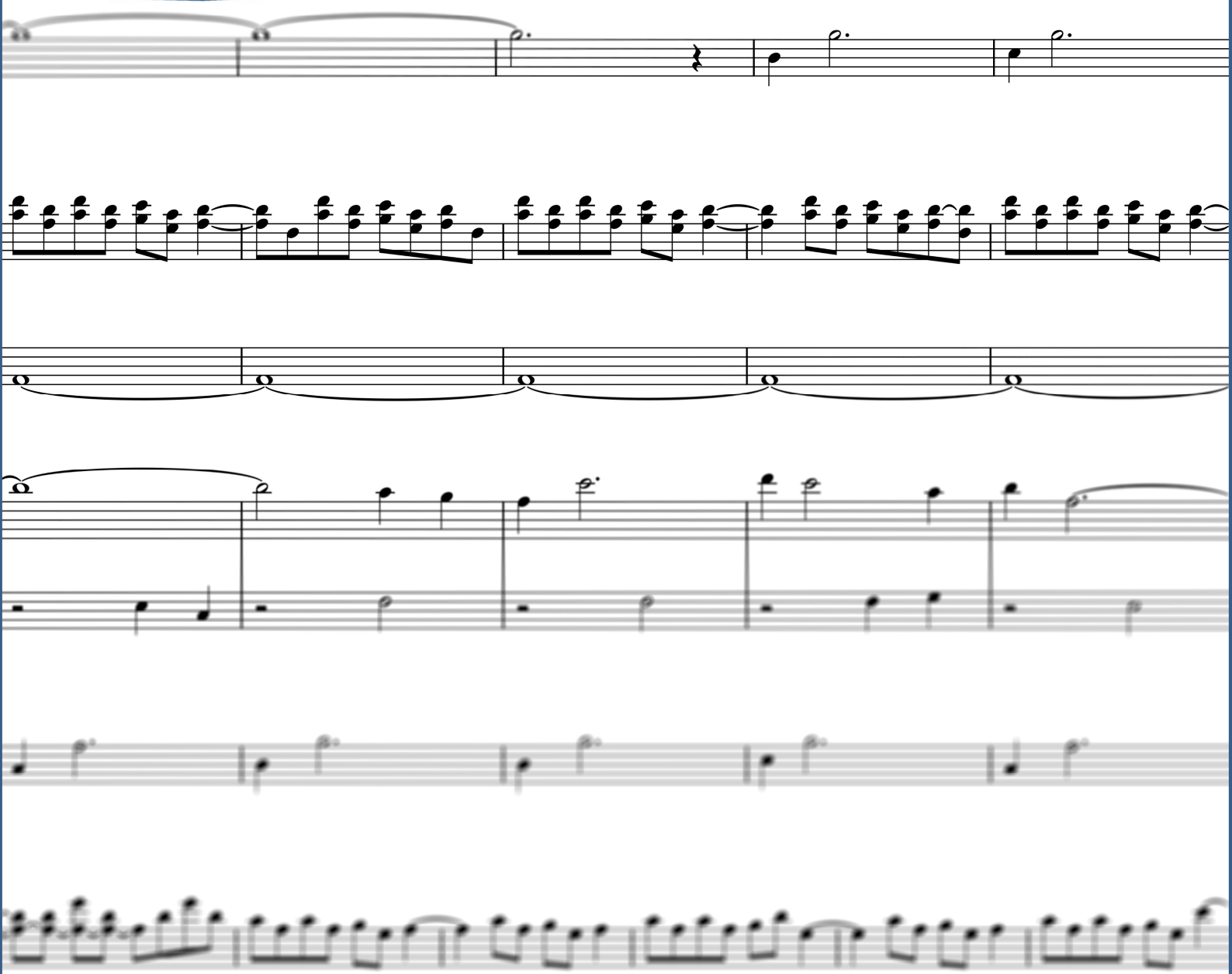
Sculpting with Scores

Musical World-Building in Medievalist Role-Playing Games



Leroy Roncken

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Utrecht University
Department of Media and Culture Studies

Sculpting with Scores:
Musical World-Building in Medievalist Role-Playing Games

by
Leroy Roncken
5952999

Supervisor: Dr Michiel Kamp
Second Reader: Dr Mark Sweeney

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The music on the cover is an excerpt from my transcription of
"King and Country" (Jeremy Soule, *The Elder Scrolls IV: Oblivion*).

Thank you, Michiel, for your guidance and enthusiasm,
and for inspiring me to pursue my passion for video game music.

Abstract

Music is a core part of video games for numerous reasons: it can contextualise the game and provide structure, communicate gameplay information, evoke feelings and emotions, or it can simply be enjoyable to listen to. But music can do much more: it has the power to influence perception and shape gameworlds. Numerous existing studies investigate how video game music contextualises gameworlds historically, culturally, and topographically. These studies mainly rely on the use of cultural and genre-specific conventions. However, convention-based approaches have repeatedly brushed over many ways in which music can establish and enrich gameworlds. Studies that do examine other types of musical world-building besides broad contextualisation are rare and narrow in scope. Consequently, the abilities of music to define and enrich environmental details remain underexamined. In this thesis, I make a start towards a comprehensive theory of musical world-building that addresses how music develops gameworlds on large and small scales—from general moods to specific game objects.

I do this by proposing and applying a method that focuses on intrinsic musical techniques. This means examining a video game's score from a formalist perspective and avoiding other factors external to the game—notably conventions—to explain what music does for the gameworld and why. As I demonstrate in this thesis, this thought process can prompt an increased awareness of subtle instances of musical world-building that would otherwise likely go unnoticed. Because of the emphasis on intrinsic musical techniques, I propose the theory of intrinsic musical world-building. This theory requires an alternative approach to that when examining conventional contextualisation. However, the two diverging approaches are most valuable for understanding world-building when considered as complementing rather than challenging each other. I demonstrate my theory of intrinsic musical world-building by analysing how music shapes recurring environment types in medievalist role-playing games—a game genre that relies heavily on world-building. More specifically, after explaining the relation of this genre to musical world-building and explaining my methodology, I analyse scoring strategies for constructing forests, urban environments, and magical settings through a diverse selection of in-depth case studies. This thesis ultimately shows just how far music can go in building gameworlds beyond the limitations of the screen.

Contents

List of Images, Figures, and Transcriptions

Images are screenshots of video games taken by me, unless otherwise credited. All figures and transcriptions were made by me. I used Dorico 3.5 (Steinberg) for all music notation and Sonic Visualiser (Centre for Digital Music at Queen Mary, University of London) for the spectrogram. All transcriptions are non-transposing unless otherwise specified, with the exception of the double basses, which sound an octave lower than written. References to the video games are given in full in the Ludography. Cues are named as they appear on the official soundtrack releases, unless otherwise specified.

Introduction

What stands out to you when you look at the picture below? The well-lit white horse and its rider in the foreground? The green forest? The medieval armour and weapons? Let us try a short mental experiment: imagine hearing rugged male voices singing a swift song in a major key accompanied by a recorder, and keep studying the image for a few moments. Is the image different with music? Surely, the mood of the scene is now distinctly cheerful. Did your attention also shift to the riders? Next, think of different music whilst studying the picture: imagine hearing a lone female voice singing a slow and wordless soprano melody in a minor key, accompanied by soft and narrow string chords gently swelling in. What changes? The mood probably shifts to a melancholic one. Maybe you look at the face of the rider in front and see him pensively staring ahead. Are they returning from a battle where they have just suffered great losses? Let us try one more: keep examining the picture and imagine instrumental music with calm and neutral melodies played by a horn and woodwinds, embellished by quick flute ornaments, and accompanied by busy harp arpeggios. Take a moment to let it sink in. Are you still wondering about battles? Or are you more enthralled by the forest, its flowers, and the sunbeams cascading through the canopy?

Image 0.1: mercenaries riding through a forest in *Kingdom Come: Deliverance*.

Music has the power to change one's perception of a view, whether it is a picture in a book, a scene in a film, or an environment in a video game. Music can establish a mood and clarify a genre, but it can also go beyond this to specify and emphasise the details of an

environment. This can be of the essence in programmatic music or in films, and it is important in video games. The process of creating and defining a virtual world in a video game is called "world-building." It is a process that depends on the cooperation of a variety of video game elements, including the visual design of scenery and game objects, level-design, narrative, in-game and genre-specific lore, sound effects, and music. World-building therefore shapes the way a game's settings appear to gamers, both on the level of the game as a whole and on the level of smaller environments like a forest, a town, or an alchemy lab. Even though world-building is an important part of every game, it is approached differently across game genres. For some games, the creation of convincing gameworlds is at least as important as gameplay. This typically applies to game genres that revolve around adventure, development of story and characters, and themes related to fantasy and medievalism.[1] A game genre that features all these aspects is the medievalist role-playing game. Because of the goals and aesthetic ideals of genres like this, they make extensive use of the world-building capabilities of music.

A diverse selection of studies addresses the role of music in creating video game environments. Whereas some take world-building as the central focus, others touch on the subject in passing. Besides the level of attention given to world-building, the approaches vastly differ in these studies: some take more formalist approaches to understand how certain compositional elements of a soundtrack help create a specific gameworld, and others examine musical conventions and connotations to draw connections between soundtracks, genres, and what they signify. Despite this wide range of research, many instances of world-building through music have been overlooked. Convention-based studies make up the bulk of existing ludomusicological world-building research, and even though they are valuable for understanding how music can contextualise a game, I argue that a convention-based approach is ineffective for uncovering many other types of world-building. I demonstrate that these overlooked world-building techniques can be revealed by working from a perspective that puts aside factors external to the game, and instead focuses on a formalist understanding of a game score and its incorporation in the game. This style of thought works from the music within the game itself and from assumptions that certain basic qualities of music are inherent to the nature of sound and human perception. I therefore propose the theory of "intrinsic musical world-building" to explain world-building strategies beyond convention-based contextualisation. Intrinsic musical world-building has received little attention: the studies

[1] Cf. Winifred Phillips, *A Composer's Guide to Game Music* (Cambridge, MA; London: MIT Press, 2014), 102–3.

that do address it in one way or another are too few and far between to form a comprehensive theoretical understanding of intrinsic musical world-building. In this thesis, I investigate how music builds gameworlds in medievalist role-playing games and what intrinsic relations between these games and their scores best explain musical world-building.

0.1 Existing World-Building Studies and the Difficulties of Scope

Due to practical reasons, the studies that discuss world-building as a central component have either taken a very broad stance, or been limited to a few specific musical techniques or case studies. This has gotten in the way of developing a comprehensive theory of intrinsic musical world-building. The broad studies are aimed at providing a clear overview of *what* music can do, more than *how* or *why* it works on a compositional level. An influential book about video game music that addresses several aspects of world-building is *A Composer's Guide to Game Music* by Winifred Phillips. It is a great starting point for exploring the importance of music as a world-builder and learning about the large variety of ways in which music can do this. In this book, Phillips explains on a conceptual level what the importance is of musical world-building in engaging gamers: music provides context for and adds depth to the story and setting, informs gamers about gameplay elements, invites interaction, and enhances realism, richness, and diversity.[2] Due to the vast scope of the types of games that this book tackles, analytical explanations and compositional clarification work on the level of genres rather than stylistic details. Kate Galloway's chapter "Soundwalking and the Aurality of *Stardew Valley*" in *Music in the Role-Playing Game* also goes into musical world-building on a broad, conceptual level. For example, she explains how "[s]easonal music is stylistically mimetic of distinctive seasonal characteristics (e.g., hopeful spring, energetic summer, melancholy fall, and lonely winter)."[3] However, *why* this music sounds "hopeful" or "lonely" is not the focus of this chapter. Therefore, studies like these provide a solid starting point for understanding musical world-building, but require substantial additions in order to create a theory of *intrinsic* musical world-building.

The existing detailed studies provide great illustrations for what music can do and why, but their specificity makes that the results from this research are problematic to generalise to broader theories about musical world-building. Perhaps the best step towards a

[2] Phillips, *A Composer's Guide to Game Music*, 45–51, 102–3.
[3] Kate Galloway, "Soundwalking and the Aurality of *Stardew Valley*: An Ethnography of Listening to and Interacting with Environmental Game Audio," in *Music in the Role-Playing Game: Heroes & Harmonies*, ed. William Gibbons and Steven Reale (New York; London: Routledge, 2019), 171–2.

theory of intrinsic musical world-building is Mark Sweeney's analysis in "The Aesthetics of Videogame Music" of mountain landscapes in *The Elder Scrolls V: Skyrim*. Here, he provides detailed compositional analyses to explain how music can enhance a gamer's aesthetic experience of open space and temporal stasis. For this, Sweeney closely examines instrumentation, timbre, structure, thematic material, harmony, scales, melodies, and more.[4] With his analyses, Sweeney convincingly shows how music can strongly influence the aesthetic construction of a game environment, without an immediate need for generic conventions and allusions. As this examination focuses on mountain ranges and centres on the musical creation of open space and temporal stasis, it leaves room for developing an understanding of intrinsic musical world-building in other types of game environments.

Another detailed study that concentrates on world-building is the article "From *Skyrim* to Skellige" by Brendan Lamb and Barnabas Smith. This article revolves around establishing medieval(ist) settings in the games *Skyrim* and *The Witcher 3: Wild Hunt*. As this is about creating allusions to specific pre-existing cultures, genre tropes are a crucial component of Lamb and Smith's discussion. However, they also examine some world-building capabilities of particular timbres beyond cultural connotations.[5] Just like Sweeney, Lamb and Smith have opted for an in-depth examination of a narrow topic: they examine a similar setting in two games and explain the ways in which music can establish and enhance a sense of the medieval. This article provides another segment for a comprehensive theory of musical world-building in terms of historical setting. Nevertheless, discussions of improving natural and urban environments can still be extended well beyond timbre.

0.2 Semiotic versus Background Hearing

The limitations that arise as a result of the chosen scopes mainly create a practical problem that is easily resolved, but there are also more complex difficulties in ludomusicological discourse on world-building. One of these has to do with the way "world-building" as a concept is understood: borrowing from Michiel Kamp's terminology, one can wonder whether musical world-building is a consequence of "semiotic hearing" or "background hearing."[6] Kamp defines semiotic music as having "two characteristics: it is unimportant what it sounds like apart from the fact that it sounds different from its context, and it requires

[4] Mark Sweeney, "The Aesthetics of Videogame Music" (PhD diss., University of Oxford, 2014), 205–20.
[5] Brendan Lamb and Barnabas Smith, "From *Skyrim* to Skellige: Fantasy Video Game Music Within a Neo-Mediaevalist Paradigm," *Musicology Australia* 11, no. 2 (2018): 79–100.
[6] Michiel Kamp, "Four Ways of Hearing Video Game Music" (PhD diss., Downing College, 2015), 17.

only the smallest moment of attention."[7] This means that a musical cue signifies something simply because it is there and need only be recognised by the gamer at its onset in order to work. This seems to be the premise on which many ludomusicologists discuss world-building. However, as I argue in this thesis, many of the world-building capabilities of music depend on specific musical qualities that are experienced over time, such as the unfolding of melodic material. The concept of world-building is therefore better described as a type of "background music," which is largely unnoticed music that works as "a piece of equipment"[8]: background music that operates as a world-builder is best understood as a functional foundation rather than an inconsequential filler. One possible function of background music is gradually feeding environmental information to the gamer through various musical techniques. Kamp discusses this as the "ecological approach," which in regard to video game music is about structuring a gameworld by connecting "environment, goals, and players."[9] Considering music as either semiotic or background music profoundly alters how its role as a world-builder can be understood.

In *Game Sound*, Karen Collins briefly mentions the creation of environments as one of the functions of game audio: it can "represent and reinforce a sense of location in terms of cultural, physical, social, or historical environments."[10] This thought is not developed much further here, but the improvement of physical environments returns in her book *Playing with Sound*. Here, Collins explains how sound can improve a gamer's spatial awareness of the virtual world; she explains how sound can help a gamer hear through their avatar's perspective.[11] The demarcation of physical environments and spatial positioning of sound sources are practical semiotic functions of game sound in general. Whilst this study helps to understand how sound can quite literally build worlds in terms of spatial structuring, it does not go into world-building in terms of settings and their appearances.

James Cook does discuss how music can affect the creation of a particular setting in his article "Playing with the Past in the Imagined Middle Ages." He explains the contextualisation of a medievalist time and place in *Witcher 3* by drawing attention to "iconic" relations between imagery, music, and game.[12] Even though Cook extends some of

[7] Kamp, "Four Ways of Hearing Video Game Music," 33.
[8] Kamp, "Four Ways of Hearing Video Game Music," 177.
[9] Kamp, "Four Ways of Hearing Video Game Music," 154, 158, 173–4.
[10] Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA; London: MIT Press, 2008), 132.
[11] Karen Collins, *Playing with Sound: A Theory of Interacting with Sound and Music in Video Games* (Cambridge: MIT Press, 2013), 45–8, 54–8.
[12] James Cook, "Playing with the Past in the Imagined Middle Ages: Music and Soundscape in Video Game," *Sounding Out*, last modified 3 October, 2016, https://soundstudiesblog.com/tag/james-cook/.

these arguments with brief remarks about influences of compositional techniques on mood, his analysis of the medievalist setting is almost exclusively semiotic. The focus of this article lies on how acts of musical signification create the setting, not how musical techniques shape the gameworld beyond historical associations.

Tim Summers makes great steps in explaining how music can build gameworlds in his book *Understanding Video Game Music*. His explanations for why particular musical techniques are favoured over others mainly rely on semiotic references. In his third chapter he examines how allusions to music from historical events like the Second World War and stylistic references to popular culture like James Bond films can help contextualise a game's setting.[13] Summers highlights similarities between music and games, and shows how this adds to a gamer's perception of characters, geography, and narrative.[14] For example, he describes "a lurching minor melody with chromatic inflections, played in a bassoon-like timbre at a low pitch" as providing an unambiguous "message" of "trouble."[15] Even though this kind of analysis of the score is in line with Kamp's discussion of semiotic music, this method of connecting musical techniques to narrative elements harbours the potential to be translated to world-building to explain how music can shape the appearance of an environment. In the fourth chapter of the book, Summers addresses cultural, historical, and geographical contextualisation through music in racing games. Once again, he relies on a semiotic approach, and it is closely connected to conventions: he analyses how certain genres are indicative of pre-existing cultures.[16] This book leaves room for an in-depth formalist explanation of how particular musical techniques work. This is in line with his goals for demonstrating the practical applications of ludomusicological concepts rather than providing abstract theory.[17] However, by examining the relations between compositional techniques and gameworlds more closely, world-building can be understood as a process of augmenting appearances in addition to providing cultural contextualisation.

0.3 Conventions and their Pitfalls

Closely related to semiotic studies are studies that focus on conventions. These often display an even stronger notion of signification through cultural or generic reference as the main or even sole cause for musical world-building. Using Peircean terminology, these studies seem

[13] Tim Summers, *Understanding Video Game Music* (Cambridge: Cambridge University Press, 2016), 66–72.
[14] Summers, *Understanding Video Game Music*, 72–7.
[15] Summers, *Understanding Video Game Music*, 74.
[16] Summers, *Understanding Video Game Music*, 87–101.
[17] Summers, *Understanding Video Game Music*, 57.

to revolve around "symbolic" relations between music and meaning. However, they tend to neglect important "iconic" relations, which revolve around likeness, and "indexical" relations, which revolve around causal connections. Finding these three semiotic concepts in practice can be problematic. As Charles Sanders Peirce also found out, the trichotomy of these signs is more theoretical than practical: in most cases signs show characteristics from a combination of symbols, icons, and indices. Pure instances of any single semiotic category are rare, if they exist at all.[18] Nonetheless, examining something from the perspective of one of these three sign types at a time can provide new insights. In the case of multimedia objects like video games, music and other aspects like visuals or narrative can share iconic similarities. This cross-modal iconicity relies on what Nicholas Cook calls "quasi-synaesthesia," and enables meaningful interaction between music and other media elements.[19] I explain how this works in more detail in Section 2.3, and most of my arguments and examples throughout this thesis rest on cross-modal iconicity. Like icons, cross-modal indices can convey meaning without an immediate need for cultural or genre-specific knowledge. An example of this is how birdsong indicates the presence of birds. As I argue in Section 3.4, music can convey similar indexical meanings to help construct gameworlds.

A clear example of the ludomusicological predisposition to symbolic approaches is Isabella van Elferen's explanation of musical literacy in her "ALI model."[20] She discusses musical literacy as the ability to effortlessly understand music in games and interpret it appropriately within the specific medium and its genre. Drawing on other definitions, van Elferen ascribes musical literacy exclusively to enculturation and generic conventions.[21] One of her examples is that people know "to expect catastrophes when a horror film protagonist's descent into a dark cellar is accompanied by low, dissonant cello motifs" as a result of "the concurrence of well-known tropes and conventions."[22] Consider for a moment a hypothetical alternate history with different musical conventions. Following the reasoning of musical literacy as a result of enculturation, a low and dissonant cello motif would be just as effective for underscoring a small bird flitting about in a sunlit garden during a cheerful cutscene if people heard this combination often enough to make a symbolic connection. However, as I

[18] Albert Atkin, "Peirce's Theory of Signs," *Stanford Encyclopedia of Philosophy*, last modified 15 November, 2010, https://plato.stanford.edu/entries/peirce-semiotics/.
[19] Nicholas Cook, *Analysing Musical Multimedia* (Oxford: Oxford University Press, 1998), 28–9, 75–80.
[20] Isabella van Elferen, "Analysing Game Musical Immersion: The ALI Model," in *Ludomusicology: Approaches to Video Game Music*, ed. Michiel Kamp, Tim Summers, and Mark Sweeney (Sheffield; Bristol, CT: Equinox, 2016), 32–52.
[21] Van Elferen, "Analysing Game Musical Immersion," 36–7.
[22] Van Elferen, "Analysing Game Musical Immersion," 36.

explain in this thesis, there are important iconic incongruences between a low, dissonant interval and a cheerful image, which impede connotations like this regardless of the embeddedness of conventions. Important to note is that I do not dismiss the influence of enculturation and conventions on our perception and understanding, or the value of musical literacy. However, I argue that some fundamental aspects of music are a result of nature rather than nurture, and that these aspects are too often overlooked due to the emphasis laid on symbolic signs in ludomusicological studies on world-building.

In her essay "Beyond (the) Halo," Karen M. Cook goes into how common tropes and conventions surrounding plainchant are employed in games to create particular settings.[23] Plainchant is taken as a signifier for a wide variety of themes: "the medieval, past, or a sense of ancientness; Christianity, Catholicism, or the more general sacred or spiritual; a general sense of peace, tranquillity, or healing; the fantastical, supernatural, or magical; or the superstitious, violent, evil, Satanic, Occult, or death."[24] Cook attributes these connotations mainly to symbolic signs enculturated through knowledge of the Middle Ages and medievalist conventions in popular media. Some of the tropes that she describes draw connections to distinctly historical or cultural elements, such as the medieval and Catholicism. Because conventions are so interwoven with culture, examining them is an effective approach for understanding how music establishes or strengthens historical and cultural settings in games. Even though the other tropes that Cook mentions are at least in part attributable to conventions, qualities of the music itself can strengthen these themes through iconic relations. For example, she describes how an instance of chant in *Sacred 2: Fallen Angel* helps to portray a temple "as a sacred, old space, one that provides healing and aid," due to the "slow, gentle pace, dark tone color, modality, lack of rhythmic or metric vitality, and generic sense of linguistic difference" of the music.[25] Like these remarks about plainchant, close observations of music can reveal many world-building aspects beyond history and culture through iconic relations. As I show in this thesis, this can even go beyond general moods like Cook describes.

[23] Karen M. Cook, "Beyond (the) Halo: Chant in Video Games," in *Studies in Medievalism XXVII: Authenticity, Medievalism, Music*, ed. Karl Fugelso (Woodbridge: Boydell & Brewer, 2018), 183–200.
[24] Cook, "Beyond (the) Halo," 191.
[25] Cook, "Beyond (the) Halo," 195.

0.4 Towards a Theory of Musical World-Building

To summarise, a decent amount of research has been performed on musical world-building in games and closely related topics. However, the majority of this work focuses on cultural contextualisation. Studies that look into other aspects of world-building tend to consider game scores in line with Kamp's semiotic music rather than background music. This creates the risk of subsuming the power of world-building under the idea that it simply relies on identifying conventions—a pitfall that many seem to fall into. A resulting problem is that too many subtle and specific world-building techniques that are not overt cultural conventions or semiotic markers remain largely overlooked. A thorough theory of musical world-building that goes beyond contextualisation is yet to be formed.

In this thesis, I aim to lay the foundation for a comprehensive theory of intrinsic musical world-building in video games by performing compositional analyses of a diverse selection of case studies from the genre of medievalist role-playing games. I consider debates about nature versus nurture to argue for and theorise about an inherent, latent connection between certain musical qualities and their applications for world-building. Understanding why music works the way it does reveals specific musical clarifications and enrichments of the appearances of game environments beyond cultural contextualisation. Even though I claim that the intrinsic musical foundation that is at the heart of this thesis does not entirely rely on generic conventions and enculturation, the perception of musical features may still be influenced by them. However, I consider the intrinsic musical features as a foundational step after which genre-specific knowledge and personal preferences can tweak, strengthen, or weaken perceptions of them.

This thesis is structured as follows: I start by clarifying and contextualising the genre from which I work and the concept of world-building in the first chapter. In Chapter 2 I lay some groundwork for my methodology and the theories pertinent to my thesis, including matters relating to the question of nature versus nurture. Afterwards, I study the music of several environment types that pervade medievalist role-playing games through compositional analyses of specific case studies: in Chapter 3 I look into forest landscapes, in Chapter 4 I study urban locations, and in Chapter 5 magical settings.

Chapter 1. World-Building in Medievalist Role-Playing Games

In the Introduction I have already briefly indicated that medievalist role-playing games place emphasis on world-building and that they will therefore be the focus of this thesis. But what exactly are they and why are specifically these games so useful for developing a theory of intrinsic musical world-building?

1.1 Medievalist Role-Playing Games and their Music

Role-playing games—often referred to as RPGs—are about taking on the persona of an avatar or small group of avatars and basing choices on their character traits during gameplay. As stories of characters unfold, gamers can improve and personalise their avatars' skills and gear. These stories involve world-changing quests, most often of the heroic, world-saving type. The RPGs that I focus on belong to the supergenre known as action-adventure games, which revolve around exploring interactive gameworlds, solving puzzles—often by means of manipulating the environment—and advancing captivating narratives. They tend to foreground the use of quick reflexes to engage in combat and navigate through certain environments.[1] Furthermore, the genre that I look into can be specified thematically to medievalist games. They feature idealised conceptions of the Middle Ages that largely originate from the Romantic era as an escapist "reaction against the rationalistic, anti-heroic, materialist, and empiricist bent of modern society."[2] Central medievalist themes are chivalry—typically represented by knights in shining armour; mythology and mysticism—represented by monsters and magic; primitive culture—represented by rustic or even barbaric behaviour and appearances; and the pastoral idyll—represented by serene country life and nature untouched by people.[3] The high fantasy genre is closely related to medievalism, and I consider it as part of the overarching medievalist genre. The reason for this is that high fantasy features the same central themes as medievalism, but places more emphasis on epic tales and magic, and includes Tolkienesque elements like elves, dwarves, and orcs.

[1] Phillips, *A Composer's Guide to Game Music*, 86–8.
[2] Cook, "Playing with the Past in the Imagined Middle Ages."
[3] John Haines, *Music in Films on the Middle Ages: Authenticity vs. Fantasy* (New York; London: Routledge, 2014), 5–8.

The incorporation of music in medievalist RPGs rests on technical possibilities and aesthetic ideals. Central to these games are explorable gameworlds that consist of a large variety of areas. Many medievalist RPGs feature open world mechanics. This means that a gamer can travel freely between many of a game's areas without technical restraints. For example, it is possible to travel from a forest to a field, and afterwards enter a village, all without loading screens. Along these travels, a gamer likely encounters enemies and frequently ends up in combat. The game changes swiftly between what Zach Whalen calls a "safety state" and a "danger state."[4] These different locations, game states, and possibly narrative context of quests each have distinct musical demands in order to captivate the gamer. The music needs to match the smooth transitions between game elements to avoid disrupting the flow of gameplay. To cope with all these requirements, the majority of the music of these games is "dynamic." This is "interactive" music that changes depending on a gamer's location and actions.[5] Entire cues can be cross-faded, or individual musical layers can be added on top of each other or be removed. An important consequence of the dynamic and interactive nature of games like medievalist RPGs is that no two experiences will be identical. As Iain Hart illustrates with his examples of encountering a combat cue in *The Elder Scrolls IV: Oblivion*, the same music can have different messages depending on the context in which it sounds. For instance, it can mean "Fight for glory and honour" or "Run away while you still can."[6] However, certain elements remain constant for different applications of the same cue, such as a sense of confrontation in the combat cue.

Medievalist RPGs have a strong emphasis on aesthetics: the music not only needs to inform gamers about game state, location, and narrative, but it also needs to sound aesthetically pleasing. A practical reason is that composers face the challenge to avoid listener fatigue as gamers typically spend dozens or hundreds of hours on a medievalist RPG, and because cues are reused numerous times. A recurrent strategy to keep game music interesting is to regularly add silences between cues.[7] However, medievalist RPGs tend to feature mostly wall-to-wall scoring, which is in line with the genre's Romantic aesthetic ideals. Therefore, the music of these games needs to be elaborate and varied to avoid boredom, but it also needs to create thematic and stylistic unity to maintain cohesion. The technical construction of medievalist RPGs and how they function also stimulates

[4] Zach Whalen, "Play Along - An Approach to Videogame Music," *Game Studies* 4, no. 1 (November 2004), http://www.gamestudies.org/0401/whalen/.
[5] Collins, *Game Sound*, 125–6.
[6] Iain Hart, "Meaningful Play: Performativity, Interactivity and Semiotics in Video Game Music," *Musicology Australia* 36, no. 2 (2014): 287–90.
[7] Collins, *Game Sound*, 141–2.

compositional creativity: the majority of the music is written in freeform, which enables compositional and expressive freedom.[8] This freeform-style writing is a result of the lengthy exploratory gameplay elements in the genre: during safety states, medievalist RPGs allow and encourage free exploration of the environment. The music that sounds during these periods is playful and reassuring. It functionally indicates that the gamer need not expect danger until combat music sounds. As a result, this "exploration music" can be rich, detailed, and appealing to reflect the intricate beauty of the fictional world with relatively little restriction. Medievalist RPGs and their scores therefore have all the ingredients required to transform any place into an enthralling and beautiful world.

