Master's Project

Proposal: Faculty members-Dr. Brownlow, Professor Cioffari, and Professor Morris

"From Sketch to Score"

This project will focus on the steps taken to create and produce a musical soundscape for tv or film.
Using music technology, I will compose and sync original music to a short film that is devoid of a musical score.
In this project, I will be using a short film, "Trail of Light" that is part of "The Berlin International Film Scoring Competition 2024". Aside from the music creation process, I will document the process I used to bring the music "From Sketch to Score".

Areas to be covered include:

- Pre-production: Video analysis: "What is the short film about?", finding the tempos, creating hit points/Spotting, what is/are the mood(s)?, aligning short film and audio formats to create a perfect sync.
- Musical sketch: Are there instruments that fit the subject matter?, time period that may determine styles, blocking out musical material for the "hit points", focus on "music as motion" to sync the visual and musical ideas, establishing the levels of importance (i.e., Is the dialogue telling the story, or is it the music?, what musical effects can be added to enhance the visual and provided sound effects.
- Production/Implementation (Bringing the Score to Life): Establishing the instrumentation, "explode" sketch materials into a full orchestration, finding the "right" musical colors to create a symbiosis with the visual, recording MIDI control changes (affecting dynamics and phrasing) to create more realistic performances, pre-mix variables to ensure instruments are not competing for the same sonic space.
- Post/Production(Micro phase): Creating a mix that brings the musical ideas into focus through the use of panning, effects processing (compressors, limiters, reverb, etc), exporting the project in its final form as a video/ short film.

Technologies to include: Sibelius music notation software, Logic Pro X Digital Audio Workstation(DAW), Native Instruments sample player, virtual instruments(Native Instruments, 8dio, Vir2 Elite Orchestral Percussion, Project SAM Orchestral Brass, Project SAM Orchestral Essentials, and NotePerformer 4 sample libraries), and Final Cut Pro video authoring software.

From Sketch to Score

Documenting the process I used to create music for a short film

By

Brady Sark

V.1a

Changes: in 1a

Added information about Spotting Session in Pre-Production Section/Film Analysis

Added information about technologies used and tempo related issues in Pre-Production Section/The Musical Sketch

Updated graphics for the musical motifs in Pre-Production Section/The Musical Sketch

Added a new motif in Pre-Production Section/The Musical Sketch

Pre-Production/The Musical Sketch

Film Analysis:

"Trail of Light"

FILM SYNOPSIS: "A contemplative journey throughout the steps of the world's creation, inspired by an old Native Americans legend from the Pawnee tribe." Refer to https://www.bifsc.org

Because there are no actors or dialogue, the role of character takes on a different meaning. In the film, metaphysical and physical objects, landscapes, and animals take on this role and provide guidance on what the film is about and its direction.

The music of the Pawnee tribes follows the same path as many other early cultures. It centers around a simple drone/hand drum pulse with a melismatic approach to the voice as an instrument. The melodic pitches are positioned in close groupings that rarely exceed an interval of a minor third. Research so far suggests much of their music existed mainly as a storytelling device. The addition of hand drums to the score seems an appropriate choice.

Syncing audio and video:
The film was created at 25 frames-per-second(fps), and the audio will be in 24-bit format at 48kHz. Both parameters need to be set for proper synchronization. I will use Logic Pro X as my digital audio workstation and export the results to Final Cut Pro, video editor, to bind the film and audio into a mp4 video.

A "Spotting Session" is a major component of the film making process. It entails meetings with the film director, film composer, and sound design team watching the film and discussing the scenes/elements of the film that need to have focus. It may involve when to have music/sound, when not to have music/sound, where there needs to be an emphasis(hit points), the world the film lives in, and the emotion the director wants the music to convey the audience.

For this project, I created an example of what may have been discussed in a spotting session for this film.

Scenes	Moods
Opening credits/Title	Used the next scene to help establish continuity
Essence of life/Creation of the earth, river, and mountains	Nebulous, gradually taking form
Eagle in flight/ Tirawa calling forth the sky	Majestic - the mountains, eagle, and Tirawa
The web	Spiders are sinister, especially the dancing one
Big Bang/The Morning Star	Build up to an explosion
Wolves	Playful, meteor showers and geyser explosions from an expanding universe
The Path of Departed Spirits/Fireballs in flight/The Milky Way	Traveling towards something important…the galaxy. Home is where the heart is.
Human life is created/The cycle of life has begun	I think they are going to screw this up, but at least the view is nice.
Closing credits	Some minor V chord love for the people who created the film.

