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Introduction
Towards a Polyphonic Approach to Games and Music Studies

There is a growing recognition of the role of music in games by the gaming industry, game fans, and journalists. Several conferences have been established on the roles of music and sound in video games, such as the industry-focused GameSoundCon, first initiated in Los Angeles in 2009, and Game Music Connect, that has taken place annually between 2013-15 in London. Simultaneously, the study of music and audio in games is gaining interest in game studies. For example, Rob Hubbard, most famous for his work on the Commodore 64 system, has been recognized with an honorary degree by Abertay University in Dundee, Scotland (Wawro, 2016). The tendency, however, is not only in response to the industry. It is also in line with an "Auditory Turn" in the humanities and social sciences, providing an alternative sensory approach to a notable visual dominance in the humanities and in media and cultural studies (Herzogenrath, 2017).

In line with the auditory turn, the past few years have seen an explosion of studies of sound and music in games. Karen Collins' work has set the wheels in motion in 2008 with an edited collection. In the same year as her the landmark publication, *Game Sound*, offered a systematic understanding of game music. Organizations and study groups also emerged as part of an interest in game sound that covers a broad, multidisciplinary field. The annual North American Conference on Video Game Music also held its first event in 2017. Another specific focus on game music has been offered by the annual *Ludomusicology*conference, which began its work as an RMA (Royal Musical Association) study day in the UK. A Ludomusicology special journal issue for *The Soundtrack* 8/1–2 was published in 2015, and in September 2017 the *Journal of Sound & Music in Games* (*JSMG*) was announced with Mark Sweeney (interviewed in this issue of GAME) as its Director and Michael Austin as Secretary. The study area of *Ludomusicology*addresses the video game music from the perspective of musicology, as can be found further in a recent collection edited by Kamp, Summers, and Sweeney (2016). In addition to musicology, media and cultural studies provided a wider social perspective on games and music. These include works by Austin (2016) and by Donnelly, Gibbons, and Lerner (2014), both reviewed in this issue of *GAME*. Further publications are now appearing in the field, including a comprehensive textbook by Tim Summers (2016), also reviewed in this issue.

The above overview of recent approaches to game sound is far from exhaustive, but it provides an insight into the importance of reappraising the sonic element in games. Sound has, of course, always been a crucial aspect of gaming audio-visuals. Far from merely accompanying a game, the auditory elements bring life into the game interface. Sound is a sonic vibration that produces embodied affect. It also elicits interpretations, and provides the player an immersed sonic sense of architectural space. Sound effectively build the game space. The sonic dimension has always taken part in orientating game play perspectives, positions, and rhythms of interaction, from the ominous march of *Space Invaders* (Taito, 1978) to the more recent experiences of games based on virtual and augmented reality technologies. Music, moreover, provides sound with the potential for temporal and harmonic forms. Game music is a necessary element of the immersive dramatic pace and rhythm of many games. It would be very hard to think of an experimental music shooter like *Rez* (UGA 2001) without its central sonic element, and it would also be hard to remember a game like *Streets of Rage 2* (Sega 1992) without its Yuko Koshiro soundtrack, or *Super Mario Bros* without its Koji Kondo score (Nintendo 1983). Game studies has only scratched the surface of the importance of music. Interestingly, elements of change come from scholars from the borders of the gaming field. Schartmann, in his study on Super Mario Bros' soundtrack (2015) provides a holistic, contextual analysis of the success of the game that does justice to its audio-visual-interactive complexity. More simplistic analyses from game studies, on the contrary, seem to forget the sonic dimension of the game, describing it often from the mythical perspective of the genius game designer/solo artist, overlooking some of the manifold, eminently choral elements, agents, and contextual elements that made it possible (deWinter, 2015).

A reappraisal of the importance of the auditory elements in games could has two important consequences: first, it could challenge dominant definitions of *video* games, suggesting a more nuanced view of the medium characterized by a recognition of its hybrid and polymedia forms; second, it paves the way for alternate histories of games, in which music and sound would regain their apparent, but often overlooked, centrality in players' experience.

