Duquesne University

Duquesne Scholarship Collection

Electronic Theses and Dissertations

Spring 2008

Analysis of Scoring Music to Visual Media

Barak Shpiez

Follow this and additional works at: https://dsc.duq.edu/etd

Recommended Citation

ANALYSIS OF SCORING MUSIC TO VISUAL MEDIA

A Thesis

Submitted to Mary Pappert School of Music

Duquesne University

In partial fulfillment of the requirements for the degree of Master of Music

By

Barak Shpiez

April 2008

ANALYSIS OF SCORING MUSIC TO VISUAL MEDIA

By

Barak Shpiez

_____   _____
Lynn Emberg Purse   Judith Bowman, Ph.D.
Professor of Composition   Professor of Music Education

_____   _____
Edward Kocher, Ph.D.   Bill Purse
Dean, Mary Pappert School of Music   Chair, Music Technology

ABSTRACT

ANALYSIS OF SCORING MUSIC TO VISUAL MEDIA

By

Barak Shpiez

April 2008

Thesis Supervised by Lynn Emberg Purse

The four works presented as the large thesis composition for the recital of Barak Shpiez represent the challenges of scoring music to picture in contemporary practice. The four selections characterize the diversity of styles a composer must be able to effectively emulate in order to convincingly accentuate the mood and emotion of the visual element. The process involves interpreting the filmmaker's intentions, composing music to compliment this, and realizing the composition by various methods of audio recording and musical performance.

The process is a unique blend of the visual and auditory, art and commerce, abstract thinking and logistical planning. A composer working with visual media must wear many different hats in the course of creating music. He or she must of course be the composer, but also producer, audio engineer, and performer. The pieces discussed below were made possible by the education and experience gained in each of these areas.

TABLE OF CONTENTS

Visual Media Selection and Context

1.1 Blade Runner

     Ridley Scott's 1982 science fiction classic "Blade Runner" is the last great visual effects movie to rely on film manipulation rather than computer aid to create the scenes. The movie follows Scott's "Alien" and continues the director's signature style of creating vast landscapes and worlds never before seen by audiences. The opening sequence shows the viewer Los Angeles in the not-too-distant. However, the landscape, entitled "Hades Landscape" by the makers of the film, is endlessly vast and bares more resemblance to a steel mill or factory than a city in which humans could live. The hue of the initial scene contains mostly warm colors: orange, yellow, red. These colors are offset by the darkness of the sky and deep colors of the tall buildings expunging fire from their tops.

     The director then changes the color balance by interjecting cool colors in the details of the city. The change is separated by a shot of a single blue human eye. This image stands in stark contrast to the inhuman scene of the over-industrialized metropolis. Movement of the camera, flying cars, and other airborne objects create visual movement and provide context for the size of the scene. These objects create contrast necessary to keep the audience interested in the lengthy shots of the scenery.

     The director goes back to the warm hues of the original section after the cooler colors created by the blue sky and human eye. The sections create a tertiary visual composition that can inform the viewer and indeed the composer as far as music choices that would be appropriate for the film.

1.2 Charlie Brown

During the 1960's, Charles Schultz comic strip "Peanuts" was made into a cartoon for certain holidays and events, such as Halloween, Thanksgiving, and Christmas. Many children and adults grew very fond of these special television events. They combined simple yet endearing animation and real children voicing the show's characters. The lack of pretense and earnestness provided a lasting memory and visual component to the holidays that people could return to year after year.

The scene opens with the traditional Christmas-time appearance. There is snow covering the ground and trees. The children are dressed warmly and sporting ice skates as they skate on the frozen pond. The movement of the children across the pond creates a sense of movement on screen, though the slowly falling snow flakes create a sense of calm.

The colors represented in the scene are gentle and almost pastel in nature. The white of the snow dominates most of the screen while most of the color comes from the children's coats as they walk across the varying colors of the houses. The deep blue of the nighttime sky contrasts the soft white of the snow on the ground.

