

UNIVERSITY OF VAASA

Faculty of Philosophy

ICS-Programme

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Crowd Culture & Community Interaction on Twitch.tv

Master's Thesis

Vaasa 2016

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**ABSTRACT**

Internet Protocol Television (IPTV) and e-sports have exploded in popularity in recent years. At the forefront of this growth is the live streaming website Twitch.tv, now one of the most popular websites in the world. Though live streaming has existed before Twitch, the website has proven to be the dominant name amongst its competitors. From this popularity has arisen a distinctive Twitch culture, complete with its own language, customs, norms, and values.

This study aims to decipher and understand Twitch's behavior through Uses & Gratifications theory as well as previous research on Collective Behavior. Specifically, the thesis addresses the following research questions: How is the interaction of chat on Twitch.tv structured? What are motivators for communication on Twitch.tv? How is the Twitch community unique to other web-based communities?

All streams were selected from channels for the popular game *Dota 2*. *Dota 2* was selected due to its popularity, well-established culture, and author familiarity. The streams of both competitive tournaments and private streamers were examined, with over 12 hours of chat logs being examined. Comments were divided into categories and the use of language on the medium was dissected.

Though hypothesized to mirror other online communities, Twitch users' behavior was found to be far closer to that of a crowd; something unique to the subcultures preceding it. The implications of this are explored, investigating the altered norms and social atmosphere which contribute to Twitch's seemingly erratic behavior. The Contagion, Convergence, Emergent Norm, and Value-Added models are consulted in order to catalogue and understand the collective behavior that occurs in the chat. Twitch is a new type of gathering place on the Internet; one which does not follow the rules of traditional Internet communities, and offers a completely different experience to users in contrast to traditional media.

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**KEYWORDS:** Internet, memes, Twitch, Internet Protocol Television, IPTV, streaming, e-sports, collective behavior



## 1 INTRODUCTION

Today, millions of people pour hours into online gaming on a daily basis. In the wake of gaming's rise to popularity, livestreaming of video games has gone from a niche web service to a grand spectator experience. Now anyone with a computer can stream themselves in real-time to a live audience who can watch and comment on their game. Professional "streamers" – individuals who broadcast themselves live from their computers – can draw in tens of thousands of viewers during peak hours. A closely related and concurrent phenomenon to this is the rise of e-sports, wherein professional gamers play for million dollar prize pools in high-stakes competitive matches in their game of choice. With a streaming platform, viewers from around the world can tune in to watch these matches as they unfold live and provide commentary, not unlike the crowd at conventional sporting matches. The two communities thrive off of and feed into one another, and the worlds of professional gaming and professional streaming often overlap. Caught in the middle of these burgeoning scenes is the audience, the millions of fans who make up the bulk of the target demographic and support the scene with their money, time, and passion.

At the crux of this new media subculture is Twitch.tv, an online streaming platform that is the 4<sup>th</sup> largest source of Internet traffic in the United States as of 2014, behind only other media giants such as Google, Apple, and Amazon (Pires & Simon 2015: 1). Twitch is specifically geared towards game streaming; anyone with Internet access and a computer can set up and start their own stream. At its heart, the spectator is the most crucial element of this interplay between two dynamic and growing forces. But contrary to the traditional view of a spectator as a passive consumer of media, an audience member in a live Twitch stream becomes an important stakeholder in a rapidly developing and complex social dynamic. (Minwoo, Wilcox & Shah 2014: 187) The focus of this research project will be on Twitch viewers – specifically, those who watch streams of the popular game *Dota 2*, and their interactions on the site and within the community.



## 1.1 The Rise of Twitch and IPTV

In recent years, Internet Protocol Television, also known as livestreaming, has seen unprecedented growth amongst Internet users. Game streaming and e-sports have proven to be particularly popular, with Twitch emerging as the dominant game streaming service on the Internet (Edge 2013: 33). It focuses on broadcasting playthroughs of video games, e-sports tournaments, and most recently, creative content. Videos on the site can be viewed live, or in the video on demand (VOD) format, similar to Youtube.

Originally a niche spin-off of the general interest streaming site Justin.tv, within three years it had completely overtaken its parent and, by February 2014, had become the 4<sup>th</sup> largest source of Internet traffic in the United States. With over 150 million unique viewers and 1.5 million unique streamers in a month, Twitch has become a massive, sprawling Internet phenomenon and staple of daily life for many who enjoy video games. (Pires & Simon 2015: 2, Zhang & Liu 2015) A single popular streamer can gather audience numbers in the hundreds of thousands, and the viewership for professional tournaments is comparable to major televised sporting events. It has completely supplanted the incomes for certain people, with professional streamers dedicating 8 or more hours a day to streaming as a full-time job. It is by far the most popular gaming IPTV service as of this writing. (Pires & Simon 2015: 1)

As such, Twitch has replaced traditional television for many (Edge 2013: 32). Like television, viewers can select which content they want to see, and it can also be turned on and left to play in the background. On the other hand, the format allows it be played from a laptop, tablet, or other mobile device, and because of the inclusion of certain community features, it allows a degree of social participation not found in regular TV. While there are many competitors and imitators attempting to compete with the format, none begin to even approach Twitch's popularity, and its name has become synonymous with livestreaming within e-sports circles and beyond. (Pires & Simon 2015: 2) Since its conception, Twitch has developed a strong, distinct culture based around the communicative avenues available on the site.

## 1.2 Theoretical Analysis

This study focuses on community interactions which take place on Twitch.tv. Focus will be specifically on how participants utilize the chat feature, which is embedded in Twitch streams and displayed alongside the video. This study draws primarily on two theoretical frameworks to form its conclusions. The first is that of the Uses & Gratifications Theory. This is due to its applicability in researching new forms of media (Papacharissi 2008: 137). The second is the approaches thus developed in explaining the phenomenon known as collective behavior. Though often referred to as a community, interactions in Twitch chat appear to run contrary to behavior in most conventional online communities. Instead, its defining characteristics more closely resemble that of a traditional crowd. Hence, models of collective behavior provide greater utility in analyzing and interpreting the interactions which occur in chat (Levy 1989: 69, McPhail 2006; Blumer 1971; Granovetter 1978; Bell 1956). Contagion, Convergence, Emergent Norm, and Value-Added models were all found to have applicability in this new medium of communication (Barkan 2012; Banerjee & Nitin 2012). This study will explore how Twitch culture fits in the context of online communities, live streaming, and e-sports. Its significance in relation to these topics, as well as the motives, social and psychological antecedents, and consequences/effects of interactions will also be explored.

## 1.3 Data Collection/Methodology

Data was taken directly from Twitch, or from video on demand (VOD) recordings, which are often uploaded to a separate web server immediately after broadcasting. Because streams run at all hours of every day, it was a relatively simple matter to collect enough data for examination, and any time more was needed it could be accessed. The challenge was selecting specific examples from the sheer wall of text being generated. It should be noted that highly populated, busy streams were favored, as this was where collective behavior was observed to occur most strongly.

