

Everyone in Space Wants to Hear You Scream

Toward a Framework for Understanding Player Voice in Virtual Worlds

ABSTRACT When considering player voice in the context of game sound, existing examinations remain inconclusive. As player voice exists in a liminal position between reality and virtuality, some academics see them as sonic violations of the game space. Voice can convey information about identity, which may oppose our understanding of the avatars within the game world. Voice can facilitate social communication, which may remind us of the physical world outside the virtuality. Mediations of voice into the virtual world may introduce obstacles or inflections that interfere with our enjoyment of the virtual space. Alongside these concerns, however, we can also find virtual worlds that prioritize and privilege player voice. Player voice can become part of character identity. Gameworlds can encourage us to communicate ludically, without disrupting immersion. Interruptions and disruptions can be limited by players.

Amongst others, the virtual world of the long-running MMORPG *EVE Online* demonstrates how voice can coexist with immersion. Marketing materials for the game now place player voice at the center of consumer focus. Including an interview with one of the videographers who placed player voice at the center of his fan videos, the article uses *EVE Online* as a case study for the integration of player voice into virtual worlds.

By examining virtual worlds and the role of voice within them, this article develops a framework for understanding player voice in the context of game sound. This allows us to recognize how player voice, an often overlooked aspect of game sound, can function within virtual worlds. **KEYWORDS** Player voice, game sound, immersion, virtuality, *EVE Online*

SHUTTING UP: ISSUES WITH PLAYER VOICE

A squad of three soldiers are carefully and stealthily making their way toward an enemy position.

“Got contact?”

“Yeah. We got two bogeys on the west side of the barn. Looks like a heavy machine gun unit and some infantry.”

“Shit. There’s a sniper in the barn. Good thing he doesn’t see us yet.”

[. . .]

“OK. Here’s the plan. On the count of three, you take out that sniper. DeBears and I will go after the machine gunners.”

[To DeBears] “Got that?”

“MOM!”

“DeBears.”

“MOM! CAN I HAVE A SANDWICH?”

“DeBears, shut up!”

“I DON’T KNOW. PEANUT BUTTER AND JELLY.”

[. . .]

“WHAT?”

“DeBears, shut up and play the fucking game.”

“I’M GETTING MY MOM TO MAKE ME A SANDWICH, YOU GUYS.”

“Look, whatever. Now on the count of three, we’re going to take out those gunners by the barn.”

[. . .]

“HELLO?”

“Oh my god, get off the phone.”

“MOM . . . PHONE . . . IT’S MRS. MC LAUGHLIN.”

This satire by Whitest Kids U’Know parodies an experience all-too-familiar to players of online multiplayer games.¹ Sounds from outside the game reality and fiction come crashing into the world, destabilizing the player’s engagement. While clearly hyperbolic, the video demonstrates awareness of a common problem with voice communication: when conveying voice deliberately through a microphone, some extraneous sound will be inadvertently conveyed into the fantasy-reality.

Despite some academic recognition of this issue, sonic violations of virtual space remain the subject of inconclusive discussion. Collins identifies that “sound should be a particularly strong force in breaking the fourth wall. User-generated audio . . . does not just extend the virtual into the real, but also extends the player’s world into the virtual space.”² As a result of sonic transgression, immersion may be damaged: Richard Bartle, amongst others, states that player voice prevents the creation of immersive virtual worlds through making them “just another aspect of the real one.”³

Player voice has, to a large extent, been excluded from understandings of game sound because of the fundamental issue revealed by these instances: player voice sits in a liminal position between “reality” and “virtuality” and may disrupt immersion when the two realities intersect. This article examines virtual worlds that prioritize and privilege player voice alongside other user-generated content, in order to develop a framework for understanding voice in the context of game sound.

YOU DON’T SOUND LIKE YOUR PROFILE PICTURE: VOICE AND IDENTITY

The connections between voice and identity pose one of the significant threats of invasion by reality into fictional fantasy-realities. In an article examining Scarlett Johansson’s role in the film *Her*, Laura Tunbridge explored the intimacy of the “haptic voice,” noting that “to write about voice is often to write about intimate experience.”⁴ The film follows Theodore

1. Chris Gaines, “Real Life Call of Duty Whitest Kids U’Know,” YouTube, uploaded June 4, 2009, accessed March 3, 2020, <https://youtu.be/ZzV6-453ay8>.

2. Karen Collins, “Breaking the Fourth Wall? User-Generated Sonic Content in Virtual Worlds,” in *The Oxford Handbook of Virtuality*, ed. Mark Grimshaw (Oxford, UK: Oxford University Press, 2014), 354.

3. Richard A. Bartle, *Designing Virtual Worlds* (Berkeley, CA: New Riders, 2006), 145–146.

4. Laura Tunbridge, “Scarlett Johansson’s Body and the Materialization of Voice,” *Twentieth-Century Music* 13, no. 1 (2016): 139–152.

Twombly as he develops a romantic relationship with Samantha, his artificially intelligent virtual assistant who is personified by her female voice. Tunbridge observes that “the problem of distinguishing between real experience and its surrogate is highlighted when Samantha [the computer voice] suggests arranging for a surrogate sexual partner to visit Theodore [the user].” When the surrogate partner arrives, Theodore experiences some confusion about whether he desires this physical manifestation of his virtual partner. A similar question arises in the context of player experiences: How far do players seek to connect the physical reality of the player with the fictional fantasy presented by the character?

Voice will always symbolize part of the real identity of the player. Vocalizations may allow players to identify—or at least assume—each other’s identity gender, ethnicity, geographical or cultural upbringing, and more. As a result, it may create tensions when connected to a specific in-game character that the player controls. In these situations, voice becomes part of the character identity, introducing physicality to virtuality.

The player’s physical identity may not be similar to the virtual representation even when players are given the option to alter their avatars freely. Players may choose to play as a different gender, different race, or even a different species. During an ethnographic exploration of online worlds, Cheng recalls concerns from players of *Second Life* (Linden Lab, 2003) that their adoption of an alternate identity—and hence their immersion in the fantasy-reality—would be damaged through the introduction of real voices.⁵ All information transmitted through player voices can be incongruent with information presented by player avatars. Voice may therefore pose an issue for players trying to immerse themselves in *Second Life*, and other similar games, who find their immersion within the gameworld disrupted by the presence of physical evidence that demonstrates the virtuality of the world.

Cheng explored further the potential for voice changers to re-anonymize the digital world and potentially allow players to be creative over their creation of a character.⁶ This could temporarily expand the ability to present a fantasy instead of revealing a physical reality. One simple hypothetical solution would be to pitch-shift a player’s voice, as deeper voices tend to be associated with male players. But changing a player’s voice presents a complex moral issue of perpetuating a “false” identity in a MMORPG such as *Second Life* where players are encouraged to share their identities and socialize. Players with avatars that are dramatically different from their real-life selves may be perceived as frauds when the “deception” is discovered, despite the invitation implied by one of the game’s taglines—“where you can be whoever you’d like.” Whilst Cheng is fundamentally correct in identifying the possibilities of voice-changing technology, the complexities of player interaction within virtuality are perhaps understated. By extending and developing the fantasy identity, it seems likely that members of the community who have not engaged in these practices may be distressed by what could be seen as a lack of trust or transparency by their in-game friends.