1.2 World-Building or World-Creation?

The medievalist and fantasy themes that pervade the medievalist RPG genre depend on world-building: their success comes from convincing gameworlds and—most importantly—the aesthetic experiences afforded by the games.[9] For this, all aspects of a game need to be detailed and work well together, and the score also needs to play its part in this. This emphasis on world-building is unique for medievalist RPGs, as gameplay tends to take precedence in many other genres like racing games or shooters.[10] Games in which the gameplay or gameworld revolves around music (e.g. *Vib-Ribbon*; *Brütal Legend*) and games that focus on experiencing a virtual world as an artistic object to be playfully explored (e.g. *Proteus*; *The Unfinished Swan*) also feature environmental development using music that may be described as world-building. With games like these the musical cues function rather literally as the building blocks of the gameworld, because they structure (abstract) environments or make up the narrative or thematic content of games.[11] Nevertheless, I want to distinguish this type of environmental development—which Melanie Fritsch calls "music-based 'world-creation'"—from world-building as I use it.[12] World-building is a concept that derives from a rich history of fantasy media and RPGs and works differently in video games than world-creation.

[8] William Gibbons, "Music, Genre, and Nationality in the Postmillennial Fantasy Role-Playing Game," in *The Routledge Companion to Screen Music and Sound*, ed. Miguel Mera, Ronald Sadoff, and Ben Winters (New York: Routledge, 2017), 415.
[9] Sweeney, "The Aesthetics of Videogame Music," 218–20.
[10] Cf. Phillips, *A Composer's Guide to Game Music*, 97–116.
[11] Cf. Melanie Fritsch, "Worlds of Music," in *The Oxford Handbook of Interactive Audio*, ed. Bill Kapralos, Karen Collins, and Holly Tessler (Oxford: Oxford University Press, 2014), 167–78.
[12] Fritsch, "Worlds of Music," 167.

World-building has been used to describe the development of original worlds that extend beyond any single (multi)media object. This traditionally goes hand in hand with fandoms, especially in science fiction and fantasy media, and Henry Jenkins's "transmedia storytelling."[13] In this context, world-building describes the activity of expanding and enriching a storyworld through participation culture.[14] One prominent way in which this occurs is in tabletop RPGs, also known as pen-and-paper RPGs. Here, a "game master" designs the setting and story of the game, which is often heavily inspired by Tolkien's Middle-earth and its medievalist setting and fantasy races like elves, dwarves, and orcs. These traditions have carried over to digital text-based RPGs that later evolved into other RPG subgenres, including the medievalist RPG that is thematically closely related to Tolkienesque fantasy. The main difference with tabletop RPGs is that the game master is not a friend sitting at the table, but a team of developers behind the scenes. The role of a game master, in whichever form, indicates that world-building is about much more than transmedia storytelling: as Mark J.P. Wolf explains, when practicing world-building yourself "you've got to find out things like the history of your world; its aesthetics; the feel of the place overall and the different, individual places within it; and all the details that give it the life that it should have – the sense of something ongoing that continues to exist with life going on there even when we aren't watching it."[15] Components like narrative, lore, and aesthetics all need to work together to develop a convincing, captivating, and lifelike world, and music can be an invaluable tool for fully achieving this.

The concepts of world-creation and world-building show different ludomusical aims. Musical world-creation mainly pertains to "semiotic" and "ludic" functions of video game scores, borrowing from Kamp's categories of hearing video game music: they are about making explicit allusions to particular music cultures and all their connotations (e.g. *Brütal Legend*),[16] or about "playing to" the music "for no ulterior reason" (e.g. *Proteus*).[17] The semiotic music is more about the references it makes to pre-existing worlds than anything else, and the ludic music is about consciously and playfully engaging with the music rather than unconsciously interpreting it in terms of the environmental information it provides. This

[13] Cf. Henry Jenkins, "Transmedia Storytelling 101," Confessions of an Aca-Fan, last modified 21 March, 2007, http://henryjenkins.org/blog/2007/03/transmedia_storytelling_101.html.
[14] Dan Hassler-Forest, *Science Fiction, Fantasy, and Politics: Transmedia World-Building Beyond Capitalism* (London; New York: Rowman & Littlefield, 2016), 3–6.
[15] Mark J.P. Wolf, ed., *World-Builders on World-Building: An Exploration of Subcreation* (Milton: Taylor and Francis, 2020), 2–3.
[16] Cf. Fritsch, "Worlds of Music," 171–3.
[17] Cf. Kamp, "Four Ways of Hearing Video Game Music," 56–67.

is where the goals of world-building music differ from world-creation music: as I explained, world-building is more about "background" music, which provides subtle information about a game's setting and enriching its appearances with particular applications of certain musical techniques. As a result of the tasks of world-building and the needs of exploratory gameplay, musical world-building typically is most prominent in exploratory gameplay; I therefore focus on exploration music in this thesis. Although beyond the scope of this study, musical world-building can occur in many (perhaps even all) layers of a game to an extent, such as in cutscenes, combat gameplay, or even in-game menus. Music's role in providing historical and cultural contextualisation in games has already received attention in numerous ludomusicological studies,[18] and so has the narrative and emotional power of music in screen media.[19] Therefore, I mainly focus on the intrinsic musical qualities that construct landscapes and atmospheres specific to medievalist RPGs.

[18] For example, Cook, "Beyond (the) Halo," 183–200; and Lamb and Smith, "From *Skyrim* to Skellige," 79–100; James Cook, "Game Music and History," in *The Cambridge Companion to Video Game Music*, ed. Melanie Fritsch and Tim Summers (Cambridge: Cambridge University Press, 2021), 343–58.

[19] For example, Summers, *Understanding Video Game Music*, 57–84, 116–42; Duncan Williams and Newton Lee, eds, *Emotion in Video Game Soundtracking* (Cham: Springer International Publishing AG, 2018); Duncan Williams, "Psychophysiological Approaches to Sound and Music in Games," in *The Cambridge Companion to Video Game Music*, ed. Melanie Fritsch and Tim Summers (Cambridge: Cambridge University Press, 2021), 302–18; Claudia Gorbman, *Unheard Melodies: Narrative Film Music* (London: BFI Publishing; Bloomington: Indiana University Press, 1987).

Chapter 2. Methodology

In order to get a good grasp of how musical world-building works in constructing and enriching forest landscapes, urban environments, and magical settings, I make compositional analyses and explain musical perception with the help of psychology and the physics of sound. In this chapter, I outline my approach and the central concepts and theories that form the foundation for the main assertions in my thesis.

2.1 Formalist Music Analysis

In this thesis I often take a formalist approach to understand the music before relating a cue to the game as a whole. This may be problematic for some, and varying degrees of acceptance of formalism may be at the heart of the diverging approaches taken to world-building. In his chapter "Music in Video Games" in *Music, Sound and Multimedia*, Rod Munday warns for losing sight of the functions of game music when working from a formalist perspective, which he refers to as an "exclusively musicological definition" of video game music. He sees this as in opposition to an analytical perspective that is tailored to the multifacetedness of an audiovisual medium like the video game.[1] Even though it is important to stay mindful of the audiovisual and interactive relations, there are benefits to taking a temporary "exclusively musicological" stance. As Frank Lehman explains in his chapter "Methods and Challenges of Analyzing Screen Media" in *The Routledge Companion to Screen Music and Sound*, a "formal understanding of music on its own terms is sometimes simply necessary before undertaking more holistic, 'thick' interpretations in which music is an integrated subsection of a multimedia whole." He argues that a formalist perspective can reveal much about how music works in screen media, despite the aversions some may have towards this approach due to "some lingering New Musicological hostility towards structural hearing."[2]

Taking the relationship between music, visuals, and meaning as a starting point for analysing games whilst using a perspective grounded in conventions has the risk of jumping to the same audiovisual tricks and clichés for describing and explaining musical world-building. For example, the use of folk instruments playing in a Dorian mode usually indicates

[1] Rod Munday, "Music in Video Games," in *Music, Sound and Multimedia: From the Live to the Virtual*, ed. Jamie Sexton (Edinburgh: Edinburgh University Press, 2007), 54–5.
[2] Frank Lehman, "Methods and Challenges of Analyzing Screen Media," in *The Routledge Companion to Screen Music and Sound*, ed. Miguel Mera, Ronald Sadoff, and Ben Winters (New York; London: Routledge, 2017), 498.

medieval European locations, and certain chromatic mediants indicate that something magical is happening. But is this the extent of the world-building functions of these musical techniques? Starting with formalist music analysis helps to understand all kinds of potential meanings of particular musical techniques besides their most foregrounded conventional connotations. Relating these insights to the other aspects of games, including visuals, gameplay, and narrative, enables insight into which of these potential meanings can come to fruition. This is the next step in understanding what the music can and cannot do in a specific multimedia context. All this can be applied to musical world-building from the perspective of Kamp's "background music": as I show in this thesis, it is precisely the formalist musicological approach that can uncover many of the world-building functions of music.

In this thesis, this "formalist" approach means that I look into musical features like timbre, instrumentation, scales and keys, rhythm, melody, intervals, and structural elements to understand what happens musically during world-building processes. To help with this, I have made musical transcriptions of striking moments that establish or enrich elements of medievalist gameworlds. These transcriptions serve as visual representation of components of a cue that are pertinent to the discussion. The transcriptions are therefore illustrations, and the cues as they appear in-game remain the objects of study. For clarity and readability, all transcriptions are non-transposing with the exception of the double basses, which sound an octave lower than written. After noting *what* happens in the music, the next step is to comprehend *why* something happens; or more specifically, why music is an effective world-builder. Music theory is an important step in understanding the way in which music works with and adds to other game components to construct meaning. Tied to this is the psychology of music perception, to which I turn now.

2.2 The Psychology of Music Perception

David Huron's influential book *Sweet Anticipation* is about music perception and explores how expectation evokes emotion, and how this affords aesthetic possibilities.[3] Huron explains how "the subjective experiences of uncertainty, tendency, stability, mobility, closure, and emotion all appear to arise from the interplay of three psychological foundations: statistical learning, the prediction response, and the phenomenon of misattribution."[4] In a nutshell, frequent exposure to music causes the listener to organise elements of the music according to

[3] David Huron, *Sweet Anticipation: Music and the Psychology of Expectation* (Cambridge, MA: The MIT Press, 2006).
[4] Huron, *Sweet Anticipation*, 167.

how likely they are to occur. Hearing something even just once leads the listener to expect to hear it again. The more a note appears, the more likely it is perceived to return again. Additionally, the order in which notes sound and how often they end pieces or introduce pauses also influence expectations. Because of the expectations of hearing particular notes in certain structural places and hearing particular combinations of notes, the listener develops an "expectational 'set,'" or "schema." Listeners will use such schemas to predict which notes they will likely hear next. Listeners know which schema to apply by detecting a unique combination of "environmental markers." In music, an environmental marker is a notable sound like a distinctive timbre of a particular instrument. Correct prediction results in a pleasant feeling, which is misattributed to the sound with which it occurs. This means that the (combinations of) notes that sound most often will be perceived as the most pleasing, such as cadences.[5]

According to Huron, then, experiences related to emotions and the functions of notes and chords are a result of expectation and prediction based on prior exposure to related music. This is not the same as the way many ludomusicologists consider the signifying functions of genre-specific conventions. Huron's ideas work on a more fundamental, structural level, and are about guiding general conceptions related to feelings and tension and resolution. Conventional signification is more oriented towards specific tropes, such as the "heroic" and "medieval." Furthermore, Huron's ideas of expectation and prediction do not require substantial cultural or generic knowledge acquired over a long period of time, even though this can improve interpretation of music. As Huron indicates, a small-scale schema can already be learnt whilst listening to just one small segment of new music, even if it is from a culture or style unfamiliar to the listener. Moreover, listeners typically avoid mixing different schemas—they interpret new music using a new expectational set.[6] A schema will develop and expand as the listener is exposed to more music from that culture or style, which may change the expectations and interpretation of the music. However, making sense of music does not depend on prior cultural knowledge, as these cognitive processes related to statistical learning and prediction seem to be universal to human nature due to the "biological importance of accurate prediction." The same goes for structurally and functionally organising musical sounds into a system equivalent to what Western musicians call tonality.[7] This suggests that certain basic interpretations of musical meanings can emerge even when

[5] Huron, *Sweet Anticipation*, 147–67, 204–5.
[6] Huron, *Sweet Anticipation*, 168–72.
[7] Huron, *Sweet Anticipation*, 174.

listening to a piece with little to no background in that style. Van Elferen's "musical literacy" can be a useful concept for describing this process of understanding music.[8] However, it appears that a basic kind of literacy can be generated within a piece, and cultural or generic literacy is not necessarily required.

Ideas of statistical learning can be applied to tonal scale degree perception. Huron provides a number of insights about the experiences of scale degrees in a major key and discusses their feelings and flavours as "qualia."[9] Huron asked a number of musicians and non-musicians with Western backgrounds about their experiences of particular scale degrees. The descriptions revolved around vivid metaphors, but they could be distilled to seven categories: "(1) certainty/uncertainty, (2) tendency, (3) completion, (4) mobility, (5) stability, (6) power, and (7) emotion." Moreover, Huron's insights strongly suggest that scale degree qualia are universal for listeners experienced with the same music—an observation that is further reinforced by his explanation of statistical learning, expectation, and prediction.[10] This works on a broad level, such as Western music in general, and need not be as specific as a particular style or genre. For example, in a major context the tonic is perceived as a "strong" and "stable" centre, the leading note as "unstable" with a "sense of inevitability," and the mediant as "bright," "warm," and open to possibilities.[11]

In addition to interpreting music based on statistical learning, expectation, and prediction, there is also a "more 'innate' psychoacoustic grounding" for why certain sounds are perceived as more comfortable or "easier" than others.[12] Much of this has to do with the harmonic or overtone series—the collection of overtones that resonate whenever a natural sound occurs. This applies to the perception of consonance and dissonance, which is affected by "harmonicity": notes that closely match a harmonic series appear as consonant, such as the octave or perfect fifth, and notes that deviate from the series or are further removed from the fundamental of a series appear as dissonant, such as the tritone or the minor second.[13] The degree of dissonance of intervals thus increases along the series. See Figure 2.1, which shows the overtones within the first three octaves of the fundamental note C.[14] From left to right, the

[8] Cf. van Elferen, "Analysing Game Musical Immersion," 36–7.
[9] Huron, *Sweet Anticipation*, 144–7.
[10] Huron, *Sweet Anticipation*, 146–7, 162–6.
[11] Huron, *Sweet Anticipation*, 145.
[12] Emilio Audissino, *Film/Music Analysis: A Film Studies Approach* (Cham, Switzerland: Palgrave Macmillan, 2017), 96.
[13] Paula Virtala and Mari Tervaniemi, "Neurocognition of Major-Minor and Consonance-Dissonance," *Music Perception* 34, no. 4 (2017): 394.
[14] Some overtones have slight unnotated microtonal deviations from the equal tempered scale, but as stated above, consonance and dissonance is about the close approximation of the overtones from the harmonic series.

subsequent intervals are an octave (C–C), perfect fifth (C–G), perfect fourth (G–C), major third (C–E), minor third (E–G), another minor third (G–B-flat), and a major second (B-flat–C). The minor second does not appear until much later.

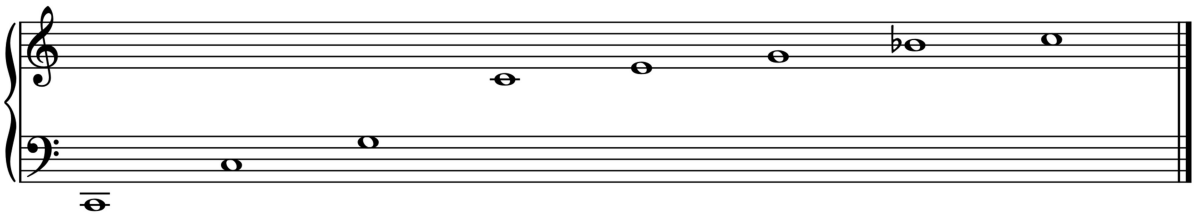


Figure 2.1: first three octaves of the harmonic series of C.

To illustrate the differences of studying musical meaning-making based on tracing back the origins of a specific trope on the one hand or considering the broader influences of sound on the other, consider Ronald W. Rodman's observations on the perfect fourth in the *Rifleman* theme: "the opening motive outlines the D-major triad, beginning with the interval of a perfect fourth, A to D. This gesture can be considered bold and heroic, based on other preexisting pieces that have a heroic intent."[15] Rodman draws on conventional applications of the trope to explain why the perfect fourth is "bold and heroic." However, this interval is not bold and heroic just because it has been used as such going back to Beethoven's *Eroica* symphony, and likely to hunting scenes from pre-modern times. The trope of the perfect fourth gains in effectiveness because of how well it lends itself to boldness and heroism in certain applications. Because of its early position in the harmonic series and because of its simple frequency ratio of 4/3, the perfect fourth (like the octave and perfect fifth) is consonant and strong.[16] Imperfect consonances like thirds and their inversions—the sixths—are mellower as they are further down the harmonic series. This mellowness is at odds with the boldness that Rodman describes. Dissonances like the minor second and tritone are unstable and uneasy—also poor fits. Adding contextual qualia resulting from general tonal musical experience to this train of thought, perfect consonances also emerge as the most suitable choices for expressing heroic themes: in the context of D major—the key of the *Rifleman* theme—the A to D is a motion from the dominant to the tonic. Following Huron's qualia, this perfect fourth provides a motion from a "strong, muscular" scale tone to a

[15] Ronald W. Rodman, *Tuning In: American Narrative Television Music* (Oxford; New York: Oxford University Press, 2010), 37.
[16] Jeff Brent and Schell Barkley, *Modalogy: Scales, Modes & Chords: The Primordial Building Blocks of Music* (Milwaukee: Hal Leonard Corporation, 2011), 1.

"strong" and "solid" foundation.[17] The reverse—moving from a strong and solid foundation to a strong and muscular scale tone—applies to a tonic–dominant motion with a perfect fifth. Moving between other scale degrees brings out qualia that would be too mellow, too light and weak, or too uneasy for a bold and heroic opening gesture.

The perfect fourth by itself is not heroic; as Rodman specifies, the horns and timpani that play this interval also have heroic connotations. It is especially this combination of instruments playing a perfect fourth that he traces back to other notable heroic moments in music history. But the same argument can be made here that these instruments lend themselves to heroic music, and not only because of conventions. For this, timbre perception can provide useful insights, which has to do with cognitive processes of recognising and locating sound sources. The horns and timpani that sound in the *Rifleman* theme have full, solid, and coarse timbres, and the timpani are thunderous. These timbres cannot be produced by many other instruments. The conventional applications of horns and timpani to play perfect fourths in heroic contexts may specify musical connotations and root them in long traditions, but they sound bold and heroic at least in part because of intrinsic musical qualities.

In the recently published handbook *Timbre: Acoustics, Perception, and Cognition*, Charalampos Saitis and Stefan Weinzierl explain how research has demonstrated that "musical semantics, the processing of meaning emerging from musical auditory information, relies on evolutionarily older mechanisms of meaningfully reacting to nonmusical sound."[18] They also show that a number of semantic descriptions of timbre, "such as brightness, roughness, and fullness," appear to be consistent across cultures and languages.[19] This indicates that there are aspects to timbre perception that can be considered universally applicable. Put differently, some tone colours are intrinsic to human perception of particular sounds.

Vocabulary related to brightness, roughness, and fullness can help avoid falling into the trap of describing timbres by their conventional connotations (e.g. a "heroic" sound) instead of describing the sound itself. However, speaking exclusively in gradations of brightness, roughness, and fullness can be too vague. An underlying issue is the general dearth of sensory vocabulary specific to timbre. Instead, descriptors of timbre rely on

[17] Huron, *Sweet Anticipation*, 145.
[18] Charalampos Saitis and Stefan Weinzierl, "The Semantics of Timbre," in *Timbre: Acoustics, Perception, and Cognition*, ed. Kai Siedenburg, Stephen McAdams, Richard R. Fay, Charalampos Saitis, and Arthur N. Popper (Cham: Springer, 2019), 121–2.
[19] Saitis and Weinzierl, "The Semantics of Timbre," 139–41.

metaphors, including vocabulary from other senses (like "bright, warm, sweet"), onomatopoeia (for example, words relating to "ringing, buzzing, shrill"), and abstract concepts (such as "rich, complex, harsh"). Semantics like this have direct connections with "commonly shared corporeal experiences," making them widely intelligible.[20]

To make my observations about timbre in this thesis more specific and descriptive, I largely build on terminology from Samuel Adler's book, *The Study of Orchestration*.[21] One of the primary goals of this book is "to enable the student to hear the sound quality of each instrument and the changes in that quality throughout its range."[22] As such, Adler explains these sonic qualities in great detail to point out the nuances to the reader, making his vocabulary practical for describing timbres meaningfully and clearly. I work from my own observations in my analyses, but build on Adler's helpful vocabulary. Most of his descriptions fit the semantic categories of brightness, roughness, and fullness. Taking his descriptions of the piccolo's timbres as an example, Adler specifies the low register as "quiet" and "hollow," which relate to fullness; the lower-middle register of the piccolo is "soft and mellow," which have to do with roughness; he describes the higher-middle register as "bright and clear," both of which apply to brightness; and Adler calls the highest register "shrill"—a combination of brightness and roughness.[23] Some of Adler's descriptors relate less to the three semantic categories of brightness, roughness, and fullness, but to cross-sensory metaphors like "sweet" and "warm."[24] Only few terms are grounded in cultural connotations, (most notably "heroic," which Adler uses to describe one of the qualities of the horn,[25]) and I will avoid these words as intrinsic timbral descriptors.

2.3 Cross-Media Analogies

My above comments about the hero trope rest on what Nicholas Cook terms "enabling similarity," which is an often iconic commonality between different media and by extension between different sensory processes.[26] For example, I note how the perfect fourth, like a hero, is "strong." Enabling similarity closely relates to "quasi-synaesthesia," which is a broader form of synaesthesia shared by most people: instead of having specific and absolute cross-sensory experiences like hearing colour, quasi-synaesthesia is about associating more general

[20] Saitis and Weinzierl, "The Semantics of Timbre," 122–7, 142–3.
[21] Samuel Adler, *The Study of Orchestration* (New York; London: W.W. Norton, 2002).
[22] Adler, *The Study of Orchestration*, x.
[23] Adler, *The Study of Orchestration*, 189.
[24] Adler, *The Study of Orchestration*, 181, 194.
[25] Adler, *The Study of Orchestration*, 315.
[26] Cook, *Analysing Musical Multimedia*, 75–7.

and relative cross-sensory experiences like recognising higher pitches as being brighter.[27] George Lakoff and Mark Johnson's idea of non-linguistic conceptual metaphors is very similar to quasi-synaesthesia, as it is about understanding one type of sensory input using another; for example, understanding the relation between pitches in terms of height.[28] In this sense, verticality "provides a physical basis for our abstract understanding" of pitch.[29] A result of fundamental non-linguistic conceptual metaphors like these is that some intrinsic musical qualities, such as conceptions of brightness, are broadly shared. The potency of quasi-synaesthetics and conceptual metaphors are illustrated by empirical experiments of associations between nonsense words and visual shapes. Most notable is the "maluma" and "takete" experiment of Wolfgang Köhler—a famous experiment showing pronounced associations of the word "maluma" with rounded shapes and "takete" with jagged shapes.[30] Quasi-synaesthesia and conceptual metaphors can not only reveal what possible meanings music *enables* in a multimedia context (e.g. a perfect fourth can transfer connotations of strength), but also what meanings music *excludes* (e.g. a perfect fourth cannot indicate weakness). In some cases, what a quasi-synaesthetic relation excludes is arguably more telling and less ambiguous than what it could potentially mean.[31]

Most types of enabling similarity revolve around temporal iconicity between sensory processes, but "enabling equivalence" is a type that is free from temporality. Important for enabling equivalence is a general correspondence between music and something else, not precise points of synchronisation across time.[32] Enabling equivalence is an important concept in discussing intrinsic musical world-building, because music functioning as a world-builder is better understood as spatial rather than temporal. The omnipresent musical backdrop when exploring a video game environment can become "object-like" in the sense that we can "'think around' it spatially, or in other words reflect on it while it is present to us."[33] This happens when the progression of a game's action is temporarily suspended, and this is what exploration music does.[34] Because of the technical integration in games, which binds specific

[27] Cook, *Analysing Musical Multimedia*, 28–9, 75.
[28] Kamp, "Four Ways of Hearing Video Game Music," 71–2; Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason* (Chicago: University of Chicago Press, 1987), xii, xv, xx.
[29] Johnson, *The Body in the Mind*, xv.
[30] Cf. Cook, *Analysing Musical Multimedia*, 75–6.
[31] Cf. Cook, *Analysing Musical Multimedia*, 28–9.
[32] Cook, *Analysing Musical Multimedia*, 75–80; Michiel Kamp, "Playing Along to What? Video Game Music and the Metaphor Model," in *Remixing Music Studies*, ed. Ananay Aguilar, Eric Clarke, Matthew Pritchard, and Ross Cole (Milton: Taylor and Francis, 2020), 40.
[33] Michiel Kamp and Mark Sweeney, "Musical Landscapes in *Skyrim*," in *Music in the Role-Playing Game: Heroes & Harmonies*, ed. William Gibbons and Steven Reale (New York; London: Routledge, 2019), 189.
[34] Cf. Kamp and Sweeney, "Musical Landscapes in *Skyrim*," 181–90.

cues to specific areas, this kind of background music seems to originate from the gameworld itself.[35] Thinking of world-building music in this way, it can create a looser kind of synchronisation with the visuals and gameplay that is free from precise synchronous moments. This is akin to what K.J. Donnelly calls "plesiochrony," which is about creating general synchronisation without precise alignment of audiovisual events.[36] Plesiochrony seems to have a somewhat negative connotation, as Donnelly explains how the term can describe "poor synchronization"; however, plesiochrony can also function as a deliberate and effective "ambient strategy."[37] Here, the effect can work to conjoin more atmospheric images and sounds where no prominent isolated events stand out, such as landscapes in games and their soundtracks.

Building on Nicholas Cook's multimedia model, enabling equivalence is what enables musical attributes to transfer to images or gameplay aspects and vice versa. In this way, individual components of multimedia like music, visuals, and gameplay can work together to create a more meaningful whole; in other words, they can "complement" each other.[38] Therefore, analysing the analogical relations between intrinsic musical qualities based on psychoacoustics and the other qualities of game environments provides a solid starting point for understanding how music creates and enriches worlds, and this is the premise on which I construct my arguments throughout this thesis.

[35] Summers, *Understanding Video Game Music*, 162–3.
[36] K.J. Donnelly, *Occult Aesthetics: Synchronization in Sound Film* (New York: Oxford University Press, 2014), 181–3; cf. Kamp, "Playing Along to What?" 39–40.
[37] Donnelly, *Occult Aesthetics*, 183.
[38] Cf. Kamp, "Playing Along to What?" 35–42; Cook, *Analysing Musical Multimedia*, 98–115.

Chapter 3. The Music of Forests: Creation and Recreation

What do you hear in your head when you try to imagine a peaceful forest? Perhaps you hear leaves gently rustling in the wind, the susurration of a river, birds whistling perkily, or a deer walking by. Perhaps you hear the faint creaking of trees as they flex in the wind or bees buzzing as they hover from flower to flower. Do you also hear someone gently plucking a harp? Do you hear playful flute melodies? And do you hear subtle, warm chords played by an invisible string orchestra that must be hiding in the thicket? Maybe not, but these ideas would not have been as far-fetched if I had asked what a peaceful forest sounds like in a medievalist RPG. Nature is a prominent part of most games from this genre, and lush, green forests separated by grasslands are a common sight. Because gamers spend a large amount of time exploring regions like this, it is unsurprising that the music that underscores these areas makes up a large portion of many medievalist RPG soundtracks. Consequently, there is a rich assortment of compositions that aurally present the beauty and tranquillity of these natural locations.

Video game scores have to enrich landscapes with divergent flora in different games—from Bohemia's deciduous forests in *Kingdom Come: Deliverance* to Leafshade's rainforest in *SpellForce 3*—resulting in a large variety of music. However, particular themes are recurrent throughout the forests of different medievalist RPGs, and the same goes for the scoring techniques used for their soundtracks. In line with Romantic and medievalist ideas, games often represent nature as something neutral, pure, and idyllic.[1] Whilst evil forces may roam forest areas to challenge gamers, nature itself usually is not the source of the malice. Moreover, these environments are typically calm and beautiful outside of combat states, and the music serves to highlight this: it provides sonic information about the game state,[2] semiotically demarcates suitable gameplay styles,[3] and enhances the visual environment.[4] Whereas the specifications of game state and gameplay style mainly rest on semiotic functions of music, enhancing the environment through music is as much an aesthetic undertaking as it is functional. In this chapter, I take a closer look at what makes recurring

[1] Cf. Haines, *Music in Films on the Middle Ages*, 7.
[2] Cf. "safety state" and "danger state" music in Whalen, "Play Along."
[3] Kamp, "Four Ways of Hearing Video Game Music," 35–36.
[4] Phillips, *A Composer's Guide to Game Music*, 103.

scoring techniques for forests effective world-builders, and why they remain effective even when deployed differently across games.