To narrow the selections and ensure high quality data, tournament streams and well-known streamers with large viewership numbers were primarily used, though some slower streams were consulted to find specific examples. In the analysis, two different streams were examined in detail.

The first sample is an excerpt from a competitive match during the ESL One New York e-sports tournament, between Teams Fnatic and Secret. The event took place at Madison Square Garden in front of a live audience on October 3, 2015. This particular tournament was selected due to the popularity of the stream, with well over 50,000 viewers, as well as the fame of the teams involved, allowing for many characteristic Twitch interactions to manifest themselves.

The second sample is from the personal stream of professional *Dota 2* player and streamer Henrik Ahnberg, better known by his online alias of “AdmiralBulldog”. AdmiralBulldog’s stream was selected also due to its popularity, as well as his regular rapport with viewers and prominence in the *Dota 2* community.

Notable events in the stream were monitored alongside the reaction of the chat. There, patterns of consistent behavior from the audience were examined, especially that which manifested clearly in response to the action in the stream. For additional context and clarification, data was also collected from the greater online *Dota 2* community, as JoinDota and Reddit. Naturally, there is significant cultural overlap between language used in chat and language used in relevant online forums.

Analysis was chiefly on the comments made in the stream’s chat function, especially in response to onscreen stimuli, as well as streamer interactions with the participants in chat. The specialized symbols, language, and rituals that chatters and streamers employed were the primary focus. The interactional structure of chat was examined using discourse analysis, interpreted through the lens of Uses & Gratifications and theories of collective behavior (Knobel & Lankshear 2007).

## 1.4 Research Gap and Questions

To date, there have been some preliminary studies done on live streaming and e-sports, typically in the context of its growing popularity as a new media format and model of Internet Protocol Television (Hamilton, et al. 2014, Pires & Simon 2015). However, this study focuses specifically on chat culture within Twitch.tv, for several reasons. Twitch is the dominant name in the world of live streams, particularly game streaming. It accounts for 4% of all Internet traffic in the United States at a given time. According to *Business Insider*, it accounts for 40% of all live streamed video content on the Internet. In a single month, Twitch generates over 100 million unique viewers. (Kim 2014) Many of these viewers are active participants in the community around them, and participate daily via Twitch's ubiquitous chat feature. Of these millions of viewers, there is scant little research done on their community, behaviors, and habits; something this study aims to address.

There has been research done on social media giants such as Facebook and Twitter, online gaming communities, and subversive online forums such as 4chan and Something Awful, but little on Twitch's chat feature, which is a unique combination of all three (Gleeson, J.P. et al. 2014, Poynter 2010: 139, Kobayashi 2010: 546, Hagman 2012: 6, Langstedt 2013, Moore 2006). Another unusual aspect of its popularity is that before Twitch's explosion, "chat room" style communication had been relegated to its former status as a niche activity, supplanted by other forms of social media. (Kobayashi 2010: 546, Baruah 2012: 4). Thus the emergence and evolution of "Twitch culture," its appeal and the effect it has on the e-sports community is a topic worthy of attention and study. As more and more people turn to streaming over other platforms such as traditional television, examining the behavior of these participants will become significant as the medium continues to grow.

The following are questions that this thesis will address:

- 1) How is the interaction of chat on Twitch.tv structured and used?
- 2) What are motivators for communication on Twitch.tv?
- 3) How is the Twitch community distinct from other online communities?

### 1.5 Overview of the Thesis

The thesis will first introduce the literature and concepts involved in the study. Uses & Gratifications Theory is discussed in accordance to its main concepts and terminology, as well as its place in context of the Internet, video games, and in general. An example of a theoretical framework of a typical study with the theory is provided. Theories of collective behavior are then introduced and defined. Their historical relevance and usefulness to this study are discussed. A general overview of relevant Internet phenomena such as memes, emoticons, as well as social influence and conflict talk are then examined. The topics of this thesis, e-sports, Twitch and its chat are defined, looking at what research has been done so far in the field.

The analysis then examines interactions on Twitch chat, first by sketching the overall structure of the medium, then by categorizing common characteristics and features of the stream. The thesis will then look at two samples selected from live Twitch streams: a professional tournament, recorded in front of a live audience, and the personal stream of a popular player AdmiralBulldog. In each, screenshots of notable moments from the chat are isolated and examined for instances of collective behavior, community interaction, and gratifications sought and achieved. The applications of collective behavior theory and U&G are then discussed.

## 2 MEDIA USE AND ITS ANALYSIS

This study is an expansion upon the Uses & Gratifications (U&G) Theory. U&G Theory is a method of psychological communication used to examine the ways in which individuals consume and use mass media. The theoretical framework is audience-based, drawing from the idea that individuals choose media and content to fulfill perceived wants or needs. These needs are expressed as motives, or uses, for choosing certain mediums, and are linked to the social and psychological makeup of the individual. Through a combination of perceived needs, social and psychological characteristics, and media characteristics, individuals use media and experience related gratifications. The framework can be applied to explore many different media uses and their effects. (Papacharissi 2008: 139-141)

### 2.1 Uses & Gratifications

Uses & Gratifications has roots in early research into mass media and its effects in the first half of the 20<sup>th</sup> century (Wimmer & Dominick 2009: 12; Weiyan 2015: 4; Papacharissi 2008: 139; Ruggiero 2000: 3). *Uses* are defined by the audience's *motives* as well as past media gratifications. *Gratifications* refer to expectation outcomes. *Motives* are defined as "general dispositions that influence people's actions taken to fulfill a need or want." (Papacharissi and Rubin 2000: 6) U&G was chosen partially because it is well suited as a theoretical approach to any new mass communication platform: newspapers, radio, television, film, and now video games and the Internet (Ruggiero 2000: 27). It can be said that U&G theory's primary strength is its ability to allow investigation into "mediated communication situations via a single or multiple set of psychological needs, psychological motives, communication channels, communication content, and psychological gratifications within a particular cross-cultural context." (ibid. 28)

The theory began in the 1940s, whereupon it initially examined newspaper stories and radio serials. As new forms of media emerged, the theory was expanded to include more mediums, such as comic books, television, film, music, and so on, until the advent of the Internet. The

theory has been reimagined, criticized, and reused many times over since its inception, and has found renewed relevance in the modern day due to its qualities. (Wimmer & Dominick 2009: 13)