Shots of Snoopy show the famous dog speed skating across the pond add excitement and mischief to the scene but retain a sense of good nature and fun. Each character of "Peanuts" is introduced visually on screen: Charlie Brown with his signature frown, Linus with his blanket, Pigpen with stink lines and dust balls emanating from his entire body. Other characters are seen as well, but not given the same attention on screen as the more well-known characters of the program. The video and indeed the entire program remain consistent with its color choices and atmosphere, but this does not create

a problem in this context. Because the entire program material is only approximately

thirty minutes, the viewer does not tire from the scenery.

1.3 The Who Live 1964

Before creating some of the most memorable music of the 1960's and 1970's, The

Who were a quartet covering blues songs from America. Before their career took off in

any significant way, a pair of businessmen decided to create a movie about the music

scene in the band's hometown. This documentary never panned out, but did provide

excellent footage of a band before their meteoric rise to legendary status. The video is

black and white with a noticeable grain that dates the performance.

All the original members of the band are present and wear clothes in the "mod"

(short for modern) style, as do the audience members. The cinematography of the

footage is unremarkable as it was shot on handheld units amidst the audience members in

a small venue not properly lit for filming. The appeal of the footage comes from the

obvious enthusiasm and energy of a young band entertaining their peers. The energy is

further accentuated by the many teenagers dancing in stylized clothing to the group's

music.

Like the Charlie Brown video, the footage of The Who is static in its visual

presentation. Part of that is due to the fact that it is shot in black and white. Another

reason is that the viewer is presented with only certain shots that are more or less

repeated several times. This stands in contrast to modern live performance videos where

multiple cameras can give many angles and present the band in many ways. Still, the

content of what is being viewed on the screen provides more interest than many directors

can muster from creative camera tricks while trying to give life to what they are shooting.

1.4 Immortal Beloved

"Immortal Beloved" follows the life of composer Ludwig von Beethoven from

childhood to death. However, the film does not hold the composer's music as its central

theme. Rather, the movie seeks to explore the identity of the "immortal beloved"

mentioned in a letter written by Beethoven after the composer's death. This angle of the

movie allows for a powerful and engaging story of lost love, family feuds, success and

failure, to be told in a somewhat mystery/detective manner, all to the music of the famed

composer.

The section composed by the author originally featured Beethoven's 5th

symphony as its score. The movement and intensity of the work suits the images the

audience sees on screen well. The viewer is presented with three main sequences

occurring simultaneously and interjecting one another. The first is Napoleon's army

mounting an attack. War-torn soldiers in period army uniforms lineup canons to fire.

The second sequence is that of a character introduced earlier in the movie fleeing her

home. She travels through a wooded area, where she is confronted by another regiment

of Napoleon's army. Here she is assaulted and almost murdered by the soldiers. This

section provides slower movement in contrast with the faster-paced army mounting their

assault. Furthermore, the green and blue color tones of the forest provide contrast to the

orange and brown tones of the field from which the soldiers are attacking.

The third sequence shows a woman protecting her children from the onslaught of the attack in a large room in her mansion. This sequence adds even more of a dramatic element as we watch the children try to escape amidst the barrage of canon fire. The visual elements are different than the other two sections, but do not present enough contrast to be reflected in the score.

Music Composition

2.1 Blade Runner

The original score to "Blade Runner" was created by Greek composer Vangelis. Vangelis had already created scores to other films relying heavily on synthesizer technology. The style of using synthesizers to replace or replicate instruments in the late 1970's and early 1980's was rather new and novel. Many scores can be heard from this period that do not stand the test of time because the instruments were used in a gimmicky manner. Vangelis used synthesizers to create new aural landscapes to match the visual ones created by the director. The music does not contain melodic motives per se, but rather employs sonic artifacts that can be heard throughout the course of the film.

