# HOW TO SAVE THE WORLD IN 20 MINUTES OR LESS

by

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## **ABSTRACT**

When composing a piece with extensive instrument requirements, excessive difficulty or length, or combinations of these factors, obtaining a recording of substantial quality is a challenge for many composers. A composer with a solid understanding of audio production techniques and a network of performers can produce a convincing recording without having to worry about the logistics or cost of assembling and recording a large ensemble.

How to Save the World in 20 Minutes or Less is scored to unconventional media - using footage of a video game being completed in record time. Composed for 23-piece large jazz ensemble, the work utilizes compositional techniques from a number of different musical genres - from funk and swing to fusion and modern jazz styles. A recording of the piece was produced by mixing recordings from 11 different musicians recording independently to simulate a live ensemble.

# **ACKNOWLEDGEMENT**

I would like to give my gratitude to a number of people, without whom I would not be as successful with this project as I have.

First of all, my composition professor and advisor Dr. BJ Brooks.

A composer cannot succeed without musicians. Special thanks goes out to Greg Orosz, Sean Schafianski, Gregory Weaver, Carlos Eiene, Jess Destramp, Eric Ladish, Troy Strand, John Reimund, Joel Everett, Alejandro Espinosa, Marc Papeghin, Nabeel Ansari, and James Hoffman for their performances and work on the finished recording.

I would also like to thank Lucas Guimares and my wife Lauren for providing extensive proof-reading and editing.

# TABLE OF CONTENTS

Chapters		Page
I.	INTRODUCTION, HISTORY, AND COMPOSITIONAL PROCESS	1
II.	PRODUCTION OF THE AUDIO RECORDING.	6
III.	ANALYSIS	9
IV.	CREDITS	16
REFERE	NCES	17
APPEND	ICES	19
$A_1$	ppendix A	19
$A_{l}$	ppendix B	24
SCORE		33

## CHAPTER I

# INTRODUCTION, HISTORY AND COMPOSITIONAL PROCESS

How to Save the World in 20 Minutes or Less: Episode 1 (HTSTW) is a third-stream tone poem that plays in sync with gameplay footage of a video game speedrun. The term third stream comes from Guenther Schuller, referring to a style of music that is influenced strongly by both jazz and classical music. Speed running is the sport of playing through a video game as quickly as possible, with different conditions based on the game and category chosen.

The first instance known to the author of playing music in time to a speed run came from Schnabubula's (Samuel Asher Weiss) "Taking Mushrooms While Playing Super Mario World." Using footage from the then-fastest playthrough of the SNES title *Super Mario World*, Weiss performed an arrangement of music from the game utilizing complex rhythmic and harmonic devices, as well as extensive improvised solos. The music was written around the performance skills of the arranger and is highly virtuosic in

<sup>&</sup>lt;sup>1</sup> Frank J Oteri, "Guenther Schuller: Multiple Streams," New Music Box @20 (New Music USA, July 1, 2009), https://nmbx.newmusicusa.org/gunther-schuller-multiple-streams/)

<sup>&</sup>lt;sup>2</sup> Nolan Pflug, *Frequently Asked Questions*, SpeedDemosArchive.com, accessed May 30, 2019, http://speeddemosarchive.com/lang/faq\_en.html)

<sup>&</sup>lt;sup>3</sup> Samuel A Weiss, "Playing Super Mario World While Taking Mushrooms," Youtube.com (Google, February 28, 2014), https://www.youtube.com/watch?v=wl-42gcyvfw)

nature - every part was recorded by the arranger on a midi keyboard using sound samples from the game.

Frequently, the West Texas A&M symphony orchestra includes "live cinema" concerts as part of its annual programming.<sup>4</sup> While studying at WTAMU, I was involved in three of these performances. After discussions with Dr. Mark Bartley (conductor, WTAMU Symphony) on the challenges of preparing for these concerts, I decided to pursue this concept of film scoring, using music as the sole auditory part of the experience. Initially, work on a score for a public domain silent film *The General* starring Buster Keaton began. Only a short segment of the score was completed, with no work done after 2013. The experience of live cinema, both from rehearsal and performance, informed many choices I made when composing for *The General* and *HTSTW*.

Each segment of the piece was approached as a separate work, then combined into a comprehensive version. All notation work used the Sibelius notation software, taking advantage of the video features available.<sup>5</sup>

The source visual component of the work consists of speed run footage from the 1998 Nintendo 64 game *The Legend of Zelda: Ocarina of Time*, played by Narcissa Wright on a Chinese console, the iQue.<sup>6</sup> This console presented several advantages to a speed-runner, including faster in-game load times and faster text speed due to the use of Chinese text. This particular speed run was chosen both in spite of and because of its

<sup>&</sup>lt;sup>4</sup> Mark Bartley, "WTAMU Symphony Orchestra: 2006-2019 Repertoire," West Texas A&M University, December 2019, https://www.wtamu.edu/webres/File/Academics/Sybil B. Harrington College of Fine Arts and Humanities/School of Music/WT Symphony/WT Symphony Repertoire 2006-2019 by alpha(1).pdf <sup>5</sup> https://www.avid.com/sibelius

<sup>&</sup>lt;sup>6</sup> Narcissa Wright, "The Legend of Zelda: Ocarina of Time:" Speeddemosarchive.com (SpeedDemosArchive, July 14, 2014), http://speeddemosarchive.com/ZeldaOcarinaOfTime.html#skipsSS)

Chinese text: Viewers unfamiliar with the story of the original full-length game would generally not understand the Chinese text either, and would potentially understand the story of the speed-run solely through the musical and visual cues.