Early U&G was based off the older idea of an active audience, which consciously selects content and media to satiate specific needs and desires (Wimmer & Dominick 2009: 137). Herbert J. Blumer outlined four aspects of an active audience: utility, intentionality, selectivity, and imperviousness to influence (Blumer 1979). Utility means uses people have for media and how they put them to use. Intentionality refers to previous motivations which determine their selection of media. Selectivity is how an individual audience member's use of media reflects their own preexisting preferences. Imperviousness to influence means audience members construct their own meaning from content which then influence their thoughts and actions. Thus audiences can avoid certain types of media influence. (Weiyan 2015: 72)

Ruggiero notes the importance of care when conceptualizing the active audience. Early U&G studies carried a tendency to imagine the consumer as superrational and extremely selective, which is inaccurate. It is not an unmalleable concept, but a variable and relative one. (Ruggiero 2000: 8) Current U&G also distinguishes between the ideas of activity and activeness for a greater understanding of the audience. According to Ruggiero, activity refers to "what the media consumer does" and activeness as "the audience's freedom and autonomy" in relation to mass communication (ibid. 8). In an audience, activity covers a wide range of possible dispositions in the communication spectrum, which can vary at all phases. In other words, different people can and will display different types and levels of activity in different communication settings and at different periods during the communication process. Activeness can be affected by any number of variables, including time of day, socioeconomic status, type of content, audience mood, stress levels, attachment to media, and so on. Audiences are variably selective and goal oriented at different times before, during, and after exposure to media. For example, a basketball fan might adjust his schedule accordingly in order to watch a specific game, then feel motivated to post on a sports-related forum after viewing. It can be surmised that variance of engagement suggests that the motivation to use any given media is also dependent on the individual's reliance on it and how well it fulfills his or her own needs. (Ruggiero 2000: 8-10)

## 2.2 U&G and the Internet

Given the Internet's status as "new media", U&G is generally acknowledged as one of, if not the dominant paradigm for examining online-based behavior (LaRose, Mastro, & Eastin 2013: 395). Given its vastness and variability, the Internet has posed special difficulties in classifying motivators for behavior. With that said, Papacharissi and Rubin have identified four primary motivators for Internet use, as shown in table 1. They were Interpersonal Utility, Pass Time, Information Seeking, and Convenience. (Papacharissi & Rubin 2000: 185-186)

**Table 1.** Papacharissi and Rubin's factors of Internet use. (Papacharissi & Rubin 2000: 186)

Internet Motive Items Factors "I use the Internet . . ."	Internet Motive				
	1	2	3	4	5
<b>Factor 1: Interpersonal Utility</b>					
● To help others	.80	.19	-.06	.02	-.07
● To participate in discussions	.80	.15	-.07	.00	.03
● To show others encouragement	.75	.15	-.11	.18	-.15
● To belong to a group	.75	.23	-.17	.08	-.12
● Enjoy answering questions	.73	.10	.08	.22	.13
● To express myself freely	.72	.18	.09	.16	.16
● To give my input	.71	.19	.08	.06	-.01
● To get more points of view	.70	.07	.27	-.07	.08
● To tell others what to do	.69	.32	-.19	-.00	-.35
● I wonder what other people said	.68	.19	-.04	.10	.10
● To meet new people	.65	.32	-.22	-.07	.14
● I want someone to do something for me	.63	.34	-.15	-.03	-.40
<b>Factor 2: Pass Time</b>					
● Passes time when bored	.22	.75	.17	.08	.23
● When I have nothing better to do	.23	.74	.10	.11	.15
● To occupy my time	.37	.69	.09	.05	.19
<b>Factor 3: Information Seeking</b>					
● New way to do research	-.16	-.03	.77	.05	.19
● It is easier	-.12	-.14	.74	.12	.24
● To get information for free	-.27	.03	.73	.18	.09
● To look for information	-.22	-.18	.69	.02	.21
● To see what is out there	.07	.24	.68	.02	.22
<b>Factor 4: Convenience</b>					
● To communicate with friends, family	.00	.01	.06	.81	.23
● It is cheaper	-.01	.09	.12	.77	.25
● Easier to e-mail than tell people	.14	.29	.05	.66	-.13
● People don't have to be there to receive e-mail	.05	-.03	.15	.62	.25
<b>Factor 5: Entertainment</b>					
● It is entertaining	-.01	.20	.31	.21	.74
● I just like to use it	.09	.25	.25	.28	.69
● It is enjoyable	.02	.09	.21	.32	.68

Note. Factor 1 (Interpersonal Utility) had an eigenvalue of 8.14, Factor 2 (Pass Time) 3.38, Factor 3 (Information Seeking) 3.73, Factor 4 (Convenience) 2.79, and Factor 5 (Entertainment) 1.91.



Note that these are for Internet use in general and do not include specialized niches, such as online gaming, e-commerce, or streaming. As new communication methods rapidly emerge, the range of possible subjects for U&G research also increases. This adaptability is particularly relevant in the current age as computer-facilitated communication methods touch every aspect of daily life. (Papacharissi & Rubin 2000: 28) The Internet caters to any level of use while simultaneously playing host to countless subcultures, niches, and special interest groups, which are increasing all the time. It is perhaps more productive, instead, to look at the Internet as a collection of relatively disparate communities, and note the behavior within. The scope of this study is not to try and identify every possible gratification for Internet use, but to examine the primary motivators for one popular but highly specialized communication node, and to interpret the outcomes of these motivations.

### 2.3 Theoretical Framework of a U&G study

Zizi Papacharissi provides a standard framework of analysis for a modern U&G study. Despite the myriad of possible contexts and interests, U&G studies generally share an analytical base that focuses on motives, social and psychological antecedents, as well as cognitive, attitudinal, or behavioral outcomes. An archetypical U&G study, then, would either select one specific medium to explore or compare uses and gratifications across different media. In doing so, researchers examine *motives*, relevant *social and psychological antecedents*, and *consequences* or *effects* tied to the media use in question. (Papacharissi 2008: 139)

*Motives* are “general dispositions that influence individuals’ actions taken for the fulfillment of a need or want and behavior” (Papacharissi 2008: 139). Most U&G studies investigate motives as a way of understanding media consumption. Research has been undertaken in investigating motives from a wide range of sources, such as watching soap operas, listening to talk radio, using a VCR, and even online fortune telling. U&G research has shown that individuals frequently employ media to fulfill both interpersonal and mediated needs, so both interpersonal and mediated communication motives are accounted for in media consumption studies. General interpersonal motives for media use can be affection, inclusion, and control. Mediated motives

can be pleasure, relaxation, and escape. Most contemporary U&G studies identify a combination of interpersonal and media motives to explore the unique qualities of each medium. (ibid. 140)

*Social and psychological antecedents* are typically mediating concepts that influence the selection of media content, amount, and motivation of medium use, as well as possible outcomes of the media experience. Antecedents are preceding variables that influence media-related decisions, attitudes, and behaviors. They can be a number of factors, such as age, mental and physical health, levels of interpersonal interaction, social activity, and economic security. They can also include personal factors, such as loneliness, anxiety, creativity, and sensation seeking. (Papacharissi 2008. 139-141)

