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# Live-Streaming Changes the (Video) Game

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## ABSTRACT

Video games are inherently an active medium, without interaction a video game is benign. Yet there is a growing community of video game spectating that exists on the Internet, at events across the world and, in part, as traditional television broadcasts. In this paper we look at the different communities that have grown around video game spectating, the incentives of all stakeholders and the technologies involved. An interesting part of this phenomenon is its relation to the malleability of activity and passivity; video games are traditionally active but spectatorship brings an element of passivity, whereas television is traditionally passive but interactive television brings an element of activity. We explore this phenomenon based on selected examples and stimulate a discussion around how such understanding from the video game field could be interesting for interactive television.

## Categories and Subject Descriptors

K.8.0 [Personal Computing]: General: *Games*, H.5.1 Multimedia Information Systems: *interactive television*.

## General Terms

Human Factors, Documentation

## Keywords

Live-streaming, live streaming, video games, spectatorship, spectator, interactive television, broadcaster, TwitchTV, Let's Play community, passive usage, active usage.

## 1. LIVE-STREAMING CHANGES THE GAME

Live-streaming is not a new phenomenon and has existed on the Internet for the last 20 years but recently, with advances in Internet bandwidth and new web services, live-streaming has become democratized, allowing anyone to stream anything they want. Members of the live-streaming community have become more focused in recent years as the technology and users' grasp of it has matured, with specific shows publishing daily or weekly live-streams. Many different people and organizations live-stream for different reasons, for example, a wildlife organization may live-stream a birds nest from a hidden camera [22] or an artist may live-stream an interactive horror show [23].

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Regardless of incentive, all of these acts have one thing in common; they use a live-streaming platform to broadcast their content to users, which Bruns [2], for instance, discussed with respect to conventional television broadcasting as DIY broadcasting. He reflects on the shift from traditional television to new models of broadcasting, especially discussing new streaming services, which better fit the interests of users and are more likely to be taken up due to better broadband options.

A popular category on live-streaming services is video games. Growing popularity in video game live-streaming communities has turned video games into not only a player experience but also a viewer experience. From highly competitive international championships to players recording themselves playing horror games for laughs, the community has grown so large there is a live-stream web service just for video games (see TwitchTV [19]). Within this paper, we are exploring the practices and incentives of performers and viewers in the video game live-stream community, aiming to gain insights that can be of interest to the interactive television community. Three of the most popular video game live-streaming communities are e-sports, speedrunning and "Let's Play". We conducted an exploratory analysis of these communities in general and the "Let's Play" community specifically. We focus on "Let's Play" in detail because it allows people broader experiences of playing and spectating a game compared to the other two communities.

## 1.1 Approach

The basis for the exploratory study presented in this paper is the first authors' participation in and observation of video game live-streaming, using Cheung and Huang's [3] framework of spectator experiences as an analytical framework.

The first author is an active viewer in the live-stream community, using websites such as TwitchTV and YouTube Live to view performers for over a year. The first author is also an avid gamer, playing many of the games he watches on live-streaming platforms either prior to or after viewing broadcasts. The fact that he is a gamer is beneficial to the study as familiarity with the nuances of the community such as the vocabulary used and knowledge of the platforms is invaluable for understanding these communities. The second author has worked on game research projects but is not a gamer or live-stream viewer. It was important to be impartial in our analysis (not to let the first author's tacit knowledge act as a bias) and as such the authors conducted a series of discussions to unpick the first author's understanding and observations of the live-streaming community and objective study of live-streaming platforms.

Analysis of the "Let's Play" community was guided by Cheung and Huang's [3] work on the e-sports spectator community. The authors provide a series of spectator personas that exist in the community and a theoretical framework of facets of the spectator experience. By applying this existing knowledge (particularly the

personas) to the “Let’s Play” community, we were able to unpick the first author’s knowledge and observations of “Let’s Play” and form an understanding of how the community functions. This guided our discussion of the phenomenon with respect to its malleability of activity and passivity, which we used to reflect on interactive television and the community’s effort to support and encourage a more interactive TV experience and surrounding technologies (e.g., second screen, mobile TV).

To aid the exploratory nature of this study using Cheung and Huang’s [3] framework, we were guided by the following questions: (1) For what reasons do “Let’s Play” players stream themselves? (2) How do viewers watch these broadcasts? (3) What insights can we consider for interactive television?

## 2. VIDEO GAME LIVE-STREAMING COMMUNITIES

We have found that the video game live-streaming community is not unified in content or practice but technology. Not all live-streamers are live-streaming the same games, for the same reasons or to the same audience. There are different forms of video game live-streaming; major e-sports organizations stream competitive matches while others informally play through entire games and others still engage in the act of trying to complete a game as quickly as possible.

Although there are possibly many more use cases for video game live-streaming, these three forms make up the three most popular communities we have seen on the live-streaming services and as such are the communities we focus on. The most popular community is the e-sports community, which stream competitive matches between players and usually a separate commentator. The “Let’s Play” community is less popular but its popularity is rising on YouTube and live-streaming websites. “Let’s Play” broadcasts are more informal than e-sports matches and much of the entertainment comes from the player as they play through a game. Finally, the speedrunning community is the least popular but is also rising in popularity. Speedrunning is the idea of trying to complete a game as fast as possible, and so like e-sports, viewers watch to see these competitive feats.

