Musical Gamescapes:
A Study of Unity in *Arcanum: Of Steamworks and Magick Obscura*

By: Tristan Capacchione

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Introduction

The purpose of this paper is to understand how some of the musical elements in the soundtrack of the video game *Arcanum* are used and organised. More specifically, it will study how certain musical elements unite different tracks and how these tracks are united by common features in the physical game world. As a new field of musical research, the analysis of video game soundtracks is short on terminology and labels, particularly from a music theoretical perspective. In an attempt to develop the use of new terminology, I borrow terms from the non-musical analysis of videogames. Ultimately, this paper seeks to start a discussion on how video game soundtracks are conceived.

In their book *Tomb Raiders and Space Invaders: Videogame Forms and Contexts*, King and Kryzwinska devote an entire chapter to discussion on "gamescapes". These virtual worlds establish the setting of the game, in terms of geography and time period (King and Kryzwinska, 77). Visually, different areas in a gamescape can share similar features (e.g. trees, buildings, etc.). In *Arcanum*, the areas that share these features, also share a similar function. The two most general functions could be understood as those which are essential to completing the game and those that aren't. King and Kryzwinska borrow the Latin terms adopted by Callois, *Ludus* and *Paidea* (King and Kryzwinska, 10). My hypothesis is that, in *Arcanum*, areas that share similar functions, also share similar musical features. In turn, this creates a more immersive atmosphere and a more enjoyable playing experience.

The soundtrack is composed of twenty-one vignettes, each of which are about two or three minutes duration, and accompany in a non-diagetic manner, either specific or general, physical locations in the game. My approach is to analyse the tracks that

represent areas of similar function and see how they relate to one another. Through a study of a persistent semi-tone motion and a specific harmonic progression, I reveal the underlying musical elements that tie these related areas together. In addition, I consider the exceptions to these examples that equally reinforce my hypothesis.

As the topic of this paper differs from that of a typical music theoretical paper, I feel it necessary to provide some history of video games and sound. First I will discuss the role of music in the video game and how it has evolved and been effective. Second, I will establish the setting of *Arcanum* and how the ideas, place, and time period of the game affect the music. Third, I will present my analysis and its significance.

Context

Video games have a history of over forty years, starting with single-player arcade games that focus all the action into a single game-screen that does not move or change (*Spacewar*, 1961). Today, home computer games provide endless worlds with startlingly real graphics and allow an unlimited number of players to play together (*Everquest*, 1999), from all over the world. This section will cover some of the key developments in the history of video games. This historical outline will make the analysis more significant by highlighting it as one of the first games to have a subtle soundtrack. Also, this outline will focus its attention on, when possible, video games of the action/adventure fantasy role-playing-game genre. In so doing, the outline becomes more relevant to the specific video game that is being analyzed. The eras that will be covered include the early days of video games including arcades and computers, the advent of home-based console systems

like the Nintendo Entertainment System (NES) in the 1980s, and personal computer (PC) games of the 1990s.

The first video game to use sound was *PONG* in 1972 (McDonald). In the mid 1970s sound was an emerging feature of video and arcade games. Sound effects were the first things to be added to video games from the satisfying sound for which *PONG* was named after to gun shot sounds that would be added only a few years later in 1975 in *Gunfight*. These types of sound effects would develop to become soundtracks for entire games. *Space Invaders* (1978) for the Atari VCS 2600 is a classic example of how 'bleeps' and 'bloops' can become an exciting soundtrack. As the enemies pour down the screen and draw closer, the sounds accelerate to increase the tension. These sounds only existed in the arcade/video computer systems, such as the Atari VCS 2600, the personal computer did not have the sounds that were available to those systems. The video game *Zork I: The Great Underground Empire* (1981) was a "text entry" based game rather than a joystick controlled game. The player would type a command on the keyboard for the character to follow and the computer would perform that action, if possible. Personal computers would lack sound for the first period of video games. The development of video game consoles in the mid 1980s would have a huge impact on video game sound.

Home video game consoles like the NES (1985) and Super NES (1991) would redefine music and sound in video games. With more memory and processing power these machines could do far more with sound and music than their predecessors. The NES was equipped with four "voices" that could all be used at one time. There were two "melody" voices, a "bass" voice, and a "sound effects" voice. The SNES was equipped with eight voices and richer options in orchestration through the use of MIDI.

