21st-Century Cello Pedagogy: 
Examining the Efficacy of Online Cello Lessons

by

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Abstract

The use of video-conferencing software and online platforms has brought many parts of the world closer together and has enabled audiovisual communication with greater ease than ever before. As with other technological developments, there are both advantages and disadvantages associated with video-conferencing and the rapid transmission of information. This dissertation will focus on the use of video-conferenced teaching in applied cello lessons, and will also examine subscription-based websites, in order to ascertain the efficacy of distance instruction in both synchronous (real time) and asynchronous (pre-recorded) contexts. The thesis begins with a consideration of the history of cello pedagogy over hundreds of years, from early print-based method books to the use of communication and recording technologies in the 20th century. To assess the current state of online cello instruction, the thesis includes interviews with online cello instructors and web creators, as well as a review of the author’s experience in video-conferenced lessons and other online platforms. The conclusion outlines what factors are necessary in order for effective cello instruction to take place via an Internet connection.
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Table of Contents

Acknowledgments .......................................................................................................................... iii
Table of Contents ........................................................................................................................ iv
List of Figures .................................................................................................................................. v
Forward .......................................................................................................................................... 1
Chapter 1  The Cello Method: From 1741 to the Internet Age .................................................. 5
Chapter 2  Teaching and Learning Music via Video-Conferencing and the Internet .......... 30
Chapter 3  Mike Block, John Graves and ArtistWorks.com .................................................. 44
Chapter 4  Jacob Szekely and *The Improvisor’s Guide to the Cello* ................................ 57
Chapter 5  Skype Lessons with Mark Summer, Shauna Rolston, and Erik Friedlander .... 66
Chapter 6  Justin Trieger and the New World Symphony Distance Learning Program .......... 89
Chapter 7  Minna Rose Chung and *CelloMind* ................................................................. 95
Chapter 8  Morten Zeuthen .................................................................................................... 104
Chapter 9  *Play with a Pro*: Adam Simonsen and Misha Nemtsov .................................. 112
Chapter 10  Conclusion ............................................................................................................. 126
Bibliography ............................................................................................................................... 131
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>(Corrette, 21)</td>
<td>15</td>
</tr>
<tr>
<td>Figure 1.2</td>
<td>(Corrette, 21)</td>
<td>15</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Fingerboard (Corrette, 195)</td>
<td>16</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Opening bars of Étude No. 1 (Duport, 176)</td>
<td>18</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Demonstration of thumb position shape (Romberg, 49)</td>
<td>19</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Bow hold (Romberg, 5)</td>
<td>20</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Positions (Kummer, 11)</td>
<td>22</td>
</tr>
<tr>
<td>Figure 7</td>
<td>“Re-write” of the Arpeggione Sonata by Schubert (Tortelier, 46)</td>
<td>31</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Pentatonics and The Blues (Szekely, IGC)</td>
<td>66</td>
</tr>
<tr>
<td>Figure 9</td>
<td>“The Ligament” in Connecting the Shapes (Szekely, IGC)</td>
<td>68</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Skype lesson set-up (marksummer.net)</td>
<td>76</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Julie-O, bars 1-11 (Summer)</td>
<td>77</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Hymn &amp; Fire, first movement, bars 64-78 (McIntire)</td>
<td>80</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Hotel Room Warm-up (Friedlander)</td>
<td>87</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Excerpt from Studies for Developing Agility for Cello (Cossmann, 1)</td>
<td>87</td>
</tr>
<tr>
<td>Figure 15</td>
<td>Olympic Cello Workout – Pulsation, Levels 1 and 3 (Friedlander)</td>
<td>87-89</td>
</tr>
<tr>
<td>Figure 16</td>
<td>Friedlander King Rig</td>
<td>89</td>
</tr>
<tr>
<td>Figure 17</td>
<td>In-Video Bookmarks, Strauss’ Ein Heldenleben (musaic.edu)</td>
<td>98</td>
</tr>
<tr>
<td>Figure 18</td>
<td>Tartini “difference” or “third” tone</td>
<td>106</td>
</tr>
<tr>
<td>Figure 19</td>
<td>Zeuthen in a still from a video in which he discusses a standard cello</td>
<td>111</td>
</tr>
<tr>
<td>Figure 20</td>
<td>The side-by-side set-up in PWP’s online lessons</td>
<td>120</td>
</tr>
<tr>
<td>Figure 21</td>
<td>An excerpt from Shostakovich’s Sonata in D minor for Cello and Piano</td>
<td>127</td>
</tr>
</tbody>
</table>
Forward

This thesis aimed to tackle a topic that has recently gained traction in the music education research community: the efficacy of online music instruction. Research aimed to assess whether the use of videoconferencing and online digital media content is a positive addition to teaching the cello, or whether it might be disruptive or confusing to prospective students.

I first became fascinated with this topic prior to entering the DMA program at the University of Toronto, and my interest in the practice of distance teaching came out of necessity. In the summer of 2012, while working for the National Youth Orchestra of Canada, I met a student named Bianca from India. She was a highly gifted cellist who had been flown over to Canada with her string quartet to play in the orchestra as part of an exchange. A number of months after the session Bianca reached out to me. She was in need of some help with her repertoire for a practical examination, approximately equivalent to the Royal Conservatory of Music’s grade ten level. Bianca faced one major obstacle: there was no cello teacher available in her city. We began scheduling lessons on Skype occasionally so that I could monitor her progress and we established a forum where she could ask me questions about fingerings, bowings, vibrato, phrase structure, how she might go about balancing her sound against a piano, as well as many other musical considerations.

The following summer I travelled to Bangalore, India as part of a group of alumni from the National Youth Orchestra of Canada to help create a combined orchestra with students from across their country. Bianca was there, and her practical examination was two weeks later. In between rehearsals we managed to fit in a few final sessions before I departed and went back to Canada. The next month I received a message on Facebook from Bianca: she had passed her exam, with honours.
While in India that summer I also met a young cellist named Aditya who was mostly self-taught, aside from a few lessons with a violinist. Like Bianca, he was a huge classical music lover who unfortunately lived in a city without a cello teacher, even though its population rivaled that of the Greater Toronto Area. I also guided Aditya through a level 8 exam as well as audition preparation for a program that he ended up attending in the United Kingdom and we still continue to stay in contact to this day.

These experiences made me curious as to other means that might be available in connecting musically with distant communities and students. In our current world where “there’s an app for that” it now seems that there are far fewer obstacles in the way of aspiring cellists with a desire to learn. Distance has for a long time been a barrier for many pupils looking to study with prominent teachers, dating back to the early days of music education. Though there are already many people weighing in on the pros and cons regarding the use of e-learning, we have to realize that it is still very much in its infancy. Through the internet a whole world of possibilities has been created for prospective cellists across the globe, and it is our responsibility as teachers to understand this relatively new tool.

Approximately twenty years have passed since the first videoconferenced master class took place, and there is a large enough sample size of experienced participants that we can now figure out what makes this type of teaching work, and how we might make it more effective.

When approaching the project, I initially set out several tasks: Firstly, I had to review the literature available in the field of cello instruction from the first method books in the mid-1700s (which served as the first distance teaching resources) to those of today, as well as the literature pertaining to online music instruction. Secondly, I searched the internet for various websites,
organizations and individuals who were engaging in this new form of learning. Thirdly I contacted a number of these individuals and organizations and conducted interviews and field tests in the various synchronous and asynchronous contexts.

Originally a fourth portion of the dissertation was to take place: a field test of Skype lessons and video exchange lessons with high school students at Port Credit Secondary school in Mississauga. Unfortunately, after completing the necessary ethics protocols at the University of Toronto, the proposal was rejected by the Peel Region School Board. The project would not have required a great deal of resources or support from the school board. This shows that there is still a great deal of skepticism surrounding the use of internet teaching. In more specific terms, it may mean that an attitude exists that online private instruction is best suited for undergraduate studies and beyond.

Other minor setbacks also occurred. A number of key pedagogues not featured in this dissertation were contacted for interviews and either:

1) Did not respond
2) Responded with an unwillingness to participate, or
3) Initially expressed interest in the project before email communication ceased despite repeated attempts.

As a result, many of these individuals are discussed in the paper, but only in passing.

Since the time of my major field examination I have also been fortunate to work with some of the teaching models discussed in this paper: I have completed a handful of video tutorials for the Royal Conservatory’s online teacher portal, discussing how to teach various pieces in the Level 4 and 5 curricula. These are similar to the videos created by Block and Szekely. More recently, in February 2018, my cello duo “VC2” while located at Dalhousie
University in Halifax had the pleasure of giving a live videoconferenced concert to students in various locations in Newfoundland through the Centre for Distance Learning’s affiliation with Debut Atlantic. Video-exchange and Skype lessons also became more of a feature of my own private studio. These experiences helped guide my path in research, and the literature that I had reviewed prior to these experiences greatly enhanced the final product.

I feel that this document provides a detailed snapshot of the varieties of practices of online cello learning and teaching that exist in the early stages of the 21st century, as well as current strategies employed by online cellists. As was the case with the method books of the past, concepts will undoubtedly change. In addition, technology will continue to improve. The at-home set-ups used in field work will be enhanced in Canada by the implementation of fibre-optic connections and globally by the ever-growing expansion of and improvements to the World Wide Web. It cannot be said that teaching via the internet is either better or worse than live teaching. It is clear that it will play a much bigger role going forward. It will be interesting to see where this group of cellists will take things next, and who will come up with the next innovations in online cello instruction.
Chapter 1
The Cello Method: From 1741 to the Internet Age

In a period spanning approximately 450 years the violoncello (or “cello” for short) has risen from obscure origins to widespread popularity. Thanks to advances in the instrument’s physical construction, important pedagogical publications by leading practitioners, and recent innovations in the field of technology, the instrument is now at home in a wide variety of genres and contexts.

A review of the history of the cello is crucial to an understanding of modern teaching and performance practices of the instrument. The origins of the cello can be traced to Italy in the sixteenth century. What is generally considered the first written reference to the violin family is found in the remarks made by Philibert Jambe de Fer in his Epitome Musical (1556), in which the cello is referred to as “le Bas” of the family (Cowling 1983, 55). An even earlier fresco painted by Gaudenzio Ferrari in Saronno, Italy in 1535 is one of the earliest depictions of the violin family, including what is presumably a three-string cello (Dilworth 1999, 7). The only instruments that exist from this period today are those made by the great luthier Andrea Amati; a cello that he built for King Charles IX in 1572 (as part of a group of stringed instruments to be played in his court) is the oldest surviving cello.

The first cellos were cumbersome and varied a great deal in size. The instrument’s dimensions and shape were not standardized until the time of Antonio Stradivarius (1644-1737) and his contemporaries, two generations after Andrea Amati, once the cello had become more established in European musical circles. Stradivarius perfected the dimensions of the instrument after much experimentation with his “B” form models, made after 1707, which although smaller than his earlier cellos nonetheless gave “a greater range of expressiveness and sheer power of tone to the soloist and ensemble player” (Dilworth 1999, 7). This was achieved by flattening the
arch of the table, which was previously well rounded and bulbous. These cellos are among his most famous and include the “Duport” (1711) used by Rostropovich and the “Davidov” (1712) which was played by Jacqueline du Pré (and more recently by Yo-Yo Ma). This new shape increased the projection of sound and better balanced the dark bass and bright treble. These features are what many current makers strive to achieve in their own instruments, and why Stradivarius’ instruments remain the gold standard.

Early stages of the cello’s development can be linked to the viola da gamba, the lowest instrument of the viol family (Wasielewski 1968, 1). The viola da gamba was originally the more popular low-register string instrument. The histories of the cello and the viola da gamba are closely intertwined. Some historians speculate that the cello descended from the viola da gamba, as both instruments are played in a seated position with the hands functioning in similar fashion, and with a parallel role in ensembles. Either instrument could be used in various instrumental settings, depending on the desired tone colour required. The creation of the bass instruments of both families of string instruments was due to a shift in the sound ideal of Western Europe after the Middle Ages, which had favoured high pitched registers and nasal timbres and did not require a sonorous bass voice. In the fifteenth century composers in the Flemish School began to extend the range of notated music down to a low C (the lowest note on the modern cello).

There are many differences between the size and shape of the two main string instrument families which make them unique. Early violins had three or four strings tuned in fifths, whereas the viola da gamba had five or six strings tuned in fourths with a third in the middle. The biggest difference between the two families is the use of frets, which made the viola da gamba a fixed pitch instrument. There would be no variance in the pitch produced when a finger of the left hand would depress a string between markers with the raised fret meeting and stopping the string. The
absence of frets and the resultant adaptability to different tuning systems may have helped to shift composers’ preference towards the violin family (Pyron as quoted in Pleeth, 1982, 215). Frets affected the sound quality of the instrument and also made intonation and temperament with a keyboard instrument extremely difficult. The violin family grew in popularity due to the fact that the instruments were able to adjust their pitch, and this is a good indicator of why the cello supplanted the viola da gamba as the preferred instrument in a continuo setting.

The cello gained its initial popularity in Italy, but there are not many contemporaneous pedagogical works from there which describe the technical skills needed to play the instrument. There were few cello students, and a majority of the early players were in fact converted gambists. One of the earliest virtuosi of the instrument was “Franciscello” (b. Francesco Alborea, 1691-1739) who was highly influential and inspired many musicians. Franciscello was an important figure in the spread of the instrument’s popularity and is thought to be the first cellist to use thumb position (Prieto 2011, 226), a technique that enabled playing in the upper registers of the cello. Thumb position is also a way of creating a moveable nut to facilitate playing in difficult key signatures. It is said that Martin Berteau (1708-1771), considered the founder of the French school, reportedly switched from the viola da gamba to the violoncello after hearing Franciscello perform (Bonta et al. 2016). Berteau was also known for the use of thumb position, as well as natural harmonics, and for the development of a more refined, singing colour in cello playing. Berteau has also been credited with changing cello fingering technique to a system in which one finger was designated for each half step, whereas previously cellists would play half steps and whole steps with the same finger (Walden 1999, 185). Though Berteau seemingly decided to make the switch from viola da gamba and taught himself the cello after hearing Franciscello, it is not until the end of the baroque period in France that the first method books
and tutors appear, which were designed for the beginner or converted gambist. These manuals would become more readily available with the evolution and spread of printed text.

The invention of the printing press was a significant innovation in information technology which had a major impact on the dissemination of music and educational materials about music. Though movable type printing had been invented by the Chinese some centuries earlier, the first European printing press was invented by Johannes Gutenberg in the mid-fifteenth century. Prior to this invention the music publishing industry was extremely labour intensive and reliant on copyists to physically reproduce composers’ works by hand. In the fifty years following the creation of the printing press, the price of books fell by two-thirds, which greatly transformed the way that ideas were disseminated (Dittmar 2011, 1133). This new technology and the widespread dissemination of books that resulted from it greatly increased literacy amongst the public. In the world of music, print technology led to a better-defined system of notation as well as much quicker production of music than via handwritten copies.

At the dawn of the Industrial Revolution (approximately 1760 to 1840) there was a change in the perception of musical art and practice, with post-baroque music finding a place beyond the church, marketplace and drawing rooms; it moved into concert halls that were public arenas where performances could be attended by the masses at minimal cost (Gregory 2005, 280). This, coupled with further improvements to print technology, created a higher demand for sheet music and method books. The spread of these print materials acted as the first form of distance learning.

The first method for cello was Michel Corrette’s Méthode théorique et pratique pour apprendre en peu de temps le violoncelle dans sa perfection (1741). Mentions of violoncello technique were made in other texts and treatises before Corrette’s Méthode, though the focus
tended to be on the treatment of ornamentation and other aspects of performance practice. One such publication is cellist Antonio Caldara’s (1670-1736) set of 44 “lessons” which functions more as an etude book without much in the way of instruction. Corrette’s method is interesting in that he was not himself a cellist: he was an organist who wrote methods for singing and for many other instruments, from the flute to the hurdy-gurdy. His cello method has been described as “a rich source of information about performing practice and music of the period” (Fuller and Gustafson, 2016). It is 46 pages long, with explanations ranging from the most basic concepts (the tuning of the instrument and where notes lie) up to lessons in bow strokes and double stops. It is not a comprehensive method, but it does contain more verbal description than anything that predates it (Cowling 1983, 73). The resource offers a snapshot of early cello playing, and the necessary changes needed to switch from the gamba to the cello. Corrette makes reference to placing markers on the fingerboard to indicate proper finger placement to ensure that the cellist plays in tune – something derived from the frets on a gamba, and a technique still used to this day in the Suzuki Method of string playing and also in the Rolland method. There is also mention of some cellists holding their cello by placing it on the floor. This claim was echoed 24 years later by Robert Crome, in The Complete Tutor for the Violoncello Containing the Best and Easiest Instructions for Learners (1765). In Crome’s method, the endpin, or some variation of it, was made of wood and was used to assist the player while standing or learning to hold the instrument. Though references to wooden endpins date back to Corrette and Crome, the modern endpin, made of metal and used to support the instrument with ease and to increase sound production, would not become part of the instrument until the nineteenth century; its first use is attributed to Adrien-François Servais (1807-1866) (Kennaway 2014, 7). Corrette also published rather curious fingering patterns in which he avoids the use of the third finger (Figure 1.1), or the
fourth finger (Figure 1.2) which would be considered by any modern cellist to be unconventional (Cowling 1983, 73). This was the trap that Berteau avoided in his fingering system, as mentioned previously.

![Figure 1.1 (Corrette, 21)](image1)

Figure 1.1 (Corrette, 21)

![Figure 1.2 (Corrette, 21)](image2)

Figure 1.2 (Corrette, 21)

Like later method books, such as Leopold Mozart’s *Treatise on the Fundamental Principals of Violin Playing* (1756) and a number of cello methods, Corrette’s text contains an explanation of the rudiments of music theory, as well as scale fingerings, exercises, and duets. There are almost no diagrams dealing with posture aside from the inside title page, which features a picture of a cellist draping himself over a chair. Corrette does give an accurate early depiction of the divisions of the fingerboard, however, as seen in Figure 2. His *Méthode* was directed at both the beginner and the viol player taking up the cello (Bonta et al., 2016). He also wrote many compositions for the cello, providing a glimpse of the soloistic style for the instrument at that time, including the use of thumb position.
As the cello rose to greater popularity in France, a number of pupils of Martin Berteau, the founder of the French school of cello playing, began to create resources and teaching methods that would set the tone for the future. One of the most important treatises for the instrument is the *Méthode de violoncelle et de Basse d’Accompagnement* (1805), co-authored by Pierre Baillot (1771-1842), along with Jean Henri Levasseur (1765-1823), Charles-Simon Catel (1773-1830) and Charles Nicholas Baudiot (1773-1849). This detailed guide was published by the Paris Conservatory, an institution that was crucial to the creation of standardizing method books for all of the orchestral instruments. The cello method is a composite of ideas, heavily influenced by the earlier *Méthode de Violon* by Baillot, Rode, and Kreutzer (Walden 1998, 13) and endorses many of the principles of the French style of string playing, such as grace and elegance. In the method, the instrument itself is referred to by two names: the “violoncelle”
which describes the instrument in a soloistic context, and the “basse” in cases where it has an accompanimental function or is being played within an orchestra (Bonta et al., 2016). At the time, the violin was considered the dominant string instrument, and so cellists were expected to adopt the violin bow hold with the fourth finger on top, as opposed to the underhand gambist hold that would have been used by Berteau, who did not himself make the switch to what is now referred to as the “French bow hold”.

Jean-Louis Duport (1749-1819) received the teachings of Berteau via lessons with his older brother Jean-Pierre Duport, a pupil of Berteau. Jean-Louis was a highly skilled cellist who reportedly would perform violin parts at pitch in the upper positions. At one point in his career he filled in for the violin virtuoso Giovanni Battista Viotti, and played so well that he was referred to as the “Viotti of the Cello” (Campbell 2004, 11). In 1806, he published the first of two volumes of his Essai sur le doigté du violoncelle et sur la conduit de l’archet. The second volume (ca. 1813) contains his famous 21 Etudes. This method was highly influential and has been adapted by many later methods, such as those by Baudiot, Dotzauer and Lindley, among others (Bonta et al., 2016). Duport’s systematic method presents the standardization of many fingering and bowing patterns, and these concepts heavily influenced his pupils Levasseur and Janson, and also the Paris Conservatory Method. Duport’s Essai gives precise directions on posture (left foot forward and the right drawn back), the placement of the left-hand thumb (between the first and second fingers; parallel with the stopped fingers), and the division of the fingerboard into a series of positions. In his method, Duport sought to “make easier the immense labor involved in learning to play the cello, and also to establish uniform principles for fingering the cello” (Gagnon 2006, 2). Duport was a firm believer in the use of double stops to teach
proper hand position, as can be seen in the first of the 21 Etudes used for advanced study, shown here in its original duo format:

![Figure 3: Opening bars of Étude No. 1 (Duport, 176)](image)

The principals of the *Essai*, as well as the *Méthode* published by the Conservatory, were spread by Duport’s students Janson, Jacques Michel Hurel Lamare, and Louis Norblin. Duport also greatly influenced the composers of his day, including Beethoven among others.

Beethoven also worked a great deal with the German cellist and pedagogue Bernhard Romberg (1767-1841) who had performed in both string quartets and piano trios with the composer. Romberg, together with Julius Johann Friedrich Dotzauer (1783-1860)\(^2\) would lay the groundwork for what would become a parallel school of cello playing, often referred to as the “Dresden School.” Romberg, who wrote many sonatas and concertos for cello, is best known for his method *A Complete Theoretical and Practical School for the Violoncello* (1839-40).\(^3\) In the

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1. The upper cello line is read down one octave from written pitch, as was customary at the time.
2. Author of the *Violoncellschule* comprised of 113 etudes in four volumes.
3. Romberg’s method has also been referred to as his *Violoncellschule* or “cello school.”
foreword to the method, Romberg explains his approach for writing the text: “Though many Instruction Books for the Violoncello have been published, in which players may find much that is useful, not one has yet appeared by which he who is wholly ignorant of music can be properly taught” (Romberg 1880, 5). This method was accepted as a manual used by the Paris Conservatory in 1840 and was not only published in France, but also in Germany, Austria, and England. In this method, Romberg acknowledged Duport’s system of fingering and provided more extensive instruction on advanced techniques. There are detailed descriptions of posture through the use of pictures and diagrams. His section on “Thumb Passages with an Illustration of the Mode of Holding the Hand in Playing Them” shows the preparation of the use of the thumb by using a cork in order to achieve proper hand shape (Ibid, 49). Romberg was also a proponent of using the fourth finger in thumb position, a technique later expanded upon by Popper in his *Hohe Schule des Violoncello-Spiels*, Op. 73 (1901-1905).

![Figure 4: Demonstration of thumb position shape (Romberg, 49)](image)

The method is divided into several sections with exercises ranging from simple explanations of notes on the staff and subdivisions of rhythm to the method of holding the cello and tuning. Romberg also expands his discussion to include more advanced topics in a similar fashion to Duport, by addressing harmonics, double stops, pizzicato technique, trills (the continued shake), and “shades” of bowing. The method, much like Duport’s *Essai*, has numerous
exercises written as duets which encourage the student to practice with a teacher. This use of the duo format would encourage the student to match both the intonation and bow stroke of the teacher and would also help to add a measure of collegiality to the relationship between master and pupil (Borup 2014, 7). Though many aspects of Romberg’s method coincide closely with standard practices of today, certain conventions have changed over time. Romberg was not a firm believer in the use of constant vibrato. He was also highly influenced by French and Italian cellists, and adopted aspects of their playing, such as the pronated left-hand shape that he used, similar to a violinist’s, only flipped vertically. Romberg’s bow hold resembles that of today’s cellists, especially given his description of the placement of fingers and subsequent diagram:

I hold the bow close to the frog and indeed so that the thumb lies on the upper and middle finger on the underside of the frog. The stick of the bow lies in the middle of the top joint of the thumb. The third finger lies next to the middle finger so that it covers the beginning of the frog; the little finger lies next to the third finger. The first finger is placed so that the stick of the bow rests in the first joint. All must rest firmly lying on the bow and not move while bowing. (Romberg, as quoted in Stowell 1994, 91)

Figure 5: Bow hold (Romberg, 5)

Justus Johann Friedrich Dotzauer is considered to be the co-founder of the Dresden School of cello playing, having published his Violoncell-Schule (1832) a few years before
Romberg. Dotzauer studied with both Romberg and J.L. Duport and combined aspects of both schools of playing in his method, and this synthesis of ideas is what made the Dresden School prominent in the nineteenth century. One example of the amalgamation of Romberg and Duport’s teaching can be found in Dotzauer’s description of shifting. Dotzauer combines Duport’s shape of the left hand fingers (rounded) with Romberg’s technique of shifting on one finger (Walden 1998, 123); the combination of the two approaches led to a better shifting technique than that of his predecessors (Venturini 2009, 36).