We will now discuss the three communities before going onto discuss different live-streaming platforms. We then use these understandings to discuss the “Let’s Play” community in-depth.

### 2.1 E-sports

E-sports is a term to describe the phenomenon of competitively playing video games. E-sports began in the era of arcade games where players would challenge each other to compete for the top place on an arcade machine hi-score board. This practice was formalized with the Space Invaders Tournament [5] in 1980 held by Atari, the developer of Space Invaders, which attracted around 10,000 participants. The e-sports community is now very large with professional leagues and tournaments mirroring those of traditional sports.

Cheung and Huang [3] analyzed the spectator’s incentives to watch e-sports rather than play the games themselves. They make three important contributions to the discussion: they (1) detail nine personas of spectators, (2) provide a dissection of the spectator ecosystem and (3) outline what makes watching e-sports entertaining. The authors point out that a person might be a mix of

multiple personas; however the nine main personas they identified for e-sports are summarized below [3]:

1. The Bystander – There are two forms of Bystander, the *uninformed* and *uninvested*. The *uninformed* lacks knowledge of the meaning of in-game acts. The *uninvested* have a basic understanding of the game but they are spectating by accident, they have “stumbled” into being a spectator.
2. The Curious – This persona is interested in filling knowledge gaps they have with the game.
3. The Inspired – This persona is keen to play the game after watching a match, perhaps attempting strategies they saw or purely because they are interested in the game.
4. The Pupil – The Pupil is very similar to *The Curious* persona but they are focused on turning what they have learnt into practice and develop their skills.
5. The Unsatisfied – This persona sees spectating as a weaker form of playing but watches because it is still more interesting than not consuming the content at all.
6. The Entertained – The Entertained is more or less the opposite of *The Unsatisfied*; they find watching entertaining in itself, not as a weaker form of playing.
7. The Assistant – The Assistant impacts the game by helping a player, for example this could be in the form of pointing out information the player may have missed.
8. The Commentator – This persona is a spectator who is also a performer to a larger group of spectators, much like a traditional sports broadcast.
9. The Crowd – The Crowd persona details the delight in spectating as a group.

The authors further detail the above findings in rich descriptions of the different personas [3]. Although the usage of the terminology ‘personas’ could be seen confusing, as the descriptions rather seem to highlight different roles people could have over time interacting with a game, we found the empirically grounded spectator perspectives very relevant for our exploratory purposes. Thus, we used the personas as a framework to discuss the video game live-streaming communities, in particularly the ‘Let’s Play’ community.

### 2.2 Speedrunning

Speedrunning is the challenge of attempting to complete a game as fast as possible; this began as simply as acquiring sufficient skill to play a particular game as quickly as possible but now encompasses exploiting bugs in a game to skip as much game content as possible.

Speedrunning has been around for a long time before live-streaming was a possibility, but the advent of live-streaming has allowed the “sport” to turn into a real spectator sport. There is an inherent difference between watching a pre-record of someone performing a speedrun after the fact and watching a player as they attempt to perform a speedrun. As Jared Rea (community manager of TwitchTV) has said “it humanizes inhuman abilities” [12]. In terms of live-streams, speedrunning is usually framed as a way of imparting tips and strategies to other speedrunners because finding and exploiting bugs is a community effort.

## 2.3 “Let’s Play”

The “Let’s Play” (which will also be referred to as LP) community is different to the speedrunning and e-sports communities in that the experience of playing a game is not framed in a larger competitive context (for example an international league in the e-sports community) or focusing on a certain player skill (completing games as fast as possible in the speedrunning community), giving rise to a very diverse community in terms of the games played and players themselves. LP broadcasts are usually informal and enjoyment as a viewer comes from what the player/performer adds to the experience. The success of a LP broadcaster is not based on their skill in the game (as it is with e-sports and speedrunning) but how entertaining they are as they play the game. One important difference between the LP and e-sports community is that LP viewers are watching LP performers exclusively through live-streaming and video sharing services which is in contrast to e-sports spectators who use these services in conjunction with watching tournaments in person and broadcasts in bars and pubs.

The term “Let’s Play” originates from the posts on the Something Awful [18] forum in which users made annotated screenshot stories of their play through video games. Even without live-streaming technology, this past-time was viable given its focus on what the player/performer adds to the experience, unlike the other two communities discussed. When screen-capture became viable, video-based LPs began to surface on video sharing services such as YouTube. LPs are now broadcasted as pre-recorded videos on video sharing services as well as live-streamed on services such as TwitchTV.

An LP is generally an episodic account of a player’s journey through a particular game or creative play in a non-linear game, following the same “diary structure” as the image-based Something Awful forum threads. The skill level of the player is not very important; it is the entertainment the player creates around the experience that draws interest. To be entertaining, every LP contains commentary from the player which usually light-hearted or comedic. The player/performer’s voice is very important; framing the action of the game in a certain light and acting as a driver of the content as well as reactionary to the content, it is what sets an LP apart from a walkthrough, which usually focuses on telling the viewer how to complete the game. Therefore an LP can be thought of a narrative commentary on an experience as it is being experienced.

