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Creating a Seven-Track Project in Diverse Commercial Styles

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CREATING A SEVEN-TRACK PROJECT IN DIVERSE COMMERCIAL STYLES

By
STEVEN SCHUMANN

A PRODUCTION PAPER

Submitted in partial fulfillment of the requirements for the degree of
Master of Music in Commercial Music
in the School of Music
of the College of Music and Performing Arts
Belmont University

NASHVILLE, TENNESSEE

May 2023

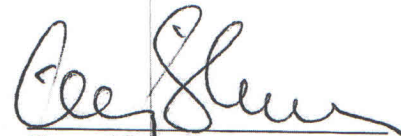
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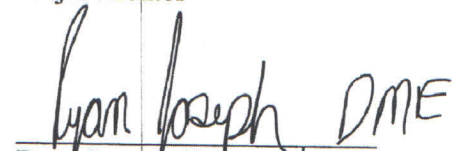
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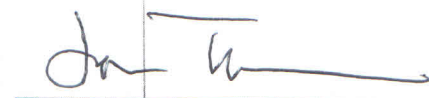

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Introduction

Scope of project

As this project encapsulates a wide range of disciplines related to both music and academia, it is important to define both the scope and purpose of this paper at the onset. As a supplement to the related recorded material, this paper aims to discuss pertinent topics related to the production of an instrumental album or project in a commercial style, and to demonstrate specific techniques utilized to achieve this at a high level. The material included is written at a level aimed toward usefulness for a student embarking on a project suitable for the Masters degree level. More specifically, much of the content is especially applicable for musicians who have had formal training in performance, but have not received the same level of education related to music production or audio technology. Each section will be labeled according to the pertinent information contained therein, and the overall form of the paper is intended to give a brief explanation of all steps required to produce an instrumental album.

The recorded portion of this project contains over twenty-five minutes of material which feature the cello as a prominent part of the performance in a variety of commercial styles. Approximately half of the material was recorded in my home studio in the style of a “desktop producer” (as defined in section “The Desktop Producer and the Studio Musician”) with the remaining half recorded at a professional studio resembling a more traditional recording session. These two formats for recording have different benefits and

challenges, which will be discussed further in this paper. The audio tracks were all mixed and mastered by me, which will be addressed briefly near the end of the paper.

This project emphasizes the importance of my multidimensional contributions as a performer, producer, audio engineer, and composer. Although these roles are typically assigned to distinct professionals in the music industry, it is reasonable to expect a certain level of proficiency in each of these areas from a performer within the framework of a master's program in commercial performance. Throughout this paper, I will examine these distinct roles both in the context of the music industry and within the context of this specific project.

As this paper serves as a key component of the final degree requirements in commercial performance, it will also touch upon the stylistic choices employed in the recorded works. Many commercial genres such as jazz, bluegrass, and country do not regularly feature the cello as a melodic instrument. One purpose of this recording project is to enlarge the body of work in these genres in which the cello can be heard as a prominent voice, thereby aiding other aspiring cellists learning these styles.

Discussion of “Commercial Music” as a Term

The lack of a widely accepted academic terminology to describe the playing of string instruments in non-classical genres is a matter of ongoing discussion. While the American String Teachers Association (ASTA) currently uses the term “eclectic styles” to refer to such styles, other influential pedagogues have adopted different labels such as “multi-style” by Mike Block (Block 2015) and “commercial music” by Belmont University (Belmont University n.d.). In this project, I will adopt Belmont University's

terminology, noting that "commercial" can encompass a range of styles including jazz, fiddle, old-time, Latin, and other popular music genres. It should be acknowledged that the line between classical and commercial technique is not always clear-cut for string players. Nevertheless, the term "commercial" will be used as a practical framework for this paper's purposes.

Track List and Background Information

One of the aspects central to the concept of this recording project is that it should reflect material which would be suitable for theoretical release as a musical project published under my name as an artist. This necessitates that my performance on the cello plays a prominent role in the material, although there are numerous other featured musicians as well. Additionally, early on in the process it was decided that this project should feature a variety of commercial genres as well as a number of original compositions. This approach was meant to feature the cello in multiple genres where it is not typically heard, and also to showcase my performance abilities in a variety of styles.

Track list and credits

Table 1. Track List and Credits

1. "Prelude"-- Steven Schumann
Cameron Bertolet: bass Justin Blanner: mandolin Engineer: David Lloyd Stephen Perlowski: guitar Steven Schumann: composer, producer, cello Weston Welch: violin
2. Paddy on the Turnpike- Trad. (as performed by Vasser Clements)
Steven Schumann: producer, violin, mandolin, guitar, bass, cello
3. Undecided- Charles Shavers (as performed by Stuff Smith)
Nick Bilski: guitar Jason Morgan: piano Steven Schumann: producer, cello, bass
4. Troublant Bolero- Django Reinhardt
Cameron Bertolet: bass Justin Blanner: guitar Engineer: David Lloyd Stephen Perlowski: guitar (nylon) Steven Schumann: producer, cello Weston Welch: violin
5. Spain- Chick Corea (arranged by Steven Schumann)
Cameron Bertolet: bass Justin Blanner: guitar, mandolin Engineer: David Lloyd Stephen Perlowski: guitar Steven Schumann: arranger, producer, cello Weston Welch: violin
6. Ulster Echoes- Steven Schumann (ft. Tessa Dalton)
Tessa Dalton: composer, violin Steven Schumann: composer, producer, cello
7. Hungarian Dances No. 5 in G minor- Brahms (arranged by Steven Schumann)
Steven Schumann: producer, arranger, guitar, bass, cello

For this project, three pieces were selected to showcase the core style of a particular genre while featuring the unconventional addition of the cello. These pieces are: "Paddy on the Turnpike" (bluegrass), "Undecided" (swing/jazz), and "Troublant Bolero" (jazz Manouche). In contrast, "Spain" and "Hungarian Dances No. 5" were arranged in a manner which blends various styles together rather than strictly representing their original genres. Finally, two original compositions, "Prelude" and "Ulster Echoes," were included, which do not fall under any specific genre but reside within the realm of progressive bluegrass, Americana, or folk. The following section will provide further details on each piece.

