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Sonic Immersion through Spatiotemporal Involvement in the Assassin's Creed *Series*

ABSTRACT The relationship between music, sound, space, and time plays a crucial role in attempts to define the concept of "immersion" in video games. Isabella van Elferen's ALI (affect-literacy-interaction) model for video game musical immersion offers one of the most integrated approaches to reading connections between sonic cues and the "magic circle" of gameplay. There are challenges, however, in systematically applying this primarily event-focused model to particular aspects of the "open-world" genre. Most notable is the dampening of narrative and ludic restrictions afforded by more intricately layered textual elements, alongside open-ended in-game environments that allow for instances of more nonlinear, exploratory gameplay. This article addresses these challenges through synthesizing the ALI model with more spatially focused elements of Gordon Calleja's player involvement model, exploring sonic immersion in greater depth via the notion of spatiotemporal involvement. This presents a theoretical framework that broadens analysis beyond a simple focus on the immediate narrative or ludic sequence. Ubisoft's open-world action-adventure franchise *Assassin's Creed* is a particularly useful case study for the application of this concept. This is primarily because of its characteristic focus on blending elements of the historical game and the open-world game through its use of real-world history and geography. Together, the series's various diegetic and nondiegetic sonic elements invite variable degrees of participation in "historical experiences of virtual space." The outcome of this research intends to put such intermingled expressions of space, place, and time at the forefront of a ludomusicological approach to immersion in the open-world genre.   **KEYWORDS** Sonic immersion, ALI, spatiotemporal involvement, historical games, open-world, Assassin's Creed

Immersion is a term generally used to describe the process that anchors players within the virtual space of a video game. Whilst accepted as a generally desirable quality of most games, the specifics of this concept are thorny at best and continue to raise important theoretical questions amongst academics.[1] This is largely due to the complex, intermedial, and subjective nature of what constitutes an "immersive experience," not least considering the huge family of video game genres with diverse modes of interaction that currently exist. As the relatively young discipline of ludomusicology continues to develop, it has become clear that music and sound are central components of immersion in video games. Zach Whalen's influential qualitative research into this area suggests that sonic elements are not only driving factors behind the expression of textual meaning but are also crucial

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1. Gordon Calleja, *In-Game: From Immersion to Incorporation* (Cambridge, MA: MIT Press, 2011), 25–31.

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to enforcing the dynamic parameters of interactive gameplay.[2] Exploring the processes by which these elements situate the player within their immediate diegetic environment remains an important objective for a more holistic understanding of video game spaces and modes of interactivity as a whole.

As part of his research into video game spaces, Michael Nitsche argues that "spatial involvement" is also an essential component of immersion. Indeed, a primary spatial function of any game environment is to guide the player's understanding of their kinesthetic relationship to visual architecture.[3] Furthermore, in many video games, both space and time are expressed, though perhaps more conceptually, via narrative setting and worldbuilding. Isabella van Elferen's ALI (affect-literacy-interaction) model of video game musical immersion provides a crucial theoretical framework for exploring how sound and music contribute to the player's understanding of inhabiting the game-play environment.[4] Through processes of identification and referentiality, this model focuses on decoding both subjective and collective meanings affectively expressed by sonic cues. As such, it provides a consistent blueprint for studying sonic immersion via different modes of interaction with a game's audiovisual framework. Exploring these modes of interaction, in turn, sheds light upon issues of perception, semiotics, and critical distance, strengthening an understanding of the spatiotemporal practices of different game genres. Nevertheless, whilst the ALI model is certainly one of the most effective methods for systematically exploring sonic immersion, it is difficult to satis-factorily apply to particularities of open-world games, largely due to its foregrounding of specific scripted gameplay sequences.

Since the success of *Grand Theft Auto III* (2001), the open-world genre has become remarkably influential. These games allow players to traverse vast and immensely detailed in-game environments, often as part of an extended and richly layered narrative. In a clear departure from games whose virtual worlds are segmented into digestible linear sequences of levels, zones, or maps, open-world games are far more structurally and geographically open-ended. In her examination of *Grand Theft Auto*: *San Andreas* (2004), Kiri Miller expands upon Jesper Juul's suggestion that open-world gameplay blends elements of both the "emergence" and "progression" game. Whilst the former describes games featuring sets of established rules that combine in complex ways, the latter describes games with fixed tasks that work toward unravelling narrative structure.[5] Players of open-world games are still able to take part in gameplay objectives that are crucial to plot advance-ment, though both the manner and order in which these objectives are completed are typically more flexible. Equally, open-world games regularly feature a number of "side objectives," which may or may not have any bearing on the main story but invariably add

2. Zach Whalen, "Playing Along: An Approach to Videogame Music," *Game Studies* 4, no. 1 (2004), accessed April 2, 2020, http://www.gamestudies.org/0401/whalen/.

3. Michael Nitsche, *Video Game Spaces: Image, Play, and Structure in 3D Worlds* (Cambridge, MA: MIT Press, 2008), 3.

4. 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, UK: Equinox, 2016), 32–52.

5. Kiri Miller, *Playing Along: Digital Games, YouTube, and Virtual Performance* (New York: Oxford University Press, 2012), 26.

textual, stylistic, and ecological depth to the gameplay space. Coupled with the sheer scale of most open-world environments, these factors frequently lead to players logging hundreds of hours inside the gameworld.

Most crucially, as Miller notes, players of open-world games have the additional option to break away from primary objectives completely, opting for a more autonomous exploration of the gameplay space.[6] In the latter installments of the *Grand Theft Auto* games, one may choose to stick rigidly to the central storyline. Just as easily, however, one may also choose to steal a car at gunpoint and take it for a joyride through the streets of Liberty City, Vice City, or Los Santos whilst evading police capture.[7] A similar duality of interaction has been well established throughout a number of open-world fantasy RPG titles, including Bethesda's acclaimed *The Elder Scrolls* franchise, CD Projekt Red's *The Witcher* series, and more recently, Nintendo's *The Legend of Zelda: Breath of the Wild* (2017). Players are able to carve out their own epic journey through interspersing participation in the primary "questline" with independent ventures across sprawling fictional worlds in search of hidden locations, powerful enemies, or valuable weapons and items. Noting this dampening of narrative, ludic, and geographical constraints, Miller argues that open-world gameplay is a form of "collaborative performance" between player and game developer.[8] Expanding further, she argues that touristic and ethnographic approaches to analyzing open-world spaces are combined with intertextual interpretations and player articulations of identity, contributing to what she describes as a "form of expressive culture."[9]

Situating these ideas within a discussion of sonic immersion uncovers an especially interesting nexus of thought. The affective and stylistic aspects of sonic cues linked to distinct narrative and ludic events in open-world games can be analyzed in a relatively straightforward manner through the ALI model. It is initially difficult, however, to apply this methodology to examining sonic immersion through its involvement in a "collaborative performance" wherein the player's interaction with virtual space is partially shaped by periods of independent, explorative gameplay. This seems almost paradoxical to consider, given the sheer scale of open-world games and the wealth of musical material they possess. Hereby a challenge is presented for systematically analyzing how sound and music are able to produce a meaningful sense of immersion in this broader context. Ubisoft's immensely popular open-world action-adventure franchise *Assassin's Creed* provides an attractive case study for confronting this challenge. The series's immersive capacity is driven primarily by its combination of dynamic explorative gameplay with the implementation of fully articulated and stylistically decorated real-world historical locations. Accordingly, the "expressive culture" of the series is arguably wrapped up in issues of historical representation and authenticity, merging characteristics of an open-world game and a historical game to varying degrees throughout its extended transhistorical narrative.