The score created by Barak Shpiez was influenced greatly by the works of Wendy Carlos, specifically her "Sonic Seasons" record. This record uses synthesizers to create atmospheres rather than music events. Carlos is most known for her work combining Moog synthesizers with classical music, as in the soundtrack for "A Clockwork Orange," but the "Sonic Seasons" album is a departure from music altogether and is a foray into modern music and sound design. The score created by the author relies on the same

concepts to match the slow moving landscape shots with atmospheric music. The opening shot of the "Hades Landscape" includes synthetic sounds with changing resonance filters. The sweeping filters add a jagged edge to the sounds that would otherwise be rather smooth and clear, though it does not add distortion. There is a sound reminiscent of a beacon or radar. Though this sound is not designed to coincide with anything onscreen directly, it adds suggestiveness to the music that pushes it into the realm of sound effects. When actual notes are used, dissonant intervals such as minor 2nds and 7ths, major 2nds and 7ths, and tritones are used. This constant use of such dissonance helps to underscore the uneasiness of the world we are watching. If the music had fast moving melodic lines, or even any recognizable melody moving on top of harmony, the constant dissonance would prove tiresome to the listener. However, because the dissonant intervals are moving so slowly, they create more of an ambiance of tension rather than an unpleasant musical experience.

The score changes texture in the second part of the video as the director introduces a new color palette. The close up shot of a blue human eye cues softer, lighter colors. The score changes accordingly to reflect the difference. The resonant filters are no longer sweeping, giving the sounds being played a smoother, more static texture. The dissonances also open up to more open sounding intervals, including perfect 4ths, perfect 5ths, and octaves. These intervals do not inform the listener's ear in terms of major or minor tonality, as the author has purposefully left out intervals that would suggest this one way or another. The intervals are hollow in that they exclude any color tones such as 9ths, 11ths, or 13ths. They would be considered bland or even blank in comparison with much of contemporary music that is rich in harmonic density. It is the contrast though

6

from the dissonances of the previous section that makes these lackluster intervals refreshing. The intervals even seem to remind the listener of a more archaic form of religious music, when 4ths and 5ths were more prevalent.

This section gives way to new landscape shots, though the visual theme returns to the original section with warm colors. The music changes back as well, keeping the same tonal characteristics but changing some textures in much the same way a composer retains some of the thematic melodic material while adding variations to maintain the listener's attention.

2.2 Charlie Brown

Composer and pianist Vince Guaraldi created the original score to all the Peanuts television features. His instrumentation included drums, acoustic upright bass, and piano, sometimes adding in guitar and voice. The instruments are captured in such a way as to capture their most natural qualities. The drums are not hyped as in many modern recordings with pounding kick drum. The jazz idiom would not allow for it. The original recording featured children's voices singing over a down tempo jazz vamp. The author decided to retain the instrumentation but alter the tempo. This creates contrast for some of the slower moving landscape shots while reinforcing the excitement of the children skating across the pond. The meter remains 4/4, but with a bpm of 170. The harmonic rhythm however, moves along at a slower pace. If the harmonic and melodic elements were to race through the piece at the tempo of the drums, the composition would sound more like a bebop tune of Coltrane rather than a more traditional jazz composition with

melody as its primary concern. The instrumentation retains much of Guaraldi's, but adds the guitar as lead instrument and adds piano comping as textural rather than melodic.

The A section of the piece followings non-functional harmonic pattern:

Dmaj7   C#min7   C7   B7   B7b13

The chromatic movement of the root creates the possibility for constantly changing tonal centers. This provides the composer with great opportunity for melodic exploration but at the same time creates a challenge in that a melodic phrase from one chord will almost certainly not work for the next chord. Many melodies can remain static if they are played over diatonic harmony. This practice can produce interesting effects as the context of the melody changes over the harmony. However, major dissonances would be created by practicing this technique with harmony that not only is not diatonic, but is in no way functional either.

The B section modulates to perhaps the most unrelated of keys in comparison to the A section. If the A section can be thought of as being in the key of D major, the B section is in G# major. The modulation of keys to the tritone is certainly not heard in classical music. But jazz music gives composers and performers license to experiment to find new harmonic and melodic areas to explore. The modulation of the B section to the tritone of the A section insures that at no time the harmony or melody will slip back into D major. The danger of slipping back to the original key can occur when modulating to the relative or parallel major or minor key, or slipping back to the Ionian mode when working with relative modes. The quality of the harmony, including major seventh, minor sevenths, and dominant sevenths, with the inclusion of the flatted 13th color tone, further adds to the jazz sound. Simple triadic harmony would sound too simple for jazz.