"Prelude"

Included in this project are two original compositions, the first of which is titled "Prelude." Although I did not write "Prelude" with a specific genre in mind, I drew heavily upon influences from the progressive bluegrass genre. One hallmark of this style is the use of elements from both jazz and classical music, but performed acoustically on instruments which are typically found in bluegrass bands (Krakauer 2018.) In "Prelude," thumb position is used to perform notes very high for the range of a cello. This is a technique which is primarily found in classical literature, but here is combined with a shuffle bow pattern common to bluegrass and fiddle styles. The Phrygian dominant mode can be heard in the chord progression of this piece, which would be more commonly used in jazz as opposed to traditional fiddle repertoire.

This piece was written specifically with this culminating project in mind. Therefore, one of the primary factors included in my idea prompt was that the cello

needed to serve as an instrument central to the sound. Rather than writing cello as the primary melody, I decided to compose a continuous sixteenth note arpeggiated passage which runs throughout the whole piece. Typically, the cello is not designated to serve this function, and in a normal bluegrass band setting this role is typically assigned to the banjo player. Harmonically speaking, most of the piece relies on a simple chord progression utilizing the following chords; D-major-7, G-major-11, B-minor, and E-flat-major-7. This progression reinforces the mixing of jazz and bluegrass elements. The use of a borrowed Ebmaj7 chord in the key of D major is the most obvious use of jazz-like harmony. In contrast to the jazz harmony utilized, the harmonic rhythm of the chord changes is fairly slow as one might find in some folk styles.

It is worth noting here what my compositional process was, as it may be helpful for other musicians who are attempting to determine the best way to collaborate with instrumentalists of various backgrounds. All my initial composing was done in a digital audio workstation (DAW) utilizing audio or midi rather than “writing” any of the notes down on manuscript paper or inputting the information into an engraving software. I first recorded my initial concept for the arpeggiated cello line mentioned earlier, and experimented with various chord changes until I arrived at an idea which I felt might be worth expanding upon.

After I had developed a short musical idea with which I was satisfied (this could be referred to as a “lick” in some musical contexts), I used the ruler in the timeline window to add arrangement markers, indicating the form of the piece which I was imagining. Continuing from that point, I recorded a “scratch track” where I played each instrument in a way that approximated the desired part for each voice. By examining

“Figure 1”, one can see that I have used techniques such as comping, duplicating, and looping to utilize my DAW as a compositional tool rather than one only for recording. These techniques will be discussed in further detail in the next section.

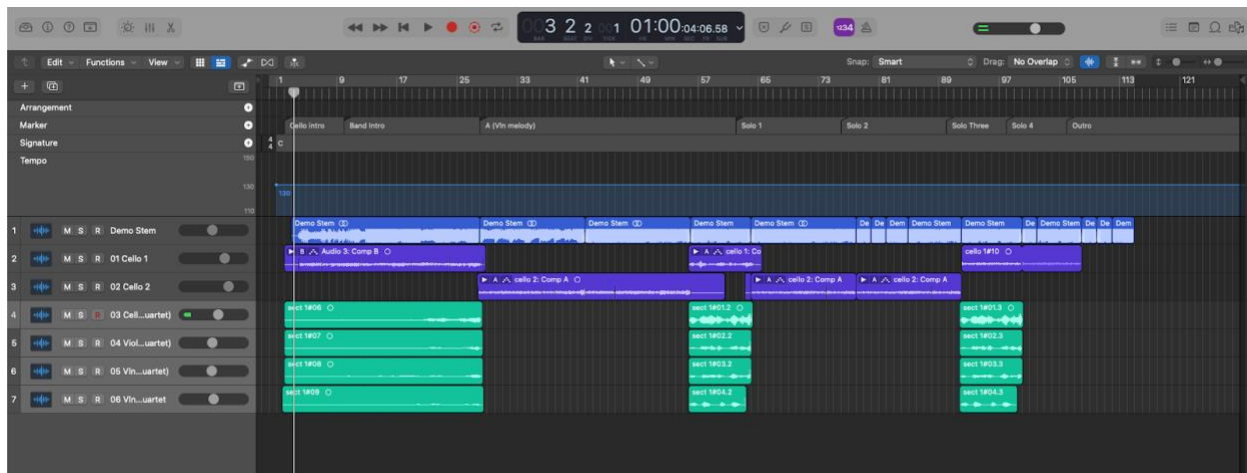


Figure 1. Composing “Prelude”

The result of this compositional approach is an audio file which follows the general form of my composition. Eventually, I did notate a lead sheet in the music engraving software Finale, but this was intended to serve as an aid for performers on the day of the session rather than representing the primary medium for creating the piece. While this method does not represent a perfect model, it is useful in a context where the specifics of each instrument are difficult to notate. For example, it is problematic to write out strumming patterns for instruments like mandolin or guitar using Western classical notation, and recording a rough example can often translate that information more elegantly. “Prelude” was recorded utilizing a five-piece string band consisting of violin, mandolin, guitar, bass, and cello. The band is also reinforced by a string section which was overdubbed after the initial recording session. The specifics of my approach to the production will be contained in more detail in the following section.