Dotzauer was an accomplished composer for the instrument, having written over 180 instructional studies and caprices, many of which are included in the most widely used later collections, such as Alwin Schroeder’s *170 Foundation Studies for the Violoncello* (1906) in which 22 of the etudes are Dotzauer’s. This is also the case with Alfredo Piatti’s method, which includes pre-existing duo studies by Dotzauer, Duport, Kummer, Romberg and others alongside newly composed duets by W.E. Whitehouse and R.V. Tabb. What we also see in later method books is the combination of ideas from different sources, such as the “Dotzauer-Klingenberg tutor”. Klingenberg, a student of Grützmacher, combined three volumes of Dotzauer with exercises by Duport in a systematic fashion (Campbell 2004, 37), further strengthening the amalgamation of the two great schools of cello playing.

Branches begin to emerge from these two cello schools. A number of pupils of J.L. Duport and Romberg began to expand on the concepts of their masters, leading to the creation of many of the technical exercises and methods used today for classical cello instruction. Friedrich August Kummer (1797-1879) was a student of both Romberg and Dotzauer and wrote his own *Violoncell-Schule* in 1839. As was customary, Kummer made direct reference to his mentors, mentioning several exercises by Dotzauer, Grützmacher, Duport and Franchomme (among
others) for further development in the forward to his method. His method is laid out in similar fashion to Romberg’s, with detailed instruction on the rudiments of playing, intervals, and scales. Kummer, much like Corrette, included a helpful guide to the positions on the cello, this time on a staff:

![Figure 6: Positions (Kummer, 11)](image)

These methods, and the activity of these cellists, helped carry forward the principles of the Dresden School, which were closely tied to principles of the Viotti school of violin playing in aspects such as sound, technique and musicality (Campbell 2004, 35). Another one of these disciples was Friedrich Wilhelm Grützmacher who was a well-known performer and pedagogue responsible for a number of transcriptions for the instrument, much like his contemporary Kummer. Grützmacher’s 12 Etudes Op. 72 and his Daily Exercises Op. 67 are foundational texts for any conservatory or university cellist. In the French School of cello playing, similar texts were written by Louis Feuillard. His Daily Exercises for Violoncello (1919) begins with a systematic guide to shift from first to sixth positions (and everything in between), then moves on to three note pattern exercises, larger shifts and scales and arpeggios in all twelve keys. Violinist
Otakar Ševčík’s methods were transcribed by Feuillard, creating the *School of Bowing Technique for Cello*. This method, in several volumes, is the most effective method for teaching the use of the various parts of the bow, and the various strokes available on stringed instruments. Feuillard also wrote many works for young cellists, including his *Méthode du Jeune Violoncelliste* (1925).

In the course of the twentieth century, a global school of cello pedagogy began to emerge. By 1900 over 80 methods had been published for the cello, with many more to come. Cellists who had studied with descendants of Duport and Romberg began to expand on their concepts in their respective countries, adding their own idiosyncrasies and forming new schools of cello pedagogy. Karl Davidov (Russia), David Popper (Hungary), and Nicholas Joseph Platel (Belgium) are considered by a number of scholars to be the founders of their respective national schools of pedagogy. Popper’s influence extended to North America through Janos Starker, a long-time teacher at Indiana University who had studied with one of Popper’s many pupils.

Popper is known for his many compositions for the cello, including 65 *Characterstücke* (“character pieces”) which are highly virtuosic works typically in quick tempi, including the well-known *Elfentanz*, Op. 39 (The Dance of the Elves). He did not write a traditional method but did leave behind his *Hohe Schule des Violoncello-Spiels*, Op. 73 (*High School of Cello Playing*), which consists of forty difficult etudes for the instrument. These etudes were originally published in four volumes between 1901 and 1905, with each edition being dedicated to either a cellist or composer (Park 2007, 8). The creation of these etudes by Popper was born of necessity. Popper was part of an opera orchestra and performed a number of works by Wagner and Richard Strauss, who were writing cello parts equal in difficulty to those of the violins (Venturini 2009, 2), and thus Popper needed to create an aid to assist himself and future cellists in navigating the
passages of the new style of composition. Study number 19 is aptly nicknamed “Lohengrin Study” for its similarity to a specific passage from Wagner’s opera.

Pablo Casals (1876-1973) was a cellist who formed his playing style outside of the framework of the two predominant schools, and his principles originally met with some resistance. Over time his techniques have become much more commonplace. Paul Tortelier, another famous performer, pedagogue and pupil of Casals, claimed that he “was probably the first cellist who played with a pianistic left hand. The correct lifting of fingers is as important as their falling” (Tortelier 1985, 54). Though Casals had a great number of idiosyncratic features to his playing and teaching, he did not ever put pen to paper to create his own method. However, he did influence many other cellists to do so. Some of his most notable pupils include Emmanuel Feuermann, Gaspar Cassadó, Maurice Eisenberg, Pierre Fournier, Paul Tortelier, Maurice Gendron and Mstislav Rostropovich (Campbell 1999, 81-82).

Casals also played an integral role in early sound recording by being the first to record Bach’s Six Unaccompanied Suites for the Cello. Before Casals, these pieces, if they were played at all, were used mostly as etudes, with some arrangements even being made for cello and piano by the notable cellists Grützmacher and Alfredo Piatti, and even by the pianist and composer Robert Schumann. The first recorded sounds were made in 1877 and the invention of Edison’s phonograph (or “Talking Machine”) in 1878 revolutionized how we listen to music and helped better define performance practice. Though Casals was not keen on recording, calling the microphone “the steel monster” (Siblin, 2009) advances in audio technology began to raise the overall level of accuracy in pitch and have at times created standard interpretations of tempi in a

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4 The gramophone record was created in 1895, followed by various other formats of recording technology, including the LP recording (1948), cassette tape (1963), 8-track tape (1965), compact disc (1982), and digital files such as the WAV (1991) and MP3 (1993).
great number of masterworks. Even in the beginning, the phonograph’s purpose in music
education and appreciation was clearly laid out by its inventor:

The phonograph will undoubtedly be liberally devoted to music. A song sung on the
phonograph is reproduced with marvelous accuracy and power. Thus, a friend may in a
morning-call sing us a song which shall delight an evening company, etc. As a musical
teacher it will be used to enable one to master a new air, the child to form its first songs, or
to sing him to sleep. (Edison as quoted in Taylor, Katz, Grajeda, 2012, 35)

Recorded sound enabled the preservation and enjoyment of music and in conjunction with
the written word began to better define the principals of master pedagogues. In America in the
nineteenth century, the goal was to teach students how to make music, particularly through
singing, whereas in the twentieth century the focus shifted to appreciation and the creation of
more classical music listeners (Katz 2010, 68-69). In articles from the early twentieth century,
teachers were asked whether they felt that the phonograph (and other mechanical music devices
such as the player piano) were helping or hindering our understanding of music. Many felt that
teaching methods involving recorded sound greatly improved their student’s ability to learn and
appreciate music. One teacher went as far as to state that with the assistance of technology “the
methods of teaching today are far in advance of those even twenty-five years ago” (Andrews as

The phonograph also created the first ever distance music lessons: The Oscar Saenger
Course in Vocal Training (1916). The prospectus reads much like those of modern online music
courses dating from over 100 years later:

The period of study is unlimited. Day after day the student may go over the same lesson
and hear again and again those little details that a teacher gives during a single lesson at
stated intervals only, but which may be overlooked subsequently as the instruction
proceeds. These lessons will be at hand for continual reference at any and all times …
Teachers, especially those who have devoted themselves to work in the smaller cities, far
from contact with the wider musical activities, will find this Saenger Course a valuable
adjunct to studio work, for it will give them correct examples to serve as illustrations of their own instructions (Saenger as quoted in Taylor, Katz, Grajeda, 2012, 103-104).

Though the public’s general outlook on recorded sound was mainly positive, others were less willing to engage with change, such as the famed bandmaster and march composer John Phillip Sousa who foresaw “a marked deterioration in American music and musical taste, an interruption in the musical development of the country, and a host of other injuries to music in its artistic manifestations, by virtue – or rather by vice – of the manipulation of the various music-reproducing machines” (Sousa 2012, 113).

Competition amongst phonograph manufactures arose with the emergence of radio and the broadcasting of live music, which would become popular shortly after the end of World War I. This adaptation of technology that was heavily used by the military became another means of bringing music to the masses and had the advantage of being uninterrupted in nature, while records required flipping every few minutes. Though both records and the radio made music available anywhere at any time, the radio was free to the listener, prompting a “Radio-craze” in the mid-1920s (Millard 2005, 136); the blow to the phonograph’s popularity was similar to the effect on film and television with the introduction of online video streaming via the Internet. Phonograph companies struggled to meet the competition from the new medium. The interest in music education and appreciation began to shift towards the radio, though physical recordings continued to be produced.

There were a great number of radio programs devoted to musical education, such as NBC’s Music Appreciation Hour conducted by Walter Damrosch. This program in particular was geared towards young students and had accompanying workbooks. Theodor Adorno had little appreciation for this development, and in a review of Damrosch’s program he stated that:
Not only is the purely musical part of this program insufficient musically and pedagogically … it also leads to a fictitious musical world ruled by names of personalities, stylistic labels, and pre-digested values which cannot possibly be “experienced” by the audience of the Music Appreciation Hour, since the program presents the material in a way designed, wittingly or unwittingly, to foster conventional, stereotyped attitudes, instead of leading to concrete understanding of musical sense (Adorno 1994, 326).

While Adorno disagreed with the way that radio was being used for music appreciation, others were more favorably disposed. Sousa, who had earlier warned about the effect recordings would have on music, remarked that the “radio’s power to educate and entertain the public is without limit … In my opinion it has come to stay forever” (Sousa as quoted in Taylor, Katz, Grajeda, 2012, 309). Nikolai Sokoloff, Director of the Cleveland Symphony Orchestra, claimed that “before the advent of radio the ordinary man in the street did not have the time or opportunity of cultivating his longing for the better things in the musical world” (Sokoloff, as quoted in Taylor, Katz, Grajeda, 309-310).

Recorded sound by no means diminished the need for method books. If anything, the boom in musical interest encouraged the production of even more pedagogical materials. A colleague of Casals, Diran Alexanian (1881-1954) was one of those who met this need. Though Alexanian was student of Grützmacher, he took a slightly different path from teachers of the French and Dresden schools of thought. He and Casals collaborated on Alexanian’s Traité théorique et pratique du violoncelle (1922). In the forward to the method, Casals offers his own opinion on the state of methods near the turn of the century:

As regards the “classical” methods that I have seen I would say that they do not represent any period, in that their authors, without any further research, have contented themselves with noting down the out-of-date “laws,” purposely ignoring the innumerable technical formulas of our times, under the pretext of being their “exceptions” or the result of “individual license.” If I attack this absence of pedagogic progress it is because of the personal conviction that certain “rules,” considered at one time indispensable for perfect execution, are not only useless, but might in our day be considered nefarious. Instructional music has gone through an evolution that the violoncello “Methods” alone have refused to follow (Alexanian, 3).
Casals went on to state that Alexanian had finally provided an analytical “dictionary” of cello technique and a “well elaborated plan for the analysis of the theory of violoncello playing” (Alexanian, 3-4). The treatise contains a great deal more text than anything that predates it, along with numerous photographs (unlike the hand drawn illustrations of previous methods) of correct positioning, examples from the literature, and exercises, in what would seem like an effort to put Casals and his own “controversial ideas into practice” (Campbell 2004, 111). Alexanian took over Casals’ class at the École Normale in Paris from 1921-1937. Alexanian was also a key figure in North American string pedagogy, as he taught at the Peabody Institute in Baltimore and the Manhattan School of Music in New York. Many virtuosi of the instrument frequently sat in on his classes, including Piatigorsky, Fournier, and Feuermann (even though he himself was a professor at the Hochschule in Berlin). According to Campbell, one either loved or hated “Alex,” who flouted the teachings of many pedagogues who were still teaching an “antiquated style of playing, characterized by slides; no importance was attached to the relationship between the pupil’s physique and his ability to handle the instrument” (Campbell, 112). This disagreement as to the proper style of cello playing in part reflects the fact that recordings were beginning to have a strong influence on the aesthetics of sound production.

Much like the diversity that was found in earlier method books, so too different types of recordings were created to assist pupils in learning standard repertoire. The Music Minus One label released LP recordings beginning in the 1950s that included string quintets and chamber music by Schubert, Mozart and Schumann. These were recordings of the full work “minus” one of the voices which would be filled in by the pupil or amateur musician. The label expanded on this in future volumes to include concertante works with full orchestra minus the soloist. In 1956 one of the great performers and educators of the time, the violinist Joseph Fuchs, indulged the
company by playing the solo part on his 1722 Stradivarius violin, accompanied by one of the recordings and remarked that:

Within the confines of his training, a student can do anything with these records. And they are probably good for the professional soloist, too. And music conservatories! The student can form his own musical opinions and get a good idea of working with an orchestra (Schoenberg 1956).

This company has continued in operation to the present day; packages of sheet music and their respective recordings are now easily downloadable at www.musicminusone.com. The use of recordings has since continued to be a feature of many methods of string playing, including the Suzuki method and the more recent O’Connor method (see www.oconnormethod.com). In Canada the most recent editions of the Royal Conservatory of Music’s “Cello Series” music scores include full recordings of the compositions performed by top tier soloists, as well as tracks that are similar to the “Music Minus One” recordings in that they feature the piano part without the soloist. The knowledge gained through this practice when live accompaniment is unavailable is helpful in developing good ear training and an understanding of the complete work.

Following closely upon the development of recorded sound there was great progress in the field of video recordings. Though the first moving pictures were captured in the 1890s, the use of television and film took somewhat longer to catch on in the field of music education, with many inventors of the medium spending a considerable time attempting to solve the problem of synchronizing the picture with sound (Millard 2005, 147), not unlike one of the premiere issues that persist today in Internet teaching. Film, like music recordings, began its development just before the turn of the twentieth century, though it was not publicly accessible until a number of

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5 The television was created in the late 1930s, with colour television following in 1944. Various video file types emerged including the VHS Tape (1951), DVD (1997) and Blu-ray (2006). The turn of the twentieth-century saw the creation of Vimeo (2004) and YouTube (2005) where a great number of historical audio recordings and videos can be found without charge.
decades after radio. The advances in technology in the 1960s and 1970s allowed for a much more accessible way for people to express their thoughts through this medium. In the field of music appreciation, classical music’s first TV star was Leonard Bernstein, who appeared in numerous televised concerts with the New York Philharmonic on CBS from 1958 to 1973, many of them geared towards young people. These presentations were given in a music-with-commentary format and went on to win multiple Peabody, Emmy and Edison awards.

A number of videos exist today on YouTube of performances originally recorded for television by greats including those that studied with Alexanian (Piatigorsky, Fournier, and Feuermann). In the area of teaching many masterclasses were recorded on video, including those by Paul Tortelier (1914-1990). Tortelier, who also studied with Casals, wrote a method entitled *How I Play, How I Teach*, focusing on a more personalized approach to playing that was specific to his own style of playing, unlike earlier, formulaic methods. As a teacher Tortelier became well known in the United Kingdom through a series of televised master classes, one of the most famous of which features Clive Greensmith (formerly of the Tokyo String Quartet). A portion of this video can be viewed on YouTube. Similar video instruction was created by the French cellist André Navarra. He released *My Cello Technique* (1969), a series of videos that are of particular interest since they are more of a one-on-one tutorial, similar to the type of discourse one might find in a method book but with the added feature of physical demonstration.

Much like Alexanian, Tortelier’s publication offers much more specific instruction on examples from the virtuoso repertoire written for the instrument. Unlike the methods written by Jean-Louis Duport and musicians associated with the Paris Conservatory, this guide caters to the needs of a more advanced student, whereas the methods written by Romberg, Kummer and

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6 See https://www.youtube.com/watch?v=VWWbcvlQGm4.
Alexanian span a larger range of abilities, as their titles suggest. Tortelier even transposes certain passages in order to pass on certain elements of playing, as can be seen in this example from Schubert’s *Arpeggione Sonata* transposed down a fifth to facilitate the left hand. The arrows indicate “spending the bow quickly” followed by “saving the bow”:

![Re-write example](image)

Figure 7: “Re-write” of the Arpeggione Sonata by Schubert (Tortelier, 46)

In North America, string education blossomed much later than the schools in Europe. As noted above, Alexanian taught in New York and Baltimore, beginning in 1937. After the Second World War there was a greater demand for musical education, due to the rise in availability of radios and recordings, and by 1945 string programs were introduced into many North American public schools to match existing wind programs (Bosanquet 1999, 203). Private cello teaching began to rise world-wide due to the rise of the motor car for transportation and the increase in the production of smaller instruments and bows for children (Bosanquet, 204). These factors helped pave the way for a pair of violin pedagogues whose principals were applied to the cello. The systems of teaching children by Shinichi Suzuki (1898-1998) and Paul Rolland (1911-1978)\(^7\) were revolutionary in inspiring young string players. Suzuki’s method, based heavily on ear

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\(^7\) Rolland was one of the founders of the American String Teachers Association.
training, uses Corrette-like fingerboard markings and is perhaps the best-known method for children in North America, with a great deal of teacher training available for interested pedagogues. Rolland’s violin method, *The Teaching of Action in String Playing*, is less familiar to cellists and though not frequently used it has been adapted for the cello. Both methods use piano accompaniment from an early stage, beginning with open strings. This was a key feature in a number of previous string playing methods to teach stability in intonation, such as the method by Fuchs (Venturini 2009, 85). Suzuki’s method has also included audio recordings of repertoire for students to listen to, as well as the same recordings without the student’s part for them to play along to.

Another teacher whose legacy has been well documented through both audio and video recordings is Janos Starker (1924-2013), one of the most highly influential cello teachers in North America. Starker taught at Indiana University from 1958 until his death, and created his guide *An Organized Method of String Playing* (OMSP) in 1961 after his students for years had been passing along his exercises by copying them down on paper. The text itself is comprised only of left hand exercises, and is meant to bring stability to the fingers; much like Duport it relies heavily on double-stops. Starker divides the fingerboard into twenty-four positions, and though the double-stops are designed for advanced students, they can be adapted for beginners (Bosanquet 1999, 207). In his autobiography, Starker talks about the OMSP seminars that he had been presenting in private homes and music schools on four continents beginning in 1955, and he provides a much better description of the technique that he practiced and taught. Starker had studied with Adolf Schiffer, a student of Popper who had taken over his class at the Royal Academy of Music in Budapest. Influenced by Schiffer’s principals on removing unnecessary

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8 When originally published this method included a set of VHS tapes.
movement, Starker divided his “method” into four categories: Playing Preparation, Right Arm-Hand-Fingers, Left Arm-Hand-Fingers and Musical Application (Starker 2004, 136). These seminars can still be viewed today on YouTube, as well as videos of several master classes with the highly philosophical pedagogue.

Methods such as those from Corrette to Starker have acted as auxiliary aides for master teachers to pass down their wisdom to future generations and provide a framework on which teachers can model their approach. In this span of time there have been several innovations in fingering, posture, the practice of teaching intonation and the concept of musicality. Aside from additions such as the end pin, the Romberg fingerboard, longer (convex) bows, and the change from gut to steel-wound strings, there have not been a great many physical changes to the cello since the time of the key method books. Composers are now writing in completely different idioms that require new techniques. Through advances in technology we have become better able to capture the ideas of master teachers through audio and video recordings, and we can now share these promptly via the Internet.

Though methods serve a great purpose in the development of an aspiring cellist, they are not able to replace one-on-one instruction. The very intention of the publication of method books was that they would be used as study guides for a pupil in conjunction with work with a teacher. These exercises and explanations are highly beneficial if properly understood or prescribed. Tortelier stated in his method that “Pablo Casals complained sometimes about some unnatural exercises which were given to him when he was a young student. It is doubtful, however, that it did him any harm. On the contrary, one can very well say that, had he been without them, he

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9 The Romberg fingerboard is longer than earlier cello fingerboards and it includes a lengthy groove in the board allowing for extra space on the plane of the C string. This can also be found on some violas from the period.
might not have mastered cello technique as he did” (Tortelier 1985, 30). The widespread use of method books led to a more cohesive global school of cello playing with these resources acting as the first means of distance education. Cello pedagogy today is becoming a much more global practice, and the Internet may well offer a more effective and fulfilling means of passing on the technique of cello playing to future generations.
Chapter 2
Teaching and Learning Music via Video-Conferencing and the Internet

Teaching lessons virtually would never have been possible without the creation of the Internet and the many innovations beforehand in recorded sound and telecommunications. In previous centuries, the means of reaching a global audience instantaneously were significantly limited by the technology available. Now that simulating live teaching experiences is much more feasible, a great deal of research is being done to measure the variables at play in the new forms of instruction. Just as recording technology transformed the music industry in the early twentieth century by allowing performances to be shared beyond local audiences (Milner, 2009), online music education has provided opportunities for learning and collaboration that previously did not exist. Questions have been raised regarding the teaching environment, the teacher-pupil relationship, and the technology needed to facilitate high quality audio and video transmission, and solutions are being found through experimentation and adaptation.

The introduction of the World Wide Web in the early 1990s created numerous ways to connect pupils with teachers regardless of geographical proximity. The first online classes occurred in 1994, a year after access to the Web was made free of charge; these classes involved the use of taped lectures (Levy 2003). In the field of music, the first instance of an online classroom came a few years later. According to numerous sources, including Juntunen (2011) and Davies (2015), the first virtual, distance masterclasses involving string instruments took place in 1997. World renowned pedagogue and performer Pinchas Zukerman was able to teach a group of students in Helsinki, Finland in real time while located at the Manhattan School of Music in New York. This intercontinental session was made possible by the Manhattan School and the Helsinki Telephone Association, and used a connection that would have been significantly more powerful than the publicly available Internet at the time. Video-conferencing
began as a very costly service offered by telecommunications companies before the Web existed and has since become both functionally and financially accessible. Since the dawn of the Internet age numerous applications, websites, and freeware have been created that have allowed a great percentage of the musical population to communicate and connect. Around the time of Zukerman’s distance masterclass, the computer networking consortium now known as “Internet2” was founded. With an Internet2 connection, users are able to access higher bandwidth (faster rate of signal processing) with lower latency (less delay in data transfer), enabling them to use video-conferencing programs with better results, as will be discussed in more detail in later chapters. In recent years, Internet2 has partnered with the New World Symphony (NWS) and assists the orchestra with a number of its initiatives. Through usage of the high bandwidth / low latency network, this training orchestra allows its musicians to engage in various coachings, lessons, masterclasses, composer reading sessions, and performances with artists located outside of Miami where the program is based. In partnership with a number of institutions of higher learning, the NWS curates the website MUSAIC (www.musaic.nws.edu) where a library of some of these interactions is available for viewing by the public.

