Octaves on 1 string (same sequence as 4 Octaves) (Feuillard 18)  
4) Arpeggio exercises (Feuillard 22)  
5) Major 3rd arpeggios (Feuillard 23)  
6) Thumb position arpeggios (same sequence as 2 Octaves) (Feuillard 27)  
7) Forbes sequence (Major, Minor, Major 7, Dominant 7, Minor 7, half Diminished, Diminished 7)  
8) Epperson - (page 1, 33)
9) Gerschefski sequence- 4 octaves - (Major, Minor, Major 1st inversion, Minor 1st inversion, Major 2nd inversion, Minor 2nd inversion, Augmented, Diminished 7, Dominant 7)

10) Cossman arpeggio study - (continuous in all keys: Major, Subdominant, Minor Subdominant, Minor, Dominant 7 to new key (2 fingerings).
APPENDIX F: TWO OCTAVE MAJOR SCALE SYSTEM USING MARYS

2 Octave Scale System Using Marys

Major Scale Pattern:
Major, Major, modal, modal, minor

Mary:

Position:
APPENDIX G: TWO OCTAVE HARMONIC MINOR SCALE SYSTEM USING MARYS

2 Octave Scale System Using Marys

Harmonic Minor Scale Pattern:
minor, minor, modal, Major, Augmented

Mary:

\[
\begin{array}{cccccc}
1 & m & 1 & m & 1 & mo \\
\end{array}
\]

Position:

\[
\begin{array}{cccccc}
I & IV & III/2 & IIe & 1/2e \\
\end{array}
\]

\[
\begin{array}{cccccc}
II & 1/2 & IV & II/2e & Ie \\
\end{array}
\]

\[
\begin{array}{cccccc}
III/2 & I & 1/2 & IIIe & IIe \\
\end{array}
\]

\[
\begin{array}{cccccc}
III & II & I & III/2e & II/2e \\
\end{array}
\]

\[
\begin{array}{cccccc}
III/2 & II/2 & II & IVe & IIIe \\
\end{array}
\]

\[
\begin{array}{cccccc}
IV & III & III/2 & IVe & III/2e \\
\end{array}
\]
APPENDIX H: TWO OCTAVE MELODIC SCALE SYSTEM USING MARYS

2 Octave Scale System Using Marys

Melodic Minor Scale Pattern:

Up: minor, Major, modal, Major, minor

Down: Major, Major, Major, minor, minor

\[\text{Mary:} \quad 1 \quad m \quad 1 \quad M \quad 1 \quad mo \quad 1 \quad M \quad 1 \quad m\]

\[\text{Position:} \quad I \quad IVb \quad III\ell/2 \quad IIe \quad I\]

\[\text{Mary:} \quad 1 \quad M \quad 1 \quad M \quad 1 \quad m \quad 1 \quad m \quad 1 \quad m \quad 1\]

\[\text{Position:} \quad 1/2e \quad IIe \quad IIIe \quad IV \quad I\]

\[\text{Mary:} \quad 1 \quad 1/2e \quad IV \quad II/2s \quad II\]

\[\text{Position:} \quad III/2s \quad III/2s \quad 1/2 \quad II\]

\[\text{Mary:} \quad 1 \quad 1/2 \quad IIIe \quad III/2 \]

\[\text{Position:} \quad II/2 \quad III/2 \]

\[\text{Mary:} \quad IIIe \quad IVb \quad I \quad II/2\]
**APPENDIX I: USC CELLO SYLLABUS**

**USC CELLO SYLLABUS**

The repertoire list below reflects minimal competency for different levels of study; it is not intended to be inclusive. Attendance at weekly master classes and cello recitals is mandatory.

**All students:**
1. Will receive a lesson once a week and participate in a weekly master class.
2. Will prepare scales and arpeggios, exercises, études, and solo literature.
3. The final grade is determined upon: semester average of graded lessons, jury or recital grade, seminar grade (if applicable), masterclass performances. Lessons are graded based on accomplishment of particular assignments and progress toward developing technical and musical conceptual expertise. Juries, recitals, masterclass performances are graded based on actual performance accomplishment and not based on potential.
4. Lessons will be made up if professor has to reschedule; if student misses a lesson due to illness, the lesson will not be rescheduled; if student misses a lesson or masterclass without a valid excuse, a grade of zero will be recorded for that particular day. **No cuts are allowed.**

**Outcomes:** Students will be able to perform, interpret, and evaluate level-appropriate musical works in a variety of musical styles and in a variety of musical contexts, including solo, chamber, and full ensemble settings. Orientation to and experience with the fundamentals of pedagogy will be discussed in master classes, studio classes. Performance majors can elect to take an independent pedagogy course.