“Paddy on the Turnpike”

“Paddy on the Turnpike” is a traditional fiddle tune of Irish origin which has been performed by numerous musicians. “Paddy on the Turnpike” (which is sometimes spelled “Patty”) has been performed under a variety of titles, such as “Wagoneer” or “Boys my Money’s All Gone,” and does not have a clear history of transfer between the old and new world (Bessiwenger 2021, 159). Vassar Clements’ performance on his album *Crossing the Catskills*, however, stands as an important version for the bluegrass genre. Serving as an example of this, influential fiddler Stuart Duncan dedicated his performance of “Paddy on the Turnpike” to Clements and repeatedly quoted Clements’ musical language during his solo in a performance on the e-Town radio show (e-Town 2018.) Vassar Clements’ recording was chosen to represent the bluegrass genre due to its place as an important work in the style.

Clements was born in the panhandle of Florida and was a self-taught musician with little to no formal training. Clements traveled to Nashville in 1949 to meet Bill Monroe, who hired Clements to record on a number of tunes (Reid 2018). From that point on, Clements continued to collaborate with numerous influential musicians and appeared on hundreds of recordings. Clements is known for his incredible dexterity with the left hand, use of extended techniques such as bow ricochets, and unique tone quality.

His recording of “Paddy on the Turnpike” features virtuosic passages which blur the line between playing the primary melody and improvisation. This is characteristic of bluegrass musicians and represents a shift away from the performance practice of old-time musicians who typically place a larger emphasis on maintenance of the melody. Clements performs the tune’s head at both the beginning and end of the recording, with a

number of improvised solos in the middle. Typically, in a tune such as this, various members of the band will take turns soloing. However, in this recording, Clements is the melodic performer for the entire piece. There is still a sense of multiple divided solo sections reinforced by the pizzicato solo section in the middle.

Clements utilizes harmonic language from the G major, mixolydian, major pentatonic, and minor pentatonic scales. Additionally, Vassar employs chromatic runs which emphasize notes found in the blues scale as well as other passing tones. This is a fairly standard harmonic set in the style of bluegrass, and similar note choices can be heard in Clements' "Bill Cheatham" also found on the record *Crossing the Catskills*. It is also important to note Clements' use of slides, which are often utilized at the beginning of phrases, especially when there is a rhythmic anticipation present.

"Undecided"

The music for the jazz standard "Undecided" was written by Charles Shavers and was initially recorded by John Kirby and his Onyx Club Boys in 1938 (Hood 2016). This composition arose during an era in which swing jazz was an incredibly popular style and would have likely been utilized for the purpose of dance band performance in addition to appearing on a record for commercial purchase. This original recording features a structured arrangement which supports a number of instrumental soloists. In addition to the improvisational solos which take place, there are numerous places where a group of instruments is featured in a highly-arranged style. While there is a large degree of syncopation present, the articulations and tones of the band reflect some influence from the stylings of sweet jazz which was popular at the time (Gennari 2006, 152).

The recording upon which this project's performance is based was created by Stuff Smith in 1959 under UMG recordings. This performance reflects a transition in jazz from the style of swing toward the language of bebop, which is most obviously observed by the increased tempo. Smith's performance begins at approximately 252 beats per minute and ends at around 260, while the original Onyx Club Boys recording exists at around 212 beats per minute for the full recording. Additionally, the instrumentation in Smith's album is made up of a four-piece jazz combo consisting of Lewis Powers on bass, Harry Saunders on drums, Paul Smith on piano, and Stuff Smith on violin and vocals. This smaller ensemble allows for more emphasis on the performers' individual virtuosity, and less attention is given to complex sectional arrangements.

Stuff Smith, born Hezekiah Leroy Gordon Smith, was an influential jazz violinist who was present throughout many of the transitions in style which jazz passed from the 1930s into the 1960s. Smith stands out as one of the few violinists who remained influential during the swing and bebop eras in which most bands phased out violin as a lead instrument in favor of horns, piano, or amplified guitar. Smith cites Louis Armstrong as one of his chief influences, and performed with jazz giants such as Charlie Parker, Coleman Hawkins, and Dizzy Gillespie (Barnett 1995, 69). The fact that Smith was a regular performer at important jazz venues such as the Onyx Club demonstrates that he was seen as an authentic performer of the style, and therefore his performances offer an ideal case for study.

Smith's improvisatory language exists somewhere between what one would traditionally label as swing and bebop. In a different way from many bebop players, Smith stays primarily within diatonic note choices for his melody lines, with the

occasional use of chromatic passing tones. He will also often sequence a descending or static line for an extended period, evoking a certain connection to blues phrasing.

Although this technique can certainly be observed in performers such as Charlie Parker, Smith's on-the-nose application does make him stand slightly apart from seminal figures of the bebop genre. Additionally, more in line with 1940s swing, Smith's rhythmic style involves a fairly bouncy or deep swing feel in which the eighth notes are closer to a tied-triplet feel than straight eighth notes. In contrast, however, Smith can often be heard soloing for extended periods in which flurries of very quick runs bleed into one another. This kind of phrasing is more similar to some of his bebop contemporaries than the swing bands of the 1930s and 1940s.