Though Internet2 is not available to the public, constant improvements to freeware applications such as Skype (created 2003) and better, more affordable high-speed connections available through Internet providers have facilitated access to good quality real-time video-conferencing. Skype began solely as a medium for transmitting speech but has since expanded to include video and conferencing features. Skype and other similar freeware applications have been used by many educators to teach students from a distance. There are also other costlier video-conferencing interfaces being used to teach. Cello professor Richard Aaron has gained attention for his use of *LifeSize Passport* – a video program and maneuverable camera apparatus
created by LifeSize Communications. Aaron’s first encounter with distance teaching involved traditional video-conferencing software, when a family from Montana with four young cellists inquired about taking lessons with him as there was not a suitable cello instructor in their town. Many years after his initial experiences with video-conferencing technology, while teaching at the University of Michigan, Aaron was offered a position at the Juilliard School of Music in New York City. He was able to set up LifeSize systems at Juilliard to teach his students while residing in Michigan. Although he still travels to New York City many times during the school year, this highly interactive tool has allowed him to maintain studios at two major American institutions.

Most recently, community-based subscription video reference websites have also appeared. Artist Works is an online music school that specializes in instrument instruction using a combination of pre-recorded video tutorials and personalized video responses from cellist Mike Block. Other online schools include The Improvisor’s Guide to the Cello (created by Jacob Szekely), which focuses on video tutorials outlining new ground-breaking techniques to be used when playing cello in a jazz context. The “Play with a Pro” website allows users to access a number of online cello teachers and to view (through purchase) a series of exclusive masterclass videos of renowned pedagogue Ralph Kirshbaum. CelloMind (https://cellomind.com), created by Hans Jørgen Jensen (Northwestern University) and Minna Rose Chung (University of Manitoba) and detailing systems of intonation and technique, is a publication which includes an online platform that is updated with relevant videos periodically.

There will always be interest in capturing sound and video to try to reproduce the feeling generated by live performance. One teacher stated in 1916:

But no matter how perfectly these mechanical instruments may approximate the performance of the artist-musician, they will never supersede him nor quench the desire of any person with music in his soul to equip himself as far as possible for self-expression

Technology is a tool and in the world of music, more tools are being added to the tool box. Qualities such as convenience, repeatability, and affordability are all advantages that make distance learning popular and are the same qualities that “underpinned the explosive popularity of recorded music in the early days of the phonograph, which displaced some amateur music-making at home and music pedagogy at many schools” (Miller 2012, 164). Similarly the traditional conservatory model of instruction is now being supplemented and perhaps even challenged by online platforms that make music education more readily available to all.

Advances in information technology have led to many innovations in music and music education; more specifically, Internet resources are enriching the lesson experience for both teachers and pupils, and are spreading ideas globally, just as the early print resources did, but with greater rapidity. Modern teaching has evolved with what this author will refer to as “living method books” which are continually updated by their authors. A number of these methods cover cello technique in alternative contexts, notably North American centered styles of improvisation in jazz and bluegrass, as well as world music genres.

Research on distance lessons, or as Davies describes it “distributed music practice” (Davies 2015), has focused primarily on the technology used to facilitate lessons, in some cases tracking latency thresholds rather than qualitatively analysing the learning experience. A great deal of the research discusses high bandwidth, low latency connections that are only available to networks in places like Silicon Valley and major universities. Studies for the most part engage in experimentation, and researchers are keeping an open mind with regard to new developments. As Justin Trieger, Director of New Media and Distance Learning at the New World Symphony, states: “Our motto is ‘whatever works’” (Trieger, 2017).
As mentioned previously, the earliest video-conferenced masterclasses were only able to take place with the assistance of global telecommunications companies. The original purpose of this technology was to transmit business conferences with simple audio (Juntunen, 2011). The creation of Skype (Denmark) and YouTube (United States) in 2003 and 2005 respectively helped small businesses, and its modified educational application launched an approach to teaching that was easily available and affordable. These two freeware applications\textsuperscript{10} created a divide in how teaching and learning online take place: both synchronously (video-conferenced lessons) and asynchronously (subscription/free lesson tutorials). Shortly after the launch of YouTube, a great number of subscription based online schools emerged, and a number of teachers began to experiment with video-conferenced lessons. Several strong research communities in a number of countries with dispersed populations (like Canada) are aiming to develop the means to distribute equal levels of education to remote locations within their borders and beyond. This dispersed form of education is not limited to music, and the literature relating to video-conferencing education pertains more to the areas of surgery and nursing, where visual quality is extremely important (Levinsen, Orngreen, Buhl, Jakobsen and Andersen, 2011).

In Finland, a country where the population is heavily urbanized, researchers are looking for ways to spread music to the more remote, “unreachable” rural areas. The most intriguing of the projects in Finland was the Vi R music research project set up by five institutions in Northern Finland, Sweden, and Norway, aimed at increasing the knowledge of virtual music teaching among students and teachers. The project had its final session in 2010, and the comprehensive findings were published in the “Vi R Music Handbook” by Noa Nakai, one of the music technologists at the Särestö Academy in Finland, in 2011. The resource aimed to tackle the most
\textsuperscript{10}Available without charge; Skype currently runs on a freemium business model, with basic services available for free and additional premium features available for a charge.
popular and practical solutions to standalone video-conferencing and related subjects including software solutions, networks and room design, with the focus being placed on finding solutions to enable the highest quality of audio and video transmission (Nakai, 2011). The document is quite similar in layout to the early method books published by string pedagogues, detailing how to address technical issues in a way that is accessible to readers without much need for prior technical background or knowledge. Subjects such as echo cancellation, peripherals for video-conferencing, and available software are explained in a way that music teachers could easily understand and implement. Even though the publication is relatively recent, some of this information has become outdated (especially the chapter “The best of distance teaching technology 2010”) due to the rapid developments in technology. Nevertheless, this resource could be considered the first “method book” for online teaching of music.

In reading this resource, a traditional music teacher would understand that there is a wealth of knowledge that needs to be attained prior to engaging in online teaching. Reflecting on paradigm shifting books by Kingsbury (1988) and Nettl (1995), author Kiri Miller states that “online music teachers have to work at imagining the specific questions and concerns of the student on the receiving end. This is a major shift from the intimate social dynamics of face-to-face instrumental lessons” (Miller 2012, 163). Many of the concerns are separate from those we would experience in a live, in-person lesson, including issues such as volume, viewpoint of the student, and the use of space in performance. These issues vary from instrument to instrument. There are large discrepancies in how classical musicians understand online resources, since musicians are generally not taught about these resources in school, but now should be required to know the differences between “audio software as a linear tape recorder and understanding it as an instrument that responds dynamically to performance gestures” (Brown 2015, 5). In video-
conferenced and asynchronous online teaching, there are a great number of supplementary tools that a music teacher will need to know how to use: music notation software, music games/apps for rhythm and pitch, and audio recording software are just some of the tools available to musicians who wish to communicate digitally. A distance student could be assisted in learning how to practise with an accompaniment by receiving a MIDI file created with Sibelius (Juntunen 2011, 8-9), assuming that they have the necessary software. Though there are technical problems to understand and overcome in terms of broadband speeds and latency, the main point of contention to teaching via this method is the difficulty in developing interpersonal relationships, and the lack of social interactions that one might experience in a more traditional setting. Nevertheless this method has opened up many possibilities in remote corners of the globe, especially through freeware applications.

A study was completed in 2010 involving researchers in Minnesota and a pair of young piano students in rural Macha, Zambia. The researchers chose to teach piano students because with Internet MIDI technology they were able to supersede the poor audio quality of video-conferencing software (Shoemaker and van Stam, 2010). Through the course of the study, the researchers had to modify their approach of simply having live video-conferenced sessions with the two students (aged 8 and 10) due to the lack of bandwidth available in their small city, as the connection was shared amongst a large portion of the population. The team began sending the students pre-recorded lessons detailing the process of learning a specific technique or short piece, which the students were then able to download outside of peak hours to review. Students could watch the lesson as many times as needed, and then were required to respond to the researchers with their own video of the technique in a process the researchers termed “time-lapsed learning”. This is similar to the instruction provided by methods such as Rolland’s that included video
demonstration, with the added advantage of a reciprocal relationship between the pupil and the teacher. Convenience is added as the student is able to review the material an unlimited number of times, which can lead to greater understanding than simply hearing a teacher in a lesson once a week. The drawbacks relate to the aforementioned difficulty in establishing a relationship with the student; in addition, the immediate interaction that is customary in classical music teaching was not possible. This makes it difficult to nurture the process of discovery in learning, which in turn can result in confusion if a student is unclear about a concept in the pre-recorded video (Shoemaker and van Stam, 2010). This type of online learning could have stemmed from the rise in subscription lesson websites in the early 2000s, especially given the ease of sending videos created by websites such as YouTube and Vimeo (the latter has fewer advertisements to distract the learner). These exchange lessons have gained credibility in light of the development of websites such as Artist Works, as will be explored further in later chapters.

In terms of stand-alone desktop video-conferenced lessons, or weekly “conservatory-style” scheduled video-conferenced lessons, the general consensus thus far is that this method is supplementary, meaning that if someone wanted to take traditional lessons solely via an Internet connection it would generally not be advisable. Simple considerations such as direct eye contact are at times difficult to achieve as the eyes are typically drawn to the screen and not the camera capturing our reactions (Orman and Whitaker, 2010). Keith Dye, in his study involving middle-school aged band students, emphasizes that teachers need to utilize efficient verbal instruction, more-so than is the case with lessons in person. As an aside, Dye notes that video-conferenced lessons would be more effective in combination with other online and computer resources, such as Berklee Shares (a free resource including lessons, MP3s, QuickTime and PDF downloads; see www.berkleeshares.com) and SmartMusic (https://www.smartmusic.com/) computer generated
accompaniment (Dye 2008, 203-204). Concerns in this medium pertain mostly to the lack of reliability, accessibility and quality of both audio and video transmission. Whereas video-exchange lessons can be shot in high definition and modify aspects of audio and video in post-production easily, Dye notes that poor live sound and image quality could deter both instructor feedback to the student and the student’s observation of the instructor modelling the technique. Though there are many drawbacks, there are also significant benefits compared to traditional applied teaching, such as reduced travel time. For example, Richard Aaron, who as mentioned is a professor at both Juilliard and the University of Michigan, is still able to meet his on-campus lesson responsibilities without sacrificing the integrity of instruction. He is then able to make better use of his professional and personal time by travelling between the two locations less frequently. The technology also allows learners in remote areas to have the opportunity to be served by capable instructors; students who might not have access to specialized instruction due to economic or geographical considerations can gain invaluable experience (Dye, 2008).

The main technological problem in video-conferenced lessons is when the visual and audio feeds are out of sync (latency). Without high bandwidth, low-latency networks, Internet connections can experience a significant delay between audio and video transmission. Classical musicians are accustomed to some delay: players in chamber ensembles typically experience latency of around 5-10 milliseconds, while the distance between the double bass and second violin sections in an orchestra creates much higher latencies (Davies, 2015), and section players are at times encouraged to play ahead of the information received from the conductor. The aim of a number of studies, such as the one by Davies, is to determine what the ideal latency threshold might be so that the online interaction is less distracting and best able to mimic live
situations. While H.323\textsuperscript{11} standard video-conferencing programs such as Skype are able to operate on low bandwidth networks, the audio is meant for voice communication. Apps like Skype employ automatic echo cancellation features which cancel some frequencies and make it impossible for two individuals to play at the same time. Latency in standard video-conferencing programs can be between 200-300 milliseconds (Davies, 2015), and the more widely available, less expensive or free programs are generally not suitable for synchronous online lessons.

Dye’s study and the Zambia study involved young children, a generation that has grown up with the Internet. At the university level, partnerships have formed between institutions, such as the one cultivated in a 2011 project which included the Royal Danish Academy of Music (RDAM), Manhattan School of Music (MSM), Sydney Conservatory of Music, and Eastman School of Music. With learning in many disciplines outside of music shifting from the classroom to online platforms, leading institutions are looking to develop sustainable teaching practices and to expand their international networks. The results have been intriguing. In the Werner Herzog documentary, \textit{Lo and Behold: Reveries of the Connected World} (2016) Sebastian Thrun compared teaching a class in person at Stanford with 200 students physically present in the classroom and teaching the same class to 160,000 students online. After completing the course, he was able to rank the “privileged” Stanford students against students who were not in the classroom; the top 412 students in the class were from the latter category (Herzog, 2016). The comfort level for students to engage in online instruction is not as alien as it might have been for a previous generation. A distance session between RDAM and MSM in 2011 observed that:

\begin{quote}
Apart from the immediate surprise of the test participants at how comfortable they felt with the video conference situation, the discussion revolved on the pedagogical and
\end{quote}

\textsuperscript{11} H.323 is an industry standard that defines protocols for audio-visual communication via the Internet.
interpersonal challenges that arise when teachers’ and students’ interaction is mediated through technology. (Levinsen, Orngreen, Buhl, Jakobsen and Andersen, 2011).

Interestingly enough, this same study also noted that cello lessons were the most easily replicated in the video-conferenced format as participants are placed in front of each other in both online and live formats, which brought an added degree of comfort.

Many of these studies involve the use of technicians to establish connections and to monitor the environment, which is something that would not be available to most home studio music teachers. However, solutions proposed as a result of this research do yield accessible possibilities. In the previously mentioned study at RDAM, the researchers noted that the monitor’s size and position were of great importance, as was the need for the teacher to be able to observe both the face and full body of the student. Both of these features could easily be realized in an at-home situation.

The superior connection of Internet2 as compared to the public Internet (or “Internet1”) partially derives from the fact that it has so few users: as of 2016, the network claimed to connect 314 higher education members, 79 industry members, 69 affiliate members, 33 connectors + 43 R&E network members, and 77 international MOU partners (www.Internet2.edu). The network is made up of fiber-optic cables instead of telephone lines like Internet1, which allows data to be moved at a speed of ten gigabits per second, compared to four megabits per second on a traditional cable modem, and thus anywhere from 100 to 1,000 times faster than Internet1 (Russo, 2005). When Internet2 was founded in 1996, only 0.9% of the world’s population was online, and by 2015, almost twenty years later, that figure rose to 46.4% (www.Internet2.edu). With a greater proportion of the world’s population online, and an increase in fiber-optic networks, such as Bell’s in Canada, there most certainly will be a great deal more innovation in spreading music education across the globe. 
Research is not limited to education, as “distributed music” practices are also used for rehearsal. In a pair of case studies involving cellists, conducted by Davies, a number of variables were measured qualitatively. The first study involved a cellist located at Keele University in Newcastle-under-Lyme and a pianist at Edinburgh Napier University (ENU). The classical duo found a number of advantages to this rehearsal method, with the pianist citing an enhanced view of the cellist’s bow contact and the cellist enjoying a similar advantage in being able to view the pianist’s keyboard – views not commonly used in traditional rehearsal, and especially performance. In a similar study, Davies arranged for a performance of Handel-Halvorsen’s *Passacaglia* for string duo with a violinist at the Royal College of Music and a cellist at ENU. The duo engaged in a pair of two-hour rehearsals before a “distributed” performance, with the violinist performing to a live audience and the cellist located in a remote room. The musicians noted that one of the main differences was the inability to rely on 3D physical input in order to realize their counterpart’s emotional response. In an attempt to show unity between the musicians, the cellist’s image in the concert hall was enlarged to mimic full-size proportions, as if they were in the room. The cellist reported that “she still felt very much part of the concert, despite not having an audience at ENU. She reported that she felt a “buzz” because of the “newness” of the technology (Davies, 2015).

Returning to instrumental education, the use of computers has continued to grow. In an interview conducted for this dissertation, Jacob Szekely, creator of the *Improvisor’s Guide to the Cello*, revealed that he will be part of the creation of a video game aimed at teaching improvisation, in collaboration with a number of his colleagues. There have been other similar innovations, including MEAWS (Musician Evaluation and “AWdition” for Strings), an open-source computer-assisted musical instrument tutor program with targeted exercises, created by
Graham Keith Percival. The program would be used by students during practice and analyzes their audio (amplitude and pitch) before displaying their errors using a graphical interface (Percival, 2008). Though the application is not commonly used, the thesis detailing its usage references a great number of other musical video games such as Harmonix and MTV Games’ Rock Band series, another area explored by Kiri Miller in her exploration of self-teaching in instrumental music (Miller 2012). The possibility exists that a video game for cello or other stringed instruments could appear before long.

In Canada, the Centre for Distance Learning & Innovation (CDLI) is located in Newfoundland, an ideal location to bring high quality education to a disbursed population in the Maritimes. The CDLI focuses on educating students from Kindergarten to Grade Twelve and has existed since 2001 with a mandate that strives to give learners “equitable access to educational opportunities in a manner that renders distance transparent” (www.cdli.ca/about-us.html). The organization has an affiliation with many music programs, including Debut Atlantic, whose artists participate in video-conferencing sessions through CDLI, which are available via live-stream to schools throughout Atlantic Canada, giving students an opportunity to engage with artists from outside of their region. In its 2015-16 season, Debut Atlantic was able to reach over five thousand students via this method (www.debutatlantic.ca/education/debut-goes-to-school).

The use of video-conferencing, as well as subscription-based lesson packages, has helped shape a new 21st-century cello pedagogy. Though traditional means will remain in place, these innovations will enhance the experience of the student, the teacher, and the performer. Given ongoing debates as to the relevance of classical music in today’s society, tools such as live-streams and video-conferenced lessons and rehearsals will only help improve the genre’s
position and give a more intimate, insider’s view to a public that may otherwise not have been engaged.
Chapter 3
Mike Block, John Graves and ArtistWorks.com

Mike Block is a pioneering multi-style cellist, singer, composer, and educator. Yo-Yo Ma has called Block the “ideal musician of the 21st century” (mikeblockmusic.com/bio). Block joined Ma’s Silk Road Ensemble while still enrolled at the Juilliard School and he maintains a highly active teaching and performing schedule. He is also the creator of the Block Strap, an over-the-shoulder cello harness that allows the cellist to play while standing, walking, or even dancing. Block founded the Mike Block String Camp in 2010 and is the founding director of the Silkroad Global Musician Workshop, both of which aim to explore a variety of styles and develop artistic voices. In 2012, Block was appointed Associate Professor of Cello at the Berklee College of Music in Boston. He teaches the Multi-Style Cello School at ArtistWorks.com (AW).

Block grew up in Kansas City and took lessons with a cellist in the local orchestra. He went on to pursue undergraduate studies at the Cleveland Institute of Music (CIM) where he studied with Richard Aaron (who, as mentioned in Chapter 2, is a pioneer of distance cello instruction). The majority of Block’s experiences prior to his undergraduate studies mostly involved one-on-one instruction. When he arrived at CIM, studio classes became a large part of the weekly routine. At times, Aaron would modify the class format to group scales or etude classes, and Block claims that the most useful aspect of this type of class was the feedback received performing in front of other students.

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12 The interview with Mike Block took place on March 10, 2017 via Skype video and lasted approximately 30 minutes. All quoted statements from Block are from this interview.

13 Block has patented a design based in some ways on the setup used by fellow cellist Rushad Eggleston. The practice of using a strap dates back centuries to church processions, and many old cellos have holes in the upper back of the instrument that would have allowed the player to stand and play.
Block began teaching while in graduate school. Juilliard had a program that allowed him to have two years of Suzuki pedagogy training, which involved a great deal of supervised teaching. In his professional career after graduate school, he has given a number of workshops and has taught private students occasionally, without formally setting up a teaching studio. Currently, his private students are all at Berklee.

Block claims that the first time he became aware of teaching online was through his colleague, violinist Darol Anger, who in 2011 began teaching the fiddle school on ArtistWorks.com (it is separate from the classical violin school). He began “covertly spying” on the organization by using Anger’s password and engaging in the medium by taking some guitar lessons while also learning some of the fiddle school tunes. Block approached AW, who at the time did not have a cello curriculum, and in 2014 began work on the Multi-Style Cello School. Aside from his work with AW, Block also has experience teaching the occasional lesson via Skype, as a private lesson substitute.

The AW platform consists of a preloaded library of recorded lessons, aimed at spanning the full gamut of possibilities on the instrument. In the Multi-Style Cello curriculum, Block had to create an extensive beginner curriculum as well as more advanced techniques such as singing and playing, chopping, playing in modes, etc. Block noted that the beginner portion of the curriculum is where a great deal of his energy was focused (“75% of my planning”) and that many of the students he interacts with are at the beginner or intermediate level.

The main feature of the AW platform is the trademarked “video-exchange lesson”. Enrolled students are able to submit short videos and receive feedback and criticism from Block himself. There are some limits to the archive of these exchanges based on the payment package that a student chooses for their subscription. These exchanges are also posted for all enrolled
students to view, creating an asynchronous online masterclass. Block admits that students are currently not likely to submit a video; only about one in ten students submits a video regularly, with the remaining ninety percent of students being what he calls “the silent majority”. These silent students are paying a yearly subscription for access to the exclusive content without engaging with their teacher, similar to the guitar and drum websites mentioned in Kiri Miller’s *Playing Along* (Miller 2012). Block feels that many of the more advanced students enrolled in the class are more likely to be part of the silent majority. In terms of attracting potential students, some sample videos are available on YouTube to entice prospective students and provide some free education for those who cannot afford the $279 USD tuition per year – which, though expensive, is much less than one would need to pay for traditional lessons.14

The Cello School on the AW platform at the time of the interview had “between 200 and 250 students” and video responses are limited: students can only submit one video at a time until they have received a response. Block stated that he has a session lasting a few hours every three weeks where he responds to videos. He admits that it required an adjustment to his usual teaching practices when creating his responses:

It became very clear from the beginning that I have to not create half hour responses to every student. You want to keep talking and if I see 5 things wrong I want to help them. If they send a 3-minute video in I can’t respond with a 35-minute video. It’s just too overwhelming. I’m better at it sometimes than others, but I try and make sure my responses are shorter than their video. It kind of depends on the person … my favourite people are people that just play something for a minute and that’s the whole video. It’s like “ok, I’ll just talk to them about that for 3 minutes.” But then there are other people that will play for three minutes and then sit and tell me the 10 questions they have for this week for another six minutes. It’s hard to know how to begin when they’re really trying to cram a lot into the video. Every single one is different, but as a teacher I have to remind myself to focus, and to try to give them one takeaway, or maybe two takeaways from the response, rather than trying to change everything all at once without really being there for them in person.

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14 Currently other packages are available in units of 3 months ($99) and 6 months ($179) with some limitations in the number of submissions placed on each.
Though he is heavily invested in his work with AW, Block does have some criticism of online music education. His main reservation concerns the loss of personal contact with a student, “where you can literally move their hand, or touch their shoulder and just get them to relax”. He also notes that students lose the ability to assimilate their teacher’s calisthenics and, of course, do not have the experience of playing live for the teacher.

In his in-person private lessons, Block spends a great deal of time practicing with the student, something that is currently not possible for a majority of the population online. He claims that at Berklee he gets frustrated with the hour-long lesson time, and that his favourite lessons occur when he has to schedule make-up lessons, where he can give a student a two-hour lesson.

Instead of just telling somebody “here’s the two things you need to work on” I have time to literally work on it with them and actually those are the things that I got from Richard Aaron in Cleveland, which is how to practice.

He does, however, see strength in online teaching, most notably the organization of having everything pre-recorded, so that as a teacher if one were to see a problem you could assign a video much like a doctor. “I can assign them pills: ‘I want you to watch this video, practice for a week and call me in the morning.’ Like, the kind of prescriptive possibility of having everything I think is important, already recorded, that is amazing.”