## 3. LIVE-STREAMING PLATFORMS

Below we detail different examples for live-streaming platforms used for video games and how their user experience design assists the broadcasters and viewers in ways a traditional television broadcast of a video game would not. We dedicate most attention to TwitchTV [19], which is popular among the ‘Let’s Play’ community, a community type we are going to discuss in more detail afterwards. However, in order to show the particularities of different platforms we also describe OnLive [17] and YouTube Live [20] as alternative practice examples.

### 3.1 TwitchTV

TwitchTV is the dominant live-streaming service for all of the communities. Twitch used to be the “Gaming” section of JustinTV but after it grew much larger than expected, JustinTV spun it out into its own website. This independence allowed the service designers to focus on designing specifically for video games. Users choose channels by browsing the featured channels

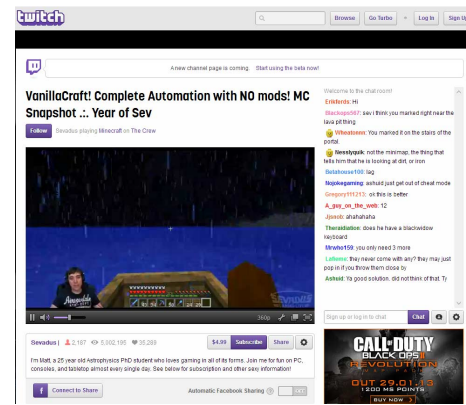


Figure 1. TwitchTV interface when watching a stream.

or view channels by game or broadcaster. Figure 1 shows how the TwitchTV interface looks while watching a channel. This channel is a “Let’s Play” broadcast in which we can see the broadcaster’s screen-capture and webcam feed in the bottom-left corner. The title tells us that the broadcaster is showing off a particular feat that he has created. To the right is the live chat window in which viewers are discussing what the broadcaster is showing and asking him questions. Below we detail the relevant aspects of TwitchTV, which will be discussed later.

#### 3.1.1 Live Chatting

The TwitchTV platform allows viewers to live chat while players are broadcasting, discussing what is happening with other viewers as well as conversing with the broadcaster directly. The form these conversations take is very dependent on the community; some discussions are about tactics and strategies whereas others are suggestions and comical discussions. For example, the most popular Minecraft channel espouses itself as a highly interactive channel, asking viewers to tell the broadcaster what to do/make and discuss Minecraft as he plays [24].

#### 3.1.2 Featured Channels

Featured channels are channels which are shown on the homepage of the website. These channels are owned by large organizations, that are in the live-stream community rather than amateur channels that have been promoted by TwitchTV. There are many forms of featured channels but they usually have to be daily channels of some sort. One example is the *Major League Gaming* channel, which broadcasts e-sporting events such as tournaments or league games. Members of the video gaming press such as *Gamespot* and *Destructoid* also have featured channels, which broadcast different shows every day. Another example are e-sports learning channels in which famous e-sporting personalities teach strategies to amateur players.

#### 3.1.3 Game Integration

TwitchTV have integrated their service directly into games and the first such game they have integrated themselves into is *Call of Duty: Black Ops 2*, the fastest selling game. Users on the PC, Xbox and PS3 are now able to enable streaming straight to TwitchTV.

#### 3.1.4 Monetization

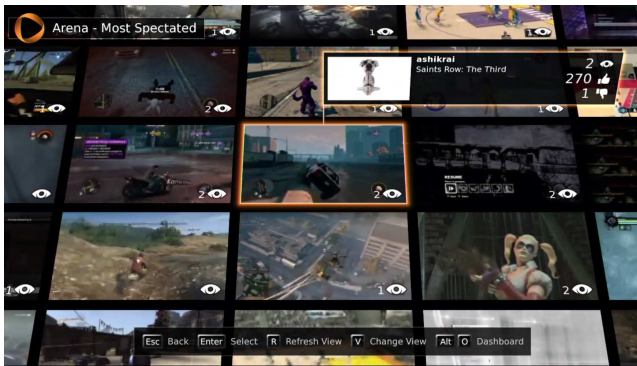
In order to continue service, TwitchTV makes money by placing advertisements over broadcast content. When viewing a broadcast, every few minutes an advertisement will interrupt the broadcast and run for 30 seconds. They have recently announced

Twitch Turbo which allows users to pay a monthly fee to remove advertisements as well as other cosmetic benefits such as a “turbo” logo by their name in chat windows and a larger set of emoticons to use in chat.

Monetization is also possible for the broadcasters and may be an incentive for some to broadcast. Broadcasters can share a cut of the advertisements placed on their page and also set up their own monthly charge to remove ads from their broadcasts.