Hit Points	Time Code Position
Drum hit	01:00:40:00
Tirawa (Father Above)	01:00:24:12.40
Eagle's flight over the mountains	01:01:40:12.40
Weaving the web	01:01:58:12.40
Dancing "Spider"	01:02:08:00
Wolves den	01:02:29:12.40
Wolf eye	01:02:41:00
Geyser	01:02:48:00
Wolf explodes into fireball	01:02:55:12.40
The galaxy	01:03:09:12.40
Drum hit	01:03:52:00

The Musical Sketch:

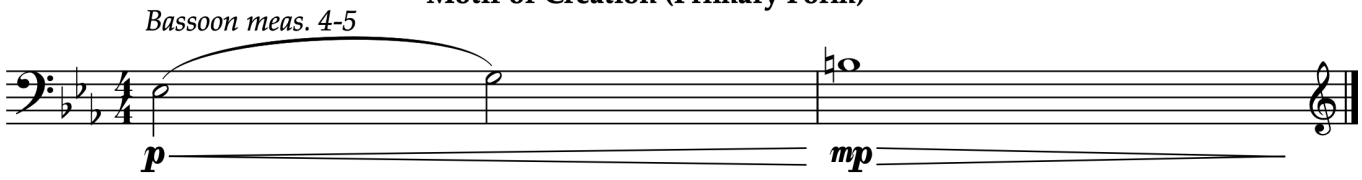
For the sketch process, I used the Logic Pro X software DAW with the film imported to execute the results of my spotting session. I determined the tempo of the film's scenes, and worked on having those tempos sync with the hit points as much as possible by creating a tempo map. Because of their static nature, the Opening Credits and Closing Credits are important tempos to match. I found the Opening credits to fit to 128 bpm, and the Closing credits to fit to 96 bpm.

Inside of Logic Pro X, I used software instruments to "document" colors that I thought would need to be present in the full score. My sketch score for the film consisted of:
Flutes, Bassoon, Piano, Full Strings, French Horn, Trumpets, Trombones,Tuba, Percussion

The film invokes two parallel worlds on different planes of existence. There is the metaphysical one where the "ideas" are set in motion and the physical one where these "ideas" are manifested. I decided that a series of musical motifs to represent the "ideas" would be a great way to show the interconnection as well as their development.

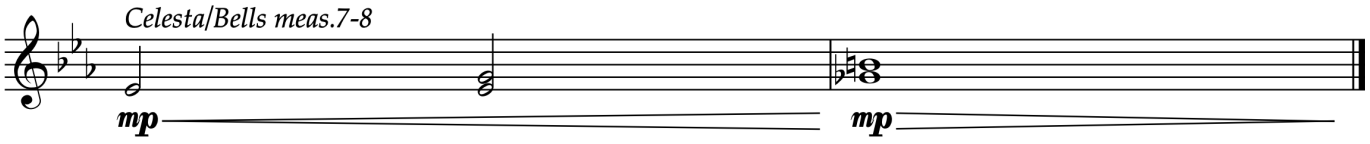
The main motif is based on an ascending sequence (E-flat augmented triad) which I will refer to as the "motif of creation":

Motif of Creation (Primary Form)



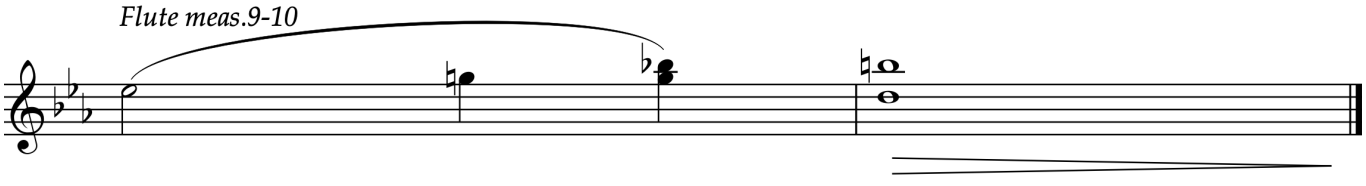
As it develops, it takes on harmonic characteristics as well. In *harmonic development 1*, the third note of the sequence shifts to a new chord quality insinuating a ♭VI (flat major 6th-B major) chord.