3.1 The Timbre of Timber

A good place to start investigating the musical world-building of forests is to study that which listeners arguably process the most quickly and easily; namely, timbre.[5] Musical timbre is intertwined with instrumentation, and a number of orchestration techniques and resulting tone colours are deployed consistently across the verdant landscapes of most medievalist RPGs. Many of the characteristics of these timbres are cross-modally iconic of (medievalist) forests, resulting in enabling equivalences that allow the timbres to intensify or supplement meaning to the landscapes.[6]

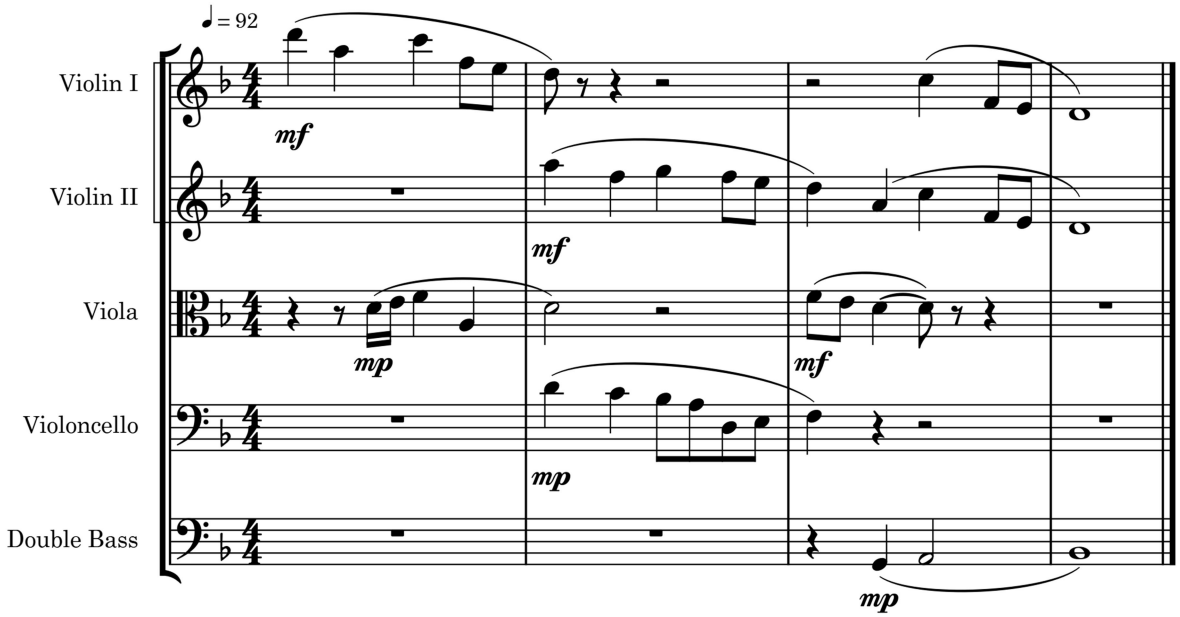
3.1.1 String Instruments

The musical foundation of the majority of forest cues consists of an orchestral bowed string section. They provide the harmonic basis for the music, frequently in the form of block chords, and regularly provide melodic material. The string section tends to be audible more often than not, and is regularly present from the very onset of the cues. Adler explains that one of the many strengths of the string section is its "homogeneous" timbre across the individual instruments. Using Adler's vocabulary, this means that the "richness" of the instruments carries well across registers and creates "warmth."[7] Composers make ample use of these qualities to infuse lush, green forests and fields with rich warmth without limiting themselves to a specific and small register. Building further on Adler's vocabulary for describing timbre, the high registers of strings are bright and "luminous"—characteristics shared by the verdant landscapes on a sunny day. The middle registers are "warm" and can have a dark sound, which relates to the darkness in dense forests. The lower registers are "sonorous," a quality that would befit towering, centuries-old trees.[8] These characteristics excel at moderate dynamics; they are softer and weaker at lower dynamics, and the timbres become harsher at high dynamics.

[5] Huron, *Sweet Anticipation*, 208.
[6] Cf. my discussion of Nicholas Cook's terminology in Section 2.3.
[7] Adler, *The Study of Orchestration*, 7.
[8] Adler, *The Study of Orchestration*, 53–5, 67, 77, 84.

Image 3.1: the green and sunny Toussaint (*Witcher 3*).

The cue "The Banks of the Sansretour" from *Witcher 3* is a good example of the employment of the richness of strings across registers for a green and sunny landscape. This soundtrack is featured when exploring the nature of Toussaint (Image 3.1). Here, the string section mostly performs at moderate dynamics and plays block chords that cover the strongest registers of each instrument. As a result, the chords are incredibly luscious, showcasing sonorous bass notes, warm middle notes, luminous treble notes, and thus an overall exuberance. "The Banks of the Sansretour" also features melodies that travel across instruments and registers. Whilst this technique can gradually highlight different nuances of the string section's timbre, it can also be deployed to (gradually) emphasise common timbral aspects. In the excerpt shown in Transcription 3.1, a descending melody and countermelodies move through the violins, violas, cellos, and double basses. As a result, the timbre increases in richness and warmth throughout: moving from the luminous violins (bars 1–2) to the mellower and slightly darker violas and cellos (bars 1–3) and violin notes (bar 3), and finally to the more sonorous double basses (bars 3–4) and violin notes (bar 4).



Transcription 3.1: excerpt from "The Banks of the Sansretour" (*Witcher 3*).

Even though the classical orchestral bowed string instruments form the foundation for most music from medievalist RPGs, they are by no means the only bowed string instruments. Folk instruments are important in many of these games, and *Witcher 3* is one of them.[9] "The Banks of the Sansretour" provides a number of bowed string melodies played by folk instruments like the Byzantine *lyra* and bowed *gusli*.[10] They share divers similarities with their classical counterparts, amongst which a warm tone colour. The main timbral difference is that the folk instruments sound coarser. This does not take away from the characteristic forest music, but rather adds a different layer to it that relates more to the game's overall musical style and setting. This style is heavily inspired by Slavic folk music traditions, and studying the perception of this medievalist music benefits greatly from a convention-oriented perspective. As Lamb and Smith demonstrate, this style is closely interwoven with the creators' and gamers' conceptions of the Middle Ages, in part influenced by Hollywood cinema. However, they also discuss how the unique timbres of traditional folk instruments add harshness to the medievalist world of the *Witcher*.[11] This latter point is an example of the world-building capacity of music of which the perception is ostensibly shaped by cultural knowledge, but benefits from intrinsic timbral qualities that help to improve a grasp of the distant past. In the case of games like *Witcher 3*, the timbres of bowed strings not only

[9] Cf. Lamb and Smith, "From *Skyrim* to Skellige," 183–200.
[10] GameSpot, "*The Witcher 3: Wild Hunt* – Creating The Sound Developer Diary," last modified 30 August, 2016, https://www.gamespot.com/videos/the-witcher-3-wild-hunt-creating-the-sound-develop/2300-6434230/.
[11] Lamb and Smith, "From *Skyrim* to Skellige," 89–94.

enhance the richness and warmth of the forest landscapes, but also highlight the crudeness of the medievalist settings.

In addition to bowed string instruments, most forest cues of medievalist RPGs feature the harp. Just like the bowed strings, the harp has a "sonorous" and "dark" sound in its lower range in Adler's terminology, a "rich and warm" sound in its middle range, and a "light and clear" sound in its higher range.[12] Nevertheless, the harp adds an extra timbral nuance to the bowed strings because it is a plucked instrument with exclusively open strings. The sound of the harp mainly differs in its attacks, which are shorter and more immediate than those of bowed strings, and decays, as the harp's strings can keep ringing for much longer after being released. The immediate and pronounced quality of harp attacks can sound capricious, making the harp ideal for highlighting the whimsy of a melody. The lingering quality of the decays, on the other hand, can create an unhurried atmosphere. These qualities and the resulting mood can encourage leisurely gameplay untroubled by the responsibilities that come with a game's quests. These timbral aspects and the versatility of the harp make it a good fit for underscoring the exploration of natural locations, and it features prominently in many soundtracks of medievalist RPGs. The harp often provides playful melodic material, including main and countermelodies, but also accompanying arpeggios or accentuating chords.

3.1.2 Woodwinds

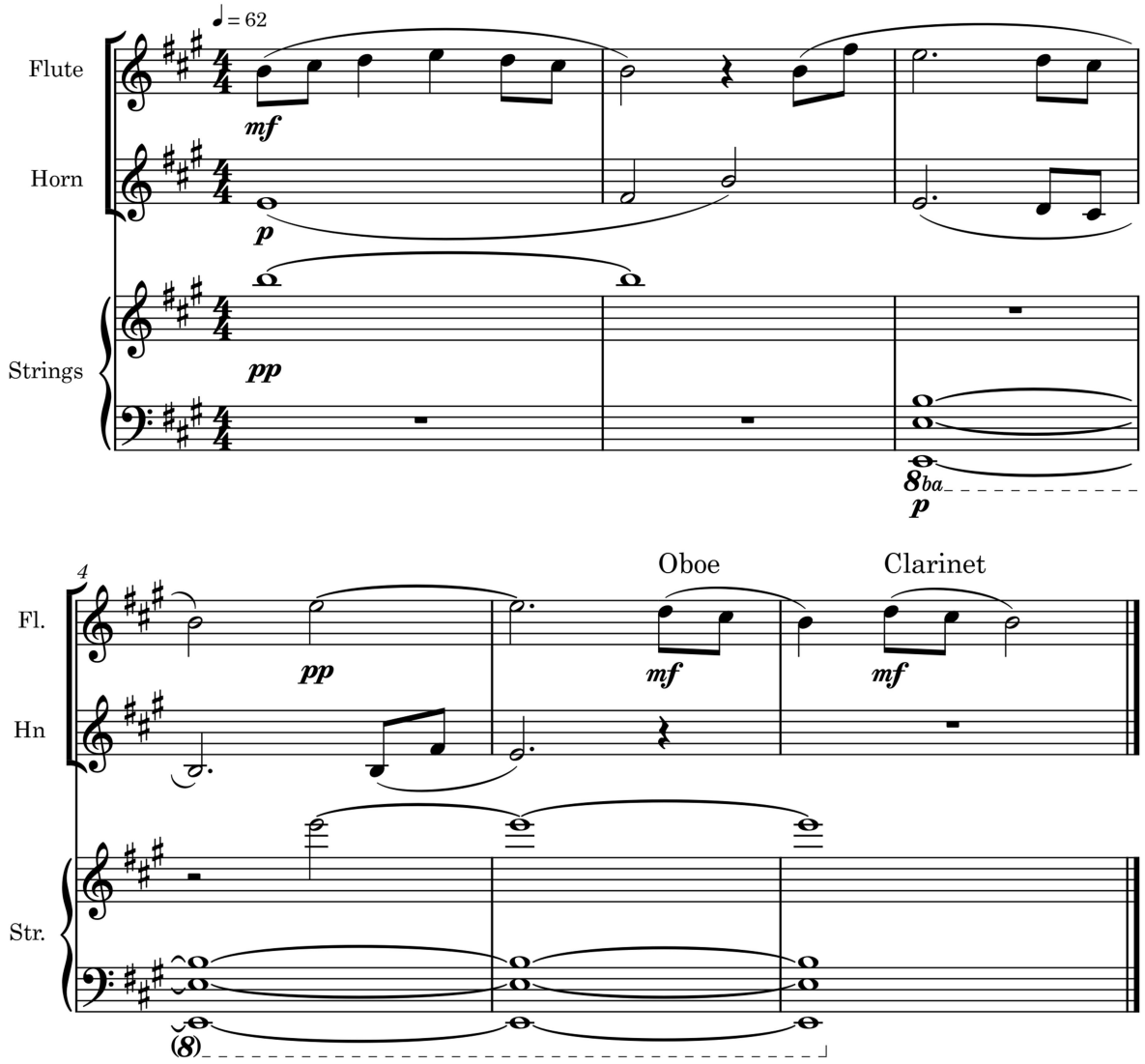
Together with bowed string instruments and harps, woodwinds dominate forest music in medievalist RPGs. Whenever woodwinds are used, they tend to be foregrounded: they provide the main melodic material or colouristic effects (for example, see Transcription 3.2). Occasionally, the woodwind section moves to the background and plays soft, sustained block chords. An obvious explanation for the prevalence of woodwinds in forest music is a semiotic one: their timbres closely resemble various types of birdsong. When traversing a tree-laden area in a game whilst hearing woodwinds, the environmental contextualisation can significantly improve from the iconic references to birdsong. This works especially well with the flute and piccolo, which sound "sweet" and "luscious" in their middle registers, using Adler's vocabulary, and brighter and even "shrill" as they play higher notes. Clarinets also have a brightness and shrillness in the clarino and altissimo registers respectively. Furthermore, it is richer in its chalumeau register, making it apt to refer to other kinds of

[12] Adler, *The Study of Orchestration*, 92.

birdsong. The oboe is an effective imitator of birds that sing with more nasal and "poignant" timbres.[13] Taken a step further, woodwinds can refer indexically to birds. This can create an impression of being surrounded by birds and even wildlife more generally, even if they are not directly visible on screen.

Besides making concrete semiotic references, the intrinsic timbres of woodwinds can aid world-building in games by highlighting more abstract similarities between music and environment. Just like the bowed string instruments and the harp, the woodwinds can employ dark, warm, lush, and bright timbres to take after densely frondescent areas. Even though their timbres share certain qualities, the timbres of woodwinds are of course not identical to the timbres of string instruments. The use of these different instruments therefore enables a larger selection of tone colours, ranges, and playing techniques to artistically present similar forest-related themes. Moreover, the woodwinds bring unique timbres into the music that enhance the green areas in medievalist RPGs. The flute and bassoon have sweet-sounding middle registers, and these instruments and clarinets sound airy—especially when they play sustained notes in melodies or chords. As Adler puts it, instruments from the oboe family have "reedy" sounds and excel at performing "mellow" and "poignant" melodies.[14] These characteristics of woodwinds have the potential to be soothing and evoke a sense of calmness, which once again reflects Romantic and medievalist views of nature as something tranquil.

[13] Adler, *The Study of Orchestration*, 181, 189, 195, 206.
[14] Adler, *The Study of Orchestration*, 195, 199.



Transcription 3.2: excerpt from "Gwen's Theme" (*Guild Wars*). The woodwinds and horn provide the main melodies, and the strings provide drones as a background.

3.1.3 Less Common Instrumentation

Given their prominence and sheer abundance, bowed strings, the harp, and woodwinds clearly are the foundation for forest music in medievalist RPGs. Nevertheless, other instruments make appearances in both foreground and background layers of the soundtracks. Sometimes they add different layers to the music that are not necessarily related to forest landscapes, similar to how the Slavic folk instruments discussed in Subsection 3.1.1 emphasise the crudeness of *Witcher 3*'s medievalist setting. In the same way, instruments can be employed that are related to each other but different, such as classical orchestral flutes and Celtic flutes. This can enable slight variations in tone colour whilst maintaining overall forest-applicable timbral qualities and can facilitate cultural connotations. Other times,

particular instruments enhance subtler or less common themes of forest environments. As the musical applications unrelated to forests receive further attention in the following chapters, I focus on the less frequent forest-related themes in this subsection.

The horn is an interesting case, as it is an instrument that can timbrally fit well with both the brass and the woodwind section. Especially at soft dynamics, the horn has a mellow and warm sound that blends well with woodwinds. It gets notably brighter as it moves up in its range. The timbre of the horn is primarily distinguishable from those of the woodwinds by its fuzzy, "velvetlike" sound.[15] Employing these qualities of a softly played horn in a forest cue infuses the game environment with a sense of stateliness, which suits large, old trees or flowing, tree-covered hills as far as the eye can see, for example. This is exactly what happens in "Gwen's Theme" (Transcription 3.2), which sounds in *Guild Wars* in pre-Searing Ascalon (Image 3.2). The horn plays a countermelody to the flute at soft dynamics. The horn adds a majestic layer to the elegant flute music, which in terms of Nicholas Cook's multimedia model complements the flowing hillscape of Ascalon by infusing it with grandeur and magnificence. The flute melody from bars 2–4 is echoed by the other wind instruments, starting with the horn (bars 4–5), after which it is passed on to the oboe (bars 5–6), which is in turn echoed by the clarinet (bar 6). The melody moves through tone colours related by their mellow qualities, but gains a different hue with each different instrument change.

[15] Adler, *The Study of Orchestration*, 312.

Image 3.2: tree-covered hills in pre-Searing Ascalon (*Guild Wars*).[16]

A similar strategy is evident with various kinds of plucked string instruments that share some, but not all characteristics with the harp. They all have in common the whimsy of immediate and frequent attacks, and most plucked string instruments have the possibility to provide the unhurriedness of lingering notes. Some instruments are softer or harsher than others, and "Springtime" from *Medieval Dynasty* provides a clear example of this. It juxtaposes calm, rising harp arpeggios with animated zither-like instruments. The harp is soft and warm, and its notes linger, whereas the other plucked string instruments are sharper and have quick decays. Because of this, similar instruments can simultaneously provide distinct melodic lines easily distinguishable by timbre (amongst other factors). The zither-like instruments form a bridge between the urban and the natural: they have some urban qualities (about which more in Section 4.4.4), but retain the leisurely playfulness of the forests of medievalist RPGs with their quick attacks and contextual positioning alongside a flute and harp: the particular applications of the flute and harp are "environmental markers" for the schema of forest music.[17] Placing the zither-like instruments in this context clarifies and strengthens their enabling equivalences with forests, drawing attention to a shared carefree whimsiness. The bridging of the urban and the natural also makes sense in terms of *Medieval Dynasty*'s gameplay, which is about building a new settlement in a forest-rich landscape and requires extensive interaction with both forests and neighbouring villages.

[16] This image was taken from "Ascalon (pre-Searing)," Guild Wars Official Wiki, accessed 9 March, 2021, https://wiki.guildwars.com/wiki/Ascalon_(pre-Searing).
[17] Cf. Section 2.2 and Huron, *Sweet Anticipation*, 147–67, 204–5.

3.2 The Modal Neutrality of Nature

The collection and organisation of pitches is an important basis for a large amount of music in all kinds of cultures.[18] It provides a framework, or schema, which structures the perception and interpretation of pitches. It can also guide the listener in experiencing particular feelings.[19] The majority of Western music is diatonic and can be organised in major or minor scales, or one of the seven modes of the major scale. The music of medievalist RPGs is no exception. However, the various types of pitch collections are not evenly distributed in the music of medievalist RPGs; there is a clear preference for particular modes in line with fundamental themes shared by these games.

Modal music—and especially music revolving around the Dorian and Aeolian modes—features prominently in all kinds of music in medievalist RPGs. One reason for this is that these pitch collections are based on music from the Middle Ages. Modality is a characteristic feature of (modern interpretations of) plainchant and medieval folk music, for example.[20] Furthermore, leading notes—strong signifiers of the common practice period of Western art music—are lacking in the Dorian, Aeolian, and Mixolydian modes. This creates a stark sonic contrast between older medieval music and more modern common practice music. Subsequently, modal music has been used profoundly in films and video games with medievalist settings. As a result of the habitual conjunction of these musical facets with medievalist themes in media,[21] the Dorian and Aeolian modes—modality in general, even—have come to sound "medieval" to those familiar with the medievalist genres. Modality is therefore an effective tool for historical contextualisation in games, which relies on symbolic semiotic relations. However, this is only part of the potential of modal music. Modes have distinctive sounds that do not depend on generic conventions.

3.2.1 Modes, Brightness, and Symmetry

The prevailing pitch collection in the forest music of medievalist RPGs is the Dorian mode. It is a mode with a neutral quality, and this is once again in line with the Romantic and medievalist notions of the neutrality of nature. Important reasons for the neutrality of the Dorian mode are its positioning between major and minor scales, and the concept of

[18] Huron, *Sweet Anticipation*, 143.
[19] Huron, *Sweet Anticipation*, 143–4.
[20] Cook, "Beyond (the) Halo," 183–200; Lamb and Smith, "From *Skyrim* to Skellige," 94–8.
[21] Cf. Cook, "Beyond (the) Halo," 186, 189–92.

brightness. To Western listeners, the major scale sounds bright and happy and minor scales sound sad or calm, and studies suggest that this is at least in part attributable to "innate, biologically hard-wired properties."[22] The Dorian mode contains a balanced mixture of characteristic notes from both major and minor scales: it has a major sixth, but also a minor third and minor seventh. Because of this, the Dorian mode is a musical and emotional middle ground between major and minor scales.

The Dorian mode is also a middle ground between brightness and darkness, which has to do with the positioning of its notes relative to the tonic along the circle of fifths. Perceiving brightness in music is a quasi-synaesthetic experience that corresponds with metaphors related to relative height, loudness, openness, and positivity.[23] The construction of diatonic scales can be visualised with the circle of fifths (see Figure 3.1). As music moves clockwise along the circle of fifths, each additional note has a dominant function to the previous one—opening up the music and creating sonic expansion. This continuous relative expansion steadily increases the sonic brightness. If music moves anticlockwise, the reverse happens: it gradually compresses as each additional note provides resolution and closure to the previous one. This continuous relative compression darkens the music. Using the circle of fifths, the construction of the Dorian mode by means of stacking fifths can be visualised. The resulting diagram, shown in Figure 3.1, shows that the Dorian mode has its tonic in the middle of the collection;[24] it is perfectly balanced between three brighter notes relative to the tonic—presented clockwise from the tonic—and three darker notes anticlockwise from the tonic. This neutralises the overall relative brightness within the pitch collection. Doing the same for all other modes reveals that they are asymmetrical. The Aeolian mode, for example, has two bright notes clockwise from the tonic, and four dark notes anticlockwise. Therefore, it sounds slightly darker overall. The Lydian mode has six bright notes, and no dark notes. For this reason, it is the brightest attainable diatonic mode. With this method, it is possible to organise the seven modes from brightest to darkest, as in Figure 3.2.[25]

[22] Virtala and Tervaniemi, "Neurocognition of Major-Minor and Consonance-Dissonance," 387–8; Huron, *Sweet Anticipation*, 172–4.
[23] Cook, *Analysing Musical Multimedia*, 28–9, 75; Lawrence E. Marks, "Bright Sneezes and Dark Coughs, Loud Sunlight and Soft Moonlight," *Journal of Experimental Psychology: Human Perception and Performance* 8, no. 2 (April 1982): 177–93; Joydeep Bhattacharya and Job P. Lindsen, "Music for a Brighter World: Brightness Judgment Bias by Musical Emotion," *PloS One* 11, no. 2 (2016).
[24] Brent and Barkley, *Modalogy*, 48–9.
[25] Beyond scale characteristics, brightness is further influenced by other factors like melodic contour and pitch height. However, as I will explain in Section 3.4, factors like melodic contour remain balanced and further reinforce neutrality in the case of forest music. Consequently, the relative brightness within a pitch collection gains in prominence.

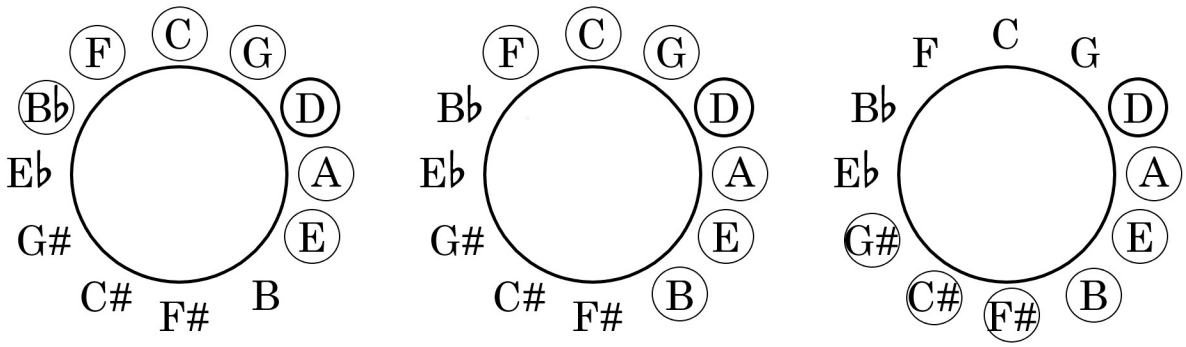


Figure 3.1: D Aeolian (left), D Dorian (middle), and D Lydian (right) presented in the circle of fifths.

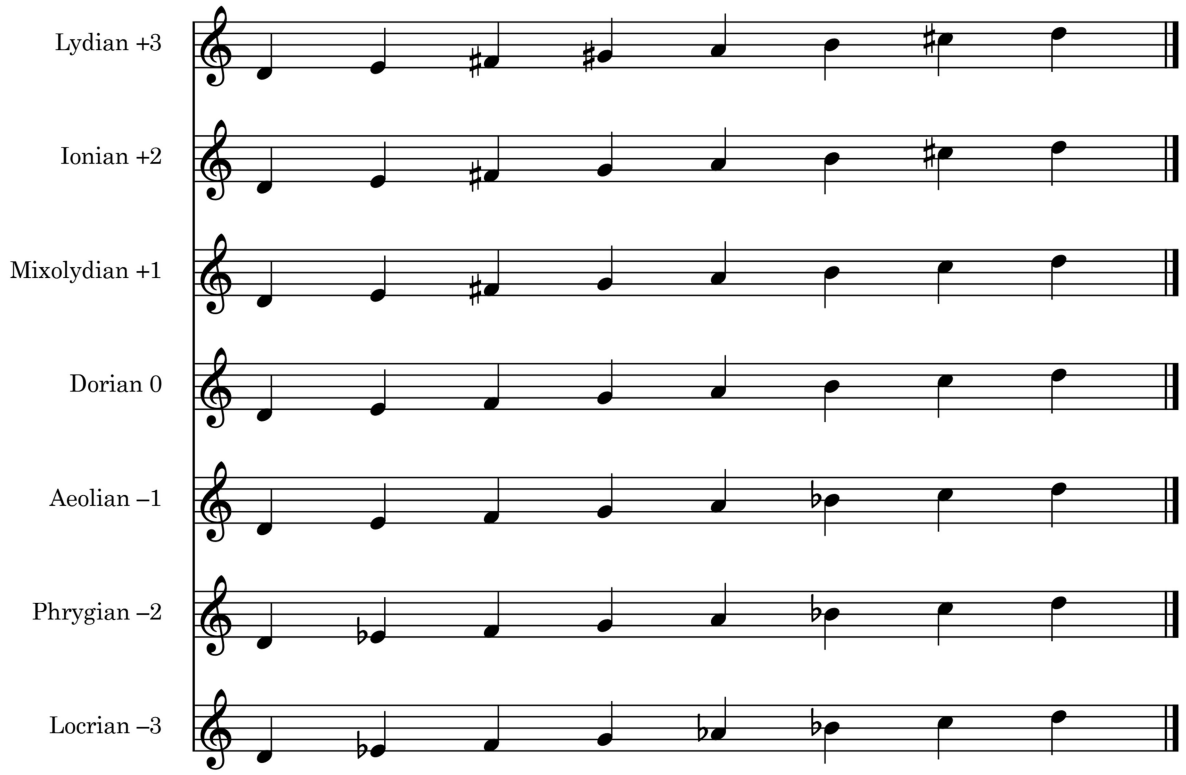


Figure 3.2: overview of the seven modes organised from brightest (top) to darkest (bottom). The numbers indicate the number of sharpened (+) or flattened (-) notes compared to the Dorian mode.

One way of classifying the structural relations between the modes is in terms of alterations made to the Dorian mode.[26] As individual notes from the Dorian mode are sharpened, the scale's intervals measured up from the tonic increase in size and create a steadily brighter sound (see Figure 3.2): the Mixolydian mode is created by raising the minor third to a major third (i.e. one note sharpened), the Ionian by additionally raising the minor to a major seventh (i.e. two notes sharpened), and the Lydian by also raising the perfect to an

[26] Brent and Barkley, *Modalogy*, 48–9.

augmented fourth (i.e. three notes sharpened). This happens the other way around when creating modes by flattening notes from the Dorian mode, resulting in progressively darker scales: for the Aeolian mode one note is flattened (the sixth degree), for the Phrygian two (the sixth and second degrees), and for the Locrian three (the sixth, second, and fifth degrees). The number of relatively brighter and darker modes compared to the Dorian mode is identical, creating another kind of relative neutrality within diatonic contexts as presented in Figure 3.2. The neutrality of the Dorian mode does not end here, though. The brighter and darker modes with the corresponding numbers of altered notes from the Dorian mode are inversions of each other (i.e. Mixolydian inverts to Aeolian, Ionian to Phrygian, and Lydian to Locrian). Notably, the Dorian mode inverts to itself (see Figure 3.3). This "inversional symmetry" creates more relative evenness within the pitch collection,[27] which further increases the mode's neutral nature. There are therefore a number of factors that give the Dorian mode its neutral sound that do not seem to rely on conventions or enculturated connotations, but on how the notes within the mode relate to each other and how the mode relates to other diatonic pitch collections.

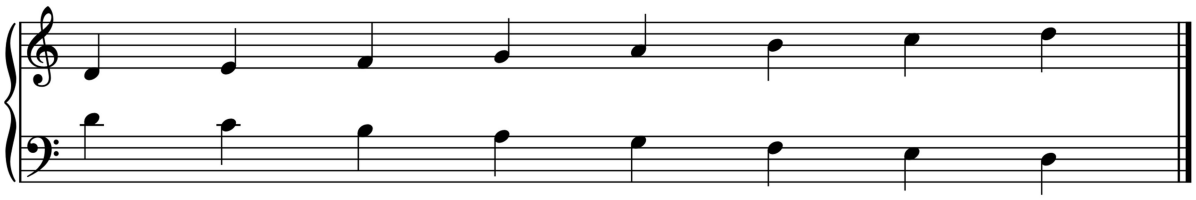


Figure 3.3: the Dorian mode (G-clef) and its inversion (F-clef). Both follow the same interval sequence of tone–semitone–tone–tone–tone–semitone–tone, but in different directions. The resulting notes of both the Dorian mode and its inversion make up the same pitch collection.

3.2.2 Applications of Modes in Forest Music

Besides the Dorian mode, the Mixolydian and Aeolian modes make frequent appearances in the forest cues of medievalist RPGs. This is not surprising, as these modes are closely related to the Dorian mode and its neutrality. They each have only one altered note compared to the Dorian mode and are accordingly still relatively neutral. The Mixolydian mode is only slightly brighter and the Aeolian mode is only slightly darker. Because of this, these modes can each evoke distinct but related feelings. The major third of the Mixolydian mode gives the scale a more uplifting quality, whereas the minor seventh subdues this somewhat. The

[27] Cf. Benedict Taylor, "Modal Four-Note Pitch Collections in the Music of Dvořák's American Period," *Music Theory Spectrum* 32, no. 1 (Spring 2010): 46–52, 57.

Aeolian mode is identical to the descending melodic minor scale and likewise has a sad or calm quality. These different modes allow more emotional variation for forest music, without completely breaking away from the themes of nature's purity and impartiality.

