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**Are Classical Hollywood film sound conventions and practices an appropriate and constructive influence to aid the sophistication of the soundtracks in narrative-driven video games?**

This dissertation will research whether classical film sound conventions and practices can be re-appropriated and applied to narrative-driven video games to help their soundtracks fulfil similar functions. I will argue that in some cases this will not only provide video games with improved sound for its own sake, but also with several functions that benefit the game-play.

Applying film sound techniques to a video game should not only immerse the player via the suspension of disbelief inherited from the cinematic sound properties, but it should also deliver information to the player that can be used constructively or strategically, and increase pleasure of the game-play. I will assess the concept that in some cases the sound design can influence the player's behaviour and actions, bringing them in line with the characteristics of the game world and the character they control, all governed by the cinematically influenced pace and atmosphere.

In film, narrative works with the addition of its shot composition and soundtrack. Games have grown closer to film as time has progressed through the influence of film narrative onto game narrative, but for a game's narrative to be as effective as that of a film, video games need to advance in narrative support elements as well. Specifically designed shot composition is much more restrictive in games than it is in film, due to the unpredictability of interactivity. Therefore, the sophistication of video game soundtracks is an essential component for increasing the quality of video game narratives. This is relevant to practitioners of film as well as those of video games, because game developers have recently shown interest in employing writers with backgrounds in film and television, creating new opportunities for those within the film industry.

There are some terms that need to be defined here. The first is 'diegetic'. Bordwell and Thompson use the terms 'diegetic' and 'nondiegetic' for analysing narrative form. They define diegetic sound as follows:

'Any, voice, musical passage, or sound effect presented as originating from the source within the film's world.' (Bordwell and Thompson, 2008:478)

Nondiegetic sound is defined also:

'Sound, such as mood music or a narrator's commentary, represented as coming from a source outside the space of the narrative.' (Boardwell and Thompson, 2008:480)

These are the two definitions that I will consider when using the words 'diegetic' and 'non-diegetic' respectively. Another area that needs clearly defining is that of immersion. 'Immersion' is defined as...

'deep involvement in an interest or activity' (Soanes, 2006)

The same source defines the more relevant term 'immersive':

'(of a computer display) generating a three-dimensional image which appears to surround the user.' (Soanes, 2006)

Another term that I will be using is what I will refer to as game-play which has been defined as follows:

'Gameplay is a term most commonly used to used to rate, or score the quality of the experience had by gamer while playing a particular game. The term

gameplay is often found in game reviews where a score is given based on player experiences during the interaction with game.' (Webopedia, 2005).

The website that has supplied this definition advertises itself as an 'online encyclopedia dedicated to computer technology' (Webopedia, 2010), which leads me to consider this definition as being from an appropriate source. Some quotes that I will include in this dissertation will sometimes refer to a game player's character in a game as an 'avatar' which the same website also defines as follows:

'A virtual representation of the player in a game.'  
(Webopedia, 2005)

Chapter 1 will critically explore the similarities between film and games in order to justify applying film sound practices, conventions and theories to digital interactive media. It also aims to persuade the reader that this is appropriate, and to argue that this re-appropriation is beneficial to video games.

In Chapter 2 I will aim to identify analytical film sound terms and how they work in their medium of origin. After re-appropriating the terms necessary so that they translate to an interactive medium, I will attempt to apply them to video games and justify their relevance as applicable terms for identifying sound practices and conventions.

By the end of the dissertation I hope to have persuasively argued, through existing examples, that a range of practices and conventions from the field of film sound can be considered either for direct application to video game sound, or as an influence towards a unique video game technique. I hope to also argue that the transfer of familiar and subconscious film sound practices onto narrative-driven games can help to immerse players.

## Chapter 1: Exploring video games' suitability for incorporating film sound conventions and practices

Cinema has developed many effective techniques that assist the suspension of disbelief to give audiences a deep sense of immersion. It seems logical then that video games, which are unique as a medium in that they are interactive, have called upon film (although not exclusively) as a reference for immersive techniques through visuals, narrative, and very notably sound. Chion (1994) notes though, that there are few lessons to take concerning sound:

'Theories of the cinema until now have tended to elude the issue of sound, either by completely ignoring it or by relegating it to minor status. Even if some scholars have made rich and provocative contributions here and there, their insights (including my own, in three previous books on the subject) have not yet been influential enough to bring about a total reconsideration of the cinema in light of the position that sound has occupied in it for the last sixty years.'

