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ANALOGOUS: THE INFLUENCE OF TECHNOLOGY ON TRADITIONAL FIDDLE PERFORMANCE

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A PRODUCTION PAPER

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Submitted by Catherine McDonald in partial fulfillment of the requirements for the degree of <u>Master of Music</u> in <u>Commercial Music</u>.

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Introduction

The first violin was created in the sixteenth century, allegedly by the hands of luthier Andrea Amati in Cremona, Italy (Tai 2018). The four-stringed, bowed instrument made its musical debut during the apex of the Renaissance period (fifteenth and sixteenth centuries) and was widely celebrated throughout Europe. During the seventeenth century, Andrea Amati's modernized violin model became the unanimous standard. It quickly migrated from Italy to neighboring European countries, initially for the use of the gentry.

The increasing emergence and usage of this instrument brought forth the need for differentiation between the classical "violin" and the natural "fiddle." This evolution led to the timeless question: what is the difference between a fiddle and a violin? Yehudi Menuhin described the alternate styles by using the metaphor "Scottish fiddlers are 'wild horses of the prairie,' and classical violinists are 'thoroughbreds' . . . [a] thinly veiled example of cultural imperialism" (Gibson 2016, 1). Though the fiddle and violin could be similarly described as the same species, one breed has historically been deemed higher in value by society's economic standards. The style differentiation reflects the economic difference in numerous ways, including the preservation of original works. Classical violin pieces have most commonly been preserved through manuscripts, requiring of musicians the additional skillset of sightreading. In contrast, traditional fiddle tunes were originally preserved aurally and passed down through generations.

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As music continued to migrate throughout the United States, recreating classical music for the typical American home quickly grew in demand. Initially, the issue of access to that music was alleviated by publishers releasing sheet music editions of classic tunes. However, this solution was short-lived, as the music industry revealed that not every household would be musically inclined. As the music industry continued to evolve in the nineteenth century, there was an increasing need for widespread accessibility to music among middle-class Americans.

Known best for his invention of the lightbulb, Thomas Edison was deemed "the man of a thousand patents" in the mid-twentieth century. He was also the mind behind the first-ever recording and playback machine known as the phonograph, for which he was granted the patent in 1878 after successfully recording the popular nursery rhyme "Mary Had a Little Lamb." Edison recorded the sound by creating indentations on a film wrapped around a rotating cylinder (Auslander 2006, 3). These methods of recording to cylinder, flat-pressed disc, and tape are known as analog recording. The playback of an analog recording directly corresponds to the recorded air-pressure variations, known as soundwaves. Analog recordings require live performance and production and are then manually mixed, mastered, and "carved" into a fixed vinyl or tape (Bourriaud 2005, 15).

In her article, "Machines, Music, and the Quest for Fidelity," Emily Thompson details that during the nineteenth and twentieth centuries, new technologies such as recording on phonographs "... provided a means to mass-produce identical recordings of musical performances" (Thompson 1995, 132). In addition, the article further states that "people increasingly experienced music not by attending unique live performances or by producing music themselves in their homes but instead by purchasing recordings, carrying them home, and reproducing the music on machines in their parlors, whenever and as often as they desired" (Thompson 1995, 132). This led to the rise of a burgeoning recording industry that made music accessible to all Americans, even those who did not wish to personally participate in music creation.

In 1977, Sony Music released the first digital-audio recorder, the PCM-1, to the global market. Significantly smaller in size than other existing recording devices, this handheld device added convenience and portability that outweighed the benefits of analog. One of the more crucial advancements provided by the PCM-1 was the ability to compress almost triple the amount of sound in one recorded unit. In order to generate quantitatively greater sound waves, sacrifices had to be made in the qualitative elements of recording that reduced them to a numerical value (Recording Connection 2022). Because of this, the new recording method that digital audio captured ultimately produced different sound frequencies than what could be achieved through analog recording.

Digital and analog recording methods vary greatly; however, all soundwaves must ultimately be converted to analog in order to be audible. According to the website Recording Connection, "Analog refers to a continuously changing representation of a continuously variable quantity. Digital, however, refers to representing these variable quantities in terms of actual numbers, or digits" (Recording Connection 2022). To put it simply, analog produces the entirety of a soundwave's frequency while digital recording produces fixed, numerical points along a soundwave's frequency, known as a sample.

