DMSA

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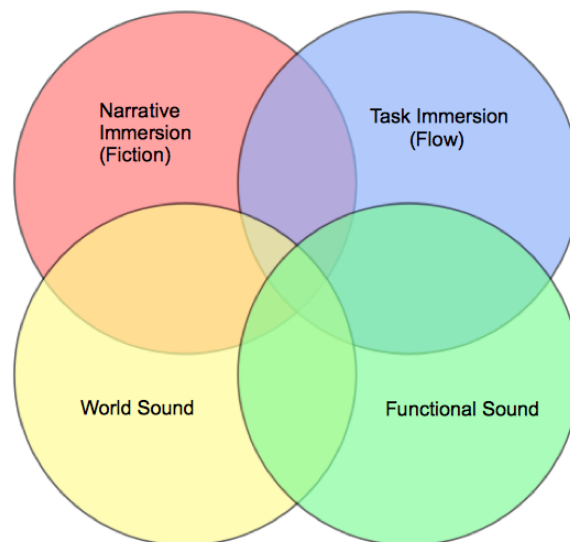# Sound As The Driving Component For Immersion And Player Action In Games

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BA (Hons) Digital Music and Sound Arts 3

Narrative Immersion (Fiction)

Task Immersion (Flow)

World Sound

Functional Sound

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Introduction

Computer games have only in the past decade started to become the subjects of academic study. A vast majority of these writings focus upon their rule systems, narratives, or visual components.[1] Significant attempts have been made to theorize game sound experiences from academics such as Karen Collins and Kristine Jørgensen. However, terminology and methods for analysis are still lacking. The purpose of this essay is to expand upon these existing theories in relation to the influence game sound has upon player immersion and actions. To do this we will consider the game sound experience from several perspectives. Firstly, we will look at how interacting with sound affects our subjective experience and how we derive meaning within game contexts. Secondly, we will consider the role of sound in creating both narrative immersion in the fictional world, and task-based immersion found in challenge and gameplay. Under these presumptions, we will then study two games in detail; *Alien: Isolation* (2014) and *140* (2013), which each approach audio in very different ways.

Themes and Problems

A major concern when studying game sounds are the distinctions between sound effects, score, and dialogue. Within games, it is often very difficult to distinguish between such elements as they have been conventionally known. This ambiguity has been present since some of the earliest games – in *Super Mario Bros.* (1985, Nintendo), the sounds for when Mario jumps or defeats an enemy, were tonal.[2] These approaches challenge the conventions of sound design and music which have often been repurposed from film and television studies. Walter Murch describes a similar issue he encountered in film, describing many sound effects as "sound centaurs", which are half-language, half-music.[3] For games, this issue is even more prevalent. Anahid Kassabian notes that the aesthetics of game sound have also cross-influenced into film production, and cites films such as *The Matrix* (1999) as examples of this.[4] For these reasons, this essay will not explicitly focus on a single distinction. Instead, we will focus upon sound which has greatest influence upon the player, with respect to the narrative and rule-based contexts of the game.

Studies of sound in media have typically focused upon the passive experience of hearing, as is the case in film and television.[5] Pierre Schaeffer and Michel Chion theorized several *listening modes* that can be applied to audiovisual media. Chion specifically noted that there is often a physical and

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1   A. Stockburger, 'The Rendered Arena: Modalities Of Space In Computer Games', *Axel Stockburger Homepage*, last updated 2006, accessed November 10, 2014, http://www.stockburger.at/files/2010/04/Stockburger_Phd.pdf. p. 5-6.
2   K. Collins, *Playing With Sound*, MIT Press, Cambridge, Massachusetts, 2013, p. 3-4.
3   W. Murch, 'Dense Clarity – Clear Density', *Transom*, last updated 2014, accessed November 10, 2014, http://transom.org/2005/walter-murch/.
4   A. Kassabian, 'The Sound Of A New Film Form', in *Popular Music And Film*, I. Inglis (ed.), 1st ed., Wallflower, London, 2003.
5   K. Collins, 2013, op. Cit., p. 2.

psychological reaction to hearing a sound, such as our eyes scanning the cinema screen to find the source of something unseen.[6][7] Chion's ideas hint at the possibility for interaction, however in these forms of media, our reactions to stimuli cannot impact events in diegesis. We cannot fully understand the nature of the sounds source unless it is explicitly shown on screen. In games, this is usually not the case. Many games do make use of *acousmatic* and non-diegetic sound, however most frequently sounds are based within the game diegesis itself, where the player often has the ability to explore and clarify sound sources at will. It is also worth considering that sounds outside of diegesis can in fact influence events in the game world, through the conduit of player interaction.[8] For these reasons, we need to investigate further how the acts of listening, hearing, imagining and interacting influence one another.

6   M. Chion, *Audio-Vision,* Columbia University Press, New York, 1994, p. 71, 85.
7   J. Barker, *The Tactile Eye: Touch and the Cinematic Experience*, University of California Press, Berkeley, 2009, p. 81.
8   K. Jørgensen, *A Comprehensive Study Of Sound In Computer Games,* Edwin Mellen Press, Lewiston, 2009, p. 98.

Interacting with Sound

An important question to ask when considering game sound is: does interacting with sound change our subjective experience? If so, how does it change this experience and what implications are there for how a player chooses to act? Also, how do the modalities of sound, image, touch and gameplay intertwine from the player perspective? In this chapter we will consider game sound in terms of its direct, two-way communication with the player. Additionally, we will consider how this system influences player action. In reference to these relationships, Collins has posed the term *kinesonic synchresis*.