To avoid violations of copyright law, Columbia University's fair use checklist determined this use of copyrighted material to fall under the "good faith fair use" category for the following reasons:<sup>7</sup>

- The speed run is comprised of a small portion of content from the game.
   Only two of the nine dungeons are shown during the duration of the run.
   In addition, most overworld areas and story events are not shown or referenced.
- 2. This project is a transformative work: it changes the purpose of the original work. The musical style, being dramatically different from the source, changes the spirit of the work in both comical and serious ways.
- 3. With no easily accessible licensing mechanism in place, Nintendo is notoriously difficult to obtain licensing for creative projects. Contacting the rights holder in attempts to secure licensing resulted in a form response email suggesting exploration of fair use, or other ways the project could still be legal without license attainment. The music of the project was not arranged or otherwise original to the game, so a license for arrangement would not have been applicable for this project.
- 4. Because the original version of the game is no longer legally for sale by the rights holder, this project does not affect sales or profit from the game. The Wii-U was the last console to feature the game. The online accounts through which games could be purchased were closed in 2018, with the virtual console service closing in 2019. A remake of the game is available,

<sup>&</sup>lt;sup>7</sup>Kenneth D Crews, "Fair Use Checklist," Copyright Advisory Services (Columbia University, May 14, 2008), https://copyright.columbia.edu/content/dam/copyright/Precedent Docs/fairusechecklist.pdf)

- but footage was not obtained from the remake, and the original is legally a different game.
- 5. Both myself and the speed-runner own a legally purchased copy of this version of the game. For copyright purposes, the iQue version is considered the same game. Other than being translated to Chinese and being released on a Chinese console, the game is functionally identical.
- 6. To the best of my understanding, no product of this nature (an original music score, which does not use original musical material of said game, applied to gameplay footage) is produced by Nintendo.

The source video was edited, and cuts were purely for narrative structure. The initial console bootup, title screen, and file select screen were cut. Although these are included in the run video, they do not provide visual interest for the purpose of scoring. From the opening cutscene to the end credits is a single, uninterrupted segment. The end credits were cut. This decision caused debate when it was discussed early in the project. For the purpose of the narrative of this piece (which focused on the speed run of the game rather than the game itself), the original credits were too long to justify keeping. The end credits to the ending screen was a single segment. The screen faded to and from white with the credits removed, making a very straightforward video edit. Although the story of the game no longer makes sense to those who never played or seen it played, the cohesion of the composition of *How to Save the World in 20 Minutes or Less* holds the narrative together. Because of these cuts, the final length of the video shortened from 30 minutes to 23:58.

Drawing from a pool of unused sketches written between 2006 and the start of the project, musical sketches were placed where the tempo and rhythm were appropriate.

Sometimes, the sketches utilized resulted in absurd musical connections that flavored the piece effectively. Musical sketches were edited to emphasize visual aspects in the source video. The *Village* segment adapted from using almost exclusively 4/4 to blending 4/4 with 7/8 and other time signatures to make downbeats hit the action. The cue *The Funky Tree* was named due to the use of a random funk shuffle sketch. Many musical sketches were chosen for one of two reasons:

- 1. The length of the sketch fit the approximate length of the cue. For example, the sketch that became the "Savior" theme only needed two measures added to fit the length of the opening cutscene prior to the nightmare.
- 2. The comical or surprising result of using unusual musical ideas. The waltz after the fairy flies to the house for the first time is an example of this. Part of the compositional process involved taking random sketches in different styles and placing them against the video regardless of mood or tone, and enjoying the result.

New material was created with an emphasis on rhythm, using a percussion track that was written as sound effects to the video. This percussion track is not heard in the final version of the work, serving exclusively as a reference for lining up the audio and video playback. Downbeats are concert bass drum, weak beats are clave, primary hits are brake drum, and secondary hits are china cymbal. Relationships between the four percussion sounds above suggested meters that were not initially considered.

## **CHAPTER II**

## PRODUCTION OF THE AUDIO RECORDING

A studio version of this work is available for viewing with the source video material.<sup>8</sup> As the composition completed, the emphasis turned to the production of the audio recording. Los Angeles based orchestrator and Composer, Thomas Kresge, aided in editing the score and parts to comply with industry standards. Some edits of note to the score include the use of large time signatures, hidden bar rests, and bar numbers under every measure.

All audio editing was completed in the REAPER DAW. The REAPER project file used a midi file with tempo information exported from Sibelius, generating the click track and backing track used by performers. As performers' recordings were received, they were added to this project file to be edited. Edits to parts were completed with a combination of Melodyne (published by Celemony), and REAPER's stock plugins. 10

<sup>&</sup>lt;sup>8</sup> John Stacy, "How to Save the World in 20 Minutes or Less (Episode 1)," Youtube.com, January 12, 2020, https://www.youtube.com/watch?v=u5vdYloU8SM)

<sup>&</sup>lt;sup>9</sup> Justin Frankel, "REAPER | Audio Production Without Limits," Reaper (Cockos), accessed March 2019, https://www.reaper.fm/)

<sup>&</sup>lt;sup>10</sup> Peter Neubäcker, "What Is Melodyne?" (Celemony.com), accessed March 2019, https://www.celemony.com/en/melodyne/what-is-melodyne)

Because performers recorded in different times and places, edits were made exclusively to generate a sense of cohesion between parts.