The recording process and traditional fiddle could be perceived as unrelated; however, the evolution of both in many ways could also be considered analogous. In biology, the word "analogous" can be defined as "similar or corresponding in form or function" (*Oxford English Dictionary*, 3rd ed., s.v. "Analogous," accessed March 30, 2023, www.oed.com/view/Entry/7026). This term is not limited to living subjects, but all structures of scholastic significance. Similarly, the culminating recording of this project arranged, recorded, and produced tunes that emulated the evolution of the traditional fiddle and its recorded medium. This process included historically accurate arrangements, instrumentation, performance technique, and locations for recording. The double-sided album compared the usage of analog and digital recording and production methods based on the appropriate era for each composition.

Keith Evanson validates the usage of double-sided records in his article "Return of the B-Side Single." He explains, "What might be considered an inconvenience to users who use modern music listening measures, the physical act of moving the turntable needle to the beginning of the second side of the record can provide a sense of clarity, flipping to the next page of the story told through songs" (Evanson 2017). For this project, the vinyl "A" side represents the historic foundation that provides a building block for the digital "B" side. The "A" side of this project was recorded entirely with analog recording methods. The musical works for the "A" side were carefully selected based on performance style, technique, and historical significance. The recordings were then converted to digital samples for the "B" side, which were then used to create analogous remixes using contemporary production methods. This showcases the evolution of both traditional violin and recording by distinguishing the transition from analog to digital between sides. Applying historically accurate recording methods such as analog recording techniques to the styles of traditional fiddle performed in the analog era provides aural preservation of that history. Utilizing the historic works digitally provides an entirely new "instrument" that is used in contemporary settings while maintaining historic authenticity of the tunes. With an emphasis on both historical and technical accuracy, this recording project showcases the influence of technology on traditional fiddle performance. The following chapters detail the history, recording process, and digital remixing of each tune selected for this project.

Chapter One

"Tain in the Rain"

"Tain in the Rain," one of the more popular Scottish reels in the twentieth century, was written by Scottish bagpiper prodigy Gordon Duncan. "Tain in the Rain" was first released in a medley of traditional Scottish reels that were featured in Duncan's 1997 album *The Circular Breath*. The accompanists for the album consist of Gerry O'Connor on tenor banjo, Ian Carr on acoustic guitar, Andy Cook on Ugandan harp, Ranald MacArthur on upright bass, Donald Hay on drums, and Jim Sutherland on congas, djembe & other percussion. *The Circular Breath* was released under Greentrax Records, a Scottish label founded in 1986 (Duncan 1997). It was recorded in Castle Studios in Pencaitland, a small town in East Scotland, roughly twenty kilometers east of Edinburgh (Duncan 1997).

The title of this album is an homage to a technique bagpipers use that involves a complex level of breathwork. It requires "the ability to consistently blow air from the oral cavity whilst taking in fresh air through the nose, with no break in the outward air flow. This is achieved through a combination of the closing of the soft palate at the rear of the throat whilst using muscles in the mouth to expel air out of the oral cavity" (Moschner 2013, 83). Circular breathing enables a bagpipe player to breathe and play sustained patterns simultaneously, something only strings were able to do before due to the use of the bow. The fruition of circular breathing techniques cultivated many traditional styles

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of ornamentation that were adapted to the fiddle and are unique to Scotland, as highlighted in "Tain in the Rain."

This piece is performed in a style traditional in the Scottish Highlands known as *Piobaireachd*, which consists of one theme followed by a series of variations (MacLellan 2020). Odd meter tunes are common in traditional Scottish music and were adapted for the fiddle from techniques used in bagpipe tunes. Gordan Duncan was responsible for a revolution in bagpipe playing known as "chanter manipulation," which refers to the variance of pressure on the pipe's bag. In doing so, the world-renowned piper was able to create accidentals that are not normally attainable on the bagpipes. "Tain in the Rain" provides numerous examples of styles specific to traditional Scottish fiddling by showcasing homages to the bagpipe with odd-meter verses and variations, a consistent sound while breathing, and unique accidentals attainable through chanter manipulation (Duncan 1997).

Castle Recording Studios is known for maintaining the integral and irreplaceable authenticity of the analog sound. Spitfire Audio stated that "A studio with this history and heritage can survive and thrive during this 'in the box' era that we live in. Within the right environment, musicians can get together and focus on performance as opposed to becoming slaves to a computer-generated click" (Spitfire 2016, 1). History and heritage as stated above refers to the approach of recording—producing a sound homogenous to a live performance, the analog style of recording is made inalterable. In lieu of the digital precision of a computer-generated click, this process records the inexplicit humanity in a musician's live expression, interpretation, and interdependence with the rest of their ensemble. In contrast, the "enslaving" click enables the ability to digitally perfect a recording. The click creates a quantification of the piece that acts as a digital map one can revisit and modify. The only exception for contemporary equipment Castle Studios will reluctantly provide is the supplementation of "poorly maintained vintage equipment" (Spitfire 2016). For the recording of *The Circular Breath*, Castle Studios used one contemporary approach by opting for a digitally controlled workstation. A crucial item of gear responsible for generating this sound was the SSL AWS 948. This 24-channel, 8-bus standalone analog mixer was able to record up to 48 analog inputs. It was one of the first digitally-controlled analog consoles on the market. According to Sage Audio, "In the 1980s, with the advent of audio processing software, digitally controlled analog became a possibility . . . which showcased fully automated, digitally controlled parameters" (Sage Audio n.d.). Because this form of recording remained analogously linear, the unbroken frequencies were not compromised by the digital aspect of the recording (Recording Connection 2022). This meant that sonically, the recording was homogenous to preceding non-digital analog mixers.