Action/adventure video games like *Dragon Warrior* for the NES would continue to develop existing ideas of sound design through a clever manipulation of the sound files. While the sounds would accelerate as enemies approached in *Space Invaders*, the "Caves" track would slow down and transpose down a tone for every staircase that was descended. *Dragon Warrior* also used generic music tracks for one type of area. For example, all towns in the game had the same 30 second track playing and all caves had a different 30 second track playing. These tracks were looped indefinitely. The SNES would further develop this idea by also introducing leitmotivs. *Final Fantasy VI* is a prime example of how leitmotivs were used on the SNES. Nobuo Uematsu, the composer for the *Final Fantasy* series, wrote different tracks for each main character as well as the different towns, places, and ideas that were presented at any moment throughout the game. These developments were possible due to advancement of technology, particularly in memory and processing power. More memory and power means more music and better sound quality. These games set new standards in video game sound design for the fantasy action/adventure role-playing game.

In the 1990s the PC would become one of the dominant video game platforms with its greater memory and processing power. This became more evident in the mid 1990s with video games like *Diablo* (1996). *Diablo* used recorded music for its soundtrack rather than MIDI. Live music changed the way people experienced video games, because the games suddenly became more realistic. Other games, like *Baldur's Gate* (1998) would greatly improve the instrument database for their MIDI engines to similar effect. In addition, sound effects became more realistic and more frequent. Different items would each have their own sound effect and sometimes different sounds

for different actions (i.e. picking up an item vs. using the item). The variety of music and sounds that could now be achieved changed sound design in video games.

The Musical Gamescape of *Arcanum*

Ben Houge first creates a general sound and style for the game as a whole. He creates this sound world through the recurring use of a few different musical features, including his use of modes, modal counterpoint, instrumentation, equal division of the octave, and transformation of the title theme. Many of these elements are heard in the title theme, "Arcanum", itself.

As was seen with games like *Dragon Warrior* and the *Final Fantasy* series, *Arcanum* does use some of the same of musical tracks for some areas, but it is not nearly as general. Whereas *Dragon Warrior* had a total of five tracks for general game play (those that can be heard at any time throughout the game), Arcanum has over eighteen tracks that can be heard at any time! Rather than having one generic track for all cities, villages, and towns, *Arcanum* uses different tracks for different cities and towns. Likewise, rather than a generic track for all caves and dungeons, it makes use of different tracks that are tied to different locations, such as one track for "Isle of Despair" and another for the "Tarant Sewers". However, he unites these different tracks with specific musical ideas. This section will discuss some of the features of the title track, followed by the unifying elements of the different tracks for cities and dungeons respectively.

In the track "Arcanum", Houge establishes many musical features of the soundtrack as a whole, specifically: the use of modes, idioms of modal counterpoint, the "main theme" of the game, and equal division of the octave. By "main theme" I am not

referring to the term applied to the opening theme of a sonata form, but rather a musical theme that is common to the whole soundtrack. The opening measures (Fig. 1) clearly establish the Aeolian mode and some of the modal counterpoint idioms such as the *cambiata* figure heard in mm. 8-10. The climax at m. 65 is on an E*b* major chord, dividing the octave by a tritone. These musical features will be heard in the other tracks to come. Another, more subtle, feature of the main theme is heard in the musical tracks that accompany cities, towns, and villages. The semi-tone motion that is first heard in m. 7 in the first violin becomes the unifying element, musically speaking, for these locations.

The various cities, towns, and villages in the world of Arcanum are all linked by a recurring semi-tone motion. This motion is seen at large and small scales within the different tracks. The track "Cities" is characterized by a recurring semi-tone motion in the different parts for most of the track. This track accompanies all cities that do not have titles (or tracks) of their own. Starting in m. 1 in the viola (Fig. 2), it is then transferred to the first violin in m. 5 (Fig. 3). At a larger scale, the modulation from D minor to C# minor can be interpreted as the same motion (Fig. 4). Not limited to cities, this feature will also be seen in the generic track for all villages.

The opening of the track "Villages" has a clear semi-tone motion in the cello that may inflect the Phrygian mode (Fig. 5). However, at m. 9 the cello continues its line and cadences on F, suggesting the Hypo-Aeolian mode (Fig. 6). In m. 13 the melody suggests C-Aeolian. Throughout the track there are two tonal centres, C and F. However, the Phrygian and Aeolian qualities are never lost. The semi-tone first heard in the cello at the beginning returns throughout the movement, specifically at measures 45 and 87.