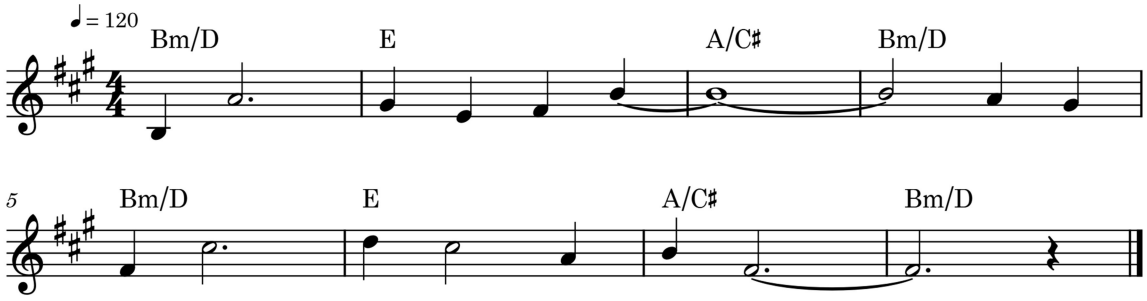
Sometimes, the pitch material of forest cues is ambiguous. One way in which this can occur is through the alternation of different modes within cues or phrases. Depending on the specific application, this allows the different feelings of the modes to complement each other or balance each other out. Another recurring modal ambiguity relates to the "hexatonic tendency,"[28] which is the inclination towards hexatonicism in heptatonic music: even though soundtracks may, strictly speaking, be Dorian, Aeolian, or Mixolydian, their characteristic notes are downplayed. In forest music of medievalist RPGs this mainly applies to the sixth degree that distinguishes the Dorian from the Aeolian mode and the third degree that distinguishes the Dorian from the Mixolydian mode. These characteristic notes are for example omitted from main melodies or only played as passing notes on weak beats. The result of ambiguity due to downplayed characteristic notes is that the music loses stronger emotional information, but gains some mysteriousness and much restraint.

Applications of modality tend to be featured prominently in the exploration soundtracks of medievalist RPGs and there are a number of recurrent strategies for this. Exploration music like forest cues characteristically have a strong emphasis on lyrical melodies, which makes them a suitable vessel for quickly and clearly establishing the main pitch material. Each mode has a unique combination of notes that typify it, such as the minor third, major sixth, and to a smaller extent the minor seventh in the Dorian mode. An effective way to establish a scale is to accentuate its characteristic notes, including the tonic. A related technique is anchoring a mode's tonic by playing drones in octaves or perfect fifths.

"King and Country" from *Oblivion* is an example of these strategies. This cue quickly establishes B as the tonic by beginning with a bass drone on this note and by starting the main melody with the B. This melody is played by a number of instruments and Transcription 3.3 shows a reduction from when the violins play an extended version of it, accompanied by double basses and cellos (indicated by chord symbols) and flute embellishments (not notated). In this melody, all notes from B Dorian are played. The B (tonic), D (characteristic minor third), F-sharp (perfect fifth), and G-sharp (characteristic major sixth) are all played on the first—and strongest—beats of the bars. The A (characteristic minor seventh) is prominently placed as a motif at the beginning of the melody. The D receives further

[28] Leroy Roncken, "The Influence of Music on Videogame Setting: A Case Study of *The Elder Scrolls*" (BA thesis, Utrecht University, 2019), 5–6.

emphasis in the pronounced bassline. Furthermore, the i–IV–VII chord progression is a typical modal progression that presents all diatonic notes. Moreover, it highlights the mode's most typifying notes: it emphasises the B in the i and IV chords, the D in the i chord, the G-sharp in the IV chord, and the A in the VII chord. Also, instead of changing the mode's characteristic seventh to create a leading note for a V–i cadence, the VII chord takes on a dominant function. The VII–i cadence has a strong stepwise resolution from the C-sharp to the D and still features the unaltered A.

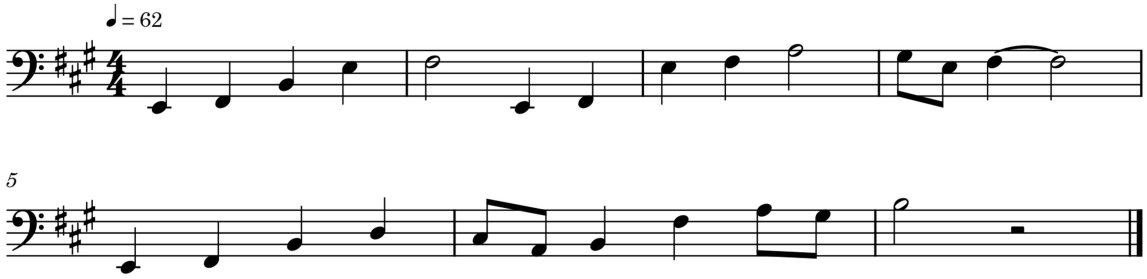


Transcription 3.3: reduction of an excerpt from "King and Country" (*Oblivion*).

Accentuating characteristic notes can not only be applied to strengthen a scale and its tonic, but also to obscure it. In the earlier given excerpt from "Gwen's Theme" (Transcription 3.2), for example, interpretations of both B Dorian and E Mixolydian are viable. They contain the exact same notes, but have different tonic centres. Drones consisting of and E and B are continuously present, with E most often in the bass. This drone of a perfect fifth suggests E as the tonic. However, the melody suggests B as the tonic; it begins and ends the flute melodies in bars 1–2 and 2–4. Moreover, this excerpt features exclusively the notes B, C-sharp, D, E, and F-sharp—either the diapente of B Dorian or the diatessaron of E Mixolydian with added F-sharp. Strikingly, the G-sharp is omitted, which would be the characteristic major sixth for B Dorian or the characteristic major third for E Mixolydian. This weakens the distinct flavours of either mode.

The opening bars of "Gwen's Theme" (Transcription 3.4) do not provide much more clarity, nor a distinct Dorian or Mixolydian flavour. The opening does present the other notes (G-sharp and A), but shows a hexatonic tendency: the C-sharp is present only once in bar 6, and it is a changing note that quickly resolves via A to B. Along this line, a pentatonic tendency would also be plausible, as the D also makes only one appearance: it precedes bar 6 and leads into the changing notes that head to B. The tonal centre remains up in the air. The

notes E, F-sharp, and B all receive similar attention in terms of rhythmic accentuation and melodic resolution. This also has to do with the missing harmonic context. The B and F-sharp can be considered as tension points that resolve to E, but F-sharp can also be thought of as the tension point that resolves to B. Just as convincingly, E can be interpreted to resolve to F-sharp on numerous occasions, which makes F-sharp Aeolian another viable possibility. As a consequence of this ambiguity and the lack of a clear tonic centre, the music has a floating nature and becomes a little mysterious. It is also serene and neutral due to the lack of clear tension and resolution.



Transcription 3.4: reduction of the opening bars of "Gwen's Theme" (*Guild Wars*), played by double basses, cellos, and the harp.

There are cases where forest music of medievalist RPGs revolves around different pitch collections. A piece can feature a mode with more extreme brightness or darkness (such as Lydian or Phrygian), it can follow tonal practices and feature major or minor keys, or go in completely different directions like chromaticism. When this happens, however, the score ascribes stronger feelings to the forest that suit specific themes. This applies to environments like magical and spooky forests, or has to do with specific narrative events and their emotional implications. In other words, building a tranquil forest is no longer the primary goal of those soundtracks.

3.2.3 Intrinsicality of Modes

As I have explained, pitch collections with an emphasis on neutrality are the most suitable for the world-building of forest landscapes in medievalist RPGs. This is because they musically present a central medievalist ideal of nature, creating an enabling equivalence between music and setting. Pitch collections have intrinsic qualities that originate from the ways in which notes relate to each other, such as an increase in brightness when pitches are sharpened or in darkness when they are flattened. The ability of listeners to recognise these connections

largely has to do with Lakoff and Johnson's non-linguistic conceptual metaphors and Nicholas Cook's conception of quasi-synaesthesia.[29] Even though these theories suggest that intrinsic musical qualities like conceptions of brightness and neutrality are broadly shared, this does not mean that everyone experiences forest music in medievalist RPGs in exactly the same way. People can value the music aesthetically or not, attach certain emotions to a soundtrack, or experience different moods when playing a game.[30] Nevertheless, some aspects are shared more commonly and lend themselves to particular purposes, just like more neutral pitch collections are apposite for the thematic world-building of forests in medievalist RPGs. Taking a formalist approach to modes has urged me to look beyond their foregrounded function of historical contextualisation in the genre of medievalist RPGs. As a result, a subtle but defining thematic function of the pervasive pitch material of forest music in these games has come to light.

3.3 Rhythmical Rambling

Carefree and leisurely behaviour is a central element of exploration game states in medievalist RPGs; it is an element that the soundtracks often foster through pace and rhythm. Some of these timing-related techniques are applicable to exploration music as a whole and others more specifically to forest music.

Pace applies to exploration music in medievalist RPGs more generally. This music roughly covers tempos between 60 bpm and 140 bpm. However, the majority of the exploration music lies in a narrower range, and the cues closer to 60 and 140 bpm are the outliers on either extreme. The tempos are related by being different kinds of walking paces: they correspond to paces ranging from a slow stroll to a brisk stride. Tempos within this range tend to be relatively comfortable; people innately perceive tempos below this range as slow and plaintive, and tempos above this range are fast and can become hasty or even hectic.[31] Tempo, pulse, and rhythm also instigate motoric response that improves temporal perception and understanding; in other words, people intuitively move their bodies to music to make sense of it.[32] Consequently, the experience of unhurried exploration clearly benefits

[29] Cf. my explanation of these theories in Section 2.3; Johnson, *The Body in the Mind*, xii, xv, xx; Cook, *Analysing Musical Multimedia*, 28–9, 75.
[30] Huron, *Sweet Anticipation*, 167–8.
[31] Daniel J. Levitin, Jessica A. Grahn, and Justin London, "The Psychology of Music: Rhythm and Movement," *Annual Review of Psychology* 69, no. 1 (2018): 53.
[32] Marc Leman, *Embodied Music Cognition and Mediation Technology* (Cambridge, MA: MIT Press, 2008), 103–6; Tiger C. Roholt, *Groove: A Phenomenology of Rhythmic Nuance* (New York: Bloomsbury Academic & Professional, 2014), 2, 83–7, 98–100.

from a score with a walking pace that is neither dragging nor rushing. Because of the close relation between rhythm and subtle bodily movement, this can happen on an unconscious level and influence gameplay flow.[33] The possible influences of rhythm on gameplay are therefore less about obvious physical movement and more about creating a relaxing and leisurely atmosphere through a bodily understanding of these rhythms.

Whether the tempo can be (subconsciously) experienced as merely a relaxed pace or specifically as a *walking* pace mainly relies on pulse and rhythm. The recurrent metres of forest music are 4/4 and 6/8, with regular accented beats. However, a beat alone is not enough for stimulating certain walking behaviour. Furthermore, gamers are not likely to walk to a rhythm at all for two main reasons. A practical reason is that gamers are usually seated when they play medievalist RPGs. A psychological reason is that footsteps and walking behaviour are usually not spontaneously synchronised to a beat alone, unlike other kinds of physical activities. Other musical factors, such as pulse or groove, have bigger effects on walking speed.[34] As can be seen in the transcriptions throughout this chapter, the main melodies of forest cues abundantly feature crotchets and quavers. The emphasis on these note values in 4/4 and 6/8 metres provides a steady pulse resembling footsteps. Alternatives would be dotted rhythms with grooves more in line with dancing or skipping, or static rhythms that lack a clear pulse. However, these alternative rhythmical techniques are much more common in other landscapes, as I will explain in the following chapters. The significance of the focus on leisurely walking rhythms in forest music is that it encourages rambling through the forest environments and taking the time to enjoy the aesthetics of the surroundings.

3.4 Materialising the Forest

Musical world-building with timbre, pitch collection, and rhythm relate to broad concepts in the forest music of medievalist RPGs; they lay the foundation for the atmospheric and thematic perception of forest landscapes. Of course, there is much more to music than these components. Notes and playing techniques can be combined in many ways to create unique melodies and effects. It is in these aspects of music that the spatial, physical, and atmospheric characteristics of forest landscapes are made concrete.

[33] For the effect of rhythm on gameplay flow, cf. Aline Hufschmitt, Stéphane Cardon, and Éric Jacopin, "Manipulating Player Performance via Music Tempo in Tetris," in *Chi Play '20: Extended Abstracts of the 2020 Annual Symposium on Computer-Human Interaction in Play* (New York: Association for Computing Machinery, 2020), 146–52.
[34] Levitin, Grahn, and London, "The Psychology of Music," 60.

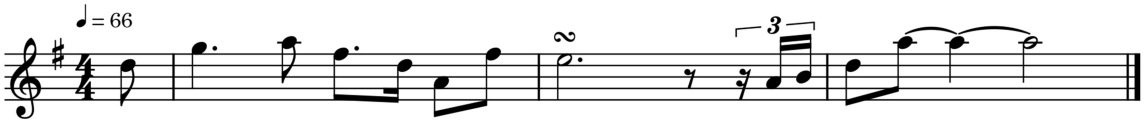
Just like in film or any other audiovisual medium, the music of video games has the power to enrich the experience of atmospheres, moods, and settings. Music does this by adding another perceptual layer to visual images and interactive gameplay. Drawing from Nicholas Cook's multimedia model, some aspects of the scores for medievalist RPGs—especially in natural environments like forests—are largely "conformant" to the available visual and narrative information about the setting.[35] Consequently, the music reaffirms salient environmental information like the physical make-up of the landscape. Moreover, it can guide the gamer's attention to characteristics of specific environmental details by highlighting them, as I further elucidate in this section. Because of how music and image are "manipulated within a specific context," many cues also "complement" the gameplay and visuals in a number of ways.[36] Music can project its denotations onto the game environment through unification of sound and image. This can dispel any ambiguity, as music "anchors the image in meaning," which is a process Claudia Gorbman calls "ancrage."[37] Due to its particular incorporation in the forests of medievalist RPGs, music creates a functional awareness of being in a safety state (using Whalen's term) and fixes atmospheric and thematic ideas like neutrality that are missing or ambiguous without the music.

3.4.1 Meandering Melodies

The forest music of medievalist RPGs is characteristically lively. Just like forests, where leaves are rustling in the wind and birds are fluttering about, there is a lot going on in these soundtracks. Melodies are lyrical and full of leaps, distinct melodies intertwine contrapuntally, and quavers, semiquavers, and quick ornaments are common.

The melodies of forest music typically consist of phrases that often and suddenly leap up or down. Skips of thirds, fourths, and fifths are pervasive, and larger leaps of sixths and even sevenths are no rarities. Consider the Mixolydian tin whistle melody from "When No Man Has Gone Before," shown in Transcription 3.5. This cue sounds when exploring An Skellig, a forest-laden island that is part of the Skellige Isles in *Witcher 3* (Image 3.3). It contains leap after leap, featuring thirds, fourths, fifths, and a sixth in what is only a short melody. The leaps are the core of this music, rather than embellishments or distinctive motifs within otherwise stepwise melodies.

[35] Cf. Cook's multimedia model in *Analysing Musical Multimedia*, 98–106.
[36] Cook, *Analysing Musical Multimedia*, 105.
[37] Gorbman, *Unheard Melodies*, 58.



Transcription 3.5: tin whistle melody from "When No Man Has Gone Before" (*Witcher 3*).

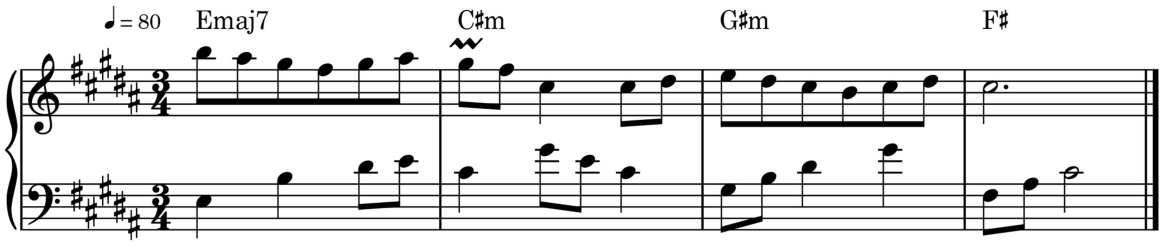
Image 3.3: An Skellig (*Witcher 3*).

Classical guidelines for writing melody advise to limit skips and leaps, to avoid successive leaps of intervals bigger than thirds, and to resolve any tension after leaps with a change of direction in stepwise motion.[38] However, forest cues take on a different approach. "When No Man Has Gone Before," for example, opens with a rising perfect fourth that shifts upwards to the fifth of the D Mixolydian scale. Next, it descends as an arpeggiated D major chord. The drop of a perfect fourth from D to A in bar 1 (after the anacrusis) is followed by a rising leap of a major sixth, in contrast to classical guidelines. The turn on the E in bar 2 is followed by a descending perfect fifth to the A. The melody then moves upwards to the D with a step and a skip, after which it immediately leaps to the A above. All these consecutive leaps in either direction make the music sound lively and nimble due to the seemingly unrestrained yet precise movement. Nonetheless, the music manages to avoid the risk of disjointed melodies that classical guidelines aim to prevent. One of the factors that help with

[38] For example, see Steven G. Laitz, *The Complete Musician: An Integrated Approach to Tonal Theory, Analysis, and Listening* (New York: Oxford University Press, 2012), 43–4.

this is the adherence to chord notes on strong beats. In this manner, the melody does not seem to jump to random notes, as they have clear structural relations. This strategy is also clear in the first violin and viola parts in the first two bars of "The Banks of the Sansretour" (Transcription 3.1). Another factor that helps is the general lack of strong tension points in the Dorian, Aeolian, and Mixolydian modes, such as a leading note or Phrygian second. Stepwise resolutions are therefore less critical in managing tension and release.

Another typifying aspect of forest music is the prevalence of contrapuntal motions. The counterpoint can be on the more complex and layered side, like the strings in the excerpt from "The Banks of the Sansretour" or the flute and horn in "Gwen's Theme," but many cues feature arpeggio-based contrapuntal motions. In the latter case, a clear main melody is played against arpeggios that run in contrary motion. Transcription 3.6 shows an excerpt from a cue in *Eastshade*, called "In the Reeds." It is an example of a main melody, played by a harp using the *près de la table* technique (shown in the G-clef), that is supported by harp arpeggios played in the middle of the strings (F-clef). The bottom melodic line underpins the chords by playing exclusively chord notes and by playing most chords in their entirety. It also establishes a strong and walkable 3/4 pulse, which is further reinforced by (unnotated) crotales on every crotchet. Even though the bass melody firmly fixes the treble melody in a harmonic and rhythmic context, the music has a light and nimble character. The bright timbre of the *près de la table* notes and the abundant leaps of the arpeggios help with this. Moreover, the treble melody seems to flow rather freely from the bass melody, because of the timbral variation, contrary motion, and different rhythmic patterns of the two lines. This is one of the main fortes of counterpoint: creating melodic independence between harmonically related lines. Or, from another perspective, it is about creating a connection between autonomous elements. Either way, contrapuntal motion adds bustle to the music and subsequently to the game environment in which it sounds.



Transcription 3.6: excerpt showing the *près de la table* treble melody (G-clef) against the *naturale* bass melody (F-clef) from "In the Reeds" (*Eastshade*).

Forest cues—and especially their melodies—are also rhythmically lively. Short note values, punctuated rhythms, and quick ornaments rapidly alternate longer notes over a steady pulse. Therefore, rhythms can flutter and frolic around without sacrificing the walkability of the music. Sometimes the melodies themselves are rhythmically bustling, such as in the excerpt from "When No Man Has Gone Before." This melody places emphasis on off-beat quavers by frequently placing prominent high notes on them that are approached by leaps, such as the high and lengthy A in the last bar. This short melody also features a semiquaver, triplet, and a quick turn, which add a hop to the rhythm. However, the melody itself does not necessarily need to be capricious. Melodies can rely on the contrapuntal juxtaposition of different rhythmical patterns to improve the music's liveliness, such as in the excerpt from "In the Reeds." Here, the *près de la table* melody steadily features successive quavers, interrupted only occasionally by a longer note or a swift mordent. The *naturale* melody consists of a balanced mix of crotchets and quavers. The contrapuntal positioning of these two melodic lines with different rhythmic patterns makes the music more fluid. There are therefore various rhythmical strategies that can further enliven the forest music and the environments that they underscore.

Image 3.4: the lush forest next to the town of Lyndow (*Eastshade*).

Even though the forest cues are lively, the music remains balanced. On the whole, there is no clear preference for ascending or descending motions. The melodic contours keep

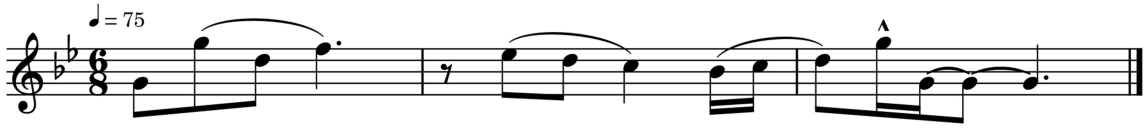
meandering along. Note values are also diverse and are approached as equally important: they appear on weak and strong beats, on the highest and lowest notes of melodic lines, and sometimes accentuate characteristic notes. Intervals receive similar treatment: many of them appear regularly and as both accentuations and ornamentations. As a result, the music remains balanced on multiple layers, which helps to keep the lively music from becoming jumbled or even chaotic, and hence from thematically moving away from medievalist forests—music reinforces the key characteristics of liveliness and balance that typify medievalist forests. Furthermore, many little musical details (like the numerous quick and short notes and flourishes) combine with the abundant visual details (like leaves, sunbeams, and small animals, see also Image 3.4) from the forests to create a harmonious amalgam. Just like in counterpoint, a profusion of individual components (musical elements, game objects, and visual backdrops) coexist to create something more—to create a medievalist forest.

3.4.2 Materialising Birds

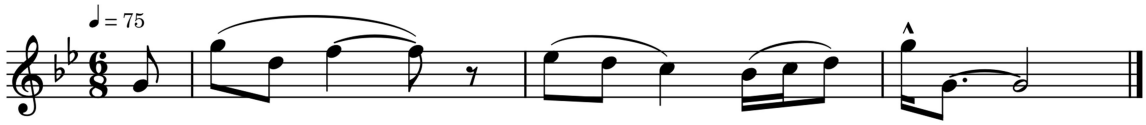
Music can go beyond increasing environmental liveliness and balance: through busy melodies and countermelodies, forest cues draw indexical parallels with the lush forests of medievalist RPGs. These forests feature a plethora of small details, including flowers, leaves, grass, birds, insects, and light rays. They are explicit to varying degrees and sometimes the wildlife and the rustling of flora are only implied through sound, whether sound effects, music, or both. The many musical details that stand out in the score can overlap with the details of the forest, and the particular enabling equivalences that form here can blur the boundaries between diegetic sound effect and musical cue. In other words, the presence of particular game objects or scenery can be materialised through music.

One specific type of correlation that forest music commonly creates is that between woodwinds and birdsong. In addition to the bird-like timbres of certain woodwind registers, the music highlights a number of melodic and structural characteristics of birdsong. One that stands out is the ascending leap that bounces back down, such as in the cue “Morning Glade” from *SpellForce 3* (Transcription 3.7, bar 3) that appears in densely forested regions. Ascending leaps that fall back down are not uncommon in birdcalls (the great tit does this abundantly, for example). These high notes demand attention because they literally stick out from the other pitches. They are sometimes accentuated even further in forest music through dynamics, articulation, or phrasing. This can have a structural effect as well, as it has the potential to disrupt the metre. Besides the accentuation of notes on weaker beats, many woodwind melodies in forest music do not strictly adhere to the metres of the cues: phrases

and legato articulation cross barlines and do not always start on a bar's first beat. The flute melody from "Morning Glade," for example, looks as if it should be shifted to the left by one quaver to align the phrase's accents with the strongest beats (demonstrated in Transcription 3.8). However, the rest of the music provides a much stronger impression of the rhythm as notated in Transcription 3.7. Therefore, woodwind melodies like this tend to be rhythmically freer than the material of other instruments and sometimes sound as rhythmically separated from the rest of the music. This can result in a more organic sound of the woodwind melodies, making them sound closer to actual birdsong, and this may in turn blur diegetic boundaries.



Transcription 3.7: flute melody from "Morning Glade" (*SpellForce 3*).

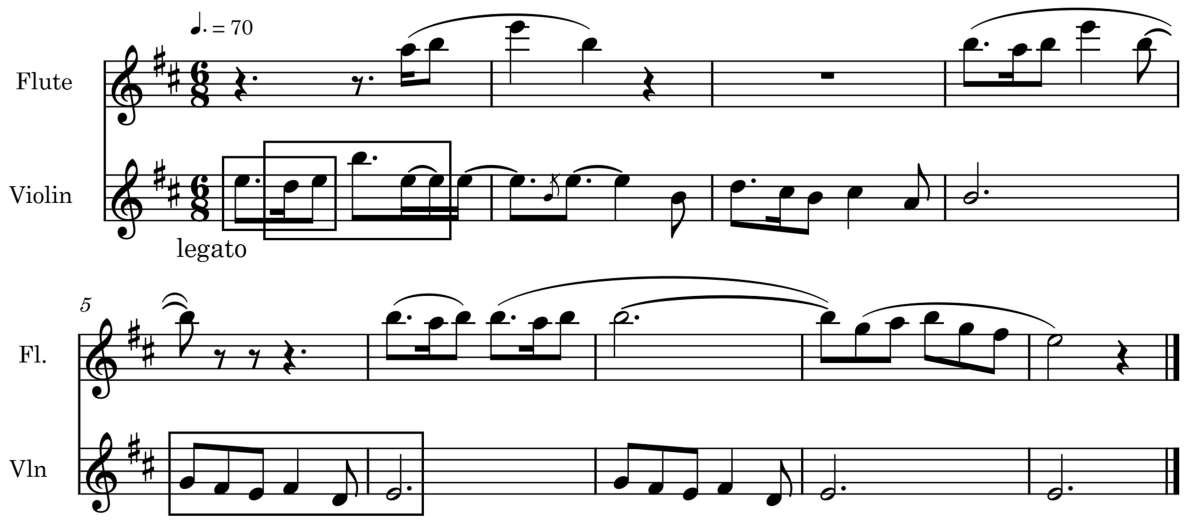


Transcription 3.8: hypothetical metre of the flute melody from "Morning Glade" based on melodic accents, articulation, and phrasing, without considering the context from the rest of the music.

Two closely related structural elements that add to the organic nature of woodwind melodies are call and response structures and echoing. Woodwinds sometimes are in dialogue with themselves, other woodwinds, or different instrument types. They create period structures with phrases that sound like they respond to one another. Antecedent phrases end on an unresolved pitch to which a consequent phrase responds and resolves the period. The antecedent and consequent phrases are closely related because the consequents usually mimic material from the antecedents. The call and response structures with bird-like woodwind registers and (cross-instrumental) repetition draw parallels to the ways birds react to calls from each other and possibly to other sounds that they hear. Some birds may imitate sounds or respond with their own unique calls. The call and response structure of music alternates different melodies, creating the impression of instruments quietly listening to others before reacting. This simulates life-like qualities like the ability to perceive and acknowledge sounds. The birdsong-like melodies and the visual and interactive forest environment are put

together in the video game, and it is in this context that the music complements the game's forest. The music anchors the forest in the organic and life-like qualities of the woodwind melodies. In this sense, the music breathes life into the fauna of the forest and materialises creatures if they are invisible.

This also happens in "Eye of the Storm" from *Guild Wars*. The excerpt shown in Transcription 3.9 is in the key of E Dorian and features violin and flute melodies that move rather freely against an unnotated steady pulse. This pulse consists of a bassline played by a harp on the first and fourth beats of every bar. The violin melody meanders around the tonic E for the majority of this excerpt, with bars 3 and 4 the only exception. The melody accentuates an ascending leap *from* the tonic (E) to the perfect fifth (B) of the scale. The flute melody mimics the violin in adapted form: it meanders around the B and leaps upwards with a perfect fourth *to* the tonic. Despite the adaptation, the flute stays true to the rhythmic and melodic shapes of the violin melody and thus remains easily recognisable. Moreover, it gives an echoing effect to the three main motifs (their first instances in the transcription are marked by boxes). The flute postpones the resolution of the period by highlighting the B every time the violin keeps hanging on the tonic E. This makes the E function more as a pedal note than a resolved tonic during the flute accents. Only in the final bar of the excerpt do the violin and flute both resolve to the tonic, providing a moment of closure and marking the end of the period. The echoing of the violin by the flute and the centring of the E and B show a clear call and response structure. Both melodies get solo moments and one instrument plays whenever the other lingers on its central note. In combination with the echoing of motifs, the tension and resolution of the melodies make it sound like the violin and flute listen and respond to one another; it is as if the melodies are emanating from living beings.



Transcription 3.9: call and response in "Eye of the Storm" (*Guild Wars*). The boxes mark the cue's main motifs. The two overlapping motifs often occur together as one longer motif.