The lack of synchronicity between avatar appearance and vocal identity can also exacerbate other issues during voice communication. Because of the potential for many avatars to

5. William Cheng, “Acoustemologies of the Closet,” in *The Oxford Handbook of Virtuality*, ed. Mark Grimshaw (Oxford, UK: Oxford University Press, 2014), 337.

6. Cheng, “Acoustemologies of the Closet,” 344–345.

share a screen simultaneously, or for voices to come from players not onscreen at all, players can find it difficult to tell exactly who was speaking if they were not already familiar with the player voices.⁷ This demonstrates another issue with identity: voice may be attributed to the incorrect avatar because of the layers of mediation (e.g., the gameworld, the software used for voice communication) between players. As avatars are representations of players, this also creates a risk of attributing voice to the wrong player as a result of the confusion.

Some games feature vocal identity as a significant part of the game despite these issues. For example, *Guitar Hero World Tour* (Activision, 2008) allows players to take on the role of lead singer in a virtual band. Players sing karaoke-style and succeed or fail based on the melodic and lyrical accuracy of their singing. Poor singing scores badly and is met with boos from the crowd, whilst good singing scores highly and results in cheers from the fantasy audience. Player voice is therefore fundamental to our identity within the game. Rather than opposing character identity, such as in the studies conducted by Cheng, player voice in *Guitar Hero World Tour* develops character identity. We succeed or fail based on the qualities of our physical voice. Our player voice is the character voice. Our voice is part of the immersive experience of the game world.

There Came an Echo (2015), a real-time strategy game, also encourages players to immerse themselves with their voice by utilizing an extensive voice-command interface. Characters within the game respond in a superficially “real” way to the player’s voice: clear orders are acknowledged and followed, unexpected commands are met with requests for verification, and quiet commands prompt the player to be ordered to “speak up” by characters within the game. If players speak too loudly and distort the audio input, the player assistant tells them to speak more quietly (Figure 1). At times within the narrative, the player is unable to communicate with characters in the story until they receive a radio from another character that they control, further connecting the player’s physical voice to the virtual commander character (Figure 2).

Jason Wishnov, CEO of *There Came an Echo*’s development company Iridium Studios, describes in an interview with gaming news site Polygon that voice was kept at the core of the game’s design, with constant consideration given to how it would function.⁸ Controlling the player’s perspective by using player voice proved aggravating in playtesting, so Iridium Studios maintained the traditional PC control systems of mouse and keyboard. In many strategy games, units are free to move around the map. To permit players to control characters with their voices, the development team used simple maps with predetermined locations for characters to move to. Ordering NPCs to fire could become annoying, so soldiers attempt to decide how and when to shoot enemies automatically, allowing players to focus on optimizing their strategies rather than micromanaging their units (see Figure 3). An emphasis on scriptwriting and voice acting also contributed to the success of the immersive qualities within the game: A variety of responsive voice lines help players feel immersed.

7. Greg Wadley, Marcus Carter, and Martin Gibbs, “Voice in Virtual Worlds: The Design, Use, and Influence of Voice Chat in Online Play,” *Human-Computer Interaction* 30, no. 3–4 (2015): 336–365.

8. Samit Sarkar, “There Came an Echo’s Voice Controls May Be the Best Way to Play,” *Polygon*, April 15, 2014, accessed March 3, 2020, <https://www.polygon.com/2014/4/15/5606644/there-came-an-echo-preview-voice-controls-pax-east-2014>.



FIGURE 1. In this screenshot from *There Came an Echo*, Val (the player assistant) tells the player that they're speaking too loudly, causing distortion. This means the game cannot parse their commands, so the game provides a diegetic explanation for a technical issue and avoids breaking the player's immersion.



FIGURE 2. In the first level of the game, one of the main characters (Corrin) does not have a radio. Players can only communicate with Corrin when he answers his phone. Corrin hangs up at a later point, leaving the player unable to communicate or give commands to Corrin until he answers his phone again.

Characters are programmed with “natural” responses to the player and their voice. This helps players view their voice as part of the presented fictional reality.

These examples use player voice as part of character identity. *There Came an Echo* positions player voice as an essential part of the game: players must *vocally* provide instructions

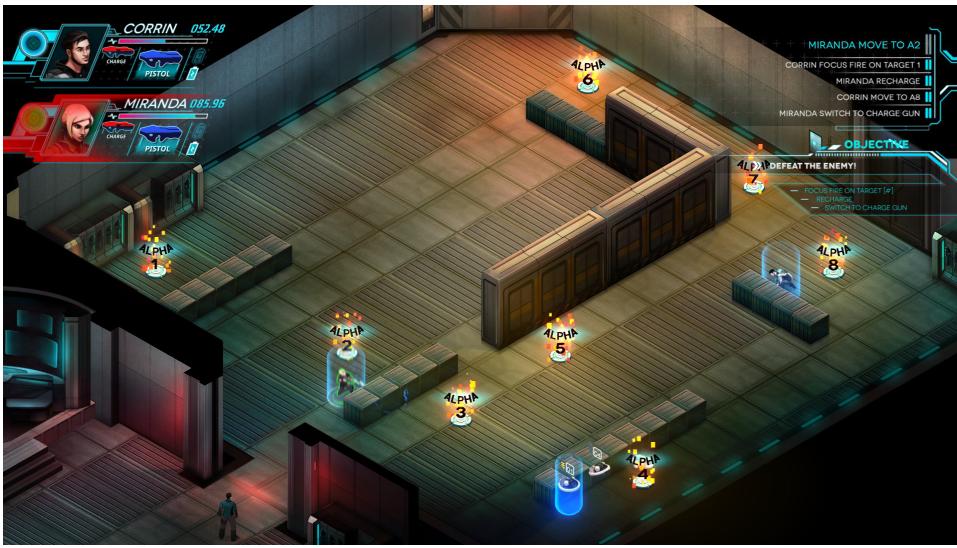


FIGURE 3. Screenshot from *There Came an Echo*, showing the record of user voice-input in the top-right of the screen. Characters are commanded to move to specific waypoints rather than being able to move freely, and they are addressed by name.

to their in-game characters. The player’s voice must interface directly with the game. *Guitar Hero* also assesses the player voice, asking players to sing and rating their performance. The success of the player is dependent on the player’s physical voice: their performance becomes the performance of their character. These games are notable for their success in integrating player voice into the immersive world.