A range of vintage equipment was predominantly utilized throughout the recording process of *The Circular Breath*. This included the Neumann U87, a largediaphragm condenser microphone released in 1967 (Neumann 2005). Neumann condenser microphones remain a universally standard vintage microphone for recording string instruments and vocals. The Neumann U87 was unique to its predecessors by enabling the user to access three polar patterns: cardioid, omnidirectional, and figure-8 (Neumann 2005). In addition, it allowed an optional high pass filter ideal for instruments with a higher range of frequencies, such as the fiddle. To best emulate the authentic sound of Castle Studios' recording process for Gordan Duncan's *The Circular Breath*, a digitally-controlled analog workstation and the large-diaphragm Neumann U87 were necessary. For this, a Neumann U87 and a digitally controlled standalone analog mixer to emulate the most accurate sound-alike recording of "Tain in the Rain." The instrumentation for this recording consists of two fiddles recorded live with a vintage Neumann U87 that was equidistantly placed one and a half feet above both fiddle players in a medium-sized room in the studio that was semi-muted with wooden floors. This arrangement remains in the traditional Scottish Highlands Piobaireachd style, first established with the A and B verses in unison as the theme (MacLellan 2020). The initial variation showcases one fiddle remaining on melody while the subsequent fiddle accompanies. The final variation features one fiddle playing the A part while the other plays the B part simultaneously, followed by a closing pass of the B part in unison.

Highlighting the specific styles unique to Scottish fiddling, this sound-alike recording of "Tain in the Rain" used the thorough analysis of traditional Scottish fiddle styles to create the best replication possible of the original. Following the analog recording process, "Tain in the Rain" was digitally converted and featured as a sample in a contemporary piece. The genre, style, and production provide a significant contrast to the traditional recording while still retaining a portion of the original in the remix. This is an example of modern technological influence with the inclusion of traditional fiddle styles unique to Scotland.

"Tain in the Rain" was produced by Emmy-nominated creative content producer "Churchill Morris." Heavily influenced by Motown, funk, and blues, he has had the privilege of working with a diverse range of clients including but not limited to Gavin DeGraw, ROZES, and Rascal Flatts. Churchill Morris' digital audio workstation of choice for sampling "Tain in the Rain" was Logic. All additional audio material used on the remix of "Tain in the Rain" derived from the personal collection of Churchill Morris.

Chapter Two

"Morrison's Jig/Volcanic Jig"

Though not exclusively Scottish, the traditional reel remains a traditional composition and performance style for Scottish fiddle. Reels are best known for having a duple-meter feel, meaning they features an emphasis on the first and third beats of reel melodies. Equally as popular, jigs feature triplet-emulating melodies that are widely known in traditional Irish compositional styles. Unanimous amongst indigenous Celtic styles is the usage of medleys. The term "medley" originated from the French word *medlee*, which translates to the English "game" or hand-to-hand combat. A medley is used in traditional fiddle to describe a performance piece that consists of multiple tunes. To pay homage to the historical usage of medleys, the following track has been arranged as a medley consisting of a reel and a jig, showcasing traditional Irish and Scottish styles (O'Flynn 2009).

The first traditional tune in this medley is a reel composed by Tom Carmody in the early twentieth century. This composition, commonly known as "Morrison's Jig," has numerous alternative names including "Port Uí Mhuirgheasa," "Humors of Dingle," and "Paddy Stack's Fancy Jig" (Carmody 1960). Having multiple names for a tune is commonplace in old-time tunes, as is multiple individuals claiming to have originated the tunes. Such mysteries played a role in the pedagogy of traditional Irish fiddle styles. Featuring a primarily aural approach to the learning and distribution of tunes, sheet music

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and written documentation were not necessary in many fiddle styles such as Irish music. This resulted in various traditional styles passed down generationally that were based on each respective teacher's depiction, interpretation, and inevitable miscommunications.