One other notable idiosyncrasy to Smith's style is found in his use of left hand pizzicato and his bow recovery. In general, Smith keeps his bow on the string throughout his whole solo sections and often marks time with small, nearly inaudible bow strokes in order to reinforce the musical rhythmic impulses. This can be heard most easily when Smith ends a passage near the tip of his bow rather than performing a "lift" as it would be labeled in classical pedagogy, he simply performs a very fast upbow with indeterminate notes in the left hand. This can be heard at timestamp 1:41 in his recording of "Undecided" from the record *Cat on a Hot Fiddle*.

At timestamp 0:36 of "Undecided," Smith employs a left-hand pizzicato of the open E and A strings. This is notable for a few reasons, the first being that an open E is not diatonic to the key of B-flat. This same left hand pizzicato occurs at timestamp 0:42, and similarly contains a note outside of the key. Smith is therefore employing this pizzicato as a rhythmic device rather than as a part of the melodic content of his

improvisation. The timing of these pizzicatos serve both a technical and rhythmic purpose. Smith will often employ these left hand pizzicatos while he is simultaneously performing the upbow recovery mentioned in the preceding paragraph. From a rhythmic perspective, these pizzicatos are often placed on the weak or syncopated parts of a measure. This impulse sounds similar to accents often performed by jazz combo drummers in the spaces between melodic lines, or the places where a comping pianist might place a particularly interesting chord. All of the stylistic elements listed here were incorporated into the improvisatory style of my performance, as well as the solo section featuring direct transcription from Smith's record.

“Troublant Bolero”

Django Reinhardt is a prominent and influential figure in jazz, widely considered to be the most influential musician of the jazz Manouche— or Gypsy jazz— genre (Dregni 2004). Born into a nomadic Roma caravan in the regions of Belgium and France, Reinhardt began his musical journey as a banjo and fiddle player, but eventually gained worldwide fame as a guitarist. He was documented with the name Jean Reinhardt at a young age but was widely known by his Roma name of Django, meaning “I awake” in Romani (Dregni 2004).

At the age of eighteen, Reinhardt suffered an injury in a caravan fire, losing most of the use of two fingers on his left hand (Winiger 2015). Despite this setback, Reinhardt developed a unique style of guitar playing that was distinct from both his fellow Roma musicians and the wider jazz world at the time. This style was shaped not only by

Reinhardt's injury but also by his musical influences and the unique cultural context in which he grew up.

The second musician who must be discussed in relation to this composition is Stephan Grappelli, who plays violin on “Troublant Bolero.” Grappelli was a French violinist born in 1908 who continued to be an influential performer up to the end of his life in 1997. Grappelli was classically trained, but he is most widely known for his recordings in the style of jazz Manouche on which he collaborated with Django Reinhardt (Levy 1997). Grappelli is known for performing with a refined sound that marries a classical tone with hard-swinging jazz sensibilities. While both players stand out as virtuosos of the instrument, Grappelli’s style stands in contrast to that of Stuff Smith (as previously discussed) in its elegance and absence of extraneous noises.

While “Troublant Bolero” is present in jazz Manouche repertoire lists, it is not one of the most commonly performed pieces by Django Reinhardt. One of the unique elements of this piece is the bolero rhythm played in the right hand of the guitars. The bolero is a dance originating from Spain marked by sharp rhythmic turns and flair. Django marries this fiery rhythm with a juxtaposed melody which brings a smooth legato quality to the piece, especially when performed with the romantic sensibilities of Stephan Grappelli.

“Spain”

Armando “Chick” Corea is an important figure in the post-bop era of jazz who has contributed to numerous styles within jazz and fusion genres. Corea’s career first rose to prominence when he acted as Herbie Hancock’s successor in the Miles Davis band.

Corea drew from many of the influences present after the dominance of bebop gave way to numerous competing styles within jazz. In his performances, one can hear impulses borrowed from rhythm and blues, which are combined with quotations from classic jazz giants and glossed over with an aptitude for classical piano (Shiptop 2002, 205). Corea was also very influential in his use of electronic keyboards in a jazz context, which he utilized in contexts from jazz-rock to more experimental settings.

“Spain” is a composition by Corea which, as one could assume from the title, draws heavily upon Spanish and Latin influences. Corea cites Miles Davis and Gil Evans’ *Sketches of Spain* as an important influence on his composition of this piece. The beginning of *Sketches of Spain* features an arrangement of Joaquin Rodrigo’s guitar concerto titled “Concierto de Aranjuez” (Hoyt 2011). Corea and his band perform a section of this as the introduction to “Spain” and the primary melody is derived from this piece as well.

Perhaps the most recognizable aspect of this piece are the unison melody sections. During the head, the primary melody is played by multiple instruments in unison (or octaves apart) in both the A and B sections. The fact that the bass is doubling this melody as well is fairly unique, although this technique has become more common since the recording of “Spain” in fusion genres. Throughout the piece, the drums can be heard adding a Latin feel without abiding by any formal rules demarking a specific clave or style.

“Ulster Echoes”

As the name of this piece implies, “Ulster Echoes” is an original composition which draws upon the traditions of Celtic music. The most prominent influence on this piece comes from the recordings of fiddler Alasdair Fraser and cellist Natalie Haas. Natalie Haas is widely known for her abilities as a cellist who integrates both rhythmic and harmonic elements into her playing, allowing her to serve as an accompanying performer. This style of playing is emulated in my cello playing in “Ulster Echoes” while also utilizing monophonic lines that imply an underlying polyphonic tonality, similar to the language found in the Bach *Cello Suites*.