"Caladon" is a city with its own track as it is a larger city than most. While the key-signature might indicate E minor, the cello's semi-tone move from E to F natural in the first two measures (Fig. 7) would indicate the Phrygian mode, which has been suggested in other tracks. The melody in the first violin from measures 1-8 would reinforce this interpretation with its use of F natural. The climax of the track at measure 45 has an E*b* in the cello, a semi-tone below the first note of the scale. Also note that the melody at measure 45 (heard throughout) is actually part of the same idea presented in "Villages". The unity of motives and voice motion in combination with the similarity of modes helps tie these different tracks and geographic areas together.

"Tarant" is another city with its own track and is the largest city in *Arcanum*. The mode is A-Aeolian but is immediately undermined with the same semi-tone motion in the cello as was heard in "Caladon" and "Villages" (Fig. 9) hinting at the Phrygian mode once more. This semi-tone is heard as a dissonance resolving to a consonance, however it is heard again at the climax of the movement at measure 30 (Fig. 10), but this time as a consonance against the E*b* in the cello. This E*b* divides the octave by a tritone as was seen in the title theme "Arcanum". Also worth noting is the motivic unity between the melody in the first violin at measure 3 and the melody of "Caladon" seen in measure 1. This melody could be seen as a variant of the melody presented in measure 1 of "Villages".

Houge unifies the different tracks that accompany villages and cities with specific musical ideas that he varies freely. By unifying the musical tracks for these locations he creates a consistent sound world for players to become immersed in. This is seen through

his use of semi-tone motion at both large and small scales, his inflection of modes, and similar motives.

Physically, towns, villages, and cities share common features such as, houses, shops, etc. However they also have another common feature, namely the *Paidea* style of game play. These locations provide many additional quests and alternatives to goal-oriented game play. There are some locations which are linked by the opposite though; there are some locations that are only used for progress through the game's story or *Ludus*. Houge unifies these different tracks with another musical idea, a specific harmonic motion of i-*b*vi. This motion is not seen in the main theme, but could be seen as a mark for story development. This idea will be discussed through an examination of specific tracks, including "The Demise of the *Zephyr*", "Tarant Sewers", "Battle at Vendigroth" and "Isle of Despair".

"The Demise of the *Zephyr*" is the track which accompanies the opening movie. This movie sets the tone and background story for the game. Composed in E Aeolian, the melodic material in the first two violins in mm. 5-17 and mm. 20-28 recalls the main theme (Fig. 11). Starting at measure 32, the triads that are emphasized are E minor and C minor, resulting in the harmonic motion i-*b*vi (Fig. 12). The motion is first heard in this track but will recur throughout the game.

The sewers of Tarant are home to many quests in the game and as a result could be understood as place that is *Ludus* oriented. In "Tarant Sewers", Houge combines elements of both the city and *Ludus* aspect of the sewers. The opening two measures recall the semi-tone motion that was seen in the city of Tarant (Fig. 13) and the abrupt switch to E*b* in measure 9 recalls the division of the octave that was seen in the main

theme (Fig. 14). The modal areas in this track are A Aeolian, F Aeolian, followed by a return to A Aeolian. This is a large scale outline of the i-*b*vi harmonic motion that is typical of these areas. Through subtle means, Houge incorporates this musical idea to identify the area.

The Vendigroth Wastes are an area that can only be explored later in the game by completing *Ludus* related quests. In "The Battle at Vendigroth" and "The Vendigroth Wastes", Houge works the harmonic motion into the structure of the melody. A clear example would be measures 11-12 from "The Battle at Vendigroth" (Fig. 15). He develops his use of the motion through reinterpretation of chords as can be seen in measures 16-17 (Fig. 16). What was the i chord becomes reinterpreted as the *b*vi chord which then resolves up to a new i chord. Beyond this, the central keys of the work are G# minor and E minor, which are related by the same harmonic motion.

In "The Isle of Despair", an area whose sole purpose is to advance the plot of the game, Houge brings this harmonic motion to the fore. The motion accompanies the main idea in the track as can be seen in measures 1-4 (Fig. 17), from an A minor triad to an F minor triad. In measures 5-8 (Fig. 17), he applies the motion to chords far removed from the tonal centre of the section. These measures show how Houge transitions between his sections in the piece. Finally, the large-scale tonal organization of the piece divides the octave into three equal parts, once again with this same harmonic motion. The piece starts in A-Aeolian, modulates to C#-Aeolian, followed by F-Aeolian, and then returns to A-Aeolian.