3.4.3 Materialising Leaves

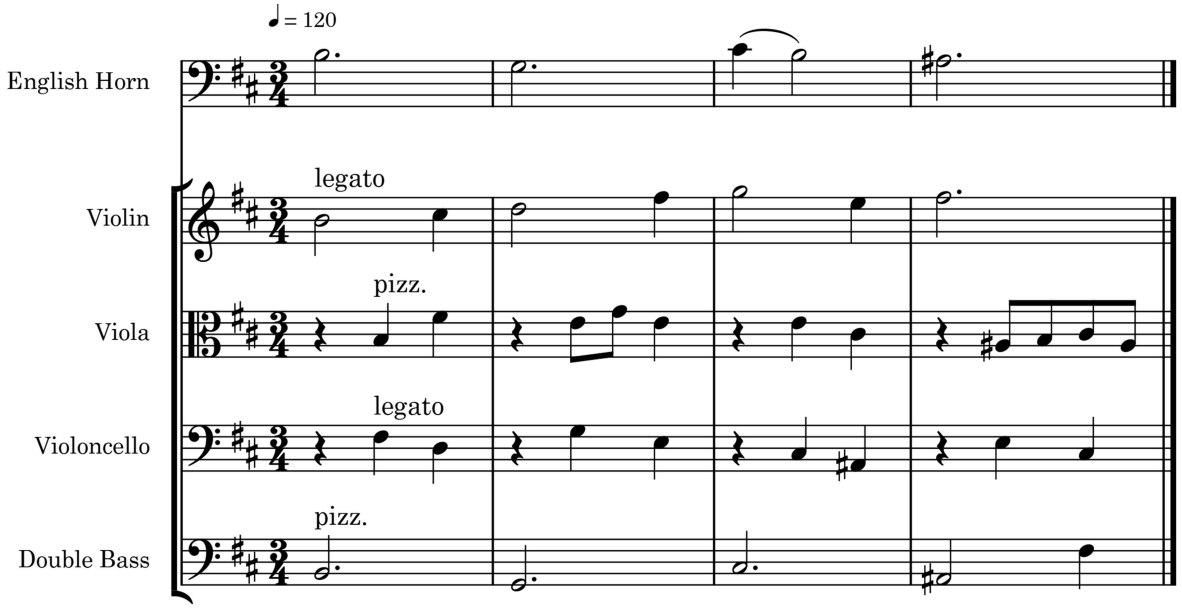
It is of course also possible to increase the liveliness of the forest and materialise invisible fauna and floral rustling with sound effects. What, then, is the advantage of doing this through the score? Whilst sound effects can function as more immediate semiotic markers, music can do several things for which sound effects are unsuitable. Not only can music imbue an environment with emotions and aesthetic ideals, but it can also sonically build objects that are inaudible by nature. A central component of forests that is largely without sound is the flora. They may creak and rustle in the wind or when someone or something is moving through them, but otherwise most plants do not make perceptible sounds. Therefore, adding a sound effect to it that is semiotically meaningful is problematic. Music, on the other hand, can artistically express some of the plants' characteristics.

When I discussed string timbres in Subsection 3.1.1, my points all pertained to standard arco playing techniques and the harp; however, bowed tremolos and pizzicato playing techniques are not uncommon in forest cues. All these techniques have timbral differences that largely have to do with the frequency, duration, and strength of attacks. What is even more striking, however, is the way that these different playing techniques affect melodic material. Arco playing features subtle and gradual attacks, which are perfect for the evident preference for smooth and lyrical legato playing in the forest melodies of medievalist RPGs. In combination with the varied yet balanced melodic style, this increases the grace and elegance of the music and the forests. Due to the dynamic nature of games and their scores,

safety state music can afford serendipitous moments where the gamer is mesmerised by a chance encounter of a picturesque vista. These experiences are closer to stumbling upon natural beauty than they are to looking at a framed picture on a wall.[39] The lyrical forest melodies in medievalist RPGs can therefore augment gameplay in the forest regions from a passive observation or an ordinary hike in nature to an aesthetic experience of exploring nature,[40] in which grace and elegance take central roles. Moreover, the elegant features of the music provide an enabling equivalence with environmental features that mirror this elegance, allowing music and environmental details to blend into audiovisual objects. Depending on the specifics of the forest and its score, this can for example enable a connection between smooth legato playing and flowing treelines, winding forest paths, meandering rivers, or cascading sunbeams. As a consequence, other qualities of the music can be transferred to the environmental features and complement them, regardless of whether a gamer makes the connection between the music and their surroundings consciously.

As opposed to legato, tremolo playing has a continuous stream of connected attacks and pizzicato playing has an instantaneous attack for each note. Pizzicato playing and the harp share similar attack characteristics and the main differences lie in the sustain of notes: the harp is richer and can ring for longer because of the open strings, whereas pizzicato notes on bowed strings sound more muffled and decay quickly as the strings are often stopped on the fingerboard. The immediacy of attacks enhances the whimsy of the active melodies and rhythms that pervade forest music. This adds an element of playfulness to the otherwise graceful aesthetic experience of forest gameplay in medievalist RPGs.

[39] Kamp and Sweeney, "Musical Landscapes in *Skyrim*," 179–96.
[40] Cf. Kamp and Sweeney, "Musical Landscapes in *Skyrim*," 179–96.



Transcription 3.10: excerpt from "Oakvale" (*Fable*), illustrating the juxtaposition of various articulations. An unnotated bassoon doubles the double basses.

The juxtaposition of different articulations also happens in "Oakvale," of which Transcription 3.10 shows an excerpt. This cue is from *Fable* and underscores a small town and the forest it is nestled within (Image 3.5).[41] It features elegant legato melodies played by violins and smooth accents played by cellos and various woodwinds. Violas provide a clear countermelody that distinguishes itself from the legato melodies with its pizzicato articulation and different rhythm. It also features shorter note values, and more and larger leaps than the violin melodies. The distinct attacks of the pizzicato articulation accentuate the hopping up and down of the viola melody, giving it a livelier quality than the smooth violin melodies. The double basses are doubled by an unnotated bassoon and give more definition to the bassline, as they create a strong pulse with the pizzicato notes at the beginning of each bar. The pizzicato playing also emphasises the leaps of the bassline because of the clearer attacks. The whimsy and instantaneous impulses of the animated pizzicato lines closely resemble the small size, sheer abundance, and organically random distribution of leaves in the visible game environment, forming an enabling equivalence. This also works with other music that features clear and immediate attacks in the context of forest environments, such as harp arpeggios. Through enabling equivalence between the harp and pizzicato playing and leaves, the music transfers new meanings to the visual game objects. More concretely, if the foliage

[41] This combination of the urban and the natural is portrayed in the music with the help of the waltz rhythm. The cue "Oakvale" shows the typical characteristics of forest music, but the rhythm is an exception: dance rhythms are common in urban environments of medievalist RPGs, which I explain further in Section 4.3.

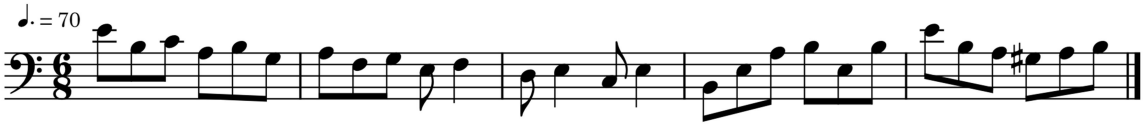
is a static image or object in a game, the music complements it with dynamism and life. If the game already includes physics systems to simulate the swaying and rustling of plants, then the music can influence interpretations of these movements (for example, understanding the movements as capricious or elegant).

Image 3.5: Oakvale (*Fable*).[42]

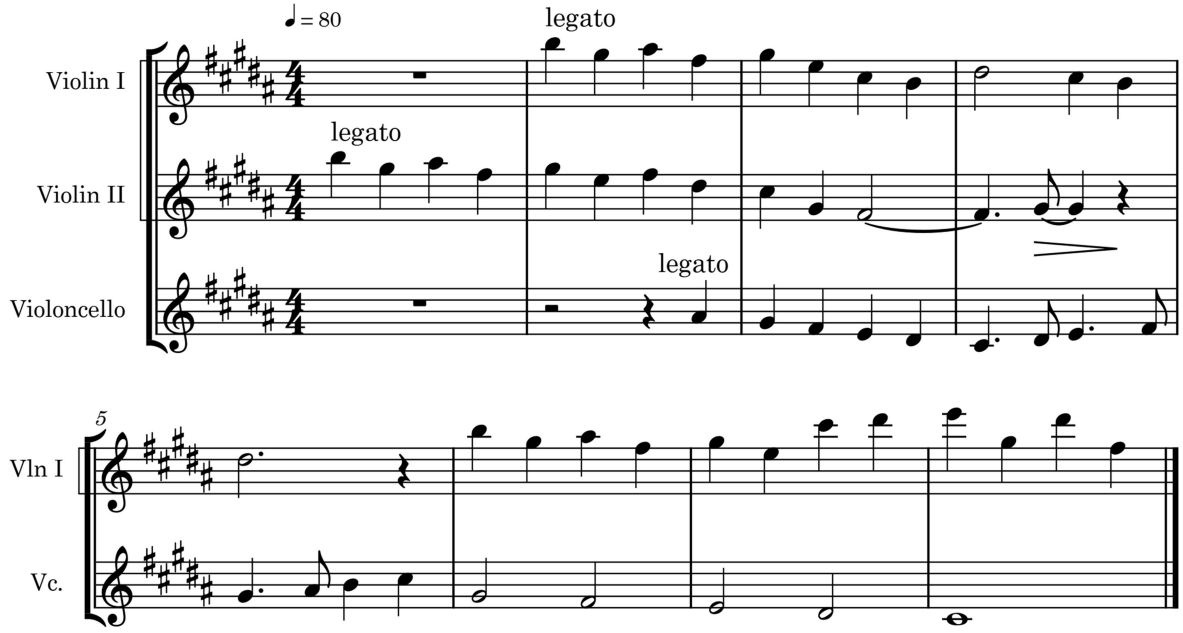
Another technique that recurs in forest music is a specific descending fluttering motion. It consists of descending diatonic thirds that are alternated with ascending diatonic seconds (see bars 1–3 of Transcription 3.11 and bars 1–2 of Transcription 3.12). The contour of this technique is descending, but the music does not drop quickly. The fact that the pattern of diatonic intervals remains the same keeps the descent from becoming too erratic, which would happen if the intervals kept changing with every leap. Furthermore, the ascending steps undermine the plunge and generally slow down the fall, creating the fluttering effect. This motion is practically identical to falling leaves, which do not descend uniformly, but flutter due to their light weight and air-resisting shapes. This musical effect stands out because it contrasts the strongly balanced melodic motions that characteristically make up forest music. This effect does balance itself out, although it takes significantly longer than

[42] This image was taken from "Oakvale," Fable Wiki, accessed 15 June, 2021, https://fable.fandom.com/wiki/Oakvale#Original_Fable.

most forest melodies: after the fluttering descent, the melody gradually rises (Transcription 3.11, bar 4; Transcription 3.12, cellos in bars 4–5), after which it resumes meandering around and blends in with the rest of the music again (Transcription 3.12, from bar 5 onwards). The ascent is much like a surge of wind that blows the falling leaves back up.



Transcription 3.11: the fluttering effect in the harp of the opening bars of "Eye of the Storm" (*Guild Wars*). This harp melody sounds contrapuntally under an unnotated flute melody.



Transcription 3.12: the fluttering effect in the strings of "In the Reeds" (*Eastshade*). This excerpt is embellished by an unnotated flute melody.

The focus on the diatonic third for the descending motion is noteworthy. Thirds, whether major or minor, are imperfect consonances. This is important, because other interval types do not work for the fluttering effect. There are relatively few dissonant intervals (minor second, tritone, and major seventh) in diatonic keys. Consequently, to create a fluttering, descending pattern with consecutive dissonant intervals would require the use of non-diatonic notes. This would obscure the central scales and possibly destabilise the key of the music if there are no underlying harmonies, which is the case in the above examples. In combination with the harsh nature of dissonant intervals, this would cause a sense of unease. Perfect

consonances (perfect fourths, perfect fifths, and octaves), at the other extreme, are too stable. In part because of this, consecutive perfect consonances can create premature senses of closure, stalling the motion of the fluttering effect. Furthermore, the stability of perfect consonances can make them sound hollow.

Imperfect consonances (thirds and sixths; possibly major seconds and minor sevenths, which border on dissonance) are suitable for a steady melodic decline because they lend themselves to musical continuation without demanding resolution. They therefore neither halt nor rush the flow of the descent. However, out of the imperfect consonances, only the thirds work for the fluttering effect. The major second does not allow a diatonic fluttering descent, because its fall is cancelled out by any diatonic rise. Consecutive dropping sixths and minor sevenths are not effective either, as their more vigorous plunges do not resemble falling leaves. Moreover, they are harder to follow as one melodic line. As demonstrated in Figure 3.4, the distance between the higher notes (regular noteheads) and the lower notes (cross noteheads) is relatively large. They are in closer frequential vicinity to the noteheads of their own kind than to the other ones. Due to sequential grouping processes of the human brain, the two lines indicated by ● and × can segregate in perception.[43] This also depends on the consistency in playing style and timbre, but the cohesion between the notes can nonetheless weaken if the pattern persists for too long. In some cases, such as Figure 3.4, consecutive descending sixths can result in an alternation with ascending perfect consonances, bringing with them their respective potential issues. Consecutive sixths are employed in the final bar of Transcription 3.12; however, this mainly functions as a variation on the fluttering effect to prepare for the stabilisation of the strings right after. It does not sound as the fluttering effect itself. Thirds are the most effective for the fluttering effect: they create a resolute yet gentle descending motion that is easy to follow. Because the notes are close together, they are clearly part of one and the same melody, and can therefore effectively resemble a single fluttering object.

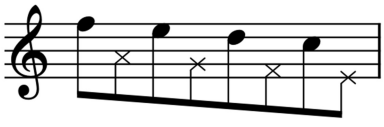


Figure 3.4: sequential grouping.

[43] Susan L. Denham and István Winkler, "Auditory Perceptual Organization," in *The Oxford Handbook of Perceptual Organization*, ed. Johan Wagemans (Oxford: Oxford University Press, 2015), 605–6.

The melodic pattern of the fluttering effect is highly specific, but it can be incorporated in music in a number of ways. The effect can for example be achieved by using one instrument, such as the harp in "Eye of the Storm." In this way, the contour of the melody is emphasised through range: the melody clearly moves down and up, gradually changing its tone colour as it moves through different registers. "In the Reeds" shows a different strategy, which involves a canon-like structure. The melody of the second violins in bar 1 is echoed by the first violins in bar 2. This keeps the register of the melody more stable at the top end, even though the motions of individual melodies keep going down. As a result, the melodic motion is dampened somewhat. Additionally, by playing the fluttering effect with multiple instruments in canon-like fashion, the falling leaf impression is multiplied: instead of one leaf falling down like the representation in "Eye of the Storm," "In the Reeds" simulates several leaves falling down one after the other. These two examples also show how the fluttering effect can work with different articulations. The harp foregrounds the whimsy and instantaneous impulses of the tumbling leaves, whereas the legato strings are smoother and foreground the grace of the drifting leaves. Different instruments and playing styles can emphasise different aspects of the same phenomenon. The concept shifts slightly without changing fundamentally, as I illustrated with my choices of the words "tumbling" and "drifting"—they describe different movements, but both are ultimately types of fluttering motion. The fluttering effect adds more movement to the game forests and materialises falling leaves indexically through music, regardless of whether leaves are moving visually in the game.

3.4.4 Manifesting Environmental Details

In brief, there are a number of musical and mainly melodic parameters that can augment details of a landscape and help make them more concrete. These parameters in forest music, such as melodic contour, articulation, metre, and interval employment, have analogical relations to the specific environments that they underscore in medievalist RPGs. The musical characteristics that bear iconic resemblances and indexical relations to elements of the forests like birds and leaves create enabling equivalences. This happens because they coincide in the game and correspond meaningfully: the similarities are close and highly specific, making them ideal for transferring additional meanings between them. The main advantages of using music rather than sound effects for representing plants and animals are that music can provide naturally soundless phenomena with sonic identities and add emotional information.

3.5 Bringing the Forest into the Room

Music has the ability to overcome the spatial limitations of the screen. Whereas a screen is often seen as a "window" to another world—which implies a separation between the viewer and the viewed—sound can fill the room and envelop the gamer.[44] The combination of sound and interactive gameplay can "bring the game space into the lived space" and guide the gamer's emotional appreciation.[45] Furthermore, the formalist approach to the scores for medievalist RPGs taken here reveals that music also enhances spatial awareness. Whereas sound in general can help the gamer with spatial positioning,[46] nondiegetic music is useful for clarifying appearances and enables a more complete aural conception of the physical make-up of the game environment beyond what is directly visible on screen.

Music therefore functions as a world-builder: it helps to construct and define a game's setting and environmental details, as well as to materialise naturally quiet objects and their movement around the gamer's avatar in the lived space. Through instrumentation and timbre, music has the power to imbue the forests of medievalist RPGs with broad atmospheric qualities, such as whimsy, warmth, lusciousness, and serenity. Pitch collections can strengthen these qualities or add different ones. The use of Dorian, Mixolydian, Aeolian, and hexatonic scales provides a sense of neutrality to the forests, establishing the medievalist ideals of purity and impartiality of nature. Pitch collections like the Mixolydian and Aeolian modes can also subtly guide emotional experiences of the environment, making them relatively cheerier or gloomier. The themes of unhurriedness and playfulness that shine through the timbres and pitch collections of forest music are made clearer by the rhythms of forest music. It enables a corporeal understanding of the leisureliness as a supplement to an otherwise primarily aural perception. All the qualities and themes of forest music are further specified by the melodic material of the cues. The combination of melody, instrumentation, and timbre can also mimic or represent specific physical components of forests, such as birds or leaves, and materialise them beyond visual restraints.

The world-building capabilities of game scores described in this chapter have been revealed through studying the intrinsic qualities of music and have mostly been overlooked in studies of generic conventions and semiotic functions of game music. A formalist approach is therefore at least as important for understanding musical world-building as approaches revolving around enculturation. Some musical qualities depend on their physical make-up

[44] Collins, *Playing with Sound*, 45–8, 54.
[45] Collins, *Playing with Sound*, 56–8.
[46] Cf. Collins, *Playing with Sound*, 54–6.

and the way the human brain processes this regardless of stylistic context. This applies to timbral characteristics like brightness, roughness, and fullness, and to rhythm and its relation to the human body. It also applies to some melodic qualities, such as consonance and dissonance based on the harmonic series. Other qualities rely more on contextual intrinsicality, which in the case of a medievalist RPG includes the game's entire soundtrack and Western diatonic music as a whole. In these cases, musical qualities result from their comparative relation to diatonic vocabulary. Pitch collections work like this, which receive several fundamental qualities from the way their notes relate to each other and how they relate to other pitch collections. The Dorian mode is neutral, for example, in part because of how it balances brightness and darkness within the mode and in relation to the other modes of the major scale. Intrinsic qualities are also vital for understanding how enabling equivalence works, as this is about direct qualitative similarities between music and an image or object. Lively Dorian flute melodies at moderate pace therefore work better than others for materialising game forests, not simply because they have been used before in this context, but also because of how they bring out latent characteristics of the environment through music.

Chapter 4. The Music of Towns and Cities: Regimented Activity

Nature may be practically everywhere in most medievalist RPGs, but the urban also plays central roles. Big cities and small towns are home to most non-hostile non-player characters, and as such they are usually the best places to pick up new quests, visit merchants to sell the loot obtained during adventures, or find artisans to improve gear. Gamers may deliberately travel to a city easily visible from far away, or they may stumble upon a small town hidden deep within a forest. Some cities are so big and crammed with buildings that no nature is visible, but many urban environments in medievalist RPGs still showcase nature: mountain ranges may form the backdrop or greenery may sprout from every nook. The scores for the urban environments of medievalist RPGs tend to reflect this diversity—depending on the visual environment, the music may or may not blend in musical techniques applicable to the particular natural details and backdrops—yet common musical techniques pervade these soundtracks.

Many of these musical techniques help to historically, culturally, and topographically contextualise the medievalist towns and cities, for which conventional associations are invaluable. This has been studied extensively by scholars including James Cook, Karen M. Cook, and Lamb and Smith,[1] and two central areas of interest in discussions like this are medieval(ist) instruments and modal pitch collections. However, these and other musical techniques can do much more than contextualisation using conventions. In this chapter, I examine what modes, intervals, and rhythms can reveal about medievalist urban environments, and I study recurring applications of particular instruments through case studies.

4.1 The Modal Neutrality of the Urban

Similar to the forest music of medievalist RPGs, the music for urban environments mainly consists of neutral modes rather than more emotionally pronounced pitch collections like major and minor keys. The Dorian, Aeolian, and hexatonic minor modes are the most prominent, and there seem to be fewer exceptions than in forest cues. The main reason for

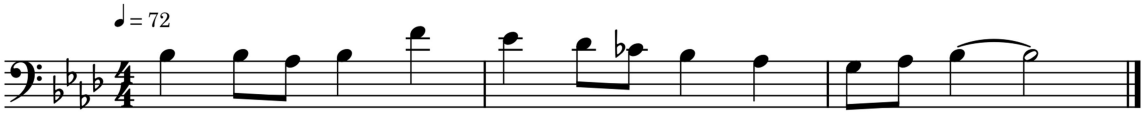
[1] For example, see Cook, "Beyond (the) Halo," 183–200; and Lamb and Smith, "From *Skyrim* to Skellige," 79–100; Cook, "Game Music and History," 343–58.

this clear-cut preference is likely related to the strong conventions of medievalism in screen media; whereas medievalism is a subtle theme in natural environments like forests in medievalist RPGs, it is foregrounded in urban environments. Even though the Dorian and Aeolian modes are strong signifiers of the medieval as I pointed out in "The Modal Neutrality of Nature" (Section 3.2), these pitch collections can still convey additional meanings.

Important meanings of the modes beyond situating the towns and cities in a setting akin to the Middle Ages rely on their neutrality, just like forest tracks. However, compared to forest music, different qualities emerge from the neutrality of Dorian, Aeolian, and hexatonic modes in urban music. This is possible because of the distinct combinations of music and game, which in Nicholas Cook's terms create diverging sets of enabling equivalences. Towns and cities contrast nature with their inorganic surroundings and the everyday bustle of the many non-player characters generally indifferent to the gamer's avatar (that is, the ones that do not need the player character to complete quests for them). In this sense, the neutrality that can be found in towns and cities is not so much serenity as it is nonchalance. The emotional and brightness-related neutrality of the Dorian, Aeolian, and hexatonic modes aligns with a disinterestedness and seriousness of busy urban areas in general. Additionally, due to the absence of leading notes, the music lacks tension and resolution—there is little functional harmonic progression in the way that music in major and minor keys can have. Comparably, the day-to-day urban life of most non-player characters seemingly does not develop as they typically perform the same mundane routine every day; for example, they leave their home, walk around town, gaze at some market stalls, spend a few in-game hours sitting in the tavern, and then return home. The particular characteristics of (medievalist) towns and cities are therefore distinct from those of forests. Consequently, different enabling equivalences form between music and image, and bring out or reinforce unique qualities for each setting.

Composers can play with modality to add more emotional depth whilst retaining strong medievalist connotations. A prime example is the cue "Talmberg (Atmosphere 5)," which, as the name indicates, sounds in the city of Talmberg in *Kingdom Come*. The key of this cue is ambiguous. The brass melody is what stands out most in this piece (see Transcription 4.1) and sounds over a drone of the perfect fifth E-flat–B-flat. This drone suggests E-flat as the tonic. Taking the notes of the melody into account, this results in an E-flat Mixolydian scale with a lowered sixth degree. This alteration darkens the music, as the flattened sixth is a characteristic scale degree of the darker modes (Aeolian, Phrygian, and Locrian; see also Figure 3.2).

However, the structure of the melody complicates this interpretation, as the melody itself appears to be in the key of B-flat. One of the reasons for this is that it starts and ends on the B-flat, and generally revolves around this note. Another important reason is the motif in bar 3 that ends the melody. This motif pervades the game, from important narrative moments to subtle background "nibbles" (as the small musical fragments of around half a minute are called on the official soundtrack release). In most cases, this motif of an ascending semitone followed by an ascending tone makes up the sixth, seventh, and first scale degrees, highlighting the characteristic degrees of either the Dorian or Mixolydian mode. The continuous reiteration of this motif in Dorian and Mixolydian contexts throughout the game makes it a strong signifier of these modes. In the Talmberg cue—which also contains D-flat, the minor third of B-flat—the inclusion of this motif compellingly suggests B-flat Dorian as the key, as it moves from G to A-flat to B-flat. Following this interpretation, the neutral Dorian sound is darkened by the Phrygian alteration of the C-flat in bar 2.



Transcription 4.1: main melody of "Talmberg (Atmosphere 5)" (*Kingdom Come*).

The various modes tangle with each other because the indications for each interpretation are strong, and this blurs the key of the cue. The Mixolydian, Dorian, and Phrygian modes compete, and the resulting melody features relatively dark notes in each interpretation. The ambiguity and darkness of the key combine with the slow pace, thick and heavy bowed string timbres, and deep, solid, and rough brass and English horn timbres to make the cue gloomy. A brighter choir and sweeter flute occasionally provide contrast to add a melancholic touch to the cue. The gloominess of this cue reflects a number of sad events that occur in Talmberg during the game. The formalist approach taken here reveals how the ambiguous modality in this cue is used to add narrative and emotional contextualisation without undermining the conventions that reinforce the medievalist setting.

4.2 Heroes, Mountains, Cities, Fourths, and Fifths

Perfect fourths and fifths are versatile intervals that occur in many different contexts in medievalist RPGs, from heroic motifs like I discussed in Section 2.2 to scores for mountain

ranges, open plains, and towns and cities. The ways in which these intervals are deployed affect how they can function and what ideas they might convey. A mountain score is therefore likely not that effective in constructing a town, and vice versa. Before delving into the applications of perfect consonances in urban regions, it is helpful to touch upon the incorporation of these intervals in scores for vast, open landscapes.

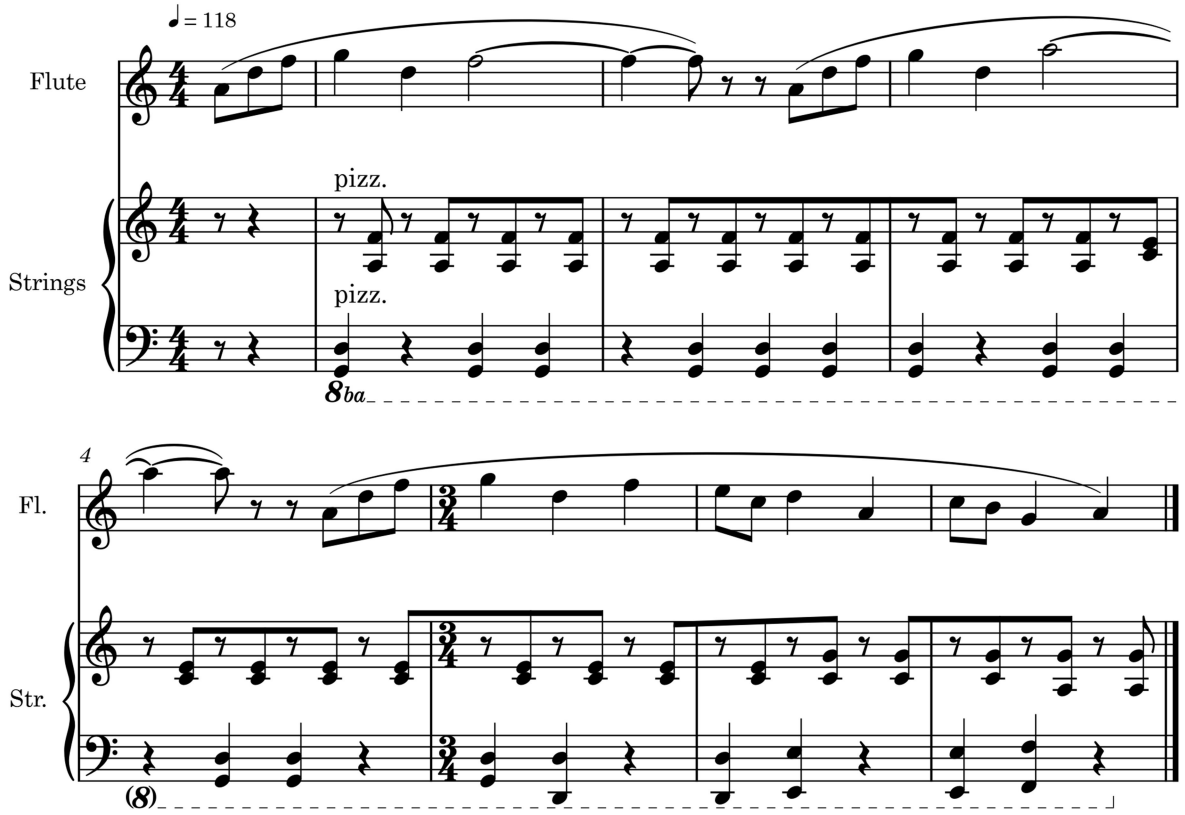
In their analysis of the music for *Skyrim*'s mountainscapes, one of the main points on which Kamp and Sweeney focus is the creation of impressions of vast space. Various musical techniques work together to create a sense of openness, and open intervals (perfect fourths, fifths, and octaves) are pivotal in this. These perfect consonances begin reverberous horn calls where they often linger, are deployed in parallel motions to emphasise the openness of melodies, conclude harmonically open-ended phrases, and create unresolving harmonic suspensions to halt musical and temporal progression.[2] In the music for spacious environments, airy melodies and harmonic stasis exploit the openness of perfect consonances.

In urban environments, the same intervals are employed for some of their other qualities, such as their firmness. The intervals have different functions in the scores for these regions compared to mountainscapes. The perfect fourths and fifths have important thematic and motivic functions in urban cues, beginning many melodies. In this sense the intervals share similarities with their applications for mountains. However, in urban environments they tend to resolve melodically right away instead of lingering on the perfect consonance. Take the main melody from "Sunrise of Flutes," for instance (see Transcription 4.2). This cue sounds in towns and cities in *Oblivion*. In the anacrusis, the flute starts with an ascending perfect fourth that immediately moves on with an ascending minor third. This arpeggiated D minor chord is repeated several times throughout the cue in the same way. In bar 1 (the first bar after the anacrusis), a descending perfect fourth is followed by an ascending minor third. In bar 3, the same descending perfect fourth is followed by an ascending perfect fifth. Even though this perfect consonance lingers for a brief moment, it functions as the end of the antecedent phrase to create anticipation. This anticipation resolves in the consequent phrase that closes the period in a more stepwise motion in bar 7.

