The Game of Performing Play: Understanding Streaming as Cultural Production

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ABSTRACT
Live streaming has become pervasive in digital game culture. Previous work has focused largely on technological considerations in streaming platforms. However, little is known about how streamers enter the practice, gain skills, and operate as content producers. We present a qualitative study of an online forum dedicated to streaming. By observing the conversations between veterans and newcomers to the practice, we develop an understanding of how streamers must tie together technological, social, and gameplay-based skills to craft an appealing performance of play. We find that a key skill in streaming is the development of a unique attitude and persona as a gamer, which permeates into every element of a streamer's performance. As individual identity becomes important in streaming practice, design considerations for platform features such as community moderation and stream metrics may help improve equitable participation in this increasingly important aspect of game culture.

Author Keywords
digital games; streaming media; games and learning; games studies

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
The ways in which people engage with digital games are changing rapidly. One rising phenomenon is gameplay performed for an audience through a streamed live broadcast. Streaming has become a common way for people to engage with games as both performers and spectators. This social, cultural, and economic activity is facilitated by increased broadband availability and rapid development of online streaming platforms [14,17,33]. The platform of Twitch.tv is the most prominent example of a game streaming service, and is routinely one of the most visited sites on the Internet [25]. Because of its popularity, we have chosen to focus on Twitch for our analysis in this paper.

Research on streaming practices is just emerging in Human-Computer Interaction (HCI). Researchers have explored how streaming serves as a third place of social interaction that focuses on gaming [14], the competing motivations that draw spectators to watch streams and participate in chat [4], and more design focused contributions, such as visualization tools for managing chat streams [23]. Outside of the HCI community, researchers have documented streaming practices as: electronic sports [12,30], a unique genre of media that changes the role of player and observer [33], and as a new form of interactive television [28]. We build on HCI researchers' conception of streaming by providing a rich description of how users interact with Twitch as a socio-technical system. We then provide two major design recommendations to improve metrics displayed to streamers that are meaningful to the practice of streaming, and to provide community management support to those who are new to the practice.

In this paper, we develop a conception of streaming as a type of ***performance play***, where researchers understand how the interfaces of streaming platforms relate to the social, cultural, and economic practices that emerge in these online spaces. By framing streaming as performance play, we can consider deeper questions about how individuals come to participate in these new technology-mediated practices. As recent controversies, such as Gamergate illustrate, issues of how individuals are welcomed or left out of gaming cultures are vital to understand the interaction between people and digital games [27]. Therefore, our work has value beyond the perspective of streaming, and games studies, and may also be useful to the larger conversation currently happening within the CHI community regarding online harassment.

There is a definitive lack of research about how performers gain entrance to, and learn about, the practice of streaming. This leads us to explore the following research questions:

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How do streamers conceive of what they do when they stream gameplay? What practices are involved in becoming an avid and accepted streamer?

We forward the literature by applying Bourdieu's ideas of Field Analysis, with a specific focus on understanding the development of habitus and capital in performance play [1]. As we outline below, habitus refers to the skills, knowledge, and dispositions that an individual possesses that allows one to participate in a given social practice. Capital describes the flow of resources in that community and can take many forms such as economic, social, and cultural notions of power.

In the following paper, we outline how Field Analysis can be employed to develop theoretically rich accounts of Human-Computer Interaction; or specifically, how game performers interact with digital tools, online platforms, and develop personally within social communities around gaming. We then present an in-depth, grounded theory study of performance play forums where prospective performers ask for and give advice on how to develop their streaming channels. The forums provide a rich setting to understand how individuals learn to become performers. Through an analysis of 240 threads, containing over 1,800 posts from over 100 authors we developed a framework to describe the ways that individuals conceived of, and practiced the performance of play.

We find that streamers in our analysis conceive of performance across three primary domains of practice: assembling technology to produce a professional looking media artifact, acting as a builder and moderator of an online community of regular viewers, and as developing a specific attitude towards gameplay that marks them as a unique and entertaining streamer. Taken together, these domains of practice form a *habitus* of successful streaming. Success at these activities is measured by *capital* within the Twitch.tv ecosystem in the form of tangible metrics related to viewership, and intangible metrics such as strength of community and fun had while streaming. New streamers often find it difficult to negotiate between the hard-coded capital numbers they see on their user dashboard (e.g. average viewers), and the intangible capital that is foregrounded as being important by more senior members who offer advice on the forums.

The findings of this study make two substantial contributions to the HCI literature. First, we provide a rich description of how individuals come to learn and develop their practice of performance play. There is little work to date that provides a theoretical framework for how this process occurs, and how technological and social systems interact to help performers develop expertise in gaming communities. Our grounded theory study offers a foundational framework to inform future HCI studies of performance play.

Second, we argue that understanding the process by which people learn and become enculturated in a practice such as streaming is vital for designing systems that foster effective and equitable performance play. Our findings suggest that:

- Performers often experience tension between metrics that are considered valuable by more experienced streamers (e.g. cultivating dedicated viewers and having fun), and the metrics that are presented to them on the dashboard of the streaming platform they are using. (e.g. average concurrent viewers) Designers should consider how to present metrics that are meaningful across the dimensions of the practice.
- Performance of play is in large part about being able to put forward a fun, carefree, and unique persona as a gamer. We suggest that to enable this practice equally among all streamers, future streaming platform designs should improve the ease of community building and moderation. Often, effective moderation is the role of the stream's community (e.g. moderators assigned from the regular viewers), which new streamers may lack when they first start out, and which would disproportionately affect streamers from backgrounds typically marginalized in game culture.

BACKGROUND AND RELATED WORK

Streaming gameplay is a rising phenomenon in the game industry. Initial studies have focused on describing the genres of streaming such as e-sports [12,30], the social interactions that occur between streamers and spectators [4,14], or the features of streaming as interactive entertainment [28]. Other researchers have begun to focus on the technical features and interfaces of streaming platforms such as the chat streams that accompany the video stream of gameplay [23].