However, both of these examples only find success as a result of designers prioritizing the integration of player voice into the game. The immersive qualities of player voice are carefully crafted through the sound design, interface design, and narrative reasoning of the games. Only specific phrases produce results in *There Came an Echo*. If players do not use the right voice commands, then other characters within the game do not understand the avatar the player is controlling. In *Guitar Hero* player voice is compared against a preexisting audio sample to compare pitch and some phonetics. Although this allows players to sing along to preexisting tracks, players are not able to change the musical performance as a singer might when performing onstage in the physical world. Restraining voice through providing a clear structure for interaction allows developers to heighten player immersion.

Through an investigation of links between player voice and character identity, we have seen that player voice becomes part of character identity in a way that is not simply superficial. Players are able to give characters a voice in some games, but characters remain limited by the developers’ designs. Identity presented by a spoken voice may contrast with the identity presented through player avatars. Voice therefore poses issues of identity in many games, especially where players share a virtual world. Through careful restriction of the interactive structures, however, developers are able to integrate voice into an immersive world, using player voice to develop character identity.

PASSPORT TO PLAY: SOCIAL COMMUNICATION IN VIRTUAL WORLDS

The use of voice for social purposes may also pose issues when considering player voice in virtual environments. An acknowledgement of the pragmatic reality of virtual worlds is required: as Collins observes, “Today games are primarily a social experience and played in groups . . . virtually via online gaming or in the same physical space.”⁹ Within multiplayer gaming communities, we can observe players’ widespread adoption of headsets to communicate within their virtual space, within or without gaming worlds. The adoption of voice communication is an expected progression from textual chats: voice is faster and does not require taking hands away from controllers to type, allowing players to socially speak and ludically compete simultaneously.¹⁰ We can identify two different forms of vocal communication that we expect to find in many fantasy-realities: (1) ludic communication, relating directly to the game and the gameworld and for the purpose of finding ludic success, and; (2) social communication, between players and/or their avatars to develop interpersonal relationships.

In games where players are noncooperative or antagonistic to each other, the social communication between them is often hindered by a lack of pragmatic ludic goals. Without incentivization for social communication, players may seek the psychological advantages offered by taunting and mocking opponents. This is a potential avenue for less skilled players to gain an advantage or for less gracious players to relish in their successes. Indeed, an analysis of gamers’ attitudes to voice chat showed that some believe that voice adds little and perhaps even detracts from the game by encouraging “trash talk.”¹¹ These social communications—even when pursued for competitive advantage—remain fundamentally outside of the virtual world of the game and the fictional avatars used to explore it.

Further, as voice allows players to make assumptions about each other’s identity, social communications are a potential vector for discriminatory behavior to emerge into the virtual world. A particularly well-known example is the extensive discrimination against women in online gaming communities. Women experience a high rate of sexism on the internet,¹² and this is particularly evident within the gaming community.¹³ Women experience greater frequencies of negative player interaction when they use their voice to engage with gaming communities,¹⁴ leading to many of them developing defensive mechanisms such as “hiding their

9. Karen Collins, *Playing with Sound: A Theory of Interacting with Sound and Music in Video Games* (Cambridge, MA: MIT Press, 2013), 14.

10. Collins, “Breaking the Fourth Wall,” 357.

11. Kevin Hew, Martin Gibbs, and Greg Wadley, “Usability and Sociability of the Xbox Live Voice Channel,” in *Australian Workshop on Interactive Entertainment 2004*, ed. Yusuf Pisan (Sydney: Creative and Cognitive Studios Press, 2004), 51–58.

12. For a more detailed summary of misogynist sexism on the internet, see Susan Herring, Kirk Job-Sluder, Rebecca Scheckler, and Sasha Barab, “Searching for Safety Online: Managing ‘Trolling’ in a Feminist Forum,” *The Information Society* 18, no. 5 (2002): 371–384.

13. Lotte Vermeulen and Jan Van Looy, “I Play So I Am? A Gender Study into Stereotype Perception and Genre Choice of Digital Game Players,” *Journal of Broadcasting & Electronic Media* 60, no. 2 (2016): 286–304.

14. Jeffrey H. Kuznekoff and Lindsey M. Rose, “Communication in Multiplayer Gaming: Examining Player Responses to Gender Cues,” *New Media & Society* 15, no. 4 (2013): 541–556.

identity [and] avoiding communication with other players.”¹⁵ Recent research has also begun to show links between racial identity and online experiences,¹⁶ and voice may also contribute to these issues by allowing antagonists to assume information about player identity (e.g., through dialect or accent). When social relationships are negotiated by antagonistic participants, the potential for play experiences to be negatively affected is clear.

The use of voice for social communication also may cause audial inundation. The inherent nondemocratic nature of voice chat, as explored by Cheng in an ethnographic study of *Team Fortress 2* (Valve, 2007), means that a few loud voices can dominate; players may be marginalized or feel excluded as a result. Carter, Wadley, and Gibb’s research into voice communications in online gaming supports this idea, identifying that “voice channels are easily abused, and the emotional intensity and immediacy of voice can escalate flame wars and damage team cohesion.”¹⁷ This research shows, again, that player communication can be a vector for negative play experiences in multiplayer environments. Social communication can pose serious issues for immersion in video game worlds.

Some games require that players have ludic communication mediated by the gameworld in order to succeed at the game. One game that encourages ludic communication is *Keep Talking and Nobody Explodes* (Steel Crate, 2015). One player takes on the role of explosives specialist and must defuse a bomb through solving a number of puzzles. The rest of the players, who cannot see the bomb, take on the role of advisers and provide the explosive specialist with answers to the puzzles from a special manual. The game forces players to communicate with each other by making all puzzles impossible to solve without the manual. One common puzzle is a maze with invisible walls: the manual provides advisers with a map of the maze, which must be used to communicate directions to the defuser. Further, a ticking timer on the bomb means that any communication must be succinct and efficient. In these ways *Keep Talking and Nobody Explodes* prevents social communication during the game and enforces a necessary ludic communication. The name becomes a misnomer: a player who simply talks, rather than communicates, may find that their team does not succeed.

The relationship between ludic and social communication is perhaps best expressed in MMORPGs. Barnett and Coulson identify that social communication is a significant part of the play experience within MMORPGs—but also that voice is required to communicate ludic information quickly and precisely to find success in certain situations. Players who wish to find ludic success may need to establish or find groups that facilitate the collaboration and cooperation required. This player coordination in itself requires a degree of social communication and organization.¹⁸ This dichotomy creates a curious issue: voice communication can

15. Lavinia McLean and Mark D. Griffiths, “Female Gamers’ Experience of Online Harassment and Social Support in Online Gaming: A Qualitative Study,” *International Journal of Mental Health and Addiction* 17 (2019): 970–994.