This is something that he makes reference to in his video responses, referring students to further videos – something that he wishes he could take more advantage of with his students at Berklee, using the AW platform as a text book and giving them “chapter reading assignments essentially in-between lessons”. Block pointed out that this would act as a flipped classroom, a model of teaching found in progressive academic institutions where instead of a teacher giving a lecture and having the students go out and do the work, students watch the lecture on their own
time and go into the classroom to work with the teacher. Traditional lessons often fall into the same trap, with a teacher giving a great deal of instruction to a student before sending them away with their homework.

Block is grateful that he was able to get in on what he feels is the ground level of online teaching and believes that “online teaching is going to be a big deal, and for each subsequent generation it will be an even bigger deal because people are so used to using the computer and finding information online, I think it is the future to some degree”. He also spoke of the sense of legacy and creating something that will stand the test of time, much like the method books mentioned in Chapter One. The videos that AW has created can exist well beyond his lifetime. In his final thoughts, Block anecdotally remarked that:

There’s much more embrace of this online teaching in non-classical styles than there is in the classical world. I think there tends to be more self-direction in the non-classical style in the student anyway, so maybe the type of people that are interested in learning mandolin or jazz piano are just simply more likely to sort of take their education into their own hands, versus somebody that’s grown up playing Suzuki violin.

Block wanted his videos to be comprehensive enough so that everything could be there, and the videos would contain anything that student would need. His videos about extended techniques for jazz and folk music offer something many other classical cello teachers are unable to provide.

In late 2017 Block published *Contemporary Cello Etudes: Studies in Style & Technique* through Berklee Press. This collection of etudes, with a preface written by Yo-Yo Ma, is aimed specifically at multi-style cello playing, ranging from beginner to advanced, and is what Block called a “contemporary non-classical re-boot of the Popper High School of Cello [Playing].” Of the set of 28 etudes, eleven are written by Block and the remaining seventeen are by twelve other contributors including Jacob Szekely, Eugene Friesen, Rushad Eggleston, Mark Summer, Erik Friedlander and others. Many of these works would previously have been taught in person.
through demonstration and imitation, but now appear in standard notation, with some added symbols for various extended techniques such as slap pizzicato (imitating a jazz bass player) or directions on how to use a loop pedal (as seen in Etude No. 29 by Jeffrey Zeigler). This publication includes an access code to an online library of audio examples that are easily downloaded. Before each etude the composers include an introduction and set of preparatory exercises, followed by “ideas for further practice” following the etude. For some students there would be a great benefit working on these live and using this method alongside a teacher with experience improvising. This would open up possibilities for the learner, where improvised sections can be “opened up” and explored. The book was made possible through an Indiegogo crowdfunding campaign (to raise funds for publication), where early backers were given access to exclusive content as one of the premium incentives: video tutorials of four etudes. There is also a newly added section dedicated to these etudes on AW’s Cello School page with Block performing all 28 pieces from multiple camera angles, along with videos analysing the material.

The platform is extremely well laid out, with the curriculum divided into easily discernible sections, including an archive of all video exchange lessons. In addition to full access to videos by purchasing a full-year membership, students also receive access to other features, including a music theory workshop, access to the “Guitar 101” course, access to “AW Live” Monthly broadcasts, backing tracks and unlimited video exchange submissions. These high-quality resources do come at a very affordable price compared to some traditional packages available online or in a community.

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15 In jazz, meaning to repeat several times until a solo has been exhausted.

16 Block has a successful track record with Indiegogo, having previously used the platform to raise $48,001 to help with the medical bills for dental reconstruction work after an accident in 2009 in which he was run over by a New York City taxi cab.

17 The 3-month package is limited to 5 submissions, while the 6-month package includes up to 12 submissions.
The silent majority who do not submit videos may be worried about the fact that any student can view any video exchange with Block, removing the privacy and security of a live lesson setting; it is more like participating in a global masterclass. When attempting a brand-new technique such as a “chop” most students likely would have a great deal of hesitancy in posting their beginning efforts online, though it is clear from the submissions that there are a wide range of people sending in attempts at all skill levels. How one uses the website is based on one’s own level of comfort, and there is no penalty given for failing to submit a video.

Though this method of self-study is stimulating and based solely on the student’s own personal schedule and learning habits, for some it can lack one main element of traditional lessons: instantaneous feedback. Though the service is ground breaking, opening a portal to a cellist that a majority of the students on AW would mostly likely not get the chance to meet in person, the slow response time deterred me from continuing my work on some of the extended popular techniques. There is a great deal of support from the large number of cellists around the world in the “Community” section, and through discussion boards solutions can be found. A student’s learning experience is not always focused solely on the teacher.

The AW platform is great for someone who is curious about the cello and it provides a wide range of information about the instrument and what is possible. Block pointed out that there may be more of an inclination to learn via this method for someone with a folk or other non-classical background where the need for feedback does not need to be as immediate. This may be difficult for students who have a classical background where instant feedback is hardwired into their system from spending time in musical education institutions. With lessons geared towards short pieces and specific techniques, the video exchange is an extremely useful tool, where short, concentrated feedback is possibly more effective than if one were to spend a one-hour lesson
obsessing over numerous angles. The AW platform is rich in content, and time will tell whether it will thrive as a vital part of music education in general and cello instruction in particular.

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John Graves is the current Vice President of ArtistWorks.com and has been with company for the past eight and a half years. Graves came from an educational background in music and audio production and first became affiliated with the company in its production department following his graduation from college at the end of 2009. Eventually Graves took over running the AW production department, which at the time of his hiring was one man, and grew it over the course of a few years. Before recently becoming the Vice President he also was involved in a number of projects in the marketing and tech departments. His current role centres on business development and recruiting artists, while continuing to manage pre-production and the creation of the curriculum.

Graves stated that AW was founded by David and Patricia Butler, a husband and wife who still own company. David was one of head developers for many years at AOL, and when he retired in the late 1990s he wanted to focus on learning jazz guitar. The main problem he ran into was that there were no suitable teachers in Tampa Bay where he was living at the time. Butler began to fly to other cities in the United States to take lessons with various teachers, which was not sustainable. Butler found a teacher he that loved learning from named Jimmy Bruno, who was located in Philadelphia. This spurred the decision to create an asynchronous way for the two to interact. Not long after his initial experiments in this area Butler realized there was a market for this type of guitar instruction, as referenced by Kiri Miller. In 2006 or 2007 (Graves could not recall which year), “Affiliated Artists” was launched, with its first school a series of guitar

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18 The interview with John Graves took place on March 29, 2018 via phone and lasted thirty-three minutes.
lessons. Eventually when the company expanded to other instruments and genres the name changed to ArtistWorks.com, in 2008.

When creating the online archives, Graves notes that each new instrument presents new challenges, and audio and video production techniques have to change with each instrument. This includes the camera angles necessary to get a teacher’s point across. Every member of the production team is a musician, so their main goal is to capture and edit the lesson as if a musician were taking it. They don’t make edits based on what they think might be visually interesting or to set a certain pacing or rhythm as one might do in editing video footage for a movie or TV show. They allow the teacher to direct what cameras they are cutting to based on what the teacher is demonstrating, what they are teaching and where they are focusing. They will have shots on the left hand, right hand, and the feet for drummers: the production values are intended to clarify whatever is being demonstrated and whatever the student needs to see in that moment to better learn the technique that is being taught.

The number of cameras used is important to note for those who might consider creating videos themselves, as for example Jacob Szekely does (see the next chapter). AW will setup as many as six camera angles, as has been the case when recording jazz drums. Other instruments do not require as many, typically three or maybe a fourth for security (e.g. for banjo and guitar).

AW does its best to keep up with changes in technology and try to stay ahead of the curve. Though the camera setup has not changed a great deal in the company’s history, 4K definition is now becoming standard in the video world, though this is not yet the case with streaming. Students are encouraged to keep up with the latest software updates. AW is not the first to use an online subscription model, they consider themselves a leader in the field of music.
For comparison they look at other subscription based services such as Netflix and Sirius Radio to see how to give students the best experience.

In each school on AW the curriculum is directed by the teacher. AW makes sure that in recruitment they are bringing in accomplished musicians in the top tier of their instrument category who are also accomplished educators. For the most part AW aims to stay out of the teacher’s way regarding what to teach, how to teach it, or how to explain it. What AW is an expert on is the delivery format of online music education. This is done by keeping the videos short in duration, approximately seven to ten minutes, and ensuring that concepts are covered in full within this timeframe. They monitor how much information the teacher is delivering and the order in which it is delivered and offer precise editing in order to make sure that there are not any gaps in the knowledge. Most schools within AW begin with introductory lessons on how to hold or tune the instrument and finish with highly virtuosic techniques.\(^{19}\) AW makes sure that everything in between those two extremes is built up step by step.

The main feature of the website, aside from the number of videos available in each school, is the video exchange portion of the website. Many of these teachers, who are among some of best musicians in the world, are also some of the busiest. Video responses tend to come in waves. Ideally AW wants them to come online once a week to update their welcome video on their school’s profile, either with a clip of what they are doing while on tour, or a new greeting, or to have them put up a new batch of video exchanges. When teachers have down time they are sometimes able to do so several times during the course of a week. AW acknowledges that there will be times when teacher may not appear as often, but so long as they communicate these

\(^{19}\) The Jazz Piano School with George Witty “hits the ground running” and begins its curriculum with the understanding that a student has prior knowledge of how to play the piano.
absences with their students via updates then the students generally understand. Graves pointed out the communal element of these exchanges, and the constant generation of content:

The way the video exchanges work, it’s not just about waiting for your response to your video. If there is a new batch of video exchanges posted, that’s a learning opportunity for everybody. Chances are that if there are ten new video exchanges posted, even if one of them isn’t mine, there are some valuable learning moments in those interactions between my teacher and my fellow students. That’s new content there for me to get through in addition to all of the dozens and hundreds of videos that I might be studying from.

The length of responses is not standardized, as was mentioned by Block, and at times Graves has had to step in to mediate their format. There is a great importance placed on direct, personalized feedback, and teachers are encouraged to always begin the video by calling the student by name. The major disadvantage of the Internet is the lack of personal contact, and it is important for teachers to create some form of personal relationship with students. Teachers are also encouraged to give students assignments and to direct them to videos that may help with the specific skills that they are working on. Directing a student to a lesson within the curriculum of pre-recorded videos also helps keep the length of video exchanges manageable and assists the teacher in avoiding re-teaching a skill that they most likely have covered in their archive. These assignments can help students set goals, and teachers can somewhat choose the learning path by asking them to submit videos based on these assignments. Graves added that teachers could even direct students to their other recent peer video responses that may be relevant but maintains that this cannot be the primary response from the teacher and that there must always be something personal attached.

AW aims to capture the legacy of an artist when creating the video archives, typically in sessions that last approximately one week. Graves calls this:

a brain dump: all those years of work and touring and learning and training and teaching. All dumped into these videos that are going to live forever. We say to them, to help them
get through the week, “think of it this way: at least you’ll never have to teach this again if you don’t want to.”

The greatest asset that students have access to is the minds of these musical masters. In a live setting this can be intimidating, but it is perhaps less through when mediated through AW. For reference, Graves used the example of AW teacher and bass legend John Pattitucci. If a student is in a live lesson with this master pedagogue and does not quite grasp a concept, either because of a lack of comprehension or the fact that he said it too fast, the student may be too intimidated to ask for clarification. A key feature in these lessons is the ability to slow down the pace of a lesson. There is a metre in the top corner of each video detailing the percentage of its progress, as well as functions to slow the video down or create loops. There is also an easily pressed “rewind 30 seconds” button. Students can watch the video once through taking notes and then go back with instrument in hand and play along all while having ongoing access.

AW is firmly committed to the model of online instruction and is not currently planning to move into live lessons. There are a number of community features on the website, including the monthly installments of “ArtistWorks Live” where all students from all schools can tune in to watch one of the AW teachers perform and then ask questions. This may expand to weekly or monthly live chats in future. Graves recognizes the importance of live events, but noted that there has been a paradigm shift in terms of how humans are consuming content:

We live in this on-demand world where everyone TIVO’s something and then watches it on their own schedule. [When] we do one of those live events 50-100 people show up (online) and are engaged and asking questions, but then within a week that same archived event has 2000 views. It’s not that it’s not valuable, it’s just that people want to watch it on their own time. I think with Skype lessons or in person lessons or whatnot, it is harder for people and they are getting further away from being able to say “I can be there at 3 pm sharp. I’ll have to move this and cancel my doctor’s appointment, but I’ll be there” and now it is nice to know “I will have this there, ready for me when I have some time, even if it’s at midnight.”
Graves sees scheduling as another big advantage to this model. Students are able to learn on their own time when they feel ready to focus on the instruction.\textsuperscript{20} A student can learn at their own pace while still having some accountability and personalized feedback through video exchanges. On the other hand, there is no physical person holding a student accountable, and students can easily stop learning. If they do not submit a video nobody is there to reprimand them (they do, however, receive occasional email reminders). In person lessons that centre on having a weekly or bi-weekly appointment with a teacher may work better for some, and the fear of embarrassment at not being prepared for these sessions could be a stimulant for learning.

If one allows oneself to engage in a meaningful way with the online community, there are many supportive students and potential musical friends online to provide an incentive to keep going. Even if AW is not one’s primary mode of instruction, the website is a continually updated and archived database for everything 21\textsuperscript{st}-century cello related – or at least it is as of this writing. As with all digital and especially online content, the risk is that it could all disappear without a trace at any point in the future, for a large variety of reasons. Given the rich resources that it provides, this would be a serious blow to the field of online music instruction.

\begin{flushleft}
\textsuperscript{20} In one of Jacob Szekely’s video lessons (discussed in the following chapter) he states that the brain works best when it is in a state of pleasure in order to learn properly.
\end{flushleft}
Chapter 4
Jacob Szekely and The Improvisor’s Guide to the Cello

Cellist Jacob Szekely has been called “One of the leaders in the Creative String Community” (Strings Magazine) and his playing has been hailed as “The first time a cellist has made the case as a leader in modern jazz!” (Eugene Friesen, professor of cello, Berklee School of Music).\(^\text{21}\) Szekely is a frequent performer, composer/arranger and educator, with a wealth of experience in all areas.\(^\text{22}\) In 2013 he founded the Jacob Szekely Trio, a group that plays “rock chamber jazz” featuring pianist Josh Nelson, drummer Christopher Allis and Szekely on cello. He has made numerous recordings as a session player in Los Angeles and has toured with a variety of artists ranging from Jay-Z to Rush.

In his work as an educator, Szekely co-founded String Project Los Angeles (SPLA) in 2007. SPLA is a “music school and resource for the alternative string playing community throughout the world” and was named “One of the top reasons to study music in Los Angeles” (Strings Magazine).\(^\text{23}\) He has also conducted residencies and given master classes across the United States at many notable institutions and festivals, including UCLA, Cal Arts, the Berklee School of Music, the American String Teachers Association’s National Conference, and New Directions in Cello Festival.

Szekely self-produced The Improvisor’s Guide to the Cello (IGC) in 2013, which he calls “the first ever comprehensive video learning series designed to address the unique challenges


\(^{22}\) The interview with Szekely took place on April 22, 2017 via phone and lasted approximately 37 minutes. Unless otherwise noted, quotations in this chapter are derived from the interview with Szekely.

\(^{23}\) Both quotations are from the SPLA website, http://stringprojectla.com/jacob-szekely/, accessed 26 April 2018.
classically trained cellists face when approaching creative string playing”\textsuperscript{24} In 2015 he launched his full-scale subscription platform, \textit{The Improvisor’s Guide to the Cello Academy}: “the first ever online interactive online community for creative cellists.”\textsuperscript{25}

Szekely began playing the cello when he was three years old, in a family of string players. In his teenage years he attended the Interlochen Arts Academy before completing post-secondary studies at the Cleveland Institute of Music for his bachelor’s degree, studying (as Mike Block also did) with Richard Aaron, and then moving on to the University of Southern California for graduate studies.

Szekely began teaching the cello at age 16 and taught in a traditional private studio setting. At age 27 he decided to create a school where he could empower young string players to learn about improvisation, which led to the birth of SPLA. Currently he has a small private teaching studio of five students and claims that a traditional teaching studio is not something that he could maintain with the projects that he currently has on the go. He chooses to use IGC to make an impact on as many people as he can globally.

Szekely began teaching lessons online while on tour; he tours frequently, including a year-long tour with the legendary rock band Rush. He eventually settled on using FaceTime on his iPad as his means of video-conferencing with students because he finds the sound of the cello on FaceTime is slightly better than on Skype. After the initial success of IGC and the short videos that were posted, he found that “people wanted more access to [him], more access to practice routines” and he wanted to connect his practicing to his students without doing online lessons as a business, which he claims is:

\begin{quote}
\textbf{The Improvisor’s Guide to the Cello Academy: “the first ever online interactive online community for creative cellists.”}\textsuperscript{25}

\textsuperscript{24} The quotation is from Szekely’s website, http://jacobszekely.com/bio/, accessed 26 April 2018.

\textsuperscript{25} The quotation is from Szekely’s website, http://jacobszekely.com/bio/, accessed 26 April 2018.
a terrible idea. For me, online teaching is basically a watered-down version of what students can get in real time or with an actual teacher, so I wanted to give understanding to what really is available to people online and what benefits there are to online learning. I realized that offering [a] series of courses and things like that was actually a much more efficient use of the medium. The best part about working online [is] obviously the ability to watch the same lesson over and over again, or to slow things down, or to loop something, or, in certain cases, to have different angles, to have subtitles, to show the most important points. The design of things is critical.

Szekely prefers his presence online to be mostly through his own curated video method.

The IGC curriculum is divided into four sections: Courses, Seminars, “Lick of the Week”/“Groove of the Week” and the Academy Show. The Courses section is meant to be completed in chronological order, and at times more advanced portions of these courses will have a warning logo: “CAUTION: Advanced Technique.” Each video in the Courses section begins with an introduction to the main concept, followed by applications, concluding with a practice routine to test drive the skill. The first of the courses is titled “Arpeggios: The Ligament System” and focuses on breaking away from the usual classical system of cello instruction, which traditionally begins with scales; Szekely feels that this system:

creates a huge disconnect for cellists when it comes to outlining harmony in our improvisations and is one of the main reasons that there are so few cellists on earth who have developed a true harmonic concept of their instrument. (www.theimprovisorsguide.com/courses-5/).

The remaining courses offered are Pentatonics, Jacobs Ladder: The Major Scale and Its Modes, The Rosetta System, and Singer Songwriter Skills.

The seminars portion of the website is based on college workshops that Szekely has presented and can be viewed in a more “a la carte” fashion. Seminars are posted on a number of subjects, labelled from beginner to intermediate, ranging from “3 Fingerboard Hacks” (beginner)
to “Bergonzi Patterns”\textsuperscript{26} (advanced). Videos are added to the seminars as new ideas come to Szekely, as is evident from differences in audio and video quality and location between videos.

In addition to the seminar series there is “The Shed” where users can find the “Groove of the Week” where a guest artist demonstrates one of their extended techniques and breaks it down slowly with multiple camera angles. The “Lick of the Week” breaks down a solo by a great string artist, occasionally by a guest such as Rushad Eggleston or Mark Summer, also with a level indicator. “The Shed” also contains a number of practice routines.

In the final Resource section users can find the catalog of Academy Shows, and a forum where a number of cello and non-cello specific topics are covered (for example, personal productivity). In general, Szekely sees his method as being a unique system, and one that is formulaic, highly visual and spatial and covers a wide range of musical possibilities.

In addition to losing the ability to touch a student’s hand to show shape, or demonstrate bow weight on a student’s cello to show sound production, Szekely notes that the impossibility of playing with a student makes video-conferenced teaching less than ideal. He also feels that in its current state the technology is not where it needs to be. The need to depend on the speed of an Internet connection is something that he feels also restricts the effectiveness of online video-conferenced teaching. Nevertheless, he does engage in online video-conferenced teaching, and feels that preparation is a key factor. For example, when one is not in the same room as a student, a great deal of time is lost explaining fingerings and bowings and transferring these to the score, so Szekely has to create these resources in advance of the lesson in order to better use his time with a student. In the not so distant future, Szekely will complete the development of an improv

\textsuperscript{25} Many advanced seminars have listed prerequisite courses. The “Bergonzi Patterns” seminar is labelled as having the Pentatonics Course as a prerequisite. Bergonzi patterns are named after the famed jazz saxophonist Jerry Bergonzi and have been adapted for the cello by Szekely.
video game on iOS and Android devices, in collaboration with a number of string colleagues who have large online followings. He also notes that an online presence does open up a number of revenue streams for teachers.

A non-renewable subscription to the IGC Academy costs $180USD. After paying the fee and receiving a confirmation email from the website work commenced with the Arpeggio Course and explored numerous other facets of the school. The IGC journey began by watching the introduction video, found on every page, which detailed the layout of the website. When I first started watching the videos it was closer to studying or doing research rather than taking an actual lesson, involving a great deal of note taking without an instrument in hand. Concepts were worked on using the iReal Pro application on an iPad which acts as a sort of “band in a box” – repeating accompaniments and chord changes using MIDI piano, drums and bass. This is the same application used by Szekely in his videos and for personal practice.

A possible pitfall in laying out the full gamut of videos is that users can easily become disoriented in their learning. A first, short lived, mistake was starting off by watching a seminar video titled Pentatonics and The Blues, rather than first cycling through the courses section. Though I was not able to fully grasp a number of the concepts, including the technique, “4th finger jam-up, 2nd finger jam-down”, the use of transposable shapes was made easily understandable using a fingerboard chart alongside the demonstration by Szekely:

![Figure 8: Pentatonics and The Blues (Szekely, IGC)](image)

Figure 8: Pentatonics and The Blues (Szekely, IGC)
The use of the fingerboard chart is found in a number of beginner cello methods, and here it is more like an adaptation of guitar tablature notation. This corresponds with the already well-established tradition of online guitar learning that has existed for decades. But it also harks back to the earliest print cello methods, such as the fingerboard chart by Corrette (see Figure 2).

In the arpeggio course Szekely stated that the main goal in improvising is to minimize shifting, using “economy of motion,” and unlike traditional arpeggios relies more on “painting by region.” The system is formulaic and covers the full range of the instrument and is less based on the typical root-based systems of classical music. In the first video, the foundation of the course is laid out as well as brief portions of material that is featured in subsequent videos: “The Improvisor’s Guide focuses on teaching you one, and in some cases two, very simple formulas that will allow you to play in every position, in any key, anywhere on the cello.” The remainder of the course was outlined in four videos, varying in length, building up to the final culminating practice routine: *The Most Important Shape You’ll Ever Learn* (4:57), *Connecting the Shapes* (5:18), *Shifting and Going Vertical* (with PDF worksheet) (7:04), *The Ultimate Ninja Practice Routine for Mastering Arpeggios* (with PDF worksheet) (18:26).

The second video in the series, *The Most Important Shape You’ll Ever Learn*, outlined three basic frames (fingerings) of four note, one octave arpeggios, which can be adjusted for chordal colours by applying extensions. Szekely noted that the first two of these patterns should feel natural to classical cellists:

1) Frame 1, starting on the first finger, 1-4-1-4

2) Frame 4, starting on the fourth finger, 4-1-4-1

3) Frame 2, starting on either the second or third finger, 2-x1-2-x1 or 3-1-3-1
The first two patterns did resemble the arpeggios that I had worked on in Block’s seventh chord arpeggio video, with the addition of the third shape which would enable me to start any arpeggio in any key, on any finger.

The third video involved connecting these shapes using a transition that Szekely calls “The Ligament” to create a larger arpeggio to switch between these frames, almost like a resolution:

![Diagram](image)

Figure 9: “The Ligament” in *Connecting the Shapes* (Szekely, *IGC*)

The fourth video acted as a preparation for the fifth video, which was the longest and most comprehensive of the set, where the full practice routine was laid out using the first eight measures of the jazz standard “All the Things You Are” as an etude. The main point Szekely made in the final video was to place limits on yourself at first when improvising, to fight the urge to shift around and get “happy feet” while you are trying to create something. “Having to come up with new solutions is how we grow as players.”