Broadcasted gameplay tends to take on three major genres of participation: e-sports (e.g. competitive tournaments with prize pools), speedrunning (e.g. players attempting to beat time records for completing single player games), and Let's Plays (e.g. non-competitive narrated walk-throughs of games) [4]. What these genres have in common is that play is performed with the intended consumption of an assumed audience of users on a specific platform [33]. While the e-sports genre of streaming is the most popular on Twitch.tv [17], a growing mode of spectatorship and production tends to be more communal and less competitive. In less competitive genres, broadcasts often serve as impromptu social spaces that extend beyond gameplay [14]. For example, one of the best-known performers of play on YouTube, the Swedish broadcaster who goes by the screenname Pewdiepie, often plays single player games in an exploratory manner, taking suggestions and feedback from his audience as he discovers new gameplay mechanics [35].

Other streams on Twitch.tv focus on humor, exploration, and sociality [14]. Players often frame their gameplay as a performance for an audience, and as a form of labor

[14,24]. In addition, previous work on e-sports has found that active participation in this genre relies on practitioners taking on their hobby as a lifestyle, actively wearing the identity of a gamer as a major part of their personal identity [30]. While much previous research has focused on competitive e-sport genres, streaming practices are rapidly moving beyond a solely competitive focus, to more social goals of streaming. As researchers delve deeper into the diverse aspects of streaming, there is a need for critical perspectives to analyze the lived reality of people who perform gameplay [33].

Streaming as Performance Play

We introduce the term *Performance Play* to describe the phenomenon of streaming one's gameplay. We argue that understanding how performance, play, and the affordances of online platforms interact together, allows researchers to delve deeper into how game culture is distributed, reproduced, and modified. This understanding then has great utility to theorize about the design of technical and social platforms to promote more equitable and enjoyable participation with digital games.

Games studies researchers often situate gameplay as inherently performative in nature [7]. For example, a player in World of Warcraft is aware of their individual role on a team (e.g. a class dedicated to damage dealing), the role that their character has in the fiction of the game (e.g. a member of the good guy faction, The Alliance), and their own social standing among their fellow players (e.g. the leader who oversees organizing and directing others) [20]. Alongside these three layered conceptions, that player also has several backgrounded aspects of their life (e.g. race and gender) which may or may not come into play as they negotiate the social world of gameplay [22].

Therefore, gameplay is a performance of an individual actor synthesizing multiple competing influences to successfully enact gameplay. Even in the case of non-networked, single player gameplay, researchers have found performative elements, with players often taking attitudes and stances toward digital games that are influenced by how games have been situated in their daily lives [18,31]. The performative aspect of gameplay is important as social, online platforms such a Twitch.tv play an increasing role for participation and inclusion in gaming communities. In particular, learning the skills and cultural norms involved in a game culture become vital factors in this context [11].

Play is a particular kind of performance that intersects with the affordances of online streaming platforms. For example, the act of recording, streaming, and otherwise presenting gameplay as a broadcast for an audience is a unique practice that involves technological social, and cultural knowledge. In a very literal sense, the gameplay that is being done in these contexts is being performed for an audience. In Postigo's examination of YouTube gameplay commentators, he finds that performers conceive of the work they are doing as "making gameplay," and that "Play becomes a subjectively recognized creative process" [24, p. 9].

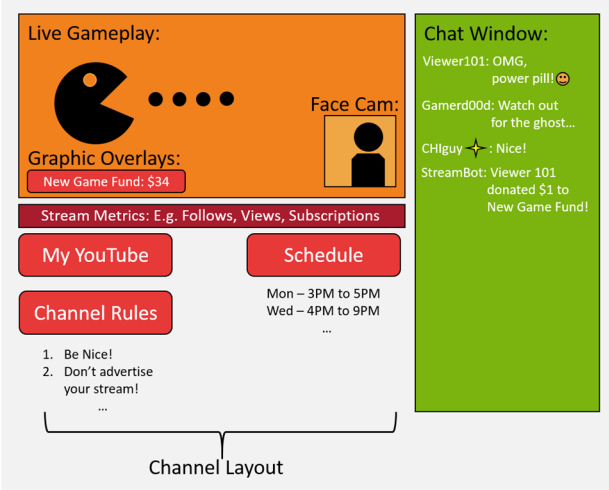

Figure 1. A visual representation of the technological, social, and gameplay elements that comprise a channel on platforms such as Twitch.tv

To give an example of a typical stream, we can imagine a performer streaming *Pacman* (illustrated in Figure 1 above). There will be a window showing the live gameplay taking place, overlaid on top of that will be a live feed of the streamer themselves allowing the audience to see them react in real-time to the events of the game, as well as other graphical overlays such as notifications about the channel (e.g. a fundraising goal that the streamer has for donations). Below the gameplay will be the channel layout, with a detailed description of how many viewers and followers the performer has, as well as personally designed elements that may link out to other social media accounts, provide ground rules for the audience, or a schedule that tells viewers when the performer typically streams. On the side of the channel is a text chat window, which allows the audience to talk to one another, as well as to speak directly to the streamer. Streams are complicated media artifacts that blend together a number of gameplay, social, and socio-technical elements.

The introduction of streaming into larger game culture provides researchers with an opportunity to study how gaming culture and practices are distributed, reproduced, and modified by participants [2]. Thus, we find the need to move beyond simply descriptive names such as streaming (as it is commonly known), or commentator culture [24], or serious leisure [15] or e-sports [30]. Instead, by explicitly using the term performance play we are foregrounding issues of: how practices of performance and play occur, within the affordances of new technological tools, in social communities mediated by online platforms, and through processes of learning and enculturation.