16. Brendesha M. Tynes, Chad A. Rose, Sophia Hiss, Adriana J. Umana-Taylor, Kimberly Mitchell, and David Williams, “Virtual Environments, Online Racial Discrimination, and Adjustment Amongst a Diverse, School-Based Sample of Adolescents,” *International Journal of Gaming and Computer-Mediated Simulations* 6, no. 3 (2016): 1–16.

17. Marcus Carter, Greg Wadley, and Martin Gibbs, “‘Friendly, Don’t Shoot’: How Communication Design Can Enable Novel Social Interactions,” in *Proceedings of the 24th Australian Computer-Human Interaction Conference* (University of Melbourne, 2012), 72–75.

18. Jane Barnett and Mark Coulson, “Virtually Real: A Psychological Perspective on Massively Multiplayer Online Games,” *Review of General Psychology* 14, no. 2 (2010): 167–79.

detract from the ludic experience, but achieving greater ludic success requires potentially compromising the immersive world by building social relationships that extend beyond the virtual characters onscreen to the physical players at their keyboards.

Social communication and ludic communication are not mutually exclusive within virtual worlds. Virtual worlds may have one, both, or neither, depending on the particularities of the game. Some of these player-generated sounds and player voices may enhance player experiences, others may detract from player experiences. These sounds, both social and ludic, may be considered part of the gameworld (at least, in some circumstances), which will be demonstrated later.

We can now see two major issues in how information conveyed by voice may be problematic when examining sound in video game worlds: the creation of conflict between presented and actual player identity, and the introduction of social aspects to a ludic world. A third major concern with player voice in virtual reality can also be identified alongside these axes of investigation. No matter how it may seem when immersed in a virtual world, player-generated sound does not appear out of thin air. The layers of mediation between players whilst they are communicating can also pose a series of obstacles or inflections to how players communicate in virtual worlds.

SONIC ALTERCATIONS: PLAYER-GENERATED SOUND AS OBSTACLE TO PLAY

The potential for aggravating sound in player communication channels is part of popular commentary surrounding video gaming. Both sound quality and sound content can pose problems, and—similar to the satirical clip from *Whitest Kids U'Know*—many players have stories of background noise or out-of-game events disrupting play. Poor-quality connections or inconsistent connections can cause “robot voices,” stuttering, feedback, and other white noise that also disrupt the virtual world through introducing sound artifacts foreign to the fantasy-reality, often in stark contrast to processed studio-quality recordings of sounds in gameplay.

Deliberately obstructive play is also a concern. In an analysis of the player-controlled sounds in *Lord of the Rings Online*, Sweeney discusses an observation of “sonic territorialisation of the landscape” where “players can interrupt and sabotage performances.”¹⁹ Similarly Cheng observed the disruption of a communal space in a similar way, with “six bagpipers blasting an auction hall . . . in an attempt to drive all other players from the room.”²⁰ Although these observations are not specifically voice-related, the potential for disruptive sound to be broadcast through player communication channels via microphone is clear.

This is perhaps why voice is not considered as part of game sound by academics such as Richard Bartle and William Cheng, who both feel that voice is disruptive to player immersion within video game worlds. These issues are also inherent to the nature of extending the virtual world through player-generated sound. But voice is not a new addition to the video

^{19.} Mark Sweeney, “Aesthetics and Social Interactions in MMOs: The Gamification of Music in Lord of the Rings Online and Star Wars: Galaxies,” *The Soundtrack* 8, no. 1–2 (2015), 25–40.

^{20.} William Cheng, *Sound Play: Video Games and the Musical Imagination* (New York: Oxford University Press, 2014), 115.

gaming community. Games with local multiplayer such as *Halo* are often fondly remembered for their “couch co-op,” where players would play together within the same physical space and were therefore free to communicate socially with each other. Players seeking a competitive advantage have identified voice communication as potentially advantageous since it first became possible.²¹ We can see the continued popularity of player voice in the ongoing facilitation of player communication in gaming communities.

Headsets are now ubiquitous to gaming consoles, with all major consoles providing either built-in communication tools or some form of microphone add-on for real-time voice communication. Within PC gaming communities, the rise of free VoIP clients such as Discord—which can be used through a web browser without the need to install any programs (unlike popular predecessors Mumble and Teamspeak)—has improved ease of use. As games move away from couch co-op and into the world of online play, voice communication has never been more important, and it can be heard in an increasingly high proportion of games.²² Voice is now, more than ever, a major part of player experiences in virtual worlds.

Yet three major issues have been identified with player-generated sound and player voice. First, voice may convey information about player identity that reveals differences to player avatars. This can damage immersion by questioning our perception of the game environment. Second, voice may encourage social communication, which may disrupt enjoyment of a virtual world by introducing representations of real-world identities into a virtual world. Third, mediation through technology and player communication tools may be misused—deliberately or otherwise. This can disrupt immersion by creating poor-quality or aggravating auditory experiences for players.

In some specific instances, however, player voices have successfully entered virtual worlds. Voice may cause us to question our perceptions of player identity, but it can also allow us to express our identity more holistically in virtual worlds, such as letting us become the lead singer in *Guitar Hero World Tour*. Although voice may encourage social communication, it also permits ludic communication, heightening our ability to succeed in video game play. By considering the intersection of game and voice in the online world of MMORPG *EVE Online*, we can perhaps find the beginnings of an answer posed rhetorically by Collins: “Are there instances where breaking the [fourth] wall increases immersion rather than disrupts that experience?”²³

EVE ONLINE

The publisher of *EVE Online*, Crowd Control Productions (CCP, 2003), seems to have understood the potential for voice to become a major part of the game experience from early development stages. The result is spectacular. Voice in *EVE Online* extends across almost all areas of play: the players and developers have created together a complex phenomenon of large-scale voice-led gameplay.

21. Greg Wadley, Martin Gibbs, Kevin Hew, and Connor Graham, “Computer Supported Cooperative Play, ‘Third Places’ and Online Videogames,” in *Proceedings of OzCHI 2003*, ed. Stephen Viller and Peta Wyeth (Brisbane: University of Queensland, 2003), 238–241.

22. Collins, *Playing with Sound*, 79–80.

23. Collins, “Breaking the Fourth Wall,” 359.

Matthew Woodward, former lead designer of *EVE Online*, describes the game as a “sandbox.” According to his philosophy, sandbox games are those in which developer-created narrative content is kept to a minimum. Woodward highlights three key principles for creating sandbox games, stating designers must create a game that is “social, goal-driven and emergent,” which in turn he sees as “making a game open, giving players control . . . making it social as possible.”²⁴ Part of ensuring this sociability was the development of EVE Voice — an in-game chat client that provided players with an easy and accessible tool for communicating with fleet members and corporation members during their play.

One commonly discussed justification for offering these tools is the desire of the developer to keep control of events in the virtual world in the hands (and voices) of the players. With the only limitation on concurrent connections within a given player-zone being whether or not the computers hosting the servers will literally melt (Figure 4), major player events with tens of thousands of participants lead to thousands of players sharing communication channels on each and every side of the game’s (often socially complex) conflicts. Within this large-scale context, coordination is already extremely difficult. Text chat would likely create confusion as many players type questions or comments, quickly drowning out instructions and slowing their response to in-game events. The only choice for players is to use voice communication tools.