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<th>FRESHMAN YEAR</th>
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<th>BA, MUSIC EDUCATION, MUSIC MINOR</th>
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<td>2 octave arpeggios</td>
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<td>6 Etudes: Dotzauer, Lee</td>
<td>5 Etudes: Dotzauer</td>
<td>5 Etudes: Dotzauer</td>
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<td>Various Feuillard Exercises</td>
<td>Various Feuillard Exercises</td>
<td>Various Feuillard Exercises</td>
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<td>Marcello Sonatas</td>
<td>Square - Tarantella</td>
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<td>7 Etudes: Lee (cont.), Duport,</td>
<td>6 Etudes: Dotzauer</td>
<td>5 Etudes: Dotzauer</td>
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<td>Kreutzer #1, Cremone, Feuillard</td>
<td>Lee</td>
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<td>Fauré – Élégie Écosses - Sonata #1</td>
<td>Appassionato</td>
<td>Sonata in C</td>
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<td>Beethoven - Sonata Op. 9 #1</td>
<td>Saint-Saens - The Swan</td>
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<td>8 Etudes: Duport, Op. 76</td>
<td>7 Etudes: Duport, Kreutzer #1</td>
<td>6 Etudes: Lee, Kreutzer</td>
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<td><strong>Pieces</strong></td>
<td>(ca. Gr. VI): Bruch - Kol Nidrei</td>
<td>(ca. Gr. VI): Faure - Elegy</td>
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<td>Beethoven - Sonata #2</td>
<td>Sammartini - G-Major Sonata</td>
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<td>Bach - 3rd Suite</td>
<td>Vivaldi Sonata</td>
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<td>Haydn - Divertimento</td>
<td>Van Gogh - Scherzo</td>
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<td>9 Etudes: Duport, Popper Op. 76</td>
<td>8 Etudes: Dolzauer, Lee</td>
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<td>Sevich, Op. 3</td>
<td>7 Etudes: Kummer, Duport</td>
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<td>(ca. Gr. VI): Dvorak - Rondo</td>
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<td>Brahms e minor Sonata</td>
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<td>Bach - Adagio, Ariosos or Andante</td>
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<td>0 etudes: Gruitzmacher, Duport,</td>
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<td>8 etudes: Duport; Popper Op. 76</td>
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<tr>
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<td>8 etudes: Popper Op. 73 Bl. 2,</td>
<td>10 etudes: Popper Op. 73</td>
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<td>Franckhommès</td>
<td>Franckhommès, Sevich, Op. 3</td>
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<td><strong>Pieces</strong></td>
<td>Junior Recital (15-45 min)</td>
<td>Beethoven - Sonata #2</td>
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<td>(at least one work memorized, 1 sonata)</td>
<td>Bach - Kol Nidrei</td>
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<td>Franckhommès</td>
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**2nd SEMESTER**

| Scales/Apps | continue scales | add fifths, octaves | continue scales |
| Technique | continue arpeggios | continue arpeggios | continue arpeggios |
| Pieces | 6 études: Popper Op. 73, Bl. 4; Senais | 6 études: Popper Op. 73, Franchomme | 6 études: Popper Franchomme |
| Seminar Perf. | Senior Recital (full recital) | Senior Half Recital | ca. Gr. VII Greg - Sonata; Saint-Saëns - Concerto | Frescobaldi - Toccata |

- (at least one major work memorized) (optional - must be approved by Jury)
APPENDIX J: TABLE OF THE PEDAGOGICAL INTENT OF THE ETUDES IN
THE DOTZAUER 113 ETUDES, BOOK 1

Etude 1: In this etude, Dotzauer explores bow distribution along with a variety of dynamics nuances.

Etude 2: This etude focuses on the *staccato* bow stroke as used in the middle and upper half of bow, although Dr. Jesselson suggests doing it *spiccato* near the frog in order to practice a light stroke with the little finger on the top.