Tom Carmody was born in 1893 near the market town Listowel in County Kerry, Ireland. He hailed from a musical family, where his father Maurice—commonly referred to as "Moss"—exposed him to the fiddle and melodeon at a young age (Carmody 1960). In his life, Tom Carmody achieved mastery of the fiddle as well as the accordion. He was known for playing a specific accordion that utilized the "two-row" system, common in traditional Irish music. The two-row accordion is known to be significantly more complex. This is due to the perfect fourth interval between the two button lines, causing difficulty with transposition (Carmody 1960).

Tom Carmody moved to New York at the age of twenty-seven. There, he gained notoriety in both fiddle and accordion through the mid-twentieth century. His many accolades include but are not limited to a residency as a Sligo fiddle player for the James Morrison Instrumental Quartet, as well as a feature with The Erin Irish Radio Orchestra. Tom Carmody returned to Ireland with his wife in the late 1950s. Although he had retired from the fast-paced New York lifestyle, he never stopped playing music. At the age of ninety-two, he recorded numerous works, all of which were assumed to be recorded on his Irish Estate. These tunes were later featured in "Irish Phonograph," a series by the national radio station RTÉ 1 (MacDonald 2000). Tom Carmody spent over half a century immersed in traditional Irish pedagogy and performance. For that reason, his works are an accurate representation of traditional Irish fiddle styles.

In the traditional style of a medley, "Morrison's Jig" passes the proverbial baton to the second piece. The development features an eight-bar cello solo, highlighting the E minor tonal center as it seamlessly transitions to the relative key of G. Once the G major tonal center of the new jig has been established, the fiddle then resumes the melody as the cello returns to the rhythm section. The traditional Cape Breton-style jig composed by Cape Breton, Nova Scotia in the summer of 1972 (Sanchez n.d.). She grew up in a musical family and received training from her uncle Allan MacMaster, a well-known fiddler more commonly addressed as "Buddy." Buddy grew up in a Gaelic-speaking household during the 1920s. It was there where he was first introduced to music by his mother, Sarah Agnes (MacDonald 2000). Sarah would serenade Buddy throughout his childhood in the traditional Gaelic style of speak-singing know as jigging and lilting. Lilting and jigging played a crucial role in the stylistic pedagogy and aural preservation of traditional Cape Breton tunes. Because of this, the traditional fiddle style highlights melodies that are more approachable to sing. Three generations after Buddy, worldrenowned fiddler Natalie MacMaster has received nominations for both Juno and Grammy awards, illustrating how the style sustains and continues to gain international notoriety.

"Volcanic Jig" debuted on Natalie MacMaster's album *Yours Truly* in 2006 under Rounder Records (Sanchez n.d.). *Yours Truly* was co-produced by MacMaster's husband Donnell Leahy. The original jig was recorded in numerous studios including but not limited to Bathouse Recording Studios in Kingston Ontario, Phase 1 Studio in Toronto, Sonic Temple in Nova Scotia, and Tomali Studios in Alberta, Canada. Though varying in locations, all of those studios utilized vintage analog consoles such as the Neve 8068 and the Neve V Series Monitor Console (Alexander 2018). In addition, the studios unanimously possessed the quintessential fiddle microphone—the Neumann U47.

The Neumann U47 microphone was created in Germany in 1947, shortly after World War II. Over seventy-five years later, it remains in the forefront of available microphones as one of the best at capturing the higher frequencies of vocals and string instruments. The large-diaphragm tube condenser microphone bears one characteristic that differs from the successors—the dual-diaphragm capsule. According to Greg Simmons, "The first commercially available microphone to use this dual-diaphragm approach was Neumann's U47, released in the late 1940s and using Neumann's M7 capsule (later replaced with the K47 capsule). The U47 offered switchable cardioid and omni polar responses" (Simmons 2020).

The instrumentation for this medley features fiddle, cello, acoustic guitar, and upright bass. To best capture the rounded tone in this recording, three authentic Neumann U47 microphones from the mid-twentieth century were used. The first microphone was omnidirectionally set and placed six and a half feet above the ground. Bass, acoustic guitar, cello, and fiddle were set in circle, surrounding the U47 to highlight the nondirectional polar pattern. Unlike the spherically-captured omnidirectional setting, the remaining two Neumann U47 microphones utilized the cardioid polarity pattern. Because the cardioid polarity pattern did not capture the full circumference of sounds, it was ideal for capturing additional frequencies directly from the instruments. The second Neumann stand was placed twenty-seven inches behind fiddle and acoustic guitar. Coming overhead, the U47 measured eighteen inches above the F holes—or "sounding point"—of the fiddle. The final microphone was placed three feet above the ground to reach the F holes between cello and bass. The Neumann U47 was twenty-four inches from the left side of the cello and thirty-six inches from the bass. To best emulate the traditional style, this medley was recorded live without a metronome.