Motif of Creation (Primary Form + harmonic development 1)



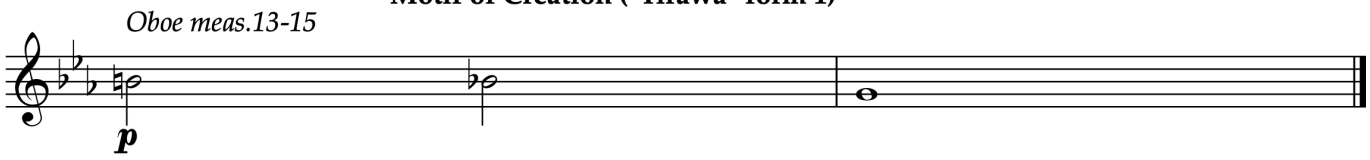
In *harmonic development 2*, a E-flat major triad is used with a resulting chord insinuating a III (major 3-G major) chord.

Motif of Creation (Primary Form + harmonic development 2)



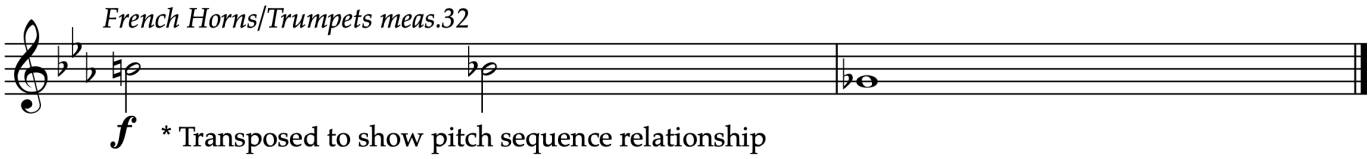
The other main motif is that of Tirawa referred to as "Father Above". Tirawa is a key component of the Pawnee's religion/lore and is believed to be responsible for bringing the world into existence. His motifs are based on his "character" as well as his actions. When his motif is introduced, it is part of the creation sequence in the film where he is bringing forth the world. The melodic sequence follows a retrograde of the Motif of Creation (development 2)

Motif of Creation ("Tirawa" form 1)



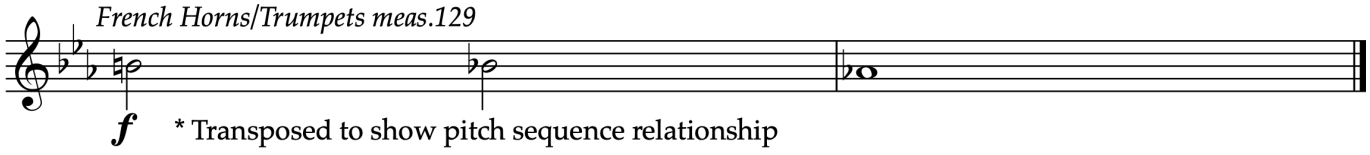
The other forms follow the same contour, but have a different resulting pitch. I tried to provide some interest and create convergence with the film since you will hear form 1 for the first time by itself. The second time, as the more elements of the world are created, you hear form 1 plus form 2.

Motif of Creation ("Tirawa" form 2)

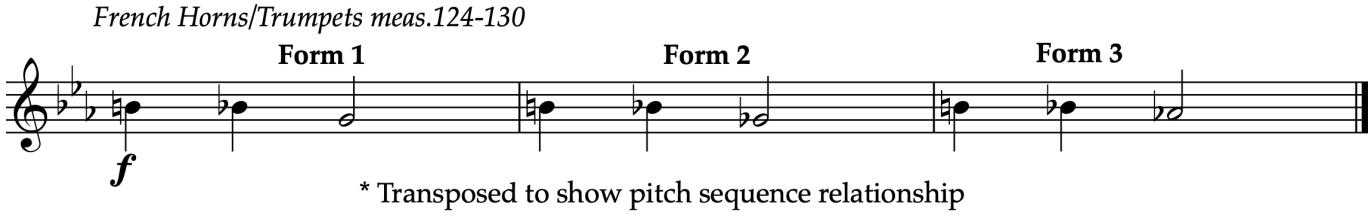


The final time, as humanity is added to the world and the film comes to a close, you hear all three forms together for the first time.