6. Miller, *Playing Along*, 26.
7. These locations are semifictional and satirical depictions of New York, Miami, and Los Angeles, respectively.
8. Miller, *Playing Along*, 28.
9. Miller, *Playing Along*, 52.

In order to examine sonic immersion more systematically in relation to the *Assassin's Creed* series, this article proposes bolstering the ALI model with "spatial involvement" components of Gordon Calleja's player involvement model of video game immersion.[10] Synthesizing these two theoretical approaches creates a framework that directs attention toward interaction with virtual environments through "spatiotemporal involvement." Splitting this concept further into "spatiotemporal semiosis" and "spatiotemporal engagement" offers a means to investigate both the broader textualization and moment-by-moment experience of virtual space-time through music and sound. Whilst separate, these concepts are not mutually exclusive but rather act as two theoretical poles between which to analyze specific sonic cues, translating the co-involvement of narrative, ludic, perceptual, and kinesthetic qualities. This furthermore sheds light upon the manner in which the *Assassin's Creed* games, through a combination of their historical and open-world characteristics, encourage players to participate in historical experiences of virtual space.

In order to justify this proposed theoretical expansion, the following section of this article begins with a brief summation of conceptual issues surrounding immersion, as well as a more detailed introduction to the *Assassin's Creed* games as a whole. This is followed by a hermeneutic reading of numerous spatiotemporally semiotic orchestrations of the piece "Ezio's Family," written originally for *Assassin's Creed II*. The point of this reading is to observe the textualization of cultural and aesthetic relationships between musical styles as a means to construct a sense of space and place through a kind of virtual historicity. After this is an examination of how spatiotemporal semiosis and spatiotemporal engagement are combined by the navigational function of "viewpoints" toward a means of colonizing and controlling gameplay space. The article concludes with an exploration of soundwalking, comparing compositional approaches to metanarrative framing with the manner in which sonic ecologies and the topography of diegetic soundscape further touch upon issues of authenticity and historical realism. By pursuing an analytical relationship between these concepts, the ultimate aim of this article is to encourage attention toward an expanded and more holistic view of sonic immersion within complex open-ended virtual environments.

TOWARD A MULTIDIMENSIONAL MODEL FOR SONIC IMMERSION IN VIDEO GAMES

Despite the variability of discourse on sonic immersion in video games, there are a number of central theoretical problems that scholars have tended to confront. The foremost challenge has consisted of unravelling different applications of the term *immersion* to describe the experience of simulated virtual reality. Whalen's research emphasizes the importance of assessing the degrees to which different audio cues provide a functional contribution to this end, be it in relation to narrative or ludic gameplay elements.[11] Beyond this is the issue of analyzing the process of immersion itself, exploring how

10. Calleja, *In-Game,* 73–92.
11. Whalen, "Playing Along."

sound and music manage boundaries between the game environment and the extra-diegetic player environment. Music and sound's role in the communication of meaning consists of creating believable diegesis, a notion lifted from Michel Chion's theories surrounding the synchronization of audio and visual elements in cinema.[12] Whilst the linear nature of films offers an insight into how one might become "part" of the diegesis, applying this issue to video games is made trickier by their fundamentally interactive nature.

Rod Munday draws upon the concept of "mythic" immersion to express how music "mythologizes" the image, assisting the player in "transcending" from the normally constrained aspects of self into positions of heroism.[13] This perspective shares similarities with the aesthetics of cinematic realism, playing an illusionistic role in upholding the suspension of disbelief and anchoring the player within the diegesis.[14] In this sense, the player is immersed through being sensually transported into a virtual space that, whilst functioning differently from the outside world, is believable enough to allow the frame of this outside world to fall away. One might think of this in terms of the player being so wrapped up in the actions of their in-game avatar that elements of their immediate reality begin to dim.

Katie Salen and Eric Zimmerman critique the idea that immersion is concerned with making the player believe they are part of an illusory simulated reality, a phenomenon they call the "immersive fallacy."[15] Rather than fostering this belief in a separate virtual world, they argue that immersion more directly absorbs the player through engaging gameplay mechanics. Expanding upon this criticism, Salen and Zimmerman offer their own account of immersion via the concept of the "magic circle" in video games.[16] Through this principle, the player is drawn into gameplay experiences via the accumulation of mechanics and rules alongside narrative constraints of the virtual world. Whilst both the immersive fallacy and magic circle theory centralize interactive gameplay as a primary facet of immersion, the critical assumption of both lacks specificity, appearing to prioritize the interactive function of ludic cues.

Through exploration of "spatial involvement" as an important facet of immersion, Calleja argues that Salen and Zimmerman's theoretical approach creates a discursively rigid conceptual binary between "transportation" and "absorption." Furthermore, he points out that it "sideline[s] the importance of spatiality as a defining feature of the phenomenon to which immersion has been used to refer in the context of virtual

12. Michel Chion, *Audio-Vision: Sound on Screen*, ed. and trans. Claudia Gorbman (New York: Columbia University Press, 1994).

13. Rod Munday, "Music in Video Games," in *Music, Sound and Multimedia: From the Live to the Virtual*, ed. Jamie Sexton (Edinburgh, UK: Edinburgh University Press, 2007), 51–67.

14. Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008), 134.

15. Katie Salen and Eric Zimmerman, *Rules of Play: Game Design Fundamentals* (Cambridge, MA: MIT Press 2003), 451.

16. See Johan Huizinga, *Homo Ludens: A Study of the Play-Element in Culture* (1938, repr. Eastford, CT: Martino Fine Books, 2014). The broader historical context of the term *magic circle* links back to Huizinga's suggesting that all forms of play occur within a space that has been delineated beforehand.

environments."[17] Such a limited view of immersion as a whole offers no means through which to differentiate simple puzzle games like Alexey Pajitnov's 1984 classic *Tetris* and games with more expansive 3D environments.[18] Alternatively, Calleja's player involvement model recognizes spatial involvement as central to the immersive experience, exploring differences between types of virtual environments and the modes of interaction they encourage.[19] Furthermore, Calleja identifies macro and micro spatial involvement, used to make a distinction between the unravelling of broader textual elements and the experience of direct engagement with the spatial aspects of gameplay. Calleja's qualitative research into the open-world massively multiplayer online role-playing game (MMORPG) *World of Warcraft* (2004) demonstrates that players often consider the exploration and the discovery of unknown environments to be conducive to an immersive gameplay experience.[20] Given the similarity of MMORPGs to aspects of open-world games, this idea can be linked back to Miller's suggestion of gameplay as a "collaborative performance." Recalling the satisfaction of Juul's "emergence" archetype enacted by games that allow for independent exploration, it is equally difficult to frame the mere navigation of space as adhering to a set of engaging "gameplay rules." This issues a particular challenge to Salen and Zimmerman's theoretical prioritization of immersion as "absorption."