Forthcoming studies on games and music are likely to highlight and look at games from an auditory positionality, as Schartmann (2015) did with *Super Mario Bros.* The directions are manifold. Sound and music are important elements of narration. They can contribute to the story *diegetically*, with music created in the dramatic space—think of the use of radio in the *Grand Theft Auto* series. They can also play their role *non-diegetically* as an accompaniment that is not always hidden as underscore, but that can become distinctive and memorable—think of the gloomy synths of *Shadow of the Beast*(Reflection/Psygnosis 1989). Even more so, the interactive soundscape of the new *Doom* (id Software, 2016) effectively co-constructs the gaming experience: far from sitting behind the gameplay, it is a dynamic and integral part of the pace of the shooter that works alongside the environment and interaction, and an essential element for its

brutal elements of pathos. *Doom*'s music effectively shapes the game with non-linear solutions, taking into full effect previous experimentation with dynamic soundtracks in games. Experimental games like *Extase* (1991), featured on the cover of our issue, are among the earliest and more radical examples of how music can be the game experience. Designed by R. Herbulot with P. Dublanchet, M. Rho, and P. Ulrich, *Extase* features interactive music by Stephane Picq as a key to its success as a music puzzle that works as an interactive soundscape.

Yet, game music also lives on outside the game itself, in various guises. Broadly speaking, the sonic elements add to the emotional and cultural dimensions of the game through a wide range of *paramusical fields of connotation* (Tagg, 2015): elements that take part in defining any gaming text. In effect, As Kamp (2016) shows, music is in menus, start screens and other circumstantial components outside the *diegesis* of the game. Moreover, orchestral and pop performances are popular within specific game subcultures (Carbone & Ruffino, 2013), which throws up debates regarding which version may be more authentic, the original game version or the performed full vision of the composer (Gibbons, 2015). As Mike Gordon, the composer and producer of *Doom*'s 2016 OST (original soundtrack) puts it: "I think video game music should always be able to find some sort of place outside the game; […] that should always be the ultimate goal" (O'Dwyer, 2016, 20:30). In effect, *Doom*'s music is so intertwined with the gameplay as to raise the question of whether or not it can be fully appreciated outside of the game (and vice versa)––in addition to reminding of the deep connections between early first-person shooters like the original *Doom* (id Software 1991) and metal and industrial music from the 80s and 90s.

Game music not only functions as a reminder of games played but is also used to promote the games. By becoming a defining part of gaming franchises, game music can become a successful product in itself. In this sense one literally hears the music, and next plays the game. Original soundtracks can be found in digital formats and, perhaps unexpectedly, on vinyl aimed at distinct collectors' markets (see, for example, Napolitano, 2012), as well as on dedicated online sites that offer game music soundtracks (for example, Spotify's dedicated VGM channel––Vincent, 2016). The pleasure of game engagement is further extended through OST remixes by game fans, subcultural activities that may well become independent of gameplay as techno, grime, dub step, trap, and hip-hop remixes of games such as the *Zelda* techno and the *Super Mario trap;* such experimentations abound on social media sites.

There is a continuous dialogue, moreover, between games and a wide range of musical styles, from classical to popular, and from fan-based to avant-garde experimentation. As video game music lives on in the sound of contemporary popular music, the chiptune scene particularly celebrates the early low-res game sound, applying this to new contexts. Similarly, perhaps, a reordering of cultural memory takes place in the reuse of game technologies. For example, the obsolete Gameboy handheld game was hacked in the late 90s by Oliver

Wittchow as performative musical instrument (Wittchow, 2014), emphasizing the ambiguity between gameplay and obscured music performance (McAlpine, 2016), which is further worked out as a training ground for digital music performance (BeatLab Academy, 2016).

Not surprisingly, game music inspires a particular sonic aesthetic in electronic music production by a generation that has grown up within games' cultures. Computer game music is now embedded into the very fabric of electronic music genres and concomitant music cultures. With reference to the grime music scene in the UK (a music style based on a genealogical mix of electronic dance music and hip-hop), Rob Gallagher demonstrates in this issue, how a generation of music makers that have grown up with game culture and digital music software and now weave this experience into their music. Other examples of game music inspired genres include hip-hop (Dirs. Dwyer & Neill, 2014; Vice Staff, 2014), gabba/gabber house (Schouwenburg, 2013), and a range of other electronica (Hinton, 2017). Making use of MIDI (Music Instrument Digital Interface) that became available during the mid-80s on sound cards, music composition software was developed for the same computers as video games (Manning, 1994). For example, C-Lab's relatively short-lived 1986 *Supertrack* for the Commodore 64 micro (Jenkins, 1986), followed by C-Lab's *Creator* (Trask, 1987), pre-runner of *Notator Logic* and *Logic Pro*, and Steinberg's *Cubase* (Lord, 1989) for the Atari ST home computer, which attractively included a MIDI-to-PC port. Such music production software treats *musemes* (distinct musical components––see Tagg, 2013) as building blocks that are sequenced and triggered. Also, the sequential visual display of music software offers a graphic interface that reminds of music and dance games in terms of moving along musemes on a linear timeline. Mobile gameplay and music apps add a different dimension to this, as musical elements merge with finger movements.