This course in itself acted as one private lesson dissected into digestible parts and it is reviewable several times over. In order to understand what was happening I first had to write out detailed notes (more common practice in a masterclass setting rather than a lesson where a student would presumably be playing). The PDF exercises in the final two lessons were very useful as I attempted to put limits on the amount of written notes I was taking, and constantly
found myself searching for musical notes via a shift. In all of the videos there was always a close up of the left hand showing the fingers falling, and the proximity of that camera angle is something one would never get in a traditional lesson unless one was to stand directly over the teacher. Though these shapes could have easily been put down on paper and published in a method book, the back and forth nature of the videos between several camera angles allows for a learner to have different perspectives rather than a static singular picture and text. As Szekely noted, the ability to create repetition and freeze framing becomes an added dimension.

The next video that I checked out was the five-minute “Groove of the Week” video submitted by Mark Summer. As Szekely pointed out in an email later, his featured guest artists are asked “to send an unedited video of them playing a simple groove fast, slow, and then fast again” which he then edits, adding titles and choosing points that he feels are most salient. With the short, concise nature of the video, it proved to be easier to learn than any of the videos in the arpeggio course. Towards the end of the video Summer mentioned Skype lessons, pointing me to his website, and a few weeks later I took him up on the offer.

The IGC Academy is a unique online school that caters to prospective improvising cellists. It is clear that IGC is intended for students who have a general understanding and prior instruction on the instrument, and it would not be suitable for beginners. There is little ability to get feedback on your playing while you work through the courses and seminars, though there is a “Mailbag Show” where questions can be posed to Szekely. Though not accessible through the interface of IGC, Szekely is still available to teach online and is easily reachable through the website or via email. IGC tackles an area of cello playing that is currently not taught in most institutions, and therefore has cornered a niche market. When compared to traditional “live” classical training, which is reliant on instantaneous feedback for results, this repetitious process
could provide a slower learning curve, depending on the learner. The PDFs are helpful, though if one is coming from a classical performance background it takes time to become familiar with the non-standard notation that is used and adapt to the different playing style, which are both necessary given the nature of improvisation. The method is in many respects quite similar to those used by guitarists and drummers, as described in Kiri Miller’s book *Playing Along*.27 If approached by a student with the necessary technical ability and a network of players to jam with, *IGC* can be a gateway to an area of cello performance that is underserved and under taught.

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Chapter 5
Skype Lessons with Mark Summer, Shauna Rolston, and Erik Friedlander

Skype has frequently been used by musicians to extend their teaching beyond their immediate geographical community. In contrast to the online methods of AW and IGC that rely on asynchronous learning, live (synchronous) lessons are in high demand, as live lessons are the established gold standard in the classical musical community. In order to evaluate this online medium, I engaged in a number of lessons with a variety of teachers, covering varied repertoire and also extended cello techniques. Though I had prior experience myself teaching students via Skype, using it as a student taking lessons was new to me. The following interviews and lessons showcase the pros and cons of using Skype for online, real time lessons. For the purposes of this chapter, all calls were made using WIFI without the use of external USB microphones, showing the use of Skype in its most basic, accessible, and free of charge form.

Perhaps known best as the founding cellist of the Turtle Island String Quartet (TISQ), Mark Summer is a distinguished performer, composer and teacher.\(^{28}\) Prior to his thirty-year career with the quartet, Summer was a member of the Winnipeg Symphony for three seasons before leaving the orchestra to perform in several Canadian contemporary and Baroque ensembles. In 1985 he helped form the TISQ and was a member of the quartet until 2015 (the group still remains active). He describes his playing as “a unique and multi-timbered style, which incorporates virtuoso jazz soloing, distinctive bass lines and extensive percussive techniques adapted from the guitar, bass and drums.”\(^{29}\)

\(^{28}\) The interview with Mark Summer took place on June 9, 2017 via Skype video, following a 45-minute Skype lesson, and lasted just over 32 minutes. Quotations from Summer that are not otherwise footnoted are from the interview.

\(^{29}\) The quotation is from Summer’s website, http://www.marksummer.net/, accessed 27 April 2018.
As a composer, Summer has published a number of pieces for cello; the most famous of these is *Julie-O* for solo cello. This piece has been performed and recorded by cellists all over the world, including a famous version with added beatboxing that made Kevin Olusola, now a member of the famed group Pentatonix, a YouTube sensation.

Summer currently performs in a trio with jazz vocalist Tierney Sutton, a seven-time Grammy-nominated singer. Past collaborations have also included a trio with clarinet virtuoso Paquito D’Rivera. The trio garnered a Grammy nomination for their album *The Jazz Chamber Trio* in 2005. Summer has recorded on numerous motion picture soundtracks and has appeared on a number of other studio recordings. He has also appeared as an orchestral soloist, premiering colleague David Balakrishnan’s concerto *Force of Nature*, which was commissioned for him.

Summer’s teaching has included a number of clinics with the TISQ, as well as studio and Skype private lessons. A featured collaborator on Jacob Szekely’s *Improvisor’s Guide to the Cello*, Summer also runs his own *CelloBeat Camp*, one-week cello camp for eight amateur and professional cellists aged 21 and up, in Marin County, California.

Summer’s early music training started with the Geber family: He studied with three teachers from the same family, beginning when he was quite young with the father Ed Geber, who was a member of the Los Angeles Philharmonic, and his wife Gretchen Geber, one of the leading cello teachers in Los Angeles. After studying with both Ed and Gretchen Geber, he then studied with their son Stephen Geber, the principal cellist of the Cleveland Orchestra, while attending the Cleveland Institute of Music. Many years after graduation, in 2008, he was

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30 Summer has since published a cello duo arrangement of the piece that includes an improvised section. A performance of the revised work (with Jacob Szekely) can be viewed on YouTube (accessed 27 April 2018) at https://www.youtube.com/watch?v=UhuGhMQycVc.
awarded a Distinguished Alumnus award from CIM. He grimaced when speaking of his early classical training:

Stephen was always like, “Intonation, intonation!” Gretchen was putting her hand on my hand and trying to get me to learn what they call collé, which she never called it a collé, for smooth bow changes. It was quite a bit of a struggle. I always say I’m in recovery from classical music.

He says that a recording of “Morning Song,” a cello quartet by jazz pianist Roger Kellaway, was the tune that really inspired him to play jazz on the cello. After a few seasons in the Winnipeg Symphony in his early twenties, he became stressed, “like, nervous breakdown stress. I kept doing it and finally I couldn’t do it anymore.” He quit and started improvising on the cello and after testing the independent scene in Winnipeg, he moved back to California to join the TISQ.

Summer’s first memory of teaching was in high school, though it was quite limited: “I have no memory of the students that I had, no memory of how much I did. I don’t think I did much.” When he quit the symphony, he began teaching in his own studio. While with the TISQ he had a great number of commitments and never had a large teaching studio. At the moment, he has one student that comes to his house once a month; other students also make one-off trips to his home studio or study with him via Skype.

Summer has been aware of online lessons for a few years but only uses the medium sporadically. He estimates that he has taught approximately 40 Skype lessons. Though he admits the lessons are a great way to connect to students in other countries, having taught lessons to students as far away as Australia, he stated that typically it is quite difficult to communicate via Skype:

I know there’s a way to really make your living from this, but I like being in face-to-face with people. You’re really easy to work with. But still, it will be a lot more satisfying if you are in a room with me. I could really hear your tone. I think Skype is like big picture stuff. It’s like, “okay, play a little bit easier.” It’s really good for someone like me in the sense that I’m showing you technique. Especially at your level, you don’t really need to
hear them as much as you needed to see them and them confirm what they are. But for somebody that doesn’t have your ability and how developed you are with the cello … this is not a totally good example anyway. You come with a piece that you prepared, and you’ve listened.

Summer’s preference for Skype lessons is to work solely on his piece Julie-O. In speaking about my preparation, we talked about the number of recordings of the work, and the variations in tempo and feel. Summer recalled that his former teacher Gretchen Geber always suggested listening to recordings. He pointed out that the creation of Spotify “changes everything” and that this has become a valuable resource for learners of any genre. Indeed, the accessibility to a large number of performances of a work has become infinitely faster and can be a great tool when creating one’s own interpretation.

The main differences between Skype teaching and in-room live teaching, according to Summer, is that the dimension of contact is greatly increased by being in the same room with somebody. It is much easier to cover playing issues in person, and online he won’t cover these aspects of playing, but rather concentrates on broader techniques. He also stated that clarity in video transmission is a problem; when there are freezes in a connection, or if the video or audio quality is compromised, he feels that he has to work twice as hard. Though he has taught quite a few lessons on Skype, he mentioned that he is surprised that he had not done more:

I’m actually surprised that I don’t do more Skype lessons on Julie-O … I’ve got a feeling that people still don’t think about it. They don’t go, “Oh, I can have a Skype lesson.” To me, if I were going to study the piece, I’d totally have lessons with me. That would answer so many questions.

Summer spoke also about generational gaps with technology, and about the quality necessary that might be required to post online. He finds that he has underutilized the Internet but does intend to engage with it more by recording more videos and continuing to offer lessons and products through his website. Summer stated that people are trying to decide what the quality has
to be in order to post videos online or teach via Skype. He mentioned that his son, who is 29, would find iPhone quality for videos acceptable, while he feels that his own generation (he turned 60 in 2018) would only proceed with online production after buying a really expensive camera and learning how to use it, which deters them from posting online more often, or at all.

As he stated:

Your generation is swimming in it … That’s what you do. You’re online all the time and you’re connected … The higher my stress level is, the less I use the computer. You’re making eye contact, but that’s ironic, too. You’re making eye contact with a piece of metal. It’s really funny. So really, I have mixed feelings about all this.

Though he does post a number of videos on Szekely’s Improvisor’s Guide to the Cello, he is always attempting to make a more human connection:

So, people are going to post videos and you go, okay, I want to learn this piece. Just watch my video. I’ve seen Jacob’s video. They’re very clear, they’re very well-thought out, very good. For me, I’ll fumble around with the crappy Internet connection, striving to make a connection with another human being … The thing that’s taught is not always what it seems. It’s not all about technique and it’s not all about the things in a lesson that can be easily quantifiable. Let’s talk about intonation. Let’s talk about phrases. All those things, there’s another element, that’s the human element and I’m not convinced that it comes through Internet teaching. So, what it is, is a technology that enables someone like yourself to contact me, have a lesson, and then ask me these questions while having contact. So, it’s a shortcut, in a way. You don’t have to get on a plane and come all the way out here. Or, you don’t have to call me up by the phone and then say, “Can you describe it?” and I’m going to do my best. That’s what people did. People wrote in letters. You’d write me a letter saying, “Can you answer these questions?” and I would have to write them all out. It’s just time-consuming and I wouldn’t want to do it, and then “can you give me some ideas and techniques for Julie-O?” I’d be writing it out. Well, that would take me a long time. So, we embrace this technology because it makes it a lot easier to make money as teachers. Let’s face it, if you really want to make money as a teacher, you’re willing to do whatever it takes. You can have all your excuses and you can be doing online classes, you could maximize the amount of money that you could make in a day teaching.

Summer believes, somewhat begrudgingly, in the future of online music instruction simply because of convenience. He admits that people still do drive hours to meet with him for a lesson, which he enjoys, but it is not a possibility for most. He added that networks such as Internet2, with incredible connection speed and clarity in picture and sound, will hopefully assist with a
number of issues that he mentioned during his interview. Though he is unsure of how it would work, he also sees virtual reality playing a large role in online music education.

Immediately preceding the interview, Summer and I worked through his famous piece via Skype. Fortunately, for the lesson portion of our call, we had a very good Internet connection with minimal interruptions or delays, which was not the case during our interview, when at times the image would freeze. Skype is designed more for speech than video, and the first thing to be sacrificed in a connection is the picture. The lesson followed a much more traditional approach: student performs the work, teacher makes general observations and criticisms and then the pair begins work on finding fixes for problems through the teacher’s existing experience and through a combined experimentation process. Summer was generally pleased with my preparation of his piece, and after asking a few questions on my interpretation, especially in relation to a few spots I found treacherous, we were able to get into specific techniques of the piece.

Figure 10: Skype lesson set-up (marksummer.net)
Our lesson focussed on sound production. Judging by the proximity of my bow to the frog, he felt that I was trying too hard to force the sound out and “playing too heavy.” This concern arose from his use of fairly conservative dynamics (\textit{mp} and \textit{mf}) in his solo writing. His general approach to both the arco (bowed) and pizzicato (plucked) sections of the piece entailed a much lighter touch, more in line with the almost fiddle-like genre of the piece. Before he began demonstrating some of his techniques, he had to adjust to his position, moving back a bit so that I could see the relationship of his hands to the bridge, which was previously out of frame.

The first passage we worked on was the opening pizzicato line; he felt that I was trying too hard to pick out each note, while picking up the string as opposed to pulling down the string. He had me experiment with using two fingers, something more in line with a jazz bass pizzicato technique. In reviewing the video of the lesson, it seemed to me that by the end I was much closer to achieving the technique that Summer was demonstrating (and at times singing), but that the sound of the pizzicato that was coming out on his end was much less resonant. Summer did note that a great deal of his judgement was based on the physicality of what he was seeing.

Figure 11: Julie-O, bars 1-11 (Summer)
The remainder of the lesson focused on bowed techniques, including “ghost notes” which are occasionally notated in the score, using brackets around certain notes that are meant to be stopped but not sounded. Summer mentioned that the bow is meant to stay in motion, similar to the strumming pattern of a guitarist, with certain notes not receiving the same amount of weight in the bow. This was similar to a technique observed in one of the Mike Block videos. We worked on a brief scale exercise in eighth notes with the second of each eighth note being silent but bowed. He also had me play further out in the bow, staying away from the frog, mostly using the upper half to play softly. This is in contrast to the usual bow positioning in classical playing that focuses on the projection of sound, We also worked on pulse, getting more of a back beat on beats two and four, rather than the classical, “heavy” one and three. Summer’s Etude, found in Block’s newly published book (titled “Bibi’s Blues”), features this type of swing bowing and is accompanied by a recording of the composer performing the piece.

Although I was able to learn a great deal during the online lesson, there is much more we could have accomplished in a live, in-person setting. Summer admitted that had I been there it would have been easier to assess tone (which he claims is impossible online) and that he could have played bass lines to accompany me. The lesson, and the Internet in general, did open up a portal that otherwise would not have existed, and in previous decades my access would have been limited to a recording and the one page of performance notes that Summer wrote back in 1997 (or possibly a phone call which most likely not have yielded ideal results). Working with a living composer, whose interpretation of his own piece has change significantly in the last 20 years, opens up many possibilities in one’s playing. Depending on one’s geographical location and access to local music scenes, students might not be able to receive such concise, practical instruction on this piece or blue grass/jazz cello playing without reaching out via the Internet.
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In preparation for my final DMA recital on May 16, 2017, I engaged in a pair of video-conferenced lessons on the piece *Hymn & Fire* for solo amplified cello by fellow University of Toronto DMA student Matthias McIntire. I had previously worked with McIntire on the piece in person for a performance in January 2017 in a live setting. In these two sessions I worked with both Matthias and my cello professor, Shauna Rolston, for approximately one hour on the first three movements which cover a number of technical challenges on the cello, including artificial harmonics, various bow strokes and patterns and fast passage work. I did not use amplification for either lesson as I was already transmitting my sound through a microphone. I used what I felt was a common low-tech set up, with the only addition being a pair of external speakers to enhance the quality of the audio that I was receiving. I did not use a hard connection to my modem and transmitted my call wirelessly. Days later I also engaged in a live lesson with Rolston in her studio at the Faculty of Music, where a Technical Playback Review (TPR) took place, which was subsequently sent to me via Dropbox (a file sharing website) at the end of the lesson.

The first session took place with the piece’s composer, Matthias McIntire, the afternoon of May 9, 2017; McIntire was in Vancouver and I was in Toronto. The original plan was to attempt to use a meeting software program that was familiar to McIntire, Zoom Meeting (videoconferencing application comparable to Skype). However, we were unable to establish a connection using that program. We resorted to using Skype, but experienced a second set back: McIntire was unable to get his video working, forcing me to play to a still profile picture of him on the screen. McIntire admitted some frustration as he had used the program only two days earlier without any problems.
We began work on the piece in much the same way that we had previously in January, playing through one movement at a time; possibly due to that initial experience the session was very similar to the live interaction despite performing to a still image on a screen. This lack of discomfort in playing to what Summer called “a piece of metal” is perhaps characteristic of the Internet generation, though the experience also mirrors the at times impersonal nature of a recording session. McIntire’s piece shares some characteristics with Julie-O in that there are some fiddle-like melodies, which is not surprising given McIntire’s background as a violinist in various non-classical idioms. Without video, observations from McIntire about bow placement were not possible. At times McIntire admitted experiencing difficulty in gauging the extremes of dynamics. Artistic decisions were still possible in terms of pacing, including the lead up to the return of the “hymn theme” in bar 70. This was discussed after the performance and it proved to be a useful discussion, though the amount of time spent trying to sift through what was actually being heard would have been greatly reduced in a live setting with visuals.

Figure 12: Hymn & Fire, first movement, bars 64-78 (McIntire)

The second movement of the piece also presents challenges, as it relies heavily on dynamic contrasts and features a number of passages in double-stopped artificial harmonics. Again, possibly because of the familiarity of having worked on the piece with its composer previously, there was not a great deal of difficulty in getting things to the point where we both agreed that
the results were satisfactory. McIntire admitted after hearing the complete performance of the movement that he could already tell the dynamics were not being correctly processed or transmitted by the microphone since the harmonics came out much louder than other stopped notes. We were still able to agree on an approach to a difficult section in double-stopped artificial harmonics, which dealt more with pacing than sound, and this was something that we had not been able to agree on in January. Perhaps this was because of my greater experience with the piece, and also my further review of the YouTube video of the premiere of the work by Andrés Vera, who commissioned it.

Despite the fact that I was not able to see McIntire, the session was highly successful, with minimal delays other than the initial setup. There were some comical moments when McIntire asked if I heard him; I was looking at my scores, but to him it looked like I was staring off into the distance. (The issue of eye contact remaining a key problem in online settings.) Though the session was mostly done for research purposes, I filmed it and was able to reference it when preparing further for the recital, specifically listening to faster passages sung by the composer to understand how he wanted the always moving sixteenth note patterns phrased.

My lesson with Rolston took place a few days later.31 Both of us were in Toronto; I was at home, and Rolston was at her studio in the University of Toronto Faculty of Music. In this video-conferenced session, the first one Rolston had ever taken part in, I performed the same three movements in a row before diving into work on them. Before starting the piece, Rolston noted that she did not watch the YouTube video of the premiere so that she could approach the piece with open ears. Before beginning the piece, she made small comments about the delay in

31 The lesson with Shauna Rolston took place on May 10, 2017 via Skype video and lasted 48 minutes. Rolston is the cello professor at the University of Toronto. Quotations from Rolston are taken from this Skype session.
video, and at one point during my performance stepped out of frame. Shortly following the three
movement excerpt she relayed her thoughts on the experience:

When I step away for a minute I feel better about the experience because for me there is an
integral connection between your articulation and the details of what you are doing
technically, and I find it distracting when what I’m hearing and what I’m looking at doesn’t
line up.

Rolston also found that the quality of sound of the cello was greatly compromised. At one point
the sound cut out completely during the “hymn theme,” and again at another point the sound
became quite distorted, almost like feedback. This may have been due to the location of the
computer in proximity to the cello. In the second movement, she noted that her imagination was
challenged and that in this setting it was hard to imagine things like textures and stage presence,
and she was unsure whether these issues were caused by the technology or related to how I was
currently conceiving the piece. The experience bothered Rolston more when she was trying to
decide what to discuss artistically because all the aspects of performance that she would want to
work on with a student (sound production, sense of theatre, texture, nuance) were compromised.
In general, she did not feel that she was getting a true representation of the piece, and that the full
scale of performance could not be captured live in such a medium:

For me, when I’m teaching, a really important component is assessing everything that you
have to offer. That’s my starting position. It’s not about what I think you should or
shouldn’t do, it’s what am I receiving from you, all of it, and then go from there, as
opposed to “there are things missing and it’s because of this format” as opposed to what
you actually do artistically and cellistically.

There were also concerns raised over the placement of the camera:

I feel like even the theatricality that I talked about and that he’s [McIntire] obviously talked
about … even in my first experience I feel like you’re too close to me. I feel like there is no
way for me to even appreciate your gesture or your sense of space because I’m right up
close.
After further discussion about the technology we did get to specifics on tone colour, specifically the *poco sul ponticello* markings; in our next live session it became clear that this discussion was better assessed in person. One of the best takeaways from this session turned out to be the video recording of the lesson itself, which I could review and reflect on my own time, similar to the videos by Block, Szekely (to a lesser extent), and Summer, though that is not specific to online instruction and something that has been common practice for some students for decades.

Prior to our TPR session at the university, I reviewed the suggestions from the videos of both lessons. On the morning of May 12, 2017, I had a two-hour lesson with Rolston at her studio where we were able to go through the piece in its entirety. In the lesson I was able to perform the piece with the required amplification and went through a great deal of video review with Rolston, including making adjustments to the placement of the camera in order to view bow angles and body position. In total four video files were sent to me which I was able to review before performing the work days later. Though these videos were very informative, details of the adjustments were more difficult to recall since those comments were not recorded.

The Skype session with Rolston did not include any dropped connections or video issues on the researcher’s side. There were only a few instances where I found myself trying to talk over Rolston in the call; the conversation portion flowed naturally. Given my previous decade-long student-teacher relationship with Rolston, it was very disconcerting making the switch to playing for a screen. This made many aspects of performance that Rolston mentioned very difficult to achieve because of the feeling of uncertainty if she was actually watching, or if the connection would be frozen. Though progress resulted from both calls, the amount of work on my side in trying to perceive contrasts in the dynamics of a certain gesture was exhausting, and
in the end still fraught with a certain degree of uncertainty. In the end, the live sessions with both McIntire and Rolston provided greater clarity.

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Erik Friedlander is an experimental cellist based in New York City. He has collaborated with a number of artists in different musical styles, and frequently appears with the saxophonist John Zorn. He is a member of the Masada String Trio, an avant-garde string trio with violinist Mark Feldman and bassist Greg Cohen, and is also a member of the jazz/fusion quartet Topaz. Friedlander has released several albums of solo and ensemble music, including his work with the Broken Arm Trio, named after the famous incident that forced jazz bassist Ray Brown to make a temporary switch to the cello. Friedlander for a number of years was the host of the Bow-tech Podcast, a series he created about all things string instrument related. He has posted a number of video lessons and practice methods on his website, including the “Olympic Cello Workout” and “Hotel Room Warm-up” (from the “Making it Count” series of video lessons) which will be examined in this chapter. The videos in the Making it Count Series were filmed a number of years before Artist Works, and feature similar multi-camera angles.

Friedlander admitted that in his formative years he coasted and that his participation in cello activities was limited. After initially picking up the cello at the age of 8, he decided at age 20 to become serious about being a cellist and had to “remake my entire technique and kind of redo everything I should have done when I was younger.” He began taking lessons with a number of teachers in and around New York. He claimed his wake-up call occurred at the Aspen

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32 The interview with Friedlander took place on April 29, 2017 via Skype and lasted ca. 19 minutes. A subsequent Skype lesson took place on June 20, 2017 and lasted 65 minutes. Quotations from Friedlander are from the interview or Skype lesson unless otherwise noted.
music festival when he was placed in a chamber group with a lot of younger students for what he viewed as “foundational problems” with his cello technique, which he was able to overcome.