*Consequences or effects* of media use, as defined in U&G theory, focus on the core concept of audience activity. This can manifest itself as media orientation, media dependency, and gratifications sought vs. gratifications obtained. Media orientation measures motives for use and can include ritual (diversionary) or instrumental (utilitarian) use of media. Media dependency is to the tendency to rely heavily on a chosen communicative medium for needs or wants. Gratifications sought (GS) vs. gratifications obtained (GO) is the process in which initial expectations about the outcome of media exposure (GS) are modified through gratifications actually gleaned from media (GO), which form a feedback loop with gratifications sought in future media use. Gratifications sought are not in themselves good predictors of media behavior, but they have explanatory value when compared to gratifications obtained. (LaRose, Mastro, & Eastin 2013: 396; Papacharissi 2008: 141)

Thus, with the advent of new media technologies and specialized communication niches, it becomes necessary to tailor the theory to the medium. A U&G study about blogging, for example, would seek to understand how blogs are used, what factors affect that use, and what the consequences of that use are. The study would then attempt to identify motives for blogging, specify social and psychological antecedents that influence these motives, and understand how these motives and antecedents together are linked to their patterns of use and other behaviors, attitudes, or thoughts. Because online media can fulfill many different communicative needs of expression, inclusion, and social interaction as well as mediated needs such as surveillance and

information gathering, entertainment, or habit, a number of motives should be used to understand what needs blogging seeks to address. Furthermore, the unique aspects of blogging that set it apart from other media and drive its adoption would be explored. For example, curiosity or the desire to explore a new technological medium could be one possible motivator. Similarly, a desire to imitate peers with similar interests or take part in a popular fad could be another. Finally, blogs allow for a level of introspection and self-focus that distinguish them unique from other media and close to diaries – the need to make private thoughts publically available could be further investigated. Having compiled a list of interpersonal, mediated, and blog specific motives, the researcher could then consider possible social and psychological characteristics that lead to interest in blogging. For instance, prior studies have linked the convenience and anonymity of online interaction to uses of the Internet as an alternative for people who do not find in-person interaction rewarding or palatable. Similarly, lack of mobility, or lack of other means for interpersonal communication has lead to heavier access of online communication channels as possible alternatives. In this sense, blogging could provide a functional alternative for individuals who do not feel comfortable interacting in person, and so on. (Bondad-Brown, et.al 2012: 473; Papacharissi 2008: 145)

With blogs, researchers have an additional invaluable research resource at hand that can be used to inform their study: the content of the blog itself. Through textual or content analysis, blog content can be coded to understand 1) how the blogger puts the medium to use, in terms of post frequency and content categories, 2) strategies for communication and self-presentation the blogger adopts, and how they relate to motives and personal dispositions and 3) how well needs are met by the medium. (Papacharissi 2008: 146)

## 2.4 U&G in Games

The advent of player-centric video games called for increased attention and a reexamination of the idea of an active audience. Here, a video game refers to a piece of digital media which requires user participation to function. (Smith, Obrist & Wright 2013: 131) In *The Active Audience, Again: Player-centric Game Studies and the Problem of Binarism*, Behrenshausen

highlighted the preference (and necessity) of player-centered approaches when it comes to understanding the social, cultural, political, and economic implications of video games. In contrast to earlier approaches, which were characterized by more formalist or structural systems, Behrenshausen notes the return of the “active audience” concept’s applications, wherein video games are not static entities, but dynamic and living communities, especially in the case of multiplayer games. (Behrenshausen 2013)

Like earlier studies of the active audience, Behrenshausen did not think of a gamer as a passive *consumer* of media. He goes one step further by conceptualizing the player as *producer* – for example, of social or economic capital within the game and its community. Gaming is a contextual, dynamic activity, which must be engaged with for meaning to be made. As “new media”, “games do not *afford* or *invite* participation; [they] require it in order to function completely.” (Behrenshausen 2013: 873) By the model of treating the player’s actions and experience as objects of inquiry, game communities can be imagined not as hermetically sealed virtual worlds, but as malleable cultural artifacts. Behrenshausen notes that player activity does not merely exist strictly in the confines of the game software itself, but that they might generate ingame “maps”, player avatar “skins”, prepare guides or “walkthroughs” to help others succeed ingame, construct fan websites, produce game modifications, form guilds, develop signature “playstyles”, and generally participate in the gaming community inside, around, in conjunction to, against, or alongside the video game itself. (ibid. 875) A “game outside of the game” – also known as a *metagame* or *meta* for short – exists in every e-sports community, and this is a necessary element to include when researching the topic. Indeed, it is one of the basic building blocks of e-sports, and gaming culture in general. Thus any U&G based study of e-sports or gaming must take this community into account. It will be necessary to continually reexamine and redefine the terms and tools used to examine new media.

## 2.5 U&G and Twitch Chat

Because it is beyond the scope of this study to interview or question every individual member of a crowd taking part in spontaneous behavior, and because individuals' behavior changes greatly depending on their surroundings, this study avoided attempts at identifying possible psychological or social antecedents which influence behavior beyond what could be gleaned from the chat itself. Instead, this study looks at such behavior in its own context; where it manifests, how it appears, and what forms it takes, and what it means to others in the group. To do this, the structure of Twitch streams and chat channels was mapped, and comments were examined to discover how users manipulate the communicative medium to suit their uses and gratifications.

### 3 MODELS OF COLLECTIVE BEHAVIOR

In addition to U&G, this study also heavily draws from previous work on the sociological phenomenon known as collective behavior. In this case, collective behavior is the term used when referring to sets of behavior in which large numbers of people engage, generally in a spontaneous or socially unusual manner (Granovetter 1978: 1420, McPhail 2006: 433, Blumer 2010: 68, Levy 1989: 69, Huffaker 2010: 594). Despite their age, the well explored models of Contagion, Convergence, Emergent Norm, Value-Added theory all carry weight in the examination of Twitch behaviors.