Perfect consonances can also function as rigid structural elements in urban music, as illustrated by the bass in "Sunrise of Flutes." The repetitive perfect fifths (shown in the F-clef in bars 1–5) create a harmonically unyielding drone, providing a solid foundation against which the other instruments can bustle. If the higher strings in the G-clef are taken together

[2] Kamp and Sweeney, "Musical Landscapes in *Skyrim*," 182–8, 191–3.

with the bass drone, the bass could be understood as creating suspensions; for example, the G in the bass suspends the D minor chord in bars 1–3. However, the stability of the perfect fifth in the bass drone is not undermined, quite simply because it remains unresolved. The harmonic stasis removes the function of the suspension: the G adds colour to the D minor rather than tension. The perfect fifth in the bass is also separated from the higher strings through rhythm and range, which further helps to isolate the drone of the perfect fifth. In "Sunrise of Flutes," the harmonic stasis is a tool for achieving structural rigour. In general, the functions of perfect consonances in urban cues are more thematic, motivic, and structural, and they are typically not about creating airy melodies or harmonic stasis to emphasise openness.



Transcription 4.2: opening bars of "Sunrise of Flutes" (*Oblivion*).

The abundance of thematic and motivic perfect consonances adds solid and rigid qualities to the music. As I explained in Section 2.2, this is because perfect fourths and fifths are strong and consonant due to their early position in the harmonic series. Moreover, these qualities can be further enhanced if the intervals stretch from the tonic to a scale degree with the function of a dominant, such as the D and A respectively in this excerpt from "Sunrise of

Flutes." In the context of medievalist towns and cities, perfect consonances can form enabling equivalences with the architecture in the sense that both are firm and strong, and with the regimented behaviour of people; this creates links between music and image.

Image 4.1: the city of Cheydinhal (*Oblivion*).

It is notable that in "Sunrise of Flutes" these urban applications of perfect consonances are incorporated in a birdsong-like flute melody. This cue also features typically urban rhythms (as I explain in the next section), and later in this cue lush string chords sound that are characteristic of forest music. In this way, "Sunrise of Flutes" represents the diversity of *Oblivion*'s medievalist landscapes: many of the game's towns and cities are filled with plants and trees, and are surrounded by forests and green hills (see Image 4.1). Enabling equivalences between the music and the different environments help the soundtrack bridge the gaps between various game elements. As a consequence, music can complement the visuals and gameplay by placing a city in a wider context,[3] drawing connections with the surrounding nature, providing narrative and emotional information, and creating thematic unity. This entanglement of musical meanings shows the value of temporarily taking on a formalist approach. It provides insight into how the compositional nuances of incorporating perfect consonances can change their possible denotations ranging from heroic motifs to constructing diverging gameworlds.

[3] Cf. Nicholas Cook's multimedia model in *Analysing Musical Multimedia*, 98–115.

4.3 The Stable Hustle-Bustle of Urban Rhythms

The aspects of rigidity and bustling that I mentioned before are not only present in melodies and drones, but they are also foregrounded in the rhythms of the urban music of medievalist RPGs. A steady rhythm can be employed to align with the more regulated aspects of urban life and with the rigidity of the immobile buildings and roads, much like the perfect fourths and fifths as explained above. In rhythms this rigidity can be achieved through a steady pace and metre, with well-defined and consistent accents. The cue "Merchants of Novigrad" from *Witcher 3* is a clear example of this. The city of Novigrad, where this cue sounds, is the biggest city in the Northern Realms that the gamer can visit. This metropolis practically blocks out any views from the surrounding nature with its large stone and timber-framed buildings (see Image 4.2); gardens and the odd tree make up the only greenery. The cue maintains a steady 4/4 beat at 80 bpm. Various hand-held folk percussion instruments like the *bodhrán*, *davul*, and tambourine play this rhythm throughout with consistently accented first and third beats. The main melodies are performed with an Irish flute, *bağlama*, and Byzantine *lyra*, adding sonic coarseness to the medievalist gameworld through their timbres. The melodies strictly adhere to repeating rhythmic patterns. These patterns feature slightly longer notes on strong beats, which are stressed even more with dynamic accents.

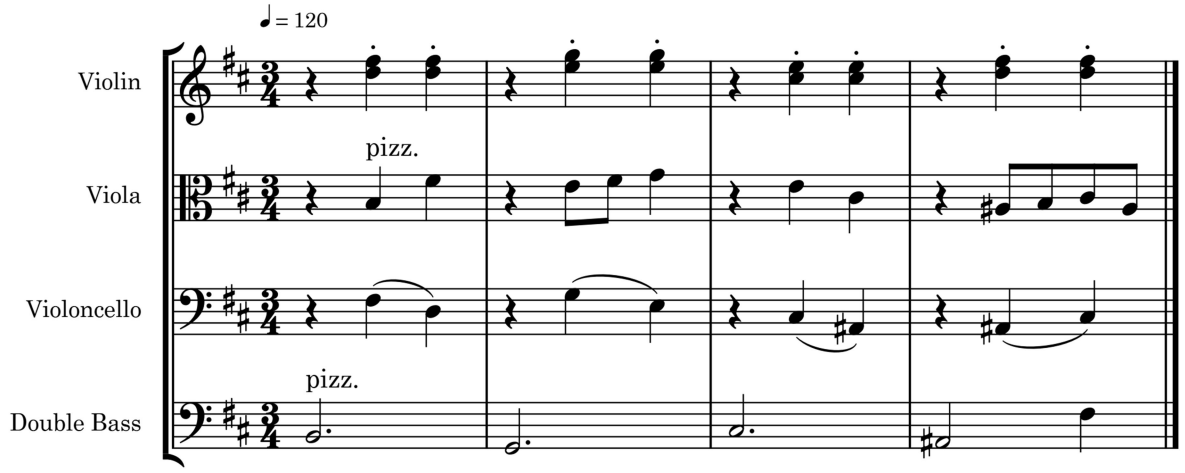
Image 4.2: Hierarch Square in Novigrad (*Witcher 3*).

Ternary rhythms are also common in the towns and cities of medievalist RPGs. They come in several forms, the most prominent of which are elegant 3/4 rhythms and energetic 6/8 rhythms. These rhythmic patterns remain very steady throughout cues, with a clear pulse and accented downbeats. This makes the music's rhythms predictable and danceable. This is also where the ternary rhythms in urban music differ from those in forest music. Forest cues have a steady pulse, but the rhythms keep developing and changing. Additionally, the melodies in forest cues that sound over the pulses are rhythmically much freer than those in urban cues. The pace also differs: forest cues tend to be calm and walkable, whereas urban ternary rhythms are swift and danceable. Understanding these rhythms in terms of being danceable has to do with understanding music in terms of bodily movement, similar to the walkability discussed in Section 3.3.[4] Even without moving noticeably to music, motion is still important in perceiving rhythm. As Mark Johnson argues, understanding music in terms of bodily movement is a kind of non-linguistic metaphor that informs and constructs perception and experiences.[5] Looking into metaphors relating rhythm to bodily movement in urban music can reveal how rhythm can establish or stress important urban qualities.

A good example of an urban 3/4 rhythm is *Fable*'s "Oakvale," which I discussed in Subsection 3.4.3. This cue bridges the gap between forest and town as the otherwise typical forest cue features a distinctly urban rhythm. The downbeats in this cue are firmly played by double basses using pizzicato articulations, and the second and third beats are played by staccato violins and arco cellos that complete the chords. The violas provide the main melody in a clear pattern. The strings keep repeating the pattern of four bars shown in Transcription 4.3, with the main changes being the strings switching to an arco melody that accentuates downbeats and upbeats, and calm and subtle woodwind embellishments that keep developing. The ternary division creates asymmetry by juxtaposing one low and short downbeat with two higher notes with a smooth and descending legato motion in the cellos. The asymmetry and motion of the music hopping up and sliding down creates a sense of the music tipping over. This makes the music mobile and energetic without losing the steady and clear pulse; in other words, it makes the music danceable. Describing "Oakvale" as a waltz is fitting, and it is possible to contribute its elegance to associations with Viennese aristocratic culture. However, the elegant and danceable qualities are also intrinsic to the musical motions and

[4] Cf. Leman, *Embodied Music Cognition and Mediation Technology*, 103–6; Roholt, *Groove*, 2, 83–7, 98–100.
[5] Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding* (Chicago: University of Chicago Press, 2007), 235–62; Johnson, *The Body in the Mind*, xii, xv, xx, 28–30; Kamp, "Four Ways of Hearing Video Game Music," 71–2.

articulations, making interpretations of elegance and dance possible without relying on cultural connotations of Waltzes.



Transcription 4.3: rhythmic pattern in "Oakvale" (*Fable*).

Ideas of movement and energy can also be portrayed more intensely to establish a more bustling urban atmosphere, which happens in "Sunrise of Flutes" with the help of polymetre. As shown in Transcription 4.2, the flute melody starts in a 4/4 metre, after which it changes to a 3/4 metre in bar 5. Meanwhile, the low strings (F-clef) form sequences of three notes: crotchet–crotchet–rest starting halfway bar 1; and one of five notes: crotchet–crotchet–crotchet–crotchet–rest starting in bar 2. This forms a 3/4 metre in the strings from the start, and one 5/4 bar. This reorganises the high strings (G-clef) in groups as indicated with the beams. They function as upbeats before the first low string note of each sequence, and as backbeats to the others. Alternatively, the high strings can be interpreted as downbeats against which the bass and flute melody syncopate. In this seeming disarray, the repetitive perfect consonances in the strings provide a solid drone that helps to stabilise the music. The juxtaposition of a rigid, unyielding foundation and tumultuous polymetre creates a controlled chaos. Like I noted before, the rigidity forms an enabling equivalence with regimented life and urban buildings, and the tumult with the behaviour of the non-player characters. Consequently, the music can complement the towns and cities with an almost mechanical bustle to the medievalist urban life.

4.4 Applications of Medievalist Ensembles and Romantic Orchestras

The typifying modes, intervals, and rhythms of towns and cities in medievalist RPGs come to fruition through particular (combinations of) instruments. Brass instruments, percussion, woodwinds, plucked and hammered strings, bowed strings, and choirs are commonly employed to highlight central medievalist urban aspects. Even though the applications of these instruments have strong signifying functions that rely on generic conventions, they do much more than that. I illustrate recurring applications of these instruments and their world-building capabilities through several short case studies.

4.4.1 Fanfares in *SpellForce 3*

An effective musical method of situating a game in an urban environment is the use of extensive military fanfares. The combination of brass, percussion, a rigid metre, and some graceful bowed string accompaniments is a recurring trope in medievalist cities. It establishes a link to the past, where parades and public announcements were inseparable from brass ensembles. But besides these very practical connotations of the Middle Ages, fanfares have a number of intrinsic musical qualities that make them suitable for the representation of the urban. In *SpellForce 3*, the cue "Greykeep" features a bombastic fanfare to underscore exploration of the large stone city of "Greyfell" (Image 4.3), home to a massive fortress called "the Greykeep."

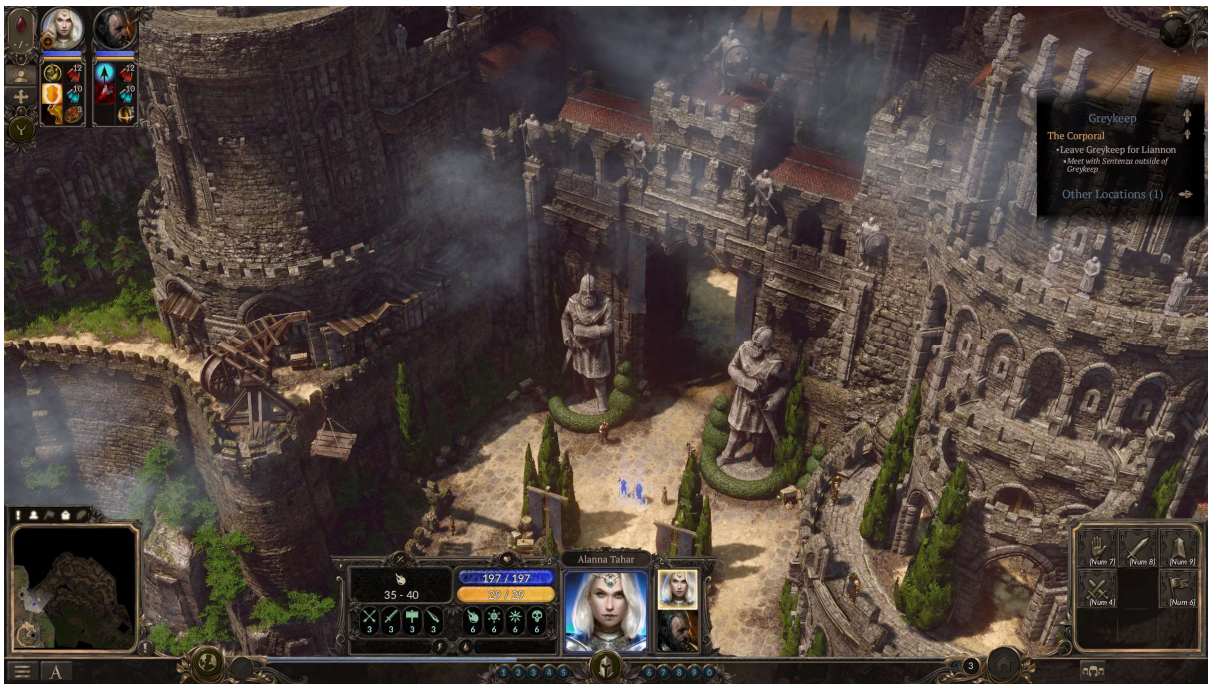
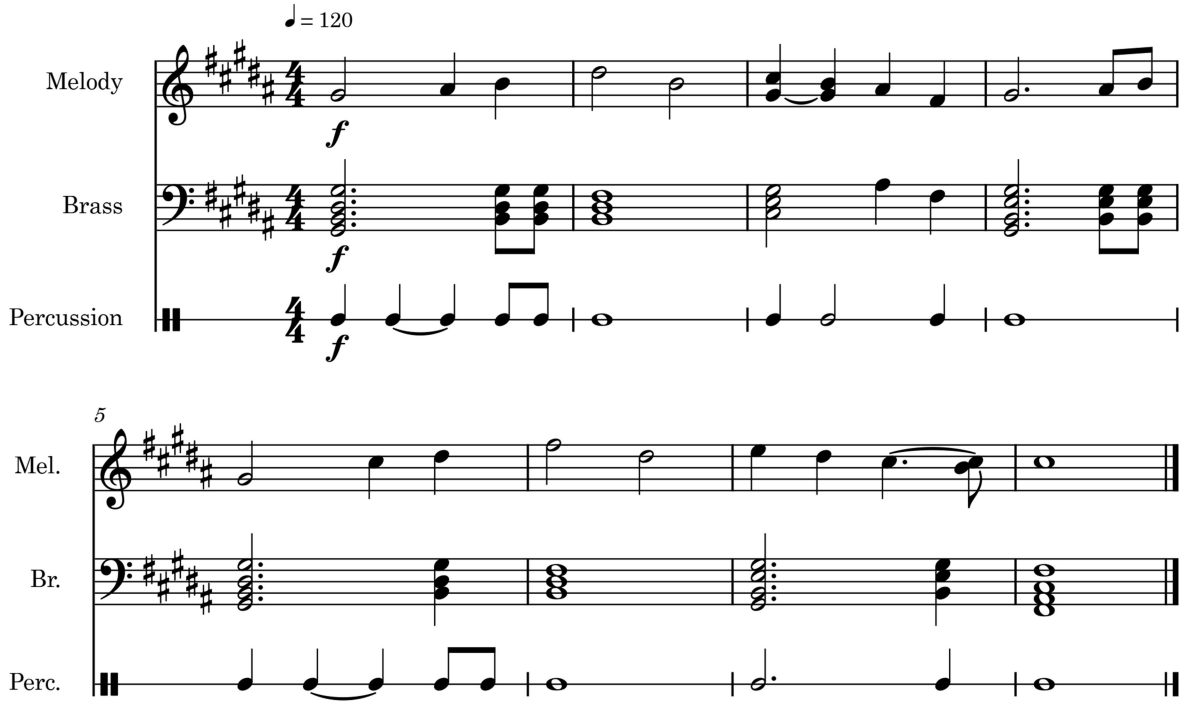


Image 4.3: Greyfell (*SpellForce 3*).

The loud brass instruments are prominent in this cue, and the high dynamics expose their rough timbres. The horns and trombones play narrow chords in their lower and middle registers (shown in the F-clef in Transcription 4.4), maximising their dark and powerful tone colours. The tuba plays a deep and strong bass in its lower and middle registers beneath these chords (the lowest notes in the transcription). The denseness of the low chords muddies the sound. This provides a strong contrast with the clear and bright timbres of the melody (shown in the G-clef), performed by a rough trumpet and smoother bowed strings. A powerful male choir and warm and lyrical bowed strings double this melody an octave below. The overall resulting sound is imposing, but not harsh. This provides a link with the imposing yet civilised visual environment. The bright timbres work together with the melodic contour to make the music uplifting: the melody slowly rises with the help of small skips to climactic heights, which briefly hang on notes with dominant functions (the fifth and seventh scale degrees of G-sharp Aeolian, shown in bars 2 and 6 respectively). Afterwards, the melody gently descends in stepwise motion. The dark timbres of the brass create a sombre and weighty contrast to the bright and uplifting music. The key reinforces this, as the Aeolian mode is rather neutral and slightly dark.



Transcription 4.4: reduction of the beginning of the fanfare in "Greykeep" (*SpellForce 3*).

The seriousness of the "Greykeep" is further strengthened by the rigid rhythm, in which percussion and the main melody play important roles. The percussion consists of a snare drum (notated in the transcription), which is doubled by a bass drum and timpani on downbeats and upbeats. The percussion accentuates the steady 4/4 pulse and the firm pace laid down by the melody, which consists of primarily minims and crotchets evenly distributed across strong beats. This melody is played in unison by numerous instruments, including a choir. The unison melody, the protruding human voices, and the rhythm make the music sound like a march. Two main enabling equivalences between the music and the urban can result from this march-like music: the human element and an almost mechanical routine.

4.4.2 The Graceful Orchestra in *SpellForce 3*

"Greykeep" also features elegant contrasts to the fanfare to provide more elegance to the city of Greyfell. These contrasting parts of the cue feature the same thematic material as the fanfare section; however, they are performed differently. The graceful sections are performed by a mixed choir and bowed strings, and brass is used only sparingly. The mixed choir provides the harmony, and soprano voices sing the melody. Rich bowed strings double both the harmony and melody. The chords are dense and rather low, which in combination with the lush timbres of the choir and strings sound sonorous and warm, but also dark. The melody, on the other hand, is bright and clear. The dark timbres in the harmony and the bright timbres in the melody create melancholy when taken together. This effect is enhanced by the relatively slow pace and soft dynamics of these sections. The elegant parts are around 85 bpm compared to the 120 of the fanfare. Especially in combination with the emphasis on minims and crotchets, this sounds rather slow. The soft dynamics slightly darken the timbres of the strings, and the few occurrences of brass sound mellow at these dynamics. Additionally, the sorrowful sound is emphasised by the higher focus on descending melodic lines, which is also different from the more hopeful ascends in the fanfare.

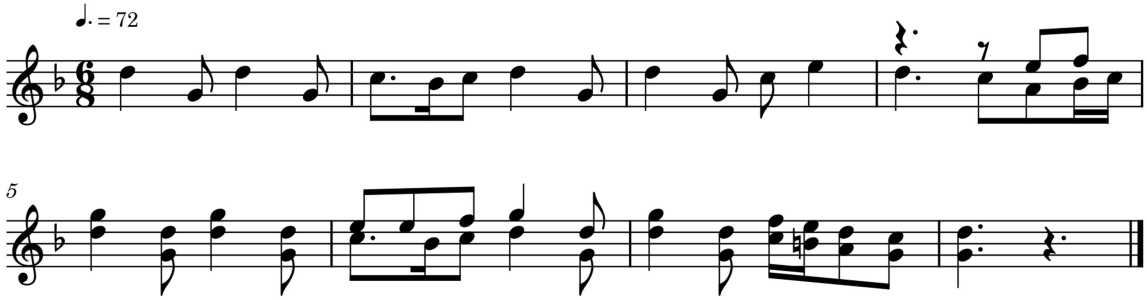
Like the lush and graceful sections in "Greykeep," smooth and rich orchestral sounds are the standard in most medievalist RPGs for providing a musical basis for urban settings (like the bowed string doublings in the fanfare of "Greykeep") or for providing contrast within the urban settings (like the contrast of the elegant choir and strings to the bombastic fanfare). Lush orchestral music can invoke conventional associations to situate the games in the Romantic ideals of the medievalist genre, but it also lends itself to graceful scoring, providing an idealised fantasy element to the hardships of the Middle Ages. In the case of

urban environments, the sophisticated sounds of an orchestra can make rough towns appear more idyllic, and rigid cities more sophisticated.

4.4.3 Period Woodwinds in *Kingdom Come*

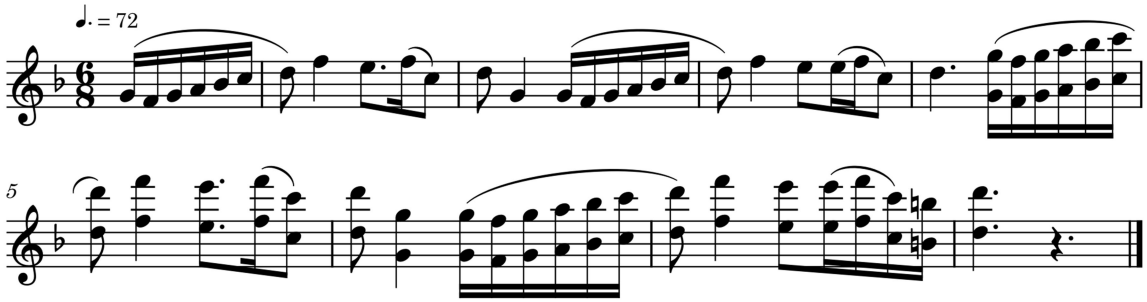
Image 4.4: the streets of Rattay (*Kingdom Come*).

Small ensembles consisting of period or folk instruments are not uncommon in medievalist RPGs. They often make appearances as diegetic music, such as a group of musicians playing in a tavern. However, period instruments can also make up a nondiegetic orchestral score or part of it. *Kingdom Come* is one of the games where many urban cues feature mainly or even exclusively period instruments. The cue "Town (Atmosphere 16)," for example, features shawm and recorder melodies accompanied by various hand-held percussion instruments and faint but warm bowed strings in the background. This cue is swift and energetic. It features a 6/8 rhythm where hand drums provide a clear and steady pulse on the first and fourth beats. As shown in Transcription 4.5, the shawm melodies further emphasise these beats, and they also draw attention to the third and sixth beats to highlight the ternary character of the rhythm and add an energetic skipping quality. This skipping is further reinforced by dotted notes and semiquavers (e.g. bars 2 and 6).



Transcription 4.5: main shawm melody in "Town (Atmosphere 16)" (*Kingdom Come*).

The woodwinds that make up the main melodic material have varied timbres, and are employed in alternation to provide contrasting material. The shawms are nasal and reedy, and mainly jump up and down with melodic perfect fourths and fifths. These instruments also play these intervals harmonically. The crudeness of the shawms is further bolstered as they articulate each note separately. The rough and crude sounds emphasise the rustic appearance of the slightly crooked, hand-crafted houses and the dirt roads (see Image 4.4); applying Nicholas Cook's multimedia model, the music complements the overall crude appearance of *Kingdom Come*'s towns. The recorders, shown in Transcription 4.6, are mellow and airy, and play smooth, stepwise flourishes that are slurred together. Melodic perfect fourths and fifths are still present, but not as prominent. The rhythmic accents of the melodies also shift over the unchanging percussion, with more emphasis on the second beat of each bar. The smoothness of the recorder melodies provides a more elegant musical contrast to the shawms, highlighting the more sophisticated aspects of the towns they underscore.



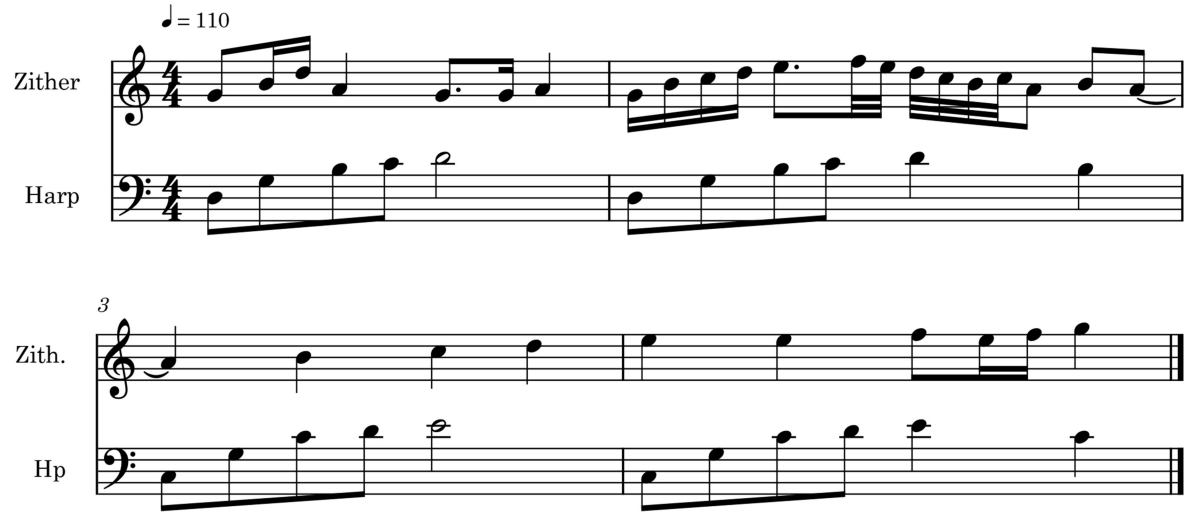
Transcription 4.6: main recorder melody in "Town (Atmosphere 16)."

4.4.4 Plucked and Hammered Strings in *Medieval Dynasty*

Court minstrels, travelling bards, and tavern bands are recurring medievalist tropes, and the lute is an especially popular instrument for representing these musicians. Seeing and hearing

plucked instruments can therefore quickly and effectively situate a gamer in a medievalist world. Moreover, these instruments have come to signify culture, whether highbrow or lowbrow. Diegetic musicians are no rarity in the genre.[6] However, plucked and hammered string instruments also feature abundantly in nondiegetic scores. They can sonically represent the Middle Ages and fantasy worlds, and not just in terms of cultural contextualisation.

As I explained in Subsections 3.1.3 and 3.4.1, the quick and instantaneous attacks of instruments like plucked and hammered strings can infuse the music and the environment it underscores with whimsy and bustle, if they are employed in certain ways. In forest environments these instruments tend to be placed in forest schemas,[7] adding caprice and activity to the forest in which they sound. In urban environments, the bustling quality of the music aligns with the city life of non-player characters. Plucked and hammered string instruments sometimes provide steadily arpeggiated chords against which other instruments play countermelodies, other times they might form the main melodic material, or both accompaniment and melodic material as illustrated in Transcription 4.7. Similar to urban rhythms, the applications of plucked and hammered string instruments in the towns and cities of medievalist RPGs present the juxtaposition of the steady and the active that permeates urban themes.



Transcription 4.7: excerpt from "Springtime" (*Medieval Dynasty*), showing simultaneous applications of different string instruments.

[6] Cf. Lamb and Smith, "From *Skyrim* to Skellige," 79–100.
[7] Cf. Section 2.2; Huron, *Sweet Anticipation*, 147–67, 204–5.

The transcription of the cue "Springtime" from *Medieval Dynasty* shows a solid foundation provided by harp arpeggios, against which an active melody plays. Not only does the harp establish a steady and walkable 4/4 pulse (note the connection to forest music), it also creates harmonic predictability: the harmonies of the cue are exclusively alternating G major and C major arpeggios. The zither-like melodies are active and bustling, but also heavily quantised. This becomes especially clear when hearing fast runs like the ornament in bar 2 (Transcription 4.7). As a consequence, the bustle is very mechanical. The (counter)melodies played by (also quantised) bowed strings and woodwinds are calm, and mellower in timbre than the zither-like instruments. This places the music in between forest and urban environments. The timbres of some plucked and hammered string instruments, including the zither-like instruments in "Springtime," can be coarse and sharp; such timbres can reinforce or add crudeness to medievalist towns and cities. The melodic, rhythmic, and timbral applications of plucked and hammered string instruments can therefore create enabling equivalences with some of the main medievalist urban themes, developing the gameworld beyond providing cultural contextualisation.

4.5 Shaping the Towns and Cities of Medievalist RPGs

The instruments, their combinations, and the musical techniques as discussed above reflect medievalist RPG conventions. Small ensembles that sound like they come straight from the medieval streets signify the Middle Ages and medievalist genres, and sweeping orchestras reinforce the Romantic and cinematic values of medievalist genres. Because of the foregrounded roles of genres and signification, it is no surprise that conventional and semiotic approaches tend to gravitate towards studying the roles of music in generic and historical contextualisation. By focusing on the compositional techniques of urban cues, different ways in which music can complement urban gameworlds stand out: modes create a sense of disinterestedness, wind instruments with rough timbres (such as brass and shawms) play perfect consonances to represent the sturdy architecture and the crudeness of the medievalist urban regions, active plucked and hammered string melodies juxtapose with steady percussion to create bustle, and lush and smooth orchestration provides an element of sophistication to the towns and cities of medievalist RPGs.

Chapter 5. The Music of Magic: Fables, Witchcraft, and Miracles

Mythology and mysticism are some of the central themes in practically any medievalist RPG, and they can take shape in a number of ways. One of the most common is the presence of magic: in many games, player and non-player characters alike can cast a wide variety of spells. Magic wielders come in many forms, including wizards with pointy hats, monstrous witches, sorceresses with political positions at royal courts, High Elves, goblin artisans, and countless more. Magic can also apply to a ubiquitous and intangible presence of a supernatural force affecting all aspects of a gameworld and its inhabitants. In the lore of many games, spellcasters wield magic by channelling this supernatural force. Mythology and mysticism can be taken far, making up literal fairy tale worlds and mythical locations riddled with mythical creatures. Conversely, mythology and mysticism can also appear as subtle atmospheres, indicating the spiritual, the intangible, or the incomprehensible more broadly. What all these manifestations of mythology and mysticism have in common is that they are about "magical" feelings and atmospheres; in other words, they are about experiences of the miraculous, the supernatural, and the ethereal, and have close connections to spellcraft and incantations.