Houge unifies these different areas with similar musical material, thus creating a consistent sound world, or *musical* gamescape, for players to become immersed in. Semi-

tone motion, harmonic motion, division of the octave, use of modes: these are all examples of how Houge unites the different musical tracks. Some of these features are specific to certain types of tracks and can be understood to represent specific game areas. This is a development of simpler sound-design concepts as were seen in games like *Dragon Warrior*. However, there are areas in *Arcanum* that are far removed from the normal gamescape and the tracks for these areas also demonstrate that. These areas include, the forest city of "Qintarra" and the "The Void". In "Qintarra" Houge uses instruments, such as rainsticks and marimba, which are not used in any other location. "The Void" and "Kerghan's Castle" use exclusively electronic music to help remove them from the world of *Arcanum*. The clear distinction of musical material and instrumentation in these tracks demonstrates how Houge thought of these places as very different from the rest of *Arcanum*.

Conclusion

The results of this analysis show a clear relation between the music and the gamescape of *Arcanum*. This relation also differs from other games in that the music track is different for each area of similar function, rather than a generic track for all cities, towns, and villages for example. However, these different tracks are all related through the use of a specific musical idea. The areas of the gamescape that are strikingly different from the rest of the world (or are just not part of that world at all) have musical features which clearly distinguish them from the rest of the tracks.

This analysis is only one approach to the study of video game music. Further steps to be taken include determining if this is a prevalent feature of video game music

from this time period or if *Arcanum* is an exception. In comparing the soundtrack of a video game to its gamescape, another option might be to consider how musical space is used and if it bears relation to physical space that a character may use. King and Kryzwinska discuss how certain gamescapes are restricted in the space they allow players to use (King and Kryzwinska, 78). In those cases, is the music "restricted" or confined in any way, through dynamic range or pitch range for example? Finally, issues of narrativity may be considered. Narrative is a hot topic in the analysis of video games in their own right, but the analysis of video game soundtracks may be separate from that (King and Kryzwinska, 38). Does the music convey a sense of "beginning", "middle", or "end" if the music does appear in such a fashion? Are there elements of the music specific to the beginning, middle, or end of the game? Could these elements be understood as having a narrative function?

As technology advances further into the 21st century, video games will continue to evolve and grow and the music will change with it. This analysis reveals one way in which the soundtrack took a traditional feature of video game sound design and developed it.

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Appendix 1 – Musical Examples

Fig. 1 – "Arcanum" main theme, mm. 1-10

Fig. 2 – "Cities" m. 1

Fig. 3 – "Cities" m. 5
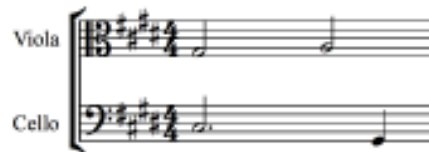
Fig. 4 – "Cities" m. 17

Fig. 5 – "Villages" mm. 1-2

Fig. 6 – "Villages" mm. 9-12

Fig. 7 – "Caladon" mm. 1-2

Fig. 8 – "Caladon" mm. 45-46

Fig. 9 – "Tarant" m. 1

Fig. 10 – "Tarant" m. 30

Fig. 11 – "Demise of the *Zephyr*" mm. 20-28

Fig. 12 – "Demise of the *Zephyr*" mm. 32-35

Fig. 13 – "Tarant Sewers" mm. 1-2

Fig. 14 – "Tarant Sewers" mm. 10-11

Fig. 15 – "Battle at Vendigroth" mm. 11-12

Fig. 16 – "Battle at Vendigroth" mm. 16-17

Fig. 17 – "Isle of Despair" mm. 3-8

Appendix 2 – Additional Information and Resources

Website – www.gamessound.org

> This is a website devoted to the academic study of video games sound. Many articles and links are available.

Website – www.vgmusic.com

> This is a website that hosts thousands of fan-made MIDI files that are arrangements of music from many video games.

Website – http://www.gamespot.com/features/6092391/index.html

> This is a website with a clear, brief outline of the major developments in music and video games.

Zork 1: The Great Underground Empire – http://www.xs4all.nl/~pot/infocom/zork1.html

> This is a website that will allow you to play this classic game online, for free.

Video - http://youtube.com/watch?v=3Xl8kqjJ4nM

> This is the opening movie for *Arcanum*. The track that accompanies it is "The Demise of the *Zephyr*" followed by "Radcliffe's Commission"