The Field of Performing Play

Field analysis is an approach to understanding social interactions, which have their own sets of rules,

understandings, and positions of power within larger society [1]. Field analysis is concerned with three main theoretical constructs regarding the study of a cultural practice:

Habitus: The term habitus describes the way that a practitioner approaches a practice. The concept involves not only the skills and knowledge needed to participate in that practice, but also the taken for granted and unspoken elements of that practice such as understanding of cultural norms and engrained habits of that culture [1]. For example, in digital games, a person's opinions about what makes a good video game are likely influenced by factors such as what types of games one has learned to play well and cultural norms about what types of games are desirable [9]. Individual actors embody habitus that is learned and reproduced through larger social structures [29]. The habitus of gameplay leads to the formation of broader tastes and attitudes in game culture - for example, a preference towards hardcore games being privileged over casual games [9,16].

Capital: In a social and cultural setting, individuals acquire and exchange capital [1]. Capital is a representation of power within a social system [26], and is classically divided into three types by theorists working within a field analysis framework. First, economic capital is money or material wealth that is obtained from cultural production (e.g. selling a painting for money). Second, cultural capital relates to tastes and opinions that drive production in a domain (e.g. impressionism is trendy, realism is not). Finally, symbolic capital reflects one's esteem and position within the hierarchical structure of a domain (e.g. an artist who has had their work shown in a trendy New York gallery) [34].

Field: A given phenomenon or social system (the field) then involves understanding the (a) habitus of individuals, (b) the kinds of capital that is produced and distributed in the system, (c) and how the flow of capital and habitus occurs within the realities of social and political power structures that are present in the social system [34]. Power, in this case, represents either an individual or an institution's ability to act and make changes within a system [1]. Therefore, when we speak of 'field analysis' we are interested primarily in the way that individuals move within these systems, how they acquire their habitus, how they exchange capital with other actors, and the larger networks of capital which are created by these exchanges [13].

Field analysis is useful for the study of digital games precisely because it focuses on practice, and specifically on both the spoken and unspoken ways that gaming as a cultural practice is passed along to its practitioners [21,18]. As outlined above, due to the performer's position as a sort of professionalized player, performing play presents a unique opportunity to understand how game culture is transmitted to individuals and how those individuals both reproduce and modify that culture. In turn, field analysis provides a method to conceptualize and understand that process. Working from this foundation, we explore the following research questions in this paper:

> *How do streamers conceive of what they do when they stream gameplay? What practices are involved in becoming an avid and accepted streamer?*

METHODS

We conducted a grounded theory analysis [3] of seven months' worth of communication on an online forum, called StreamPlus.com (or SP.com from this point forward). Throughout our findings we will be using pseudonyms to identify the forum space that we analyzed, as well as the research participants within that space.

We chose a grounded theory approach because of its strength for developing theory through direct observation and analysis [3]. Due to the lack of critical perspectives on streaming [33], and our desire to flesh out a larger theoretical construct of performance play to inform future research, we found the open and interpretive strategies of grounded theory to be a fruitful approach [6]. Specifically we are working from Charmaz's 'constructivist' approach to grounded theory, which stresses developing theoretical frameworks that take into account the "social contexts, interaction, sharing [of] viewpoints, and interpretive understandings," [3, p. 14] of a phenomenon.

Site Selection and Data Collection

SP.com is a site that is dedicated to both live-streaming gameplay, as well as producing pre-recorded videos for YouTube. It was chosen as a site of study for three primary reasons,

1. The participants on the site vary from veteran streamers who make money from the practice to new streamers who are only just starting out. Therefore, the conversation presents a rich site of research where multiple perspectives on the research question are presented for analysis [3].
2. Conversation is almost entirely about the craft of streaming allowing us direct observation of how habitus and capital are developed and shared amongst streamers. Therefore the available data is relevant to our research question, and useful in building theoretical understanding [19].
3. The atmosphere of the site is welcoming, inclusive, and supportive. The nurturing attitude of the space allows for many different perspectives to come through, and for conversation to largely be related to the practice itself instead of related to interpersonal conflicts among participants [10].

Each thread on the forum index was read, annotated, and considered in terms of its primary themes and topics. Relevant threads were hand-coded in the Atlas.TI qualitative analysis software, along with data about authorship, related documents (e.g. external links or images), and general flow of the conversation (e.g. if one

post referred to another via the quote feature of the forum software). Altogether 240 threads were analyzed, spanning from January to August of 2016. This data corpus represents 1,895 posts, from 116 individual authors.

Data Analysis

Constructivist grounded theory calls for the side-by-side collection and analysis of data [8]. As we moved through the forum dataset, an evolving set of initial codes was developed as participants engaged in discussions of the practice of streaming. Using a constant comparative analysis method, we allowed for new codes to emerge as these concepts came up in the data [3]. Alongside collection and coding, we also wrote analytic memos describing our developing theoretical framework that we saw emerging from the data and iterative coding process.

For example, a code that emerged from analysis was "Presenting the Self", relating to the way that the personal self is presented both on camera in the stream, as well as the persona that a streamer adopts in relationship to their streaming practice. Below is a forum post that was the first occurrence of that code in the dataset (from Streamer 1), and a related reply from another user on the same topic (from Streamer 2). As a note: to protect user anonymity, we have slightly modified the excerpted text to guard against direct searching,

> *Streamer 1: Trying to do anything on stream outside of what comes 'natural' is weird to me. If I'm thinking "INTERACT MORE!" then I'll just end up acting like an ass.*

Associated Codes: Branding Stream; Defining Skills of Practice; Presenting the Self

> *Streamer 2: I hear arguments about people being fake, and being different on the stream than you are in real life. I think those arguments are BS. Doing a broadcast is like doing a job interview; you have to be the best version of you that you can possibly be. In an interview you're selling yourself to a potential employer, and when you're broadcasting you're selling yourself to potential viewers.*

Associated Codes: Branding Stream; Building Community; Presenting the Self

The codes "Branding Stream", "Building Community" and "Defining Skills of Practice" were early codes that developed in this phase of analysis. Both codes continued to emerge throughout the course of data analysis, but in this excerpt we uncovered a new (yet related) concept of "Presenting the Self" as these two streamers began to talk about self presentation as a vital aspect of building their brands, interacting with their audience, and being perceived in intended ways by the public.