(Chion, 1994:xxv)

David Lynch (1998), the director of *Eraserhead* (1977), argues that 'Films are 50 percent visual and 50 percent sound. Sometimes sound even overplays the visual.' (Lynch, 1998). This is understandable considering the functions that sound can have in a film. Sound can deliver information, create meaning, provoke emotion and sell the on-screen world to audiences in ways that image alone cannot. Bordwell and Thompson (2008) give an example of the creative manipulation of sound:

'In *The Godfather*, just as Michael Corleone is steeling himself to shoot the rival gangster Sollozzo, we hear a loud metallic screech, presumably from a nearby elevated train. The sound suggests impending danger,

both for the victim and for Michael himself: after the murder, his life will change irrevocably' (Bordwell and Thompson, 2008:272)

Similarly, in the video game *Conan* (2007), the sound of a waterfall is designed to gain in voraciousness as the player moves their character across a bridge and towards it whilst fighting enemies as elaborated on by Kastbauer (2010):

'The shifting textures and frequencies of the three sounds combined sound massive as you battle your way across the bridge which helps to add a sense of audio drama to the scenario' (Kastbauer, 2010)

Both of these are strong and similar examples of the power that sound can subtly deliver regardless of their respective mediums. Despite this, it is widely written that very little attention has been given to sound compared with the extensive research into other areas of film. This in turn also affects the amount of insight into video game sound, as Young (2009b) states:

'If there is little written about linear sound design, there is even less written about interactive sound in computer games.' (Young, 2009b)

Designing a game's soundtrack to sound like a film can arguably push the feeling of the game to seem like a film. As film is synonymous with real-life actors and images, which support our belief in these films, a soundtrack in light of this could, in turn push the believability of a gaming world through the relationship that we make between a lifelike film and its soundtrack. The video game *Doom* (1993) used low-quality sounds that were of acceptable quality at the time but lacked a strong emotional atmosphere. The atmospheric delivery of the game's sound is debatable, but it is at least inferior in clarity to a version of the game that was re-released later (1995) for the Playstation. The Playstation was a format that supported a higher

quality of audio, and this provided an opportunity for the redesign of the game's soundtrack. The tone of the game moved from a style that celebrated a rebellious rock music theme to that of a dark and atmospheric horror film, with little change in anything other than the sound. It could be argued that this also encouraged the playing style to be changed, moving away from a detached shooting game into a scary survival horror. This example of a maturing soundtrack is representative of a pattern that Bridgett (2007) has noticed in the evolution of game sound:

'For some time now there has been a trend in narrative-based console games towards "cinematization" -- or put simply, "sounding like film".'  
(Bridgett, 2007)

Incorporating not only the stylistic elements of film sound to games but the informative as well is even more beneficial. Casual audiences' expectations of film soundtracks have been established over decades of cinema. Therefore, the application of a film sound style to video games can potentially alert players to informative elements in game narrative, due to their pre-existing understanding of conventions. For instance a player will be on alert when moving through a rough city area in a game because of a distant police siren in the ambient track that suggests they should be wary. This will also encourage the player to act accordingly and play with care and suspicion, thereby influencing the player into carry out a fitting character role within the interactive narrative of the game. Kastbauer (2010) gives an example of how video games can use sound to encourage identification with a character role in this way...

'In 2008's *Spider-Man: Web of Shadows*, Shaba Games lead sound designer Brad Meyer was able to use the player character's good/evil affinity, in addition to the dynamic "mood" of each level, to determine the sound palette used, as well as the sound of the effects'  
(Kastbauer, 2010).

Visually, video games have reached a graphical height of near-photorealism and the quality of audio that accompanies it is almost equal to that of other mediums. Combined, these technological advances create more believable and superior immersive experiences to those of a decade ago. Though as with film, sound is not used solely as an immersive device in video games. It is of great importance for sound to deliver a variety of information to audiences and players alike. Chion (1994) alone has written extensively on how sound can deliver information to audiences and this is also true in video games for players. Collins (2008a) notes that sound in video games is affected...

‘by the nature of games themselves, in terms of genre, narrative, the participatory aspects of games, and the *functions that audio must fulfil.*’ (Collins, 2008a:123)

Even in commercial video gaming’s most basic form starting with *Pong* (1972), which is a stripped down representation of table tennis, sound was a valuable element with which to deliver information to the player. This was done essentially by aiming for realism by relating to human assumptions that sound in a game would work as it does in reality. This helped to give a better understanding of an unfamiliar medium as evident in this account of the first two people to play the game:

‘One of the players finally nudged a paddle, and the ball bounced off with a satisfying “pong” sound. That was enough to tell them what to do, and they began to play. By the end of the first game, both players had learned to volley.’ (Salen and Zimmerman, 2004:xiii)

In pursuit of realism to further immerse audiences, it may prove a struggle when trying to recreate the sounds of concepts in life that many people will not have necessarily experienced, such as war. War has been the subject matter of many sound films across a variety of genres, most of which have

provided soundtracks that sonically interpret the war projected on screen. It seems appropriate then, that if film genres 'help to shape and are shaped by our understanding of American culture, character, and identity' (Belton, 1994:116), then a film soundtrack's interpretation of war stands as a practical source of influence for the sound design of games that depict war.

The example of war is very applicable to video games because a large proportion of them are based on this theme due to its popularity. These games are a form of escapism that provide opportunities for influence and imitation of the cliché Hollywood action films. The immersive qualities can be driven by the sounds of near-misses and carnage that are conventionally used in these films. These cinematic features also make for a common visual influence on the choice of art style for these games. This adopted filmic aesthetic in turn encourages a suitable tone for the soundtrack that will take from the conventions of these action film soundtracks.