The remix for this medley was produced by Nashville-based audio engineer and disk jockey Paige McCloyn. Paige was first exposed to the world of audio through broadcasting as a DJ for Revolution 91.7 in Bowling Green, Kentucky. From there, she went on to earn a degree in Audio Production from Middle Tennessee State University. Creatively, Paige's works often fall under the genres of R&B and soul. The digital audio workstation of choice was Pro Tools for the remixing process of the traditional Scottish fiddle tunes. Aside from the original medley recording, all other samples utilized came from the producer's personal collection.

Chapter Three

"Dusty Miller"

Historian Aaron Smithers depicted the migration of fiddle competitions from Europe to the New World. He writes that "Record exists of a contest in the colony of Virginia in 1736 . . . contests were fierce competitions which inspired innovation and improvisation in fiddlers in order to win favor with the judges and audiences. Texas-style fiddle music rose directly out of this contest tradition" (Smithers 2013). Traditionally, the repertoire requirements for old-time fiddle competitions included a hoedown, a waltz, and a third tune of the fiddler's choice. The contestants were judged on style, rhythm (both timing and all-over consistency), tone quality, and dance-ability (National Fiddlers Contest & Festival 2023).

"Dusty Miller"—also known as "Millers Reel"—is a well-known tune in the competitive fiddle circuit as a standard, old-time/bluegrass, Texas-Style "breakdown." The original composer remains unknown; however, the first written record of Dusty Miller was published in 1800 as a featured tune on Henry Robson's list of popular Northumbrian song and dance tunes. The tune has since been passed down historically through generations.

The tune consists of three sections: the first section tonicizes A minor, while the following two tonicize A major. This was common in traditional old-time "cross-tuning," wherein one alters the pitch of a string from traditional tuning, like that of a drop-D

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tuning on a guitar. As the tune was passed down through generations, traditional tuning rather than cross-tuning became routine as cross-tuning began to be utilized less frequently in American fiddle styles.

"Dusty Miller" was first recorded during the early-1900s era that was known as the "old-time revival." It was recorded by Twelfth Texas Cavalry Veteran Captain M. J. Bonner under Victor Records. According to Kevin Fontenot of the Texas State Historical Association, "On January 4, 1923, he (Bonner) broadcast a program of old-time fiddle Music over WBAP in Fort Worth, thus becoming one of the earliest radio fiddle players" (Fontenot 2006). Reputable as one of the top fiddle players of his time, Bonner's notoriety grew with the larger audience base of radio. This surge of listeners incentivized Victor Records to put his traditional old-time fiddling to tape.

The double-sided shellac record known as *The Texas Fiddler* consisted of four fiddle tunes: "Yearling's in the Canebrake," "The Gal on The Log," "Dusty Miller," and "Ma Ferguson." The final tune, "Ma Ferguson," was written in homage to Texas's first female governor Miriam Ferguson. *The Texas Fiddler* (Cataloged as Victor 19699) was recorded on March 17, 1925, at the Rice Hotel in Houston, Texas. Accompanying Capt. M. J. Bonner was the WBAP Hilo Five Hawaiian Orchestra's Fred Wagoner on guitar harp (Fontenot 2006).

"Dusty Miller" was originally recorded in the mid 1920s on the Victor Talking Machine. The most common microphone used from the 1920s-1930s was the carbon microphone, and the Neumann CMV 3 was the first mass-produced and most popular (Neumann 2005, 2). *Neumann History* details the sonic quality of Neumann microphones, stating that "With a linear frequency response between 50 Hz and 1 kHz this microphone had an excess of 10 dB up to 4 kHz, which decreased to approximately 15 dB at 10 kHz. Not quite what we would call a studio microphone these days" (Neumann 2005, 2). The Neumann U47 is a variable microphone, meaning an individual is able to adjust the polarity. With this feature, people were able to record and broadcast with more control over specific frequencies of their preference. Unfortunately, this control compromised certain frequencies and volume levels. Volume levels were dependent on the frequency being captured—the lower the frequency, the higher the decibel level.

To emulate the traditional recording and performance styles, "Dusty Miller" was recorded on a CMV 3. This microphone was commonly referred to as the Neumann Bottle. The instrumentation consists of mandolin, upright bass, acoustic guitar, and fiddle, all of which remain standard in traditional bluegrass ensembles. The form remains in the traditional three sections and was recorded live in a space with hard wood floors and a curved wooden ceiling for acoustic accuracy.