One well-respected player group, Rooks and Kings, publishes video documentaries of their in-game adventures. Predominantly European, they are famous within the *EVE Online* community for their early adoption of voice-led gameplay. Their use of voice may be due to the influence of one of their leaders, known within the community as “Lord Maldoror.” In an email exchange, we discussed his views on player voice in *EVE Online* and digital

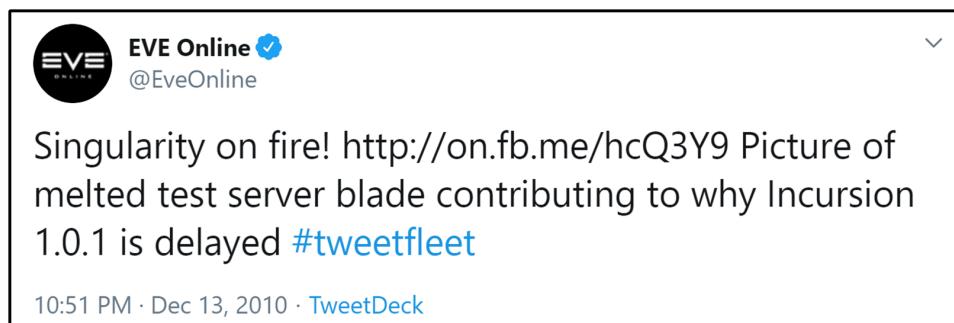


FIGURE 4. *EVE Online* servers are pushed to their limits during large-scale player conflicts and stress tests, occasionally resulting in extensive hardware damage, up to and including the physical hardware melting. In this instance, a stress test with thousands of players led to the delay of an expansion whilst CCP Games replaced their server infrastructure. <https://twitter.com/eveonline/status/14452261556068352>.

²⁴ Kris Graft, “EVE Online and the Meaning of ‘Sandbox,’” *Gamasutra*, October 29, 2012, accessed March 8, 2020, <https://www.gamasutra.com/view/news/179811/>.

communities. For him, player voice (as mediated by communication software) is “the true medium that gives us the human dimension [of player organizations].”²⁵

Rooks and Kings placed a high value on player voice communication from the beginning. Lord Maldoror referred to a “notoriously labyrinthine” procedure for joining their group, including not only forms and questionnaires for every applicant but also “the most crucial aspect . . . whether a candidate could establish rapport during interviews on Teamspeak.” The requirement of a microphone in such a situation seems obvious. Indeed, he clarified that “it’s difficult to imagine a player joining any serious [*EVE Online*] group without having a headset”—something reflected by the now-ubiquitous requirement in almost every major *EVE Online* community that players should have a functional microphone.

Rooks and Kings was amongst the first to include player voices alongside game audio and narration in their video series “Clarion Call,” but this practice was quickly adopted more broadly, until almost every video capturing large-scale events in *EVE Online* will include at least some of the player communications. As Lord Maldoror explains: “When capturing a moment of EVE in a recording of a battle or campaign, an enormous part of the story is in the voices themselves. It’s not just the content of what it is said but rather the tone—some of the narrative is carried by rising tensions bubbling through the voices of so many different accents and origins.”

EVE Online is not all gunfire and explosions, however, and players find themselves with plenty of time to, as players often say, “hurry up and wait.” Battles over major game structures such as stations and citadels—where players store ships and equipment—are interrupted by timers of several days. This ensures that international alliances stretching across many time zones can gather their forces to defend their territory. In more recent years, tactics known as “boredom tanking” and “time zone tanking” have emerged: groups utilize blitzkrieg tactics to rapidly generate large amounts of timers for opponents to defend over the following week, with indefinite intentions of showing up to continue the fight. This strategy forces groups to repeatedly gather members together, often without any specific instantaneous ludic goals to achieve, and it can be demoralizing, causing players to become bored with the game. Players must socially communicate to prevent these tactics from being effective. Player voice allows groups to remain engaged with the game even when their opponents refuse to show up.

Lord Maldoror confirms that “there are many hours spent waiting and the quality of one’s company determines the overall experience.” Although social elements contribute significantly to our experiences in MMORPGs, within *EVE Online* social components also form a significant part of a group’s ability to function as a long-term entity. As he explained, voice is seen as a “passport” to join larger groups within *EVE Online*. Microphones are a requirement to join most “serious” corporations and alliances, and players will spend a significant amount of time using voice communication. Voice is not a disruptive influence on the virtual world—it is an essential part of the typical gameplay experiences of the users.

²⁵. The complete email discussions are included as a supplement to this article, and quotations are provided *sic erat scriptum*.

Without a voice, a player is unable to fully participate in the game experience and therefore the gameworld.

Voice is so widely accepted within *EVE Online* that one of the biggest issues for players is not a few players disrupting events but rather too many voices trying to be helpful: with tens of thousands of players involved in major events, players must find a way to avoid communicating conflicting instructions to minimize participant confusion. Often groups appoint a fleet commander to coordinate their actions in the game world. Other players may find themselves asked to coordinate specific aspects of large-scale events, whether that be taking reports from scouts and spies, or arranging battlefield logistics, or monitoring the rate at which allied ships are dying. At the largest scale, player organizations in *EVE Online* function like a command center in a war zone, where specific players voice specific information to allow a supreme commander to understand the battlefield. In turn, this allows them to design a strategy to win the battle and save the day.

Through the creation of these roles, player voice in *EVE Online* becomes connected to character identity: what a player says becomes a reflection on what their character does and the intentions behind their actions. For example, the identity of a fleet commander exists when a player dictates the actions of hundreds, or thousands, of individuals. Larger operations might involve many sub-commanders, with divisions and wings and sections operating with varying degrees of independence. To become recognized as a fleet commander, the player must lead groups of fellow players and receive their ludic and social recognition. The role that the player takes on within the game's social structures is defined by the ludic interactions that they propagate with their voice. Through these methods, the limitations and methods of voice communication determine both the player identity and their character identity, and also fundamentally how the game can unfold.

Far from being a tool of oppression, the inherent non-democratization of voice communication that Cheng explores in *Sound Play*²⁶ becomes essential. A single voice must dominate. And players choose tools that permit them to easily do this. For example, the popular VoIP program Teamspeak permits the appointment of "priority speakers" who temporarily mute everyone else when they are speaking. This ensures communication is kept clear so that in-game groups of thousands of players can find collective success. The dictatorial nature of voice communication is key to the players' collaboration in corporations and alliances. We can also identify an additional benefit: any concern that players are not able to easily identify every voice amongst thousands of players is avoided by the creation of key voices to specifically listen for.