Listening and Interacting

Expanding upon the listening modes set out by Schaeffer and Chion, David Huron proposed a new set of possible listening modes that appear more comprehensive when considering new media forms. Of particular relevance to game sound are the *signal*, *retentive*, and *sing-along* modes. Signal listening refers to "listening in anticipation" for auditory cues. In music, this could refer to a percussionist awaiting a particular phrase before playing their part. Retentive listening refers to the memorization of information, such as in the game *Simon* (1978). Sing-along refers to the mental act of following a piece of music or a sound in an act of mimicry.[9] Huron's expanded definitions seem to be especially relevant to interactive media, as they all involve, or precede, an action on the part of the listener.[10] Music game *Guitar Hero* (2005) makes use of retentive and sing-along modes, as the player is tasked with following along to rock songs, with the goal of a note-perfect performance (Fig. 1).

Debate regarding what defines interaction, particularly related to media, is still ongoing. Points of contention tend to revolve around whether our subjective meaning-making of a work can be considered interactivity. Margaret Morse argues that it is imperative; "Rather than presenting a story that seems to tell itself or a world that arises of itself, by definition interactivity involves decision making or the active *participation* of a user."[11] Some theorists posit that only physical interaction, in a two-way communication system, can be considered interactive.[12] However, in recent years, consensus has begun to shift towards a more unified understanding of interactivity. *Embodied cognition* considers our understanding of our environment to be a direct result of our ability to physically interact with it. Through memory, we are able to make meaning of an event by

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9   D. Huron, 'Listening Styles And Listening Strategies', *Society For Music Theory - Conference Proceedings*, last updated 2002, accessed November 12, 2014, http://www.musiccog.ohio-state.edu/Huron/Talks/SMT.2002/handout.html.
10   K. Collins, 2013, op. Cit., p. 5-6.
11   M. Morse, 'The Poetics Of Interactivity', in *Women, Art And Technology*, J. Malloy, MIT Press, Cambridge, Massachusetts, 2003, p. 16 - 17.
12   David Z. Saltz, 'The Art Of Interaction: Interactivity, Performativity, And Computers', *The Journal of Aesthetics and Art Criticism*, vol. 55, no. 2, Spring 1997.

recalling our sensory and motoric states from past experience.[13] Trevor Cox suggests that this sensory recollection may explain why we dislike certain sounds – for example we hear the sound of nails on chalkboard, and recall the unpleasant feeling of performing the same action.[14] Embodied cognition, therefore, represents a fruitful approach towards understanding the experience of interacting with game sound, and how it creates immersion in tandem with visuals and action.

Fig. 1: Fret-board interface of *Guitar Hero*, showing upcoming notes.[15]

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13 K. Collins, 2013, op. Cit., p. 23-25.
14 T. J. Cox, 'Scraping sounds and disgusting noises' , *Applied Acoustics*, vol. 69, no. 12, p. 1195-1204.
15 Red Octane, Harmonix, *Guitar Hero*, 2005. Photographed by Francesco De Mao, 2014, explosion.com, accessed November 2014, http://www.explosion.com/54881/guitar-hero-downloadable-contents-removed-soon/.

<u>Sound and Multimodality</u>

Technologies' impact on media has broadened the range of ways in which we may interact with artifacts. The advent of recorded sound and sound reproduction are notable milestones in this regard. When such technologies began to be used in film, theorists were confronted with a plethora of new and unusual experiences for which there was little basis for understanding. Since then, writers such as Chion have provided coherent arguments such as the *audiovisual contract*, where audiences ignore the knowledge that sound is sourced from loudspeakers. Instead, they temporarily accept that sound is projected from within the fictional world.[16] Such a contract is also at play in games, where the method of delivery is usually similar to that of film. Chion also theorised about a *synchresis* between sound and image. This term describes how the seeing of an image on screen, in combination with the hearing of a sound, can form a new meaning that is independent of the original elements.[17] In Chion's words "we never see the same thing when we also hear; we don't hear the same thing when we see as well".[18]

Whilst games remain somewhat loyal to these phenomena, they also introduce the additional stimuli of control, movement and action, which impact upon player interpretation.[19] It can be argued that films also have an element of interaction, through individual interpretation, and sensory reaction. This is particularly true when we consider the argument of *embodied cognition*. However in games, the influence of interactivity is far more pronounced. This melding of interaction with sound and visuals, which in turn creates emergent meanings, has been termed *kinesonic synchresis*. The agency and autonomy that games grant a player, physically and cognitively, also impact directly on the sensory experience. Allowing the audience to directly influence events, games encourage players to pay greater attention to, and forge better understandings of, the sounds of the game. A survival game such as *DayZ* (2011) exemplifies this in the extreme. A core mechanic of this game is the permanent death of the player character, should they fail to be aware of, or react appropriately to, danger in their surroundings. The result is an extremely tense and immersive experience, where we are compelled to listen to our surroundings with great attention (App. 1).