Friedlander remarked that he has been an off and on teacher for approximately 20 years, and although he created a number of educational resources for cellists, he considers himself more of a performer/composer. As part of the “Lessons” tab on his website, Friedlander directs potential learners to a series of videos, titled “Cello Talks,” by David Finckel, former cellist of the Emerson String Quartet. Friedlander’s website states that these are the “most comprehensive series of video cello lessons on the web … they work well whether you are going through them one-by-one, or you’re simply looking for a way to spice up a practice session with a few chosen at random”.

Friedlander states that he has only taught “around two” Skype lessons. Like Rolston, he finds the experience awkward, with constant interruptions causing a great deal of frustration. Prior to Skype, Friedlander decided to create his online resources in order to reach out to more people who may have shared similar struggles in achieving their technique.

I felt like I had come to it in a way that was – I wasn’t a complete natural. Some people you meet are completely natural. You just do it and it’s great. You get something from those people because you are just being around that kind of ease and it’s exciting you know, you pick up on little things, but sometimes the person who really had to work to figure stuff out knows how to explain it. I felt like I knew a few things that I had figured out and I wanted to explain it.

In my interview with Friedlander, we discussed the models that had been created by AW and IGC as these were similar to the video lessons that he had created a number of years earlier. Friedlander preferred the idea of these lessons to video-conferenced instruction, as learners can view videos when they have time, making scheduling simpler. In general, his views on video-conferenced lessons were not overly positive:

It hasn’t stood up for me. I mean there is nothing quite like going into a teacher’s house or going into a studio and having to present some work that you have done, and it seems like it’s just so much more immediate and visceral with the person, and you can pick up little things that are unintentional I think also.

Friedlander was uncertain about the future of online lessons, but his resources, both written and video (available free of charge on his website www.erikfriedlander.com/cello-stuff/), are of immense help to cellists searching for new routes to find solutions for their technique, whether it be classical, contemporary or jazz based, though there is of course a focus on the latter.

In Skype lessons with Friedlander, I was able to use his online videos as a primer ahead of time before working through the exercises and a short piece with him. The focus was on two staples of Friedlander’s online video series, as well as a short pizzicato piece called King Rig. The first video was Friedlander’s Hotel Room Warm-up. The short video, about four minutes in length, covers an exercise aimed at “working the ‘pulling’ muscles of your left hand” to create stronger, more precise fingers, similar to “core training,” with variations designed to “wake up and warm up your brain, open up new connections by challenging the coordination between your left and right hands” (www.erikfriedlander.com/hotel-room-workout). Friedlander demonstrates the somewhat obscure warm-up from multiple angles, similar to those in the videos by Block and Szekely; the exercise features an open C drone (bottom staff), a left hand pizzicato pattern (middle staff) and a stopped note in the left hand (top staff):

34 This exercise was chosen as one of the etudes featured in Block’s new collection, with some modifications in both the fingering patterns and bowing variations.
Hotel Room Warm-Up goes on to a series of variations changing the held left hand note, from fourth, to third, etc. The corresponding instructional video was useful and added a great deal of value. Friedlander’s *Olympic Cello Workout*, the second of the exercises to be learned, reads more like a short daily exercise book much like Feuillard or Grützmacher. It is available in seven PDFs which can be downloaded as a ZIP file. Working on this exercise greatly assists left hand coordination and also the consistency of bow sound, and shares similarities to the famous Cossmann *Studies of Developing Agility for Cello* that many cellists use:

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**In his *Olympic Cello Workout – Seven Exercises to put you in Gold Medal Contention*, he thanks his teachers and contributors, Ron Leonard, Zara Nelsova and Robert Gardner (Friedlander, Workout Title Page).**
wind players) aimed at building endurance and aiding tone production. The exercise is in three levels and revolves around pulsations during a sustained open string bowing, beginning first with eight beats per bow, increasing up to twenty to twenty-five beats per bow, with variations in dynamics (i.e. starting piano and moving to fortissimo and back to piano, and vice versa). This is expanded on further in the second exercise in the workout which involves pulsation in the bow over an open string, and eventually scales (as seen on the following page). The workout continues with *Coordination* (sixteenth-note intervallic string crossings), *String X-ings*, (similar to the previous exercise, but with scales), *1-string scale, Improvisation*, and the *Warm-Down* (slow open strings with singing over top, meant as a release from the previous six exercises).

**LEVEL 1**
One octave of any scale.

*think this:*

*but play:*

*continue up scale in same manner*
LEVEL 3
3 or more octaves

Further Study:

Figure 15: Friedlander *Olympic Cello Workout* – Pulsation, Levels 1 and 3

The study of Friedlander’s technical aids provided a good foundation to approach *King Rig*, from his 2007 album *Block Ice & Propane*. One difficulty for a classical player to learn Friedlander’s music, and in a general sense jazz music, is the nature of the score. *King Rig* is written in a dropped G scordatura (with the A string lowered a whole step) and it opens with an improvisation in which Friedlander uses an almost flamenco guitar-style rapid pizzicato, which is not taught to most cellists, and continues with a fast strumming pattern. However, the sheet music only outlines the basic melody, without strumming pattern, as seen in the first phrase:

![Sheet music fragment](image)

Figure 16: Friedlander *King Rig*[^note]

[^note]: This version of the score is not written in concert pitch and denotes fingering. Every note seen sounds a whole step lower.
In order to learn the piece, one has to rely heavily on experimentation and utilizing the ear. Luckily, aside from the recording, there are a number of videos of Friedlander performing the piece on YouTube. These are mostly taken from live concerts over a number of years. Using Friedlander’s pizzicato video from his *Make it Count* series provided a better understanding of his pizzicato technique, which involves alternating fingers and pulling strings, similar to a bass player. In another video detailing his pizzicato techniques on a subsequent album, *Bone Bridge*, Friedlander described how he was able to obtain his technique:

> I got a lot of my techniques from watching bass players, at first, because jazz bass players have incredible plucking chops. I mean, they really maxed out on what you can do. My first instrument was guitar and I had all this kind of finger picking chops that I had learned when I was a kid, folk guitar techniques, and so once I started paying attention to this pizzicato sound and what it could bring I started using it more. It started with *Block Ice & Propane* and then it went into *Broken Arm* and it opened up a whole world for me because I feel that I have two voices that I can pick from which gives me more tools in my tool box.\(^{37}\)

The key thing that Friedlander mentions is his experience watching bass players. What YouTube can do for a student in a community outside of a bustling jazz metropolis like New York City is give them a window into the scene, and to help them add to their own “tool box” much like a traditional jazz musician would learn. Friedlander’s catalogue on his website and on YouTube (which features many videos which are “cello talks” in and of themselves) provide a window into how to be a jazz cellist, and in a way provide insight much like Szekely’s website, though with less organization. Unlike AW, Friedlander had not had a student send him a video of one of his techniques for his analysis, though he admitted that this was an interesting concept.

In the Skype lesson Friedlander admitted that he had not used either the warm-up or workout in some time, and that he is constantly looking for new ways to get his brain going and to solve problems. In working with Friedlander there was no cancellation in the signal when we

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\(^{37}\) Transcribed from www.youtube.com/watch?v=gT_Oyp406Qo, accessed 27 April 2018.
were both plucking our instruments, making it possible to play at the same time which is a rarity when using this program. However, when a bow was involved the sound would cut out. It is possible the pizzicato sound imitated the ictus of the human voice just enough to avoid stopping the audio signal. The sound quality also differed greatly between the bow and pizzicato, with the former sounding as if it were under water, which may be the reason that Szekely switched from Skype to FaceTime. This did not seem to be the case in listening to Summer’s playing during our lesson and can be attributed to differences in bandwidth from their respective Internet providers, amongst other possible factors.

Overall, the lesson was effective, giving me the chance to ask whatever I wanted of Friedlander, including how he achieves a very quick first finger pizzicato, one of the featured techniques that he used on his recording of King Rig and one that he uses in a number of solos. There were a number of awkward pauses in our conversation, and the lesson ended somewhat abruptly as I was unsure of how we might conclude. The handshake and the packing up of the instrument that is commonplace in live lessons were replaced with the click of a button. Going through the workout provided the most useful interaction, with Friedlander demonstrating and analysing some of the exercises and variations and giving me immediate feedback on my attempts. His message in general was that a lot of these techniques would take time to develop, and to use the recorded lesson as my guide.

These lessons provided a window into the problems involved in using Skype for cello instruction. Though far from ideal, Skype is still used for a great deal of online teaching. Both newcomers and veterans of Skype lessons will agree that the quality is not really adequate for satisfying and advanced music instruction. The technical specifications for Skype are a mystery and are in most cases non-customizable in dealing with audio/video quality. Additional clarity
can be gained through external web cameras and speakers which can be registered and paired with a student or teacher’s computer. These tweaks improve the quality somewhat, but not to the level one might hope for.

All subjects complained about the lack of dynamic range and quality of sound. This is because of the built in dynamic range compression that is built in to the program. Compression refers to the audio processing operation that reduces the volume of loud sounds or amplifies the volume of soft sounds, creating a narrow spectrum in the audio signal’s dynamic range. This is an effect heard more commonly on the radio, but it is also a feature of Skype.

Recurring issues also included sight lines and framing. The difficulty in these lessons is that it is not possible to have direct eye contact with the individual on the other side of a call because of the web camera. One can either look at what is happening on screen or stare into the top of their computer, unless an external camera is strategically placed. The lack of eye contact or the perception of gaze aversion has a negative effect on information recall in a learner, and in a distance learning environment researchers have noted that it is common practice for educators to look into the camera in order to promote more efficient learning, rather than the eyes of the image of the student that they are seeing on screen (Fullwood and Doherty-Sneddon, 167). The size of a monitor, combined with the video quality, also plays a factor in gauging whether we are able to perceive if the other person is making eye contact. The image of an individual is of course compromised by the capabilities of a thirteen-inch laptop screen. There is no solution for capturing a full body image without sitting further from the monitor, and thus making it more difficult for the learner to see the screen. An external monitor (or “cast” to a television screen) could be a solution, but would also compromise bandwidth as an additional connection is made.

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38 This would involve duplicating a signal on the other device using hardware such as Apple TV or Google Chromecast.
Framing, which proved an issue in both the Summer and Rolston sessions, does not seem easily achievable given the distance required to capture the full picture on the cello.

The environment in which we learn is also crucial to development. Each teacher did utilize a dedicated teaching space, but it is also important for the student to try to duplicate these conditions in their own space, in order to avoid distractions. Cameras (or laptops/tablets) should be placed in relation to where a student might typically sit spatially in order to simulate the true live experience in some way. The use of a tablet without external audio support (speakers) would not be wise and could have been a contributing factor in the Rolston lesson (even though this is a preference for Szekely currently).

Recording these lessons proved to be the most useful tool, and the repeatability that was mentioned in previous chapters remained a key component in learning these less traditional techniques and exercises. As suggested previously, there is more preparation required in these types of lessons on both the part of the student and teacher, which in some ways detracts from the main objective of mastering the technique.

Lastly, the personal relationships that are traditionally found in the live teaching studio are difficult to nourish via Skype. This was clearly a constraining factor in the sessions with Summer and Friedlander, both of whom were strangers to me, but it was also an issue in the Rolston session, which was a departure from our normal live lessons.
Chapter 6
Justin Trieger and the New World Symphony Distance Learning Program

The New World Symphony (NWS) was co-founded almost 30 years ago by Artistic Director Michael Tilson Thomas, with the support of the power couple Ted and Lin Arison. NWS is a training orchestra based in Miami that is made up of 87 young musicians who are graduates from top tier music programs. These students are given fellowships for up to three years to assist them with their preparation for a career in the professional music world. The program places an importance on professional development, explores a wide range of repertoire for orchestras and chamber groups, and creates opportunities for the students to work with a variety of guests, including conductors, soloists, and visiting faculty members from other leading institutions. The NWS notes that “relationships with these artists are extended through NWS’s extensive distance learning via the Internet” (www.nws.edu/about/about-nws/). Students receive lessons, engage in coachings and Google hangouts, work with composers and even perform concerts via high bandwidth, low latency connections.

Another more recent initiative of relevance to this thesis is MUSAIC. The website is a digital online library aimed at connecting a widespread community of classical musicians. The collection of videos, curated by the NWS, is a collaboration with a number of prominent musical institutions: Cleveland Institute of Music, Curtis Institute of Music, Eastman School of Music (University of Rochester), Guildhall School of Music and Drama (London), Manhattan School of Music, Royal Danish Academy of Music, San Francisco Conservatory of Music, University of Missouri-Kansas City, and University of Southern California. The video library of MUSAIC is continuously updated with excerpts of master classes, coaching sessions, lessons and online conferences. “Just as teachers have traditionally passed down knowledge to their students,
MUSAIC provides access to classical music instruction and conversations for students and performers alike” (musaic.nws.edu).

Justin Trieger first got involved with the NWS shortly after completing his undergraduate studies in recording engineering.³⁹ His original role when he arrived in 2007 was specifically to deal with distance learning and assisting in the setup of online music lessons, acting as a facilitator and technician for the students. The NWS began early experiments in distance learning around 2004, when they partnered with Internet2 as an affiliate member and did some of the first trials with video-conferencing over that network. Though the NWS is partnered with Internet2, it is not the only network that they use, for in order to use Internet2, the person on the other end must have the same connection; the NWS motto is “whatever works” when it comes to online teaching and technology. Trieger pointed out that there are obvious challenges in setting up online lessons, noting that teachers are not always familiar teaching in an online environment, and sometimes they do not know who the correct technical personnel on their own campuses are to get them set up. What this means is that if NWS has not worked with the teacher before, the first priority is identifying key support staff at the remote site. Frequently requests for lessons from students come in with not enough lead time for these connections to be made.

Scheduling of lessons comes about in one of two ways: students may make a request directly themselves, or an institution may directly offer instruction from a particular faculty member, or through the NWS community engagement program. In the programs at NWS, many types of technologies are utilized, including both Skype and FaceTime. The situation determines what tools NWS will use and the strategies for teaching in that kind of an environment are the

³⁹ The interview with Justin Trieger, Director of New Media and Distance Learning at the New World Symphony, took place on May 11, 2017 via phone and lasted approximately 18 minutes. Unless otherwise noted, quotations from Trieger are taken from the interview.
same with regards to the technology. Trieger finds that most students and coaches are familiar and comfortable with lessons by video-conferencing and that it is mostly the poor quality of the transmission they are working with that causes issues.

A majority of the programs that exist online for NWS students do not use asynchronous teaching; the traditional live teaching model is preferred. For interested external learners the MUSAIC library provides an extensive video collection. Trieger noted anecdotally that a number of students do create videos, especially when they are preparing for the auditions or audition tapes (possibly to send to teachers for feedback) but believes “the real value for a lot of the students and coaches is the interactivity, so being able to respond to the things at the moment is kind of the deal breaker for them.”

Trieger admitted that the Internet itself has not changed dramatically over the years; most change has occurred in the area of infrastructure improvements, which increase bandwidth and lower latency. This has not impacted the applications that NWS is using so much because most of these applications do not consume enough bandwidth to warrant worrying about capacity. As video-conferenced activities have become more commonplace, he has found that they have run into network connectivity issues much more infrequently. He admits there is some mythology being perpetuated about what Internet2 actually is:

A lot of people get confused when you talk about Internet2 and what that means. Ultimately it’s just a private network for research and education, so you can run whatever applications you want over it as long as both hosts that are trying to reach each other are on that same network. LOLA (Low Latency) or UltraGrid or any of these tools that we use could be used on commercial Internet, it’s just that the capacity and the service isn’t quite at the level it needs to be at for them to function.

In general, participants in the distance learning initiatives are very keen, but there have been rare occurrences where someone refuses to participate. Trieger noted that in these cases it has to do with generational differences:
It’s rare that someone is completely unwilling to work [online]. It’s usually someone who has a very high artistic opinion of themselves and feels like there is nothing new they can accomplish unless they’re in the room with somebody, which is very debatable. From the student’s perspective, they all grew up with video communication, they use it in their everyday lives and that’s a very natural thing. I know many of them maintain their own teaching studios, that they use Skype and things like that for their own purposes.

Trieger sees video-conferenced lessons as more of a supplement and feels that these sessions work best as a bridge between in-person sessions. He admits that there may be a time and place where teachers and students work and never actually interact in person and they could be aided by assisted or augmented or virtual reality technology currently in development.

The challenge with online education is more often than not the interpersonal relationships, because it is hard to be comfortable with someone if you’ve never actually gone out for a beer afterwards or a coffee or something. It’s those social interaction pieces that are much easier in person that differentiates them. The technology always gets better and it’s amazing right now what you are able to accomplish over a computer and an Internet connection.

In regard to the future of high bandwidth connections, Trieger also noted that there are a few “smart cities” located in the United States, municipalities trying to extend the connectivity of Internet2 to their residents. According to Trieger, Chattanooga, Tennessee, offers fibre cable installation to homes as a public service.

MUSAIC catalogues the work of several institutions in providing instruction in orchestral instruments, some via high bandwidth connections. The archive of these sessions is broken down into several sections: orchestral excerpt videos, masterclasses, audition preparation, reflections, performances, “how to” videos, and “artists” – a page where one can search featured performers, students or faculty members. Through this website, one can see the clear quality of an Internet2 connection and the quality of audio and video. Performances from a number of institutions of higher learning are typically available for live webcast but can also be seen on the MUSAIC platform after the fact.
Two sections of great interest are the excerpt videos and recorded masterclasses. In the excerpts section, there are several videos by master pedagogues and also NWS fellows, including the cellist Michael Frigo. One example is Frigo’s tutorial on the infamous set of cello excerpts from Tchaikovsky’s *Swan Lake*. This video was meant as a tutorial for the NWS side-by-side concert audition, and the three-and-a-half-minute video details Frigo’s practice routine involving drones to help students prepare it in tune. Other videos of interest include tutorials by Mark Kosower, principal cellist of the Cleveland Orchestra, on a variety of excerpts, including a thirteen-and-a-half-minute assessment of the opening of Strauss’ *Ein Heldenleben* – a staple in orchestral excerpts for the cello. There are also videos for cello by Brant Taylor, Mihail Jojatu, Eric Kim, Morten Zeuthen and Bjorn Ranheim to name a few. Occasionally these videos have introductions by NWS artistic director Michael Tilson Thomas describing various stylistic considerations. To assist students with navigating the video, NWS have included in-video bookmarks so that a learner can jump to various parts of the video that they might feel are more relevant or are in need of more review:

![Image](musaic.edu)

Figure 17: In-Video Bookmarks, Strauss’ *Ein Heldenleben* (musaic.edu)
In this section viewers are also able to watch clips taken from lessons on orchestral excerpts conducted via Internet2 with a split screen between the student (on the left) and the teacher (on the right) which tend to last ca. ten minutes, a reasonable amount of time to focus on an excerpt without excessive analysis. The library contains many Internet2 sessions on various violin excerpts as well, with Andrés Cárdenes, Professor of Violin at Carnegie Mellon University.

The masterclass portion of the website is similar in that there are a number of clips from coaching sessions conducted over high bandwidth, low latency networks. There are also video clips taken from live masterclasses from past seasons, including several by Yo-Yo Ma. At this moment there are no clips posted involving distance cello lessons in either the orchestral excerpt or masterclass sections of the library.

MUSAIC gives outsiders access to advice and coaching from some of the world’s top tier professionals free of charge. Though some videos of this nature do exist on YouTube and similar websites, the organization of the videos and post production editing creates a unique experience that one may not have experienced live or elsewhere on the Internet. The website also shows the powerful connection available via Internet2 and demonstrates that a video-conferenced session without latency or interruption is possible, though unfortunately not currently available to the general public. This does provide a great deal of encouragement for those of us who are looking to the future potential of online technology as a means to teach or perform. Though participation in this project is limited to those enrolled in the member institutions, the public is still able to access these materials without charge and can catch a glimpse of what the future might hold.
An active performer, teacher, lecturer and co-author of *CelloMind*, Minna Rose Chung has engaged with audiences and students globally. In 2008 she was appointed Professor of Cello at the University of Manitoba Desautels Faculty of Music and has since become an active member of the province’s music scene. Her research has received numerous awards, including a University of Manitoba Rh Award in 2014.

Outside of Canada, Chung tours internationally as a soloist, chamber musician, and teacher with numerous festival orchestras, collaborative ensembles, and international music festivals, including the Meadowmount School of Music. She is a member of the Desautels Trio, the Manitoba Chamber Orchestra, and is also the President of the Winnipeg Violoncello Society. Chung is the Director of Project Rio which was associated with the Rio International Cello Encounter. The project started in 2009 in hopes of providing Brazilian students masterclass opportunities with U of M faculty. This program had been highly successful but is currently defunct because external situations in Brazil and a lack of resources. Eight Brazilian cellists have come to study, perform recitals, participate in master classes, and even earn graduate degrees during Chung’s tenure at the U of M.

Chung is the co-author, with her former teacher Hans Jørgen Jensen, of the cello method book *CelloMind*. This publication centres on teaching students how intonation works and why it works in the way that it does. Drawing on scientific and mathematical relations of pitch, the two-part book includes exclusive access to an online portal with hundreds of supplemental

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40 This interview with Minna Rose Chung took place on April 10, 2018 via Skype video. The call lasted 58 minutes. Quotations from Chung are taken from this interview unless otherwise noted.

videos and audio files to enhance the learning experience, and for learners to be able to see and hear the principles that are discussed in print. The first part of the publication focuses on teaching intonation through a series of long tone exercises, double stops, and fingerboard charts, while the second part is comprised of exercises and etudes from the gamut of cello repertoire which are to be tackled using the new-found understanding found in part one. There are 235 videos and three audio examples, which are sortable as to their relevance to certain chapters, as well as to their relation to the two parts of the method. *CelloMind* is groundbreaking in its method of teaching the very subtle art of intonation and is the first method to do so, let alone on this scale.

Chung began playing the cello at age seven and a half. She admits that she was “always on edge going into lessons” and was very analytical, asking many questions. In her formative years, she felt that being prepared took a lot of effort, with etudes and technique, and she never felt that she had practiced the right thing. The transition from student to a teacher without any Suzuki background was a steep learning curve. From her teachers she learned many tricks of the trade which she feels can only be taught by someone who has performed a piece many times. Following her formative, pre-college years, Chung earned a Bachelor of Music in cello performance at Oberlin Conservatory (studying with Norman Fischer and Peter Rejto); a Master’s Degree at Northwestern University’s Bienen School of Music (studying with her co-author Jensen) and a Doctor of Musical Arts Degree from SUNY Stony Brook University (where her teacher was Colin Carr).

Chung’s teaching career began as what she calls “a total fluke” during her studies at the Oberlin Conservatory, where she would teach friends. Shortly afterwards she started a position at the Lawrence University Academy of Music (LUAM) in Appleton, Wisconsin teaching students
who ranged from a very young age up to high school, a position she remained in for four years. This is where she felt her process of being analytical from her own practicing “came full circle” when she realized how efficient she could be with a student. Many of her high school students from the LUAM went on to continue their studies at Juilliard, the New England Conservatory, Oberlin Conservatory, and the Cleveland Institute of Music. When these students were getting into top schools in the United States she realized that teaching was an area of great potential, rather than the orchestral world that involved practicing excerpts and losing auditions (she tried a few times before abandoning that career path). In teaching she could be more “creative with different students, using their individualized responses to determine their path instead of a standard, conservative approach.”