### 3.2 OnLive

OnLive is not a live-streaming service like TwitchTV but is a service in the emerging area of “cloud gaming”. Cloud gaming services allow users to log in from PC, Mac, Android and iOS devices to play any game that they have unlocked in their account. Technically, the games are running on a server at one of OnLive’s buildings and streaming each video frame over the Internet to the user’s screen. When a user uses an input device, the input data is streamed over the Internet to the OnLive server, allowing players to play graphically intensive games on systems that would not be able to support the games natively.

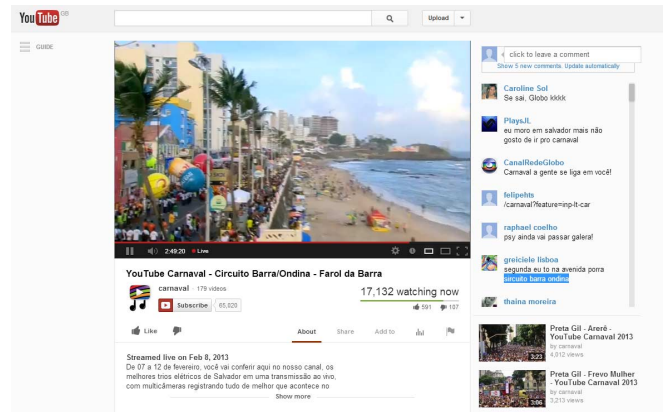


**Figure 2. The OnLive live-stream spectator interface, each grid square is different stream that can be viewed full-screen.**

The fact the games are streamed from a server under OnLive’s control is an advantage for live-streaming; OnLive make every game currently being played available to anyone to view. Figure 2 shows how the live-streaming interface looks; each tile is showing a game that is being played and as a viewer we can choose any tile to watch, at this point it fills the screen. This form of live-streaming is very different to TwitchTV from the perspective of the player; a TwitchTV broadcaster has gone out of their way to stream themselves playing whereas an OnLive player is live-streamed anytime they are playing. This difference in incentive has affected the way OnLive implements the live-streaming service, viewers can only give a “thumbs up” or “thumbs down” which is presented to the player unobtrusively in the top corner of the screen, rather than the richer participation viewers have on TwitchTV.

### 3.3 YouTube Live

Apart from the previous example, YouTube is the largest video sharing website and is primarily used by uploading videos after they have been recorded. Recently, YouTube have implemented a live-streaming service called YouTube Live. This service acts much like other live-streaming services technically; allowing users to live-stream any recording device, be that a screen-capture or video camera. Although YouTube is the most popular video sharing website for “Let’s Play”, it is not very popular for live-



**Figure 3. Youtube Live interface.**

streams, which can be explained by its lack of video game-specific features.

The interface allows users to browse categories such as “News & Politics” and “Gaming” with each video thumbnail showing how many people are currently watching and if the channel is currently live. Upon choosing a channel, the webpage in Figure 3 is displayed, looking very much like the standard YouTube page. The main difference is that the comments do not flow underneath the video but beside it in a live-chat format. This makes commenting a more important part of the experience than usual as comments are always in view. We see this design mirrored in other live-streaming websites such as TwitchTV.

## 4. THE “LET’S PLAY” COMMUNITY

As previously mentioned, we are focusing on the Let’s Play community for further analysis. There are a number of popular LP performers who use TwitchTV to live-stream as well as YouTube to share pre-recorded LPs. A popular LP performer is Felix Kjellberg who goes by the YouTube username *PewDiePie* [21]. Felix’s gained popularity through playing horror games and entertaining viewers through his scared reactions to situations in the game *Amnesia*, he has since made LP videos his profession. We have chosen Felix as an illustrative example in our exploratory analysis due to the author’s familiarity with his work and his position as the most popular LP performer on YouTube with 6.5 million subscribers and 1.4 billion video views. Although Felix is primarily popular on YouTube through uploaded videos he does perform live-streams and the differences between his uploaded videos and live-streams (in terms of audience participation and recording practices) are not significant enough to separate them.

In the following, we are using Cheung and Huang’s [3] research findings as an analyzing framework. With regard to the nine identified personas (as described above) we are only using six for discussing the LP community. Three of the personas (*The Bystander*, *The Pupil* and *The Crowd*) were considered as less relevant when exploring the Let’s Play community because *The Bystander* and *The Crowd* applies to viewing contexts that don’t exist for LP performances and *The Pupil* applies to the viewer wanting to improve their skills in a game, which is not an apparent incentive in our study of the LP community. However, the choice taken within this exploratory analysis does not imply that they should be disregarded in future work.

## 4.1 Player as Commentator

Cheung and Huang's [3] list of personas includes *The Commentator*, this persona is derived from the e-sports commentators that are spectators of an e-sports match but with the special privilege of controlling the "camera angle" the spectators see and commenting on proceedings. In an LP broadcast, there isn't a commentator spectator; *The Commentator* is a part of the LP player/performer. Being the performer and *The Commentator* at the same time gives the performer much more control over how the narrative of the experience develops, this allows an LP to be much more curated than an e-sports broadcast where the player and *The Commentator* can have a different amount of control over the experience and different incentives on how the match will unfold. For example, a commentator may want a very exciting and suspenseful match whereas the player mainly wants to win and progress to the next round, even if that means playing in quite a boring way. This problem does not occur for the LP performer as they are curating the experience in the way they see fit (other than the constraints of the game).