The instrumentation of a violin and cello duet was chosen both as a way of evoking the artistry of Natalie Haas and also allowing for a collaborative performance. This piece was cowritten by me and fellow Belmont University student Tessa Dalton. There are, of course, many ways to approach a cowriting scenario, but my process involved composing the underlying harmony, groove, and form of the song while my collaborator wrote the melody. This allowed me to focus on creating a rhythmic line with interesting subtleties without needing to divert my attention to the melodic aspects of the piece.

Much of the piece is based around specific techniques utilized in the cello part. The most visible technique featured in this piece is the use of rhythmic “chopping” which provides a backbeat for the primary groove. A chop on the violin or cello involves placing one’s bow on the string in a rhythmic fashion to create a sound similar to a snare drum, mandolin chop, or a “DJ who scratches records” (Hymes 2021). This technique

was first popularized by Richard Greene, who used chopping in his solos or to accompany in a bluegrass band.

Inspired by players who have greatly developed the chop, such as Darol Anger, Casey Driessen, and cellist Rushad Eggleston, I utilized some more advanced variations of the technique in “Ulster Echoes.” One example can be heard in what is sometimes described as a triple chop, which involves subdividing an eighth note into a rapid sixteenth note triplet. This triplet is typically followed by an additional standard backbeat chop. Additionally, the chops are often surrounded by various rhythmic actions of the bow which help define the subdivisions of the groove.

“Hungarian Dances No. 5”

Johannes Brahms was a German composer and pianist born in 1833 whose compositions make up an important chunk of what defines the romantic style in the Western classical canon (Geiringer, 2023). Brahms composed important works for many instrument groups including but not limited to solo piano, cello, chamber ensembles, and four symphonies. Due in part to the influence of his contemporary and friend Robert Schumann, Brahms was known by many as a successor to Beethoven and was esteemed as one of the authors of classical “masterworks” (Avins, 2021).

An aspect of Brahms which is pertinent to this project lies in that he was a skilled improviser and well versed in the folk music present in Europe in his time. A common tale told of Brahms both in his day and still today was that young Johannes grew up performing at seedy bars along the Hamburg waterfront, entertaining sailors and prostitutes with his piano playing. This image played into his persona in which he existed

as a tortured artist, citing that these experiences as a young boy “left a deep shadow on his mind” (Swafford 2001, 270). There is some debate in academic circles about how legitimate these claims are: however, it is clear that Brahms was involved with folk music as a listener and performer. Brahms served as the accompanist for the renowned Hungarian violinist Eduard Reményi and therefore did indeed perform with musicians who were legitimately familiar with the Hungarian style (Schwarm 2016).

The “Hungarian Dances” compositions were published in two groups in 1869 and 1880, written for two pianos. Since the time of Brahms, the study of ethnomusicology has developed greatly, with much of this development spurred along by Hungarian composers Béla Bartok and Zoltan Kodály. It is therefore worthwhile to address some of the conflicting origins related to these pieces, and specifically Hungarian Dance No. 5. Brahms claimed that these pieces were “the genuine children of the Gypsies, not begot by me, merely nourished by me on bread and milk” (Banks 2021, 758). The truth is somewhat more complex, however. Most of the melodies contained are actually of Hungarian folk origin, rather than coming from the Roma people (referred to as “Gypsies” by Brahms). Additionally, according to the previously cited 2021 article written by Jon Banks, nearly one hundred percent of the material published by Brahms was taken from written scores with “negligible” additions from Brahms. For example, Hungarian Dance No. 5 is essentially taken completely from Béla Kéler’s “Bártfai Emlék Csárdás,” even down to the marking that the second melody should slow down greatly and then accelerate after the first repeat. It is important to note that this melody was a tune originally composed by Kéler, and is not derived from folk origins despite having a similar sound.

The primary rhythm driving “Dance No. 5” is set by a strong beat pulse played by the bass hand, and then a consistent off-beat pulse performed by the right hand of the accompanying piano. This rhythm evokes the march feel common to wind band tunes and marches common to the period. The primary melody lends itself to virtuosic expression and seemingly imitates the rowdy yet skilled musicians that may have been present in the previously mentioned waterfront bars. In the section with the second primary melody, there is a sudden drastic slow down, creating a dramatic juxtaposition against the motor-like rhythm of the two accompanying hands. Both of these rhythmic elements are likely intended to evoke the feel of Hungarian folk music.

Production Perspective of Project

The Desktop Producer and the Studio Session

Due to the development and price reduction of numerous forms of technology, the ability to record oneself at a level considered to be professional is far less expensive than ever before. The popular duo Billie Eilish and her brother Finneas famously won a Grammy in 2020 for their song “Bad Guy” which was produced in a bedroom rather than a professional studio (Tingen 2019). This example is emblematic of the possibilities available to musicians today, and it serves as a point of inspiration for many aspiring producers. To illustrate the radical drop in cost to a burgeoning recording engineer, I would like to refer to a 1975 article in *Rolling Stone* magazine titled “Kids: Make Big Records in the Privacy of Your Own Home” by Len Feldman (Feldman 1975).

In the article, Feldman breaks down the equipment which one would need to begin recording high quality audio in their own home. Feldman offers several choices to readers, and adding all of the equipment together arrives at a total estimated range for an “affordable” home set up in the range of \$3,175-\$5,175 (Feldman 1975). Adjusted for inflation, these numbers would be somewhere around \$17,271-\$28,150 in 2023. As it is not in the specific scope of this project, I will not belabor the specifics of an equivalent modern system; however, one could easily create a home studio setup for below \$3,000 with far greater capabilities than listed in the Feldman article. An example is listed in the

following table, in which all equipment prices are taken from Sweetwater.com as an industry standard.