The B section harmony is also chromatic, but uses its chromaticism in a very different way. The resultant harmony is as follows:

G#maj7   *Cmin/G*   *Cmin#11/F#*   *F9 (no 3rd)*

The harmony is created by playing the G#maj7 chord in root position. When lowering the root a half step, the resultant harmony became C minor with the 5th in the bass, placing the chord in second inversion. Lowering the bass note again removes the 5th from the chord and replaces it with a raised 11th color tone. Because this dissonant color tone is in the bass however, the chord has the characteristics of a diminished or augmented chord, rather than a simple minor chord with an upper structure tone. While the harmony contains chromatics in the B section as well as the A section, the B section harmony provides static tones from the body of the G#maj7 to serve as base points for the melody. Whereas in the A section the entire chord shifted chromatically, here only the bass note does. This allows for a more controlled melody to be created while still enjoying the creative effects of chromaticism.

Walking lines were created for the bass part as is customary for a piece in this style. Each chord was arpeggiated in the bass by playing quarter notes. The composer considered what each following chord would be and at times added some non-chord tones to bridge two chords together.

The form of the piece is simple binary, alternating the A and B section one after the other. Each repetition of the sections finds the melody altered and expanded upon from the previous version. The third time through the sections finds the piano picking up as the lead instrument and providing a solo. The melody for the guitar and piano in the A

section treats each new chord as its tonal center. Furthermore, because the harmony

alternates between major and minor, the quality of the melody also changes often.

Despite this, the author strove to compose melodic content that retains emotional impact

as opposed to merely creating something that sounds good in theory. The B section

melody has the luxury of retaining many notes from chord to chord so that the line from

one bar to the next can interconnect and not have to start from scratch as it would if it had

to redefine its tonal center.

2.3 The Who Live 1964

While Pete Townshend would one day write rock operas such as "Tommy" and

"Quadrophenia", in 1964 the guitar player and band were mostly covering blues-inspired

music they had been listening to from the United States. The author composed a

rock/pop song in the blues style in accordance with the style that was played by the band

at the time. The blues harmony contains only simple structure and primarily dominant

seventh chords. The harmonic content is usually limited to the I, IV, and V chords. The

verse, or A section, uses a melodic motif, in this style more commonly referred to as a

riff, to drive the song. The riff includes the essential notes of the blues scale. It starts on

sol of the chord, moves to *te*, then *ti* briefly for a chromatic flavor, then to *do*. The line

adds *mi* before repeating as well. The riff is played on the one chord for four measures

before being played on the IV chord, transposed accordingly. Only at the refrain do we

hear the dominant V7 chord played before it chromatically lowers to the IV7 chord and

then ends on I7.

The bridge provides harmonic contrast by introducing the submediant (B minor in this key) and the IV chord (G major). Though the melodic line of the bridge is only slightly less static than the verses, the introduction of the new harmony allows for new melodic notes as well to be introduced. The following guitar solo occurs over the verse harmony. The solo makes use of the standard blues pentatonic scale, utilizing the notes 1, m3, 4, 5, m7 of the scale. Because the I, IV, and V, chords are all played as dominant seventh chords, the minor pentatonic scale using each chord as its tonic can be used. For instance, while the harmony is playing D7, D is the tonic center of the pentatonic scale. However, because the IV chord, G, is also played as dominant seventh, G can be the tonic of the pentatonic scale played over that chord. One can also maintain the tonic center of the key of the song too. The composer chose to mix the tonic centers at different times to increase his melodic options.

The song ends with a double chorus and repeat of the A section riff before ending on the I7#9 (D7#9), which is common for this style of music. This piece of music proved interesting because it required the writing of lyrics as well. As most songs written in this period and in this style, the subject of the lyrics almost required it be about women and/or love. The rhyme scheme was kept as simple as possible as well to reflect the style of the time. Only in the bridge did the author step outside of the framework a bit to add some interest. Listeners will find few songs of the early 1960's that reference the Queen of England, Paris, Mexico, and the President of the United States of America. Though the lyrics printed below are far from political, inclusion of even such words was not common until years later during the social revolution of the late 1960's. In fact, it was not until the late 1970's when the Sex Pistols wrote the song "God Save the Queen" that the Queen of