Marc Leman has argued that music involves all of the senses, despite being presented as an exclusively aural occurrence. Music can "move the body, evoke emotional responses, and generate associations with spaces and textures."[20] As we discovered earlier, distinctions between sound effects, language and music are very amorphous in games. Therefore, we can reasonably extend

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16 M. Chion, 1994, op. Cit., p. 1-3.
17 ibid., p. 63-65.
18 ibid., XXVi.
19 A. Stockburger, 'The Game Environment From An Auditive Perspective', *Axel Stockburger Homepage*, last modified 2003, updated October 2, 2014, http://www.stockburger.at/files/2010/04/gameinvironment_stockburger1.pdf. p. 1-2.
20 M. Leman, *Embodied Music Cognition And Mediation Technology*, MIT Press, Cambridge, Massachusetts, 2008, p. 139.

this argument to encompass their manifold uses. Cazeaux poses the example of sounds of footsteps getting louder in his phenomenological study of radio drama. He contends that such sounds are loaded with semantic information. We can determine not only that someone is approaching, but also gauge intent, gender, size, etc.[21] These meanings derive from the embodied cognition of a plethora of memories with similar sounds. *Papa Sangre* (2013) and *The Nightjar* (2011) are *audio games* created for mobile devices, which present the game space solely through binaural sound. The only visual element is an onscreen interface that the player uses as a controller (Fig. 2). Gameplay can be considered similar to a radio drama, where sound generates mental imagery and sensations, and forms the narrative. Sounds are therefore able to incite a sensory impression that involves other modalities, such as action or visuals.[22]
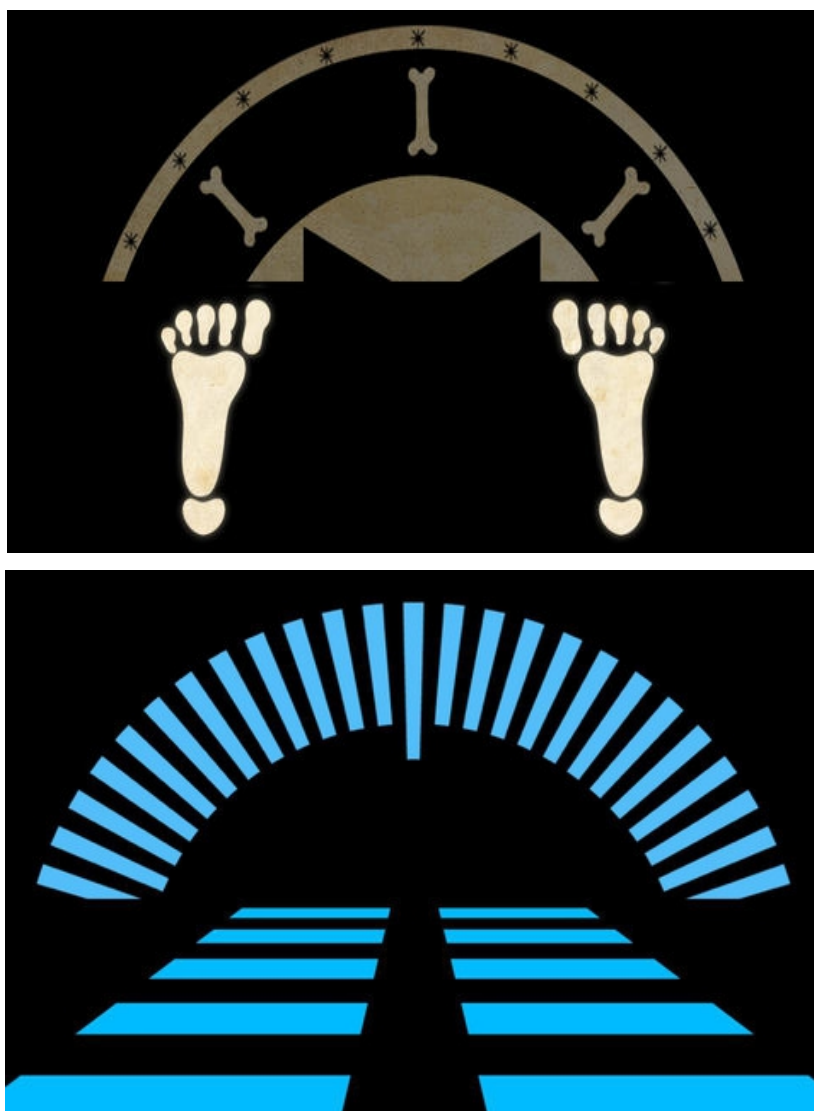

Fig. 2: On-screen interface for *Papa Sangre* (top), and *The Nightjar* (bottom), used for movement and orientation.[23] [24]

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21 C. Cazeaux, 'Phenomenology And Radio Drama', *The British Journal of Aesthetics*, vol. 45, no. 2, 2005, p. 157-174.
22 K. Collins, 2013, op. Cit., p. 32-33.
23 Somethin' Else, *Papa Sangre*, 2013. Photographed by W. Andrew Hair, November 2014.
24 Somethin' Else, *The Nightjar*, 2011. Photographed by W. Andrew Hair, November 2014.

140

Many games make use of sound to convey complex information about game events to the player. In *140* this idea is applied to background music, where musical elements are synchronized to the movements of objects and enemies.[25] Music has been transmuted into the physical world of the game, and we must use our intuitive understanding of its rhythm to navigate. The game form comes in the shape of a two-dimensional *platform* game. Visual aesthetics can be considered very minimalist, with a vibrant colour palette and psychedelic feel.

Composer Jakob Schmidt created an electronic soundtrack which both complements the minimalist visuals, and works as a guide for player navigation. Heavy emphasis was placed upon rhythm, therefore music was composed in 4/4 time signature, 140bpm, and employs percussion, synthesized bass instruments, and half-time drum beats. Most significantly, the score was created with extensive game world integration in mind.