Situating her response to the magic circle approach within the context of sonic immersion, van Elferen introduces the concept of "flow," borrowed from psychologist Mihály Csíkszentmihályi.[21] The flow of gameplay experiences can be defined via the notion of engaging game space through processes of association with "real rules" to create a virtual "half-reality," another concept attributed to Juul.[22] In the case of the musical experience, however, van Elferen argues that this principle "reconfigures space, time, and subjectivity," creating an "alternate reality" separate from the gameworld.[23] Here, music is part of the game but also connects to the player's cultural memory, evoking identifications that are firmly rooted outside of the diegesis. This occurs through the player remembering previous experiences of hearing the same music or music with similar stylistic elements.[24] As such, when players take part in both gameplay and a listening experience, the synesthetic performative processes of immersion afforded by musical associativity serve to reinforce expressions of the gameworld. Again, this notion bears a striking resemblance to Miller's ideas around "collaborative performance" and "intertextual interpretation" within a broader "expressive culture."

17. Calleja, *In-Game*, 27.
18. Calleja, *In-Game*, 27.
19. Calleja, *In-Game*, 73.
20. Calleja, *In-Game*, 76.
21. Isabella van Elferen, "¡Un Forastero! Issues of Virtuality and Diegesis in Videogame Music," *Music and the Moving Image* 4, no. 2 (2011): 31.
22. Jesper Juul, *Half-Real: Video Games between Real Rules and Fictional Worlds* (Cambridge, MA: MIT Press, 2005).
23. Van Elferen, "¡Un Forastero!" 31.
24. Van Elferen, "¡Un Forastero!" 31

This perspectival shift forms the basis of van Elferen's ALI model of video game musical immersion. The theoretical framework for this model provides a far more integrated method of analysis that aims to surpass previous conceptual binaries surrounding the topic. It is based around the systematically overlapping domains of affect, literacy, and "interaction."[25] As van Elferen explains, *affect* can be used to describe "personal investment in a given situation through memory, emotion, and identification."[26] *Literacy* is used to make sense of the intertextuality of game experience, drawing upon habituated practices of engagement with other media formats. This literacy can range from an understanding of filmic conventions to an understanding of musical aesthetics and game mechanics, helping interpret gameplay through the sociocultural connotations of its sonic elements.[27] Finally, *interaction* describes the more unique instances in which music is directly interacted with through gameplay.[28] Examples of this include games centered around producing music but also games that feature music as a distinguishing part of gameplay. The ALI model is most useful in that it can be applied to a range of different sonic phenomena, connecting existing analysis of video game musical immersion within a more fluid, organized framework. These phenomena are apprehended at the point of affect, guided through broader literacies, and elaborated upon in an interactive dimension, giving a comprehensive understanding of how players engage with gameplay.

Through her explanation of interaction, van Elferen briefly considers issues of space, exploring how nondiegetic soundtrack elements guide the player through adaptive navigational clues.[29] This understanding of space seems nonetheless wrapped up in an analysis of specific gameplay sequences and events. Both applications of the ALI model that van Elferen suggests are centered within the horror genre, where music and sound provide a linkage to specific stylistic tropes. In the sci-fi survival horror game *Dead Space 2* (2011), dissonant drones and sharp crescendos form an elaborate counterpoint that carefully and constantly manages tension, leaving the player wary of potentially imminent danger.[30] Similarly, in the survival horror game *Amnesia: The Dark Descent* (2010), visual and sonic "hallucinations" are incorporated into numerous "insanity sequences," with the intention of heightening the player's sense of disorientation and psychological terror.[31]

Overall, it would appear that both Calleja and van Elferen are well equipped to engage with the complexities of sonic immersion in open-world environments. Nevertheless, there are apparent gaps in each model that the other is able to conveniently fill in. Calleja's focus on the spatial aspects of video game immersion is crucial for examining open-ended, explorative gameplay styles; it lacks, however, any kind of explanation regarding how music might contribute to the player's understanding of the gameplay environment. Conversely, van Elferen offers a rigorous methodology for interpreting the

25. Van Elferen, "Analysing Game Musical Immersion," 33.
26. Van Elferen, "Analysing Game Musical Immersion," 33.
27. Van Elferen, "Analysing Game Musical Immersion," 36.
28. Van Elferen, "Analysing Game Musical Immersion," 37.
29. Van Elferen, "Analysing Game Musical Immersion," 39.
30. Van Elferen, "Analysing Game Musical Immersion," 40.
31. Van Elferen, "Analysing Game Musical Immersion," 47.

relationship between sonic cues and interactivity, which nevertheless seems limited to scripted narrative and ludic sequences.

AN INTRODUCTION TO THE *ASSASSIN'S CREED* SERIES

The *Assassin's Creed* franchise, created by French developer Ubisoft, comprises a series of open-world games that rely heavily on combining elements of action-adventure and stealth gameplay. The primary textual vehicle for this series is a long-standing rivalry between the Assassin Order and the Knights Templar (often referred to as simply "Assassins" and "Templars"). The factions are locked into an epic conflict that spans multiple historical periods, with each game staged against the backdrop of significant conflicts in real-world history. The first entry in the series, released in 2007, is set during the Third Crusade in 1191. Players take control of Altaïr Ibn-La'Ahad, a disgraced *hashashin* order member who must covertly carry out a number of high-profile killings in order to regain his honor. Across the series's subsequent eleven entries, further historical backdrops include Renaissance Italy at the time of the Pazzi conspiracy, the rise of the Ottoman Empire in Constantinople, and both the American and French revolutions.

The device that threads these disparate narrative strands together is a piece of futuristic technology known as the Animus, which allows its users to access and relive the memories of their ancestors by harnessing the principle of "genetic memory." Throughout each installment in the series, there are two concurrent plot arcs. The predominant one focuses on the historical events that occur during the reliving of memories, with a secondary narrative set in a semi-futurist present. This secondary narrative focuses on an insurgent group of Assassins using the Animus to collect data on ancient, mythical, and immensely powerful artifacts known as Pieces of Eden. This information must be obtained before it falls into the hands of multinational tech conglomerate Abstergo Industries, the contemporary iteration of the Knights Templar. The first entry in the *Assassin's Creed* series allows players to explore three distinct open-world city environments, Damascus, Jerusalem, and Acre. These cities are afforded a great amount of detail and historical authenticity, not only in terms of material culture but also cultural geography and social ecologies. Monks will linger around the Christian buildings in Acre, whilst beggars and drunks will accost the player in some of the city's poorer districts. Many of the following entries in the series have continued this tradition of using urban landscapes as primary gameplay environments. Starting with *Assassin's Creed IV: Black Flag* (2013), numerous titles also give players the option to sail between in-game locations. The most recent entries in the series, *Assassin's Creed: Origins* (2017), *Assassin's Creed: Odyssey* (2018), and *Assassin's Creed: Valhalla* (2020), expand the characteristic open-world model even further, featuring enormous maps that encompass the entirety of Ancient Egypt, Ancient Greece, and Anglo-Saxon England, respectively.