## Edits included the following:

- Pitch pitch inconsistencies of performances cleaned up relative to the lead player of every section. Since perfection was not the goal, no more than 75% intensity was used for pitch correction.
- Rhythm stylistic inconsistencies were unified to replicate phrasing and listening that happens when musicians perform together in the same space. Similarly to pitch, correction intensity was no more than 75% except for chordal hits, which were corrected to 95% intensity relative to the drum tracks.
- Noise removal extra sounds including breaths, instrument noise, or other sounds in the room required removal using the ReaFir plugin.
- Equalization using the lead player in each section as a reference, equalization was applied to the section players to match the sound of the lead player. This made use of Melodyne's overtone EQ feature.<sup>11</sup>
- Formant adjustment In instances where the same player recorded multiple parts on the same instrument, the formant was shifted by several semitones to prevent phasing issues.

Performers agreed on a workload (number of parts to record) and timeframe. Some performers recorded multiple parts, while others only recorded a single part.

Deadlines were established on a flexible basis with communication. With guidance from several composers, a production process took shape. Performers were instructed to send recordings using WAV format with a 48khz sample rate and 24 bit sample depth.<sup>12</sup>

<sup>&</sup>lt;sup>11</sup> ibid, "What Can Melodyne Do?" (Celemony.com), accessed March 2019, https://www.celemony.com/en/melodyne/what-can-melodyne-do)

<sup>&</sup>lt;sup>12</sup> Griffin Brown, "Digital Audio Basics: Sample Rate and Bit Depth," iZotope.com (iZotope, July 15, 2019), https://www.izotope.com/en/learn/digital-audio-basics-sample-rate-and-bit-depth.html)

Consistency in file specifications is necessary for effective mixing. Although mixing audio with different sample rates is possible, artifacts are sometimes introduced when the file is converted to a new sample rate.

Several changes were made by performers that are not notated on the score. For the recording, it was possible to use multitracking to add new layers that would be impractical for live performance. For example, several passages of flute and piccolo were added to double the lead alto saxophone part, but are not used in live performances. If these flute and piccolo parts were used in a live performance, the player would only be used for less than one sixth the duration of the total piece. The recording pianist elected to make use of acoustic and electric piano, and an organ not notated in the score. The third and fourth cornet parts are fully playable on trumpet. The first and second trombone parts are playable on any tenor trombone and do not have to switch during live performances.

## **CHAPTER III**

## **ANALYSIS**

Going forward, the analysis of *HTSTW* will deal exclusively with the recorded version, and will not address any differences present in the live version.

This piece is written for expanded big band: Five saxophones (doubling at times on flute and clarinet), two trumpets and two cornets (doubling at times on flugelhorn), four horns, four trombones, tuba, and rhythm section consisting of piano, drum set, guitar, bass, and sound design. Details on specific instrumentation choices can be found in Appendix B.

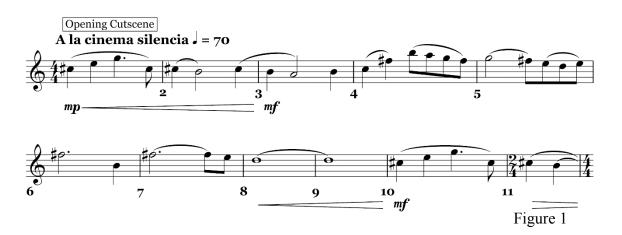
The use of additional instruments to the typical big band instrumentation is not optional and is absolutely necessary to the playability of the piece. It is common for publishers and editors to include horn parts transposed for flugelhorn or trumpet, and tuba parts adapted for bass trombone. Both the horns' and tuba's colors and range are intentional, and the intended range and colors are not playable on flugelhorn or bass trombone, respectively. In short, performing the piece without the intended instrumentation leaves large gaps in the sound.

Due to the nature of the compositional process, *HTSTW* is programmatic. As a stand-alone work without visual cues, the piece can be divided into movements and/or

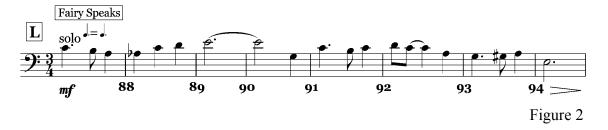
several shorter pieces: some of these do have a discernible form, using the names in boxed text at the start of each section as starting or ending points.

Several themes and motifs are used throughout the work to represent figures and places, and are developed to represent the growth of the concepts represented. In the context of this work, theme and motif are used in the same way as film scoring - a motif represents a short melodic, rhythmic or textural context that represents a concept and may be developed into a longer theme.

The *Savior* theme represents the hero and the hero's journey. It first appears in the saxophones at the beginning of the piece, shown here in figure 1.



The *House* theme represents the hero's home, first played by alto trombone. The first few notes of the *House* theme became its own motif representing acquiring an item, shown here in figure 2.