Table 2: Purchasing a Budget Recording System

Equipment Item	Model	Price:
Audio interface (4 channels)	Focusrite Scarlett 4i4	\$260
(2) Dynamic Microphones	Shure SM58	\$200
Directional Condenser Microphone	AKG C-214	\$465
Omnidirectional Condenser Microphone	sE Electronics sE2300	\$400
Ribbon Microphone	Royer R-10	\$600
Computer	Apple Mac mini Apple M2 chip with 8-core CPU and 10- core GPU, 256GB SSD	\$600
Digital Audio Workstation (software)	Logic Pro X	\$200
TOTAL:		\$2,725

For the purpose of this paper, I will use the term “desktop producer” to describe someone who is utilizing their own space and equipment to record audio as opposed to the use of a professional space. In order to highlight the benefits and drawbacks of utilizing a professional studio as well as one’s own space, around half of the material was recorded at a studio while the other half was produced in my own space. In 2023, it is sometimes difficult to differentiate between the capabilities of a home studio and a professional studio; therefore, I will describe a few guidelines to define the parameters.

A desktop producer, as defined here, will typically be recording audio in his or her own domicile (house, apartment, etc.) or at an external location which is likely not acoustically treated for studio purposes (e.g., a church, office, or classroom). Most desktop producers will have a single audio interface with little to no outboard gear, such as analogue compressors, EQ's, or delays. Typically, a desktop producer will only be able to record one or two sound sources simultaneously due to a limited number of mic inputs, a suitable room, and/or number of high quality microphones available. A desktop producer will almost always be running their DAW from the same room in which the audio is recorded. It is important to note that someone recording audio from their own space does not necessarily indicate that the audio quality will be lower or a performance will be worse than audio made in an analogous situation in a studio.

The process for recording a song as a desktop producer is slightly different than the typical method of recording in a studio. When studio musicians, studio space, and engineers are hired at an hourly rate, it is imperative to work quickly and efficiently due to the high cost. This means that typically the whole band will record together at the same time, often with one or more members separated in an isolated booth. When recording at home, the typical process involves layering the different instruments and tracks one at a time. This is a much more time intensive process; however, it allows one to redo the various performance takes until satisfied since they are not restricted by the studio's hourly rate. Additionally, since all of the tracks are recorded in isolation, it is much easier to edit the individual parts. This can take the form of pitch correction in a program such as Melodyne or fixing rhythmic inaccuracies.

There are different benefits and challenges of recording in a studio session environment. The most obvious disadvantage is in the cost of booking players and studio time. There is a great amount of variation in how long a song takes to record, but I estimated that each song would take around one hour of studio time for this project. By examining the following table, one can see what the cost of an entry-level professional studio session might look like before any post-production or overdubs.

Table 3. Budget for a Studio Session

Item:	Scale:	Total (for four hour session)
Studio Space	\$50/hr	\$200
Audio Engineer (single engineer)	\$50/hr	\$200
Session Musicians (4 player band + the artist)	\$85/hr/player, + potential \$85/hr for session leader	\$1,360-1700
TOTAL:	\$440-525/hr	\$1760-2100

One should also be aware that it is much more difficult to edit the audio files recorded at a studio session than when recorded in a sterile overdubbed environment. Much of this can be mitigated by working to reduce acoustic bleed between channels, but in a string band context, it is typically desirable to position musicians around a room mic in addition to their individual spot mics.

Although there are drawbacks, the benefits of a studio session can be immense. First, gathering all musicians in a room in real time allows for a much higher degree of multidirectional communication between the producer and musicians. In a jazz or bluegrass context, this is important as the playing and improvisational style of one player will often inform the decisions of others. From a sonic perspective, professional

recording studios will generally be able to afford much better equipment. At a high-end studio, a studio signal chain for one source (microphone, cables, outboard gear, pre-amps etc.) will often run in the tens of thousands of dollars. It is often much more convenient to simply rent a studio space for a few hours, rather than investing in the ownership of such high quality equipment.

With each piece recorded at a studio session for this project, we utilized a similar microphone setup with the only difference being a switch in instruments. Each player had headphones with separate monitor mixes, which also allowed us to use a click track. While the audio engineering setup remained consistent between pieces, a slightly different approach was taken in producing each piece, which will be detailed in the following pages. The following section is organized by approach in production rather than in the track order of the recorded portion.

“Troublant Bolero”

Troublant Bolero was recorded at a studio session and represents a straightforward process of production. The instrumentation involved an upright bass, steel-stringed acoustic guitar, nylon-stringed acoustic guitar, cello, and violin. Although there is a lot of variation in jazz Manouche ensembles, this grouping of instruments (especially the doubled guitar) is fairly standard other than the presence of cello. Because the cello plays the primary melody in this piece, it was necessary to ensure that there was some space in the low-mid to high-mid frequency space. The presence of two guitars could present a problem in this frequency range; however, the highly percussive nature of this specific bolero rhythm makes it easy to feature the cello.

This piece was performed to a click track, and we recorded a total of three passes. The multiple passes allowed for the ability to insert song sections from various takes in order to “comp” together a master take. After the recording session was finished, I wrote and overdubbed string section (cello, violin) parts which were added to the final mix. All player’s solos were played in real time in the studio and not spliced in after the fact.