Magic can largely be thought of as a mood; understanding magical atmospheres only in terms of scenery, objects, gameplay mechanics, and lore does not fully capture the position of magic in medievalist gameworlds. Music can play an invaluable part in fully conveying the intangible ideas of "magic" to the gamer. In this chapter, I analyse how the scores for medievalist RPGs make palpable the ethereal magic that pervades their gameworlds. With the help of case studies, I examine recurring musical techniques relating to chromaticism, timbre, and stasis. As these techniques have become tropes, sometimes even to the extent of clichés, I investigate what makes specifically these techniques effective for conveying sensations of magic.

5.1 Chromatic Magic

Magical music is almost unimaginable without foregrounded chromatic gestures in otherwise diatonic contexts. Chromaticism can appear in harmonic progressions, long melodic themes, or short motifs. Most often a combination of these appears in magic cues, and cases without

any foregrounded chromaticism are far and between. The pervasiveness of chromaticism in medievalist multimedia genres indicates that it is perhaps the most prominent convention for creating magic through music. Depending on how exactly chromaticism is applied, the techniques can easily border on clichés. However, I argue in this section that chromatic gestures work especially well for conveying ideas related to mystery and magic due to several intrinsic operations of sound and music.

5.1.1 Harmonic Chromaticism

As I have illustrated in the previous chapters, diatonic and especially modal melodies seem to make up a large portion of exploration music in medievalist RPGs. These pitch collections have specific qualities that work well with the environments that they underscore. In order to effectively build those gameworlds, the music in principle tends to stick to the pitch collection it features. Obscuring a scale or key with notes from largely unrelated pitch collections would obfuscate the typifying attributes of any one pitch collection, and add different qualities. This is precisely what chromaticism makes use of in mystical soundtracks.

The harmonic progressions in medievalist magic cues often feature local chromatic mediants. There are a number of these progressions, and as Erik Heine explains in the context of film music, they have specific connotations. He has named them according to their conventionally most frequent applications, such as "Magic," "Hero," and (Darth) "Vader."[1] In a nutshell, local chromatic mediants are two subsequent triads with roots a third apart, one of which is borrowed from a parallel key. For example, an alternating C major chord and E major chord are two major triads with roots separated by a major third, which Heine calls the "'Magic' motion" because of its regular use in fantasy and science-fiction.[2] All types of chromatic mediant progressions that Heine discusses share particular musical structures: the two chords have one common note that remains in place whilst the other notes shift stepwise. At least one of them shifts by a semitone, and the chord quality (major or minor) is preserved. A chromatic mediant is a type of chromatic transformation, which is a stepwise shift to a non-diatonic chord.

What makes chromatic mediants sound the way they do can be explained with their specific structural elements: the combination of borrowing a chord from another key, the lingering common note, and the stepwise and chromatic shifts to other notes. The fact that these progressions use chords from different diatonic pitch collections subverts a clear scale

[1] Erik Heine, "Chromatic Mediants and Narrative Context in Film," *Music Analysis* 37, no. 1 (2018): 103–32.
[2] Heine, "Chromatic Mediants and Narrative Context in Film," 108–14.

and its specific qualities. In Huron's terms, the progression moves beyond the schema of Western diatonics. Progressions like these can be surprising at first, because chromatic transformations are usually a relatively small part of a medievalist game score. But a more important consequence of this move beyond diatonicism as it is usually applied in magic game scores is that the music is not functional in the sense of creating and resolving overarching structural tension: medievalist games often alternate chromatic transformations like chromatic mediants throughout magic cues, avoiding a clear tonic centre. This means that tension and resolution work differently in many magic cues than in the other types of cues.

The harmonic progressions in the magic cues of medievalist RPGs typically work on a local level, from chord to chord. A chord, which need not have any tension, resolves to the next chord through a chromatic transformation. The stepwise shifts between notes create a sense of continuation and progression, even if not towards a clear harmonic destination as dominant–tonic structures would. Combined with a lingering common note between chords, the stepwise shifts of chromatic transformations enable effortless movement to chords from distant keys, subverting diatonic structures and weakening ideas of any single tonic centre. The movement between chords rests on stepwise voice leading and ignores structural tonal relations between keys. Consequently, the harmony is non-functional (using Western vocabulary). An alternative structural interpretation is that subsequent chromatic transformations are tonic prolongations; magic cues sometimes stay within such a tonic realm in their entirety. A sense of progression—although present—is subtle, as it is created by moving through chords that have no structural tension. In other words, the music does not move away from the tonic realm to create tension, but instead explores variations on the tonic. Additionally, there is a tendency to preserve chord qualities (major or minor) during chromatic transformations (and especially chromatic mediants). This makes the music even more static.

The overarching structural and functional stasis on the one hand, and the subtle and local tension and resolution created by slow, stepwise shifts on the other hand can create drifting and lingering sounds. Chromatic transformations can also create feelings of wonder and mystery as chords leave the schema of diatonicism (established by the majority of music in almost any medievalist soundtrack) to move to distant key areas. These feelings that chromatic transformations can evoke can be explained using musical characteristics that all chromatic transformations seem to share. Therefore, they are not exclusive to chromatic *mediants*. Furthermore, the overlapping qualities of all types of chromatic transformations

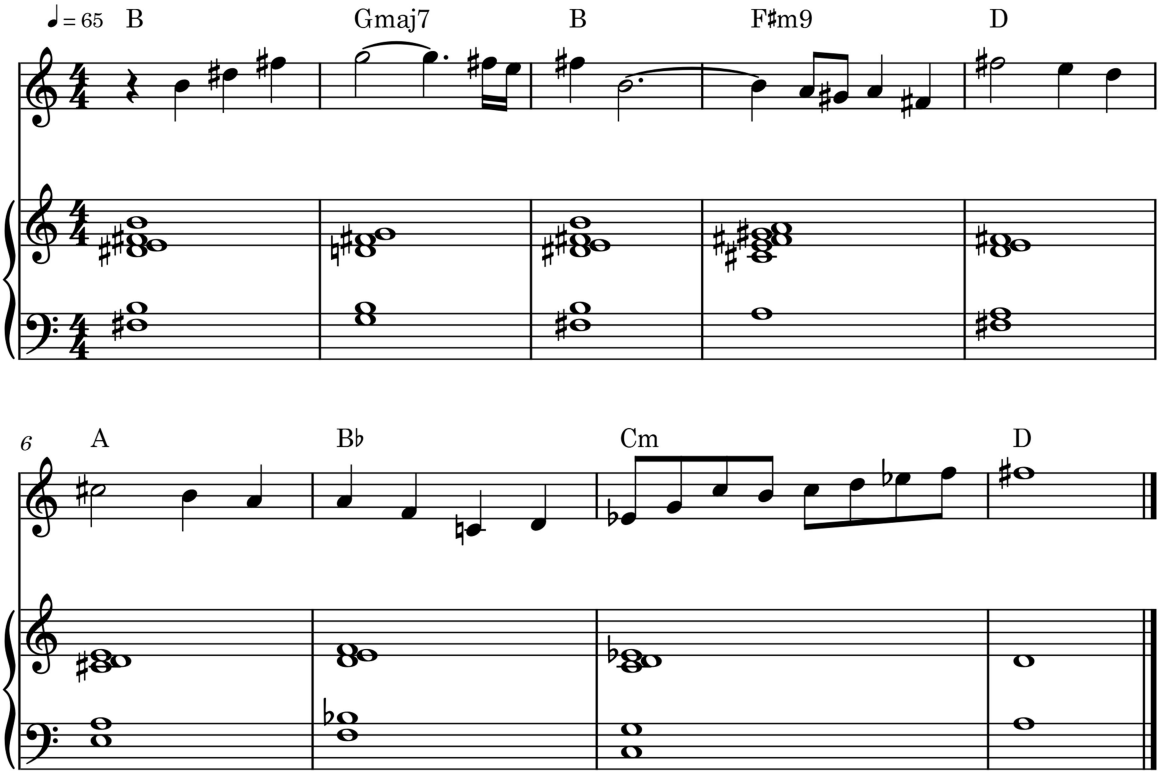
that I described fit in one way or another with each of the categories specified by Heine (including "Magic," "Hero," and "Vader"). This suggests that all chromatic transformations can add to specific meanings like "magic," even if some transformations have more specific connotations of those meanings than others. The multimedia context in which a chromatic transformation sounds influences which exact meanings it brings to the surface, and so it can specify magic in a number of medievalist settings.

Image 5.1: a colourful glade in Teldrassil (*World of Warcraft*.)[3]

An example of the centrality of consecutive chromatic transformations to indicate magic is the music that sounds in the forests of Ashenvale and Teldrassil in *World of Warcraft*. These locations are closely connected to the Night Elves, which are beings with a long and rich history in magic. The colourful wilderness of Ashenvale is the ancestral homeland of the Night Elves, and many Night Elves live in Teldrassil (Image 5.1)—a magical island that is essentially one massive tree. One of the cues (which does not appear on the official soundtrack release as a separate piece, so I will simply refer to it as "Teldrassil" here) consists almost exclusively of chromatic transformations. In this cue, "Teldrassil," a clarinet-like synthesiser arpeggiates a new chord in each bar and is accompanied by faint block chords in the background. Voice-, horn-, and woodwind-like synthesisers reinforce the chords even more in a slow melody. Transcription 5.1 shows this cue's opening bars, in

[3] This image was taken from "Teldrassil," WoWPedia, accessed 15 June, 2021, https://wowpedia.fandom.com/wiki/Teldrassil.

which I reduced the clarinet arpeggios and background chords into block chords to clarify the subsequent chromatic transformations. The chord names are simplified for clarity, but numerous notes are added as passing notes and sometimes provide brief suspensions. I included the added notes in the transcription as they play a part in connecting subsequent chords, which I explain in the next paragraph.



Transcription 5.1: reduction of an excerpt from "Teldrassil" (*World of Warcraft*).

"Teldrassil" seems to open in B major, which is reaffirmed in the melody with a slow and accentuated broken B major triad (Transcription 5.1, bar 1). However, the music already leaves the key of B major in the next bar, as a G major seven chord is borrowed from the parallel minor key of B. It is approached by leaving a B and F-sharp in the harmony in place, as another F-sharp (in the bass) and the D-sharp resolve stepwise to G and D respectively. This transformation is a chromatic mediant and is the "Magic motion" in Heine's terms. The same process happens in reverse as the harmony moves from G major to B major in bars 2–3. The transformation from B major to F-sharp minor in bars 3–4 is a variation on the chromatic transformation technique, as most notes move stepwise or linger. This is made possible by the added notes to both the B major and F-sharp minor harmonies. The note E is added to both chords to form a bridge between them, and the B in the melody is held over the F-sharp

harmony. The added notes not only enable extra possibilities for linking distant chords together, but they also create dissonance and thus tension within each chord. Therefore, no chord is a true resting point, which subverts diatonic functionality. The combination of the added notes and the voicing of the background block chords, clarinet arpeggios, and melody create cluster harmonies. The resulting dissonances are either resolved stepwise on a local, chord-to-chord basis, or linger in place until they are. Consequently, the music drifts around with no clear goal, as dominant–tonic structures would. The whole cue works in this way: from bar to bar the slightly dissonant cluster chords change through chromatic transformations or similar techniques. The subtle but constant tension creates a mysterious atmosphere, and the deviations from the diatonic schemata of the rest of the soundtrack or Western music more broadly can create a sense of wonder.

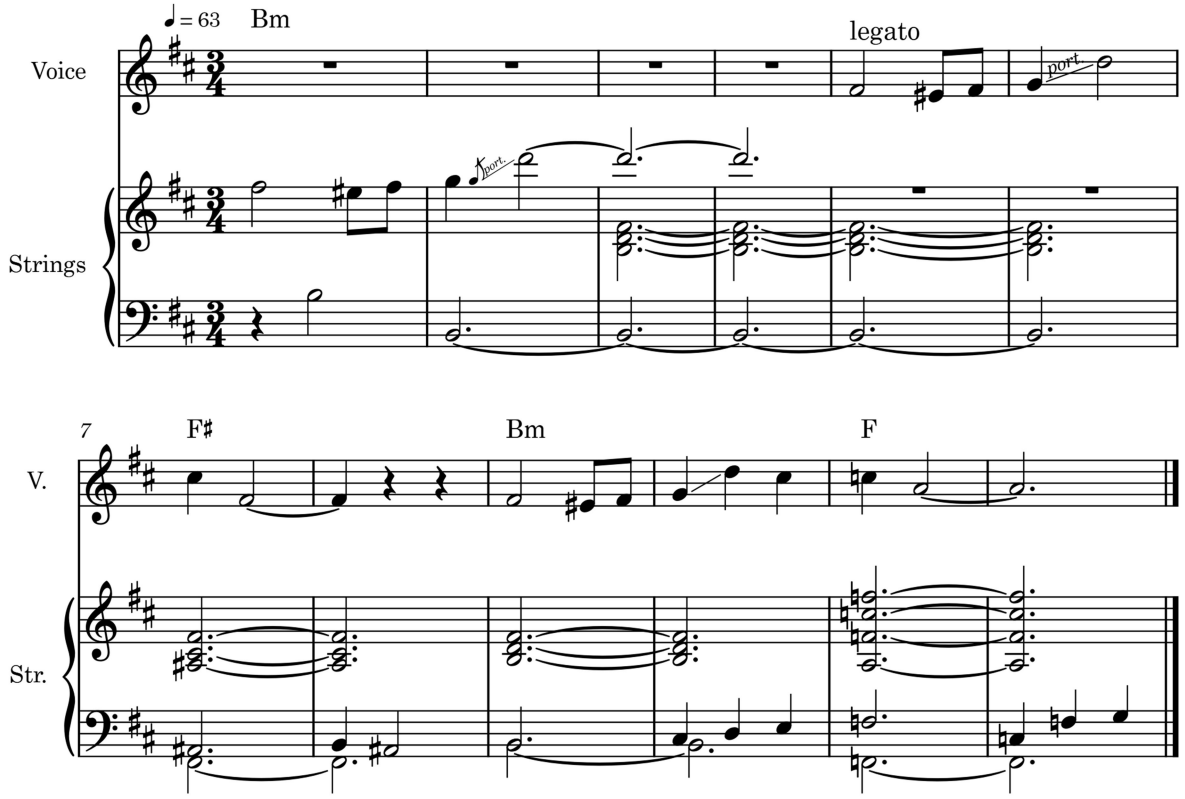
5.1.2 Melodic Chromaticism

Medievalist RPGs employ chromaticism not only harmonically in magic cues, but also melodically. A melody with chromatic embellishments or alterations can ease chromatic transformations in the harmony and work together with the harmony to weaken diatonic structures and their functional progressions. An additional and more unique asset of melodic chromaticism lies in the applications of its inherent dissonance: chromatic scales are made up of consecutive semitones, which sound dissonant because of their position in the harmonic series. Chromatic melodies can make use of this dissonance in combination with chromatic transformations or diatonic progressions.

Image 5.2: the monastery of La Valette Castle (*Witcher 2*).

"Sorceresses" foregrounds chromatic dissonance in the melody, and this cue sounds in the monastery of La Valette Castle in *The Witcher 2: Assassins of Kings* (Image 5.2). A singing female voice cuts in upon mention of Triss Merigold in the dialogue—a powerful sorceress and one of the main non-player characters in the game—emphasising the link between the sorceress and the game's main chromatic motif: F-sharp–E-sharp–F-sharp–G sounds over a B minor triad, which is the tonic of this cue (bars 1–2 of Transcription 5.2, repeated in bars 5–6 and 9–10). Dissonance occurs in the semitones of the melodic line itself, but also harmonically as the E-sharp forms an augmented fourth over the B. In bars 10–11, the now chromatically descending melody D–C-sharp–C prepares a chromatic transformation to an F major chord positioned a tritone away from B. This is further supported by the primarily chromatically ascending string line C-sharp–D–E–F. The dissonances created through chromatic gestures sound in a mainly diatonic context: the melody is not exclusively chromatic, and the cue opens with a i–V–i progression complete with a leading note resolving to the tonic. Consonance and dissonance remain balanced on the whole. Combined with the calm tempo and rich sounds of the string chords, the cue is not downright evil or scary, but rather slightly unsettled and uneasy. This helps to add mystery and magic to the monastery, atmospheric qualities that are not clear in the visuals by themselves (see Image 5.2). Important for the world-building capabilities of the music in this case is the motivic application of the chromatic melodic line and its narrative connection to Merigold. However,

the intrinsic musical qualities of the chromaticism lend themselves to the mystery and unease of the motif, and enrich the environment with a magical atmosphere.



Transcription 5.2: opening bars of "Sorceresses" (*Witcher 2*).

In the right musical context, a more extreme application of chromaticism can result in a clumsy and possibly comical soundtrack. This is the case in the beginning of the cue "Witchwood," which sounds in the misty forest region of the same name in *Fable*. Similar to "Sorceresses," the main harmonic structure of "Witchwood" revolves around alternating i and V chords, creating a diatonic functional foundation. In both cues, chromatic gestures on top create dissonances that undermine the diatonic sound and add mystery. However, where the melodies in "Sorceresses" are largely diatonic with chromatic motifs and embellishments, the melodic material in "Witchwood" is primarily chromatic. Furthermore, the melodies in "Witchwood" are not aimed at preparing any chromatic transformations. The focus instead lies on awkward dissonances within a simple but robust harmonic context.

As shown in bars 1–4 of Transcription 5.3, the cellos open "Witchwood" with a chromatic descent that leads into an F-sharp dominant seven–B major—or V7–I—progression. This establishes the dichotomy between chromaticism and diatonicism right away. The music modulates from B major to E minor from bar 4 to 5, after which the bassoon

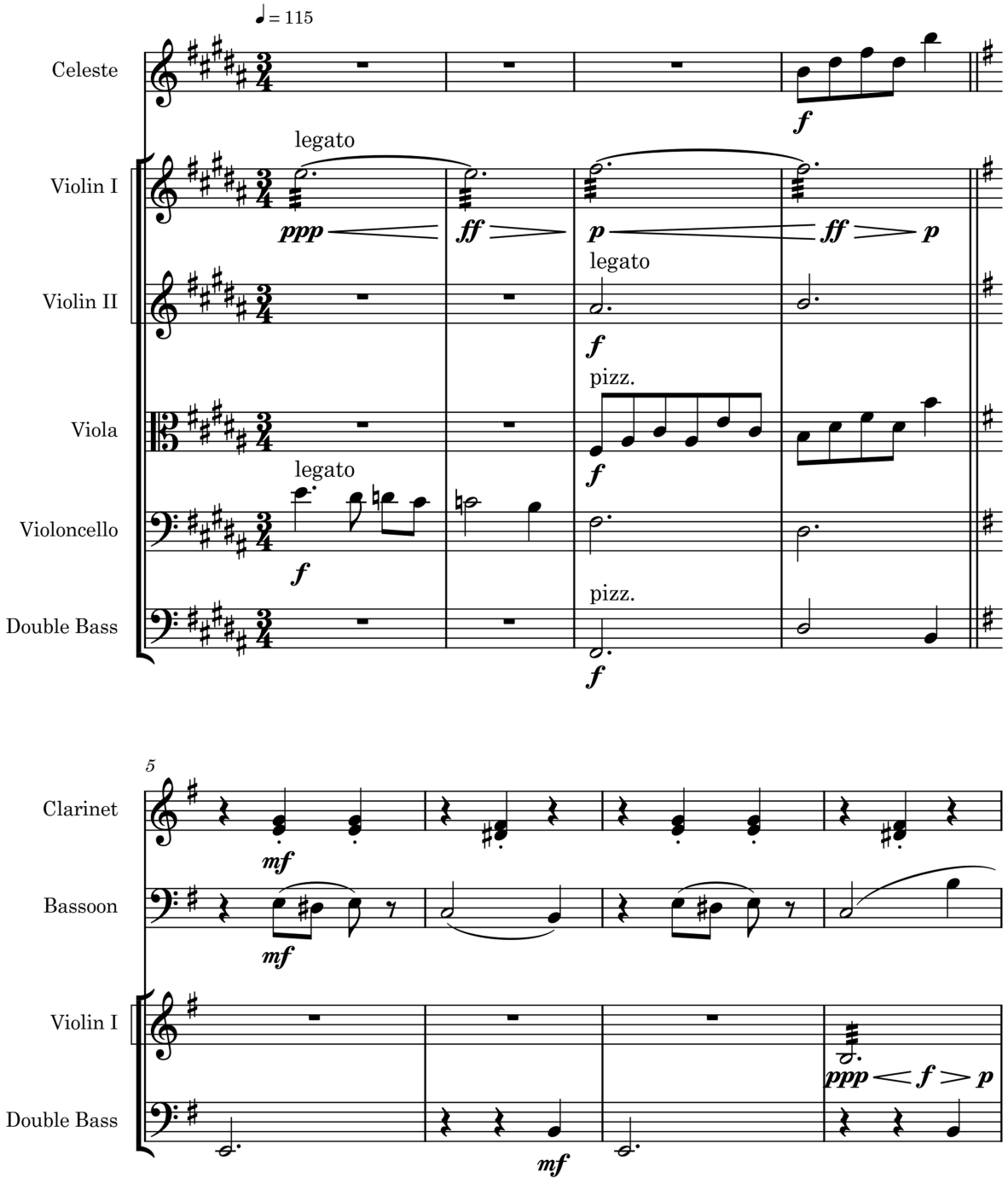
starts playing the main melodic material. This consists of exclusively small steps, most of which semitones: in bar 5 the bassoon alternates an E and D-sharp, and in bar 6 it plays a C followed by a B. The D-sharp in bar 5 forms a dissonant major seventh in the E minor chord performed by the double basses and clarinets. The C in bar 6 first creates the sound of a diminished triad with the D-sharp and F-sharp (enharmonic to a C diminished triad) in the clarinets, after which it resolves to a consonant B major triad. The bassoon melody is repeated in bars 7–8, after which the flute and oboe take over. They perform the same melodic material in bars 9–12, but with several variations. The first part of the repeated melody is transposed, resulting in the semitone alternation of B–A-sharp –B in bar 9, which moves with a semitone to the next minor second C–B in bar 10. The A-sharp creates a tritone with the E in the double basses and bassoon, forming a diminished triad as an embellishment of the E minor triad.

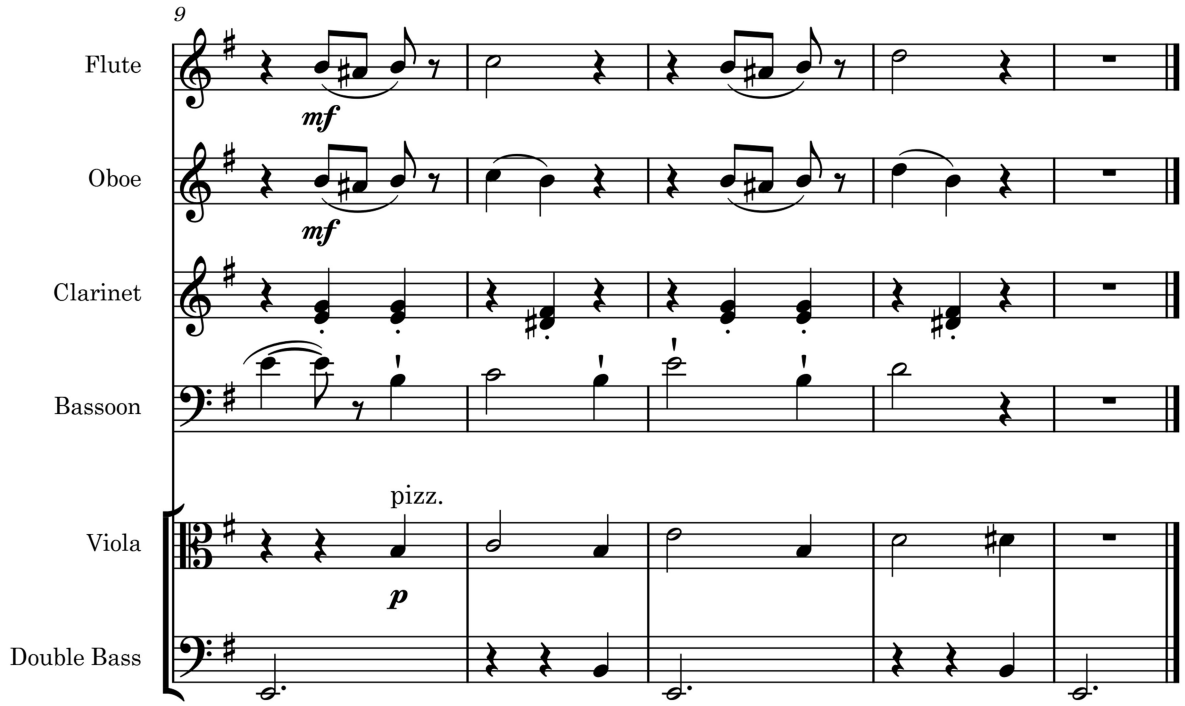
In bar 10, the oboe not only plays the *melodic* minor second C–B, but also a *harmonic* minor second against the flute and bassoon that sustain the C. This can create a clumsy sound, as the oboe slips away from the still lingering C. It is also rhythmically early compared to the C–B motion in the bassoon in bars 6 and 8: the B comes on the third beats of bars 6 and 8, but already on the second beat of bar 10. The oboe's early B in bar 10 anticipates the B on the third beat in the bassoon, violas, and double basses, creating an echo that emphasises the deviation from the earlier bars. Because of this, the oboe might well be perceived as blundering, at least until the same thing is repeated with a variation in bar 12. The clumsy and knockabout effect is further enhanced by the descending staccato motions: chromatic gestures are most often downwards, as if the music is literally slipping away. This has to do with understanding pitch in terms of physical verticality,[4] and the effect is especially strong in bars 10–11. In these bars, the music drops with a thud on each beat, as if it were tumbling down a jagged slope. The music achieves this with the pizzicato and staccat(issim)o articulations and the descending C–B in the oboe, followed by the deep thuds of the descending B–E created by double basses plucking the strings. The cross-modal effect can be strong, as the clumsiness and tumbling are emphasised musically in multiple different ways; namely, in the melodies, rhythms, and timbres.

"Sorceresses" and "Witchwood" illustrate very different types of magical music that can result from applications of chromaticism. In *Witcher 2*, chromatic accents unsettle a largely diatonic cue by adding dissonance and non-diatonic chords. One of the main qualities

[4] Cf. Johnson, *The Body in the Mind*, xv. See also my discussion of this in Section 2.3.

this music can evoke is mystery, and this relates to magic in the sense of spellcraft, supernatural powers, and the way sorceresses are portrayed in the world of the *Witcher* as powerful and mysterious women. “Witchwood,” on the other hand, exploits the clumsy side of chromaticism and its dissonance: it is not so much about creating otherworldly sounds as it is about creating awkwardness. This relates to a different kind of magic as I explain in the next section, which is in line with fairy tales and peculiar mythical creatures.





Transcription 5.3: opening bars of "Witchwood" (*Fable*). The celeste sounds an octave higher than written.

5.2 Outlandish Orchestras

Instrumentation, playing techniques, and timbre play a substantial role in musically building magical gameworlds. Even though rich orchestral sounds still provide the foundation for many of these scores, magic cues also emphasise alternative and more extreme timbres. As is the case with chromaticism, different applications of instrumentation and timbre can convey varying types of magic, including the awkward, the eerie, and the otherworldly. The applications of instruments that help construct magical settings are often closely intertwined with other musical factors like melody and harmony, and these combinations are the focus of this section.

5.2.1 Awkwardness in "Witchwood"

Chromaticism and rhythm are not the only musical techniques that make "Witchwood" sound so clumsy and magical. The particular playing styles and the resulting timbres of the cue's instruments significantly enhance the awkward sound. The timbres in "Witchwood" are mostly rough: the oboe, clarinets, and bassoon sound "reedy" (using Adler's words) and buzzing.[5] They also often have deep sounds. Additionally, the pizzicato notes of the double

[5] Adler, *The Study of Orchestration*, 195, 199.

basses are deep and heavy. The pizzicato playing by the violas and double basses, and the staccato playing by the clarinets and later also the bassoon add an abruptness to their style. Juxtaposing this to smooth legato gestures emphasises the clumsiness of the rough and abrupt music. The legato melodies themselves are also interrupted as they are divided into two separate articulations: for example, the E–D-sharp–E in bar 5 and the C–B in bar 6 are two separately slurred parts of one melody (Transcription 5.3). Furthermore, these legato slurs sound deflated, as they always appear to descend.[6] The bassoon's legato structure of a longer minim followed by a shorter and descending crotchet in bars 6 and 8 also creates a dragging sound. All these playing techniques and timbres in combination with the pervasive dissonance make the music cumbersome: it staggers with deep and heavy movements.

"Witchwood" features musical effects that bring the music from merely being clumsy to being magical as well. The cue begins with a tremolo swell in the violins to accompany the chromatic descent in the cellos (see bars 1–2 of Transcription 5.3). The tremolos in bars 1–4 and 8 create an unstable and buzzing sound, and the swells bring the effect from the background to the foreground and back. This combination creates an agitated sound, but because it is used sparingly it adds an element of unease to the music rather than making it sound altogether hostile. Another sonic effect that is employed in "Witchwood" is the shimmering celeste in bar 4, which sounds an octave higher than written. It doubles the pizzicato arpeggio of the violas two octaves higher, creating a bright and ringing shimmer. This is one of few ascending motions in the cue, and this brief musical flourish can form an enabling equivalence with the visual effects of magic.[7] Like in most medievalist RPGs, magic in Fable is visually presented as colourful light and glowing particles. The music and visuals are both bright and therefore have a quasi-synaesthetic connection. Additionally, the rising celeste notes have instantaneous attacks and lingering decays, which bear iconic resemblances to the spatial and temporal characteristics of magic particles: in Image 5.3, for example, glowing particles float gently around and above a Wood Nymph; these particles materialise suddenly, and they linger for a while before slowly fading away. The intermittent musical effects add whimsy and mystery to the otherwise awkward and somewhat comical soundtrack.

[6] Even in bar 8 (Transcription 5.3), where the bassoon technically ascends from C to B, it sounds as if it descends. This is because of the B in the double basses two octaves below and the blurring of the deep timbres of the bassoon and double basses. This creates an overtone above the double bass that completes the bassoon's descending semitone. The ear is thus tricked into perceiving the higher B as a second bassoon that enters above the still descending bassoon, even if it is only one bassoon complemented by double basses as notated.
[7] Cf. my discussion of Nicholas Cook's enabling equivalence and quasi-synaesthesia in Section 2.3.