In *A Study of Sports Crowd Behavior: The Case of the Great Pumpkin Incident*, Linda Levy describes the case of an outbreak of collective behavior at an American football game on October 17, 1988. The crowd, initially excited and cheerful at the prospect of watching their home team the New York Jets, becomes more and more disgruntled as the game goes on, owing to their teams' poor performance. As the lead by the opposing Buffalo Bills becomes insurmountable, the crowd's attentions turn instead on a giant inflatable pumpkin which is filled with air and tossed into the crowd. Following pre-established norms for such occurrences at sporting events, the crowd endeavors to keep it in air for as long as possible, collectivizing their dismay and anger when it is taken away from them by stadium personnel. This reaction coalesces into a chant, whereupon the pumpkin is demanded to be returned to them. Lasting a few more minutes before being deflated completely, the crowd descends into chaos, whereupon the violent and destructive behavior takes hold, and seemingly becomes the norm amongst the audience. Reference (I would divide the paragraph here)

Levy's insights serve as a useful model in recognizing and understanding the chaotic environment of Twitch chat. She discusses the four prevalent theories of Collective Behavior in her analysis, and identifies distinct components in her analysis of the incident, each playing a part in that evening's events. (Levy 1989) They are Contagion Theory, Convergence Theory, Emergent-Norm Theory, and Value-Added Theory. These components are also applicable to Twitch chat and can be examined to determine their role in the community culture.

The following models were originally intended to interpret and explain the behavior of real-life crowds. As preexisting models developed for collective behavior, they can also be applied to Twitch chat due to its crowd-like composition.

### 3.1 Contagion Theory

Contagion Theory was first postulated by the scholar Gustave Le Bon in the late 19<sup>th</sup> century (Barkan 2012; 873). Le Bon was primarily concerned with understanding social unrest in the form of mob violence, which was a common occurrence in his time and a disturbing phenomenon to the intellectual class to which he belonged. They viewed such violence as irrational behavior, and thought that those taking part were being unwittingly influenced by strong emotions and the influence of others in the mobs, which would spread like a real disease. (Barkan 2012: 873)

Contagion Theory is a reflection of these beliefs. According to the theory, individuals act rationally on their own, but in a crowd they become subsumed by an almost hypnotic influence, turning emotional and irrational. They can no longer keep unconscious instincts in check and become violent and even savage. During times of social upheaval, people may become involved in exciting, spontaneous events and subsequently swept up in the action of the crowd and finally in social contagion as their frenzy increases. People in crowds become attuned to each another, experiencing rapport which results in the weakening of social resistances and a loss of control over individual actions. (Levy 1989: 71) Contagion Theory states that collective behavior is itself intrinsically irrational and is a result of the contagious influence of the crowds in which individuals gather (Barkan 2012: 874).

### 3.2 Convergence Theory

Contagion theory was prevalent for much of the 20<sup>th</sup> century; however, scholars came to think that collective behavior was much more rational than initially suggested and that individuals

exerted more autonomy from crowd influences than first believed. Convergence theory came about as a result of new understandings about collective behavior. According to this theory, crowds do not intrinsically cause individuals to act in impulsive or violent ways. Instead, crowd behavior is a reflection of the attitudes and predispositions of the individuals belonging to the crowd. Once grouped together, the behavior of the crowd is the sum of their actions and attitudes. In short, instead of the crowd affecting individuals, individuals affect the crowd. Convergence theory is based on the thought that individuals with certain predispositions have a tendency to form groups with similar-minded people, converging in the same place. The crowd is the result of these collected thoughts and desired activities. (Barkan 2012: 875, Levy 1989: 72)

Convergence theory, like Contagion theory, accepts that people in crowds may take part in behavior they would not engage in normally, but it also states that a crowd's actions are largely a reflection of the individuals within. A mob or gathering of people who commit a hate crime such as gay bashing can be seen as an application of Convergence theory. The grouping consists of people who hate homosexuals, and the group violence they commit is a reflection of these beliefs. (Barkan 2012: 876)

### 3.3 Emergent Norm Theory

During the middle of the 20<sup>th</sup> century, it was theorized that instead of being normless, individuals in crowds would follow new norms as opposed to previously established ones. It was the mood and atmosphere of the immediate situation which caused these new norms to emerge that were then transferred to others in the crowd through social exchange. When a potentially exciting or arousing circumstance arises, individuals are at a loss for the proper course of behavior to follow; therefore, they look at their surroundings see what others do and modify their actions accordingly. As they adjust and change their potential behavior and mindsets, new norms dictating their actions emerge, whereupon this new protocol proceeds to guide subsequent behavior. In this way, individuals communicate the communal behavioral consensus, pressuring others around them to fall in line with the new standards. (Levy 1989: 71, Barkan 2012: 876)



Emergent Norm theory offers a middle ground between Contagion and Convergence theory. To clarify, Emergent Norm theory views collective behavior as more rational than Contagion theory; however, it also views collective behavior as less predictable than Convergence theory, assuming that people do not necessarily share convictions and motives before forming crowds. (Barkan 2012: 876)

### 3.4 Value-Added Theory

Recognizing that each of these theories addressed but certain elements of a whole, Value-Added theory was developed, which broke the anatomy of a crowd into several composite parts – namely social conduciveness, structural strain, generalized beliefs, precipitating factors, and lack of social control. The first stage, *social conduciveness*, is where social conditions favor collective action. *Structural strain* refers to societal problems which cause anger and frustration in people, often occurring in succession. Without structural strain, people would never have cause. *Generalized belief* refers to beliefs which identify and ascribe characteristics to the source(s) of strain and then accordingly determines a reaction. *Precipitating factors* are factors which confirm and substantiate these beliefs as well as intensifying the previous factors. In other words, they are sudden events which ignite collective behavior. A video that is released to the public showing police beating a suspect unjustly which causes a riot would be considered a precipitating factor, for example. *Lack of social control* refers to the fact that collective behavior will more likely take place if potential participants do not expect punishment for their actions. It should be noted that all elements do not need to be in place for collective behavior to occur. (Barkan 2012: 877, Levy 1989: 71)

Levy noted that in live sporting events, collective and deviant behaviors can be attributed to the presence of what is known as a “carnival state,” in which sports events can be likened to carnivals, which produce unique, exciting circumstances for spectators. The increased amount of participants, combined with a spectacle on display, creates a “festival” atmosphere which is conducive to relaxed norms and spontaneous behaviors. Merrymaking, feasting, music, consumption of alcohol, and lowered inhibitions occur as a result. (Levy 1989: 73) The carnival

analogy signifies behavior transcending its normal limits, aligning with situations whereupon new norms might emerge, and thus carnival elements “become representative of two perspectives on crowd behavior.” (Levy 1989: 75)

### 3.5 Collective Behavior Theories & Twitch

Despite being an online medium, Twitch chat displays analogous properties when it reaches sufficient numbers. Contemporary studies have reinvestigated the strengths and weaknesses of the four theories while recognizing the utility that each one offers. Similarly, this study draws from elements of all four theories when investigating the behavior of Twitch chat. The suggestive, imitative aspects of Contagion Theory are helpful when understanding user responses. Convergence Theory is useful for understanding how users group together and experience rapport in chat. Emergent-Norm Theory aids in understanding the rapid shifts in behavior Twitch undergoes when certain conditions are met. Value-Added Theory allows for investigation into the causes and triggers of collective behavior in Twitch chat.