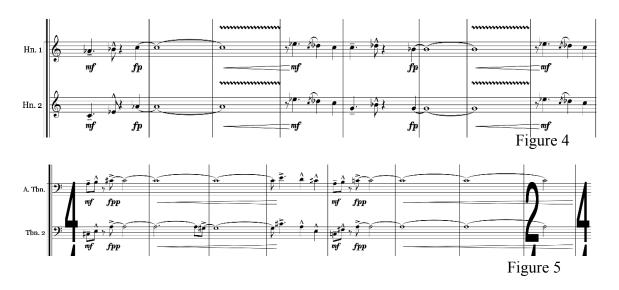


The *Princess* theme represents the damsel in distress. It appears multiple times throughout the work, but is heard for the first time in its entirety at the end of the work,



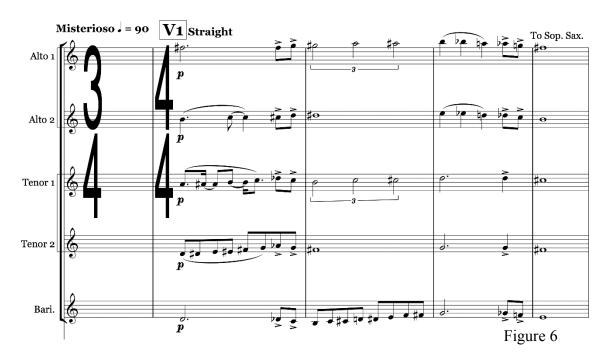
played on the piano. The *Adventure* motif is used as an accompaniment figure in the piano, and can also be seen in figure 3, in the piano's left hand.

The *World* motif is used to represent a departure from home. Two themes, *Wide*New World (figure 4) and Village (figure 5) both start with this motif before entering new material. The motif involves not only an intervallic component, but a harmonic one as well - it is always harmonized using horn fifths.



Multiple themes and motifs represent victory over evil. The first one is played twice in the saxophones, shown in figure 6. This is written deliberately soft as an anti-climax. The lead line, in the alto saxophone starts and finishes on the same pitch.

Meanwhile, the tenor and baritone saxophones move upward. All chords are quintal, then move in different rhythms to keep this relationship on the downbeat of each measure.



From a musical perspective, the victory theme is unrelated to the victory motif.

Shown in figure 7 in the piano and bass, it represents the aftermath of the battle.



Although there are wide variations in the piece, each smaller section is stylistically unified. Forms such as a standard song form (AABA) were used as a guideline for some sections, but with development to match the time requirements of the video. The connection between a form and its actual use is sometimes vague. Example: the tower escape sequence uses a twelve-bar blues. Although the connection is distant and spread out due to the 12/8 meter being split into 7/8 and 5/8. The relationship is harmonic in nature

Several harmonic devices are used consistently. Two types of chord substitutions are frequently used. The first, and most commonly used, is a tritone substitution: Substituting what functions as a V chord with a chord a tritone away. For example, instead of ii7-V7-I<sup>7</sup>, it becomes ii7-bII7-I<sup>7</sup>. The second type of substitution, known as a diminished cycle, functions similarly to the tritone substitution with one exception: it can be formed on the root of any note from a diminished 7th chord based on the dominant. A G7 can be substituted with Bb7, Db7, and E7. These come from Bela Bartok's axis system of harmonic function.<sup>13</sup>

Many times, the function relates to a group of several chords all functioning as one unit. This is usually applied to groups of chords that are chromatically planing downward. On the small scale, sound effects and musical tropes are located in separate appendices. A list of Sound Effects can be found in Appendix A. A list of tropes can be found in Appendix B

<sup>&</sup>lt;sup>13</sup> "BÉLA BARTÓK'S AXIS SYSTEM," Harmonicwheel.com, December 12, 2017, http://www.harmonicwheel.com/bartok axes.pdf)

It is unlikely that more pieces of this scale would be composed for a small number of reasons, mainly due to copyright protection. The extent of work necessary to produce another *How to Save the World* may not be doable depending on future time constraints. Fair use can only be claimed for specific circumstances, and many speed runs that would be viable candidates show too much game content to qualify. Similarly, many games are notoriously difficult to license. Live performances of this type of work present too many logistical difficulties to be worthwhile.

In the event that it is possible to compose more pieces in this style, the following are currently candidates:

- 1. Super Metroid (SNES) Copyright prohibits this run. All categories of Super Metroid speed runs show too much game content to be considered fair use.
- 2. Mega Man Legends (PS1) Licensing from Capcom (the rights holder for the Mega Man franchise) is more accessible than from Nintendo. However, most runs of this game are long enough to make the project too time intensive for a part-time project.
- 3. Minecraft (PC) Minecraft speed runs play out as one continuous video segment, rather than changing scenes frequently. From a compositional perspective, this is an attractive trait. In addition, Mojang, the rights holder to Minecraft, has a history of encouraging fan works of their intellectual property.
- 4. Untitled Goose Game (Switch) The widespread popularity of this game leads to a relatable and short entry to the *How to Save the World* series.