However, games also take from films in the design of everyday sounds. Film sound carries a reduced realism, by which I mean an exaggerated re-design of sounds in order to give a desired effect, such as a specific emotional response. Therefore, even everyday sounds in a film will differ from our perception of those sounds in reality. It has been theorised by Chion (1994) that film sound convention can 'easily override our own experience and substitute for it, becoming our reference for reality itself' (Chion, 1994:108).

This use of exaggerated cinematic sound is an element of film that can be applied to video games. In the case of games, it can provide cinematic impact to emphasise important events. For example, an exaggerated 'whoosh' may be heard when a character performs a punch. Collins (2007) notes how this can be used in a game's narrative:

'Particularly important to games is the use of sound symbols to help identify goals and focus the player's

perception of certain objects. As Cohen describes, sound focuses out attention, as when a “soundtrack featuring a lullaby might direct attention to a cradle rather than to a fishbowl when both objects are simultaneously depicted in a scene” (Collins, 2007)

Even though the sound design of some video games incorporates a reduced realism, those video games with three-dimensional environments have reached an expectation in that the typical realities of how sound works are coherent here. For instance, sounds will increase and decrease in volume with their distance from the auditor. If a sound source moves from one side of the auditor to the other, then the sound will pan in accordance with the motion, as in stereo or surround sound film soundtracks.

The obvious similarity between film and video game sound are moments in some games that are commonly referred to as *cinematics*, which are described by Collins (2008a) as:

‘linear animated clips inside the game in which the player has no control or participation. The production of audio for these sequences is very similar to film sound production’ (Collins, 2008a:5).

These are usually used to deliver information to the player about the story or a puzzle of some sort. The unfortunate thing is that the nature of the linearity allows for a much more specifically controlled sound mix, like that of film and animations, that is usually superior to the unpredictability of interactive game-play, which must be ‘mixed in real-time by the game (if at all).’ (Young, 2008a)

Although there are similarities between film and video games which might make the use of film sound in games appropriate and useful, there are also problems that have been identified. There have been debates as to whether film conventions and practices are applicable to an interactive

medium, specifically with sound. Collins (2008a) warily uses terminology from film studies to analyse games stating that:

'The notion of diegesis, borrowed from film and drama studies, is perhaps ill suited to games. Nevertheless, it provides a useful notion with which we can discuss the different degrees of interaction between player/viewer and the on-screen content, and highlight some of the distinctions between the linear qualities of film audio and the nonlinear qualities of games.' (2008a:125).

Elsewhere though, Collins (2007) writes that...

'[u]ltimately, sound functions and is consumed in games in different ways than those of other media, and as such, our relationship to sound in games must be theorised differently from ways of the past.' (Collins, 2007).

Young agrees with this...

'game sound can and will continue to learn from every other medium's use of sound but, ultimately, needs to derive its own techniques and methods for communicating information and telling stories which work within the unique possibilities offered by the medium.' (Young, 2009a).

Much has been written about the problems of applying the sound techniques of film to an interactive medium purely because of the unpredictability of the player's actions and the dynamic game-world. Collins (2007) notes that two separate sounds being triggered together could, for example, create a meaning that was not intended by the author:

'The participatory nature of video games potentially leads to the creation of additional or entirely new meanings other than those originally intended by the creators by not only changing the reception, but also changing the transmission.' (Collins, 2007).

One issue that has received less attention is that of frame rates. Chion (1994) writes that 'sound temporalized the image: not only by the effect of added value but also quite simply by normalizing and stabilizing film projection speed.' (1994:17). Video games tend to aim for a fixed number of frames per second, but when too much starts to happen in some games that frame rate can drop and the game will slow down visually. Consequently, the length of time between sounds increases as they wait for the delayed visual cues in each frame with which to react. Coincidentally, the slowdown adds to the havoc of whatever visual actions have caused this frame rate to drop. As this technical limitation does not always fit the context of the diegetic situation in the game, it is another obstacle in the way of a measurable soundtrack.

There is evidence that some practitioners of video game sound are fully aware of film sound theory and apply it to their chosen field, especially as many of them have moved to the video games industry from backgrounds in film and television. Randy Thom, who was the sound designer on *Forest Gump* (1994) and *The Incredibles* (2004), worked on the video game *Scarface: The World is Yours* (2006). The sound designers on the game *Halo 3* (2007) also have a background in film (Hanson, 2007). Therefore, it would make sense that some film sound terms could be used to analyse the soundtrack in some games. This is not to suggest that game sound relies entirely on the lessons of film sound as many game-specific sound conventions have always been in place. It is only in the past decade that game sound has reached a quality to benefit heavily from film sound conventions and practices, but Young (2009a) argues that games should not rely solely on learning from film sound practices...

