Player Agency in *Audience Gaming*

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INTRODUCTION

With the advent of broadband network infrastructures, video streaming services such as YouTube and Twitch have become the dominant source of multimedia consumption. As these platforms have matured, the community and its ensuing culture gave birth to a new generation of providers, initially as commercial live feeds, then as adult entertainment and game streams. These live video streams allow the audience to interact directly with the performer and talk among themselves through chat widgets. We call the live playing of a game in front of an interacting audience *Audience Gaming*.

Present research focuses mainly on why people watch others play, their socio-cultural characteristics, how they form communities, and the performers' motivations and approaches.[1] However, newly developing affordances of interactivity on streaming platforms such as straw polls, donation messages, and stream integrated games are not well researched. *Audience Gaming* is a result of the newly formed streaming culture. It has influenced the production of games such as DEAD CELLS (2018), where the audience can vote on what will come out of an in-game chest, or HEARTHSTONE (2014), where Twitch viewers can get in-depth information on an ongoing game:

1 Gandolfi, Enrico: "To Watch or to Play, It Is in the Game: The Game Culture on Twitch.tv Among Performers, Plays and Audiences," in: *Journal of Gaming & Virtual Worlds*, Volume 8 Number 1 (2016), pp. 63-82.

Similar to the theatre in modern times, the spectators have become participants.[2]

In comparison to classical multiplayer experiences focusing on a fair and balanced gaming experience, an *Audience Gaming* setting is infused with a more complex power dynamic between the streamer or performer and audience. While streamers are forced to accommodate their viewers or face their reactions, they also hold ultimate control over the game and chat. In the following, we will analyse and define these new affordances and the change in player agency by analysing the performative processes arising from *Audience Gaming* streams with games that offer direct audience participation like the aforementioned DEAD CELLS.

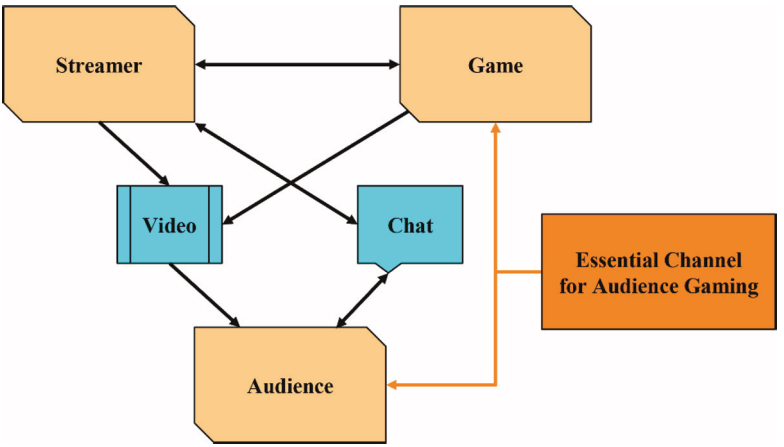
DEFINING *AUDIENCE GAMING*

For *Audience Gaming* to occur, three essential agents must be present: a game, a player that broadcasts their gameplay through a digital channel, e.g., a streamer, and an audience watching the streamer play. The streamer plays the game and records their gameplay and optionally themselves through video. The video is streamed to the audience via a streaming service, and in most cases, the audience can react to the video stream via a chat. Vice versa, the streamer can respond to the audience either through the video directly or use the chat themselves. So far, this process describes the basis out of which *Audience Gaming* emerges in digital game culture. Gerald Schenke calls this "Live Stream Gaming,"[3] and it describes the core functionalities of streaming platforms like Twitch. In opposition to classic television broadcasts, the chat enables the audience to directly discuss the performance among themselves and react to the streamer.

2 Cf. Scully-Blaker, Rainforest et al.: "Playing Along and Playing for on Twitch: Livestreaming From Tandem Play to Performance," in: Bui, Tung (ed.), *Proceedings of the 50th Hawaii International Conference on System Sciences*, ScholarSpace/AIS Electronic Library 2017, pp. 2026-2035.

3 Schenke, Gerald: *The Design Space of Interactive Live Stream Gaming. A Theoretical and Practical Investigation*, unpublished Master Thesis, Cologne 2018, p. 24.

Figure 1: Communication channels in Audience Gaming (based on Schenke's definition of "Live Stream Gaming")



Source: Graphic by Brandis/Bozkurt

However, in this model, the audience can only communicate with each other and the streamer. Only the streamer can interact with the game. *Audience Gaming* requires an additional channel, which enables the audience (or at least some members of the audience) to also interact with the game. If this channel is active, "Live Stream Gaming" becomes *Audience Gaming*. This form of interaction is directly related to telephone polls in classic television, which enables and engages the audience to take part in the events on the screen.