Player communication is part of nearly every player's experience in *EVE Online*. The game is proud of player communication in a way rarely seen even within the voice-privileged context of MMORPGs. Inauthentic representations of player voice have been used for many years in marketing materials for the game. The 2011 promotional video "I Was There" presents an unseen player recounting a hypothetical play experience, and a 2010 trailer for game expansion *Dominion* includes an audiovisual representation of the battle between two opposing factions complete with voice from commanders on both sides. The 2016 trailer

²⁶ Cheng, *Sound Play*, 138–166.

“Citadel” includes faux voice communication resembling that found in the Rooks and Kings documentary series “Clarion Call” (2011–2016), where players voice orders, contributing to the underlying tension of the action.

In more recent years, CCP has also utilized authentic, genuine, non-simulated player voices within their marketing campaigns. For the 2017 “This Is EVE” video trailer,²⁷ CCP invited players to submit audio or video recordings of past play experiences. These player voice audio recordings were overlaid directly, rather than being re-recorded in studio sessions with paid actors or player volunteers. This connected players to the trailer: they could hear familiar voices of major identities within the game, many of whom were part of their present or past play environment. Beyond the emotional, nostalgic, and narrative connections for players, this trailer also connected player voices to the game in an official, canonical fashion: players’ voices had entered the marketing world of *EVE Online*. From this point forward, we could see (and hear) them as part of the game universe that CCP presents to prospective players as both feature and experience.

These videos and trailers are reflective of a current reality: player voice is a core part of typical gameplay experiences in *EVE Online*. Players are likely to hear other players’ voices, whether playing with a small group or within the mega-alliances of tens of thousands that are the game’s most infamous attraction.

TOGETHER IN SPACE: DEALING WITH CONCERN SURROUNDING PLAYER VOICE IN *EVE ONLINE*

The core issues at the center of voice in virtuality remain, however. Simply requiring voice would not, in itself, create a fantasy world where voice has transcended digital perceptions. Headsets and microphones have offered this opportunity since their inception, but examples similar to *EVE Online*’s widely accepted positive attitudes toward player voices remain rare. It would be easy to say that players demonstrate a willingness to embrace and view voice as part of their game universe and gameplay, recognizing characters through the identity given by their player’s voice, *despite* these issues. But equal explanation could also be found in the methods that players and developers of *EVE Online* (potentially inadvertently) use to prevent player voices from disrupting immersion within their video game.

Cheng’s concern that hearing player voices may disrupt the immersion of other players, as seen in *Second Life*, comes specifically from disjunction between character identity and player identity. Within *EVE Online*, character identities are vague and nebulous, avoiding a specificity that may cause issues. The avatar is only easily visible to the player who controls the character, with players requiring multiple clicks and interface menus to examine another player’s avatar. Even for the controlling player, avatars are easily forgotten. Although “Walking in Stations” was introduced as part of the *Incarna* expansion in 2011—allowing players to walk their avatar around a small room whenever they docked—the feature was removed

²⁷ EVE Online, “‘This Is EVE’ - Uncensored (2014),” YouTube, November 21, 2014, accessed March 3, 2020, <https://youtu.be/AdffFnTtzUTo>.

in 2017 when an examination of the player base revealed that 97 percent of players had since disabled the now-optional feature.²⁸

Further, many players operate multiple characters. As the game is relatively slow-paced, experienced players are able to use multiple accounts simultaneously, offering their corporations and alliances a significant advantage in battle. Players are unlikely to identify with a specific character as a result: avatars are seen as tools to be used freely. They are indirect, abstract representations of the player rather than placeholders or substitutes for a physical reality. Any associations between players and specific in-game avatars are often forgotten. Players do not see avatars as presenting their or another's self-identity within the game.

Throughout most play experiences, players are typically identified either solely by their in-game name(s) or their character name(s) in combination with the ship(s) they are flying—in much the same way that players within racing games may be identified by the car they are driving. There is no direct representation of a player avatar within the play space. Players lack the comprehension or consistency of a character identity necessary to formulate an expectation of what someone “should” sound like. As a result, players find it almost impossible to imagine a disjunct between player identity (as expressed through voice) and character identity (as expressed through in-game avatar).²⁹

Conversely players identify each other through voices, without particularly considering avatars at all. This allowed Lord Maldoror to “spy” on other groups by modifying his voice; he described “a soundboard, an intermediary person . . . or a different language” to conceal his “easily identifiable voice”—the implied questionable ethics of which may also help substantiate my earlier concerns regarding voice changers as a tool for roleplay.

Concerns that reality may intrude on fantasy have also been avoided in *EVE Online*. There is an extensive lack of pre-recorded audio in the game. NPC missions do not use voice actors, encounters with NPCs in space utilize text channels to communicate “radio messages” as necessary, and only indistinct crowd noises can be heard when docked. The only voice players hear within the game is that of the ship assistant, Aura. Alerts are read when their ship is running low on energy and ammunition, and she speaks to reassure players that their ship are entering warp to confirm that player commands have been received. Primarily her purpose is to provide ludic feedback to the player, and she is often considered part of the ship rather than a specific identity of her own. As a result, there are no high-quality voice files to compare to any player voices that are heard, avoiding any unfavorable comparisons.

The potential for disruptive sound observed by both Cheng and Sweeney is also avoided through deliberate player management. In large-scale encounters with tens of thousands of players, there is potential for absolute chaos over voice communication. To avoid this, voice communication systems are rigorously managed. Push-to-talk is normally mandatory (minimizing noise bleed from external sources) and only specific players are allowed to talk during major engagements. Although there is still the potential for some “acoustic terrorism,” the

28. “Walking in Stations: A Farewell to Captain’s Quarters,” *EVE News24*, August 15, 2017, accessed March 8, 2020, <http://evenews24.com/2017/08/15/walking-in-stations-a-farewell-to-captains-quarters/>.

29. Lord Maldoror suggests a similarity to asking Bobby Fischer to consider a man riding a horse when moving his chess piece; see Email 3 in the supplement.

player base has many years of experience in managing these large-scale events and works quickly and efficiently to minimize any disruption.

Further, players have avoided issues surrounding language and understanding through the development of a near-universal vocabulary, such as the “primary” (a target for everyone to focus their fire on) and the “secondary” (the next target that will be focused upon). Targets are generally referred to by the first three letters of their name and their ship name to minimize any confusion. (For example, “Primary [target] is Alpha-Tango-Lima in the Raven [a ship type].”) This “fleet command” language in *EVE Online* helps ensure that players do not have their immersion disrupted by struggling to understand each other in intense combat situations: fleet commanders structure their speech according to player expectations to facilitate ludic communication in stressful situations. There is a lack of evidence on how it came into being, but the structure of the speech likely evolved naturally as players attempted to make their ludic communication more efficient to ensure ludic success.