"Dusty Miller" was remixed by artist, producer, and disk jockey Kai Felsman. Trailblazing both musically and vocationally, Kai's traveling has introduced the essence of ethnomusicology into his creative process. Rust Magazine describes "He's heavily influenced by sounds and styles from around the world . . . The dynamic polyrhythms common to world music are foundational for [him]" (Felsman 2023). With his in-depth knowledge of traditional rhythmic styles, Kai utilized the original recording of "Dusty Miller" as a percussive sample throughout the remix. The digital audio workstation used for sampling was Ableton Live. Additional audio material used in the remix of "Dusty Miller" was from the personal collection of Felsman.

Chapter Four

"Faded Love"

The iconic western swing ballad "Faded Love" was first released in September 1950 by Bob Wills and His Texas Playboys. Led by Wills, this track features the infamous musicians known as "The Texas Playboys." The band subsequently rerecorded and released "Faded Love" multiple times throughout their career, culminating with a release on Bob Wills' final album, *For the Last Time*, in 1974. The band members included bassist and lead vocalist Leon Rausch, Jody Nix on drums, and Eldon Shamblin on guitar. The fiddle and background harmonies featured multi-instrumentalists Johnny Gimble, Keith Colman, and Merle Haggard.

The melody originated from a fiddle tune written by Bob Wills' father, John Wills; he later taught the melody to his sons. This tune was then adapted to create a new piece entirely in a historic example of sampling. "Faded Love" was a family affair, written by Bob Wills with his father John and his brother Billy Jack Wills. In a review featured in the *Southwestern Historical Quarterly*, Wayne Oakes described the Wills family as ". . . frontier musicians who of necessity supplemented their income by playing country dances. The family lived and worked in the breadth of Texas, exposing their children to the gamut of cultural influences" (Oakes 1977, 248). As a result of growing up in a musical family, Wills had an affinity for fiddle from a young age. He honed his skillset studying under his own family as well as from migrant workers and neighbors.

The small area Bob Wills was from was known for its fruitful and diverse music scene, producing legends such as Scott Joplin, Victoria Spivey, and Blind Lemon Jefferson (Townsend n.d.). According to Charles Townsend, Wills was "enthralled" by jazz and "In his late teens, he once rode fifty miles on horseback to see the Empress of the Blues, Bessie Smith" (Townsend n.d.).

James Robert Wills was born March sixth, 1905, in Limestone County, Texas. Though Wills participated and led numerous Western swing bands in the late 1920s, the ensemble he led that gained the most notoriety was formed in 1934—The Texas Playboys (Oakes 1977). The Texas Playboys circulated band members with ensembles ranging from six to twenty-two musicians at a time. The instrumentation of the band varied depending on the performance context, ranging from string trios to a full horn section. Bob Wills and his Texas Playboys were musically diverse. Their influences included a multitude of genres such as mariachi, ragtime, big band, folk, Cajun, and jazz. The marriage of so many regionally traditional performance styles along with their instrumentation cultivated a new genre entirely, known today as Western swing.

Bob Wills was able to elevate traditional fiddling, receiving accolades that ranged from Hollywood films to the United States Senate. According to *Senate Concurrent Resolution No. 35* from the Texas State Legislature, "Texans Milton Brown and Bob Wills, two of the most famous and influential swing artists of all time; these pioneers formed the Light Crust doughboys in the Fort Worth area in the early 1930's and then went on to even greater fame while leading individual bands of their own" (Texas State Legislature 2011). In recognition of the achievements of both Brown and Wills, this resolution officially designated Western swing as the official state music of Texas (Texas State Legislature 2011).

Some of the features of traditional Western swing fiddling—such as vocal imitations, a key modulation, and improvisation—are featured on the original recording of "Faded Love," chosen for that record by Wills himself. The song begins in the key of D major with a fiddle introduction that imitates the vocal melody in the verses. Following the introduction, the band ascends chromatically by two steps, landing on E and creating the dominant chord for the modulation to A major. The song features a verse-chorus form with instrumental solos over the chord changes of the verse.

Because it was originally recorded in 1950, this traditional Western swing composition was recorded live to tape via analog console. For this project to best emulate the original, the ensemble consisted of drums, bass, guitar, fiddle, and vocals (both lead vocals and harmony) and was recorded live; a digital-audio workstation was used to overdub both vocals and fiddle to prevent bleeding. The bass was recorded with the AKG microphone overhead and the RCA 44BX placed six inches away from the right-side F hole. This was done to capture both the low- and high-range frequencies. The drum kit was recorded using the Telefunkin 251 overhead; a five-foot by five-foot rug was used beneath to dampen the higher frequencies. The Neumann U47 was used for guitar; it was placed slightly above eye level at a three-foot distance. For both vocals and fiddle, a Neumann U87 was used. For the fiddle, the mic was placed overhead, one and a half feet above the F holes. It was placed five feet above the ground for vocals. The lead vocal was recorded one and a half feet away from the microphone while the harmonies were recorded an additional four feet away. This both prevented distortion for the louder "gang" vocals and highlighted the lead vocal line.