“Prelude”

“Prelude” offers an example of a fairly different approach to studio recording than that described in the section above. In this piece, there is much less attention placed on improvised solos, but rather the focus is on the arrangement as a whole. As such, less concern was paid to ensuring that the ensemble was able to record long continuous and collaborative takes; instead smaller sections were repeated multiple times to ensure accuracy. “Punching” refers to a recording technique which allows for the band to begin recording at a specific place within a piece, as opposed to starting from the beginning (Rumsey 2009, 66). As one can see in Figure 2, every section of the piece involved multiple punches, often overlapping slightly in order to offer multiple points of transition between takes.

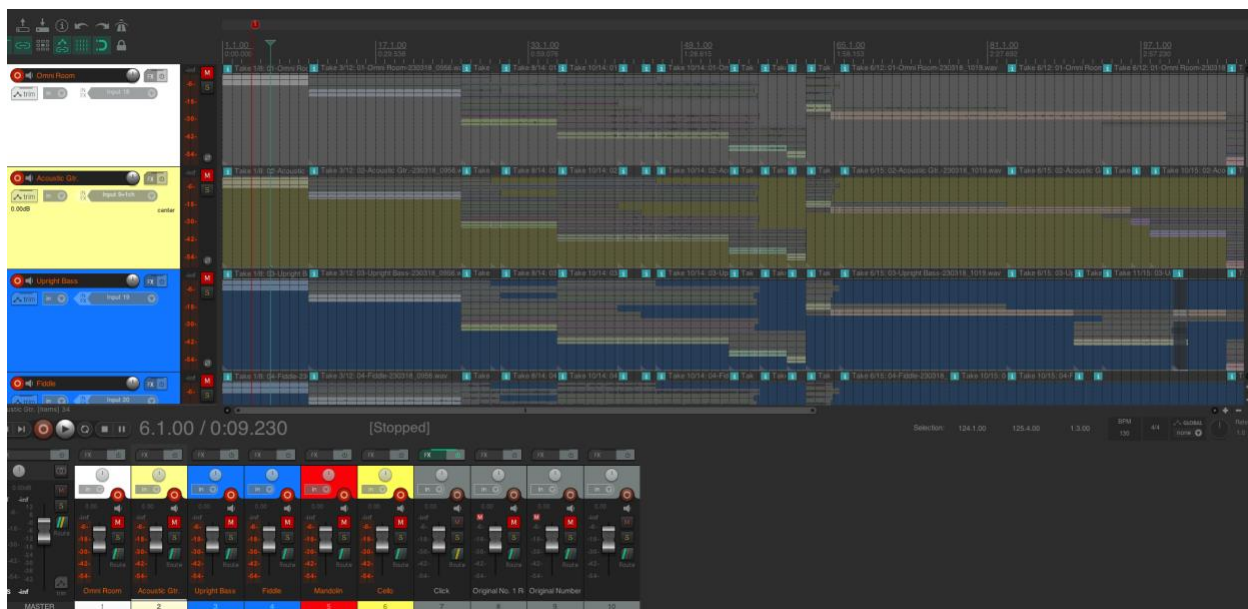


Figure 2. Punches for “Prelude”

Another difference in the process for this piece is that I produced the recording from within the control booth as opposed to playing live with the other players. Because the cello part is highly repetitive and serves as the rhythmic underpinning of the piece, a scratch track was created with the cello part embedded within, which I recorded ahead of time at my own studio. This allowed me to divert my attention completely to the role of producing while the session was occurring, and to focus on expressing my vision as the composer to the musicians present. The cello parts were later overdubbed in order to match the performances of the other players.

“Spain”

Out of the three pieces recorded in the studio session, “Spain” by Chick Corea presented the most difficulty in terms of production. This was due in part to the fact that the arrangement was a reinterpretation of Corea’s original recording. The string band instrumentation offered a chance to create something unique, but also required a great

deal of intentionality with choices in terms of arrangement. Additionally, “Spain” was recorded for this project at a fast tempo of 272 beats per minute and involved intricate unison lines which offer very little room for error. Finally, the piece is quite long since musicians are given the opportunity to take improvised solos. With all of these challenges in mind, a hybrid production approach was taken to ensure a positive mix of spontaneity and accuracy.

The initial head of the tune was recorded multiple times with various punch points to ensure a high degree of accuracy between all of the parts. This also allowed the band to try a few different ideas in regards to arrangement and instrumentation. Because all of the takes were saved within the project file, the ability to choose between these ideas was maintained after the recording session. The general dynamic level is relatively static during the head, so the ensemble’s sense of musicality was not greatly affected by the presence of multiple punch points.

For the solo sections, longer continuous takes were utilized in order to encourage a sense of collaboration between players. This approach is more similar to the method employed for the recording of “Troublant Bolero” mentioned previously, while the head sections more closely resemble the process for “Prelude.” Additionally, the band recorded a version of the solo section over which no one improvised. Because the piece was recorded to a click track, this clean accompaniment could be spliced into the recording after the session if any players wanted to redo their solo. This was a technique utilized for the final cello solo.

“Paddy on the Turnpike”

Among the pieces recorded in the style of a desktop producer, “Paddy on the Turnpike” was the most straightforward. A click track was used in order to assist with clean punches and to make temporal editing more straightforward. All of the instruments were played by myself using the same microphone (a Neumann TLM 102), or using a direct input in the case of bass. It is worth noting that the specific instrument used for bass was a Kala Journeyman UBASS, which is not an instrument which would commonly be used in the style of bluegrass. The idiosyncrasies of the UBASS evoked a quality surprisingly similar to that of an upright bass. This sound matched the style more closely than an electric bass or octave-shifted cello which were also attempted.