Chung has taught on Skype for a number of years and noticed that her usage of the application began to increase in 2012 when her touring career began to expand. A handful of these lessons are used for recruiting purposes, sometimes involving free 30-minute trial lessons, usually to students in Canada or the United States. She has used the platform a great deal during times when she has travelled to China, to check in on her own students, and at other times when she is away for an extended period of time. While Chung uses her laptop, her students sometimes use their cell phone and simply place it on the music stand, which she finds can be good enough. In her studies she recalled going to the AT & T building in late 1990s to watch Zukerman give one of his now famous distance master classes. This setup involved a large projector screen, and many wires, which she admitted is too much for her, though she would most likely have access at the University of Manitoba to such technology. With her laptop setup, using the fastest Internet connection publicly available and the latest software on her Mac computer, she feels that she can get a clear enough picture to understand what the student is trying to do, and she can hear
what is not working, including intonation issues. To her these lessons are more about the convenience of being able to lend an ear to someone who is not able to come to Winnipeg or for her to travel to them. Even with audio and video that are not fully lifelike in quality,\textsuperscript{42} she feels that a great deal can be determined from the student’s physical setup.

Nowadays, having the ability to video teach is really useful. I really didn’t think that it would be that great seven years ago – it was almost impossible. But now from my studio or from home I find that it is really quite seamless. It really is.

She has also used this tool herself to play for colleagues, most recently in her preparation for a performance of the Haydn D Major Cello Concerto with the University of Manitoba Symphony Orchestra in April 2018. In the weeks prior to the concert she Skyped four or five times with a colleague in San Francisco (one who also attended North Western University and was a part of Jensen’s studio). These sessions would be about two-and-a-half hours in length a couple of times a week. Her colleague, whose students are currently winning numerous jobs and competitions, was able to pick up things from her hand shape, vibrato and bow speeds – all relative to what she saw on her side. From Chung’s perspective the visual aspect is very important in analysis, and she claims never to have experienced a delay in video teaching through Skype, though she knows this is a possibility even in the realm of streaming a pre-recorded video.

The set-up that Chung employs has not changed over her years online: she does not use external microphones or speakers and relies solely on her laptop’s default settings. She chooses not to use her instrument when she teaches on Skype because she finds it is faster to articulate what she is hearing or not hearing without “adding that dimension into the equation.” This is also reflected by her preference in a student’s preparation of a piece in a Skype lesson. To her, there is a specific time when a video-conferenced lesson is appropriate:

\textsuperscript{42} As an aside, she notes, as do others who have been interviewed, that in the past few years the quality of transmission on Skype has risen dramatically.
It is incredibly useful for when someone is really comfortable with the piece of work that they are doing, and you are there to talk about the musical phrasing, or maybe the articulation of the bow or slight intonation differences. That’s generally where my focus is when I Skype. I’m not ever Skyping someone who is just learning a new piece because then you need the cello, you would talk about fingerings and things like that. I find it useful when it is near performance ready. I think that is generally where I tend to want to Skype because I want to be a part of the last stages before they do the competition, or audition. In some ways it’s more of a general scope.

She has not done a lesson on the “nitty-gritty stuff” (basic set-up on the instrument and other technical issues) on Skype and admits that she is unable to do “a normal lesson.” When she teaches in studio she does play live but prefers to use her student’s instrument to get a sense of what an issue may be, which at times is set-up related. These types of issues have to be dealt with live in order for her to feel what the student is feeling and dealing with which cannot be accomplished on Skype.

To Chung, the main advantage in live teaching, aside from being able to physically assess an instrument, is being able to assess how the muscles work and feel. It is very difficult to explain pressing vs. natural weight in the bow arm over Skype. The only way that this can be done is through the use of metaphor, which is common practice in live lessons, but which plays a more important role online. Examples that Chung provided included pretending “you have a gallon of milk hanging from your elbow” (feeling bow weight) or “pretend you are dipping your right hand in water and pull your hand out” (explaining the relaxed handshape while holding the bow). This was crucial to her when she was studying, and to her it was very important to physically feel what the teacher was trying to convey. Chung stated that feeling a motion physically can be accomplished in a number of ways. For example, a student can touch the teacher’s back as they produce a long legato stroke, feeling the difference when the teacher utilizes the proper setup versus what happens to this motion when their shoulders are raised.

There is also a higher quality of sound in a live setting, where a student is able to hear the
difference in the release of the sound when a teacher demonstrates a resonant stroke versus a “stressed” stroke. Chung feels that she can still hear this difference on Skype especially when someone is playing up high. This could be a result of the compression that occurs to the sound on Skype and other videoconferencing programs where the lower register is quite difficult to capture. Another reason to avoid this type of work on Skype is the uncertainty that the student will be able to tell the difference between sounds. What Chung would be sending out audibly is not going to be transmitted to the student in the same quality, and some students are just eager to please and will nod in agreement without necessarily grasping the concept. Online there is a problem knowing if they understand what you are saying or if the information has audibly been received properly.

There are also issues raised due to language barriers. When a student does not grasp English well it is critical for them to be in the same room to feel vibrations and differences between when the teacher is playing and when they are playing. In a live setting fewer words are needed when expressing something on the instrument and having the sense that it is getting across to the student. In general, because of this barrier, she limits her sessions online to students who understand English. As an aside, she noted that connections in foreign countries had varying degrees of efficiency.

_CelloMind_, Chung’s asynchronous resource written with her former teacher Jensen, was four years in the making before its publication in 2017. In its initial planning stages, while Chung was on sabbatical, Jensen wanted the focus to be on intonation, so it took some time to establish a consensus. Before _CelloMind_ there was no method book on intonation, mostly due to the difficulty in putting this process down on paper. Once writing, both realized that “they could not get away with assuming that everyone had a good ear.” In her experience, Chung noted that
students with perfect pitch cannot always hear the differences in tones and at times can be the ones who play the most out of tune. Videos became integral so that there was a meeting point for those with and without a sense of pitch, and Jensen was adamant that important exercises in the book should be demonstrated.

In the early stages they encountered difficulty in presenting material such as overtones and partials and had to simplify their explanations. At the beginning the Herz measurements that are currently marked (see Figure 18) were given as ratios (e.g. 4/5) which was confusing to students. In her in-person lessons, Chung likes to talk about intonation without the book and typically begins by demonstrating Tartini tones.\(^{43}\) This involves having the student recognize the third pitch “without just thinking of it as a slight buzz.” She also has students play passages against the open strings, similar to moments in the Suzuki method, and in the initial chapters of *CelloMind*. Figure 18 is the same as ones published in the method.

![Figure 18: Tartini “difference” or “third” tone](image)

Studying with Jensen (who has “dog ears” and “can whistle the 9\(^{\text{th}}\) partial”) made Chung think about intonation constantly, and she feels that his dedication to teaching it is what sets his students apart and is why they are near the top of the class in terms of winning orchestra jobs and

\(^{43}\) “A Tartini tone – a concept established by Guiseppe Tartini in 1714 – is the third tone produced when you play a double-stop perfectly in tune. It creates a soft, bell-like vibration that resonates quietly at an interval below the notes being played.” This quotation and Figure 18 are taken from “Technique: Minna Rose Chung on Double Stopping and Tartini Tones,” *The Strad* website, https://www.thestrad.com/improve-your-playing/technique-minna-rose-chung-on-double-stopping-and-tartini-tones-/7571.article, accessed 27 April 2018.
competitions. It is his dedication to the “why” and his ability to prove to students scientifically how intonation works. Chung believes that there is a way to teach intonation, and both teachers and students need to learn better how to approach the subject of playing in tune. In the mid-1980s, when she was a student, very few teachers would talk about intonation. Even today, when a student plays for a legendary master they rarely talk about intonation and instead talk more about musical considerations without addressing a glaring issue. Providing accurate information about intonation, in her mind, makes the student much more independent.

The videos chosen for the online portion of the method feature students of Jensen, who worked long and hard to create these videos. Many of the techniques (e.g. finding partials) are only completed after hundreds of takes. This is the reason why most of the technique chapter videos are short, only demonstrating a small sample of the piece, and are aimed at showing learners the final goal or finished product in terms of the tempo and character. Jensen and Chung wanted to show the best possible performance of these etudes, pieces and exercises without the performance being computerized. Her hope is that others do not feel insignificant if they are unable to reach this standard, and that they use it simply as a reference point.

In terms of the application of CelloMind to her own studio, her students look at videos independently without encouragement from Chung. In her work some students have found it difficult to hear the Tartini tones in the video examples, which is typically fixed by using headphones instead of built in computer or phone speakers to enhance the audio quality.

Chung feels Skype could take the place of in person lessons, but this would depend on the stage of learning that the student is at. Independent study is at the forefront of her teaching style. Giving students a resource such as CelloMind and being able to check in on them creates a pairing that in the long run will benefit the student more than a purely traditional approach. To
Chung, in person sessions should be about dealing with physical issues, workshopping new pieces and being sure that a student understands the vibrations of their instrument. The access to other countries and to her own students while she travels is the main advantage to Skype lessons. The previous relationship with the students she teaches online is important and is something discussed in greater detail by Morten Zeuthen in Chapter 8. The prior knowledge and familiarity with a given piece greatly assists the discourse in her online lessons. Regardless of the audio and video quality, she acknowledges that it is remarkable to have the ability to monitor her studio and her student’s progress remotely, while they work things through for themselves.
Morten Zeuthen has been a leader in cello performance and teaching for over four decades. He was the principal cellist of the Danish Radio Symphony Orchestra from 1978 to 1997, and a member of the Kontra String Quartet from 1976 to 2000. Both ensembles toured the world, with the latter ensemble officially representing the Danish state. He has also appeared as a soloist with all of the Danish orchestras, performing contemporary works as well as the standard solo repertoire for cello, including recordings of concertos by Danish composers Per Nørgård, Poul Ruders, Pelle Gudmundsen-Holmgreen and Bo Holten. He currently performs in two main chamber music groups: a duo with pianist Amalie Malling, and the Copenhagen Cello Quartet, comprised of Zeuthen and three of his former students.

Since 1996, Zeuthen has been professor of cello at the Royal Danish Academy of Music (RDAM) in Copenhagen; his pupils have won many prizes and professional positions. He has also been a guest professor in China, Poland, Norway, Sweden, Germany, Israel and the United States, and has been closely involved with the New World Symphony (see Chapter 6). Zeuthen has taught online at many of the leading distance education centres, including the Manhattan School of Music, New World Symphony, Northwestern University, and the Sibelius Academy. He is also in the process of publishing a book that addresses strategies for practicing, on which topic he has also given seminars.

In his interview Zeuthen admitted that he came from a non-musical background; neither of his parents were musicians. He began his studies at age ten at a school where a number of his classmates played instruments. He went on to study with some of the leading cello teachers of

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44 These interviews with Morten Zeuthen took place over two days, via WhatsApp video, on March 26, 2018 (37 minutes) and April 2, 2018 (36 minutes). Quotations from Zeuthen are taken from these interviews.
his time: Paul Tortelier, Asger Lund Christiansen, and for short periods of time with Mstislav Rostropovich and Arto Noras. Hans Jørgen Jensen was also a close colleague of his during his development; the two were both pupils of Christiansen and participated in many of the same competitions. He stated that when he was growing up there was a very different way even of comprehending music, and there was much more of a difference in style and sound between Europe and the United States. As an aside, Zeuthen stated that he felt Tortelier would have never taught on the Internet, as his approach to teaching, performing, and acting would not have been conducive to this medium.

Zeuthen’s teaching career began in earnest when he left his orchestra position to become a full-time professor at RDAM 20 years ago. Approximately eight years ago he became involved in the development of the distance learning platform at RDAM and was tasked with being one of the small group teachers who were chosen to pioneer its use. He has also been a spokesperson for the platform and has given demonstrations at conferences that have been held at RDAM. He has taught online to institutions in Europe and Australia, but most of his Internet teaching involves American schools such as the Jacobs School at Indiana, the Manhattan School of Music in New York and especially the NWS. A majority of his online teaching occurs through the distance learning platform at RDAM (he has never been attracted to and rarely uses Skype) as part of the network initiated by NWS. Zeuthen noted that most people feel that Manhattan is where online music instruction was initiated because of Zukerman, who tried to find a way to teach effectively while travelling a great deal. Zeuthen also plays a large role in the curation of MUSAIC for NWS. He has recorded a number of orchestral excerpt videos and also acts as the editor for the RDAM videos which are uploaded to MUSAIC.
On more than one occasion Zeuthen has been to Miami to teach the cello fellowship students at NWS live, many of whom he had already taught online several times previously on the distance learning platform. On one occasion, upon the completion of these in-person lessons, the students gave feedback on the experience in a panel discussion which Zeuthen found quite interesting. One student who had played for him online revealed that when he had a live lesson he felt intimidated. The Internet removed some pressure, and the experience for the student was freer. The student felt the distance created by the Internet helped them to relax. Notwithstanding that student’s response, Zeuthen feels that knowing a person first greatly increases the success of any one-to-one situation, and this is also the case with online cello instruction. Having seen them play live he then knew their tendencies better, and in the future this led to more successful online lessons. This also gave him a much clearer picture of the differences between Internet teaching and live teaching. In his online teaching he has to allow students to play longer than usual and has to wait until the playing is over (“Which is actually a good thing much of the time”) giving him more time to think about what he is going to say. He finds that the same can be said for the students, namely that they get more time to process what he is saying which changes the speed at
which ideas are shared, which he notes as a very important difference. The pace is slower in contrast to normal teaching, and he feels this yields preferable results. The set-up of online lessons is more formal which develops a different atmosphere. He finds the students are always very respectful and that they listen better to what you say on the Internet.

Due to the delay he cannot accompany, play bass lines, sing or beat time. He has to cope with this and change his method. Another restriction is the lack of movement. He cannot walk around or dance, or really change his seated position much like he would during an in-person lesson:

You can’t loosen up the atmosphere the same way you used to do it, you have to do it differently, and you find ways for that I think because working with young people is very much about loosening up, feeling free, freeing the fantasy, freeing the body, freeing the pressure on the strings and all this.

Something that is important to Zeuthen is contact, which is also lacking in online instruction. He cannot feel the student’s finger pressure on their fingerboard, and they cannot feel his hand if need be. He admitted that there are some aspects of advanced teaching that one cannot address, and that there are “some finer nuances that you cannot reach unless you already know each other quite well”.

Zeuthen also video records his students in his live studio classes and lessons, which is similar to the TPR review that Rolston employs. He finds this is related to the Internet because it is very clear what is successful and what we can discern from video without being in a live setting, and it becomes a concrete issue for the student. When he is watching the video with the student, both take notes and then after watching the video both reveal their observations. Finding the differences in observations is important for both the student and the teacher. The objectivity of a recording is somewhat related to the objectivity found in Internet teaching.
Zeuthen has also been a part of the Global Audition Training Programme at RDAM. This program, which began in 2014, involves students from five schools that cover three continents and a jury of concertmasters and solo players located all over the globe. These juries have consisted of members of the Vienna Philharmonic, Cleveland Orchestra, New York Philharmonic, Los Angeles Philharmonic, the Danish National Symphony Orchestra and the Royal Danish Orchestra. Using distance learning technology, including high definition audio and a high-speed Internet connection, students perform standard orchestral excerpts and concertos (for cellists, Haydn) for the jury and receive a broad range of feedback from the international panel. Originally Zeuthen had a great deal of interest going into the project to see what the differences might be globally when it comes to standard repertoire, because when he was a student there was a large divide between what a French or a Russian player would sound like – “three notes and you knew!” This program showed that the attitude towards style, tempo and sound is now more or less the same around the world. This unique program will help students gain international audition experience without travelling abroad. Though these sessions are not viewable by the public currently, mostly due to permission issues, Zeuthen would like to see these types of things added to the catalogue of school libraries as they provide much important information. “The sheet music isn’t needed anymore. You can get it on IMSLP very easily.” In general, he feels we need access to unique experiences like this, and the legal permission needed for sharing these materials should be built into contracts for concerts and master classes so that sharing can be facilitated.

45 The other partnering schools include the Cleveland Institute of Music, New World Symphony, Shanghai Conservatory of Music, and the University of Music and Performing Arts (Vienna).

46 The IMSLP/Petrucci Music Library (www.imslp.org) is a free online library of sheet music in the public domain. In Canada works enter the public domain fifty years after the date of the composer’s death. As of publication there are currently 131271 works on the website by 16247 composers.
In summary, Zeuthen feels that teaching on a distance learning platform, especially one using Internet2 technology, “can be close to just as good as live and in some ways different and in some ways even a little bit better [than] normal teaching.” He feels this is simply another type of contact and that it is not necessarily worse nor better. Apart from the pedagogical issues, it is also better for the environment, cutting down on the carbon footprint of those involved. To Zeuthen, the best way to develop distance learning platforms would be to “mix it up a little bit” and blend the experiences of live lessons, solitary practice, and distance lessons. To his colleagues he would suggest coming and giving a master class, as he did in Miami, which would allow them to teach the same student later on a different level than if they only met on the Internet. Emphatically he stated that the learning should not be limited to the student and that teachers need to learn in these adaptive situations as well. He feels strongly that this is not something that one can jump into from either side. The first time he taught on the Internet he felt “very different, strange and stimulated.” Due to the stigma attached to this type of teaching because of unfamiliar obstacles not present in live teaching, the style of teaching must change. Zeuthen sees the Internet as the way of the future, not only for live lessons, but also the use of videos to teach some of the basic skills:

When there is a recording or Internet set up, things tend to get a little more concrete, a little less fussy, a little less poetic, a little less complicated. You can try to make that situation happen when you do this… As a conclusion, Internet teaching is not only practical…it definitely adds a new way of teaching and that’s extremely interesting not only for the students, but also for the teachers. You can have more diversity having more people teaching the same student which is of course the main goal.

One of the main issues that he sees on the asynchronous side of things is that there is too much out there, and it is difficult for a student who is not advanced enough to know what might be helpful and what might be detrimental. He enjoys David Finckel’s videos and admits that some of them are very good, but that they are part of what he calls “YouTube syndrome” where useful
videos such as these are mixed in with others that are less helpful and at times, quite useless. Part of the stigma about using the Internet to learn music is that it is not as trustworthy, and unless a student has some prior knowledge, they cannot be sure of what type of instruction they are receiving.

The next step in the digital era of music education is to figure out how we can guide ourselves through “this mess.” This is why Zeuthen has continued his work with MUSAIC, which is a highly reliable resource. It has the advantages of being backed by some of the world’s top musical institutions while also being free to the public. Ideally, he would like to see music libraries acquire more videos of masters because these tend to get lost on YouTube amongst the billions of other videos. There has to be some curation in order to give students the best chance of success.

Asynchronously, Zeuthen can also conceive of teaching scales, studies and to some degree orchestral excerpts (the “non-individualistic part of a cellist’s life”) via instructional videos, similar to CelloMind. Excerpts are a great example of this because they have now become standardized over time. At the very least, these videos could provide a solid foundation for a student before working on specific, personal aspects in a live setting:

They want to check out whether your spiccato is fine for the Mendelssohn (Midsummer Night’s Dream – Scherzo), they want to see the fingers in the Smetena (Bartered Bride Overture), they want to check your sound making in the Brahms (Second Symphony), they want to check your intonation in the Verdi (Requiem - Offertorio)...There is a very specific purpose for each orchestral excerpt and this could be quite effectively taught in pre-made videos. Scale systems and arpeggios – they could all be done.

Lastly, he believes that Internet teaching should be aware of the fact that it cannot just be about setup and showing fingerings. There is a great difficulty passing on the artistic side of things. He sees a future where schools may run into cutbacks and that pre-recorded videos and a variety of online lessons could be an effective means to make students better and also make
learning more efficient. Videos should be part of the picture already, and then the one-on-one live teaching can be reserved for the artistic, personal work.
Chapter 9

*Play with a Pro: Adam Simonsen and Misha Nemtsov*

*Play with a Pro* (PWP) is a multi-faceted music education website created by Adam Simonsen. PWP began in 2009 or 2010 with a series of video master classes, first only with Simonsen. In 2011 the website began to release similar master class series and lesson archives featuring classical artists such as Ralph Kirshbaum (cello), Daniel Hope (violin), Emmanuel Pahud (flute), Gustavo Núñez (bassoon), and Elliott Carter (composition) amongst others. Two years later the live lesson portion of the website, featuring coding from Web RTC, was launched. Currently the website has around 20,000 users.

Simonsen, a Juilliard trained clarinetist, was a member of the Royal Danish Orchestra for fourteen years before beginning PWP because he was “extremely bored” and needed a change. Having a background in film, he got into video production and created the initial tutorial videos (featuring himself) which were originally released on DVD. He would film for many hours, covering all aspects of learning the clarinet from the basics to advanced techniques. This initial release was successful even though it was recorded only in Danish and English. After this point Simonsen started doing productions with other artists and moved the format online to what is now called the PWP “Digital Music Academy.” In this way Simonsen was able to combine his love for music and film.

As the business started gaining popularity, he began drawing on feedback from users. As a self-proclaimed “tech geek” he explored what was possible and then came to the conclusion that it was extremely important to add a live feature to the website. Users wanted more direct interaction with teachers, regardless of skepticism regarding its effectiveness. This occurred at

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47 The interviews with PWP founder Adam Simonsen took place on March 21, 2018 (24 minutes) with many connection issues and a follow up on March 22, 2018 (48 minutes) via PWP’s internal video conferencing program.
the same time as the creation of WebRTC, and PWP became one of the early platforms to utilize this technology. WebRTC\textsuperscript{48} enables Real-Time Communication (“RTC”) to users on specific browsers and mobile applications through simple APIs (Application Programming Interfaces). The initiative is a project supported by the search engines Google, Mozilla and Opera and is maintained by Google Chrome’s team (www.webrtc.org). Originally PWP was part of the WebRTC prototype, developed with a small team located in India. This was then later shaped into its current form by a team of professional developers; Simonsen does not do programming himself. PWP uses both synchronous (live lessons) and asynchronous (lesson/masterclass series) instruction formats. The costs of both range a great deal. In the area of cello instruction, currently there are 15 teachers globally; live lessons range from $30 USD for thirty minutes to $225 USD for sixty minutes. Costs can be brought down by purchasing blocks of five or ten lessons. The master class videos with Kirshbaum come with lifetime access and cost $75 USD.

Simonsen has done a great deal of testing to find solutions to give users the best lesson experience online, especially in the area of cello lessons, as his girlfriend is a cellist. He stated that all low-frequency instruments, including the contrabass and piano (with large chords and overtones) tend to be difficult to work with online unless an external microphone is attached, rather than a built-in computer speaker. The built-in microphone is unable to capture the sound because it is built for the human voice, and some pitches from these instruments can be two octaves below the typical register. The website recommends four different USB microphones to users and teachers so that they can optimize the audio being captured. This did not include the DPA microphone setup that was used in the lesson with Misha Nemtsov.

\textsuperscript{48} WebRTC is an open source project, meaning that it is available and can be modified freely.
There is some correlation between people who purchase the video lessons and master class packages and those who take live lessons, though this is hard to measure and has only been determined to some extent by matching up email addresses to purchases. Simonsen plans on linking the two more but has not seen this occur yet. There is some crossover of teachers from master class videos to live lessons, including Ole Kristian Dahl (bassoon), Gustavo Núñez (bassoon), Radovan Vlatković (French horn) and Simonsen himself. There are only eighteen artists featured in the pre-recorded video section. Kirshbaum does not teach on the website.

Using WebRTC, PWP is able to monitor the bandwidth on both the sides of the teacher and user interface. If there is a disruption a notification appears on the screen. This warning system is an important tool for a teacher. It can notify them if there might be issues with the material they are conveying and whether it is being properly received. Data is also compiled on each session so that if there are issues (which are rare) solutions can be found. Simonsen noted that contrary to popular belief, you do not need a fast connection. What is really needed is a stable connection as most issues are a result of latency and packet loss.49 The most important detail is that things stay in sync. Unlike Skype, the platform features a split screen delivery instead of a large image for one caller with a small icon of the user in the corner. These lessons are also recorded, and are sent to the section of the user’s profile titled “My Lessons” for future study, as seen in Figure 20.50 Simonsen stated that there have been cases where students and teachers can play duets together on this system which is possible with good connections. When packet loss occurs sound and picture become out of sync and it is really difficult to play duets together.