Image 5.3: a Wood Nymph summoning scorpions using colourful magic in *Fable*.[8]

Musical awkwardness is an interesting case of world-building, as it is not intrinsically magical. My observations regarding the use of chromaticism (Subsection 5.1.2) and instrumentation in "Witchwood" may seem more applicable in a discussion of narrative development or character building because of the abundant analogies to clumsy and comical movement. The Witchwood area in which the cue sounds is accessible after beginning a quest to find a character known as the Archaeologist. This character is a recluse and one of the few to study the ancient Kingdom of Albion. Given the connection between this quest, the Archaeologist, and the "Witchwood" cue, it is no stretch to consider the music as underscoring the narrative or the peculiar character. However, the cue sounds throughout the Witchwood gameworld whilst the quest recedes into the background. Moreover, the Archaeologist is still elusive at this point in the game; even though the music could foreshadow him, it does not directly underscore the character. Because of how "Witchwood" is integrated in the game as an exploration cue, it takes on the function of a world-builder. In the context of a misty forest in a medievalist RPG and magical musical effects like the bright shimmers, the intrinsic musical qualities of awkwardness crystallise into a form of magic. Gameplay, narrative, visuals, and music combine into a magical setting in line with fairy tales and quaint fables. Notable is that within the genre of medievalist RPGs, there are hardly any gameworld types that benefit from awkward moods apart from magical gameworlds. It is not inconceivable, however, to have comical or awkward environments free from magic in other

[8] This image was taken from "Nymph," Fable Wiki, accessed 2 June, 2021, https://fable.fandom.com/wiki/Nymph.

game genres. This suggests that intrinsic musical world-building techniques can be applied to different ends in different contexts, whilst retaining certain core characteristics.

5.2.2 Uncanny Fairy Tales and Eerie Witchcraft

A recurring timbral technique in magic cues is the employment of the outermost registers of instruments; for example, deep and heavy bass instruments providing a resonant grumble, or high-ranged instruments playing shrill melodies. High melodies can also sound thin and wispy when played by violins at soft dynamics, and this effect is prominently used in "Beyond Hill and Dale" from *Witcher 3*. This cue is unique to a literal fairy tale world in the game called the Land of a Thousand Fables (Image 5.4), which is reached by reading an enchanted storybook. As this world had been abandoned for years, the fairy tales became twisted. For instance, an adaptation of The Little Match Girl became a drug dealer just to get by. As is also visible in Image 5.4, the fairy tale world seems innocent on the surface. The twists reveal themselves only upon closer inspection. To fully create the appropriate atmosphere, the soundtrack is strange and mysterious, and gives off an uncanny feeling that something is not quite right.

Image 5.4: the Land of a Thousand Fables (*Witcher 3*).

To achieve these slightly off-putting qualities, the thin and wispy timbre of the extremely high violin melody is combined with chromaticism and portamentos to create a

mysterious and eerie sound (see Figure 5.1). The portamentos can further weaken diatonic scales if they are used as abundantly and prominently as in the opening of "Beyond Hill and Dale," because portamentos approximate a pitch before it becomes a fixed diatonic note. The gradual sliding through pitches by the violins is contrasted with a voice that doubles the violin an octave below: the voice approaches pitches more quickly than the violins, and this juxtaposition slightly destabilises the pitches and causes a subtle dissonance. This is a musical version of something feeling not quite right. Similar techniques are used to a subtler extent in "Sorceresses" from *Witcher 2* (Transcription 5.2): a thin and wispy violin opens the cue with a part of the main melody, which includes a prominent portamento when repeated by the singer. Both cues also embellish the eerie melodies with magical shimmers of mark trees, which can create the same connection to magic as the celeste shimmers in *Fable* as explained above. Eerie and magical sounds work together to create the right atmosphere and help build a world of twisted fairy tales.

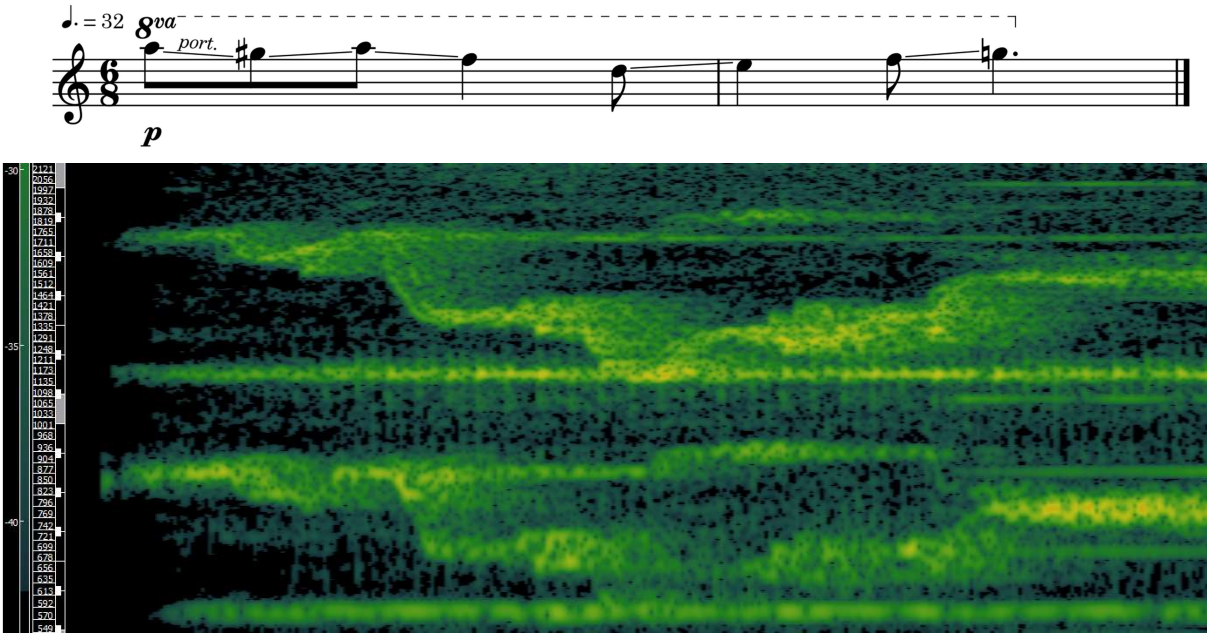
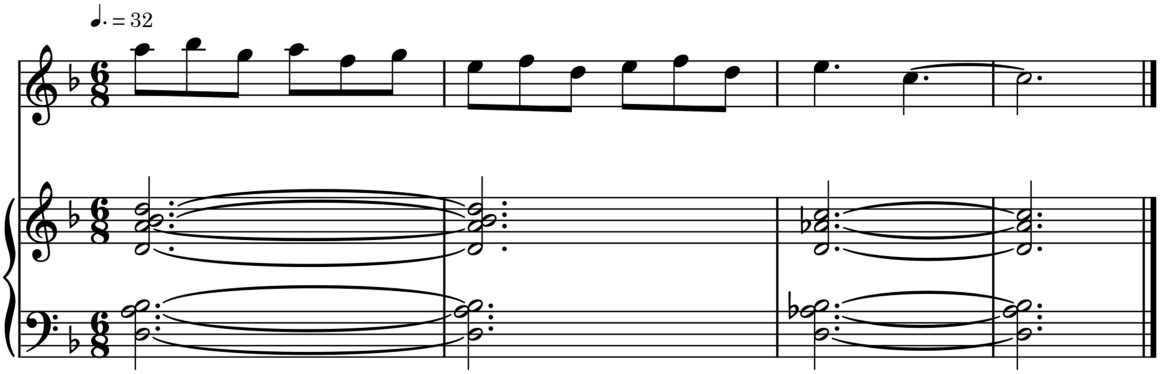


Figure 5.1: transcription and spectrogram of the melody opening "Beyond Hill and Dale" (*Witcher 3*). The upper melody in the spectrogram is the violin (also shown in the transcription), and the bottom melody is a female voice. The x-axis of the spectrogram shows the progression in time and is roughly aligned with the transcription, and the y-axis shows the pitch height. All lines that are not horizontal and straight in this spectrogram are portamentos. Note how the round and flowing violin line is juxtaposed with the more angular voice line.

5.2.3 Supernatural Sounds

Besides the eerie instrumentation, *Witcher 3*'s "Beyond Hill and Dale" features otherworldly sounds to emphasise the detachment of the fairy tale world from the rest of the gameworld. The airy and ethereal timbres of bowed strings and choirs play a central role in this. They provide most of the harmonic foundation in the form of dense and sustained block chords in the instruments' bright middle and upper registers, and the melodies primarily in their upper registers: Transcription 5.4 shows an excerpt where the chords and melody are all doubled by strings and choir. The instruments' airy and ethereal timbral qualities are amplified by the harmony. In this excerpt it starts with the dissonant semitone A–B-flat, after which the A leads stepwise into A-flat. This creates an even more dissonant harmony with tritones (D–A-flat). The clustered and lingering dissonances subvert diatonic functionality, and instead resolve on a chord-to-chord basis as chromatic transformations. As I explained in Subsection 5.1.1, this can construct a mysterious and otherworldly sound, and can also create a sense of wonder. In many other magic cues like "Teldrassil," woodwinds are employed similarly to the bowed strings and choirs in "Beyond Hill and Dale" as the woodwind section can play airy timbres over a wide range. The ethereal qualities of timbre, harmony, and chromatic melodies can amplify each another to create otherworldly music and help build magical gameworlds.



Transcription 5.4: bowed strings and choirs doubling each other in an excerpt from "Beyond Hill and Dale" (*Witcher 3*).

Ethereal sounds can also distance the music from natural sounds. For example, wordless chanting can transcend the distinctly human aspects of a voice and sound alien. Additionally, singing and playing techniques like the use of extreme registers, chromaticism, and abundant glissandi can make music sound uncanny, as if originating from nonhuman or

unearthly sources.[9] As such, there is overlap between eerie and otherworldly techniques. Distancing the music from human and natural sounds is one of the reasons for why the wordless chanting of non-diatonic melodies by soprano voices works well for indicating fantasy races like Elves. Even though instruments in medievalist RPGs often are (or closely emulate) real acoustic instruments, synthesised instruments are not uncommon and can deploy artificial timbres more extremely. The airy synthesised woodwinds in "Teldrassil" that I briefly mentioned in Subsection 5.1.1 feature these unearthly timbres. Especially in combination with musical techniques like chromaticism, artificial timbres can help establish otherworldly magic and make it palpable.

5.3 Stasis...

As I explained in Section 5.1, one possible effect of chromaticism is the undermining of diatonic functionality. Structurally non-functional harmony in this sense is a type of stasis, but stasis can occur in different ways and to different ends. In the magic cues of medievalist RPGs musical stasis helps make gameworlds ethereal and otherworldly. I examine melodic, harmonic, rhythmic, and timbral stasis in this section. These types of stasis are closely intertwined, and I discuss them through a case study from *Kingdom Come*.

5.3.1 The Magic of "Alchemy"

In the Middle Ages, alchemy was the chemical science of transmuting metals into gold and creating extraordinary medicines. The inexplicable and miraculous nature of the aspired outcomes of alchemy is not far removed from magic, and this connotation has become the norm in medievalist RPGs. The majority of this genre's games feature some kind of alchemy, often in the form of mixing ingredients to create potions and poisons. Their possible effects are wide-ranging, including healing, improving the player character's eloquence, increasing one's strength, turning someone invisible, and much more. Typically, the gamer can engage in alchemy by selecting ingredients and clicking a button to create a potion in an in-game menu opened from an alchemy lab or the player-character's inventory, but *Kingdome Come* takes it to a new level. In this game, the gamer needs to consult a recipe book, and grind, mix and boil ingredients for specified lengths whilst watching and turning a sandglass and controlling the heat with bellows (see Image 5.5). The real-time alchemical process demands constant attention from the gamer and notably received its own unique score. Alchemy in

[9] Isabella van Elferen, "Fantasy Music: Epic Soundtracks, Magical Instruments, Musical Metaphysics," *Journal of the Fantastic in the Arts* 24, no. 1 (2013): 11–18.

Kingdome Come is not an exploration game state as the other case studies in this thesis are; it is more like a minigame. However, the music that sounds during alchemy gameplay is a prime example of world-building.

Image 5.5: alchemy gameplay in *Kingdom Come*.

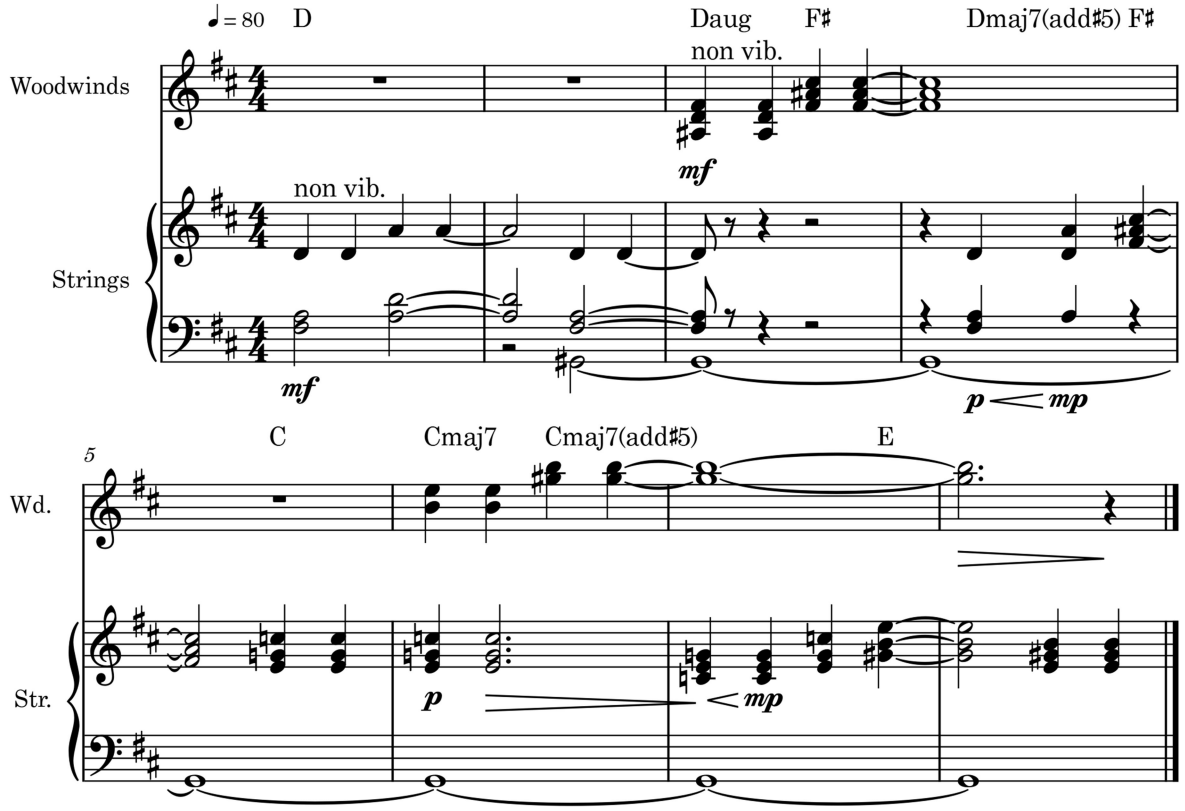
5.3.2 Melodic Lethargy

The beginning of the cue "Alchemy (Atmosphere 4)" consists primarily of chords and hardly has any distinguishable melodies. One of the few recognisable melodic elements in the cue's languid harmonic unfolding is the motif of the rising and falling perfect fifth that is featured in most of the game's cues (see the G-clef of the strings in bars 1–3 of Transcription 5.5). The motif is slower than usual in "Alchemy," but still familiar. Other melodic material is shaped only through movement of chords and remains vague. The melodies become more defined only later in the cue, and are a dissonant variation on one of the game's main musical themes. The dissonant theme makes the music slightly unsettling and mysterious, and the musical stasis produced by the overall slow pace and melodic lethargy creates an ethereal sound.

5.3.3 Desultory Harmonic Structures

The chords that make up the main thematic content of the "Alchemy" cue are static in multiple ways. One form of stasis has to do with the slow harmonic tempo. Chords are reiterated in different voicings before they change root or quality: in bars 1–2 of the excerpt

shown of Transcription 5.5, for example, three different voicings of the D major chord follow one another. Even though it may sound as if a new chord is played with every voice change, the chords functionally remain the same D major triad. The different instrument sections, such as the woodwinds and strings in the excerpt, play similar rhythmic patterns where different voicings of one triad succeed each other. Both instrument sections play distinct chords, and one section's pattern starts before the pattern of the other section is finished. This obscures the rhythm of the pattern and creates an overlap of seemingly unrelated chords (see in particular bars 3 and 6). Harmonic stasis follows from the slow harmonic rhythm and the ostensible harmonic incongruity.



Transcription 5.5: excerpt from "Alchemy (Atmosphere 4)" (*Kingdom Come*).

The overlapping and stacking of unrelated chords create interesting sounds that impede diatonic structural functionality. The chord progression of the excerpt is essentially D major–F-sharp major–C major–E major. It basically consists of chromatic mediants (D–F-sharp and C–E) and one chromatic transformation with a tritone distance (F-sharp–C). However, during the overlaps in bars 3–4 and 6–7, new chords form. Taking a closer look at bar 6, the strings continue to play the C major triad from the bar before, but the woodwinds

already start with an E major triad on top. The overlap of these chromatic mediant chords causes the harmony to briefly take on the flavours of C major seven and C augmented, before resolving to E major at the end of the next bar. Augmented chords do not appear in the natural overtone series, and they have an unnatural symmetry between the stacked major thirds that make up the chord. These intrinsic sonic qualities make augmented chords harsh and even unnatural.[10] In cross-sensory terms, augmented chords can be described as sour—a widely shared association as Alan Taitz et al. have found.[11] Both the augmented chord formed by the G-sharp (further underlined by the G-sharp drone in the bass) and the semitone between the B and C therefore create severe dissonance. Just like in bars 3–4, the smooth chromatic mediant progression is torn apart to emphasise one dissonance at a time, which is savoured for a moment before resolving to a consonant major triad. This slows down the harmonic tempo even more, as the progressions in bars 3 and 6 happen note by note and are repeated in bars 4 and 7. The unsettled key and aimlessly drifting chords resulting from chromatic transformations, the jarring dissonance, and the lingering unnatural sound of augmented chords combine to create an otherworldly soundtrack. This helps to distance the gamer's miraculous alchemical activities (remember their unfathomable nature in the medievalist context) from the rest of the gameworld, which should be more comprehensible and earthly.

5.3.4 Resonating Timbres

The timbres in this cue are not like the rest of *Kingdom Come*'s soundtrack. Even though the same orchestral instruments are used, they are performed in unique ways. Strikingly, vibrato is largely absent. On the one hand, this creates an alienating sound, as it diminishes human expressivity. On the other hand, the steadier pitches enhance the resonances between notes, creating rich and unwavering sounds. This lack of fluctuation is a form of timbral stasis, as is the constant focus on the resonant and ethereal sounds of the rich non-vibrato strings and the airy non-vibrato woodwinds. Subtle unnotated harp chords accentuate the harmonies in the "Alchemy" cue, and they add to the ethereal sound by lingering and resonating until fading out. These timbral qualities, like the unnatural harmonic elements discussed above, distance the gameworld from the earthly. Important for building mysterious and otherworldly

[10] Steven Reale, "Variations on a Theme by a Rogue A.I.: Music, Gameplay, and Storytelling in *Portal 2* (Part 1 of 2)," *The Society for Music Theory Videocast Journal* 2, no. 2 (July 2016): 11:22, http://doi.org/10.30535/smtv.2.2.

[11] Alan Taitz, Diego Shalom, Marcos A. Trevisan, and Bruno Mesz, "The Taste of Scales and Chords," in *Anais do XVII Simpósio Brasileiro de Computação Musical* (Porto Alegre: SBC, 2019), 197–8, https://doi.org/10.5753/sbcm.2019.10445.

gameworlds without turning them into scary or evil gameworlds is the balance between natural and unnatural sounds. One often-used technique for creating this balance is to employ the lush and warm timbres of orchestral instruments as a foundation for extremer timbres, such as the non-vibrato in "Alchemy" or the high and thin violin in bars 1–4 of "Sorceresses" (Transcription 5.2).

5.3.5 Building the World of Chemical Creation

Kingdom Come's cue "Alchemy" is a clear instance of musical world-building. The historical conception of alchemy and its relation to the miraculous and the magical is implicit in the game. The gameplay during alchemy is not markedly magical, especially with our modern-day knowledge of chemical science. The otherworldly music is what makes alchemy a miraculous and magical pursuit. Additionally, music can further shape the physical setting of the alchemy lab. In the same ways that music can help materialise leaves and birds in forests (see Section 3.4), the static music, rising and falling harp arpeggios, and shimmering mark trees in "Alchemy" can help materialise fumes of smoke and flying embers. Combined with the mysterious dissonance, ethereal stasis, and otherworldly sounds, a scientific minigame is turned into a magical experience through musical world-building.

5.4 Making Magic Palpable

In the context of medievalist RPGs, the musical techniques discussed in this chapter are specific and unique to magic cues. Because of this, clear conventions have developed, sometimes to the point of clichés. Nonetheless, conventions are not necessary to explain how music can help build magical gameworlds. Music can present a number of magic types that are directly or indirectly related to mythology and mysticism, including the mysterious, the awkward, and the otherworldly. Frequent musical techniques revolve around chromaticism, timbre, and stasis. Depending on the specific application and musical context, chromaticism creates mystery and wonder, or awkwardness. To achieve this, intrinsic qualities of the harmonic series are employed, and specific non-diatonic harmonic structures are formed within a cue. This forms contrasts to the other diatonic musical elements within the cue and to most of the other cues of the game's soundtrack. Timbres create similar magical effects by distancing the sounds from the human and the natural. This deals with human perception in general rather than culturally or stylistically specific observations: timbres sound like they do not come from human sources, or they invoke iconic similarities with a visual phenomenon,

such as between shimmering sounds and magic particles. Like harmonic chromaticism, stasis also relies on structures within a cue rather than with external associations: the music functionally drifts aimlessly, which can help build mysterious and otherworldly settings. Conveying ideas of magic through music adds another perceptual layer to the visuals, lore, and gameplay, and makes magical atmospheres palpable. In this chapter I focused on cues that almost entirely revolve around magic. However, the magical effects that I discussed here can also be employed as subtle additions to other types of music, such as forest cues, to add a touch of magic to any medievalist gameworld type.

Conclusion

In this thesis, I have studied how the music of medievalist RPGs can shape and enrich gameworlds—I have studied how music works as a world-builder. I have done so by examining specific cues from a diverse selection of video games within the medievalist RPG genre. This enabled me to analyse recurring scoring strategies in depth and develop a clear understanding of how they can impact gameplay experience. The formalist approach that I have taken has provided insight into numerous subtle world-building techniques of soundtracks that transform games into captivating and compelling worlds. My approach foregrounds musical qualities that bear iconic resemblances or have indexical, causal connections to other gameplay elements, including visuals and story. This has enabled me to focus on different musical world-building strategies than the many existing ludomusicological studies on world-building. As I explained in detail in the Introduction, the existing studies are either narrow in scope, or focus on cultural and historical contextualisation reliant on symbolic references and genre-specific conventions.

Through my formalist analyses of musical cues and their particular integration in medievalist RPGs, I have found that music can influence the way game environments appear to gamers in detail. In the case of lush, green, forest landscapes, string instruments and woodwinds make the gameworlds lush and warm. They also add an element of whimsy, and they create an altogether leisurely atmosphere. The modal pitch collections reinforce this, as their sonic and emotional neutrality takes on a sense of serenity in the visual context of unspoilt nature. The rhythms of forests are carefree and leisurely due to their subtle, yet walkable pulse. Besides providing general atmospheric information, the music of forests in medievalist RPGs can materialise environmental details that are out of sight: rhythmically free woodwind melodies create iconic references to birdsong as well as indexical references to the presence of birds. I have also found that particular fluttering melodies performed by string instruments have the ability to create impressions of falling leaves. Forest music generally is lively, yet balanced enough to prevent it from becoming cluttered or chaotic.

The cues for towns and cities in medievalist RPGs incorporate several musical techniques that are similar to those used in other landscapes, but they can convey different information to gamers. Like forest cues, urban cues feature neutral modes. However, the settings in which they appear create different audiovisual combinations, resulting in unique overlaps between music and other game elements. As such, the neutral modes that sound in

medievalist towns and cities indicate nonchalance rather than serenity. In similar fashion, perfect consonances can transfer openness in mountainscapes or rigidness in urban areas, which also depends on their particular compositional integration. Urban scores are more unique in their rhythms and instrumentation: the rhythms are danceable due to their stable and steady foundations that are juxtaposed with bustling melodies and ornaments. The timbres and playing styles of folk and period instruments also reinforce the dichotomy between firmness and activity, paralleling the strict rules and rigid buildings of towns and cities on the one hand, and the bustling crowds on the other. Furthermore, contrasting these instruments with smooth and sophisticated orchestral gestures infuses gameworlds with fantasy elements, turning the medieval into the medievalist.

Magic comes in numerous forms in medievalist RPGs, and music helps to define and crystallise them. Even though the types of magic range from light-hearted fairy tales to eerie mysticism, they mostly build on the same core musical features. Chromaticism seems to be central to any magic cue, whether it comes as brief but frequent embellishments or permeates the harmonic and melodic structures. Chromaticism obfuscates scales and keys, and weakens or removes diatonic functionality. It can also create aimlessly drifting harmonic structures to otherworldly and wondrous effects. Magic cues typically emphasise the intrinsic dissonance of chromatic scales. This can be done in different ways, and can result in eerie, mysterious, clumsy, or comical sounds depending on the musical context. The timbres of magic cues are closely intertwined with playing techniques and generally revolve around ethereal, airy, nonhuman, and unnatural sounds. Timbre, playing technique, and melody can be combined into specialised musical effects to materialise magical particles through iconic resemblances. Musical stasis is present in a number of the above-mentioned techniques, such as in the lingering harmonic structures and ethereal timbres, but melodies and rhythms can also be static. Stasis can stretch out aimlessness, dissonance, and other unnatural sounds to create musical distance between magical locations and other game environments, reinforcing the otherworldliness and mystery of magic.

The musical techniques that I outlined above provide a solid overview of how music shapes forests, urban environments, and magical settings in medievalist RPGs. Some general observations can be made from these analyses about musical world-building: there are clear preferences for compositional techniques in underscoring particular game environments, and they build gameworlds in similar ways across games. Some of these musical features seem to be largely independent of context in conveying specific ideas, such as the richness and warmth of bowed strings playing in their middle registers. Others take on different meanings

depending on the enabling equivalences that are formed by their compositional application and the game context, as is the case with lively melodies and playing techniques that can construct leaves or magic particles, for instance. It has therefore become clear that particular musical techniques are not necessarily confined to any single environment type. Additionally, different environments can overlap musically; the waltz in *Fable*'s "Oakvale" is an example of this, which bridges the gap between forests and towns.

My observations of musical world-building follow primarily from case studies of exploration music, but they may be applicable to other game elements to varying degrees. For example, musical world-building also happens in cutscenes and during combat gameplay to reinforce the game's setting. Musical world-building may even be a part of in-game menus to prepare or maintain immersion in a medievalist setting. However, as world-building is usually not the primary aim of these game elements, it may be possible that the employed musical strategies differ and they therefore merit further research. There are also other environment types in medievalist RPGs that I have not examined in detail (open plains, mountainscapes, lakes, deserts, and caves, to name a few), even though forests, urban areas, and magical settings are amongst the most common. Additionally, musical world-building can be applied to help construct seasons, weather, or day and night cycles (of which *Kingdom Come* is an example). Moreover, world-building may be most prominent in medievalist RPGs, but it is certainly not exclusive to this genre or perhaps even to the medium of the video game. In this thesis, I have made a start towards developing a structured and detailed understanding of musical world-building in video games, but much research remains to be done before a comprehensive theory of musical world-building can be formed.

The characteristics of the musical features that I have explored in detail are grounded in physical sonic phenomena like the harmonic series, and in the psychological perception of them, such as Huron's observations on interval qualia resulting from statistical learning. In other words, they can be called *intrinsic* musical qualities, as external cultural or generic conventions are not necessary to explain them. Throughout this thesis, I have applied Nicholas Cook's multimedia model to understand the psychological processes behind musical world-building. Quasi-synaesthesia and Lakoff and Johnson's theory of conceptual metaphors explain how people can connect cross-sensory perceptions like pitch, height, and brightness. When certain cross-sensory qualities overlap, enabling equivalences are created that allow music and other media components (such as images and narrative) to transfer meaning between them. In this way, music can conform to a game to reinforce ideas or complement it to add new meaning. As I have demonstrated, these ideas and meanings are

not necessarily general emotional impressions; music also has the capability to help materialise concrete environmental details, and hence influence the appearances of landscapes.

The majority of my findings of instances of musical world-building can be observed and explained using these intrinsic qualities. They have close links to physical and psychological phenomena, and they can be described without considering cultural and generic conventions. Following this, it appears that conventions may adjust or strengthen certain experiences, but they are not their primary cause. It seems that there are intrinsic musical factors that work on a fundamental level of understanding music in relation to environmental appearances before cultural or genre-specific knowledge comes into play. Even though this follows logically from my observations, this hypothesis requires further ethnographic and cognitive research to state with certainty.

Regardless of whether this hypothesis can be fully substantiated, I have demonstrated that a formalist approach to intrinsic musical world-building is valuable. Whereas a conventional approach can provide insight into historical and cultural contextualisation of a video game's setting, the intrinsic approach prompts different perspectives: it encourages a consideration of musical world-building that shapes general moods, specific environmental objects, and numerous other characteristics of unique landscapes. Through formalist analysis I have provided a structured and detailed overview of how music helps to build forests, urban areas, and magical settings in medievalist RPGs. The theory of intrinsic musical world-building, towards which I have made a start in this thesis, enables a thorough understanding of music's value in shaping the appearances of gameworlds beyond the edges of the screen. During gameworld exploration, there are trees, houses, and magical particles as far as the ear can hear.

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