We used both short memos to record impressions of the forum posts during coding, and longer analytic memos to help guide our overall theorizing about the data. In the short memo that accompanied the coding of the above excerpt Anthony wrote, "This is a pretty clear explication of the idea of naturality, just having fun, and not forcing stream numbers that comes up quite frequently in the discussion. It does seem almost paradoxical, though."

In a deeper analytical memo, reflecting the reoccurrence and support for this idea in the data, Anthony wrote, "A common bit of advice that comes up with questions about game selection, and more generally about how to attract and retain an audience is the idea of being natural, being yourself, and the most important skill of streaming to have fun. Often the more senior members of SP.com will posit this as being the sole skill (or at least the central skill) to a successful stream - simply having fun and being yourself. There's a little bit of a paradox here, as with Streamer 1's reply, that there's a level of intentionality behind that advice, and even taking on a very open, naturalistic attitude might cause a streamer to become aware of adopting that attitude, and choke up, or be less natural as a result. All of this ties into the Building Community code, and to a certain extent seems related to Branding Stream - it's sort of this idea that the streamer is developing a certain attitude towards play (branding) that attracts viewers and has them stay around as regulars."

Later in the analysis, the idea of "presenting the self" solidified along with related codes "branding stream" and "playing the game" into an idea of "Gameplay Attitude", which we discuss in our findings section. In that way, moving between collection, coding, and memoing, we built a larger framework of what it means to perform play. As we developed our understanding, we continually checked to see whether our theoretical propositions and proposed relationships between concepts were supported by data.

Our data collection and analysis focused largely on classifying the discourse of the forum into statements of action. For example, in the following excerpt from a thread about organizing a 24-hour, continuous stream a user writes

> *"I did [a 24 hour stream] on the 100 Follower mark just to experience that, and it was fun and all but it did nothing for growth. I did it again on the five hundred follower goal. You should make a plan. You can incorporate your viewers into planning. I recommend it for a 24 Hour stream."*

This post provides a rich example of how streamers communicated the different practices they tried, such as conducting a 24 hour stream. This person tried this practice out at different levels of viewership, such as when this streamer had hit the 100 versus 500-viewer mark. And then sharing their developing habitus with others – including knowledge, experience, and cultural norms – in the form of advice. For example, in this post, the streamer shares that making a plan for one's 24 hour stream is vital, and finding

ways to incorporate the feedback of your viewers in your planning, would likely lead to a more successful stream.

In our codes, we noted that this user is sharing their knowledge about 'Building Community' on one's streaming channel, 'Involving Audience' by using strategies such as asking for viewer input on one's 24 hour stream, and 'Analyzing Metrics' such as viewer counts that are present in the interfaces of streaming platforms to plan and gauge the conditions of success of one's stream. Categorizing our data in that fashion allowed us to break conversations into concepts of the practice of performance. As our analysis proceeded, we solidified major codes into related concepts, higher-level categories, and finally an integrated model represented with the themes that we report in the findings.

We present the above example of our initial, grounded theory approach – where codes emerge, change, and evolve – to illustrate our process and goal in developing a deeper theoretical framework for understanding performance play. Our goal in this analysis is to both present a rich description of how streamers develop habitus and capital (e.g., Field Analysis), but also to develop a model for what factors relate to others in the field of performance play.

FINDINGS

We found that the practice of performing play involved three major themes: **assembling technology**, **building community**, and **adopting a gameplay attitude**. Those themes constitute the primary domains of practice for performing play, along with interrelated **feedback loops** where those domains inform and structure one another. Success within these domains is measured with two related (and occasionally contradictory) ways that consist of both **quantified** and **intangible metrics**. We conclude by examining the way that these metrics determine the theme of the **goals and desires** of performers within the practice.

Assembling Technology

A large portion of discussion between veteran and novice streamers was devoted to using technical skills to put together a channel that not only worked properly, but also had a level of professionalism and polish. The passages coded within this category tended to focus on three different elements of a stream: the hardware (e.g. cameras, computer systems, microphones, staging equipment such as lights), software (e.g. the broadcast software, bots that handle automated processes in chat, post-production software to improve image or sound quality), and graphic design (e.g. the images used for header sections for a channel's schedule or rules section, graphical overlays that sit on top of gameplay, custom emoticons and icons used in chat).

A code that emerged often in forum posts that focused on assembling technology for one's channel, was "Differentiating Practice". This code described a common occurrence where players would share what characteristics distinguished a professional-level stream from less polished productions. For example, in discussing whether streamers should run giveaways to increase viewership, a regular poster gave the following advice for running raffles,

> *"Discoverability is nothing without retention. Before running [a raffle], make sure you're happy with where your stream is at. Make sure your audio and video are on point and you're on top of your game as a caster."*

Here the technical capacity of a stream is positioned as a means of retaining viewership. Being "on point" technically is a way for streamers to cultivate dedicated viewers through the technical quality of their stream. Thus, facility and skill in using technology and showing one's technical skill via the design of one's stream emerged as an important aspect of habitus in the broader streamer culture.

Building Community

The idea of "building community" was also a major topic of conversation amongst streamers. In our coding, several practices were apparent as strategies and skills that streamers shared with one another to build community and increase their viewership. Streamers suggested to newcomers that "networking" – or purposefully viewing other streams to make friends and connections – was a core way to build community. "Branding" one's channel by keeping imagery, naming conventions, and behavior consistent was another strategy. A code we developed called "spaces interacting" described a strategy to use other social media platforms for promotion, and "scheduling" was communicated as a vital strategy where keeping a consistent schedule increased the likelihood of a strong community forming in one's channel. Through our iterative coding process, we began to understand that these strategies tended to fit into a larger goal toward, or were antecedent to, the goal of purposeful building of community.