“Hungarian Dances No. 5”

This piece involved a similar approach to that of “Paddy on the Turnpike”; however, some additional difficulties were encountered which highlight one of the benefits of utilizing the desktop producer approach at times. One feature of the original score written by Brahms is a variety of tempo changes within the primary melody section. Because I knew that many overdubs would be required, I programmed these tempo changes into my DAW, which allowed me to remain consistent with the measure numbering and maintain the use of a click track. After completing my initial recordings, however, I decided that these dramatic tempo changes were not suitable to my interpretation of the jazz Manouche style. Because there was no studio space or session musicians being paid by the hour, it was not detrimental to the project to rerecord much

of the material in order to achieve a desired effect. All instruments were performed by myself, and I utilized both steel-stringed and nylon-stringed acoustic guitars.

“Undecided”

Although the arrangement for “Undecided” is quite straightforward, the piece featured the challenge of using MIDI instruments alongside acoustically-recorded material. Additionally, I collaborated remotely with two musicians— Belmont University’s Nick Bilski on guitar and Jason Morgan on piano. Initially, a scratch track was composed using MIDI drum samples from Steinberg’s Groove Agent plugin, some simple MIDI piano voicings which were drawn in, and a walking bass line was performed by myself. Additionally, the track featured the primary melody on cello as well as an improvised solo for information on the style. These instruments were delivered in multiple .WAV stem files, which allowed the collaborating musicians to mute any instrument groups that were not helpful to their performances. Each musician recorded their parts at their own home studios.

“Ulster Echoes”

The final piece described in this section was recorded in an environment which lies somewhere between a desktop producer and a studio session scenario. Because there are only two musicians featured on the piece, there were significantly less variables which need to be controlled. The piece was recorded to a click track with each musician wearing headphones. However, due to the small space in which the recordings were produced, it was not possible to isolate one instrument from the other. Therefore, it was

possible to comp together a master version of various takes. However, there was not the same level of control available as if the instruments were recorded sequentially. Three microphones were used for this recording, with one Neumann TLM 102 condenser close to the cello and a stereo pair of Rhode M5's on the violin.

Post Production

Entire volumes have been written on the subject of mixing and mastering, and it is therefore out of the scope of this project to explain each step of post production exhaustively. I will, however, detail a brief overview of some elements which help to achieve a more polished final product. It is also important to note that many of these elements can be manipulated differently depending on the context of each piece.

The most important step of post production in this project was the comping, editing, and collating of the recorded performances. Because most of the tracks in this project aimed to represent an organic musical experience, it was not necessary to only find sections with perfect accuracy in every instrument. For example, in some of the takes which made the final version of "Spain," the entire band rushed slightly ahead of the beat. However, this helped to create a sense of energy and anticipation, and at the right time propelled the arrangement forward in a way which is difficult to articulate in strictly musical terms. One should clearly define their musical vision for the project before beginning this step, as it requires an artistic imperative in addition to technical know-how. In the editing stage, I also used Celemony's Melodyne to tune some sections and improve the rhythmic accuracy of various tracks. This was especially useful for salvaging

performances that represented a desired musical effect but contained some undesirable mistakes.

Once the performances were committed into master takes, the next step involved the mixing of said tracks. In a project which features the heavy use of acoustic instruments and tones, I did not require the use of effects which greatly augment the natural sound of these instruments. It is common to apply a small amount of equalization to each track in order to highlight or suppress certain frequencies. This was an especially useful tool for when multiple instruments fought to be heard in a similar frequency range. An additional effect which was applied to each track is compression. A use of subtle compression on each instrument's close mic helped to assist with volume mixing as it stabilized the actual decibel level of the track.

For reverberation, I used a variety of emulated spaces rather than keeping the same effect across multiple pieces. My choice of reverb depended on the context of the piece as well as the environment in which it was recorded and the ability to use a room mic. Additionally, different instruments will often use a different blend of reverb types in order to support that instrument's role in the mix. I referenced numerous existing recordings in various genres in order to choose a style of reverb (hall, spring, synth, etc.) which was most suitable for the desired effect. In general for this project I used a mix of emulations with a decay time of one to three seconds in a medium-sized space.

Once a suitable mix had been achieved, the final step of the process involved mastering. According to audio engineer Bobby Owinski, "Mastering is the process of turning a collection of songs into a record by making them sound like they belong together in tone, volume, and timing (spacing between songs)" (Owsinski 2008, 3). It was

important to consider that listeners will hear this music through a variety of playback devices. An iPhone's speakers will portray a mix quite differently than a pair of headphones or loudspeakers. Mastering helped to get each track sounding suitably good on every device, and also ensured that the overall loudness level is suitable for mediums such as streaming. Because mastering is an art which truly takes years or decades to become proficient in, I opted to utilize some technology to assist. iZotope Ozone is a software which utilizes artificial intelligence to create mastering signal chains based on a set of parameters defined by the user. I used Ozone to master each of my tracks in order to establish a consistent sound for the project. While there may be certain detectable differences between that of a professional master engineer and Ozone, it served as a useful tool for the scope of my budget and capabilities.

Conclusion

The information contained in this paper is intended to give an overview of the methodologies used to complete this project and also serve as a potential starting point for other students looking to attempt a similar venture. There are many proverbial hats which burgeoning musicians are required to wear in the music industry in the twenty-first century, and a project such as the one described in this document can be quite helpful in learning many of the such required skills. The audio portion which accompanies the written portion of this project includes a mix of original and non-original instrumental pieces intended to expand the repertoire of commercial music featuring cello as a lead melodic instrument.

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