Objects in the environment that the player must navigate may appear, disappear, change state, or move, depending on what is occurring in the soundtrack. For example, a platform may appear ahead of the player as the hit of a snare drum plays in the music (Fig. 3). On the next hit, the platform will disappear. As a platform game, *140* is very challenging, and requires players to execute their movements with very precise timing. The score is therefore providing an intuitive system by which a player is able to very accurately gauge how and when the environment will change its status.
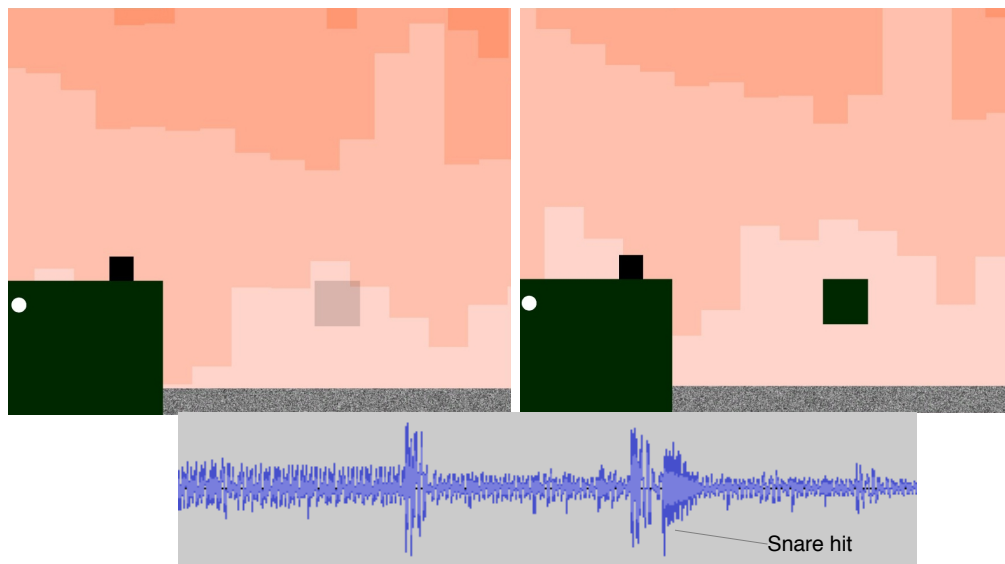

Fig. 3: Appearing and disappearing of platform on subsequent snare drum hits.

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25 K. Aallouche, H. Albeiriss, R. Zarghoune, J. Arrasvuori, A. Eronen, J. Holm, 'Implementation and evaluation of a background music reactive game', In Proceedings of the 4th Australasian conference on Interactive entertainment (IE '07), M. Gibbs, Y. Pisan (eds.), RMIT University, Melbourne, Australia, Article 1.

Similar to forms of electronic dance music, there is heavy use of repetition and *looping*. This allows the player to become accustomed to the musical elements and how they relate to game objects. Progressing through the levels is also linked to musical progression. Instruments come in as the player encounters their respective objects, and fade out as they move past them. As an experience this could metaphorically be likened to playing within a piece of music. (App. 2)

In the first levels the synchronization between instruments and objects is readily apparent and easy to follow. However, the second 'boss' level the player encounters involves avoiding an enemy whose attacks are timed to the playing of a bass note. In order to successfully dodge the attacks, the player must understand that it coincides with the third beat of every second bar. Through kinesonic synchresis, the player is able to forge a connection between the bass note, and the repeating attacks of the enemy. The player must dodge 12 of these attacks in order to beat the boss, so a mastery of timing is imperative (App. 3).

The final boss battle demands a much greater understanding of the music than the preceding levels. Whereas previous levels required the player to keep time with a single musical element, this battle involves multiple. It also introduces a set of random conditions which prevent the player from simply memorizing a set of physical actions. Instead they must keep track of a snare drum pattern, which determines the position that their character fires from. They must also pay attention to the timbre of a synthesizer chord, which represents the direction that enemies will come from. This level also overloads the visual system by rotating the game world during each chord. Visually orientating where the character needs to be is practically impossible. Instead, the player must pay close attention to the snare pattern and synthesizer chords in order to master the level (App. 4).

140 makes significant use of multimodal sound. The soundtrack is capable of conveying detailed information about game action, which the player must be attentive to in order to succeed. Visual representations of the game action are insufficient to make the game enjoyable and immersive. As Sanders and McCormick describe, auditory communication is preferable when the visual system is overburdened, or subject to continuous change.[26] [27] The complex movements and interactions of game objects are much better conveyed through musical timings. Gameplay as an experience involves extended periods of *signal* listening. Frequently the player will pause for a moment, until they have an understanding of musical timings and how they relate to objects.

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26 E.J. McCormick, M.S. Sanders, *Human Factors in Engineering and Design: Auditory, Tactual, and Olfactory Displays,* McGraw-Hill, Singapore, 1993, p. 133.
27 K. Jørgensen, op. Cit., p. 62.

Sonic Playgrounds

As we discovered earlier, definitions of sound types in games require a terminology that expands upon previous theories of audiovisual forms. In film and television these definitions are typically based on where they find their source, for example diegetic/non-diegetic music. However in games, these criteria are not so distinct. For instance, sound that is non-diegetic can, through the actions of the player, influence events within diegesis. Sounds can also be perceived as serving very different functions, such as in *Resident Evil 4* (2004). Atmospheric music in this game plays only when there are enemies still in the area. Depending on the player's perception, it can therefore either function as a tool for communicating danger, or a score to construct narrative.