Building community is typically viewed in relation to accruing capital in streamer platforms, such as increased viewership and potential revenues that can come with viewers. However, we observed that streamers in the forums helped novices understand, deeper, hidden forms of capital that building community also provided. For example, in a thread where streamers discussed the process of switching between different games, one poster framed the idea thusly,

> *"Once you build up a community of a dozen or so regulars who are always there regardless of the game you'll be in a good position where moving game to game isn't so bad because those regulars help to give you more visibility in the category."*

In this excerpt, the poster presents the idea of a stream's community being a regular group of viewers who come back consistently. The poster then communicates a hidden benefit – or capital – that arises if one dedicates time and resources to building a community of regulars "who are always there regardless of the game". Namely, regulars are

likely to exhibit more patience with the performer if they want to experiment and try performing a variety of games, which would normally have a negative effect on channel viewership ("moving game to game isn't so bad"). Furthermore, the presence of regular viewers will give a streamer a leg up by giving them more, initial visibility in new categories of games, where it can be difficult to attract new viewers to channels with lower viewership.

Interestingly, advice and know-how such as this post suggested that actual gameplay skill itself was less important than building a community of regular, and dedicated viewers. Once a streamer could establish consistent viewers, they could unlock other benefits or capital, such as patience and ability to expand out to other genres, or try out new practices that would be detrimental for less established channels. As our analysis progressed, we found that gameplay skill was not particularly important for channel success (outside of high level competitive play genres), compared to a performer or streamer developing a defined attitude toward gameplay that established their persona to viewers.

Adopting a Gameplay Attitude

A third topic of discussion as new streamers entered SP.com and sought advice, was the question of what game to perform for audiences. Exchanges in the vein of game choice, or gameplay skill were tagged with the code, "Playing the Game" in our analysis. Often new streamers tried to stream a highly-saturated game that was already well represented by many other channels. For example, a popular choice was the competitive, strategy game *League of Legends*, which had many channels dedicated to it and thus led to limited growth in viewership for new streamers.

A sentiment that emerged often in the advice of veteran streamers was the theme "Adopting a Gameplay Attitude". One post is representative of this type of advice:

> *"Your mindset before hitting that 'stream' button is important. You're about to sit down and play a game, that's always something that should be positive; games are supposed to be fun! If there's ever a day when there's too much going on and you just can't get into your stream, don't feel that you need to broadcast just because your schedule dictates that you should."*

This snippet encapsulates what emerged as one of the primary concepts of our theoretical framework: that the main skill inherent in streaming is adopting a fun, casual, naturalistic attitude toward gameplay. Relatedly, we observed that the performer's self-presentation as a gamer was related to building a stronger community of viewers (the prior theme).

The persona that one adopts is meant to highlight elements of oneself which already exist naturally; to magnify these markers of identity so as to present a unique brand for one's stream.

Feedback Loops

The three concepts outlined above exist in relation to one another, with activity in one domain feeding back into each other. We found that a streamer's channel required a complex development of oneself, the technical skills to create a professional channel, and the development of a dedicated community around one's performance.

The strategies that streamers employed in any one area often interlinked and amplified other factors. For example, streamers have to learn technical skills, such as graphic design and recording, in order to create a professional looking channel. This technical development for a channel is also tied to the brand that a streamer puts forward. Streamers simultaneously must develop a persona that is natural and reflects their true selves, while also communicating a unique attitude about gaming for an audience. This persona is presented through a professional looking design scheme on their channels. Finally, streamers build community by making critical choices of what games and genres they will perform, and using strategies such as networking with others and developing a work ethic around their channel (such as providing regularly scheduled performances to foster consistent viewership). These community-building strategies feed into one's persona and interact with the professional quality of one's channel.

Through the process of identifying these themes of self, channel, and community, a central value also emerged. Streamers often stressed that one should stream for fun and not focus on the formal metrics provided on the streamer dashboard, such as viewership counts. In the next subsection, we will discuss how that theme emerged from our data, how it guides the practice of performing play, and how it drives the creation of game culture on streaming platforms.

Quantified and Intangible Metrics

Common in the discussion at SP.com was the code "setting goals" that described the benchmarks and metrics by which streamers measured their success. The design of Twitch.tv itself, which was by far the most commonly discussed platform for streaming, features several quantified metrics that drive performance on the platform: the number of current viewers (e.g. the audience currently watching the stream and in chat), over-all viewers (e.g. the total number of times that a channel has been viewed over its lifetime), and follows (e.g. a subscription that allows users to be notified when a user is streaming).

These numbers are visible to the performer from their stream console, and are key in eventually qualifying for partnership with Twitch.tv, allowing a streamer to generate revenue with their performances, with partnership often being the ultimate end goal of many of our participants. Many posts asked for advice on how to improve these numbers. In the following example post, a new user posed a question about what to do to grow their viewer counts, as a

"variety caster", which is someone who plays many different games on their channel,

> *"Hello all! I've been streaming for almost two years now but have really kicked things into high gear lately: more frequent streams, better gear, just an overall better experience for the viewer. The problem is that being a variety caster, it's hard for me to maintain a steady audience … I'm proud of the small community I have and if it stays the way it is right now, I'd be okay with it. However, I do strive for bigger things and do wish for a larger community."*

A more senior member of the forum replied,

> *"There are many other goals you could set [other than viewership] that would have more meaning. 'Trying to complete Dark Souls without dying!'; 'Trying to complete the entire (Franchise Name) series!', or even 'Trying to win GTA V races while drunk!' All of those are much more interesting goals that would entice me to watch a channel over 'Trying to reach XX followers!'"*

This exchange exemplified an emerging code from similar conversations, "Negotiating Values of Practice". In this case, the value is to play for the joy of playing, and the joy of the community, and not to simply increase one's viewership as a game of numbers.