‘As an analogy, imagine if film sound only ever “learnt from radio” – there were, and continue to be lessons that film sound practitioners can learn from the use of sound in broadcast radio. But if film sound only ever emulated radio sound then there is a whole host of techniques which film sound currently takes for granted which wouldn’t exist.’ (Young, 2009a).

Film sound is designed to be listened to linearly, and the theories that academics have analysed it with, and the techniques that practitioners have applied to films, are not necessarily appropriate for application to video games. It would be more constructive to first identify the conventions and terms as used in film, and then to re-appropriate them to video games, evolving the conventions to serve an interactive medium. The unedited terms can help to analyse what information game sound can give to players just like film sound does for it’s viewers, but it is by evolving the theories to serve the interactive medium that we can identify ways in which the techniques uniquely benefit the game-play.

## Chapter 2: Identifying and re-appropriating film sound conventions and practices.

The first sound term I will analyse is what Rick Altman (1992) refers to as 'point-of-audition (POA) sound' (1992:251). He defines it as...

'Sound identified by its physical characteristics (principally reduced volume and increased reverb) as it might be heard by a character within the film" (Altman, 1992:251).

Chion (1994) argues that the 'notion of a point of audition is a particularly tricky and ambiguous one' (1994:89), and that its relationship to the point-of-view model sparks confusion between two possible terms that it can relate to, which are 'spatial designation' (referring to the camera's perspective), and 'subjective designation' (referring to a character's perspective). Sonnenschein (2001) reviewed Chion's (1994) conceptual input into this term, restating the distinctions between spatial and subjective designations of POA:

'The voice will have tone colo[u]r fluctuations, diminishing the higher frequencies when the person's back is towards the mike. This can help create a sense of reality in the space, but it must be balanced with the momentary loss of intelligibility. On the contrary, a lapel mike will pick up everything clearly and consistently, but will not offer a feeling of perspective.'  
(Sonnenschein, 2001:89)

Within film, an example of POA sound can be seen in *La Haine* (1995) where the character Hubert goes to make a drug deal along with Vince and Saied. When Hubert and the drug dealer are in the foreground, we can only hear from the perspective of Vince and Saied who are positioned in the background of the shot. From their perspective, we cannot clearly hear the

action occurring in the foreground. This connects the audience to their subjectivity of the scene in contrast to the shot that favourably frames the foreground action. This technique can be transferred to the medium of video games, whose unpredictability may compose shots that are irrelevant to the player's interest, yet are not controllable. Here the sound can be used to draw attention to the relevant subject.

It is worth applying POA to a video game genre commonly known as the 'First Person Shooter' (FPS), in which the game is viewed literally through the eyes of the protagonist traditionally with their weapon held up just in sight. When the player goes to aim a gun in some more recent games for instance, the character will look directly down the physical sights of the gun.

Due to the nature of the genre, it is arguable that either spatial and subjective designation of POA are both applicable to the FPS during game-play, as the camera always follows the character's subjectivity, or that it is irrelevant identifying between them because here they are typically the same thing. In accordance with Lastra's (1992) indication of subjective POA, the designation is identifiable 'by an increase or decrease in volume indicating the approach or retreat of the source' (1992:77), suggesting that the FPS is generally of the subjective designation. However, games like the FPS *Half-Life 2* (2004) demonstrate that the audibility of character dialogue is relative to the player's proximity to that character regardless of being in front or behind of him. Yet the character will sound quieter if the player faces away from him, suggesting that the spatial designation of POA is more suitable.

The FPS *Call of Duty 4: Modern Warfare* (2007) makes constructive use of the point of audition theory, which is appropriate due to the game's explicit influence from Hollywood action films. This is evident in its cinematically represented viewpoint that imitates film camera apparatus through elements such as depth of field. There are many set pieces that directly imitate famous Hollywood film action sequences such as a moment reminiscent of *Black Hawk Down* (2001) where the player must rescue the

pilot of a shot down helicopter in a very similar location. The sound design is undeniably cinematic and the game uses a musical score by Hollywood composer Harry Gregson Williams, who has worked on *Enemy of the State* (1998) and *The Replacement Killers* (1998).

The spatial designation of POA could be made applicable to this game as it was for the genre earlier, except that it changes POA momentarily for cinematic effect. If the player manages to shoot an enemy soldier in the head whilst aiming down the scope of his sniper rifle (which naturally fills the screen), then a clearly audible “ping” of the bullet hitting the soldier’s helmet plays regardless of the player’s distance from the enemy, indicating that the POA has very briefly shifted to the perspective of the enemy soldier. The result is a cinematic effect that increases immersion using conventions of film.

This concept is reminiscent of a shot from *Enemy at the Gates* (2001) in which we see down the scope of the protagonist’s sniper rifle as he shoots an enemy in the head and the bullet hitting the enemy’s helmet pings. Although this is not evidence alone that the choice to have the distant enemy’s helmet ping in the game shows an understanding of POA theory, it is along with the functions that this mechanic provides that suggest otherwise: the confirmation of accuracy that the clarity of the “ping” provides not only lends a sense of self-satisfaction to the player over his/her accuracy, but the sound also compensates for the limitations of the visual perspective. This is evidence of a conscious application of POA theory because it is a specifically designed function rather than an accidental result of the nature of the medium.