Dual Sound Functionalities

When we consider the function of game sounds in relation to their affects on the player, we are better able to describe them. Jørgensen believes that game sound has a 'dual' nature; they tend to fall on a spectrum between two key responsibilities. One is to create coherent and believable worlds in which the player can be immersed, in collaboration with other components of the game. The other, in contrast, is to function as a usability system to inform the player of game events.[28]

Jesper Juul highlighted that, in order to fully analyse a game, we must consider it in terms of two layers. There is the exposed audio-visual stimulus, or imaginary world, that we experience on screen and through loudspeakers. Beyond this there is an underlying rule system that dictates how the player and the game world may interact.[29] In the same vein, Lars Konzack points to a 'virtual space', which includes characters and environments, and a 'playground' which involves the ways in which a player may interact.[30] There is a distinct relationship between the paradigm of roles that Jørgensen describes, and the analytical criteria for games that Juul and Konzack set out. The virtual world and narrative can be created through sound, but sound can also communicate aspects of the rule system. Some games even use sound as a rule in itself, such as *140* or *Audiosurf* (2008) (Fig. 4).

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28 K. Jørgensen, op. Cit., p. 4.
29 J. Juul, *Half-Real,* MIT Press, Cambridge, Massachusetts, 2011, p. 6
30 L. Konzack, 'Computer Game Criticism: A Method For Computer Game Analysis', *Digra.Org*, last updated 2002, accessed November 6, 2014, http://www.digra.org/digital-library/publications/computer-game-criticism-a-method-for-computer-game-analysis/.

Fig. 4: Audiosurf. Players select an MP3 file which is digitally analysed and used to build the game world.[31]

Sound As A Narrative Constructor

Games often utilize sound as a device to create narrative coherence, in a similar fashion to moving image. How successfully they convey narrative, in collaboration with visuals, gameplay and story, can be referred to as *narrative fit*. A player's comprehension of narrative is important in creating emotion.[32] Enabling players to experience emotion towards fiction also requires the presentation convince the brain into mistaking it for reality.[33] By extension, these emotions determine the immersiveness of the game experience, and how players choose to act.[34] Interaction with audio also affects the immersive experience, as being able to interact with our environment to produce sound is key to it's credibility.[35][36] However, naturalistic realism in its purest form is not the primary goal for narrative sound. Instead, it is the narrative fit, based upon conventions of *cinematic* realism that game sound aspires to.[37] Creating sound which proves useful for assisting the player in understanding narrative is the main objective in this case. Jørgensen coined the term *perceptual fidelity* to describe this cohesiveness.[38]

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31 Invisible Handlebar, *Audiosurf*, 2008. Photographed by develion, 2010, develion.co.uk, accessed November 2014, http://develion.co.uk/article/2010/11/22/audiosurf/.
32 I. Ekman, 'A Cognitive Approach To The Emotional Function Of Game Audio', in *The Oxford Handbook Of Interactive Audio*, K. Collins, H. Tessler, B. Kapralos (eds), 1st ed., Oxford University Press, Oxford, 2014, p. 200.
33 E. Tan, 'Film-Induced Affect As A Witness Emotion', *Poetics,* vol. 23, no. 1-2, 1995, p. 7-32.
34 L. Ermi, F. Mäyrä, 'Fundamental Components Of The Gameplay Experience: Analysing Immersion', in *Worlds In Play: International Perspectives On Digital Games Research*, S. De Castell and J. Jenson (eds.), 1st ed., Peter Lang Publishing, New York, 2007.
35 R. Bridgett, *From The Shadows Of Film Sound*, Self-published, Vancouver, 2010, p. 83.
36 B. Laurel, *Computers As Theatre*, Addison-Wesley Publishing, Reading, Mass., 1991, p. 161.
37 K. Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design*, MIT Press, Cambridge, Mass., 2008, p. 134-135.
38 K. Jørgensen, op. Cit., p. 60-62.

Sound that is used to construct narrative often formulates emergent meanings when combined with visuals, as described by Chion with synchresis. The capability of sound to change the perception of narrative has been well documented in film, as shown by Chion and also Vitouch in relation to music.[39] However only very recently have games and game interaction been the subject of similar studies.[40] An example of this *kinesonic synchresis* is shown in *Hotline Miami* (2012). Set in a psychedelic 1980s Miami, *Hotline Miami* compels the player to commit brutal massacres against an undefined criminal organisation. Each level is accompanied by repetitive, energetic house music (App. 5). Whilst this music performs well in providing narrative cohesion, the emergent meaning it creates when combined with extreme gore and brutality is even more evocative. We find ourselves goaded on to perpetrate even greater acts of inhumanity by the relentless music. We may even question why we demand such levels of violence from games.