Primary gameplay takes place throughout different memory sequences, during which the player interacts with core narrative objectives, usually involving either preparing for or carrying out an assassination. At any time during these sequences, however, players are given the freedom to explore their surroundings at their own leisure. The *Assassin's Creed*

series is probably most notable for its refinement of the parkour mechanics first established through Ubisoft's earlier work on the *Prince of Persia* series. This dominant mode of interaction encourages players to explore by clambering up landmarks, jumping across rooftops, and using elements of the built environment to deftly evade enemies when in restricted areas. During these periods of explorative gameplay, players are often able to locate treasure that can be used to purchase weapons and cosmetic appearances, as well as progressively unlocking segments of the in-game map. Doing so allows the player to expand the Assassin Order's hold over the gameplay environment, pushing back Templar influence and reducing enemy presence in certain areas.

Van Elferen briefly mentions the *Assassin's Creed* franchise in her discussion of the ALI model, though in a relatively superficial manner, to express the "epic" quality of the series's soundtracks.[32] Undoubtedly, there are plenty of emotionally driving sonic elements in the series, though on an affective level, experiencing a sense of "epicness" seems far less direct and perhaps even far less sustainable than feeling tense or frightened. The key issue with van Elferen's commentary on the *Assassin's Creed* games is that it doesn't seem to tell the whole story in terms of the series's emphasis on space, place, and time. Understanding how these domains are expressed sonically in relation to both the historically representational and open-world aspects of the series is crucial for analyzing the player's sense of "being in the world." Such modes of interaction are difficult to analyze through the ALI model alone because their affective qualities cannot necessarily be derived from straightforward sequences or situations, seeming to require more focused attention toward the collaborative performance of open-ended gameplay.

Introducing the spatial involvement aspects of Calleja's player involvement model into the ALI model has the capacity to reinforce both. Processes of affect and literacy are still of primary importance when it comes to decoding expressions of meaning, which is useful for analyzing the *Assassin's Creed* games as historical games. They could, however, be used to uncover more complex meanings expressed through the heightened spatiotemporal practices of open-ended gameplay. To aid this theoretical framework, I propose the analytical concept of "spatiotemporal involvement," which is further split into "spatiotemporal semiosis" and "spatiotemporal engagement." The reason for using the term *spatiotemporal* rather than simply *spatial* is to account for the fundamentally durational nature of music and sound. It also allows for an expansion of the concept of spatiality to include a general historical sense of place and time. Spatiotemporal semiosis can be defined as a process through which the player achieves a contextual sense of virtual space by decoding textual and thematic meanings signified by particular sonic elements. Both the conceptual notion of place and the historical understanding of time are interwoven parts of this signification. Spatiotemporal engagement can be understood as the expression of more direct spatiality through sonic signifiers that emphasize perceptual and orientational relationships to visual architecture.

In the context of the present analysis, spatiotemporal semiosis characterizes the player's feeling of cultural, historical, and geographical context. Spatiotemporal

32. Van Elferen, "Analysing Game Musical Immersion," 38.

engagement, on the other hand, characterizes the player's feeling of direct moment-by-moment existence within the visual and kinesthetic bounds of gameplay space. Throughout the course of gameplay in the *Assassin's Creed* series, both of these concepts are in play to varying degrees and are not wholly removed from instances of more direct narrative or ludic action. Nevertheless, making this analytic distinction helps with the understanding of two very different yet very important ways in which music, sound, space, and time become intertwined in the context of sonic immersion in these games. The following section primarily deals with an exploration of spatiotemporal semiosis through nondiegetic soundtrack elements, investigating how cultural and aesthetic literacies combine with historical representations of time and place to create a sense of virtual historicity. This is followed by an exploration of how spatiotemporal semiosis becomes intertwined with spatiotemporal engagement through navigational mechanics and whilst soundwalking through the series's urban landscapes.

CONSTRUCTING A VIRTUAL HISTORICITY: "EZIO'S FAMILY"

A striking example of what could be considered spatiotemporally semiotic music is uncovered through William Gibbons's audiovisual analysis of the tutorial sequence in *Assassin's Creed III* (2012, hereafter *ACIII*).[33] During this part of the game, the player takes on the role of Haytham Kenway, a man tasked with carrying out an assassination during a 1754 production of John Gay's *The Beggar's Opera* at London's Theatre Royal. As Kenway nears his target, diegetic excerpts from the work are heard from the stage at intermittent points. As Gibbons acknowledges throughout most of his work on classical music in video games, the use of such a piece immediately communicates a general sense of "pastness."[34] Beyond the further appropriateness of its English Baroque idioms to a London theatre setting, however, Gibbons argues that Gay's infamous ballad opera is serving a far more subtle and self-reflexive purpose during this opening sequence. Andra Ivănescu suggests that the dual function of music as both a spatiotemporal signifier and thematic link increases critical distance through an emphasis on self-reflexivity.[35] In the context of *Assassin's Creed,* this self-reflexivity sees a direct thematic parallel with the Animus as the series's central framing device. Beyond superficial stylistic analyses of *The Beggar's Opera,* Gibbons points toward the manner in which its usage directly comments upon previous installments in the series, hinting at the diegetic relationship between a broader range of disparate narrative settings.[36] Gay's work is known to have introduced music borrowed from popular English and Scottish folk tunes to an eighteenth-century London whose stages were monopolized by Italian opera. Placing it during the opening sequence, Gibbons argues, serves to directly

33. William Gibbons, *Unlimited Replays: Video Games and Classical Music,* (New York: Oxford University Press, 2018), 19–35.

34. Gibbons, *Unlimited Replays.*

35. Andra Ivănescu, "The Music of Tomorrow, Yesterday! Music, Time and Technology in *BioShock Infinite,*" *Networking Knowledge: Journal of the MeCCSA Postgraduate Network* 7, no. 2 (2014): 51–66.

36. Gibbons, *Unlimited Replays,* 22.

contextualize the textual space of *ACIII* through its relationship to the Italian Renaissance setting of its immediate predecessors.[37]

The Animus is perhaps a not-so-subtle reference to psychoanalyst Carl Jung's concept of anima and animus archetypes, closely associated with the theory of the collective unconscious. A Jungian reading of musical immersion is reasonably beyond the scope of the current investigation. Nevertheless, the concept of drawing reflexively upon known images and associations is relevant to both the framing function of the animus and the wider affect- and literacy-driven aspects of the ALI model. Much of the spatial, interactive, and ludic boundaries of gameplay are implicitly connected to the simulative capabilities of this technology. Collectively, this creates the notion that to play the game is to, at all times, be physically present within the animus in a liminal state of "accessing" historical space. This type of contextual framing has semiotic parallels throughout *Assassin's Creed*'s soundtracks, which invite players to transport themselves to imagined historical spaces through subtly layered aesthetic and cultural cues.