Etude 3: In this etude, Dotzauer challenges the student with difficult slurs which can be solved using the left/right (contrary) motion.

Etude 4: This etude helps the student differentiate bow strokes and work on bow distribution. The rhythm is the same during the whole etude, which helps develop endurance.

Etude 5: This etude has this indication of “*marcato*” but can also be used at a faster tempo to work with the *spiccato* bow stroke.

Etude 6: This etude helps the student master the upper half of bow, as it is played entirely at the tip. At the bottom of the page, Dotzauer shows another possibility of bowing for this etude. If Dr. Jesselson uses this etude, he asks for the stroke in the lower part of the bow and the upper part of the arm.

Etude 7: This etude helps the student work on the best contact point while using a *staccato* bow stroke.

Etude 8: In this etude, the student can begin by working with one bow per measure. When this bow distribution is achieved, it can be learned with one bow every two measures. This etude uses first and fourth positions.

Etude 9: This etude is also played almost entirely in the upper half of the bow. It is a good exercise to develop the understanding of how to use the lower arm. If Dr. Jesselson uses this etude, he asks for the stroke in the lower part of the bow using the upper part of the arm.

Etude 10: This etude stimulates the student’s understanding of using a whole bow
stroke in an efficient way practicing using the lower/higher contact point. Dr. Jesselson rarely uses this etude because of the double stops and other intonation issues which are too complicated for an intermediate student who needs to focus on more basic issues.

Etude 11: This etude should be played in the upper half of bow, again teaching the student to recognize the importance of using the lower arm in an effective way. If Dr. Jesselson does use this etude, he asks for the stroke in the lower part of the bow and the upper part of the arm.

Etude 12: Dotzauer created this etude to help cellists develop a good staccato bow stroke. Attention should be given to the different contact points necessary. If the student is playing on the lower strings, the contact point must be higher, whereas on the higher strings, the contact point should be lower.

Etude 13: This Allegro should be played in the lower part of the bow. This etude works to develop an efficient spiccato or "brushy off the string" stroke. The lines above the notes indicate that they should be played in position, starting with IIe position.

Etude 14: This etude deals with bow distribution. Careful planning is required to have full control of the right hand. Once again, Dr. Jesselson feels that this etude is dealing with issues that are not important for an intermediate student who is working on more important issues as they start with him.

Etude 15: This etude deals with the legato bow stroke. The slurs should be played as evenly as possible. As this etude is the longest one thus far, endurance may also be an issue.

Etude 16: Dr. Jesselson uses this etude as the first one he teaches from this book with an intermediate student who is starting to study with him. In that situation the student is mostly focused on core sound, left/right motion and how to sketch an etude. The dotted rhythm is the main feature and needs to be observed carefully. String crossings, staccato dotted rhythm and legato dotted rhythm are all elements of this etude.

Etude 17: This Andante sostenuto has a melancholy tune in which the student can work on coherent phrasing. The bow distribution must be carefully planned for good tone quality. The student should focus on the crescendos to the tip and decrescendos to the frog, which requires use of bow speed. Also, full bow and left/right motion.

Etude 18: Dr. Jesselson asks for this etude to be played with the spiccatto bow stroke close to the frog, with different contact points related to each string, as discussed for etude No. 12.
Etude 19: This is an important and rather difficult etude for an intermediate level student. In this Allegro, attention should be given to bow distribution and the many dynamic markings. The problem for most students is with the accuracy of the rhythm in the beginning, since notes are tied over the bar with either quarter notes, dotted quarter notes, or eighth notes. The next major problem is figuring out how to play lots of notes in a bow with crescendos to the tip and decrescendos to the frog. Important to use left/right motion and change contact point during the crescendos. Issues with bow speed for the dynamics.

Etude 20: This etude should be played with a detaché bow stroke in the middle of the bow. Although it is marked piano in the beginning, it is better if the student plays it mezzo-forte because the detaché bow stroke should be heard clearly. Since this is a moto perpetuo type etude, finding a good tempo is important. The student should start slowly and work up the tempo with the markings on the left side of the page.

Etude 21: This Allegro moderato uses the same rhythmic patterns as the previous one. In the beginning Dotzauer wrote: WB, Pt, WB, N, WB, Pt, WB, N. All these notations refer to different parts of the bow at a slow tempo; however, for pedagogical reasons the professor can ignore these suggestions and require it be played entirely in the middle of the bow at a faster tempo.