Outside of First Person Shooters there are other character-controlled games, namely of the action/adventure genre that is traditionally concerned with a “3<sup>rd</sup> person” camera perspective, which means that the player’s character is visible on screen within the environment. There are two primary versions of this camera system: one allows the player to revolve the camera around the orbit of his/her character as in *Assassin’s Creed*

(2007) and *Grand Theft Auto IV* (2008), whereas the other system uses a non-interactive, pre-determined camera that has been designed to frame the action on screen to the director's preference such as in *Metal Gear Solid 2: Sons of Liberty* (2001) and *God of War* (2005).

*Metal Gear Solid 2: Sons of Liberty* (MGS2) allows players to switch to a first person perspective as Alex Stockburger (2003) observes:

'The two visual perspectives correspond to two different aural perspectives. If one switches to the first person perspective in the outside level of the oil rig, one will hear a much louder rendition of the sound produced by the wind. Essentially there are two different auditive spatial signatures at work, which are related to the virtual camera. This function greatly enhances the feeling of being in the place, while it refers to film sound conventions.' (Stockburger, 2003)

When identifying the POA in *Assassin's Creed* (2007), the specifics of whether we are hearing from character or camera seems inconsistent. On close analysis, it seems that the POA is subjective to the character since other characters are loudest when closer to him rather than how close they are to the camera, yet the audio itself seems more cinematic than subjective. And upon facing the character or the camera a different way, there is no change to the sound. Although this does not appear to be a conscious use of POA theory, it is arguable that this could technically be analysable as the spatial designation of POA. Here, the game mechanics use the character as a reference point for the player's attention for technical reasons, while staying away from subjective hearing.

Games that seem indecisive in their commitment to a POA philosophy are unable to create diverse jumps in a subjective or spatial designation of the term. The games that seem to use the practice consistently such as *Call of Duty 4: Modern Warfare* (2007) and *Metal Gear Solid 2: Sons of Liberty*

(2001) have constructively applied it to an interactive context to aid immersion and to create meaning as it does in film. Other games could benefit from using POA theory and doing so consistently.

*Assassin's Creed* (2007) also makes use of 'internal sound', which Chion (1994) describes as '[d]iegetic sound that corresponds to the physical and/or mental interior of a character, e.g., heartbeats, voices imagined or recollected' (Chion, 1994:22-23). An example can be heard at the end of the film *King Kong* (2005) as we hear King Kong's heartbeat as he passes away. In *Assassin's Creed* (2007), when one button is pressed the camera perspective moves to the point of view of the character, but rather than the sound changing to a traditional subjectivity, we instead hear and see an almost hallucinatory, meditation-like state of mind.

An example of this also lies in *Call of Duty 4: Modern Warfare* (2007) in the form of an audible heartbeat when the player holds a button that temporarily holds his character's breath to steady his aim whilst sniping. The inventive function here is that the beating heart pressures the player to attempt to shoot their target before their character runs out of breath whilst also forcing the idea that the player has just one chance to take the crucial shot.

Stockburger (2003) notes that in *Metal Gear Solid 2: Sons of Liberty* (2001), internal sound is used again through the character's racing heartbeat, here to build tension when the player chooses to hide him in a cupboard avoiding discovery by enemy guards, 'which is used in an intriguing way to strengthen identification with the avatar in connection with the vibration of the controller' (2003). Although this example is not a huge detour from the traditional use of internal sound, it is still evidence of successful application of a film sound convention that has been re-appropriated to provide an immersive function in an interactive context.

Similar to POA sound is perspective sound, which Sonnenschein (2001) refers to as 'Subjective character experience' (2001:177). It is similar to

POA in that we hear what a character is hearing, but the subjective nature of the perspective contrasts with the POA outside of the character's perspective. It is different from internal sound in that it is a representation of what the character is actually hearing rather than something internal that represents the character's state of mind, such as a heartbeat. Sonnenschein (2001) gives an example:

'In *A Civil Action*, a man must decide whether he is going to give information to the lawyers about the toxic water quality, and he is watching his own children drinking water. We hear the isolated sounds of the kids drinking to realize what he is focusing on, rather than seeing a visual close-up on the lips of the kids, making for a psychologically powerful scene.' (Sonnenschein, 2001:178)

In *Saving Private Ryan* (1998) there is a use of subjective character experience when the lead character (played by Tom Hanks) momentarily loses his hearing due to shellshock as the film's sound designer, Gary Rydstrom (2001), explains:

'You get distorted bits and pieces of the outside, but mostly just this seashell roar as if you're inside his head. There is a wonderful shock coming out of the hearing loss when one of his men is screaming at him and he can't hear a thing, then we use another explosion for him to snap to, and now we can hear the guy.' (Rydstrom cited in Sonnenschein, 2001:178)

This scene has inspired a common trend in some video games. In *Call of Duty 4: Modern Warfare* (2007) for example, when the player's character has taken too much damage and is close to death, the game will visually, and specifically audibly, mimic the effects of the shellshock scene in *Saving*

*Private Ryan* (1998). The player then knows to get in cover until their health regenerates.