In his approach to video game musical analysis, Tim Summers puts forward the idea of "texturing" as a means to investigate the implied detail of gameworlds through broader associative touchstones.[38] By drawing upon a "repository of known images," Summers explains that music is able to "interpolate beyond the simple image" of the game. Taking the arcade game *Street Fighter II* as an example, he notes the way in which characters are categorized by national identity, a characteristic reflected in both their distinct visuals and the unique motivic themes associated with them. This motivic expression of national stereotypes relies on association with broader aesthetic and cultural literacies, affording a deeper layer of detail to the game. A great deal of nondiegetic music in the *Assassin's Creed* games serves the same function, though it is preoccupied to a further extent with the distinct expression of place and historical period. One of the series's most widely recognized score elements is "Ezio's Family," originally written by Jesper Kyd for *Assassin's Creed II*, set in fifteenth-century Italy and featuring Florentine nobleman Ezio Auditore da Firenze as its central protagonist.[39]

The primary motif of "Ezio's Family" has been reorchestrated by a handful of composers throughout latter installments as a form of leitmotif for the series. Its primary melody is characterized by a repeated half-note rising D minor pentatonic figure, accompanied in the lower register by an arpeggiated eighth-note version of the same figure (see Figure 1). The rich choral texture that accompanies the opening motif, whilst not in unison, is evocative of medieval plainchant through both its diatonic harmony and relationship to the tonal center. This piece appears to blend stylistic idioms from both

37. *Assassin's Creed III* is preceded by the "Ezio Trilogy," which features *Assassin's Creed II* (2009) and *Assassin's Creed: Brotherhood* (2010). As Gibbons notes, *Assassin's Creed: Revelations* (2011), the third entry in this trilogy and direct predecessor to *ACIII*, takes place mainly in Constantinople though follows the same subplot and Italian protagonist as the previous two installments. Gibbons, *Unlimited Replays*, 21.

38. Tim Summers, *Understanding Video Game Music* (Cambridge, UK: Cambridge University Press, 2016), 61.

39. Kyd served as the primary composer for the first four installments of the franchise: *Assassin's Creed* (2007), *Assassin's Creed II* (2009), *Assassin's Creed: Brotherhood* (2010), and, with Lorne Balfe, *Assassin's Creed: Revelations* (2011). He returned to compose the soundtrack to *Assassin's Creed: Valhalla* (2020) alongside fellow composer Sarah Schachner and black metal musician Einar Selvik.

FIGURE 1. The opening motif as featured in Jesper Kyd's version of "Ezio's Family" for *Assassin's Creed II* (transcribed by the author).

the *stile antico* and *stile moderno* practices of Italy's music history. Secular operatic traditions more closely expressing the *seconda pratica* era are combined with a more subtle expression of the *prima pratica* era through earlier religious vocal practices. Accompanying these elements is a strummed guitar pattern with timbral similarities to traditional lute music. On an affective level, the slightly disparate nature of these stylistic elements appears to be primarily rooted in communicating a sense of "epicness," as mentioned by van Elferen.[40] Even so, Kyd's version of "Ezio's Family" is still able to tangibly express the idea of Renaissance Italy through a combination of basic cultural literacies, suggesting a thematic rather than realistic signification of place and time.

Further in his discussion of gameworlds, Summers places emphasis on the manner in which some games create "virtual histories," focusing specifically on Karen Cook's analysis of historical periodization within the strategy game *Civilization IV* (2005).[41] As with *Street Fighter II,* the various world leaders that the player controls in the *Civilization* games are assigned music that expresses national identity. Unlike *Street Fighter II*, however, this music is heard in numerous iterations with different phrasing and instrumentation as gameplay progresses. This is in keeping with *Civilization IV*'s chronological approach to historical periodization, which allows players to expand and develop their empire across multiple historical eras.[42] As Cook explains, *Civilization IV* uses musical signification to connect fictional and actual worlds, whereby the historical narrative of the virtual world implicitly frames the real world through its cultural and chronological context.[43]

The version of "Ezio's Family" reorchestrated by Austin Wintory for *Assassin's Creed: Syndicate* (2015), titled simply "Family," transposes the original motif down a minor second, decorating it with a dark sonic ambience and recurring metallic bell sounds. The

40. Van Elferen, "Analysing Game Musical Immersion," 39.
41. Karen M. Cook, "Music, History, and Progress in Sid Meier's Civilization IV," in *Music in Video Games: Studying Play*, ed. K. J. Donnelly, William Gibbons, and Neil Lerner (New York: Routledge, 2014), 166–82.
42. Cook, "Music, History, and Progress," 166–82.
43. Cook, "Music, History, and Progress," 166–82.

emphasis on bells is most likely a reference to the widely recognized Westminster bell tower, though perhaps more crucially references London's cultural and historical geography.[44] Bells are the subject of a number of popular English folk songs and singing games, an idiom that saw a significant rise in popularity, and was subject to rigorous ethnographic documentation, throughout the Victorian era.[45] Wintory's orchestration furthermore blends the original "Ezio's Family" motif with a somber rendition of his own motif from *Assassin's Creed: Syndicate*'s title theme, "Bloodlines." The self-described "neo-Mendelssohn" style of this motif is particularly evocative of late Romantic-era dance music, perhaps further expressing the stark sociocultural dynamic between the regal and industrialist sensibilities of Victorian London.[46] Similarly, Sarah Schachner's reorchestration of "Ezio's Family" for *Assassin's Creed: Origins* (2017) uses stylistic signifiers to create an association with the game's setting during the final years of Egypt's Ptolemaic dynasty. The composer mentions how she used a reverb module to create eerie desert drones, which she combined with traditional instruments such as lyres, lutes, and ouds to create a mysterious and "mythological" sound.[47] Here, the original motif is rhythmically augmented and decorated with microtonal inflections that carry a characteristic Middle Eastern sound. Schachner's choice of instrumentation demonstrates a partial emphasis on historical and geographical accuracy. Nevertheless, the semiotic link to an "exotified" Ancient Egypt that is primarily understood through mystery and mythology suggests a signification rooted in firmly habituated orientalist associations with this historical period linked to wider cinematic and pop-cultural depictions.

The original version of "Ezio's Family" aims at implicitly commenting upon extra-diegetic historical and geographical location as the basis for narrative context. In part, the spatiotemporal involvement that occurs here relies on the semiotic apprehension of both cinematic and wider cultural literacies in order for the player to participate in a historical expression of space, albeit one that is rather passive. This involvement is expanded in that, similar to the *The Beggar's Opera,* reorchestrations of "Ezio's Family" express further relationships between disparate game settings. Unlike *The Beggar's Opera* though, they require additional literacy with the *Assassin's Creed* games themselves, guiding the historical experience of place through interwoven references to the narrative context of the series's overarching story. Commanding the player's semiotic relationship to place and time is arguably central to these soundtrack elements. Nevertheless, they are perhaps more appropriately viewed in terms of *Assassin's Creed*'s status as a collection of historical games, with little relationship to elements of open-world gameplay. This is not to suggest,

44. It is worth noting that the term *Cockney*, a long-standing demonym for working-class Londoners, is commonly classified as someone who was born within the sound of the bells of St. Mary-le-Bow.

45. See Alice Gomme, *The Traditional Games of England, Scotland and Ireland* (1897, Project Gutenberg 2012 e-book), accessed May 31, 2020, http://www.gutenberg.org/files/41727/41727-h/41727-h.htm.