We observed a friction between the metrics that Twitch.tv displays for a user, and the goals that are foregrounded as values of practice. In a thread about this friction, one poster relayed an experience where they became flustered due to a sudden influx of viewers, saying that the presence of a larger audience made them choke up. A more senior member of the community offered the following advice,

> *"Honestly, hiding the view count altogether helps in a big way. That way you have no choice but to act normal in the event of a view bomb ;) it's crazy how getting too focused on the numbers can affect you mentally as a streamer, so just nip that in the bud and focus on being yourself."*

The friction between quantified metrics (e.g. viewership) and intangible metrics (e.g. having fun) was difficult to resolve, and seemed to coexist in the conceptions of the practice shown by our participants. Although there does appear to be a shared value in being naturalistic, fun, and unconcerned with numbers, most posters still appeared cognizant of the quantified metrics of the system, and followed them to some degree as they set goals for their streams. Streaming was positioned as being highly competitive, and Twitch.tv (as a platform) especially so.

Goals and Desires of Performance

One of the most heavily trafficked threads that we coded was titled "Streaming Goals for the New Year", and centered on a discussion of goals that members of SP.com were setting for themselves as performers for the coming year. As we describe above, posters freely mixed both the quantified metrics presented by the Twitch.tv platform alongside the intangible, personally held habitus that characterized fun in performance, skill in gameplay, and strength of community.

A regular poster on the forums relates both ideas as they outlined their goals as a performer (the slashes indicate paragraph breaks in the original formatting of the post),

> *"complete all [The Elder Scrolls] games / complete all the [Final Fantasy] games / continue expanding and finding ways to give back to the community / 10,000 followers / partnership? whatever [Kappa Emoticon - a commonly used graphic in Twitch chat usually serving to indicate humor or light hearted sarcasm]."*

Here, the poster is mixing two gameplay goals (e.g. completing two different role-playing series), a goal relating to growing viewership as well as providing support for their fellow streamers, a hard metric goal (e.g. ten thousand followers), and a rather sarcastic intonation of gaining partnership. Partnership was often framed in that light, both within this thread, and in the forum in general. We observed that members of SP.com highly prized earning Partnership and moving beyond streaming as a hobby.

However, partnership was also recognized as being extremely exclusive and difficult. For example, a bit later in the New Year's thread, another regular poster wrote as a goal, *"Get partnered!! / OK, but seriously,"* with other posters treating partnering as a difficult, but possibly obtainable goal, *"[Goal three] Get partnered. It is very unlikely but it would be a dream come true to get partnered and make this something that I could live off of."*

On Twitch.tv's own help document for partnership [32], they describe the process as such, "… we are looking for broadcasters that have large viewership and have built up a strong subcommunity of their own. These broadcasters engage their audience, produce amazing content, and find ways to stand out from the crowd … you should look to produce the best content that you possibly can for your audience. As your skills as a broadcaster and entertainer improve, we hope that your audience will grow too." Alongside that advice, there is also a fairly firm average concurrent viewership requirement of 500 viewers at a time. In our experience with SP.com, new streamers tended to be happy to draw a tenth of that amount. In the official structuration of Twitch.tv we can also observe the same tension between tangible and intangible measures of quality.

However, the need to be entertaining, likable, and unique amid a very competitive and crowded field of fellow performers can be difficult. A streamer who remained constant through our data posted in the last month of data collection, relaying that they were retiring from streaming and from SP.com,

> *"I started to feel like a slave to my stream, even when I played what I wanted … That burden to turn on your channel cause if you didn't you'd be an as asshole to your audience cause who else will entertain them? Honestly thousands of other channels probably could…"*

Streaming is an incredibly personal form of gameplay. The streamer is putting their self, or at least a highly amplified version of their self, into their performance. Success and failure feed back into the day-to-day life of the participant in a way that is magnified from typical consumption of digital games.

DISCUSSION

Our study focused on a grounded analysis of individuals discussing the performance of play. By taking this approach we developed a theoretical framework that arises directly from the words and actions of people who are discussing and learning that practice as a community.

We observed that streaming required the development of habitus in various ways. The practice of performing play required the development of technical skills to build one's channel in online platforms such as Twitch.tv. It also required the building of community – and learning different strategies to recruit dedicated viewership to one's channel. In addition, the practice of performing play required the cultivation of taste and culture, in terms of types of games to play, how to present oneself in natural and engaging ways, and develop a brand for viewers.

New streamers typically struggled to develop the necessary skills within the three domains outlined above, and faced stagnation in the development of their community and audience. In SP.com, more senior performers often gave advice to novices to focus on having fun, hanging out, and being natural with gameplay as the most vital aspects of the practice. However, the overall field of streaming introduced tensions for those learning how to improve their channel. For example, gaining viewers was highly competitive with few performers ever gaining Partnership status in Twitch.tv. Visible metrics – e.g., capital – such as viewer counts ran counter to the internally motivated forms of performing play for enjoyment. New performers often burned out.

Turning back to our theoretical framework of field analysis, we can think of the tensions described above in terms of habitus, capital, and field. Performers are often trying to maximize and blend varying forms of capital together: economic capital (being paid as a Twitch.tv partner), cultural capital (being recognized as a desirable streamer and having a devoted audience), and symbolic capital (being able to help out fellow streamers and to command respect within the Twitch.tv ecosystem). In a system where one has very direct quantification of these metrics, it can be frustrating to new streamers to try and gain power within the field.