Remixing for Faded Love was produced by me (Catherine McDonald). The digital audio workstation used for sampling "Faded Love" was Logic. Additional audio material used in the remix of "Faded Love" was from my personal collection.

Chapter Five

"Limerock"

It is believed that the Texas-Style rag known as both "Limerock" and "Limestone Rag" was written by the reputable Texas fiddlers Bryant Houston and his father, Lek or "Cap" Houston. However, it is not certain that the Houston family is to thank for "Limerock." Several other notable fiddle players of the time such as Lum Sellers and Matt Brown have been accredited with the tune's composition as well. Regardless of its potentially murky origins, "Limerock" remains a staple in old-time fiddling and fiddle competitions.

Fiddle tycoon Texas Shorty described Bryant Houston's playing as "... the sound of a concert violinist turned old time fiddler. I later learned that Bryant had been trained as a concert violinist at the urging of his father, Lek Houston" (Wheeler 2016). Shorty goes on to say, "I'm not sure why he turned to fiddle playing, but I know he was part Cherokee Indian, and I think that influenced his playing. It was also clear that he had an affinity to nature's own music" (Wheeler 2016). "Limerock" follows a traditional AABB form with variations. Within the form, numerous key changes and sweeping harmonics offer similar timbres to a chirping bird, a rolling stream, and many other nods to nature that are common features in Houston's tune-writing style. In addition, "Limerock" features specific techniques that are akin to those used in classical violin such as altering positions to a higher register on the left hand known as shifting.

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The piece was first recorded by Benny Thomasson during the 1960s at a live show in Seattle, Washington. He was accompanied by Dudley Hill on guitar, Phil Williams on bass, and his son Jerry Thomasson on tenor guitar. "Limerock" has since been recorded in numerous arrangements and instrumentations. These ranged from Johnny Gimble's more competition-style cover with guitar accompaniment to string trio arrangements of the tune.

Recording the emulation for "Limerock" was based on the arrangement by Mark O'Connor, Edgar Meyer, and Yo-Yo Ma from their 2000 record *Appalachian Journey* (O'Connor et al.). The acoustic arrangement was recorded live in Mechanics Hall in Worcester, Massachusetts in July of 1999. When asked to describe the quality of sound unique to the hall, *Reference Recordings* engineer Keith Johnson details "The string vibrates to the limit and vibrates a little *faster* – so the note has a slightly higher pitch than it would have . . . as the note decays, you have two slightly different frequencies going" (Quint 2018). Mechanics Hall is well known amongst the recording community, having earned numerous awards for the unique tone quality it produces. Featuring the frequencies unique to Mechanics Hall, this trios' rendition of "Limerock" was recorded live directly to a digital audio workstation.

To properly emulate this, the recording of "Limerock" for this project took place in a large open room with an older wooden floor and minimal furniture. This created a natural reverberation akin to Mark O'Connor, Edgar Meyer, and Yo-Yo Ma's recording in Mechanics Hall. Instrumentation consisted of violin and cello, following the traditional AABB form with stylistically-accurate variations. The musicians were recorded sitting on the far-left side of the open room, maximizing the available space to enable reverberation. The quintessential Neumann 87 condenser microphone was used to record omnidirectionally. It was vertically placed four and a half feet above, and equidistantly two feet between, the cello and violin. Additionally, the Telefunkin 251 was used to capture the bow articulation of both instruments while highlighting more ambience from the room. The microphone was placed at a distance on the far-right side of the room; this was done to record the frequencies that can only be attainable through distance.

"Limerock" was remixed by Nashville-based engineer and artist Shawn Spencer. As an artist, Shawn's work has been featured nationally, ranging from Conan O'Brien to People Magazine. Contrasting to his background in audio engineering, Shawn's work has an emphasis on vocals. He does so by synthesizing lyrics writing with complimenting melodic structures. This skillset is highlighted in the remix of "Limerock" by using the original works as the accompaniment to a new vocal piece. The digital audio workstation used for sampling "Limerock" was Pro Tools. Additional audio material used in the remix of "Limerock" originated from the personal collection of Shawn Spencer.