Another interesting difference that arises from *The Commentator* also being the performer is that there is no way for the performer to manipulate how information is released to the player. Cheung and Huang discuss the idea of information asymmetry, describing the effect that the release of information has on spectator entertainment. There are three forms of information asymmetry; where the player holds information the view does not, where the viewer holds information the player does not and where neither of them holds a particular piece of information. In e-sports, good commentators deliberately hide information from the spectator until the most opportune moment as to surprise the spectator. In LPs, as the performer also plays the role of *The Commentator*, they have less control over this form of information asymmetry because the viewer is seeing the same content as the performer. Yet, an LP elevates the "Player Unknown, Viewer Unknown" form of information asymmetry as revealing the unknown is experienced by both the performer and the viewer at the same time.

It is possible to have the "Player Unknown, Viewer Known" form of information asymmetry in an LP but only on a small scale. When a viewer knows what is coming up in a game because they have played it before, they can look forward to when the performer is reaching that point.

## 4.2 Performer Incentives

In his Nonick 2012 talk [15], Felix discusses how he saw another LP performer playing the horror game *Amnesia*, which made him want to play too (see *The Inspired* persona). When he began to play he was scared and talking to an imaginary audience, gave him the confidence to carry on playing. Although this is a specific case of why a performer started, it gives us insight into why performing as a player to an audience is more desirable than playing alone. The act of performing to someone changes the way a player plays; in the simple scenario of someone walking into a room where someone is playing a game, the player becomes more of a performer if they know someone is watching: narrating what is happening, what parts of the game are good and what parts are bad, etc.

Cheung and Huang [3] discuss the spectator ecosystem as a way of describing the experience of viewers and players as inter-related; players promise not to disappoint fans and viewers judge players according to sportsmanship. In e-sports, the promise not

to disappoint fans comes from the incentive to win games as all e-sports are inherently competitive. This incentive does not exist for the LP performer as there is nothing to "win", but the incentive to not disappoint fans comes more from the performance as a separate layer to the play. An LP performer can be bad at a game (in terms of not being skilled in the way the game requires) but this does not mean they will be judged by viewers, their performance is what is judged by viewers. One way to explain this is that both e-sports and LP broadcasts are meta-games on top of the original game; e-sports players are playing a video game to progress in the "game" of the tournament, whereas LP performers are playing a video game to construct interesting and entertaining situations for the viewers. It is common a performer to play around with one object in a game while commenting for a long time, whereas doing so while playing a game alone isn't.

## 4.3 Viewer Incentives

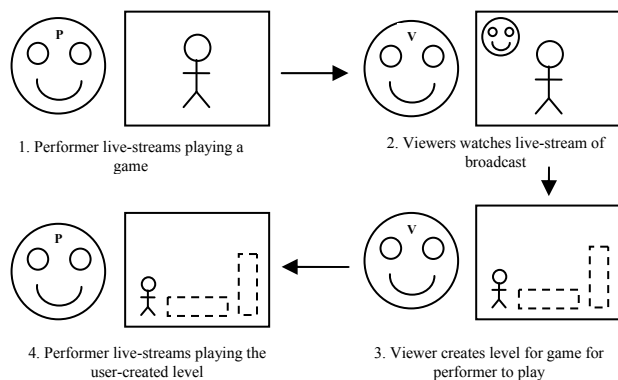
Felix began LPing in 2011 and, as previously mentioned, his initial reasons for recording himself playing games while narrating was so that he didn't feel alone while playing horror games that he thought he would be scared by. He imagined a future audience that he was conversing with. This audience began to form a community who started to converse back in the form of YouTube comments and the TwitchTV chat window. Some comments include information about the game by experienced players telling Felix what to do next or interesting parts of the game that he missed. Felix would reply to the community in following videos, mentioning things people had asked him to do in the game and then changing the way he played based on this. This reciprocal nature of the performer's persona as the one driving the content as well as reacting to commenters to alter the content helps build a community around their LP broadcasts.

Here we see *The Assistant* persona in the spectatorship. *The Assistant* finds interest in advising the player on what to do; telling Felix what to do next, where to go next or describing interesting parts he has missed; *The Assistant* has a voice on the experience, altering how the game is played. We see assistants more on TwitchTV broadcasts where the viewers can directly influence the game as it is being played. It is common to hear the performers answering questions from viewers and reacting to their suggestions. *The Assistant* also has an interesting role in information asymmetry, as discussed earlier; a spectator can derive entertainment from knowing what is coming up in a game and directing the performer accordingly.

*The Entertained* persona prefers watching than playing which is very prevalent in the LP community. This can be explained by the extra content the performers provide through their commentary, it adds to the entertainment viewers would get from playing the game. For example, Felix creates characters and voices for elements of the games. Felix discussed in his Nonick [15] talk how he tries to create a "universe" around the games, which helps create the community of viewers.