## 4 SOCIAL CHARACTERISTICS OF ONLINE COMMUNITIES

As an online community, it becomes necessary to identify and clarify a number of Internet phenomena which are observed to occur regularly in Twitch. And as a unique media format, it will be necessary to point out the dimensions of conventional Internet groupings and highlight where Twitch diverges from them.

### 4.1 Dimensions of Leadership and Social Influence

In David Huffaker's *Dimensions of Leadership & Social Influence in Online Communities*, several factors were noted to comprise the basic interactions which online social communities are based around. Several primary communication traits which shape social characteristics and linguistic patterns were found to form the essence of online social interaction (2010). Notably, Twitch differs from nearly all of them in significant ways.

The first trait of a conventional online community is leadership. Online communities typically have prominent leader figures that are established via rapport with the community. Such leaders are defined by their followers as well as their capacity to influence attitudes and behavior, including the ability to directly influence the efforts or behaviors of the whole group. In conventional communities, there is generally a positive relationship between participation and maintenance of social capital. (Huffaker 2010: 596) For example, significant amounts of participation on Facebook are linked to accruing social capital. In turn, norms are encouraged and enforced, and running contrary to such norms results in the loss of capital (Kobayashi 2010: 547).

The second is the value of eloquence. Poor or repetitive language use and general inarticulateness typically reduces the social capital of an individual in an online community and destroys their credibility. It is not enough that leader figures regularly engage with their audiences; their messages must be well-written in accordance to community guidelines as well. (Huffaker 2010: 598)

Finally, in a conventional online community, the affectations of positivity and negativity are heeded when conventional community members interact with one another, where “positive affect in messages reinforce a sense of community and encourages continued participation.” (Huffaker 2010: 598) For example, on the social media website Reddit, “good” comments are “upvoted” and given points, whereas “bad” comments are “downvoted” and have their point value subtracted. Facebook has the “Like” system. Twitter users can “retweet” each others’ thoughts, sharing the ones they prefer. This leads to a culture which encourages meeting the approval of others in order to attain positive reinforcement. (ibid. 599)

In general, a key distinction is the influence of social capital. In typical Internet hubs, users gain or lose prominence by meeting the approval of the community via the methods listed above, developing meaningful interpersonal bonds on a large scale (Huffaker 2010: 613). These characteristics will be necessary to highlight the differences between Twitch and conventional social media outlets.

#### 4.2 Behavioral Threshold and Conflict Talk in Online Communities

Collective behavior can be observed almost immediately in any given stream with sufficient popularity. Before that point, the chat moves too slowly, and social norms are still enforced. Because a chatter has virtually equal voice as anyone else, a participant’s comments are seen by all, no matter how briefly. Twitch’s popularity, high visibility, and anonymity create what is known as a behavioral threshold. That is, the precise point in which a member of a group decides to take part in collective behavior. In *Threshold Models of Collective Behavior*, a threshold is simply defined as “that point where the perceived benefits to an individual doing the thing in question [...] exceeds the costs” (Granovetter 1978: 1422).

On the Internet, crossing behavioral thresholds often manifests as “conflict talk”, i.e. speech involving discontent or disagreement. The presence of such talk in Twitch chat is typically an indicator that it has begun to act collectively. Conflict talk often appears in the form of “flames”,

which is insulting speech in online communication, as well as “trolling”, which is the practice of engaging in deceptive, destructive, or disruptive acts online with no instrumental purpose besides entertainment. (Buckels, et. al 2014: 97, Hagman 2012: 7).

Hagman notes that online environments provide opportunities for behavior which would typically be frowned upon in face-to-face social interaction. Conflict talk is so ubiquitous to Internet communities that it is considered one of the defining characteristics that separate face-to-face communication from computer mediated communication. (Hagman 2012: 7) These concepts will be useful in classifying Twitch chat’s behavior, where the crossing of behavioral thresholds is both common and expected.

### 4.3 Memes

Much of Twitch chat’s content is delivered in a format commonly known as a meme. First described by Richard Dawkins in his 1976 book *The Selfish Gene*, the term has changed significantly from its original definition and use. Long before the Internet was a part of daily life, the term *meme* meant any non-genetic behavior and cultural ideas that spread from person to person, from all language to songs to rules of a board game (Borzsei 2013: 3). Since then, the term has gained common use on the Internet to denote any content that is easily shared and spread through social media. The contagious and wide-ranging nature of a meme is often compared with that of a virus, and indeed, when something spreads online today, it is often referred to as “going viral”. Debate continues over the precise definition of the term in its modern incarnation, but the first “academically rigorous” meaning was given in Patrick Davison’s 2009 essay *The Language of Internet Memes*: “An Internet meme is a piece of culture, typically a joke, which gains influence through online transmission.” (Davison 2009: 122)

Though there are many popular websites dedicated to categorizing and defining Internet memes such as Know Your Meme, Encyclopedia Dramatica, and Urban Dictionary, their usefulness is limited to how the public perceives them (Borzsei 2013: 2). Davison’s definition breaks down

the anatomy of a meme into three components, allowing it to be analyzed from a sociological point of view. (Davison 2009: 122)

The first is the *manifestation* of a meme, which are its perceptible, external characteristics and phenomena. It is the tangible artifacts created by the meme, or its evidence of being. It indicates “any arrangement of physical particles in time and space that are the direct result of the reality of the meme.” (Davison 2009: 122) This is what people see when they encounter a meme in daily life. The second is the *behavior*, which any action taken by an individual in order to propagate the meme; that is, any action taken that creates the manifestation. For example, the act of photographing a cat and using photo manipulation software to add a humorous caption would be considered such. The third is the *ideal*, which is the concept or idea being conveyed. The ideal guides the behavior, which results in the manifestation. If the manifestation is a humorous picture of a cat, and the behavior is adding a caption, then the ideal is the idea that “cats are funny.” (Davison 2009: 122)

Knobel and Lankshear explore the idea of memes as a sort of “new literacy.” In this context, new means “newly recognized” as a form of literary practice. They define memes as “contagious patterns of cultural information” which are passed from person to person and directly generate and shape the mental predispositions and behavior within their social groups. Due to the possibilities of modern technology, ordinary people can constantly generate new ways to express ideas through digital means such as animation software, music and video editing programs, image manipulation, and social media. They can be implemented on an unprecedented scale and in ways scarcely imagined prior to the advent of such technologies. (Knobel and Lankshear 2007: 199-203)