Motif of Creation ("Tirawa" form 3)

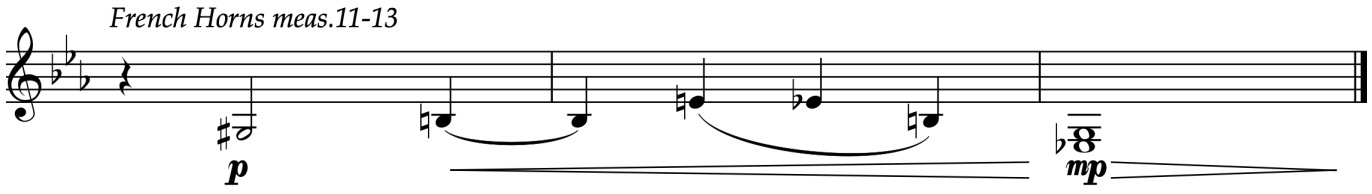


Motif of Creation ("Tirawa" final form)



The final motif I utilized is to represent time passing. The “Time in Motion” motif is two measures of common time in length in a 4 half note sequence. What gives it a sense of time moving forward is that it is displaced by a beat so it begins on beat (2) instead of the downbeat (1). Because of the beat placement and melodic material it feels like it is rushing forward toward the next downbeat. Whether that feel or sense is felt by the listener is subjective, but it is tangible to me.

Time in Motion motif (Alteration of Primary form and "Tirawa")



Production

Instrumentation Consideration:

I chose the film orchestra instrumentation because the film is not about the Pawnee tribe itself, but about their "lore" and beliefs. The gods that created the Earth and heavens, and the animal spirits that guide the tribes through their lifecycle. In the short film, The Pawnee people are not seen until the last scene of the film. This allowed me to be free in choosing an orchestra type of instrumentation. Also, Richard Wagner taught me that gods like orchestras.

Instrumentation includes:
Woodwinds: 2 Flutes, 2 Oboes, 3 Clarinets, 2 Bassoons
Brass: 4 French Horns, 3 Trumpets, 2 Trombones, Bass Trombone, Tuba
Pitched Percussion: Celesta, Orchestra Bells, Marimba, Timpani
Non-Pitched: Snare Drum, Bass Drum, 4 Toms, Susp. Cymbal , Crash Cymbals, China Cymbal, Tambourine, Triangle, Wind Chimes, Large Tam-Tam, Taiko drums
Strings: Harp, 2 Violins, Viola, Cello, Bass
Electronic effects:"whooshes", and "risers"

At this point, I exported the MIDI data into Sibelius, a notation software program, because I was creating "stems". Stems are audio recordings of smaller sections of a score. In my case, I wanted to export the woodwind , brass, and strings sounds created by the sample library NotePerformer 4.

Personally, I feel more connected to the music when I can see all aspects of the music in a score format. This was going to be an film orchestra score so that additional level of comfort was welcomed.

Music and Video Connections

There are several key moments that I viewed as needing a convergence between the two mediums.
Opening Sequence: 00:00-01:22 -Credits/Title/Creation/Transformation

- The beginning of the film starts with the opening credits and title sequence. While the title sequence should have "weight", I focused more on the golden "primordial ooze of creation" and Tirawa as the main characters. Thus, I focused more on preparing that scene as a horizontal build-up that ebbed and flowed rather than vertical points. In my opinion, all of these things are interconnected instead of disparate elements, and they needed to carry forth until the transformation of pouring water turning into a large river.

  The "theme of creation"/Tirawa begins with a solitary E-flat in the chimes, and it starts to gain life as an ascending E-flat augmented triad using a 2 half note rhythmic motif. As it is passed around the orchestra, variations occur as E-flat major, minor, and augmented both ascending and descending as it transforms and evolves throughout the ensemble. The "Time in Motion" motif is also introduced to create a sense of moving forward or creates the feel of the tempo speeding up. The cut away scenes with Tirawa serve as a metaphor for life taking shape and culminates with the water from a "measuring cup" transforming into a river as the density of the orchestration comes to peak.

- A vertical element introduced near the beginning are two drum hits, one at the beginning and another at the end, seem important to the short film as they serve as bookends to the presentation. The addition of a Taiko drum patch for those hits may not be accurate of the sound that would be created by the drum in the film, but I imagined this drum as being special and otherworldly. I chose the sound of the Taiko drum as it has more depth and presence than the hand drum could provide.

Second Sequence 01:23-01:58 -The Mountains/The Eagle/Tirawa
For the the second section, it really came down to choices and interpretation.