THE RISE OF STREAMING SERVICES

Live video streaming, especially within the sphere of video games, has been a steadily expanding business since the mid-2000s.[4] It is part of a larger

4 Live video streaming is closely related to Esport events. In 2005, events organized by the Electronic Sports League (now called ESL) ran for the first time on public television, GIGA in Germany ("20 Years of Esports," *ESLgaming*; https://about.eslgaming.com/20-years/). More recent developments show bigger companies

online gaming culture along with discussion boards, wikis, and the rich gaming content of YouTube ranging from Let's Plays to compilations. When streaming websites started becoming popular, professional gaming tournaments were already looking to reach larger audiences through video-on-demand on YouTube, and live streaming was the next step in production value. Similarly, video game performers such as speedrunners, who try to beat games in the shortest possible time, are drawn to streaming websites to share their craft and get recognized for their feats much more easily. In general, the sharing culture that came with social media platforms and smartphones and the growing broadband networks meant many gamers had the means to share their experiences with others online.[5]

There are many live streaming websites such as Google's YouTube Live and Facebook Gaming. Among them, the most popular one, at least currently, is Twitch. It is a platform where anyone can stream video content live

investing heavily into the life streaming business: Amazon buying Twitch.tv in 2014 (MacMillan, Douglas/Bensinger, Greg: "Amazon to Buy Video Site Twitch for $970 Million," *The Wall Street Journal*, August 26, 2014; https://online.wsj.com/articles/amazon-to-buy-video-site-twitch-for-more-than-1-billion-1408988885), Twitter acquiring the streaming service startup Periscope in 2015 (Koh, Yoree/Rusli, Evelyn M.: "Twitter Acquires Live-Video Streaming Startup Periscope," *The Wall Street Journal*, March 9, 2015; https://www.wsj.com/articles/twitter-acquires-live-video-streaming-startup-periscope-1425938498), and Google launching YouTube Gaming in 2015 (Dredge, Stuart: "Google Launches YouTube Gaming to Challenge Amazon-owned Twitch," *The Guardian*, August 26, 2015; https://www.theguardian.com/technology/2015/aug/26/youtube-gaming-live-website-apps). In general, the viewers of live streaming have been steadily increasing, reaching enourmous heights during popular events (Handrahan, Matthew: "The International 2017 Reached 5m Peak Concurrent Viewers," *gamesindustry.biz*, August 14, 2017; https://www.gamesindustry.biz/articles/2017-08-14-the-international-2017-reached-5m-peak-concurrent-viewers; Fanelli, Jason: "Overwatch League Claims Record Viewer Numbers in 2019 Season," *Twin Galaxies*, October 3, 2019; https://www.twingalaxies.com/feed_details.php/5903/overwatch-lea gue-claims-record-viewer-numbers-in-2019-season/).

5 Cf. Smith, Thomas P. B./Obrist, Marianna/Wright, Peter: "Live-streaming Changes the (Video) Game," in: *Proceedings of the 11th European Conference on Interactive TV and Video – EurolTV '13* (2013), pp. 131-138.

and it is mainly focused on gaming-related content. It is by far the most popular service with a steady increase of concurrent viewers per month from around 80 thousand on average in September 2012 to 2.9 million in January 2021, with the highest peak being nearly 6.5 Million viewers in the same month.[6]

Besides the video, Twitch features a chat box where the audience members can send text messages to the streamer and each other. Devoted community members developed automated bots that listen to the chat to gauge audience reactions, put out polls and many other features. As the website grew, Twitch opened its API (application programming interface) and thus provided developers with more tools to enable advanced interactions for both streamers and the audience.[7]

STREAMER TYPES

Streamers and their content can take on very different forms. In the context of *Audience Gaming,* it is essential what size the audience is. Consider, for example, a football stadium versus a small reading in an open mic poetry slam. Both feature a stage and a performance, but the possible modes of interaction for the audience are entirely different. While the stadium does not allow an individual voice of the audience to be heard, it is the combined cheering, booing or singing of the thousands of fans that form the message. In the bar however, individual voices can rise out of the audience from time to time and a more direct form of conversation between the performer and the audience is possible. Streams have similar modes of interaction.