## **CHAPTER IV**

## **CREDITS**

1. Recording performers

Woodwinds: Greg Orosz - Flute, Piccolo

John Stacy - Clarinet

Sean Schafianski - Soprano Saxophone Gregory Weaver - Alto Saxophone Carlos Eiene - Tenor Saxophone Jess Destramp - Baritone Saxophone

Brass: John Stacy - Trumpet, Flugelhorn, Horn, Trombone

Eric Ladish - Trombone

Troy Strand - Bass Trombone

John Reimund – Tuba

Rhythm Section: Joel Everett - Piano, Organ

Alejandro Espinosa - Guitar, Bass

Marc Papeghin - Drum set

Nabeel Ansari - Sound Design, drum programming

Production: Thomas Kresge - Score preparation advising

James Hoffman - Mixing, Mastering

Valerie Stacy - Artwork

2. MAGFest 2020 Performers

Saxophones: Sean Schafianski, Gregory Weaver, Gregory Danis, Jess

Destramp, Gregory Orosz

Trumpets: Ken Crouch, John Robert Matz, Robby Duguay

Horns: John Stacy, Lauren Stacy, Jordan Moore, Luigi Bencomo

Trombones: Danny Flam, Daniel Romberger, Eric Ladish

Tuba: Alex Hill

Rhythm Section: Sam Bobinski - Bass, Dave Sylvester - Piano, Felipe

Fournier - Percussion

Conductor: Thomas Kresge Tech Crew: Kevin Lin

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## APPENDIX A

## **SOUND EFFECTS**

When using almost exclusively musical instruments with limited or no sound design capability, creativity has to be used to both represent the action on the screen and fit in with the texture and harmony of the rest of the piece. This is a technique subtly used in current video games, but is not a necessity due to dedicated mechanisms for sound effects being used. A notable example of this is Super Mario Odyssey for the Nintendo Switch. Several actions in the game used sound effects that changed pitch to match the key of the background music. The Tropical Wiggler enemy, when possessed by Mario, extends with an accordion sound that uses notes from the key of the background music. When Mario is travelling through the power lines, the synthesizer ostinato also adjusts to fit the key. <sup>14</sup> The effect is subtle and is not noticed until after the first playthrough - background music can only be changed through a feature unlocked after clearing the game once.

For *HTSTW*, sound effects took advantage of specific instrument techniques, although not necessarily extended techniques. Here is a list of sound effects and their purposes:

<sup>&</sup>lt;sup>14</sup> An example of Super Mario Odyssey's harmonising sound effects can be found in this video: https://youtu.be/U5-YDxH6It8.

- Measure 12: Flash The brass play a short and loud hit that lines up with the image of the horse flashing on screen.
- Measure 23: Scream The effect here is made up of A, Bb, Db, D, Eb, F and G.

  Saxes are trilling in octaves from written high E to F, and an octave lower. These trills match up with the horns, which are divided into two octaves, slurring upward. The high concert G has a screaming quality on the horn at this dynamic.

  The tuba's note (A) was chosen based on the previous whole tone scale. The trombone notes were chosen by going up a tritone for bass trombone, then stacking a Bb- triad above this for dissonance. The trumpets use a G- triad over an A to take advantage of the minor 9th interval between trumpet 4 and trumpet 1.
- Measure 106: Movement sounds All chordal sound effects in this section are based on the harmonies from the rhythm section. These sound effects stay consistent through measure 151. The horns play stacked chords using one of two articulations a short fall represents a jump, and a scoop represents a backflip. Trombones, with the exception of the first note at 106 use two articulations. A unison marcato note on the root of the chord represents a landing after a jump. A fall represents a roll forward. In measure 125, trumpets playing marcato chords represent collecting currency. Horns glissando upward from a unison note into m. 128 to represent the player climbing a short wall. The trumpets in m. 137 double trombones up an octave, but represent the same action.
- Measure 151: Scene transition Trombones glissando down, then upward to represent the transition from scene to scene.

- Measure 157: Currency The piano plays staccato notes in time with collecting currency. Notes are decided to be mildly dissonant against the chord changes. In measure 168 thru 172, the harmonic structure consists of intervals of a 6th in the left hand, with intervals of a 6th in the right hand formed a 7th away from the root in the left hand, diatonic to the C lydian dominant scale. The same piano concept comes back at m. 177, but diatonically to C major.
- Measure 299: Rehash of measure 106 This section is recycled material from the earlier appearance. The location of sound effects changed due to the slightly different timing of actions on screen.
- Measure 328: Tree opening The trombones glissando from a chord tone down to whatever note is in 6th or 7th position on that partial. The next gliss starts one half step lower than the chord tone in measure 330.
- Measure 332 Inside the tree Trombones use the same rolling sound effect (a short fall) from earlier. Horns playing a stopped chord cluster represents a damage impact to an enemy on screen. Measure 373 represents a splash into the water.
- Measure 378 Hits Sax chords line up with impacts on screen. This is doubled
  in the brass.
- Measure 400: Fidgets This is a senza misura, creating an uneasy and disorienting feeling.
- Measure 406: Brassy noise Trombones start with a cuivre half step cluster, then glissando downward to another cluster (with bass going to a lowered 6th position to maximize the smear sound of the bass trombone). Horns glissando to a

- chromatic cluster in the extreme high range to represent the creature on screen roaring.
- Measure 459: Villain defeated The trombones, after an upward jump, play a
  descending chromatic pattern to represent the fall of the villain from the
  nightmare at the beginning of the video.
- Measure 469: Rumble All saxes play a low trill that is not practical to play quickly. The slowness of the trill, in the low register adds to a rumbly sound that fits in with the quaking on screen.
- Measure 471: Illusion Combined with the saxophone trills, this section uses a colorful gesture to push into the next section, and the move from cluster to chord represents the start of the tower collapse and the move from an ambiguous, ominous situation to a more definite sense of terror. All brass play a series of accelerating chromatic triplets, starting with whole note triplets tied over the barline, then half triplets, then quarter triplets in the direction of an arrival point (measure 475 for trombones and tuba, measure 476 for horns and trumpets).
- Measure 510: Open gate Trombone glissando represents the princess opening the gate with magic. This happens again leading into m. 524.
- Measure 544: Final tower collapse The brass section uses loud, practical pedal notes. The exception is trumpets, who play a pedal note of indeterminate pitch.
   The guitar and bass strike open strings in sync with the tower collapsing.
- Measure 552: Ring of fire Muted trombones and horns represent the ring of fire appearing.