This use of subjective character experience is beneficial to the video game. The regeneration mechanic has almost entirely replaced the traditional health system that was represented by some sort of on-screen statistic. This on-screen information drew the players' attention away from the diegesis of the game to focus on statistics, and this highlighted the game's materiality and fractured the game's immersive qualities. By eliminating this in favour of a simulated, subjective character experience in some games, such moments are arguably more immersive because they disguise the medium through their cinematically inspired use of image and sound.

In this example, a subjective character experience of sound is used to disguise the medium of games, and this notion of disguise has also been taken from films. Films use sound as a way to disguise such things as cuts, which are obviously unrealistic for the audience. Ekman (2008) elaborates on this:

'As another case of supporting realism, an integral role for sound at least in classical (Hollywood) film production has been to hide the medium. An example of such is the common practise of continuing sounds over cuts, making them less apparently noticeable. Many other conventions of film sound also contribute to the invisible medium effect, either directly or indirectly. Thus, a role of sound is to create a sense of immediacy.' (Ekman, 2008:22)

Here we have seen two film sound conventions brought together in a game. Subjective character experience is used to hide the medium. This technique provides information to the player while making them feel immersed in the game, thus being a successful use of the film conventions.

Next, I will focus on 'Acousmatic' sound. Chion (1994) defines this as...

'Pertaining to sound one hears without seeing its source. Radio and telephone are acousmatic media. In a film, an offscreen sound is acousmatic' (Chion, 1994:221).

Chion (1999) describes de-acousmatizing using *The Wizard of Oz* (1939) as an example, which Sonnenschein (2001) revisits and explains more compactly:

'In the specific case where the source of the unseen sound is revealed, this effect is known as de-acousmatizing. The classic example occurs when Dorothy pulls back the curtain to reveal the little man making the big voice in the smoke in *The Wizard of Oz*. The dramatic impact of this is to disempower the previously unidentified sound, taming and draining it of its mystery.' (Sonnenschein, 2001:153).

Early on in the video game *Bioshock* (2007) as the player is gradually learning about the realities of the world, acousmatic sound is used to draw the player's attention up a set of stairs towards the screams of a character who is stuck in a falling elevator. As well as steering the player in the right direction, the scene helps to reinstate the tone of the game. This demonstrates the suitability of acousmatic sound to an interactive context which Collins (2008a) argues...

'is far more pronounced in games, as sound gives the player cues to head in a particular direction or to run the other way, therefore affecting player decision making' (Collins, 2008a:130).

*Metal Gear Solid 3: Snake Eater* (2004) uses restricting camera angles that do not always allow the player to see any enemies on patrol. Their footsteps, however, can be heard approaching to alert the player, thus constituting acousmatic sound. The game is commonly categorised into the stealth genre, which Collins agrees 'make[s] particular use of this function, as the player is alerted to enemy presence' (Collins, 2008a:130). Jorgensen (2008) also argues the importance of off-screen sound to compensate for the visually restrictive nature of some games:

'In games, acousmatic sounds are important since they provide information to the player in situations where the visuals have no power to do so. In *Warcraft III*, for instance, the player monitors a range of processes and events simultaneously, and in this respect acousmatic sound is a vital orienting system.' (Jorgensen, 2008:168).

*Call of Duty 4: Modern Warfare* (2007) uses sound in this sense through a radio to give information to players. As the player is usually busy looking for enemies on their eye level, they can be pre-warned of an incoming attack such as an air-strike by the quickly approaching sound of jet engines.

What is used as a powerful tool in film to create meaning and deliver information has evidently translated well into video games. Even though earlier video games would use off-screen sound when an enemy of the player had not appeared in the frame, it was not necessarily influenced by film's use of acousmatic sound. Within more recent narrative-driven games using examples such as those described here, there are lessons that may have been taken from moments of cinema, and have provided games with the same immersive and informative effects.

Anempathetic sound is another term coined by Chion (1994) that he describes as...

'[s]ound – usually diegetic music – that seems to exhibit conspicuous indifference to what is going on in the film's plot, creating a strong sense of the tragic. For example, a radio continues to play a happy tune even as the character that first turned it on has died. The opposite of empathetic-sound (again, usually music) whose mood matches the mood of the action' (Chion, 1994:221)

This effect can be identified in *Girl Interrupted* (1999) when a character has left a happy song looping on a record player after having hung herself for the protagonist to discover, after being drawn to the scene by the record itself. Chion (1994) notes that this effect can also work with noise rather than music. He uses the shower scene in *Psycho* (1960) as an example, pointing out that after the death of the protagonist the shower keeps running 'as if nothing had happened' (Chion, 1994:9). Hitchcock uses this once more in *The Birds* (1963) by juxtaposing children singing in a school with the quiet gathering of threatening birds, drawing attention to the vulnerability of the children for dramatic effect.