*The Curious* are interested in filling knowledge gaps. In the e-sports community these are knowledge gaps in the game, but in the LP community this can represent knowledge gaps in the game or the LP player's universe. For example, after watching more broadcasts of a game, a viewer may be interested in learning more about the game, but also they may be interested in learning more about Felix and why he always makes jokes about certain objects in the game. Watching broadcasts of his other games will fill these knowledge gaps and make *The Curious* feel more a part of the community.





**Figure 4. Performer (P) and Viewer (V) co-laboring in play.**

There are two more personas that fit the LP viewer community: *The Inspired* and *The Unsatisfied*. These two personas are somewhat opposites in their incentives to watch but both derive enjoyment from watching. *The Inspired* is eager to play a game after seeing it, as the LP performers play a myriad of different types of game for the enjoyment of the viewers and themselves, there is a high chance the viewer will see a game they have not heard of before or in a genre they enjoy. Compared to an e-sports broadcast, the informal nature of an LP broadcast shows *The Inspired* the game is for fun rather than competition and is therefore more inviting to try out. *The Unsatisfied* watches a broadcast as a weaker substitute for playing. As many “Let’s Play” games are single-player games or obscure games (chosen for their originality), *The Unsatisfied* may not have the time to invest or the equipment required to play the games, but experiencing the story of the game (along with the performer’s added content) as a viewer is more interesting than not experiencing it at all.

#### 4.4 Performer-Viewer Incentives

We have discussed the performer’s and viewer’s incentives separately so far but there is a third category of incentive which includes both the performer and the viewer. Cheung and Huang [3] discuss the idea of *Co-laboring in Spectatorship* – the fact that spectators work together to create an enjoyable experience. This is described as how *The Commentator* and observer-cameraman (camera operator) shape the information asymmetry for the spectators and how spectators share informal information between themselves to heighten the experience.

In the LP community, this emphasis is much more on *Co-laboring in play* rather than *Co-laboring in Spectatorship*. As previously mentioned, viewers can chat while a performer is playing, telling the performer to do certain things in the game or asking them questions. This act is for the purposes of entertainment; the viewer is heightening their enjoyment, and hopefully others’ enjoyment, by interacting with the performer as *The Assistant*.

LP performers play any game they decide will be entertaining (in contrast to e-sports) and there are many games, which allow user-generated content such as user-generated levels or items. This allows viewers to create content for their favorite LP performer, which the performer will then play in the future (see Figure 4). We see this with Felix when he plays the game *Happy Wheels* [14]; some viewers make “PewDiePie Quiz” levels or other levels themed with characters from Felix’s LP universe and we then see LPs by Felix where he is playing these levels in *Happy Wheels*.

This is a reciprocal process in which a viewer has watched a performer’s videos, found that they play a certain game that allows user-generated content, created content for that performer and the performer then creates a video including the viewer’s content, this strengthens the LP performer’s universe and community. This process is interesting in that it shows the importance of creating a cohesive universe around the different games an LP performer plays and how viewers can be a part of the creation.

Now that we have discussed the LP community using Cheung and Huang’s personas and framework, we will discuss the different platform approaches to designing live-streaming experiences for both the broadcaster and viewer as well as how these insights can be of interest and value for designing interactive television services and experiences.

## 5. DISCUSSION

Within this paper we aimed to explore the questions around players’ motivation for streaming themselves (becoming a broadcaster) and generate an understanding why other people (viewer) would watch the streamed content. Each live-streaming service described above (TwitchTV, OnLive, YouTube Live) approaches the design of the broadcaster experience and viewer experience differently based on the incentives of the stakeholders.

### 5.1 Live-Streaming Platform Comparison

In the case of YouTube Live, the service has grown out of an existing video sharing service, which is used mainly for uploading pre-recorded videos. As a result, it is relegated somewhat to a “add on” feature rather than an integrated part of the service provided. In contrast to TwitchTV, the ability to discover content, especially video game content in YouTube Live, is not as flexible or contextual and as a result there is less of a community around certain categories or games. This is a problem TwitchTV doesn’t seem to have, by designing their content discovery and viewer participation around featured channels and game hubs, users are much more part of a community, with regular viewers recognizable by broadcasters in the chat, and thus giving evidence of repeat viewing.

OnLive’s implementation is vastly different to the previous two services, as it seems like a side-effect of the technical architecture of their service. Interestingly, the “always on” streaming when playing a game on the service is influencing the way other services harness content. For example, TwitchTV recently announced a partnership with Activision which builds TwitchTV live-streaming directly into Call of Duty: Black Ops 2 for PC, PS3 and Xbox 360, vastly reducing the number of technical obstacles required to live-stream. In the same way as OnLive, it makes it very simple and thus easily accessible for a broader audience.

All live-streaming platforms have been designed for different ways of interaction, diverse reasons and provide the communities (such as Let’s Play, e-sports, speedrunning) different experiences. Based on our discussion of the ‘Let’s Play’ community we also explored the roles of broadcaster and viewer based on Cheung and Huang’s framework. Thus we were not only able to reflect on the practices in the streaming communities, but also relate them back to a set of existing types of viewers (personas) revealed from the gaming context. We highlight what and why spectating as well as acting as broadcaster is entertaining and reciprocal some times, such as in the act of co-creating content.