In considering the larger field of game culture, Twitch.tv (especially as it's conceived by SP.com members) does have a more positive and supportive habitus than we generally associate with game related spaces [5]. Despite SP.com's focus on positivity, users still shared their own experiences with toxic behavior as they performed play. Given the performer's dual role as player and community manager, the discussion of toxicity often took on the form of workshopping how to deal with trolls and hecklers in the stream chat. For example, in a thread about how to set ground rules on a stream's page, a regular poster wrote,

> *"I had a rules panel at first, then I realized that Trolls don't care because... well, they're trolls. Common sense goes a long way and my chat regulars inform me when someone acts out and I don't see it. I also have good mods who don't really put up with BS either."*

In this same discussion (and across other threads in our data), many regular posters concur. Trolling was a major aspect of life in performance play. Performers utilized strategies such as employing moderators, relying on supportive viewers, and configuring technology such as automated chat bots, which can automatically censor or ban based on language, to keep trolls away. Given our other findings about the challenges associated with building viewership, we reach an interesting tension. New streamers who may be especially vulnerable to toxic behavior - such as women, ethnic minorities, and other groups marginalized in game culture [5, 27] - might face heightened obstacles in mitigating and controlling troll behavior. Strategic backgrounding and foregrounding of oneself, as has been suggested in previous research of game-related social spaces [11], is far more difficult in performance play platforms where the streamer's physical self is central to the experience.

Our finding that the performance of play is largely about putting forward a compelling and unique gameplay attitude is complicated by the fact that streaming is still a practice within the larger field of game culture that can remain toxic. Therefore, we argue that issues of inclusion, exclusion, and equity will continue to be major issues in the practice of performance play.

Design Considerations

Drawing from this discussion, we present two major design considerations that follow from our research:

Rethink Metrics: Twitch.tv does consider some intangible aspects of performance play as conditions of partnership such as judging the quality of content and strength of community on one's channel. However, many participants on SP.com saw tension between the habitus of performance play (such as fun and building a natural persona) and the quantified metrics that streamers are presented, and work toward. These discussions among streamers suggest that a potentially fruitful design consideration is to value and display these community values in online platforms.

Performing play is a highly personal, and community centered activity. Often the metrics that are front and center on a user's dashboard do not reflect the sort of skills that are necessary to grow and maintain a thriving community, which is a central part of the skill of performing play.

Improve Tools for Community Moderation: We found that two of the most important aspects of performing play were building of a strong and supportive group of dedicated viewers, and developing and presenting a unique persona as a gamer. While streamers work hard to learn these skills, tastes, and other forms of habitus, building viewership is difficult and issues of trolling were prevalent. Moderating a stream against the threat of trolling can sometimes be mediated through technology (e.g. chat bots), but often is a function of having a broader community who cares enough about the streamer to protect them against trolls, while also providing the emotional support to keep working towards their goals. This finding suggests that vulnerable populations – those seeking entry into broader gamer culture – may lack these social and cultural forms of capital that buffer performers against hurtful behavior.

These inequitable distributions of capital are particularly detrimental in the field of performance play because, performing play is intrinsically about putting oneself forward, and even amplifying that self with a persona as a gamer. We argue that a vital and needed area for future design experiments, are to think of new tools to enhance community moderation. By improving the built-in tools for community moderation, future streaming sites (and other platforms that deal with gaming and games) may make it easier for players of all backgrounds to thrive on those platforms.

Limitations and Future Work

The work presented here is about a very specific and local conception of the practice of streaming. While we engaged in a comprehensive, deep, grounded-theory analysis of specific SP.com forums that provide rich data, we recognize that we only explored one online space for learning about streaming. We took this approach because we believe that this site has a number of benefits that allow its users to discuss the issues at the heart of the question that we are researching. However, future work and theory building about performance play would benefit from sampling a wider variety of online platforms where individuals learn about the practice. For example, prior research on affinity spaces has found wide variation in how welcoming or exclusionary these online spaces can be for learning about gaming practices and culture [10]. Forums such as the r/Twitch sub-Reddit showcase much more discussion of toxic behavior within the Twitch.tv community, while also placing more of an emphasis on practices geared toward gaining viewer metrics.

In addition, while the users of SP.com described the space as a community, and positioned their audience as a community, it is worthwhile to explore the boundaries of the concept of community in future work, as with Gee's work on affinity spaces [10]. Future research might seek to unpack the degree to which these informal learning spaces, and the social connections formed through streaming officially constitute a community, and furthermore a community of practice.

Differences in the culture and practices of online spaces dedicated to streaming, present fertile ground for understanding how the habitus learned by performances might differ. There is also great opportunity to understand how habitus is developed in other genres of performance play such as e-sports and competitive games. The participants in our study tended to focus on learning how to develop channels for social gaming experiences. We know little of how different forms of capital are acquired and distributed in these genres.

Quantitative study of a field is typically one element of full-scale field analysis [26]. Our study plays an important role for informing future quantitative study of performance play. Specifically, our findings about what skills are important in performance play – technical, social, personal – could be used to construct and collect these variables in survey studies of performers or channels. Future studies may explore whether these forms of habitus are related to accruing capital in performance play communities, or how habitus and capital are distributed across gamers.

Finally, this initial study of performance play can inform future, in-depth ethnography of streamers from a variety of backgrounds. A critical question for future work is to understand the *process* that performers go through, and the learning progress they make over time, as they work to develop their own individual habitus of performing play, navigate through streaming communities, acquire capital, and become valued gamers in the performance play community.

Conclusions

Through the study of performance play, we provide a powerful view into the process by which gamer culture is created, reproduced, and (importantly) modified by players. We hope that our approach may be used as a starting point for future work in HCI, not only on streaming, but also on other areas of technologically mediated cultural production. As streaming becomes a popular way that people experience digital gameplay, it will become an important gateway to the broader culture of gaming. It is vital to consider ways that we may make this experience better, more equitable, and joyful, by designing new ways to play with one another through technology.

REFERENCES

1. Pierre Bourdieu and Loïc Wacquant. 1992. *An invitation to reflexive sociology*. University of Chicago Press, Chicago.
2. Benjamin Burroughs and Paul Rama. 2015. The eSports trojan horse: Twitch and streaming futures.