Flores-Saviaga et al. analysed the different sizes of English-speaking Twitch streams for one month in 2017 with the help of the Twitch API and identified the following five categories of streamers:

6 Cf. "Twitch Viewers Statistics," *TwitchTracker*; https://twitchtracker.com/statistics/viewers

7 Cf. Astromoff, Kathy: "Twitch Extensions and Twitch API – Now Live!," *blog.twitch.tv*, September 12, 2017; https://blog.twitch.tv/en/2017/09/12/twitch-extensions-and-twitch-api-now-live-768d304162d9

Figure 2: Streamer types based on viewers

Clique Streamers	Rising Streamers	ChaterBoxes	Spotlight Streamers	Celebrities and Tournaments
0-6 viewers	6-1,879 viewers	1,879-7,703 viewers	7,703-21,678 viewers	more than 21,678 viewers
relationship-driven	small communities	local slang, emoticons & bots	largest audience	professionals and tournaments
low retention	shares identity/ experience	better retention	audience engagement and play time often strictly separated	stadium-like audience

Source: Graphic by Brandis/Bozkurt

Clique Streamers are new to streaming or have a very narrow focus that targets the smallest audiences. They rely on personal relationships between the streamer and the audience. Often, they are not (yet) well organized and do not have a strict streaming schedule. Therefore, they can have a difficult time holding onto new viewers.

Rising Streamers built small communities around specific shared identities or experiences. They have successfully expanded beyond their own social sphere. If they keep a regular streaming schedule, they can apply to Twitch's affiliate program and start making money.

ChatterBoxes are regular streamers with established communities. Twitch allows affiliates to have their own set of emoticons, which results in these communities developing a local slang or a certain way they respond to what happens on the stream.

Spotlight Streamers host the largest portion of the participatory audiences and are heavily promoted by Twitch. At this point, streamers start to become public performers, and it becomes more difficult to play and engage with the audience at the same time due to the number of messages written in the chat.

Celebrities and Tournaments Channels draw the biggest audiences, but there are only a few of them. Some of these are games' official channels, which broadcast big events with high production values and professional hosts. Others are famous full-time streaming professionals with set schedules, good equipment, and corporate sponsors. The audiences for these

channels resemble those of a stadium and generally do not participate in the stream's content.[8]

THE AUDIENCE AS PLAYERS

One of the first big audience participation events on Twitch was called "Twitch Plays Pokémon." It was a social experiment by an anonymous developer, and it quickly became a viral hit. According to Twitch, it drew 1.16 million people to the site.[9] The streamer had set up a game of POKÉMON RED VERSION (1996) on an emulator and used the Twitch API to enable the stream audience to send commands such as "up" and "down" directly to the game via the Twitch chat thus simulating the input of a game controller. All inputs in a certain time frame were analysed and channeled into a concrete command for the game which executed it. Effectively thousands of players had to coordinate their actions to navigate the single main character of the game. After nearly 17 days of continuous play, the audience successfully finished the game despite mischievous participants intending to derail the collective effort.[10] The success of this experiment prompted Twitch to develop more tools and open their platform for more ways to increase interactivity.

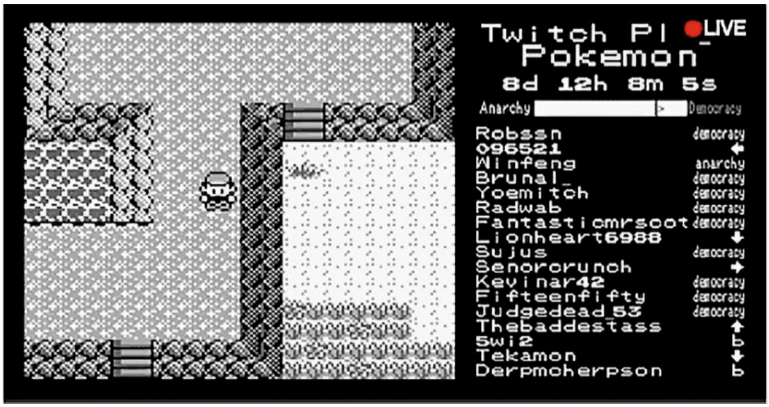
Since then, developers took the opportunity to add streaming enhancements to their games. One such example is ULTIMATE CHICKEN HORSE (2016). It is a competitive 2D platformer game in which the players build the level as they go along in trying to reach the end goal before their opponents. When played on a stream, the audience can give players resources by typing the resource names in the chat. In contrast to the collective playing experience of "Twitch Plays Pokémon," this form of integration aims to involve the audience in a streamer's play session.