46. Joey Ferris, "Interview with Austin Wintory, Composer for *Journey* and *Assassin's Creed: Syndicate,*" Nerd Reactor, October 6, 2015, accessed July 27, 2021. http://nerdreactor.com/2015/10/06/interview-austin-wintory-composer-for-ac-syndicate/.

47. "Composer Sarah Schachner on Bringing Ancient Egypt to Life in Her Assassin's Creed Origins Soundtrack," Music Radar, February 20, 2018, accessed May 31, 2020. https://www.musicradar.com/news/composer-sarah-schachner-on-bringing-ancient-egypt-to-life-in-her-assassins-creed-origins-soundtrack.

however, that spatiotemporally semiotic music is inherently paratextual or "cinematic" music that is entirely removed from a consideration of open-world characteristics, as will be explored in the following sections.

"VIEWPOINTS" AS AN EXPLORATIVE FUNCTION

Discussion up until this point has dealt primarily with spatiotemporal semiosis as a facet of spatiotemporal involvement, exploring the degree to which space is contextually framed by nondiegetic soundtrack elements. Spatiotemporal semiosis is a key factor for unravelling certain textual constraints of the diegesis related to the game environment, though this concept also shares a relationship with spatiotemporal engagement through more directly interactive instances of gameplay. Unlike the more expressly cinematic aspects of the video game soundtrack, dynamic audio can often occur fluidly, emerging from both diegetic and nondiegetic sources. Karen Collins divides this concept into instances of "interactive" and "adaptive" audio, with the former immediately generated by player actions and the latter based on the triggering of different game states.[48]

Axel Stockburger offers a typology of "sound objects" present throughout the game environment, ranging from character-based to event-based and environment-based.[49] The interplay between these objects and "dynamic" audio is typically linked to ludic triggers that occur within the gameworld. On top of this, Stockburger also argues that all these objects serve a broader spatializing function, creating nuanced orientational and navigational relationships. Applying these concepts to the *Assassin's Creed* games poses a considerable challenge, owing to the scale and detail of their respective environments. As part of the "spatial involvement" component of his player involvement model for video game immersion, Gordon Calleja asserts the importance of the "cognitive map" as a means for the player to establish a sense of their place within the gameworld.[50] Through habitually navigating these worlds, players can construct a mental image that considers the spatial connectivity of their component parts, Calleja argues. In open-world games, this mental image is often assisted by in-game maps or other spatially holistic sources.

One such source that is fundamental to the open-world gameplay experience of the *Assassin's Creed* series is the "viewpoint," particularly in its treatment of virtual space. Throughout each game in the series, players use viewpoints to uncover further portions of the gameplay environment, helping improve their overall knowledge of this space by surveying it from atop a range of different architectural landmarks. As Michiel Kamp notes, interaction with viewpoints can be split into three key stages. Firstly, the player must climb the viewpoint, finding an effective path to the top by looking for handholds and ledges. Once they have reached the top, the player will then be given a visual cue to "synchronize" with the viewpoint by pushing a particular button or key. Once this has

48. Collins, *Game Sound,* 125.

49. Axel Stockburger, "The Game Environment from an Auditive Perspective," in *Proceedings: Level Up: Digital Games Research Conference (DiGRA),* ed. Marinka Copier and Joost Raessens, 4 (Utrecht, Netherlands: Faculty of Arts, Utrecht University, 2003).

50. Calleja, *In-Game,* 78.

happened, the player then performs a "leap of faith," diving from the viewpoint into a pile of hay or leaves.[51] During the synchronization phase, a small cutscene plays wherein the player is given a sweeping 360-degree view of the surrounding landscape accompanied by a nondiegetic musical stinger that emphasizes a sense of awe and sublime discovery. The framing function of this dynamic trigger is interesting, as it not only merges diegetic and nondiegetic sonic elements but also reflects a co-involvement of spatiotemporal semiosis and spatiotemporal engagement. By Stockburger's definition, the viewpoint is a "score sound object" that is connected to a specific nondiegetic expression of game space.[52] The intelligibility of this expression is nevertheless fundamentally dependent on engaging in a specific sequence of gameplay.[53] This disruption of the player's control over the game is in stark contrast to other, more serendipitous framing devices such as those implemented in *The Elder Scrolls: Skyrim* (2011) to accompany the discovery of landscapes. As Michiel Kamp and Mark Sweeney note, in this context, players are completely in control of gameplay throughout the "discovery" moment, with ambiguous tonal centers and unresolved static harmonies lending to a sense of "authoredness."[54]

Returning to the notion of spatiotemporal involvement, there are arguably two interdependent processes of literacy occurring during this affective moment. During the synchronization sequence, the player is wrenched away from gameplay into a framed cinematic experience in which time stands still and the immediate surroundings are expressed as having a sublime quality. But it is through a fundamentally interactive sequence of game mechanics that this expression is made fully meaningful by the player. Furthermore, the broader relevance of viewpoints to open-world gameplay is essentially wrapped up in the use of space itself to control, reward, and influence the player toward further exploration.[55] The activation of this framed sequence is contingent upon the player engaging in a very particular set of actions involving the spatial architecture of the gameplay environment. By possessing a "ludoliterate" understanding of these actions, the player is then able to understand the synchronization sequence as expressing a sense of discovery that is furthermore inherently tied to a sense of achievement.[56] This latter expression of meaning is reinforced by the incentivized nature of viewpoints, which are used functionally to encourage the colonization of space by unlocking further parts of the game environment and developing a more comprehensive cognitive map. Here, both the moment-by-moment existence in space and the wider contextualization of space serve to fundamentally reinforce each other as part of the sonically immersive experience.

51. Michiel Kamp, "Four Ways of Hearing Video Game Music" (PhD diss., University of Cambridge, 2015), 118.

52. Stockburger, "Auditive Perspective," 8.

53. Kamp, *Four Ways of Hearing*, 120.

54. Michiel Kamp and Mark Sweeney, "Musical Landscapes in Skyrim," in *Music in the Roleplaying Game: Heroes & Harmonies*, ed. William Gibbons and Steven Reale (New York: Routledge, 2020), 179–96.

55. Shira Chess, "Playing the Bad Guy: Grand Theft Auto in the Panopticon," in *Digital Gameplay: Essays on the Nexus of Game and Gamer*, ed. Nate Garrelts (Jefferson, NC: McFarland, 2005), 80–90. Chess explores a similar "foucauldian" treatment of space in the *Grand Theft Auto* series, whereby the player is given more space the more adept they become at playing the game.

56. Van Elferen mentions "ludoliteracy" in her description of the ALI model, using it to explain literacy with game mechanics. Van Elferen, "Analysing Game Musical Immersion."

Without one of these elements, the other would arguably not make much sense, harking back to the suggestion of a form of expression through open-world gameplay that is reliant on collaborative performance.