## 5.2 Value for Interactive Television

As stated in the beginning, the most interesting part of the live-streaming – broadcaster and spectator – phenomenon is its relation to the malleability of activity and passivity; video games are usually enjoyed actively and television is enjoyed passively, but through studying the video game live-streaming community, we can see that these are not concrete concepts and viewers sometimes play active or passive roles. The question now is what we can learn from these insights from the gaming world for interactive television? Several themes can be directly linked to interactive TV activities and efforts, such as engaging viewers in social interaction while watching TV. Below we outline some insights for interactive television, which should be seen as inspiration for discussion as well as stimulation for further explorations of this phenomenon by the iTV community.

### 5.2.1 Up-Down Reciprocity

Social TV applications (e.g. [5][6]) have been studied increasingly within the iTV community. For instance, Geerts and De Grooff [7] suggested a set of sociability heuristics covering a wide range of social and shared usages around the TV. Still, insights from the video game live-streaming community on live chatting could provide additional food for thought on these heuristics, in particular, with respect to extending the concept of social TV towards the broadcaster, thus breaking down the power relationship between viewer and broadcaster.

### 5.2.2 Flat and Democratic Practices

User-generated content platforms such as YouTube have stimulated several discussions within the iTV community [8]. Producing and distributing media content is not the exclusive domain of broadcasters and media professionals anymore. End-users are participating in peer-to-peer networks by producing, distributing and consuming content and communities – such as from the gaming context – show that the content is increasingly influenced and co-created by the viewer. The changing and dynamic relationship between player and broadcaster or performer enriches the viewing experience and makes, as Cheung and Huang have shown spectating more entertaining. Although interactive television pushed content creation by viewers, it did not become successful as much as it is in the gaming context. An interesting element seen in our example on ‘Let’s Play’ is the flat and democratic practices, which needs more emphasis in the TV related context in order to be successful. However, more analysis of a variety of cases is need for supporting this assumption.

### 5.2.3 Learning Through Others

Interactive television has since its beginnings been seen as a potential learning and education platform and medium, especially due to its pervasiveness and embeddedness in an entertainment context. Chorianopoulos and Lekakos [10] stress the point that while commercial broadcasters might financially not be interested in developing educational content, they could integrate existing content from thematic documentary channels or children’s channels in interactive television applications, such as add interactive browsing or a game. That highlights another anchor point to the insights gained from the video game community, where the viewers’ incentive amongst others lays in learning playing strategies by viewing the live-streamed game play. Enhanced through additional live chats and the ability to even influence the players’ next game (giving suggestions on what the player should try to do), the viewer her/himself is receiving a very active and engaging role as part of the audience, and can further

inspire design strategies around learning through interactive television services (e.g., [10][8]).

### 5.2.4 Behavior-based Ads

The exploration of the TwitchTV platform also revealed insights on advertisement strategies, which might be of interest to consider for broadcasters in the interactive television context. For instance, the insights gained by Vennou et al. [11] on evaluating new advertising (ads) formats for digital interactive television could be re-thought and reflected based on the described live-streaming examples, in particular looking beyond formats itself and foster the focus on the viewers’ behavior as an active element for positioning ads.

### 5.2.5 Cross-Platform Support

Finally, the example introduced for the Let’s Play community ‘Felix’ shows clearly a link to the proliferation of multi-platform services (active on TwitchTV and YouTube Live). Beyond cross-platform experiences as explored by Obrist et al. [14] or second screen applications [1], interactive television service providers need to appreciate viewers (or broadcasters) desire to be active on different platforms.

## 6. FUTURE WORK

We are aware that more analysis beyond our selected examples is needed to get a better understanding on how such live-streaming platforms are changing the game around ‘active’ and ‘passive’ roles and how this can be beneficial for inspiring the design around interactive television services and platforms. There are also questions related to the cultural context of video games live-streaming and spectatorship, which need more attention as some genres of games and the ways they are played can be localized, meaning personas that apply to some spectators may not apply to others from a different cultural background.

## 7. CONCLUSIONS

What we provided in this paper is an overview and reflection on selected topics emerged from the exploration of video game live-streaming platforms and community practices and their relation to interactive TV. Through our exploratory analysis of live-streaming communities, particularly ‘Let’s Play’, we have found that there is malleability between the roles of the active and passive in users’ experiences. We cannot treat them as separate and conflicting ideas as live-stream viewers can co-labor in play in the same way a television viewing experience can float between passivity and activity in an interactive television context.

We have highlighted the potential opportunities for inspiring and improving the design spaces for interactive television services and experiences in our discussion and hope to provide stimulation for future work, in particular engaging in a more structured analysis of these two fields by learning from each other’s through looking outside of the box.