- "Should the impact be focused on the mountains or the eagle?" Here I chose to meet in the middle. I focused more of the expansion of the "shot" to encompass the vastness of the mountains and the inclusion of the eagle. With a slower tempo and an ascending theme, based on an augmented and major triad, this time based on B-flat, the fanfare provides the change from the metaphysical to physical world.

• "Does the eagle have increased motion toward the top of the mountain or over it?" My interpretation was it was gaining velocity toward the apex with a clear purpose toward Tirawa. The use of horns using a triplet based rhythm is widely used to give that sense of purpose and drive. Why reinvent the wheel?

- The next scene has Tirawa "calling forth" and weaving the Earth with the sky. Here again, I juxtapose the major and augmented chords previously established to his character and creation but with extended chords and a diminution of the rhythmic motif. His face and mouth opening seemed to me that he was about to "get messy". I tried to mimic that quality.

Third Sequence 01:23-01:58 -Spiders, and Lightning, and Big Bang…oh, my!
For the the third section, it felt like a point-to-point (leave the Earth, travel, and arrival)
- "Spiders? Why does it have to be spiders?" I guess the weaving should include spiders as if there was a web. The travel sequence through the spiderverse has a jerky/glitchy like quality. I used multiple meter changes to try to emulate that factor. It seemed one spider in particular was important so I gave it his moment in the spotlight. A little melodic minor did the trick for it and its cohort.

• The next scene involving what I interpret as a "Big Bang" event is not pretty prior to its explosion. There could be a correlation between this and the Pawnee lore of the Morning Star. I have yet to find anything that substantiates that claim, but either one would work for the music created here. In this scene, we get a wide angle view of a sky percolating with activity and foreboding clouds. Greater textures and tessituras in the orchestration seemed to be the choice while still utilizing the odd meter. The use of minor 2nds in the melodic material help give it that tension. I used a descending motive sequence based on the "creation motif" to try and emulate the particulate matter heading toward the viewer, which seems like it is "seeding" life.

Fourth Sequence 01:23-01:58 -Wolve's Den
In the fourth section land animal guides are introduced
- The wolf den contains the most "characters" in one shot in the film. This gives you a sense that a lot has happened since the viewer left Earth, life is delicate and generations have passed. I tried to give the music that sense with the use of a solo flute melody for the first phrase, and tutti flutes and strings for the second. Melodic material is still based on elements of the "creation motif" shifted up to E-natural and returning to E-flat. Harmonically, it is a minor to major sequence. There are tie ins to the wolves as spirit guides, but I focused more on the physical world.

Fifth Sequence 01:23-01:58 -Running with the pack /Fireballs/Geysers
The fifth section so far has the most activity of the sequences.
- The wolves are on the run, the sky is exploding, and the world is in flux. Musically, I called upon the triplet rhythmic motive to give a sense of motion, adding a few stabs for visual hit points. I decided to focus on the wolf's ascension as a fireball instead of the freeze frame. Too many allusions would spoil the moment.

Sixth Sequence 01:23-01:58 -The Expanding Universe
Section six gives you a glimpse of the galaxy.
- Traveling to the heart of the galaxy, I again used a E-flat major triad with the added flat 6 motive modulating to D-flat major one of my favorite keys. At this point, I thought it needed a change of key, and a change of mood. The section has more of an attempt at creating some "pretty" before being thrust into the jaws of humanity.

Seventh Sequence 01:23-01:58 -Humans Enter The Fray/The Drum of Destiny
The story's final sequence introduces humanity as it begins to populate the Earth.
- The scene continually expands, encompassing the village, the mountains, and the skybox as the sun continues to rise. I layered the Tirawa theme with a motive representing humanity (1 + (2) + 3, 1 + (2) + 3) before the tremolo strings give focus to the expanding scene. The Tirawa, theme of creation, is presented in its final form in an upper brass fanfare, followed by a B-flat major chord filled with arpeggiated figures in woodwinds, strings, and pitched percussion. Hopefully, the music matches the majesty of the sun rise. Enjoy the view. Taiko drum hit brings it all to a close.

Final Sequence 01:23-01:58 -Closing credits
A thank you to the good people who made the film.
- Typical credit sequence. I thought I would go with a couple favorite chord progressions of mine: (1) first phrase, B-flat major sus4, B-flat major, D-flat major, E-flat minor with flutes, bassoons, harp, percussion, and strings, and (2) second phrase, E-flat major to B-flat minor (I-v-I) with french horns, percussion, harp, and pizzicato and arco strings.