8 Cf. Flores-Saviaga, Claudia et. al: "Audience and Streamer Participation at Scale on Twitch," in: Atzenbeck, Claus/Rubart, Jessica (eds.), *HT '19: Proceedings of the 30th ACM Conference on Hypertext and Social Media*, New York: The Association for Computing Machinery 2019, pp. 277-278.

9 Cf. "TPP Victory! The Thundershock Heard Around the World," *blog.twitch.tv*, March 1, 2014; https://blog.twitch.tv/en/2014/03/01/tpp-victory-the-thundershock-heard-around-the-world-3128a5b1cdf5

10 Cf. Ibid.

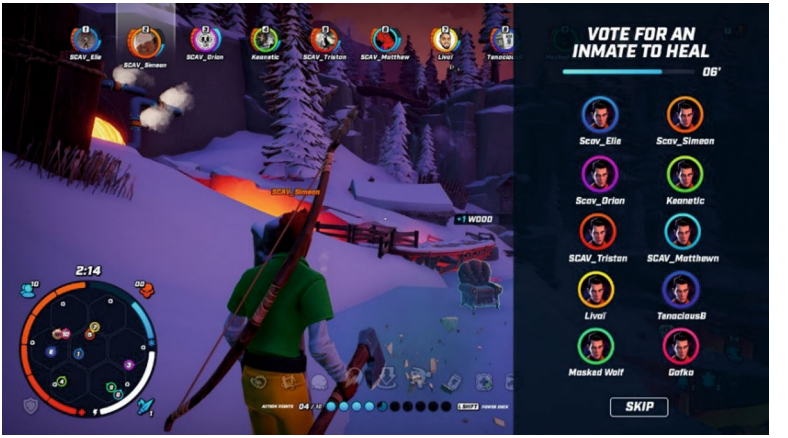
Figure 3: Twitch Plays Pokémon on its eighth day. On the left side is the original game view, while on the right side, the collective inputs are displayed. Anarchy and Democracy are features that were installed after the launch of the project to make sure that the game could also continue in difficult sections. While for Anarchy, a simple majority of inputs is enough to trigger the next event, Democracy requires a supermajority. Depending on which mode is voted for the game proceeds.



Source: https://en.wikipedia.org/wiki/File:Twitch_plays_pokemon_animated.gif#/media/File:Twitch_plays_pokemon_animated.gif

Another such example is the Battle Royale game DARWIN PROJECT (2020). The Battle Royale formula was made popular by games like PLAYERUNKNOWN'S BATTLEGROUNDS (2017) and FORTNITE (2017). These games are multiplayer shooters in which all players have a single life per round and do not respawn. They also feature a level map, which shrinks over time and forces the players closer and closer together. DARWIN PROJECT differs from other Battle Royale games by casting one player in the role of the game session's director. The director does not participate in the fight but gets to watch and steer the game as it progresses. They can talk to the players on voice chat, give information, health or ammo packs to aid or grief them. Some streamers use this feature to run the game like a TV show host, commentating on the game and creating an interesting show. When the game is run in streamer mode, the audience members can vote on players at different phases of the game, act like a decision board and can change the course of the session.

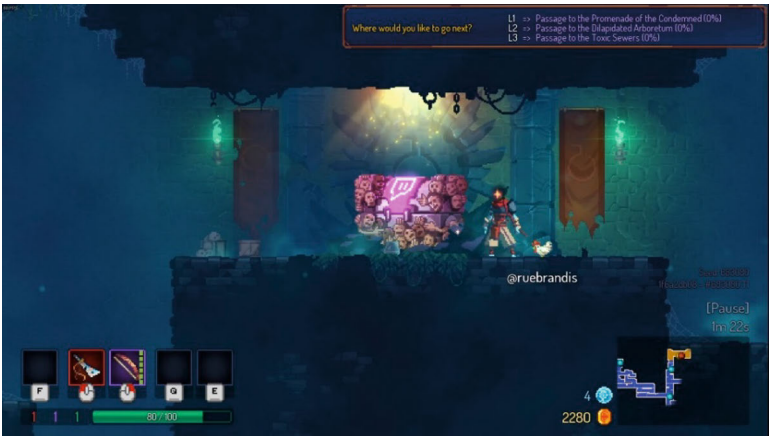
Figure 4: THE DARWIN PROJECT running a poll for the audience about which inmate (active player in the game) should receive healing



Source: https://blog.twitch.tv/assets/uploads/6ca7d444c8608ac4718aece43e65b36.jpeg