Chapter Six

"Minor Swing"

"Minor Swing" was written by Django Reinhardt in the early twentieth century. It was first recorded by at the Quintette du Hot Club de France in 1937 in Paris, France. "Minor Swing" is the featured title track on *The Essential: Django Reinhardt*. Members of the Quintette du Hot Club de France consisted of Django Reinhardt on guitar, his brother Joseph Reinhardt on auxiliary guitar and percussion, Roger Chaput on rhythm guitar, Lois Vola on bass, and Stéphan Grappelli on violin.

Hailed as "the grandfather of jazz violinists," Stéphan Grappelli was known for his innovative commercial violin styles. After his mother passed away and his father was drafted to war while Stéphan was under the age of ten, the young Grappelli was brought under the wing of Isadora Duncan. Shortly after, Stéphan was enrolled in the Duncan Dance Institute, where his love for impressionistic music was fortified. However, as World War II progressed, the institute was converted into a military hospital. It was then that Grappelli was put into a Catholic orphanage, where he recalled he and the other orphans "slept on the floor, and often were without food. There were many times when I had to fight for a crust of bread" (Dregńi 2006, 71).

When his father returned from war in 1918, he allegedly pawned one of his own suits for what would be Stéphan's first violin. Though he was initially enrolled in formal lessons, the young Stéphan remained unamused by the strict rigidity. Instead, he sought

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lessons from the busking violinists that earned their living serenading the streets of Paris. Stéphan honed his skills during his formative years, learning by ear and remaining predominantly self-taught. In three short years, he was making a full-time living busking as a violinist. After receiving training at the Conservatoire de Paris, Stéphan worked in the pit orchestra at the Theatre Gamount and would spend his breaks visiting a local brasserie in Paris, Le Boudon. It was there that Stéphan Grappelli fell in love with jazz and it was then that he began his own development of jazz violin. Though there were other critically acclaimed jazz violinists at the time such as Joe Venuti, Stéphan Grappelli was one of the first to perform jazz improvisation on the violin.

The melody, chord progression, and arrangement of "Minor Swing" have been described by Michael Dregńi as "sweet and simple," who further detailed that it is "based on repeated ascending phrases climbing from the root to the minor third to the fifth in the I, IV, and V chords in the key of A minor" (Dregńi 2006, 138). Simplistic in nature, it is not the "head" of the standard that gained notoriety, but rather the virtuosic solos improvised by Reinhardt and Grappelli. The traditional style of arrangement for jazz begins with a melody that is followed by a solo section over the same chord progression. The melody is typically repeated as the cadence to the standard.

The original recording of "Minor Swing" was captured live around one sole microphone. This setup, though innovative at the time, was not the most sonically ideal. The setup created numerous variables such as requiring specific staging of the musicians based on the volume of their respective instruments. This specific recording process also meant that musicians had to physically move towards the microphone during their solo, and it determined the overall dynamic of the ensemble. Furthermore, the entirety of each recording had to fit within certain time-sensitive parameters (Dreńgi 2006, 129). A wellknown record producer of the time, Hugues Panassié, details the bandwidth: "It must last at least two and a half minutes but less than three minutes twenty seconds for twentyfive-centimeter 78rpm discs" (Dreńgi 2006, 129). This was required in order to be deemed "desirable" enough for the general public's consumption.

To best emulate the Quintette du Hot Club de France's 1937 recording of "Minor Swing," the entirety of the piece was captured completely live for this project. The full ensemble was recorded a single Neumann U47 microphone. Sonically "mixed" locations were determined based on the frequency and dynamics produced by each instrument. The bass and drums were perpendicular to one another and staged nine and a half feet away from the front of the microphone. For the recording of the full ensemble, guitar and violin were recorded at a three-and-a-half-foot distance from the Neumann U47. The violin and guitar solos were recorded separately in the same room on the identical U47 at twentyseven inches from the mic; they were then mixed in post-production. To match the desirable length of late 1930s radio recordings, this emulation of "Minor Swing" is two minutes and thirty seconds in duration.

Following the traditional jazz arrangement style, this emulation of "Minor Swing" begins with the melody and is followed by improvisations over the chords. The guitar, violin, and upright bass are the featured soloists, all taking two rounds through the chord progression. The violin solo further highlights traditional jazz styles with a transcription of Grappelli's original solo (Koger et al. 1985). The arpeggiated chords, tasteful glissandos, and the usage of rests are all key characteristics of the traditional style of jazz violin. Kai Felsman was the artist responsible for the remix of "Minor Swing" as well as "Dusty Miller." The bass line sample demonstrated a percussive usage of sampling akin to the remix of "Dusty Miller." In contrast, the chorus of "Minor Swing" was additionally sampled and featured as a motif in the new composition. Ableton Live remained the preferred digital audio workstation of choice for Felsman. Additional audio material used on the remix of "Minor Swing" is from the personal collection of the individual producer.

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