Virtual Worlds Research 8, 2: 1–4. http://doi.org/http://dx.doi.org/10.4101/jvwr.v8i2.7176

3. Kathy Charmaz. 2014. *Constructing grounded theory*. Sage, London; Thousand Oaks, Calif.
4. Gifford Cheung and Jeff Huang. 2011. Starcraft from the stands: Understanding the game spectator. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 763 (CHI '11), 763–772. http://doi.org/10.1145/1978942.1979053
5. Mia Consalvo. 2012. Confronting toxic gamer culture: A challenge for feminist game studies scholars. *ADA: A Journal of Gender, New Media and Technology* 1. Retrieved from http://adanewmedia.org/2012/11/issue1-consalvo/
6. Juliet M. Corbin and Anselm L. Strauss. 2008. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications, Inc, Los Angeles, Calif.
7. Garry Crawford. 2012. *Video gamers*. Routledge, London ; New York.
8. John W. Creswell. 2013. *Qualitative inquiry and research design: Choosing among five approaches.* SAGE Publications, Los Angeles.
9. Jon Dovey and Helen Kennedy. 2006. *Game cultures: Computer games as new media*. Open University Press, Maidenhead, Berkshire, England ; New York, NY.
10. James Gee. 2004. *Situated language and learning: A critique of traditional schooling*. Routledge, New York, NY.
11. James Gee and Elizabeth Hayes. 2012. Nurturing affinity spaces and game-based learning. In *Games, learning, and society: Learning and meaning in the digital age*, Constance Steinkuehler, Kurt Squire and Sasha A. Barab (eds.). Cambridge University Press, Cambridge, 129–153.
12. Chris Georgsen. 2015. Well played & well watched: Dota 2, 167 spectatorship, and eSports. *Well Played* 4, 1: 167–179.
13. Michael Grenfell (ed.). 2008. *Pierre Bourdieu: Key concepts*. Acumen, Stocksfield.
14. William A. Hamilton, Oliver Garretson, and Andruid Kerne. 2014. Streaming on twitch: Fostering participatory communities of play within live mixed media. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '14), 1315–1324. http://doi.org/10.1145/2556288.2557048
15. B. Hutchins. 2008. Signs of meta-change in second modernity: The growth of e-sport and the World Cyber Games. *New Media & Society* 10, 6: 851–869. http://doi.org/10.1177/1461444808096248
16. Jesper Juul. 2010. *A casual revolution: Reinventing video games and their players*. MIT Press, Cambridge, Mass.; London.
17. Mehdi Kaytoue, Arlei Silva, Loïc Cerf, Wagner Meira, and Chedy Raïssi. 2012. Watch me playing, i am a professional: A first study on video game live streaming. In *roceedings of the 21st International Conference on World Wide Web Pages* (WWW '12), 1181–1188. http://doi.org/10.1145/2187980.2188259
18. Graeme Kirkpatrick. 2013. *Computer games and the social imaginary*. Polity, Cambridge, UK.
19. Robert V. Kozinets. 2010. *Netnography: Ethnographic research in the age of the internet*. Sage Publications Ltd, Thousand Oaks, CA.
20. Esther MacCallum-Stewart. 2012. "You No Take Candle". Online games as different social spaces. In *Online Gaming in Context: The Social and Cultural Significance of Online Games*, Garry Crawford and Ben Light (eds.). Routledge, London.
21. Randy Nichols. 2013. Bourdieu's forms of captial and video game production. In *The game culture reader*, Jason Thompson and Marc Ouellette (eds.). Cambridge Scholars, Newcastle, 30–47.
22. Anthony Pellicone and June Ahn. 2015. Building worlds: A connective ethnography of play in Minecraft. *Games and Culture*. Published online before print. https://doi.org/10.1177/1555412015622345.
23. Rui Pan, Lyn Bartram, and Carman Neustaedter. 2016. TwitchViz: A Visualization Tool for Twitch Chatrooms. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (CHI '16), 1959–1965. http://doi.org/10.1145/2851581.2892427
24. Hector Postigo. 2014. The socio-technical architecture of digital labor: Converting play into YouTube money. *New Media & Society*. http://doi.org/10.1177/1461444814541527
25. Quantcast. 2016. Twitch.tv traffic and demographics. Retrieved March 16, 2016 from https://www.quantcast.com/twitch.tv#demographicsCard
26. George Ritzer. 2000. *Modern sociological theory*. McGraw Hill, Boston.
27. Anita Sarkeesian and Katherine Cross. 2015. Your humanity is in another castle: Terror dreams and the harassment of women. In *The State of Play: Creators and Critics on Video Game Culture*, Daniel Goldberg and Linus Larsson (eds.). Seven Stories Press, New York City, 103–126.

28. Thomas Smith, Marianna Obrist, and Peter Wright. 2013. Live-streaming changes the (video) game. In *Proceedings of the 11th european conference on Interactive TV and video* (EITV '13), 131. http://doi.org/10.1145/2465958.2465971
29. David Swartz. 1997. *Culture & power: the Sociology of Pierre Bourdieu*. University of Chicago Press, Chicago.
30. T.L. Taylor. 2012. *Raising the stakes: E-sports and the professionalization of computer gaming*. MIT Press, Cambridge, MA.
31. Helen Thornham. 2011. *Ethnographies of the videogame: Gender, narrative and praxis*. Ashgate Pub. Company, Farnham, Surrey, England ; Burlington, VT.
32. Twitch.tv. 2016. Twitch.tv: Partnership Frequently Asked Questions. Retrieved September 21, 2016 from https://www.twitch.tv/p/partnerfaq
33. Austin Walker. 2014. Watching us play: Postures and platforms of live streaming. *Surveillance and Society* 12, 3: 437–442.
34. Jen Webb, Tony Schirato, and Geoff Danaher. 2002. *Understanding bourdieu*. SAGE Publications, London ; Thousand Oaks, Calif.
35. Christopher Zoia. 2014. This Guy Makes Millions Playing Video Games on YouTube. *The Atlantic*. Retrieved November 24, 2015 from http://www.theatlantic.com/business/archive/2014/03/this-guy-makes-millions-playing-video-games-on-youtube/284402/