Sound as a Facilitator of Gameplay

Sound can also perform a crucial role in assisting gamers play effectively. Most games involve some kind of goal structure, where performing a certain set of actions allows for progression towards further segments of the game. Mihaly Csikszentmihalyi's theory of *flow* describes how our complete immersion in a task is the result of a careful balance between our self-perceived skill at performing, and the perceived challenge of the task. We must be operating at the best of our abilities, on a task that is demanding of us (Fig. 5).[41] This phenomena manifests itself in most games, and games often include difficulty systems to accommodate various player abilities.[42]

Sound has a unique capability to communicate important information regarding game events to the player, and therefore can ease the learning curve of gameplay.[43] [44] When sounds perform well in communicating this information, we can say they have a high *functional fit* [45], or in Jørgensen's terms, *functional fidelity*.[46]

39 O. Vitouch, 'When Your Ear Sets The Stage: Musical Context Effects In Film Perception', *Psychology of Music*, vol. 29, no. 1, 2001, p.70-83.
40 D. Moffat, K. Kiegler. 'Investigating the Affects of Music on Emotion in Games'. *Proceedings of the Audio Mostly Conference*, Piteaå, Sweden, p. 37-41, Available: http://wood.tii.se/sonic/images/stories/amc06/amc_proceedings_low.pdf.
41 M. Csikszentmihalyi, 'Flow: The Psychology Of Optimal Experience',Design Issues, vol. 8, no. 1, 1991, p.80.
42 J. Y. Douglas. A. Hargadon. 'The Pleasures Of Immersion And Interaction: Schemas, Scripts And The Fifth Business', in *First Person: New Media As Story, Performance And Game*, N. Wardrip-Fruin and P. Harrigan (eds.), 1st ed., MIT Press, Cambridge, Mass., 2004, p. 203 - 204.
43 K. Collins, 'An Introduction To The Participatory And Non-Linear Aspects Of Video Games Audio', *Gamesound*, last updated 2014, accessed October 2, 2014, http://www.gamessound.com/interactive.pdf, p. 8.
44 A. Marks, *The Complete Guide To Game Audio*, Focal Press/Elsevier, Burlington, Mass., 2002, p. 190.

45 I. Ekman, op. Cit., p. 200-204
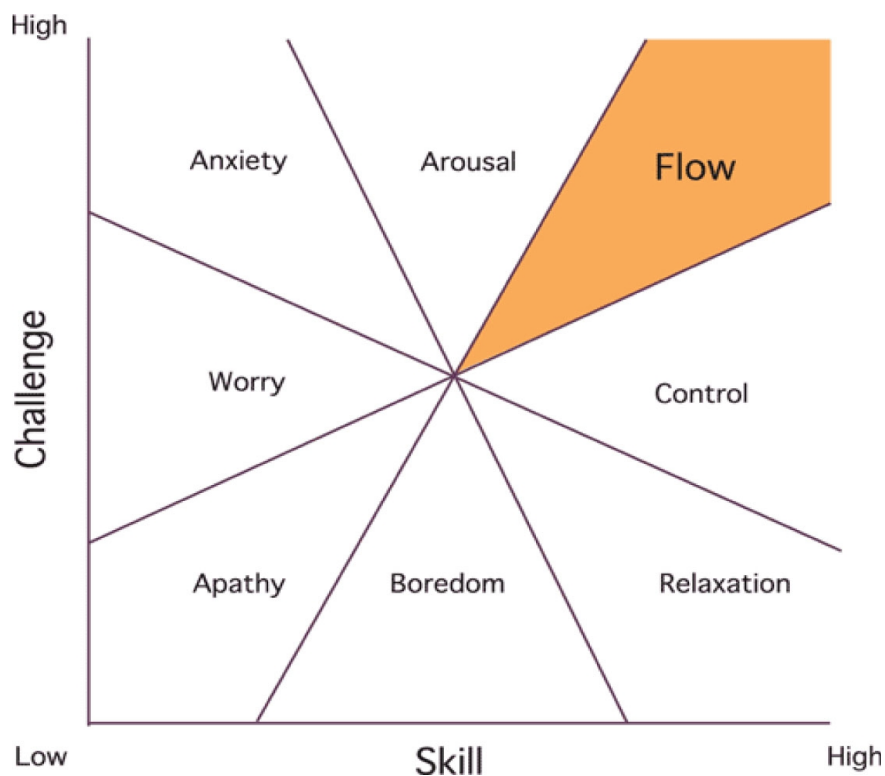46 K. Jørgensen, op. Cit., p. 60.

Fig. 5: A diagram illustrating how high challenge combined with high skill facilitates flow.[47]

The most self-evident forms of functional sound are warning and alert sounds. McCormick and Sanders devised a list of situations where audio is preferable to visuals in conveying information. In particular, sound is most effective when dealing with matters that require urgent attention.[48] [49] In *Half-Life 2* (2004) the HEV suit that the character wears will announce "Vital signs critical. Seek medical attention" if the player sustains significant damage.

Feedback and response sounds are another critical aspect of easing player interaction. These sounds provide confirmations, rejections, or neutral responses to actions of the player, or game events. This is particularly useful in assisting the player in achieving game goals. In *World of Warcraft* (2004), if the player attempts to perform an ability without the required resources, the character will announce "I need more energy", compelling the player to try an alternative. Such sounds can also communicate the long term effects of player action. In *Grand Theft Auto V* (2013), radio news reporters will comment on world events that the player has participated in, such as bank robberies. These reports act as both a narrative device to enhance fictional immersion, and as a confirmation that a player's action has influenced and progressed the game world.

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47 M. Csikszentmihalyi, Flow Diagram. Sourced from Daniel Swensen, 2012, *Surley Muse*, accessed November 2014, http://surlymuse.com/finding-the-flow-state-in-the-age-of-distraction/.
48 E.J. McCormick, M.S. Sanders, op. Cit., p. 138.
49 K. Jørgensen, op. Cit., p. 63.