The game most prominently featuring Twitch's interest in the concept of *Audience Gaming*, however, is DEAD CELLS. It is a hack 'n' slash game where the player runs through dungeons and crypts fighting numerous enemies. This game was one of the flagship titles promoted by Twitch for its extensive use of the Twitch development tools. It is a single-player game but can be played on a stream, which completely changes the playing experience for the main player through the audience's involvement. Like ULTIMATE CHICKEN HORSE, the audience can vote on certain events within the game. This can be the decision of what skills the player should get or which path will open when the level design branches. Additionally, the player encounters Twitch chests from time to time, which can be recognized by the Twitch logo on them. The player then must fight waves of enemies while the audience chooses if the contents of this chest will be helpful or harmful to the player. However, the most extensive audience participation feature is the "Captain Chicken" mascot. DEAD CELLS features a small chicken that follows the player around. Audience members can become the chicken by typing "pickme" in the chat and one member is randomly chosen from the pool of applicants. The audience member's name is then portrayed in-game next to the chicken and they gain the possibility to heal the player from time to time.

Figure 5: DEAD CELLS showing the Twitch chest right next to the player and the "Captain Chicken" character with the audience member's user name displayed



Source: Screenshot by Brandis/Bozkurt

DEAD CELLS is offering several different forms of audience involvement and thus aims to cater to different audience player types simultaneously. While some might enjoy getting involved directly in the stream by being featured as the sidekick character, which also comes with the expectation of more prominent participation in the chat's communication, others might rather silently participate by voting on different occasions while not committing to any form of responsibility. DEAD CELLS streamer mode is still a casual experience for the audience, which has very limited possibilities of interaction. Nevertheless, it hints at the possibilities that can be achieved through the usage of the Twitch API.

AFFORDANCES

Game design traditionally focuses on the player when trying to create engaging systems which are enjoyable to play. If a designer tries to create a game aimed at streaming, they have to additionally think of how the broadcasting of a game is enjoyable for an audience that does not directly influence the gameplay itself. The audience is also aware of each other and can interact

and react even outside of the game's scope, i.e., in the chat. In the case of *Audience Gaming,* these two elements of design collide because the audience can be player and spectator at the same time or switch between these roles seamlessly. This results in three core affordances of *Audience Gaming*:

Performable Gameplay: For *Audience Gaming* to occur, a digital game must support streaming. In general, this applies to any game that can be recorded and broadcasted. More specifically, it means that a game's systems can be used to create an interesting performance. This especially applies to games that allow open play and multiple forms of interaction, which makes observation interesting, because it cannot be easily predicted. A good example would be multiplayer games like LEAGUE OF LEGENDS (2009) or sandbox games like MINECRAFT (2011).

Audience Impact: The Audience must be able to directly communicate with the game's system without the streamer being able to interfere with this communication. The streamer still has control over the situation, but cannot validate the audience interaction with the game at all time. This also means that *Audience Gaming* always affords a multiplayer setting.

Asymmetrical Gameplay: In an *Audience Gaming* setting, streamers and audiences both act as players of the game. However, the modes of engagement with the game result in different agencies based on their roles. Streamers are always in control of the game as they host the game session and control the stream itself. The audience always acts on this ground and can only influence what the streamer and the game allow in the first place. This is called "asymmetrical gameplay." Jesse Schell differentiates between "symmetrical" and "asymmetrical games" by looking at the player's possibilities to act within a game. In symmetrical games, the balancing distributes possibilities to act equally between the different agents capable of acting within the game's system. In an asymmetrical game, different agents are provided with different possibilities to act, which creates more complex and diverse gameplay.[11]

11 Cf. Schell, Jesse: *The Art of Game Design. A Book of Lenses*, Boca Raton/London/New York: CRC Press 2015, p. 203.

INDIVIDUALS AND SOCIAL GROUPS

For *Audience Gaming*, it is crucial to distinguish between enabling the individual as a player and a social group as a group of players. This means two types of agency are inherent to this form of interaction described by Seering et al. as "individual agency" and "social agency."[12]

"Individual agency" is important for every single individual player, who must believe that they can influence the game systems and thus the outcome of a game through their inputs. For game designers, this can mean providing a series of interesting decisions, a way Sid Meier likes to think about game design.[13] However, "individual agency" is not only linked to the simple act of having a choice. Tannenbaum and Tannenbaum expand on this idea by describing agency in games by focusing on the player's process of creating meaning:

> "Agency is not about selecting between options in this case but is instead about expressing intent and receiving a satisfying response to that intent. Commitment in this sense might be a purely cognitive process, or it might involve player actions."[14]

"Social agency" describes the process of a group creating a common identity and acting out within specified social rules. In contrast to the "individual agency" in games, "social agency" revolves around the role an individual takes on in a larger social group and the subsequent influence a group can have because of their size. For *Audience Gaming,* it is integral that a streamer can create an identity for and together with their audience to create engagement and active participation. "Designers may consider granting participants

12 Seering, Joseph et al.: "Audience Participation Games: Blurring the Line Between Player and Spectator," in: Mival, Oli (ed.), *DIS 2017: Proceedings of the 2017 Conference on Designing Interactive Systems*, New York: The Association for Computing Machinery, pp. 429-440, here pp. 436-437.

13 Cf. Meier, Sid: "Interesting Decisions," *GDCVault*, March 2012; https://www.gdcvault.com/play/1015756/Interesting

14 Tanenbaum, Karen/Tanenbaum, Theresa: "Commitment to Meaning: A Reframing of Agency in Games," in: Penny, Simon (ed.), *DAC 09: Proceedings of the Digital Arts and Culture Conference*, Irvine, CA: University of California 2009; https://escholarship.org/uc/item/6f49r74n

social agency as an alternative or supplementary form of engagement, where collaboration leads to collective power and collective rewards."[15]

Thus, "social agency" connects all of *Audience Gaming*'s affordances. Asymmetrical gameplay and a need for audience impact make it necessary for game designers and streamers to enable the formation of social groups to enhance their sense of identity, in short: belonging to a group that has an impact. *Audience Gaming* extends upon the previously existing formation of groups based solely on chat interaction and the collective following of a streamer (fandom) by infusing gaming with a more complex power dynamic between streamer, game, and audience. This can especially be seen in comparison to classical multiplayer experiences, which focus on a fair and balanced gaming experience. Instead, the different possibilities and modes of interaction streamer and audience have at their disposal to influence a game's system are suited perfectly to explore the possibilities of asymmetrical gameplay.

As described before, various streamer types exist. We have focused on separating them by the number of audience members watching to highlight the different scope audience games can target. A game like the DARWIN PROJECT lends itself more to a stadium atmosphere with many anonymous viewers participating. DEAD CELLS, on the other hand, offers single audience members direct influence by playing as a minor side character in the game in addition to the possibility for the whole audience to vote on events. These options make this game interesting for small and large audiences alike.

CONCLUSION

Twitch and other streaming services offer game designers, streamers, and players new forms of playful expression through the exploration of new communication channels, which enable the audience to have an impact on gameplay in different ways. These forms range from simple votes about certain events in the game to the audience being an integral part of the game's progress.

The possibilities and success of *Audience Gaming* revolve around its three core affordances: performable gameplay, audience impact, and

15 J. Seering et al.: *Audience Participation Games*, p. 436.

asymmetrical gameplay. The latter, with its potential for complex multiplayer situations, especially broadens the experience of playing a game into the social spheres surrounding them by giving all involved agents (game, streamer, and audience) a direct channel to communicate with each other. This expands not only on classic multiplayer games with their individual players but also on the broadcasting and discussion of gameplay through streaming services.

The power distribution between streamer and audience is always unbalanced in *Audience Gaming*, with streamers having total technical control over their stream and chat. They can kick and ban audience members at will and generally hold authority over the stream. However, they are also dependent on their audience members and their goodwill. If streamers do not treat their audience with respect, they may leave and in the case of professional streamers even endanger their source of income by doing so. Other forms of disobedience are also possible.

In *Audience Gaming,* the two spheres of "individual agency" and "social agency" collide and must be catered to simultaneously. The structure and systems of a game must support an individual streamer playing the game and an audience interacting with it and the streamer themselves. For the design of the game, this means that a broader spectrum of interactions must be considered and explored. For now, these interactions are still determined by the Twitch API and are limited to simple forms of audience engagement like voting or simple assistant roles like the chicken in DEAD CELLS. The inherent unequal power distribution between streamer and audience promises to be fertile ground for more complex experiments in the future.

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MINECRAFT (Mojang 2011, O: Mojang)

PLAYERUNKNOWN'S BATTLEGROUNDS (PUBG Corporation 2017, O: PUBG Corporation)

POKÉMON RED VERSION (Nintendo 1996, O: Game Freak)

ULTIMATE CHICKEN HORSE (Clever Endeavour Games 2016, O: Clever Endeavour Games)