Post Production

Mixing the score and effects:

Digital Audio Workstations provide a plethora of advanced features designed for audio professionals. For my purpose, the performance of a piece is the final product, not the presentation. This project has given me a chance to dive into those features and learn something new.

Compressors/Limiters/Ducking/Reverb:
The use of compressors and limiters is an important part of the mix. They bring clarity to a mix by allowing the bandwidths of sound to exist in a limited space. When you are dealing with dialogue they are especially useful. Since there is no dialogue, I used the orchestration to create that effect naturally.

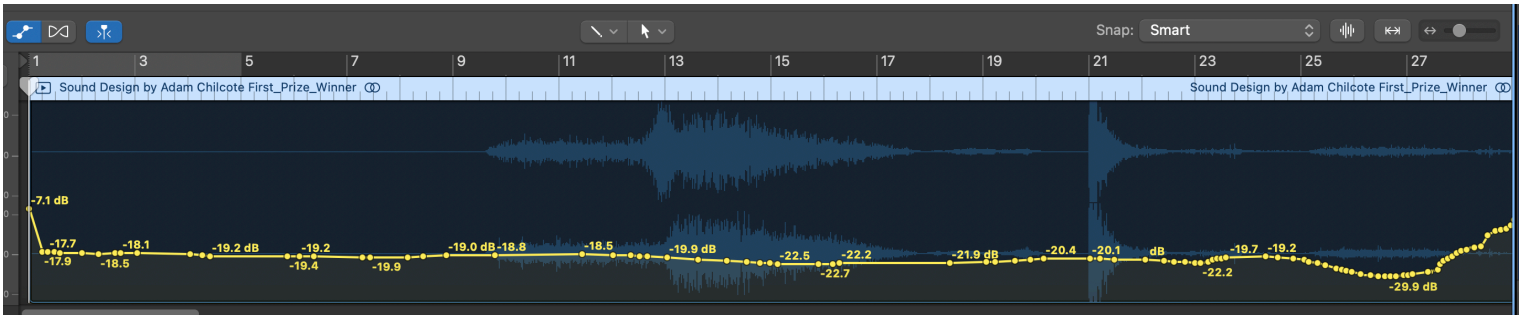
Reverb gives the score depth and weight but can be too much as it can "bleed" into articulation clarity. For the most part, I used the reverb built into NotePerformer 4 with a few additions of Logic Pro's offerings in certain scenes.

Plug-ins:
All of the instrument sounds, were created with virtual instruments from various sample libraries. The library I used the most for woodwinds, brass, and strings is called "NotePerformer 4" from Wallender. It provides a great "out-of-the-box" experience by using AI models to generate expression and colors based on volume parameters.

Using Native Instruments "Kontakt 7" sample player, I supplemented the brass sounds with Project SAM "Orchestral Brass" in spots to give French horns a little more "oomph" in the lower and upper tessituras.
All percussion sounds on the final mix were created with a mixture of Project SAM "Orchestral Essentials" and Vir2 "Elite Orchestral Percussion". Both libraries provided great examples of realistic sounding playback.

I also used some electronic effects utilizing granular synthesizers to create a backdrop/pad for the instruments to sit upon. These were very far in the background but provided some depth in certain sections of the score. You won't really know they were there unless you did a side-by-side comparison with their absence.

Final Mix:
After getting all of the instruments "sounding" correctly, it was time to adjust volume parameters to create dynamic expression through the use of MIDI control changes. Logic Pro X has a great tool to bring crescendos and decrescendos to life using a pen tool to draw a representation of those expressions.



Final Thoughts

I really enjoyed this experience as it was something I had some knowledge of how to do, but I have had limited need to pursue. The evolution from sequencing software to full digital audio workstations has made great strides over the past decades. With the introduction of generative music patches and AI tools, the process of creating realized scores with little experience of music fundamentals and orchestration is upon us.

In the process of researching these topics, it became rather apparent. Play an E-major chord on the keyboard, and the output is a fully realized orchestra along with moving lines and color changes according to key velocity and modular wheel changes. Had I used this approach, as opposed to creating a music composition, I would have been done with the score portion in an hour or two.

However, like most artistic fields being encroached upon by artificial intelligence, the creative spark or humanity is missing. I chose the colors, textures, dynamics, and moving lines to fit the visual elements of this particular film. Not an algorithm that has determined that 94.56% of composers use this combination in a film.