In video games, a similar use to *Girl interrupted* (1999) can be seen in the science fiction FPS *Bioshock* (2007). As the player ventures down darkly-lit corridors encountering scenarios and threats of a horrific nature, gramophones can be found in the diegesis playing joyous music that contrasts the sinister tone of the world. This meets the definition of anempethetic sound and works as effectively as it has in film. Once more, it tells the player that he/she is to be wary in this certain area and potentially manipulates the player to act cautiously in context with the narrative by approaching characters with subtlety rather than drawing attention to themselves.

Due to their nature, video games are capable of creating unique, unexpected and unplanned narratives through the actions and reactions of

players and the interactive environment. This is especially applicable to multiplayer games (games that allow more than one person to play simultaneously through one game console or over an online connection) through the cooperative and competitive relationships between players. Within these circumstances, I argue that some games can unintentionally create moments of anempathetic sound.

The online multiplayer FPS *Counter Strike* (1999) is vacant of non-diegetic music allowing the entire environment soundtrack to be clearly audible. Since the sound of a character running can give away their position to an enemy, cautious walking combined with the untouched sounds of the environment gel to create an air of tension. It is not until a gunfight breaks out (usually resulting in the death of one player's character) that the environment is less audible under the firing of weapons. Once the confrontation is over, the environment will continue to sound as if nothing had happened, similar to the shower scene in *Psycho* (1960). If this is an unintentional use of anempathetic sound in *Counter Strike* (1999) and other games, then it is certainly worth noting that it is effective and if used intentionally in the design of other games it would benefit them as well.

Having established some conventions used in moving image sound design and illustrating the traditional implementation of them within film, I have also applied them to the interactive contexts of some video games. Not only are they identifiable in video games, but they are sound conventions that have been taken from linear media and re-appropriated to offer extra additions to video games in the form of game-play functions, immersion, and influence towards player behaviour in accordance with the context of the games. However, there are areas in which games still have a lot to learn from film and areas in which their re-appropriated techniques are not yet as effective as in films.

Films sometimes use sounds to give the illusion of a visual moment that never actually existed. In *Predator* (1987), when Schwarzenegger motions

to an ally soldier in a close up shot to run after someone, we hear him whistle as if he is catching the soldier's attention, even though when watched closely, his lips do not move. This sound has been added later to help better explain the sequence. It is not only with dialogue that this technique is used:

'[I]n making *The Empire Strikes Back*, when director Irving Kershner needed a door-closing effect he sometimes simply took a static shot of the closed door and followed it with a shot of the door open. As a result of sound editing, with Ben Burtt's "psssht," spectators who have nothing before their eyes besides a straight cut nevertheless think they see the door slide open.'

(Chion, 1994:12)

This technique can be identified in games, for example, in *Uncharted 2* (2009) when a character picks up ammunition off the floor. So that the player's controller input (in the way of button presses) is not interrupted, a sound of a gun reloading will be played to give the illusion of picking up the ammunition. *Counter Strike* (1999) takes advantage of the 1<sup>st</sup> person perspective in which to give the impression that the avatar has picked up a weapon physically outside of the frame, when in reality the gun transports from the floor to the avatars hands over the sound of a gun being picked up. The player's physical input of pressing a button acts as his/her action of picking up a weapon, to which the sound gives a response as Collins (2008a) explains:

'Unlike the consumption of many other forms of media in which the audience is a more passive "receiver" of a sound signal, game players play an active role in the triggering of sound events in the game [...] While they are still, in a sense, the receiver of the end sound signal, they are also partly the transmitter of that

signal, playing an active role in the triggering and timing of these audio events.’ (Collins, 2008a:3)

The player feels that they have physically interacted as the weapon appears in the hand of the avatar. The sound covers up the cut-out animation which would have introduced a clunky interruption to the game-play as the avatar picked up the weapon. This may not be as effective as the impression of the door opening in *The Empire Strikes Back* (1980), but it does help somewhat to create an illusion and identifies itself as an area that could take further lessons from film.

Perhaps one of the biggest influences that can be weaved into video game convention from that of film is the use of a dynamic range in sound within a soundtrack. Video games have always lacked a sound range that was as dynamic as film in terms of volume and Bridgett (2008) believes that this is due to their roots:

‘Video games were born in arcades where they had to compete with the sounds of other nearby games consoles for the paying public’s attention. At the same time as the rise of the arcade machines, various home game systems also gained popularity. The sounds of games in the home have also had to compete with many other domestic sounds, much as the television does.’ (Bridgett, 2008:129)

Many action games like the widely played *Call of Duty 4 Modern Warfare* (2007) become walls of sound when played in a multiplayer environment where the goal is to improve your score by killing opponents, usually with loud weapons. In the rare occasion where there is almost silence, there is a very noticeable difference. Bridgett (2009a) argues that...