England was ever mentioned in popular music. Below are the lyrics for composition

created for the video of the Who Live in 1964:

Girl did you hear that you are mine
You might not believe it but give it time
Ask anyone you see cause I ain't lying

Everybody knows that you're my girl
Everybody knows around the world

Well girl don't think you can go run and hide
Wherever you go you know I will find you
And on that day everything will be right

Around the world from Queen of England to the parliament
To America and the president
From border of Mexico to all the places in the world I'll never go

Around the world in aero plane from the wall in China to the streets of Spain
To the Eiffel Tower in Paris, France, where the locals there invented romance

2.4 Immortal Beloved

The composition for this video required a full-sounding orchestra to be

appropriate with the images on screen as the movie is a period piece. The

instrumentation chosen was strings (violin I, violin II, viola, cello, double basses), horns

(French horn and trumpets), woodwinds (flute, clarinet, oboe, bassoon), and

miscellaneous percussion.

The first twenty seconds of the "Immortal Beloved" film clip details the march of

Napoleon's army as it prepares to attack. The pace is not brisk but it is not languid either.

The composer started with timpani hits on the first and third beat to characterize a

drummer boy keeping the marching infantry in time. The string section plays tremolo,

adding a sense of foreboding and danger as it thickens in density. The woodwinds play a

simple, slow moving melodic line, keeping in step with the rhythm of the timpani. The

melody is mostly diatonic to the key of G, except that it throws in a bit of chromatics with a 16th note Eb.

The section builds until bar 8 when the orchestra breaks out into a fast moving melody with different sections switching primary and supportive roles. The melody is primarily G major but with so many minor key variations it can almost be said it is in both keys. Initially, violins I and II play the melody with the violas, cellos, and basses performing supportive material. After two bars, however, they switch roles and the lower instruments carry the melody. The melodic line itself is one entity, but it is passed around the orchestra. The woodwinds in this section provide the same function as the strings. The horns are also divided between the French horn and the trumpets.

The music changes at bar 19 when the images of the woman traveling through the woods appear onscreen. Whereas the previous section showed movement and chaos, this scene imparts a feeling of dread and mystery that will be realized in upcoming segments. To reflect this, the woodwinds and lower strings (viola, cello, basses) play a staccato 16th and 32nd note monolithic rhythm. The horns support this by playing whole notes and providing harmony and texture. The violins I and II, whereas before were playing a very brisk, exciting melody, are now playing a slow, lyrical passage. Classical harmonic analysis would describe this section as atonal in that it is not clearly major or minor nor does it stay with any one tonal center. More modern analysis may allow for its description as being a melody in F minor with frequent modal interchanges, both melodically and harmonically. At the end of this scene, the strings return to playing tremolo as they build suspense and lead to the next scene.

The rhythmic phrasing of the first section returns as we again are watching the soldiers attack and civilians fleeing. The lower strings are however playing a slow moving melodic line themselves which provides harmonic basis as well as counterpoint to the primary melody. The horns play accents on key notes. As the scenes switch back and forth more rapidly to show the different characters in different situations, the music as well changes its character more rapidly but less dramatically. The result is a combination of certain parts of the A and B sections. This portion continues building suspense, alternating between fast moving melodic lines and lyrical passages until bar 49. At this point the piece introduces a new section that will end the composition. The viewer witnesses the death of one of the women's child. The tone of the piece, while at sometimes borderline playful to reflect the chaos of the scene, turns dramatically darker. The woodwinds and lower strings adopt a 32nd note rhythm, not dissimilar from the rhythm of the first instance of the B section. The key changes once again to C minor. The horns however throw in the tritone briefly to add tension. The upper strings play long, drawn out notes that allow the vibrato to be heard with clarity. The timpani plays on the beat, reminiscent of the part played by the instrument when the army was introduced visually. These elements serve as bookends to the piece as it begins and ends with dread and fear both on screen and in the music.

Realization of Composition and Performance Elements

3.1 Blade Runner

The composition for the "Blade Runner" clip relies on combining synthesized sounds to create the ambiance necessary for the video. The composition was written and

recorded in Steinberg's Cubase digital audio workstation. The software allows for the

combination of audio, MIDI, and synthesizers via the Virtual Studio Technology (VST)

protocol. The piece was created first by selecting and testing different synthesizers and

patches for each. Several instances of the Steinberg synthesizer Monologue were created.