Etude 22: The main goal in this etude is to develop an efficient spiccato bow stroke. The sempre staccato marking in measure 11 can be ignored. This etude involves many string crossings. Even though the student will likely not have studied string crossings in depth at this point (Feuillard No. 34) they should be told how to do the string crossings with the right part of the arm.

Etude 23: This etude focuses on bow distribution, using the rhythm pattern of three slurred eighth notes against a single eighth note. The student should aim to remain in the lower part of the bow and not keep moving to the tip on the eighth note passages. The other rhythmical passages should use a lot of bow, especially the quarter note triplets. The measures with 16 notes in a bow require very low contact point and attention to the dynamics.

Etude 24: A good metronome marking for this etude is quarter note = 112. In this Allegro, the student should play with a brushy off-the-string spiccato. Placing the right little finger on the top of the bow will improve the stroke considerably.

Etude 25: This etude contains many string crossings and the sound can become dry. It should be played at the frog to highlight the accents, with vibrato to improve the sound.

Etude 26: This arpeggio-based etude must emphasize the dynamics. At the bottom of the page, Dotzauer shows nine variations that can be used, changing slurs, rhythmic patterns and bowings. Dr. Jesselson rarely uses this etude, since the
issues can be dealt with in other ways and the student will not have had the
Feuillard No. 34 string crossing information yet.

Etude 27: This etude can be played with a flying spiccato bow stroke. The many
string crossings should be practiced as chords, so the cellist is aware of the
sequence of intervals.

Etude 28: This Allegro has important notations in the beginning - “LH” (lower
half) and “M” (middle)—which should be followed for a good result. The sound
should be kept even, avoiding any kind of undesirable accent.

Etude 29: Dotted half note = 50 is a good metronome marking for this etude,
which is played with the brushy, off-the-string spiccato bow stroke. This etude is
also good for endurance.

Etude 30: This Allegro non troppo has the same rhythmic pattern from the
beginning until the end; the main issue is the bow distribution and a staccato
stroke with the same sound close to the frog and further out.

Etude 31: Dotted half note = 40 is a good tempo for this etude. The whole
exercise is written with the same rhythm. Playing the dynamic markings on the
bowings as marked will help the student master the right hand. Dr. Jesselson uses
this etude to discuss keys and how to figure out what key the arpeggio is in, even
if it is in an inversion. He asks the students to write in as many keys as they can
throughout. He can then check it quickly.

Etude 32: This Allegro non troppo, also marked energico, requires an energetic
mood. It is the first time in this book of etudes that tenor clef appears. The square
hand position should be used for playing the double stops. The short notes should
be played brushy-off-the-string close to the frog.

Etude 33: This etude starts with an appoggiatura, which is tricky for students to
figure out how not to play it sounding like a downbeat. The stroke is brushy-off-
the-string, with the bow going further out for the upbow slurred 16th notes.

Etude 34: This is the most challenging etude in the book. It has mordents, some
complex rhythms and slurs. Students should first practice it thinking six beats per
measure. When the rhythm is clearly understood, it can be played thinking two
beats per bar. Many of the Dotzauer etudes are in compound meter. The should
first be played slowly with the eighth note as the beat and then sped up. Once the
student reaches 120=eighth note, they can convert it to 60=dotted quarter note.
Doing the math and understanding the compound meter, is often tricky for
students. The other issue in this etude is making a cresc/decrescendo in each
measure, with the loudest part in the 6th eighth note.
APPENDIX K: THE “HOW TO PRACTICE” FLOW CHART

Start

Play: Overall idea of piece

No

Put in fingerings & bowings

Yes

Play spots

Tear apart spots

Analyze technical difficulties of a short passage/phrase

No

Yes

Play single bows for intonation slowly checking notes

No

Yes

Single bows - no checking

Yes

Bag of Tricks

No

Yes

Play short passage

Yes

No

Connect with longer passage

No

Yes

Work up to desired speed one by one

Put #'s down side of page

Yes

No

Style/Phrasing

Yes

No

Dynamics

Yes

No

Final Playthrough

Figure out desired metronome markings

Yes

No

Playthrough

Yes

No

“How to Practice” Flow Chart
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