In the world of *EVE Online*, players and developers have answers to the immersion-threatening issues of player voice identified previously—and for good reason: despite their essentiality to ludic success, group longevity, and many areas of gameplay, player voices retain the potential for disruption. Therefore, players are incentivized to ensure that voice communications are clear, concise, and coherent, and as a result they take steps to avoid any potential disruptions to their immersion in a battle. Their actions contribute to a broader acceptance of voice and communication within the game. As Lord Maldoror observes: “Whether the person is a thousand miles away or standing next to me, it is their voice I interact with.”

But is this experience of player voice specific to *EVE Online*? Perhaps the acceptance of player voice is connected to the sandbox environment, and *EVE Online* has held an almost unchallenged monopoly in the genre since its release in 2003. Newer games such as *Albion Online* have begun to enter the MMO-sandbox market, but they do not yet have the market share to provide us with evidence for any generalizations. Although I believe that other games likely will develop a similar voice-led player experience, the possibility remains that *EVE Online* could have a singularly odd player base, which has created a unique experience of completely unrestrained player voice existing quasi-diegetically within a fantasy universe.

CONCLUSIONS

EVE Online shows player voice as a constructive force within its specific video game sound design, but it cannot be used to justify any generalization that player voice *always develops* a player experience. The lack of other games with sandbox structures and large-scale player groups at the core of gameplay means a broad generalization needs to be avoided. The game’s existence, however, does call into question any firm belief that player voice *always disrupts* a player experience.

To some extent, a belief that voice can form an essential part of play is reflected in current game design literature. Restrained player voice has already begun to be considered by both academics and designers. In *Guitar Hero World Tour*, the voice is used as part of “band mode,” forming part of the performance that players are simulating. Other games have taken a more creative approach, such as the mobile game *Chicken Scream* where players

must scream at their phone to cause a chicken to jump. Ambitious projects such as *There Came an Echo* have found solutions to the issues surrounding player voices to permit an entirely voice-controlled strategy game to function. Other games have attempted to make the difficulties of voice communication a feature of the game, such as *Keep Talking and Nobody Explodes* where one player can see the bomb and the other player can see the manual that sets out how to defuse it.

But if the adoption of player voice within video games continues to spread and become more ubiquitous, other games will undoubtedly cause us to revisit a fundamental question: What is game sound? Voice forms a part of game experiences—narrative, social, and otherwise—in many multiplayer games. Voice communications can be found within other game series such as *Team Fortress* or *Call of Duty*. MMORPGs often encourage voice communication. Within *EVE Online* voice is seen as a passport to join larger groups, with microphones being a requirement to join most serious corporations. Does that mean that we should always consider player voices to be part of video game sound?

Game audio differs from film audio in one important regard, despite the similarities of presenting to an audiovisual audience: game audio is interactive. Players are not only observers but also authors. To quote Collins: “Our interaction with sound . . . adds significant implications for our understanding of sound in media . . . interactive sound may encourage a three-way emergent meeting where new meanings are created through interaction.”³⁰ Within MMOs we can see the emergent meeting of sociability with technology. Social connections form an important part of MMOs, creating the multiplayer communities that are the defining fundamental of the genre. Within MMOs player voices hence play an important part of the game experience. However, this may not hold true in other genres, or indeed in all MMOs.

Our consideration of player voices in the realm of video game sound returns not to the intentions or designs of the developers but rather to the player experience: when examining or designing gameworlds, the role of player voice should be considered carefully alongside the role of voice within the diegetic reality and within the expected play experiences. A series of questions can be used to consider how, and to what extent, player voice is situated within play experiences:

1. Is voice communication part of the *typical* user experience, or limited only to *specific* players or instances?
2. Is the in-game representation of the player *direct* or *indirect*?
3. Does player voice *complement* or *oppose* the designed soundscape?
4. Are player voices *structured* or *unrestrained*?
5. Is the voice communication primarily *social* or *ludic*?

The communication in *There Came an Echo* is structured; players must use specific phrases to communicate. The communication in *Keep Talking and Nobody Explodes* is unrestrained; players can communicate the required information in any form. It is easy to see a connection between structure and computer-based interfaces. Although virtual assistants are

³⁰ Collins, *Playing with Sound*, 37–38.

pushing the boundary, computers currently require some form of structured control system to function well. But not all structured communication will involve a computer-based interface. Structure can also be found within human-human interactions. One example of this is air traffic control at airports: air traffic controllers and pilots use specific phrases to communicate at international airports to avoid any potential issues arising from pilots lacking fluency in the *lingua franca* of the country they are flying through. Similarly the communication in *EVE Online* during intense high-player-count activities has an observable structure of specific phrases and instructions to allow players who may not understand or speak the chosen language to fully participate. Though *EVE*'s language is not forced to be structured in the same way as the interface used in *There Came an Echo*, players voluntarily surrender unrestrained communication to find greater ludic success.

The communication in *Keep Talking and Nobody Explodes* is ludic; players communicate for the purpose of ludic success, sharing observations and information with each other. The communication in *Second Life* is social; players communicate to establish social bonds beyond the ludic parameters, often using information about their personal identity rather than their character identity. This may have some relationship to a consideration of “in-character” vs. “out-of-character” and can cause blurring between character and player that make the distinction unclear. However, social groups of *characters* exist within roleplaying games such as *World of Warcraft*, where players remain in character whilst socializing. Therefore, this secondary consideration is not an essential component of social communication and should not be taken as the sole indication of whether communication is ludic or social.

Player voice holds issues for designers, developers, academics, and players. The virtual world and the real world are pushed closer together when voices are brought into the game space. Player voices can form part of the “text” of video games and heighten player experience, or they can tear the virtual world apart. Each of the five factors identified earlier can form part of the friction between virtuality and actuality.

These factors, however, are not intended as dyads that are true or false for voice within all video games, or even within a specific video game. It is likely that within each game, a variety of situations and approaches to player voice may be found. Within a given game, one group may utilize player voice as part of their in-character role playing, whereas another group may use voice to communicate socially with each other out of character. Each heightens their play experience using fundamentally different approaches to integrating player voice.

The five factors are intended to be axes on which player communication within specific play experiences can be contextualized. By utilizing them, we can examine player voice more holistically, allowing us to recognize the ways in which an often-overlooked aspect of game sound can function within virtual worlds: not only recognizing instances where player voice disrupts immersion, but also discovering instances where player voice builds upon the immersion within and enjoyment of the virtual world. ■

BIBLIOGRAPHY

- Bartle, Richard. *Designing Virtual Worlds*. Berkeley, CA: New Riders, 2006.
Barnett, Jane, and Mark Coulson. “Virtually Real: A Psychological Perspective on Massively Multiplayer Online Games.” *Review of General Psychology* 14, no. 2 (2010): 167–79.