- Measure 571: Final villain Trombones, tuba, and horns represent the newly reborn villain landing on the ground. The triplet quarter note in m. 573 represents the text on screen.
- Measure 581: Sound design Nabeel Ansari programmed the sound design for
  this section. The sound effects were largely left up to what he saw fit, of which he
  chose to use a cinematic flair. All directions after this point were vague, and were
  discussed via phone call.
- Measure 586: Scream The horns use extreme high range glissando to represent the villain roaring.
- Measure 590: Final battle Various sound effects are used to represent actions on screen, mainly borrowing from the forest scenes earlier.
- Measure 678: Falling The saxes play a series of bell tones that support the floating character on screen, then plane downward as he falls.
- Measure 681: Defeat The bell tones in the trumpets and horns represent the floating motion the villain is doing on screen.

## APPENDIX B

# JOKES, THEORY, AND UNORTHODOX ORCHESTRATION

As this project started as a side project for fun, numerous examples of jokes are present. Sound effects were sometimes chosen due to the comically absurd effect they produce. The brass stabs in m. 12 and 14 are examples of this. The most effective overview of jokes is a chronological analysis.

The fusion drum beat (drawn from Josef Zawinul's Birdland) starting in m. 19 was a placeholder that was kept because of the comical effect it produces. It also adds to the confusion frequently experienced in nightmares.

The fairy flight theme is derived from the savior theme, and is written in the style of a series of after school specials I watched growing up. These would be hilarious due to how unintentionally cheesy they were. It would combine jazz and orchestral music, similar to the style of this section. The tempo of this section comes from the movement of the child on screen in measure 42.

The bonk in measure 49 where the fairy runs into the fence is the moment where the tone of the piece is fully established. Following a cluster chord, the phrase prior to the chord picks up immediately following the bonk, as the fairy resumes her journey.

Measure 66 quotes "Frere Jacques" in the saxophones because the hero is sleeping. Attempting to capture the feeling of "angsty teenager woken up against their will", I used a heavily distorted guitar, and a dense Bartok axis theory chord progression.

The clarinet solo at measure 121 is an inside joke. The original performer for the part was Doug Storey, clarinet professor at West Texas A&M University and in demand jazz saxophonist. During jazz gigs, he would playfully refer to the clarinet as the "agony stick." In the speed run, a stick item is purchased in the store. The personal connection here told me to use a clarinet solo for this very reason.

## Part 3 - the world

The section starting at m. 153 uses a street beat (style notated as 2nd line swing). When playing the original game, I always imagined the fish people in this area to have really heavy southern/New Orleans accents.

At m. 190, the runner uses a glitch known as a HESS (Hyper-Extended Super Slide) to travel quickly. My first thought in this section was to use the blast drum beat to highlight the absurdity of that glitch from a realism perspective. In my head, I was imagining the drummer just drowning out the rest of the ensemble. Sampled drums don't get the same effect, so I compromised.

Starting in m. 240, the act of throwing cuckoos into the pin is made much more exciting with a loud brass hit for each one moved. M. 280 is written to sound like cheesy game show music. Video games by nature have this tendency to make mundane tasks exciting, so mundane tasks were celebrated with overly enthusiastic music.

# Part 4 - Funky Tree

The Funky Tree is a joke in and of itself. As a kid, I thought the tree looked like it had an afro. When I started this section, I used a sketch from the pool. Adding a swing to it created a feel for this section that I enjoyed. At measure 366, I gave the guitar player the performance direction of "porno waka waka" just to see what would happen. Measure

437 and 438 are palindromes of each other. This is because the player leaves the room, then goes back in. This makes a 5 bar phrase instead of a 4 bar phrase.

## Part 5 - Tower

Measure 478 is the start of a lengthy 7/8+5/8 rhythmic scheme. This started as a 12/8 section. The rhythmic basis of 2+2+3+2+3 comes from the phrase "pants that fit so well you don't even need a belt" with equal rhythm on each syllable. During a tower escape, where running is necessary, tripping over loose pants would not be a good thing. So good fitting pants are necessary. The harmonic structure of this section is based on a 12-bar blues, with an octatonic bass line. The form is just over 24 measures long with the 7/8+5/8 rhythmic scheme, which is 12 measures of 12/8.

## Part 6 - Tower Collapse

The main joke in this section is the gradual inflation in pitch. The section is based on 12-tone technique, and the choices of transposition gradually goes up, giving a rising feeling to the music in this section. Tower is falling down, so I make the music go up.

The choice of sound effects in this section is deliberately cartoony.

## Part 7 - Final Battle

In the original video game, the monster in the final battle is called Ganon. Canon rhymes with Ganon. Therefore, the music playing during the battle with Ganon, starting in m. 590 is a canon.

## **Orchestration Choices**

Orchestration choices that deviate from the norm always happen for specific reasons. The horn and tuba were added mainly because of personal preference, but also

for compositional reasons. The tuba, having a highly present and heavy sound can add emphasis and intensity to impact points. In addition, orchestral chord voicings can be replicated to great effect when appropriate.