SOUNDWALKING THROUGH *ASSASSIN'S CREED*: SONIC TOPOGRAPHY VS. META-NARRATIVE FRAMING

The concept of spatiotemporal involvement has thus far been used to explore a handful of nondiegetic sonic elements that signify varying relationships to space, place, and time throughout the *Assassin's Creed* games. This final section focuses on aspects of diegetic soundscape, posing a radical question: to what degree can the *Assassin's Creed* games be understood as moving past the realm of "game" and into the realm of "historical simulation?" Conclusively answering this question is not the point of this article, though it is certainly a relevant question for further academic consideration. As Andra Ivănescu explains, video games as a "post-modern artefact are constantly questioning their own nature, attempting to push beyond the limits of what they are."[57] Aside from their standard gameplay modes, both *Assassin's Creed: Origins* and its immediate sequel, *Assassin's Creed: Odyssey*, have included a Discovery Tour mode, which transforms aspects of the game environment into a kind of virtual museum. In this game mode, players take part in specially curated linear audiovisual tours through familiar in-game locations, stopping periodically to be provided with an explanation of various historical landmarks, cultural practices, and organizational structures. The addition of this mode shows evidence of the *Assassin's Creed* series moving beyond a single focus on gameplay elements, moving toward considering the ways in which its games can be used as a historical learning tool. Whilst this is a relatively new development, it is worth examining the ways in which a touristic and ethnographic approach can be taken toward exploring "curated historical experience" through aspects of soundscape during primary gameplay.

Further to his discussion of cognitive mapping, Calleja gives special consideration to what he calls "open-ended spatial structures," arguing that the design aspects of open-world games are more akin to architectural planning theory. This is an especially appropriate way to look at the *Assassin's Creed* series given that most of its game environments are fundamentally urban in nature. Calleja references urban planner Kevin Lynch's idea of "imageability" as a quality of in-game objects that assists the player in topographically assimilating them into their broader cognitive apprehension of the game world.[58] Much of the material culture that informs the visual and topographical architecture of *Assassin's Creed* is representationally accurate.[59] It is worth considering, however, how this topographical view of the game environment maps onto Stockburger's consideration of sonic objects. As part of her ethnographic study into the sonic ecologies of *Stardew Valley* (2016), Kate Galloway draws attention to the notion of the "soundwalk" as a method for

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57. Ivănescu, "Music of Tomorrow, Yesterday!," 60.
58. Calleja, *In-Game*, 88.
59. Aris Politopolous, Angus A. A. Mol, Krijn H.J. Boom, and Csilla E. Ariese, "History Is Our Playground: Action and Authenticity in *Assassin's Creed Odyssey*," *Advances in Archaeological Practice* 7, no. 3 (2019): 317.

analyzing sonic environments.[60] This ethnographic tool is comparable to van Elferen's concept of the "musical GPS," which is used to describe sonic elements that provide a navigational aid to gameplay. Drawing upon Michel de Certeau's ideas about the spatial practice of walking through a city, van Elferen reiterates the notion that "abstract" space can become meaningful space through the appropriative act of navigation.[61] Here, the "narrative action" of exploring virtual space constitutes a form of "interactive worldbuilding," which is a constituent part of the feeling of immersion.[62] Whereas van Elferen applies de Certeau's principles to a general description of navigational practices in video games, the *Assassin's Creed* games offer a direct virtual analog for the act of freely walking around a city. Given the open-world nature of these games, however, it is worth considering what the player's narrative action is in exploring these spaces.

Soundscape aspects throughout the series arguably work to enhance broader urban cultural ecologies, demonstrating a profound case for studying explorative gameplay through the primary lens of spatiotemporal engagement. A key component of many of the *Assassin's Creed* games is soundscape elements used to designate specific topographical aspects of the game environment. In *Assassin's Creed II,* acousmatic plainchant decorates a variety of religious buildings. Similarly, in *Assassin's Creed: Unity* (2014), real historical revolutionary songs can be heard emanating from various club houses littered throughout the Paris of 1789. In *Assassin's Creed IV: Black Flag* (2013), *Assassin's Creed: Rogue* (2014), and *Assassin's Creed Odyssey*, players are again able to listen to real folk tunes being sung in proximity to taverns, as well as naval work songs and shanties whilst sailing. This "sonic imageability" is not necessarily restricted to music, with the ambience of chatter and bustle also layered across many of *Assassin's Creed*'s most heavily populated environments.

All these sonic cues aim to express a sense of presence in space through components of soundscape, wrapped up in diegetic expressions of in-game topography. The use of sonic topography clearly functions to create some degree of convincing experience not directly linked to textual exposition. Here, the question of immersion is not so much wrapped up in realism in the sense of simulating reality, but rather constructing a realistic historical experience through treating the gameworld as a kind of museum. In her exploration of *Grand Theft Auto: San Andreas*, Miller uses the notion of the "virtual museum" in open-world games to express how particular approaches to spatial and historical authenticity contribute toward works of broader cultural commentary.[63] There is, of course, an extent to which certain aspects of soundscape still function toward certain gameplay mechanics in the *Assassin's Creed* games. For example, the player can be accosted by bards throughout *Assassin's Creed II*, who, whilst representing an accurate feature of Renaissance society, primarily serve to interrupt smooth running or stealth sequences. Nevertheless,

60. Kate Galloway, "Soundwalking and the Aurality of Stardew Valley: An Ethnography of Listening to and Interacting with Environmental Game Audio," in *Music in the Roleplaying Game: Heroes & Harmonies*, ed. William Gibbons and Steven Reale (New York: Routledge, 2020), 159–78. Galloway's ideas around soundwalking are primarily derived from composer Hildegaard Westerkamp's attitudes toward examining real-life sonic ecologies.

61. Van Elferen, "¡Un Forastero!" 34.

62. Van Elferen, "¡Un Forastero!" 34.

63. Miller, *Playing Along*, 26.

the boundaries between this function and a broader worldbuilding function are still worth considering.

With restrictions on how the player explores open-world space lifted substantially, there is perhaps a need for an analytical model of spatial practices in video games that more closely resembles existing nonvirtual models. One way to explore this in relation to the specific features of *Assassin's Creed*'s open-world environments is through Jean Baudrillard's concept of "hyperreality." This idea is defined as "the generation of models of a real without origin or reality."[64] Rather than attempting to create a depiction of space that is based on accurate depictions of historical soundscapes, diegetic sonic elements arguably create a "more than realistic" expression of space guided by approximation. This creates a direct layer of spatiotemporal engagement whose immersive capacity is nevertheless semiotically linked to the notion of a historical reality that is "too good to be true."

Whilst the sonic ecologies present throughout the *Assassin's Creed* games appear to be aimed at expressing a degree of historical authenticity, this notion is notably subverted by elements of nondiegetic soundtrack that may feature during players' soundwalks. This creates a potential schism between the games' historical and open-world qualities in terms of representation and framing. Compositional approaches to the piece "Home in Florence" from *Assassin's Creed II* are a good example of this. In his discussion of the fantasy genre, James Cook explores the use of medievalist aesthetics as the basis of historical, geographical, and cultural setting in video games.[65] Observing the use of symbolism and narrative shorthand, he considers the manner in which social and environmental structures are expressed through a tradition of widely understood Western folkloric conventions. Medieval aesthetics in their various fictional iterations typically signify an overlapping connection between actual medieval history and the realm of the fantastical. The term *neo-medievalism*, popularized by Umberto Eco, is used to describe this form of approximation that frames the medieval in a manner not reliant on historical authenticity but rather on more presentist concerns.[66] This sentiment is echoed by Karen Cook, who equally describes medieval musical tropes as necessarily bound up in expressions of the past that are rooted in later eras.[67]

"Home in Florence" serves as a particularly effective means for observing how these tropes have become part of the nondiegetic soundscape in *Assassin's Creed II*. As its name suggests, this musical cue serves as the background music whenever the player is exploring the city of Florence. One of the key musical features of this piece is a distant, echoing, wordless female voice singing an ethereal scalar melody, accompanied in octaves by both a guitar and piano (see Figure 2). Karen Cook describes the wordless voice as one of the

64. Jean Baudrillard, *Simulacra and Simulation*, trans. Sheila Faria Glaser (Ann Arbor: University of Michigan Press, 1994), 1.