Many games use sound to create a convincing three-dimensional virtual space. Sound is unique in this capacity, as whilst visuals can create a faux 3D space, it is usually still presented via a flat screen. Surround formats allow for a greater sense of immersion in the game space, but they also allow for a greater role of functional sounds.[50] These sounds often work to draw player attention to important objects or targets in the game space. Such sounds can be considered *leitmotifs* and help the player in object/enemy identification.[51]

The earliest example of a game using spatialized sound to communicate information to the player is in *Super Mario Bros* (1985) where the player will hear the sound of a cannon firing off to the right of the screen. Shortly after, a *Bullet Bill* will fly onto the screen. In *Bioshock* (2007), NPC characters will engage in idle conversation with one another, which can be heard from behind walls or around corners. Whilst there is an element of narrative support at play here, the main function of these sounds is to aware the player of potential enemies in their environment.[52]

Duality In Play

It is rare that sounds in games are purely functional, or narrative based, as we have described above. For example, in *The Stanley Parable* (2013), the player's exploration of an office building is accompanied by an audio narrator, commenting on choices, and foreshadowing future events (App. 6). The narration often compels the player to follow a certain path. However, there are usually multiple options to explore, so we can choose to disregard the presented narrative and follow another (Fig. 6). This is an example where the player's perception, or *perceived function* determines the role of the narration. The player is able to perceive the narration as a commentary support for the path they have followed. Alternatively they may use it as a functional system, where they decide which path to take based on the information presented to them. This is also a further example of how kinesonic synchresis, where a fusing of audio narrative, action and our visual environment produce new meanings that are dependant on the perception of the player.

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50 R. Bridgett, op. Cit., p. 34 - 35.
51 K. Collins, 2008, op. Cit., p. 130.
52 Soundingames.com, 'Beacon Locator - Sound Design In Games', last updated 2014, accessed November 20, 2014, http://www.soundingames.com/index.php?title=Beacon_Locator.

Fig. 6: The narrators ideal game path.[53]

53   Galactic Cafe, *The Stanley Parable*, 2013. Photographed by W. Andrew Hair, November 2014.

Alien: Isolation

Narrative Context

Alien: Isolation is a survival-horror game developed for home console and PC platforms. The storyline was written as an extended epilogue to the original *Alien* (1979) film. Set in 2137, approximately 15 years after the events of the original film, players control Amanda Ripley, daughter of film character Ellen Ripley, who finds herself in the vicinity of the destroyed Nostromo spacecraft, and is motivated to investigate a nearby space station in order to discover what happened to her mother. In doing so, she is trapped onboard the derelict space station with only a handful of human survivors and androids for company, along with an unknown life form that has been slowly killing off those still onboard.[54]

Cinematic Sound and Score

As with the film, *Alien: Isolation* places heavy emphasis on a subtle, disconcerting soundscape, comprised of both musical score and sound design, in order to evoke feelings of anxiety and claustrophobia in the audience.[55] The primary function of the *acousmatic*[56] ambient sounds of the station is to provide credibility to the game world. It is unlikely that these sounds influence the player's decision-making process directly, instead they are more likely to contribute to their emotional state, and through this influence action. In addition, this ambience can act as a narrative support, "establishing a sense of foreboding about the future of the ship and crew", as William Whittingdon notes on the film (App. 7).[57]

Adaptive music[58] is employed frequently in relation to the stealthiness of the player, whether they have been detected (or in danger of it), if they are being hunted, and so forth. Of particular importance are the musical elements that accompany the freely-roaming Alien. If the player sights the Alien from a distance, music with "stringed instruments plucked chaotically"[59] plays. If the Alien begins to move towards the player or if a player decides to hide, additional layers and ambiances are added, such as brass instruments played with "extended sustain and simple tonality", and synthesized pink noise. As the distance between player and threat reduces, so the tension within the music builds to reflect the perceived danger in the player. It is worth noting that these musical elements are not utilized continually, but instead may only play on certain

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54 D. Krupa, 'Alien: Isolation – The Most Authentic Alien Game Ever?', IGN, last updated 2014, accessed October 29, 2014, http://uk.ign.com/articles/2014/01/07/alien-isolation-the-most-authentic-alien-game-ever.

55 Sam Cooper and Byron Bullock, 'Alien: Isolation Audio Interview With Sam Cooper & Byron Bullock!', *The Sound Architect*, last updated 2014, accessed October 29, 2014, http://www.thesoundarchitect.co.uk/interviews/alienisolation/.

56 M. Chion, op. Cit., p. 32.

57 W. Whittington, *Sound Design & Science Fiction*, Austin, TX, University of Texas Press, 2007, p. 152-154.

58 K. Collins, 2014, op. Cit., p. 8.

59 W. Whittington, op. Cit., p. 155.

encounters, or certain situations. In this sense, the *adaptive music* may be attempting to evade being used as a tool for detecting danger. This impermanence and unpredictability contributes to the "fear of the unknown" that is so important to horror aesthetics[60], reducing the audiences power, and encouraging a nervous, cautionary style of play (App. 8).

<u>Self-generated and Surrounding Noises</u>

All characters within the gameplay diegesis have the ability to 'hear' the actions of the player, and as such, how much noise the player chooses to make in a given situation is critical to survival. Self-awareness is achieved through extreme attention to detail to the objects and surfaces a player may interact with. For example, sprinting and shooting generate high levels of noise. Through experience with moving and interacting in various ways (at beginning of the game, in safer environments), the player develops an understanding of the noise system, which becomes critical later in the game. As a result, a players assessment on courses of action hold heavy weight on how much noise they can make without being detected.