The synth contains two oscillators as well as effects, filters, and ADSR (attack, decay,

sustain, and release) controls for both the modulation envelope as well as the amplitude

envelope. These controls allow for the precise tweaking of patches to suit the composer's

needs. Several other Steinberg synthesizers, namely HALionOne and Mystic were

created to provide other textures. The editing controls of these synthesizers are almost

identical in approach and very similar in implantation. However, the synthesizer

algorithms for each provide an endless array of tones the composer can use to his

advantage.

 After each textural sound was selected, the composer played each part live using a

MIDI controller. The MIDI performance was recorded, though no audio would be

rendered until the final mix was ready for layback to the video. The recording of MIDI

performance data rather than audio data allowed for the composer to return to the

performance and adjust any parameter to his specification. This would not have been

possible with audio, as the whole section, or at least part of it, would have had to be re-

recorded.

 The composer also included sound effects to the piece to add a sense of realism to

the viewing experience. Sounds of explosions were added to the scenes of the towers

discharging fireballs into the sky as well as sounds of thunder as bolts of lighting struck

the sky. Many of the sound effects had to be pitched down several tones to create a

deeper impact. Sounds of race cars were also used; these sounds were taken of high speed cars whizzing by. The cars in the video, though moving fast, appeared to float across the screen in contrast to the endless landscape. Therefore, the composer felt it more appropriate to slow down and drop the pitch of these samples as well to match the flying cars on screen.

Lastly, the composer added a long reverb to the sound effects and instruments to provide an aural depth to match the visuals.

3.2 Charlie Brown

In stark contrast to creating the "Blade Runner" piece, the composition for the "Charlie Brown" required realistic emulation of acoustic instruments. The composer created an instance of a VST synthesizer/sampler for the initial drum sounds while composing. This instance required low CPU usage which allowed for faster workflow while composing. After the drum part was written, the composer played the rhythm guitar part to outline the structure of the piece.

The composer utilized outboard equipment to create the tone for the guitar. With electric/amplified guitar, the sound derived from the processing is almost as important as the sound from the instrument itself. The composer used a Line 6 POD XT Pro amplifier modeling unit to add the tonal quality necessary to the jazz idiom to the guitar sound. The amplifier modeler included preamp, speaker, and microphone emulation as well as compression, EQ, and reverb.

The acoustic upright bass was next written. Again the composer utilized a low CPU usage VST instrument to write the bass part itself. Afterwards, he created an

instance of a sampler in another digital audio workstation, Pro Tools. Through testing of

several samplers on different platforms, the composer decided upon the sampler for the

bass part that was only available in Pro Tools. This required the composer to extract the

MIDI performance data from Cubase and import it into Pro Tools, all the while making

sure the tempo remained the same. The composer then exported a mono audio file of the

acoustic bass part and imported that into Cubase.

The composer set up another VST sampler instrument for the piano before

playing and editing the piano performance part. MIDI allowed the composer, whose

primary instrument is not piano, to create as much as he could via live performance

before editing the MIDI performance data to suit the needs of the piece.

After the parts were all written, the composer utilized yet another audio

production program, Propellerheads Reason. This program is a collection of frequency

modulation synthesizers, samplers, effects, and more. The Rewire protocol allows for the

exchange of both MIDI and audio information between Reason and a compatible digital

audio workstation. The MIDI performance data from the drum track in Cubase was sent

to a sampler in Reason. The sampler then triggered audio samples that were then sent

back to Cubase to be mixed with the audio from other tracks and samplers. The drum

sampler in Reason is of a higher caliber then ones found in Cubase. The drum sampler

uses what is known as hyper-sampled drum tracks. Each velocity range (0-20, 21-40,

etc), contains 4 different samples for each instrument. That means that even if the

velocities for the MIDI data stays the same, the sampler will alternate different samples,

creating a more realistic part. The sampler also outputs close miked samples for each

drum (kick, snare, toms) as well as a stereo overhead output and a stereo ambient output.