49 Packet Loss: When one or more packets of data fail to reach their destination travelling across a computer network. Causes include errors in data transmission, either via errors in wireless networks or network congestion.

50 Simonsen notes that this could be accomplished during a Skype lesson by running the application QuickTime and doing a screen recording of the session. However this might compromise the computer’s speed, and is unreliable.
Simonsen is aware that many teachers and students are fine with Skype, and that it is great for many purposes, but notes that it is a closed and secretive environment:

Nobody knows where the servers are no one knows the code that is behind it; it’s top secret actually what they do and which codecs they use etc. You can’t really do anything with it. You need to download the app, you need to login on, give away your user information to a certain extent … Skype makes a huge compression (in audio quality) in order for them to make sure that things sync so that you can send data and you can receive data.

WebRTC’s open format allowed the design team to customize the settings so that low frequency and compression issues are less prevalent. Developers are able to build in features and remove echo cancelation, as well as other audio filters that induce compression, in order to tailor the audio signal for music lessons. This creates a much more fulfilling user experience as opposed to Skype, which is optimized for speaking and has many issues as discussed previously. The platform is run through the Google Chrome browser. All that a user needs to do is open Chrome or Firefox (Mozilla), log in, and then they are able to access all of the features of the website. An issue that existed with Mac users, where Safari is the default browser, is soon to be remedied as this program will begin to support WebRTC in 2018, according to Simonsen.
PWP has not used Internet2 or LOLA connections, and has only used the Internet that is available to the general public. Higher bandwidth options were looked at, but Simonsen sees it as a deterrent which can drive people away from online lessons, making things less accessible:

For each of those small steps while you make just a tiny small obstacle for the user you have a major drop off. You won’t believe what makes people to drop off of the platform. People are so incredibly lazy online. This is why Amazon has the “one click buy” [function on their website]. They boiled it down to the simplest way of purchasing something. That’s what it’s about for them. For us it’s a little bit different, but at the end of the day of course it’s the same for us to make people book a lesson.

Returning to the idea of connection speeds and reliability, Simonsen related that there are definitely geographical aspects involved, and that there is some correlation between geographical location and speed. China and Brazil have both invested heavily into I.T. infrastructure and can have speeds up to ten times as fast as North America, resulting in a more lifelike experience. He noted that in Europe there is more discrepancy with Denmark and Scandinavia having the best quality infrastructure. Areas of the world that are problematic include Africa and the Middle East, especially with restrictions in places like Iraq and Iran, and to some degree China, where they are not able to get on to the PWP website even though he is aware that there is a great deal of interest from these countries. He also recently had sessions in Nigeria where there is also a great deal of interest in online music lessons, but the connection was not stable enough. This disparity amongst countries is an obvious problem now, but Simonsen feels that in the future this will not be a problem. Globally, Simonsen would like to see PWP support hundreds of teachers per instrument with as large a variety of styles and approaches as possible, though this is of course a long-term project with its own set of challenges.

Simonsen is “100% convinced that in three to five years online lessons will be normal.” In order to make it work best in its current state he has suggestions, which in turn are emailed to teachers and students as a checklist. The main points include: Have a good working computer.
Check webcam, microphone and Internet connection prior to taking the lesson, using the PWP website’s diagnostics. He suggests setting up close to the router, or better yet plugging in as the hardwired connection will be more reliable; also shut down other applications as these will slow down the computer’s processor. Aside from technical requirements he stated that it is important to frame yourself and your instrument. This also includes lighting; his preference is natural light from a window. Sightlines are also key in simulating natural discourse, which for Simonsen involves looking into the webcam instead of the eyes of the student on screen while speaking giving students the impression that he is speaking directly to them. He admitted this was strange at first but one becomes used to it after a while:

It’s like it’s a map. When you teach physically you also have your set up right you have your music here, your music stand there. You have your metronome and all the other small things and your routines. It’s the same with this. I’ve been teaching a lot and I teach also now at the Music Academy here. All this hocus-pocus small talk before and after the lesson. You end up spending easily 10-15 minutes on that. Biking there takes me 10-15 minutes, 10-15 minutes back that’s 30 minutes then all this small talk that’s another 15 minutes that's 45 minutes of nothing. You could say it’s wasted time. I don’t like to call it that because I make a big deal out of small talking to students and hear how they’re doing and you know just the human stuff, but you can also do that here. I’m just saying from the student coming ringing my doorbell walking up taking off their coats, spending the first 5-10 minutes on having a dry reed that they haven’t moistened … all these fuses and all that. Here they are doing it from home, they’re comfortable. They might have just been sitting warming up for 10 or 15 minutes before the lesson. They’re not as nervous. There are these things that are quite interesting where there is definitely of some benefit.

The sum of these small details of sound, picture, and connection, as well as convenience, are what makes this format work. This applies to both teachers and students, and when both understand the medium the experience is very comfortable and personal. He feels that humans are able adjust to changes in setups, and the elements of basic human communication have to be met in order for the medium to be successful.
Aside from these personal issues, the major problem remains the physicality and sound quality during lessons. The biggest challenge with online lessons is what he calls “a three-dimensional perception of sound”:

If you were playing your cello I will still be better able to judge your sound live in three dimensions, even though you can’t talk about three dimensions in terms of sound. But I can still evaluate and judge sound easily and I can still detect where the problems are: if it’s a reed, if it’s where he places his tongue in his mouth and all these things just from hearing it. Actually, that is what I have been missing when I teach online: [taking] the student’s clarinet and trying it out. Is it the student or the instrument? These small, fine adjustments on the reed on the student’s mouthpiece and reed setup, which I know will make a huge difference, which he will fumble around and not really able to [fix]. I could show him how to do this, how does it feel. [This is where] there is a barrier where it can be a little daunting. Where it would have been so much easy just grab and play … So that’s a disadvantage of this, definitely.

This speed is something he experienced while filming the Pahud series of videos while the flute pedagogue taught master classes at Domaine Forget in Quebec. Pahud never used his own flute and would demonstrate using the student’s flutes during the classes. This is a great pedagogical technique as it showed students that they can make their own instrument sound great, and could not use the quality of their instrument as an excuse. Unfortunately, this is not possible online.

Simonsen lives a few kilometers from the Royal Danish Academy of Music in Copenhagen and also does some teaching there. While there he has witnessed some of the exchange programs, with regular online master classes with students in China. He thinks this is great, but because of the scale of the whole production, including a sound engineer, he sees this as prohibitive for the average student. Like Chung, he was in New York when Zukerman began to teach online. He had colleagues who studied with the Zukerman and says that they were just fine with it, but he knows that these musicians were already at a very high level of playing. He stated that online instruction will not replace traditional music schools completely as features of those programs, such as playing in orchestras and chamber music ensembles, cannot be
replicated. An orchestra where all students are in different locations is currently not possible as there are limitations on how much data can be sent and received when a lot of people are online. There is also the social aspect and comradery found in these institutions that helps nurture creativity. However, he feels that there is a lot that can be done in the realm of actual lessons and lectures. Many universities are now putting their lecture series online so that students can watch at home on their own time (similar to AW and IGC); the old model of live lectures seemed to hinge on whether a student showed up or not and was less about the actual transmitting of knowledge. In three to five years’ time he feels that this will all look very different, and a lot of the stigma surrounding online lessons and lectures will be a thing of the past.

In order to better assess the platform, I conducted a brief field test and interview with cellist and PWP faculty member Misha Nemtsov. Mikhail (Misha) Nemtsov has performed globally in many roles. Prior to his recent appointment to the Mozarteum Orchestra in Salzburg he performed with the Philharmonia Orchestra, Porto Symphony Orchestra, European Union Chamber Orchestra, Manchester Camerata, the RNCM Chamber Orchestra, Liverpool Mozart Orchestra and the London Festival Orchestra. He has also served as principal cello in the Bergen Symphony Orchestra and co-principal cellist of the BBC Philharmonic. Nemtsov was awarded the Pierre Fournier Award (2011) and has been a Silver Medal winner from the Rostropovich Memorial International Competition, and several other competitions (www.mishanemstov.com).

Nemtsov plays in a cello-piano duo with his sister Elena, aptly named the Nemtsov Duo. The two siblings have won several international awards, including the Salieri-Zinetti and the Swedish Duo International Competitions, the Pinerolo International Chamber Music Contest and Lyon International Chamber Competition. The Nemtsov Duo have released a pair of recordings;
the latest *60 Degrees North* features sonatas by Peter Maxwell-Davies and Dmitri Shostakovich, and a number of short pieces, including one written by Elena Nemtsov.

Nemtsov studied music in St. Petersburg and in Manchester at Chetham’s School of Music and the Royal Northern College of Music. In the UK he studied with Nicolas Jones, Hannah Roberts, Gary Hoffman and Ralph Kirshbaum. His teaching career began while he was still in college and was something he took more seriously beginning in his third year, around age 21. He had already given masterclasses in Germany and a few years later became a visiting lecturer at the Birmingham Conservatory. He also had an assistantship in Manchester during his studies. He has also taught at the Royal Northern College of Music and at the Altensteiger Sommersmusik Akademie in Germany.

Online teaching was not on Nemtsov’s radar until he met Simonsen a few years ago. This occurred while Simonsen was filming in Manchester. Simonsen encouraged Nemtsov to join the PWP team as he has a diverse musical background and speaks three languages (Russian, English and German). Prior to teaching on PWP he had taught a bit over Skype, but not a great deal. Nemtsov has taught lessons to students in England, Russia, Portugal, Austria, and now Canada. He found that the quality of the transmission never hinged on where the student was from but had to do more with the Internet speed and microphone quality, as some laptops did not possess anything that was useable. “If you have good Internet it doesn’t matter where you are. But both sides have to have a good connection.”

To Nemtsov the main advantage of PWP is its convenience. Everything is in one place for both the teacher and student: messaging, payment, recording, diagnostics and the user interface. He has seen a range in the connection quality and feels this depends on what Internet connection people are using. Nemtsov, like others, simply uses his laptop with no extra cameras
or mics and this is fine for him. This is also the case for students who play for him. He has not
tried teaching from a mobile phone. Atmosphere is the greatest difference for Nemtsov. Though
his preference is for his students to travel, to master classes, he feels the current state is still close
to being as real as it can get:

I think it is always better to have a real lesson in life. But this (online lessons) makes it
possible to have lessons with people in different countries who cannot come to you …
Why is it better to have a live [lesson]? First, the sound will never be as real. I can’t prove
it scientifically, but I believe that it will never be quite [the same]. There are small colour
changes that you will probably not be able to capture with the microphone. But some
monumental things can be discussed, but you cannot tap somebody with the bow to ask
them to lower their shoulders and stuff like that. But some people avoid physical contact. I
think it gets pretty real on video and it is a great possibility to have lessons online. People
can learn a lot from that, but if they can attend a live masterclass of course I would
recommend that, but often it is too expensive flying somewhere and paying fees.

Like Zeuthen, he noted that students may feel more excited or nervous in live lessons, and the
online format may make students “less stressed and free inside” allowing for greater learning
potential. It is a different experience that is also useful in a student’s development, especially if
this is the direction in which lessons are going.

Nemtsov has not made any pre-recorded videos. If one of his students were to ask him he
would be more than happy to, but he feels that he has always tried to be as clear as possible. He
admits that he has found some interesting videos online and at time has referred students there.
He does not do this often as it is a sensitive matter, much like listening to too many recordings.
He does not want his students to copy but does want them to listen to stylistic traits and to see
technical solutions that he deems acceptable. He claims also to have seen livestreams of master
classes and concerts that include live translations on websites such as Facebook. Unfortunately,
he could not recall the name of the organization that put these productions on.

To people’s skepticism Nemtsov stated that “It is always good to have a lesson rather
than not having one” and the main disadvantage in online lessons would simply be having a bad
lesson from someone. Another disadvantage that occurs occasionally is the difference in time zones. My interview and lesson took place at 7:00 am EST, which is not an ideal time to be performing for a teacher, especially if one lives in an apartment building or condominium. The best aspect is the possibility of receiving ideas from a fellow musician who lives on another continent, and there is a variety of opinions that one most likely cannot have access to in their own country.

In order to check sound I used the opening page of Shostakovich’s Sonata for Cello and Piano in D minor, Op. 40, written in 1934 (Figure 21). This movement has a wide range of pitches, dynamics and character and Nemtsov had a great deal of familiarity with the piece, having recently recorded it. Slight delays occurred in the audio during the session when talking, though these were not nearly as significant as earlier Skype calls in the research. The extent was so minimal that there were no notifications from PWP about connection issues. The same can be said about the video quality which also had brief moments of latency, but these also did not occur while either participant was performing. These tests were made easily measurable because the lesson was recorded by PWP, so it is possible to view how both sides of the call are received.

![Figure 21: An excerpt from Shostakovich’s Sonata in D minor for Cello and Piano](image-url)
The first test involved me performing the first 53 bars of the piece using the built-in computer microphone on a Mac computer. The sound was relatively clear, but would cut out on quieter notes, or moments where intensity would subside, such as the G natural in bar 8 and the quiet passage that begins at bar 26 (the remainder of the ostinato passage is not pictured in the figure). In other moments the sound was distorted as if it was underwater. There were moments where the piece was almost not recognizable. The video quality however remained in sync for the duration of the playing. Nemtsov also relayed his own thoughts on the sound:

I can imagine how it sounds in your room, but it sounds quite metallic through your microphone. It sounds a little bit like if you had an electric cello going through a speaker. It distorts the sound. When you play quieter in piano, it disappears, so that is maybe the microphone’s fault I think.

The second test was a switch: Nemtsov warmed up on his cello while the third test was set up. This involved a basic warmup which included some of the famous opening notes of the Dvořák Cello Concerto followed by the opening of the Shostakovich sonata. The quality of the signal was much louder even though Nemtsov was located further back from his laptop. This could have either been because of the quality of his instrument or the resonance of the space which was quite bare, with the exception of a couch. The signal remained very metallic, sounding almost as if Nemtsov were playing an electric cello through a guitar’s distortion pedal. Again, the video was perfectly in sync with the playing.

In the third test an external microphone was inserted into the computer using a USB Steinberg CI1 edirol box, which acts as a pre-amp allowing for audio adjustment, and in this case adding phantom power for a DPA 4099C cello microphone.\(^5\) Immediately it was clear why Simonsen is adamant about lower frequency instruments needing external microphones, as this

\(^5\) The DPA 4099 is one of the top instrument microphones currently available. The “C” refers to the fact that it is a cello model and has a clip that is attachable just below the bridge on the afterlife of the strings. These microphones cost just over $700 CDN.
yielded quality that was “twenty times better” according to Nemtsov. There were still moments where the signal would disappear, but this was to a lesser degree than the first test. In this test it was possible to hear a clearer range of the contrasts between the dynamics and changes in character. There were still issues in capturing certain passages, such as the E-flat / D / C-sharp motive which is twice repeated in bars 20 and 21. In these bars the sound was unable to catch up. Video was still very well synced. Nemtsov enjoyed the change, and admitted that it had changed his perception of his own set up.

Now it is a different story. Nothing disappeared – it is much better like this … I heard much more spectrum of when you were over the fingerboard or over the bridge. I could hear. Nothing disappeared like before. I think it is a must to have this microphone. I will try myself and do some tests.

However, due to the microphone’s location and its built-in directionality, all talking became very quiet. This could easily be remedied by adding another talking microphone to the edirol box set-up as it has two XLR inputs. Nemtsov was curious as to whether effects could be added, such as reverb or other acoustic enhancers. This was not the case with this specific device, though it may be possible with others. Something like this, he added, could aid in developing a different atmosphere.

Nemtsov is usually able to do most of his analysis in online lessons based on the relationship of the bow to fingerboard and bridge. Regardless of what microphone a student uses he stated that the closer the sound can become to how it is in real life will greatly enhance the experience of the lesson for both the student and the teacher, with both being able to assess things clearer.

PWP shows the possibilities of both synchronous (live lessons) and asynchronous (video lesson archives) instruction available in our current state of online cello learning. The quality of the video conferencing platform, given its customizable nature, is currently the best available to
the public. Even with imperfections in audio, if lending an ear is the important part, as Chung stated, then this is worth dealing with quality issues. As shown through the addition of an external microphone, audio issues can easily be improved.

There are a number of features that Simonsen would like to see PWP implement, such as a much more personalized learning path where students can set goals with teachers. He may also implement a curriculum that involves tests (or exams) and online concerts and live master classes where other users can also send feedback (though this may be much more intimidating than a traditional masterclass). At the moment it is a matter of prioritizing the order in which these ideas are implemented, and which help fulfil the biggest needs of the users.
Chapter 10
Conclusion

Through surveying the past 300 years of cello pedagogy, and the research and analysis of the use of more recent developments in audio, video, and information technology for music instruction, one can see that the use of video-conferenced lessons and subscription-based video lessons will play a large role in the future of cello pedagogy. Though there is skepticism regarding the quality of some of the currently available tools, research has shown that the future of online instruction will be integral to the development of future musicians.

The main problems inherent in online cello learning are the difficulty of creating and/or maintaining interpersonal relationships between teacher and student, inadequate audio and video quality, and the lack of haptic feedback. Of the three issues, the only one that cannot be corrected is the last one. In the current context, where permission is generally needed before moving a student’s arm or placing a hand on them in any manner, this technique in teaching is becoming scarcer. It can be difficult to establish a relationship between the teacher and student online, but pre-existing relationships can make this less of an issue given the proper set-up. The most effective sessions are when there is a pre-existing relationship. Problems remain with audio quality and image capturing, and three dimensionality is the most difficult effect to achieve.

Many teachers who are unaware of the websites mentioned in this paper that offer online instruction are struggling due to a lack of high-bandwidth, low-latency connections. It is difficult to engage in a conversation, let alone a lesson, due to the frequency of interruptions, delay (latency), auditory and visual distortions, generally poor image quality, and the occasional dropped call or frozen connection. There are helpful measures that can be taken with regards to the specific technology used and how it is set up, but as this is often a mobile form of teaching (e.g. done while on tour in order to keep in touch with students in one’s home city), those tools
may not always be available, as shown by the laptop set-up that was used for the Skype portion of this dissertation.

As Summer pointed out, whether we like it or not, a great deal of what we do is being moved online. This ranges from simple acts such as shopping for clothes or groceries, to more serious matters such as doctor’s appointments and surgery. With a spike in the number of Internet users from 0.4% of the world’s population in 1995 to 46.4% twenty years later in 2015 (Internet2.edu), the rate and amount of information being transmitted is staggering. There is certainly a generation gap when it comes to dealing with this technology, which has been seen in this research; younger teachers like Block and Szekely have heavily embraced teaching via the Internet (though admittedly with some reservations), whereas Friedlander and Summer utilize it with more skepticism and discomfort. One important development is that the method book of the past has moved online and is greatly enhanced by the fact that it can be constantly updated. Also the addition of video provides more clarity than purely written instruction is capable of offering, since the visual plays at times a greater role in our musical education than the aural online.

In the field of classical music, the need for instantaneous live feedback is often, as Trieger put it, the “deal breaker” with regards to online instruction. Though some basic concepts could conceivably be taught via video demonstration, such as tuning an instrument or holding a bow, it is debatable whether they can be taught well without in-person human intervention. In the video-exchanges on ArtistWorks.com there are many postural issues that Block cannot deal with effectively solely through verbal and visual means; in a live setting, he would simply move an arm or have a student repeat a motion, possibly with physical guidance. As he stated, students from other genres of music may have a greater inclination to learn via online instruction. A student studying solely through the Internet may not be able to hold themselves up to the at times
overly exacting standards that are being placed on today’s classical musicians in terms of performance accuracy. In this same vein, as Rolston pointed out, it is not possible to gauge the nuances of stage presence accurately via a screen, and the energy which a student is putting into a performance does not necessarily translate through a digital connection. The same can be said of the audio quality.

What the Internet has brought to music is greater accessibility. One is now able to reach out to a great teacher or composer and attempt to arrange a session or ask questions through a subscription-based platform. These platforms can hold a large amount of content and can be updated continuously. Each platform offers a sense of community via forums, discussion boards and so on. Though the discourse with the teacher may be compromised, a much larger network can be formed. The costs, however, vary a great deal. In the case of this research, the cost of a Skype lesson was either slightly below or slightly above the cost of one-year subscriptions to ArtistWorks.com or the Improvisor’s Guide to the Cello. Lessons on Play with a Pro have an even larger range. Many videos are available for free through websites such as Vimeo and YouTube, the latter being the number one source of music online, but there is a lack of curation and organization, and these websites cannot be relied on for study purposes. Classical music, or music in general, is a fairly expensive profession and/or hobby to acquire, and these new online pay-for-use platforms can be either inhibitive or prohibitive based on an individual’s personal means and goals. One further problem from the teacher’s point of view is piracy. As is the case with the photocopying of printed scores, even if safeguards, logins, and warnings are in place, online materials can still be copied and stored using an application such as Quicktime’s “screen capture.” It will be interesting to see how this is dealt with in the future. In addition, a student looking to learn solely through subscription-based lessons must have a strong sense of self-
motivation. As Graves pointed out, there is no real person there holding a student accountable. The shorter videos are easier to focus on than full hour lessons. Helpful features introduced into online videos include the possibility of looping, slowing down/speeding up, thirty-second rewind and of course constant access to a vast archive of lessons.

When engaging in video-conferenced lessons teachers and students need to be aware of the environment that they are creating, which in many ways aims to recreate a traditional lesson set-up. Aspects to consider include “framing” oneself within the lens of the camera and making sure that enough of the cello is displayed from the top of the scroll to the bottom of the tail piece. Teachers also need to be able to mimic direct eye contact with students by aiming their gaze at the web camera in order to simulate normal visual communication. Often times it can be difficult to recreate a lesson environment for students, as they tend not to have a dedicated room for practicing their instrument at home and so may have to deal with distractions – pets, siblings, dishwashers, etc. Enhancing the stability of transmission by having a computer connected to the router is also difficult in these situations as it may not be located in an appropriate spot in the home. Scheduling can also be an issue based on the time zone of both individuals. One lesson in this research took place at 7am EST, which would be awkward if not impossible for a student living in an apartment or condominium with strict noise bylaws.

Both teachers and students should aim to have technology for the sessions that is suitable to the purpose. In the case of the lesson with Misha Nemtsov the use of a DPA microphone created a completely different sound world which enabled him to assess the performance more accurately. The way that the low frequencies of the cello are captured by a built-in laptop microphone and the compression that occurs seriously compromise the sound quality, so an external microphone should be considered a necessity. Though Skype has worked as a means of
In this paper there are better alternatives for video-conferenced sessions. Lessons also do not need to be the traditional one-hour length, and as Chung noted, the purpose can be more of a check-in when a piece is closest to performance level. A half hour could be quite suitable, and for many this would also be more affordable.

In a country like Canada, with a diverse population scattered over one of the largest landmasses on earth, the use of information technology can help to unify a nation. It can assist with the sharing of arts and culture between major city centres and rural locations. Institutes such as the Centre for Distance Learning in Newfoundland will in future likely play a larger role in education and, more specifically, musical education through community engagement initiatives. Music faculties of universities can use the technology to recruit students by allowing them to engage with faculty via video-conferenced lessons, saving travel and recruitment costs while casting a much larger net in efforts to attract a diverse population of students.

There is no evidence suggesting that the use of video-conferenced lessons or e-learning could have a negative effect on a cello student. Though interpersonal relationships may be difficult to forge, this may not be as much of an issue in the future. The experience of learning online can still be as enriching as in person learning but is dependent on the performance level of a student, as well as their own personal commitment to learning. Online learning will never replace the traditional, local, live model, just as audio and video recordings have not curbed our desire to go to live performances. For the time being, the two methods of teaching and learning work best in conjunction with one another, with the newer, online format acting as a supplement to the traditional mode of instruction, helping to bridge gaps between lessons and enhancing communication between student and teacher.
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