Knobel and Lankshear defined 5 criteria for what constitutes a “meme.” First, that it is “contagious, replicable, and has longevity”, meaning that it is “discussed or passed on for longer than a period of days”. (Knobel & Lankshear 2005: 3) Second, that it “encodes a recognizable element of cultural information, where cultural information is defined as some kind of meaningful idea, pattern, or chunk of ‘stuff’” that defines or shapes some aspect of thought or behavior associated with the group in question (ibid. 3). Third, it is more or less wholly

transmitted via digital means (e.g. e-mail, websites, forums, chat rooms, and other social media). Fourth, it is passed outside the original place from which it first emerged (ibid. 3). Finally, it “can be considered ‘successful’ because it is strong or salient enough to capture online and offline broadcast media attention in the form of news reports, newspapers, televised broadcast, or talk shows; i.e. mainstream or widespread acknowledgement” (ibid. 3)

These criteria have remained fairly consistent since their proposal, and can still be applied to memes today. However, since then, countless Internet-based subcultures have arisen, allowing for specialization of memes, the most popular of which inevitably spread and become mainstream again. Memes can be as general or specialized as their users intend them to be. As a meme’s popularity grows, its use becomes adapted to a wider audience and therefore undergoes more permutations, to the point where the manifestation is unrecognizable from its predecessors. (Knobel & Lankshear 2007: 202) These distinctions are key in understanding the behavior of Twitch chat, wherein hundreds of messages may pass in the span of a minute, often entirely in the form of a meme.

#### 4.4 Emoticons

Twitch chat constantly employs use of emoticons, more commonly referred to as *emotes* by the Twitch community. In the context of computer-mediated communication, emoticons can be defined as a string of keyboard characters that can be seen as a face suggesting a particular emotion. Emoticons are a method to show emotion or act as surrogates for nonverbal communication. Often, they are employed to suggest a joking, playful, or sarcastic tone to messages which would often be taken at face value. (Jibril & Abdullah 2013: 201, Skovholt et. al 2014: 780)

Emoticons were essentially invented to enhance humor and help establish the correct connotations in text communication. Studies on the role of emoticons in textual contexts show that emoticons are capable of enhancing the effect of an unwritten message, emphasize an

implicit meaning in the creation and interpretation of an extant message, and to simplify meaning in text. (Jibril & Abdullah 2013: 202)

Jibril & Abdullah point out that “the human brain processes visual elements 60,000 times faster than written text, with 93% of human communication taking place non-verbally” (Jibril & Abdullah 2013: 203). Essentially, the brain decrypts images almost instantaneously, while language and writing are decoded in a linear, chronological fashion, making it the slower process (Jibril & Abdullah 2013: 20 203). This variability of speed and efficiency in conveying messages will play a role in examining their use in Twitch chat.

It should be noted that by definition, emoticons are memes; in fact, they are perhaps the oldest form of Internet meme. However, the use of emoticons as means of entertainment unto themselves has long since fallen out of popular use. (Borzsei 2013: 6) This study will examine how the format of Twitch chat facilitates the widespread use of emoticons by its userbase and reinvents a seemingly dead activity.



## 5 E-SPORTS

As a fledgling industry and topic of study, it is important to first reach an academic consensus on what e-sports and streaming are. The study draws on what has been established, with Cambrand et. al positing that e-sports can be defined as a form of sports where the primary aspects of the competition are carried out by electronic systems, wherein the input of players and teams as well as the output of the e-sports system are mediated by human-computer interfaces. It is not completely analogous to traditional sports, but instead a merging of media and communication networks. (Cambrand et. al 2014: 1-2).

### 5.1 Live Streaming

This theory is expanded upon by Nathan Edge to include Internet Protocol Television, or IPTV, which is an umbrella term that Twitch falls under. As a combination of multiple Internet technologies, social media, and user generated content, Twitch (and IPTV in general) provides a new media experience which is worthy of study. IPTV is the broadcasting of some type of activity or object of spectator interest to an audience via the Internet. (Edge 2013: 33-34) IPTV is colloquially understood as live streaming, or just streaming. Live streaming has existed in some form or another for over 20 years, but it was not until fairly recently that the format became accessible enough for most people to do at their leisure. As technology has improved, members of the live streaming community have become more focused in their interests, allowing for many specific interests to accumulate dedicated fan bases. A wildlife organization, for example, might stream video feed from a submersible, or an artist might walk an audience through their creative process. (Smith, Obrist & Wright 2013: 131)

The proliferation of IPTV has been instrumental in the rise of e-sports. Competitive gaming has existed since the 1980's, but was limited to arcades and smaller audiences. With the advent of IPTV, an inherently digital medium was suddenly made widely available to the public. Smith, Obrist, and Wright categorized the primary types of live streams which dominate most of the gaming community: competitive (e-sports), casual, speedrunning (completing the game as

quickly as possible), and Let's Play (constructing a narrative by playing through a game). (Smith, Obrist and Wright 2013) This study will primarily focus on the first two, as *Dota 2* facilitates such a format.

The game streaming community is not unified in content or practice, but in technology. Not all live streamers stream the same game, for the same reasons, or for the same audience. A *StarCraft II* player may be fulfilling a desire to compete and win against others, and a person watching Twitch may be watching the stream out of a desire to see such a competition play out without any direct involvement in the game itself. (Cheung & Huang 2011: 768) A participant in the chat may be fulfilling the need to socialize with other fans, vent about poor play, or discuss strategy in the game. This study will build from these concepts, as the Twitch viewer is a unique and fairly new combination of Internet commentator, gamer, and e-sports spectator all in one.

## 5.2 Spectator Types

Cheung & Huang explore the demographics of IPTV further by identifying a wide range of "spectator types" in e-sports viewership which are present within the streaming community (Cheung & Huang 2011: 763). They have identified nine spectator archetypes in their research on viewership within the context of the competitive e-sports game *StarCraft II*. (ibid. 767) In accordance to U&G theory, these spectators have a large and diverse amount of motivators for watching. Due to their closely intertwined natures, these archetypes are useful when it comes to examining e-sports audiences and interpreting their relationship to Twitch. These spectators are not mutually exclusive; many, if not most viewers will be to some degree a mix of the personas, and can change into others over time.

The Bystander – The Bystander is the least engaged of the spectators and unfamiliar with the game they are watching. Cheung & Huang identify two different groups of bystanders. The first is the *uninformed bystander*, who lacks knowledge or awareness of what is going on in-game. A spouse of another spectator who walks into the room where a game is being viewed for example, or a news anchor doing a report on e-sports would be examples of uninformed bystanders. The

second type of bystander is the *uninvested bystander*. This is someone who has some game knowledge and may be a player themselves, but is not familiar with the e-sports or competitive side of things. They may be unaware of teams, players, advanced (“metagame”) techniques, and may be almost as lost as the uninformed bystander when viewing a fast-paced tournament game. Players who participate in the game to a lessened degree are often referred to as “casuals”, short for casual player, by their more experienced and/or dedicated peers, often derisively. (Cheung & Huang: 769)

The Curious – A spectator who focuses his or her attention on knowledge gaps in the game. Their experience remains engrossing as long as things remain incomprehensible, and new things can be discovered by spectating. (Cheung & Huang: 769) A new player, or an experienced player from a similar game may have a vested interest in learning more about the game and may often consult the chat for help.