The horns add another melodic timbre that blends well with the rest of the ensemble. In addition, doubling another instrument with horn creates a wider, fatter version of that instrument. The horn, projecting best in a range between trumpet and trombone gives full voiced chords extra power due to instruments playing in their strongest registers - the trumpets can all play in the upper register, and the trombones can all play in the middle or lower register. Horns and tuba also give the freedom to use cinematic gestures effectively, without having to compensate for the shared personnel - replicating a horn part using two of the available four trombones only leaves two trombones to create textures normally played by four, for example.

Orchestration choices that deviate from standard practice are all deliberate.

Several choices resulted from experimentation in dealing with problems caused by recording multiple parts with the same person and instrument. Known as phasing, it results when sounds are too similar to each other and begin to cancel out frequencies.

This only happens in unison lines. For trumpet parts, this was solved by using a cornet on lower parts, and a trumpet on higher parts. As more projects used this solution, the different characteristics of the instruments became apparent, and eventually these characteristics were emphasized in writing specifically for this instrumental combination.

In researching the cornet, and the possibility of using it in a big band context, I stumbled upon an article by brass instrument builder Robb Stewart.<sup>15</sup> The article is on the

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<sup>&</sup>lt;sup>15</sup> https://www.robbstewart.com/difference-between-trumpet-and-cornet

actual difference between trumpet and cornet from a builder's perspective. Although the difference between the trumpet and cornet are mainly in playing style and sound concept, the materials that make up the cornet that was recorded were significantly different from those of the trumpet used. The sound difference, combined with choice of equipment made the trumpet favor the upper register, and the cornet favor the lower register. This characteristic was effective when the two trumpets are playing unison in the upper register while the two cornets are in unison an octave lower.

Similarly, when recording unison lines on trombone, the available instruments included an alto trombone, small bore tenor, large bore tenor, and bass. The stacking of these progressively larger instruments gave desirable results, similar to the trumpet/cornet combination above. The alto trombone is an instrument that is infrequently used outside of period performances of works originally written for it.

In some contexts, as explored by Michael Lake, the alto trombone has desirable tendencies more so than a small bore tenor trombone. <sup>16</sup> Because of the shorter tube length, the sound is both lighter and brighter. When pushed to louder dynamic levels, the alto trombone gets brassier and edgier than a tenor trombone. The overtone structure of progressively larger trombones creates a thick, harmonically rich sound that enhances chords and thickens unisons. In sections that use the alto trombone, it can also function as a "trombone zero" to the other three, making an orchestral setup of two tenors and a bass.

However, some of the desirable aspects can be undesirable in other contexts. The tenor trombone, having a rounder sound can player louder before the sound gets too bright. The sound, although appropriate for lighter styles, such as bossa nova and lighter

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<sup>16</sup> https://www.altobone.com/#begin

classical style music, is not appropriate for heavy cinematic style playing or more intense Latin styles where a heavier, darker sound is more appropriate. Playing unison passages that are technical in the middle to top of the staff become more difficult for the alto.

Although this is in a standard range for tenor, it is in the low range of the alto, which lies a fourth higher.

Choices of orchestration that defy convention were also used to take advantage of the abilities of certain performers, or to create a specific effect. The saxophones, in measure 469 play trills that are typically impractical to play. In this instance, the clumsiness of the fingerings make a slow, rumbly sound that is appropriate for the action on screen.

In measure 544, the trumpet pedal blats are just a low note of indefinite pitch.

This note does not respond at a soft dynamic, and gives a brassy, noisy sound that blends well with the rest of the noise happening in this measure. Trumpet players do not like this effect, and continually insist "this note isn't playable on the instrument."

#### **THEORY**

A full theoretical analysis of the piece is unnecessary for the purposes of this paper, but a number of sections benefit from at least a partial analysis. Many harmonies serve as color rather than function. The first instance of this is during the nightmare sequence starting in measure 12. The lower trombones and tuba use a Dsus4 shape. This shape is moved up the next measure by a half step.

The stacked chords at the end of the measure are stacked in fourths. From the bottom, F, Bb, Eb, Ab, B, Db, E, F#, G, A, C, D, G. All 12 chromatic pitches are contained in this chord, but do not sound as dissonant as a mother chord because of the stacked fourths. The horns are not strictly stacked in fourths due to range considerations of the trumpets above.

In measure 14, the chord structure changes to stacked sub-groups of fourths.

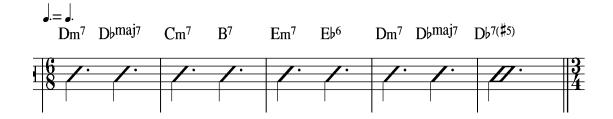
Trombones and tuba keep the chord from measure 12. Trumpets and horns are stacked from the top down, adjusted for range.

Frequently, transitioning from quartal based harmony to quintal based harmony leads to brighter sounding chord voicings. The trombones and tuba move to a quintal shape in measure 17, mainly to support the lydian mode Princess theme above.