- Carter, Marcus, Greg Wadley, and Martin Gibbs. “Friendly, Don’t Shoot!: How Communication Design Can Enable Novel Social Interactions.” In *Proceedings of the 24th Australian Computer-Human Interaction Conference, 2012*. University of Melbourne, 72–75.
- Cheng, William. “Acoustemologies of the Closet.” In *The Oxford Handbook of Virtuality*, edited by Mark Grimshaw, 337–348. Oxford, UK: Oxford University Press, 2014.
- Cheng, William. *Sound Play: Video Games and the Musical Imagination*. New York: Oxford University Press, 2014.
- Collins, Karen. *Playing with Sound: A Theory of Interacting with Sound and Music in Video Games*. Cambridge, MA: MIT Press, 2013.
- Collins, Karen. “Breaking the Fourth Wall? User-Generated Sonic Content in Virtual Worlds.” In *The Oxford Handbook of Virtuality*, edited by Mark Grimshaw, 351–363. Oxford, UK: Oxford University Press, 2014.
- Graft, Kris. “EVE Online and the Meaning of ‘Sandbox.’” *Gamasutra*, October 29 2012. Accessed March 8, 2020. <https://www.gamasutra.com/view/news/179811/>.
- Herring, Susan, Kirk Job-Sluder, Rebecca Scheckler, and Sasha Barab. “Searching for Safety Online: Managing ‘Trolling’ in a Feminist Forum.” *The Information Society* 18, no. 5 (2002): 371–384.
- Hew, Kevin, Martin Gibbs, and Greg Wadley. “Usability and Sociability of the Xbox Live Voice Channel.” In *Australian Workshop on Interactive Entertainment 2004*, edited by Yusuf Pisan, 51–58. Sydney: Creative and Cognitive Studios, 2004.
- Kuznekoff, Jeffrey H., and Lindsey M. Rose. “Communication in Multiplayer Gaming: Examining Player Responses to Gender Cues.” *New Media & Society* 15, no. 4 (2013): 541–556.
- McLean, Lavinia, and Mark D. Griffiths. “Female Gamers’ Experience of Online Harassment and Social Support in Online Gaming: A Qualitative Study.” *International Journal of Mental Health and Addiction* 17 (2019): 970–994.
- Sarkar, Samit. “There Came an Echo’s Voice Controls May Be the Best Way to Play.” *Polygon*. April 15, 2014. Accessed November 20, 2019. <https://www.polygon.com/2014/4/15/5606644/there-came-an-echo-preview-voice-controls-pax-east-2014>.
- Sweeney, Mark. “Aesthetics and Social Interactions in MMOs: The Gamification of Music in Lord of the Rings Online and Star Wars: Galaxies.” *The Soundtrack* 8, no. 1–2 (2015): 25–40.
- Tunbridge, Laura. “Scarlett Johansson’s Body and the Materialization of Voice.” *Twentieth-Century Music* 13, no. 1 (2016): 139–152.
- Tynes, Brendesha M., Chad A. Rose, Sophia Hiss, Adriana J. Umana-Taylor, Kimberly Mitchell, and David Williams. “Virtual Environments, Online Racial Discrimination, and Adjustment Amongst a Diverse, School-Based Sample of Adolescents.” *International Journal of Gaming and Computer-Mediated Simulations* 6, no. 3 (2016): 1–16.
- Vermeulen, Lotte, and Jan Van Looy. “I Play So I Am? A Gender Study into Stereotype Perception and Genre Choice of Digital Game Players.” *Journal of Broadcasting & Electronic Media* 60, no. 2 (2016): 286–304.
- Wadley, Greg, Martin Gibbs, Kevin Hew, and Connor Graham. “Computer Supported Cooperative Play, ‘Third Places,’ and Online Videogames.” In *Proceedings of OzCHI 2003*, edited by Stephen Viller and Peta Wyeth, 238–241. Brisbane: University of Queensland, 2003.
- Wadley, Greg, Marcus Carter, and Martin Gibbs. “Voice in Virtual Worlds: The Design, Use, and Influence of Voice Chat in Online Play.” *Human-Computer Interaction* 30, no. 3–4 (2015): 336–365.
- “Walking in Stations: A Farewell to Captain’s Quarters.” *EVE News24*, August 15, 2017. Accessed March 8, 2020. <http://evenews24.com/2017/08/15/walking-in-stations-a-farewell-to-captains-quarters/>.

VIDEOGRAPHY

- CCP Games. “EVE Online: Dominion Trailer.” YouTube Video. November 24, 2009. Accessed December 2, 2019. <https://www.youtube.com/watch?v=zDVEHE10nHc>.

- Chris Gaines. "Real Life Call of Duty Whitest Kids U'Know." YouTube Video. June 4, 2009. Accessed March 3, 2020. <https://youtu.be/ZzV6-453ay8>.
- Eve Online. "'This is EVE'-Uncensored (2014)." YouTube Video. November 21, 2014. Accessed November 20, 2019. <https://www.youtube.com/watch?v=AdfFnTt2UT0>.
- GamerSpawn. "Real Life Game Parodies-Call of Duty 4: Whitest Kids U'Know by TeamOathProductions." YouTube Video. November 8, 2010. Accessed November 20, 2019. <https://www.youtube.com/watch?v=T9CbUDvhy5k>.
- Husky Raid. "Saw Something Weird in Destiny . . . [HUSKY RAID]." YouTube Video, September 5, 2017. Accessed November 18, 2019. https://youtu.be/TLzf51S3_cs.
- Rooster Teeth Animation. "Season 1, Episode 1 – Why Are We Here? | Red Vs Blue." YouTube Video. March 6, 2015. Accessed November 20, 2019. <https://www.youtube.com/watch?v=9N8IpXO6rKs>.

FURTHER VIEWING

- These videos from Rooks and Kings, representing the genre and style that they produced, are included for the purpose of demonstrating how they included player voice in their videos. A few minutes of footage have been suggested in each case.
- Rooksandkings. "Rooks and Kings: Clarion Call 3 (1080p available)." YouTube Video. November 17, 2011. Accessed December 3, 2019. https://www.youtube.com/watch?v=XrYe_4vHzgE. See 21:45–23:00.
- Rooksandkings. "Rooks and Kings: Clarion Call 4 (1080p available)." YouTube Video. September 17, 2014. Accessed December 3, 2019. <https://www.youtube.com/watch?v=LNUu75fH8Uc>. See 35:10–36:30.
- Rooksandkings. "Rooks and Kings: VidBR5: Mister K (1080p available)." YouTube Video. October 31, 2012. Accessed December 3, 2019. <https://www.youtube.com/watch?v=uGIWIrJDZgY>. See 9:00–11:30.

LUDOGRAPHY

- Guitar Hero World Tour*. Neversoft/Activision. 2008. Xbox 360.
- There Came an Echo*. Iridium Studios. 2015. PC.
- Keep Talking and Nobody Explodes*. Steel Crate Games. 2015. PC.
- EVE Online*. CCP Games. 2003. PC.