## 8. ACKNOWLEDGMENTS

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## 9. REFERENCES

- [1] Basapur, S., Mandalia, H., Chaysinh, S., Lee, Y., Venkitaraman, N., and Metcalf, C. 2012. FANFEEDS: evaluation of socially generated information feed on second



- screen as a TV show companion. In *Proceedings of the 10th European conference on Interactive tv and video* (EuroITV '12). ACM, New York, NY, USA, 87-96.
- [2] Bruns, A. 2009. The user-led disruption: self-(re)broadcasting at Justin.tv and elsewhere. In *Proceedings of the seventh european conference on European interactive television conference* (EuroITV '09). ACM, New York, NY, USA, 87-90.
  - [3] Cheung, G., and Huang, J. 2011. Starcraft from the stands: understanding the game spectator. In *CHI*, pages 763-772.
  - [4] Chorianopoulos, K., and Lekakos, G. 2007. Learn and play with interactive TV. *Comput. Entertain.* 5, 2, pages.
  - [5] Harboe, G., Massey, N., Metcalf, C., Wheatley, D., and Romano, G. 2008. The uses of social television. *Comput. Entertain.* 6, 1, Article 8 (May 2008), 15 pages.
  - [6] Geerts, D., Cesar, P., and Bulterman, D. 2008. The implications of program genres for the design of social television systems. In *Proceedings of the 1st international conference on Designing interactive user experiences for TV and video* (UXTV '08). ACM, New York, NY, USA, 71-80.
  - [7] Geerts, D., and De Grooff, D. 2009. Supporting the social uses of television: sociability heuristics for social tv. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '09). ACM, New York, NY, USA, 595-604.
  - [8] Martins, D.S., Oliveira, L.S., and Pimentel, M.G.C. 2010. Designing the user experience in iTV-based interactive learning objects. In *Proceedings of the 28th ACM International Conference on Design of Communication* (SIGDOC '10). ACM, New York, NY, USA, 243-250.
  - [9] Obrist, M., Miletich, M., Holocher, T., Beck, E., Kepplinger, S., Muzak, P., Bernhaupt, R., and Tscheligi, M. 2009a. Local communities and IPTV: Lessons learned in an early design and development phase. *Comput. Entertain.* 7, 3, Article 44 (September 2009), 21 pages.
  - [10] Obrist, M., Moser, C., Alliez, D., Holocher, T., and Tscheligi, M. 2009b. Connecting TV & PC: an in-situ field evaluation of an unified electronic program guide concept. In *Proceedings of the seventh european conference on European interactive television conference* (EuroITV '09). ACM, New York, NY, USA, 91-100.
  - [11] Vennou, P., Mantzari, E., and Lekakos, G. 2011. Evaluating program-embedded advertisement format in interactive digital TV. In *Proceedings of the 9th international interactive conference on Interactive television* (EuroITV '11). ACM, New York, NY, USA, 145-154.
  - [12] Webster, A. 2013. Don't die: livestreaming turns video game speedruns into a spectator sport. The Verge: <http://www.theverge.com/2013/1/21/3900406/video-game-speedruns-as-live-spectator-sport>. Retrieved 02/2013.
  - [13] Web: Electronic Games. Issue 02. Vol 01/02/1982. March. Page 35. [http://www.archive.org/stream/electronic-games-magazine-1982-03/Electronic\\_Games\\_Issue\\_02\\_Vol\\_01\\_02\\_1982\\_Mar#page/n35/mode/1up](http://www.archive.org/stream/electronic-games-magazine-1982-03/Electronic_Games_Issue_02_Vol_01_02_1982_Mar#page/n35/mode/1up). Retrieved 02/2013.
  - [14] Web: Fancy Force. *Happy Wheels*. [http://www.totaljerkface.com/happy\\_wheels.php](http://www.totaljerkface.com/happy_wheels.php). Retrieved 02/2013.
  - [15] Web: Nonick 2012. *Felix Kjellberg Keynote*. [http://www.youtube.com/watch?v=5-iEQD5s97E&playnext=1&list=PL8AD0F546C4CF57E8&feature=results\\_video](http://www.youtube.com/watch?v=5-iEQD5s97E&playnext=1&list=PL8AD0F546C4CF57E8&feature=results_video). Retrieved 02/2013.
  - [16] Web: OnGameNet. <http://ko.twitch.tv/ongamenet>. Retrieved 02/2013.
  - [17] Web: OnLive. <http://www.onlive.com>. Retrieved 02/2013.
  - [18] Web: Something Awful. *Let's Play! - SomethingAwful Forum*. <http://forums.somethingawful.com/forumdisplay.php?forumid=191>. Retrieved 02/2013.
  - [19] Web: TwitchTV. <http://www.twitch.tv>. Retrieved 02/2013.
  - [20] Web: YouTube Live. <http://www.youtube.com/live>. Retrieved 02/2013.
  - [21] Web: YouTube. *PewDiePie Channel*. <http://www.youtube.com/pewdiepie>. Retrieved 02/2013.
  - [22] Web: UStream. <http://www.ustream.tv/SouthwestFloridaEagleCam>. Retrieved 02/2013.
  - [23] Web: UStream. <http://www.ustream.tv/aliceseyes>. Retrieved 02/2013.
  - [24] Web: TwitchTV. <http://www.twitch.tv/cyanideepic>. Retrieved 04/2013.