Measure 49 makes use of a chord with all chromatic pitches stacked, but in a dissonant fashion. The voicing choices in the saxophones were mainly to take advantage of notes on each instrument with undesirable tonal qualities. Soprano saxophone written high F has a tendency to "split". Alto saxophone written high F#, and tenor saxophone

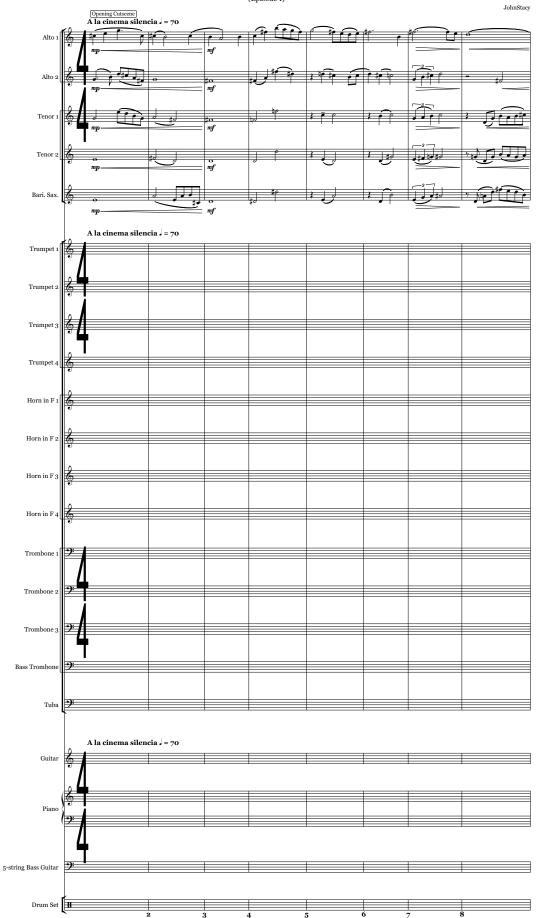
written high D have the same tendency. The bari saxophone written low C is an effective "honk" note, and it doubles the tuba. The tenor saxophone written G was selected to clash with trombone 2's F#. The brass are voiced quasi-randomly, mainly to be dissonant in each instrument group, and to clash with at least one other instrument from another group. The bass and guitar strum all open strings, and the piano hits a cluster chord with both elbows.

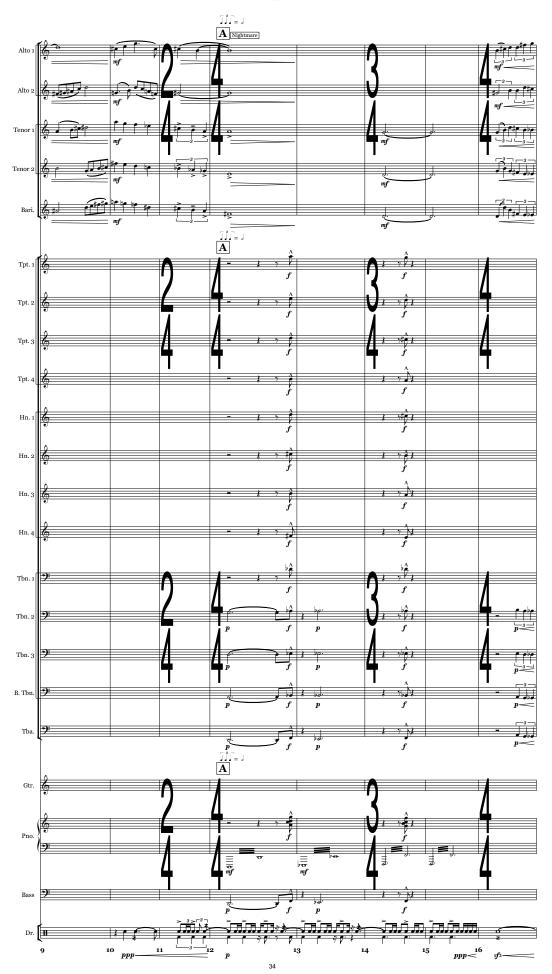
Measure 82 is an instance of the use of extra chords to generate motion, elaborating on an otherwise short progression. Although this is functional harmony, the purpose is not strictly functional. This progression is easiest understood backward. The arrival chord is a C major 7. The method of arrival is through a tritone substitution (ii7-bII^7-I^7). The second chord of this group is then shifted from a Db major 7 to a Db7#5. The above group is approached by a similar group from a whole step above (ii7-bII6). This group is approached by planing backward from a V7 to this group.



## A FEW MORE ANALYSES OF NOTE:

- The long chromatic line starting in measure 447 is generated by chaining together dissonant intervals and chromatic enclosures.
- Measure 451 is based on the same half-whole octatonic scale as the earlier section. This also applies to the next section at measure 476.
- The section at 476 is elaborated from a 12-bar blues form. The first 8 measures are centered around Fm7, with an octatonic bass line. The next 4 are centered around Bbm7, followed by 4 of Fm7. The next 4 are based on Cm7, then 4 of Bbm7, then 4 of Cm7. This concludes in measure 504 with an F major chord.
- Measure 533 takes advantage of a tone row, consisting of 0e789t234156. Various sound effects and chord clusters highlight sound effects during this section, with the row being manipulated in a background context. This section doesn't conform to typical 12 tone technique. Although it does manipulate a tone row using a matrix, the construction of the section isn't consistent with the 12-tone idiom. The main reason it is used is to sound disorienting to the audience.
- Measures 544 and 545 are written to be noisy, and are not based on a traditional chord.









Fairy Flight