Visuals in the game are characterised by relative darkness, reinforcing the idea as the space station as decaying and inhospitable. In situations such as these, where our visual system is hindered, and threats can come from any number of locations, spatialized sound becomes extremely important in informing us to danger.[61] Frequently, our first indications that the Alien might be in our area is through creaking in air-conditioning ducts nearby, or the heavy thud of footsteps from around a corner.

As we saw above, the sound design is fulfilling a dual role. Most importantly to the survival of the player, it is acting as a warning system, communicating threat distance, movement speed, direction, and through vocalizations, current attitude. Significantly, the sound effects that accompany creatures and other dangers, are often similar in tone and texture to the ambient acousmatic sounds described above. Attentive players will be more able to delineate between the two, and they can even *deacousmatise* some of these sounds, depending on whether they are sourced within the game area. However, overall this perceptual closeness between far-away rumbling, and impending threat, contributes further to ensure the player remains in a state of constant paranoia.

Early in the game, the player discovers a 'motion tracking' device, which registers any moving creatures on the radar screen of a handheld gadget. There is no immediately obvious visual scale to

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60 R. Roberts, 'Fear Of The Unknown: Music And Sound Design In Psychological Horror Games', in *Music In Video Games: Studying Play*, K.J. Donnelly, Neil Lerner and William Gibbons (eds.), 1st ed., Routledge Music Screen and Media, New York, 2014.
61 R. Bridgett, op. Cit., p. 73 - 75.

the radar, although through experimentation the player can roughly grasp the distances involved. Accompanying the radar blips is an audible 'bleep' recurring more frequently, as the creature moves closer to the player. Again, this sound is serving a dual function, both as a usability system to signal urgency and degree of threat to the player, and as a narrative support, to heighten anxiety and claustrophobia in the player.

Conclusions

Game sound performs in a multitude of roles that all have different implications for the player experience. Conventional approaches to analysing sound and music within moving image provide a starting point from which we can consider game sound. Games involve a broader range of sensory and cognitive stimulus than moving image, and therefore demand a more unified approach in order to understand their affects. The meanings we interpret from collaboration of sound and image in film are described well with synchresis. Interaction becomes part of this equation in games, where the actions of the player also influence the meaning we create. Collins' idea of a kinesonic synchresis describes this effect well, and provides us with a useful term for expanded discussion. As Walter Murch describes how "despite all appearances, we do not hear and see a film, we hear/see it"[62], so we can say of games we hear/see/play. Additionally, the theory of embodied cognition has been successfully applied to player experiences of game sound. It is evident that the hearing of sounds in games carry sensory impressions beyond hearing alone. Our minds are able to generate mental imagery, gauge materials and texture, and even determine whether the source of the sound is a threat to us.

We have also seen how sound in games tends to perform a role related to creating narrative, or to communicating important gameplay information. These roles are implied when we consider games as having two layers; the fictional world, and the unseen rule system. Both of these roles influence the players sense of immersion in the game environment, and guides their decision making processes. Just as we can be immersed in the fiction of a novel, so too we can be immersed in a game. A consequence of this immersion, which is provided for in part by audio, is the player will act in a fashion more congruent with the game narrative. Likewise, we can be immersed in the challenge of a good game. Sound can be extremely useful in drawing player attention to key game events, reducing the learning curve towards effective play, and facilitating a state of flow. Towards which end of this spectrum sounds tend, is heavily dependent upon game style and genre. Here we see the limitations of this study. We have developed a broad understanding of how players are influenced by game sound through the theories above. However we can also benefit from a detailed study into the representational language of genre-specific game sound - in other words, how game sound is adapted on a case-by-case basis.

Word Count: 5046

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62 W. Murch *in* M. Chion, op. Cit., p. 32.

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140 (2013, Carlsen Games)

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Audiosurf (2008, Invisible Handlebar, Dylan Fitterer)

Bioshock (2007, 2K Boston, 2K Australia, Take-Two Interactive)

DayZ (2013, Bohemia Interactive, Dean Hall)

Grand Theft Auto V (2013, Rockstar North, Rockstar Games, Take-Two Interactive)

Guitar Hero (2005, RedOctane, Harmonix)

Half-Life 2 (2004, Valve, Sierra Entertainment)

Hotline Miami (2012, Dennaton Games, Devolver Digital)

Papa Sangre (2013, Somethin' Else)

Resident Evil 4 (2005, Capcom Production, Studio 4, Capcom)

Simon (1978, Milton Bradley)

Super Mario Bros. (1985, Nintendo)

The Nightjar (2011, Somethin' Else)

The Stanley Parable (2013, Galactic Cafe)

World of Warcraft (2004, Blizzard Entertainment)

Appendix

Audio-visual Examples

1. *DayZ* - Heightened attention to auditory environments.
Available: https://www.youtube.com/watch?v=SBIRyzER18Y

2. *140* - Second boss.
Available: https://www.youtube.com/watch?v=6mzriunguAE

3. *140* - Music and level progression.
Available: https://www.youtube.com/watch?v=vZou6EaRF2E

4. *140* - Final boss.
Available: https://www.youtube.com/watch?v=pgeUKvMvNaQ

5. *Hotline Miami* - Kinesonic synchresis involving soundtrack.
Available: https://www.youtube.com/watch?v=jawvheSngwE

6. *The Stanley Parable* - Audio narration.
Available: https://www.youtube.com/watch?v=kCB73i5WE2k

7. *Alien: Isolation* - Ambient sounds.
Available: https://www.youtube.com/watch?v=r2d4ZQEHfAE

8. *Alien: Isolation* - Adaptive music.
Available: https://www.youtube.com/watch?v=x2lVYqJa4g4