65. James Cook, "Playing with the Past in the Imagined Middle Ages: Music and Soundscape in Video Game," *Sounding Out!: The Sound Studies Blog*, October 3, 2016, accessed April 2, 2020, https://soundstudiesblog.com/2016/10/03/playing-with-the-past-in-the-imagined-middle-ages-music-and-soundscape-in-video-game/.

66. Umberto Eco, *Travels in Hyperreality*, trans. William Weaver (New York: Harcourt Brace, 1986), 61–72.

67. Karen M. Cook, "Medievalism and Emotions in Video Game Music," *Postmedieval* 10, no. 4 (2019): 482–97.

FIGURE 2. The vocal melody and its accompaniment from "Home in Florence" (transcribed by the author).

most common medieval tropes, which draws upon symbolic connotations of plainchant and typically communicates a sense of wonder, mystery, or antiquity.[68] Read through the lens of neo-medievalism, however, the negotiated collective meaning of these elements is dominated by reference to a more general aesthetic repository of framed "pastness."

As James Cook notes, the expression of the medieval through narrative shorthand is not necessarily concerned with authentic musical representation of space but rather conjuring a sense of immersion within a coherent virtual world.[69] The association between Renaissance Florence and a sense of pastness is arguably a further expression of the notion that this is a familiar nonfictional space that is being accessed in-game, through the framing capacity of the Animus, rather than authentically lived. The spectral and echoic quality of the vocal melody reinforces this idea, implying a degree of literal acoustic separation from the player that signifies a metaphorical distance from a framed past. This sense of perspective has an even more direct sonic analog in the combination of the aforementioned medieval aesthetic elements with more modern stylistic elements. The mechanical rhythm and erratic melodic contour at the beginning of "Home in Florence" give the impression of a quantized sequencer pattern typical of modern-day electronic music. Equally, the guitar section that accompanies the vocal melody is decorated by a "phaser" effect, creating an electronically distorted sweeping quality that mirrors the voice's ethereality. The inclusion of anachronistic elements suggests a literal framing of pastness in line with the textual function of the Animus, using modern-day

68. K. Cook, "Medievalism and Emotions," 491.
69. J. Cook, "Playing with the Past."

musical idioms to express gameplay space through a multilayered web of complex trans-historical connection.

In her exploration of *Bioshock: Infinite*, Ivănescu suggest that the use of anachronistic popular music evokes emotion and memory, transforming the player into "tourist through time and space."[70] Again, much of *Bioshock: Infinite*'s gameplay is premised upon linear constraints that allow for its music to appear at narratively and ludically significant moments. The heavy nonlinearity of the *Assassin's Creed* games, however, arguably complicates the notion of what it means to be a tourist in this same sense. Furthermore, the anachronistic framing of historical space enacted by "Home in Florence" appears, in part, to run counter to the more ethnographically significant aspects of diegetic soundscape, complicating the sense of intention regarding historical representation and authenticity. The piece consistently reinforces the fictional framing function of the Animus, which is furthermore mirrored by the player's real extra-diegetic relationship to real world history.[71] Ivănescu describes this kind of breaking of the fourth wall as contributing toward a "meta-game," acting as a constant self-reflexive reminder to the player of their place within the gameworld.[72] Here, the expressive culture of gameplay appears to be at a crossroads with regards to historical authenticity and representation. Is the collaborative performance of gameplay a matter of accurately simulating historical space? Or is it rather a matter of reflecting upon the framing of the historical from a present-day perspective? Such complex questions remain open, though they reflect a central focus of this article: directing theoretical attention toward exploring how historical open-world environments reflect on real-life spaces via the concept of sonic immersion.

CONCLUSION

The primary goal of this article has been to expand upon the relationship between music, sound, space, and time in the context of beginning to examine sonic immersion as it occurs in open-world games. Whilst reaffirming the crucial importance of Isabella van Elferen's ALI model in this regard, this article draws attention to the way it can be more specifically implemented to analyzing spatiotemporal involvement, introducing aspects of Gordon Calleja's player involvement model. Through the analytical relationship between spatiotemporal semiosis and spatiotemporal engagement, these concepts account for the collective examination of sonic, visual, textual, and kinesthetic elements of gameplay. These concepts are used to explore a handful of *Assassin's Creed*'s intermingled historical game and open-world game characteristics. Through spatiotemporally semiotic soundtrack elements such as "Ezio's Family" and its multiple reorchestrations, players are given a means to contextualize divergent game spaces through association to real-world history. These connections invite the player to participate in a historical experience of space that is framed

70. Ivănescu, "Music of Tomorrow, Yesterday!" 60.
71. It is worth noting that in *Assassin's Creed IV: Black Flag* (2013), *Assassin's Creed: Rogue* (2014), and the PlayStation Vita title *Assassin's Creed: Liberation* (2012), there is direct reference to this breaking of the fourth wall, with the Animus marketed as a commercial entertainment product using the slogan "History is our Playground!"
72. Ivănescu, "Music of Tomorrow, Yesterday!," 60.

by wider stylistic literacies. There are also instances in which spatiotemporal semiosis becomes intertwined with spatiotemporal engagement through dynamic cues, simultaneously expressing a contextualization and direct existence within particular spatial structures. This is expressed more directly through the manner in which the player's relation to the immediate gameplay space is disciplined through viewpoints. Applying spatiotemporal semiosis and spatiotemporal engagement to the sonic ecologies of open-world games leaves room to challenge the boundaries between game and simulation. In *Assassin's Creed*, this is expressed specifically through aspects of diegetic soundscape that appear to both enhance and subvert the visual and material culture of the gameplay environment.

This article has explored a handful of specific examples of sonic elements that reflect spatiotemporal involvement throughout the *Assassin's Creed* series, examining an additional mode of interaction that could be considered "immersive." The wider aim of this research, however, has been to provide a springboard for further academic thought on the sonic properties of open-world games as a whole. This article has explored the specific nuances of *Assassin's Creed*'s gameworlds, which are admittedly heavily wrapped up in issues of historical representation but nevertheless offer insights into particular aspects of open-world gameplay. Further work may need to be done to fine-tune the tools presented by this article's central methodology, particularly in relation to open-world games that depart from historical realism. Given the freedom of nonlinear gameplay, there is also room for further ethnographic and perhaps even autoethnographic research into open-world environments. This might encourage a far more rigorous investigation than is offered here into how sonic immersion mediates the boundaries between real-life spatial practices and those that can be implemented in virtual space. ∎

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