'Cleverly constructed montage of silence potentially has more dramatic effect than the biggest and loudest sounds.' (Bridgett, 2009a)

The lack of danger notified by the lack of noisy gunfire creates perfect conditions for tension, but few games have the opportunity to reverse these conditions to create escalating threat or emotion with noise. Weis (1985) discovered how this is effective in film in her analysis of Hitchcock's *The Birds* (1963):

'The shift in terror in *The Birds* from noise to silence is essential to its aims. The film eventually makes us feel just as vulnerable in moments of relative tranquillity as in chaos. It is one thing to feel threatened when under attack; it is another to be frightened at all times, to feel that life is a permanent state of siege.' (Weis, 1985:308)

Whereas films will use peaks and valleys in their story to create moments with impact, action games suffer from the fact that players will expect to be involved with the action throughout as a result of video game conventions. Bridgett (2009b) argues that game designers need to plan out when the most intense moments are in order to keep the sound loud in relation to the narrative's peaks and valleys.

'Without a suitably defined dynamic range game-play curve within which to do this, it can be a more difficult job than it needs to be to deliver the same high and low dynamic moments within a game as there already exists in filmic or classical musical structures' (Bridgett, 2009b)

## Conclusion

In this dissertation I have attempted to argue that some of the conventions and practices of film sound can be applied to video games. I have given a variety of examples where video games have used the techniques of film sound to create meaning in order to encourage emotional responses from players, deliver information about game-play or to encourage play style appropriately in relation to the narrative. I found that sometimes a film sound technique can be translated in its entirety to fulfil the same function as it would originally, or be used to produce a new meaning. The same results can sometimes be found when re-appropriating a film sound convention or practice.

With academics continuously attempting to write about video games (and their soundtracks) as a way of understanding the underdeveloped medium, they are often borrowing from film analysis. Others write of how the medium needs to be seen as a completely different form than film. I agree with both views. The biggest distinction between the two mediums is that video games are interactive, and as such many of film's practices are not fit for games. An example of this can be seen in the use of 'diegetic' and 'non-diegetic'. I previously discussed how players can learn from non-diegetic signals about the state of the game and it is worth considering this quote as to whether these terms are appropriate for video games:

'When the terms diegetic and non-diegetic are used in the context of games, one has to acknowledge the fact that non-diegetic information can influence the diegesis, because of interactivity. For example, a player controlling an avatar can decide to take caution when noticing a change in the non-diegetic musical score of the game, resulting in a change of behavior of the avatar in the diegetic part of the game. In some cases, this trans-diegetic process needs to be taken

into account when using the terms diegetic and non-diegetic. Yet, diegetic and non-diegetic have more or less become the established terms within the field of game studies to describe this particular distinction in the game environment.' (Huiberts & van Tol, 2008)

This highlights the importance of video games developing their own sound terms rather than only borrowing from films. Although some film conventions have and can be re-appropriated to games to provide a benefit, the essential difference of interactivity must be considered when doing so. Nevertheless, films have developed a rich variety of practices with which to tell stories through sound alone, and games can borrow from this. Even if it requires re-appropriating the sound conventions, the fundamental functions that sound brought to films can be left mainly intact when applied to video games.

Technology is another current restraint on the evolution of video game sound as opposed to film. Some sound techniques from the world of film would still be possible in an interactive context and are only limited by the technology available in the current generation of video game consoles. This may not be for too much longer though. If this dissertation was written 10 years ago, then many of the uses of sound in video games as documented here would not be featured, as many of them have only been technically feasible on recent generations of video game consoles. Similarly, much of what is written here may be inapplicable within 10 years from now. Collins (2008b) notes how sound design in video games has reason to change:

'another issue in games sound is the need for more variation in sound effects. Playing 40 hours with the same gunshot sound, or the same footsteps, can get very repetitive for the player, leading to listener fatigue, and the player's desire to turn off sound altogether [...] In granular synthesis, sounds can be constructed from smaller grains of sound which could be adapted in real

time in a game, so that no sound effect would play back in the same way twice.’ (Collins ed, 2008b:9)

Revolutions such as granular synthesis will open up new possibilities for the design of video game sound and bring sound designers closer to being able to create a measurable soundtrack that will help to eliminate the chances of a game’s sound giving the wrong impression to a player. Randy Thom (2006) talks about the limitations that he was confronted with as the sound designer for *Scarface: The World is Yours* (2006), but concluded that it was just a matter of time before they could deliver a sonic experience on par with that of film:

‘The sampling rates that we’re dealing with in terms of sound are about half of what we’re used to working with in film, and that just means that the sound quality is lower. It’s not going to sound as good, as sharp, as clean. And in the end unfortunately it doesn’t sound quite as powerful as we would like it to, but fortunately the technology is heading in a good direction and I think [in] this next generation of video games, the sound is going to be very similar to what you hear in a movie.’ (Thom, 2006)

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