The specific characteristics of interactive and immersive player engagement with non-linear music composition and adaptive audio set it apart from linear music composition, however. This is illustrated in detail in the *BEEP* research project, in which Karen Collins and her team video-document interviews with game composers around the world. Engagement with games, game music and game culture is also addressed from players' perspectives in her work on player interaction (Collins, 2013). In this issue, interview clips from the *BEEP* project are linked to a playlist of her favourite game music, showing a dynamic connection between the personal experience of game music and research in the area. In this issue, the topic of interactive game sound is further addressed by Tom Langhorst, with a focus on sound effects that provide believable action cues, and by Zander Hulme's investigation of the issue of crossfading between audio components during gameplay. In his recently published monograph, Rob Gallagher (2017) suggests that a socially produced embodied alignment occurs between gamer and the rhythm of the game, a

type of "entrainment". Musical pulse and rhythm can significantly enhance the experience of entrainment produced within the rhythms of gameplay interaction through both seductive flow and the challenge of rupture. A type of interactive dialogue is set up in this way between the game environment and player, similarly to the way in which between DJs and dancers become part of a responsive network (Ferreira, 2008; Rietveld, 2016).

Another critical aspect of game music is its enmeshment in narratives of gaming history that focus on technology and sound to celebrate innovation and appease a nostalgic sense of affection for video games. In this special issue of *GAME*, technostalgia is present in the discussions by James Newman, Kenny McAlpine and Tom Langhorst, each of whom addresses, in various ways, issues that relate to the aesthetics of low-resolution digital sound, which hail back to the early days of gaming. James Newman has worked extensively on the ephemeral ontology of video games as hardware becomes obsolete and software is superseded, and the challenges as well as questions this brings to game preservation (Newman 2012; see also Newman 2004 and 2008). In his study for this issue, Newman focused on the relations between technology and the musical, and on how composers like Rob Hubbard and Martin Galway went on to shape the sound of video game music for generations of players. From the perspective of sound design, Langhorst contributes to the related issue of the relationship between visual and audio realism as a designer, discussing game experience through sound in early games such as *Pong* (Atari 1972). Like Newman, Kenneth McAlpine also explores constraints faced by early programmers. McAlpine focuses on designers working with 48k Sinclair ZX Spectrum and argues that their ingenuity turned limitations into creativity an innovation, effectively shaping an early sound of video games that would go down in history as well as influence modern developments like chiptune music.

Further contributions in our issue show examples of some of the many directions of research that the auditory element of design brings to the attention of game studies. Rob Gallagher's paper, as already discussed, shows how a generation of music makers grew up with game culture weaved this experience into their music. Frederico Peñate Domínguez addresses what he calls "Nazi rock 'n' roll", an imaginary American popular music used to promote *Wolfenstein: The New Order*, which simultaneously mythologizes Nazi culture through false musical memory. Peñate Domínguez discusses how music worked as an essential aspect through which the programmers were able to create an alternate, immersive, heterotopic post-WW2 history and to promote the game through it. In his article for this issue, Zander Hulme focuses on more technical aspects related to this issue. He discusses how the implementation of adaptive musical through dynamic, *imbricate* audio could further increase the ability of composers to immerse players in gameplay. Other contributions in this issue include reviews of recent books on the subject of games and music, an interview with the Ludomusicology research group, and an original playlist

on memorable moments in game sound history by Karen Collins. Providing a varied series of perspectives on the many directions in which the study of the auditory dimension could bring game studies, as well as games, our edited collection does not aim to provide an exhaustive or linear history of game music. Rather, it offers a glimpse into its "polyphonic" and still vastly underexplored fields, identifying some of them, and suggesting a long-term cooperation and interplay between music and game studies.

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