The combination of all of these elements creates an extremely real, lifelike drum performance and sound.

The instruments were mixed with subtle, short reverb, to create the feeling that the instruments were being played in a single room. Low frequency information was removed as recordings in the jazz idiom do not rely on exaggerated low frequency response.

3.2 The Who Live 1964

The drum track, providing the basis of the rhythm and structure of the song, was created first. In a very similar way to the "Charlie Brown" composition, the drums were written with a low CPU usage drum sampler to start with. The guitar was also put through the Line 6 POD XT Pro amplifier modeler. However, whereas the tone for the "Charlie Brown" piece required a smooth sound, the emulation of Pete Townshend's guitar required a distorted, piercing sound with an abundance of midrange. The piece was played with the guitar's bridge pickup, which provided more twang as well. The composer usually prefers to double the guitar parts, the fact that there is only one guitar player on screen required that only one guitar be heard. This made creating the solo more difficult, as there was no other rhythm guitar to mask any mistakes or flaws.

The recording of the solo was made easier however by combining together takes from several passes at the section. Because digital recording allows for non-linear editing of audio, several sections of several different solos were put together to create one seamless take.

The bass was played with a Fender P-Bass plugged into a Tech21 Sansamp. As the name implies, this piece of audio equipment provides all the tonal coloration of a bass amplifier and speaker in a single box. Though the tone was good from the Sansamp, the composer took out much of the low frequency information below 250 Hz to match the sound of recordings from the early 1960's. The composer used other recordings imported into the recording session as a reference.

Lastly, the composer sang the lead vocal. A Shure KSM 27 condenser microphone was used through an RME preamplifier. The high-end nature of these pieces of equipment did not lend themselves to the somewhat distorted, heavily colored sound of vocals for this type of music. The composer added distortion plugins to distort the sound of the vocal accordingly. Furthermore, he took out much of the low frequency information below 500 Hz and above 4 KHz to narrow the frequency response of the vocal.

The recording was then mixed in mono as opposed to stereo. The sound was more cohesive in mono and sounded more appropriate for the type of music. Most music sold through the early to mid 1960's was monaural.

3.4 Immortal Beloved

The recording of the composition for the "Immortal Beloved" clip was the most unique among the four pieces. To emulate an entire orchestra, the composer had to rely on all sampler technology to create realistic acoustic sounds. The majority of the melodic components were originally composed in the notational software Finale. A MIDI file was then exported from Finale and imported into Cubase.

The composer again used Propellerheads Reason to call upon the samplers contained therein as each instrument required a separate sampler. Furthermore, one sample had to be created for legato violin, while a separate instance of a sampler with a different memory bank was created for tremolo violin. The composer also created samplers for individual string sections (i.e. violin I section) as well as for single instruments. The composer mixed in the individual single instruments with the sections to impart a greater sense of realism to the performance.

The composer continued to compose the piece using MIDI programming in Cubase while using the Rewire protocol to transmit the MIDI data. The Rewire protocol then sent the audio information from the samplers back into Cubase to be mixed. The composer took out some of the high midrange frequency information to create a sense of distance. Many of the instruments were sampled at close proximity. However, in an actual performance or recording of an orchestra, the audience would be several meters away. This distance would decrease some of the nuance and midrange frequency information. The composer then added a large amount of reverb with long decay time to make the instruments sound as one cohesive whole. Panning was applied to individual instruments and sections according to the normal seating chart of an orchestra.

REFERENCES

Motion Pictures

Lerner, Murray (Director). (2007). Amazing *Journey: The Story of The Who* [Motion

      picture]. United States: Universal Pictures.

Melendez, Bill (Director). (1964). *A Charlie Brown Christmas* [Motion picture]. United

      States: Paramount Pictures.

Rose, Bernard (Director). (1994). *Immortal Beloved* [Motion picture]. United States:

      Columbia Pictures.

Scott, Ridley (Director). (1982). *Blade Runner* [Motion picture]. United States: Warner

      Brothers.

Music Recordings

Carlos, Wendy (1972). Spring. *Sonic Seasons* [CD]. New York: East Side Digital.