The Inspired – One who desires to play the game themselves after spectating. Sometimes it is to try the same strategies or techniques they just witnessed, or perhaps simply to share in the enthusiasm (“hype”) generated from the experience. For the Inspired, the act of watching is a precursor to getting to play themselves. The purpose is to evoke the same thrill that they experienced as a spectator. (Cheung & Huang: 769) In chat, they may mention a desire to play a certain character after a professional player has done well with it.

The Pupil - Resembles the Curious spectator in that they both seek a deeper knowledge of the game and of its players. However, what defines the Pupil is the emphasis on putting newly acquired knowledge to their own practice. In contrast to the curious, the pupil’s question is not simply “How did he do that?”, but also “How does this information change how I play?” As a result, the pupil may directly ask a streamer for advice, often paying money to do so, or seek out a recordings of a skilled player’s performance to examine their technique. (Cheung & Huang: 769)

The Unsatisfied - Uses the act of spectating as a weaker substitute to an activity they would prefer, i.e. actually playing the game. A Curious spectator may transition to an Unsatisfied

spectator, as their game knowledge and desire to try new techniques grows. Or a person at work may have a desire to play the game, but uses a live stream to sate their desire until they can play the game themselves. (Cheung & Huang: 769)

The Entertained - These are spectators who derive satisfaction from the simple act of watching over playing. In a video game, a player is forced to participate if he or she wishes to proceed. Unpleasant aspects of gameplay are oftentimes unavoidable. For example, in-game conflict talk, wait and load times, being defeated, difficult enemies, rude teammates, and so forth are often simply taken as part of the game experience. Because games carry a risk of losing when played, streams allow viewers a surrogate experience of playing a game without the unpleasantness or inconvenience of loss. As their name suggests, the Entertained watches for entertainment, as one would watch a television show, movie, or sports event, but with the added bonus of selective participation. (Cheung & Huang: 169) Many spectators on Twitch and e-sports in general fall under this category.

The Commentator - The Commentator is a spectator type which is capable of taking on an official or semi-official role in regards to the relationship between audience and viewer. Colloquially known as “casters”, commentators narrate the action in a game as it unfolds, not unlike the commentator in a sports event. Because audiences are constantly exposed to the caster’s voice, the commentator shapes the viewing experience of the other spectators, and has a unique relationship to the audience. He is both a spectator and a performer, and a poor narration (“cast”) can easily incite animosity or rage within the rest of the audience. Casters are generally divided into two types. The first is a “shoutcaster”, or someone who is skilled at rousing excitement (“hype”) and drama in their cast. The second is more of an analyst role, which provides technical and strategic information about the game, its mechanics, and insight about high-level play. (Cheung & Huang: 769)

The Assistant - Spectators often have the ability to exert influence over a game in-progress. One example of this is to act as an advisor to the player, providing an extra pair of eyes as well as giving advice. This is possible not only in person, but through the game as well, due to *Dota 2*’s coaching service, in which a third party can view the game through a team’s eyes and provide

advice while the game is being played. The Spectator takes on a new role in Twitch, wherein the massed, spammed opinions of the crowd can have a visible effect on players and casters. (Cheung & Huang: 169)

The Crowd - Cheung & Huang identify the crowd itself as a spectator type. Again, similar to a traditional sporting event, there is a tangible communal aspect to spectating an e-sports event. The Crowd feeds off of and encourages itself, and for many, the community aspect is just a big part of a draw as the game itself. (Cheung & Huang: 169) With the advent of Twitch and its chat feature, the “Crowd culture” has been allowed to flourish and gain a life of its own. Crowd behavior can be observed in any sufficiently busy stream.

## 6 TWITCH

Easily the most popular game streaming site on the Internet, Twitch.tv is alive with user activity at all hours of the day. As Twitch serves as a unique hub for three subcultures, namely gaming, e-sports, and streaming, it absorbs the argot and communicative quirks of all three communities. Thus to understand anything an observer must be able to effectively understand three “languages” – that of the game, that of the professional scene, and that of the chat. The result is something which can be bewildering to the uninitiated; a first timer to a Twitch stream might see massive walls of text and understand none of it. This richness and depth of culture within a single space creates a ripe opportunity for research in the realm of IPTV.

### 6.1 Characteristics

Upon accessing Twitch.tv, the user is presented with the option of several channels to watch, generally based on a single game. These are typically ranked by popularity in descending order. At the forefront of the site is a featured game or tournament, typically a notable stream with many viewers. Upon selecting a channel, a list of all related streams to that game is then displayed, again in descending order by popularity.

Due to its popularity and format, Twitch acts as a television surrogate, with many viewers abandoning traditional television for the service completely (Edge 2013: 764). Like television, viewers can select which content they want to see, and it can also be turned on and left to play in the background. On the other hand, it can be played from a laptop, tablet, or other mobile device, and because of the presence of a chat function, it allows a degree of social participation not found in regular TV.

While there are many competitors and imitators attempting to compete with the Twitch such as Youtube, none even begin to approach its popularity, and when users are forced to watch a broadcast on another platform, they often complain because it lacks Twitch’s trademark features – namely the chat and all the communicative opportunities it brings (Pires & Simon 2015: 5). As

a result of its popularity, Twitch culture has emerged as the face of game streaming and now occupies a significant presence on the Internet, leading to the emergence of Twitch culture.

Twitch is unique in that it allows users to directly interact with famous figures while they work – in this case, professional streamers. When a popular figure in the e-sports community is online, the forum in which they hosts their stream and chat together is known as a channel. Viewers can “follow” channels and even make monetary donations to streamers in the form of subscriptions and messages. A popular channel becomes a sort of “micro-community” while it is online, in which even further specialized in-jokes, references, and behaviors emerge. The streamer is free to moderate and adjust their channel according to their wishes, and it is in this way they gain popularity or notoriety based on their interactions with chat. A streamer might be known for their insightful commentary on gameplay strategies, and attract viewers motivated by increasing their game knowledge. Other players might be known for their highly skillful play, brash personality, sense of humor, or any combination of attributes. Each channel is unique, and thus each channel fulfills different gratifications depending on what the user wants at that moment; not unlike the choice of channels on cable television.

## 6.2 *Dota 2*

At any given time, Twitch is host to thousands of active streams in hundreds of different games. There are over 1.5 million unique streamers on Twitch (Twitch 2014). Obviously it would be beyond the scope of this study to catalogue and examine every single stream, or every game community. To narrow the focus, a single game was selected, *Dota 2*.

*Dota 2* is the sequel to the original *DOTA*, which stands for *Defense of the Ancients*. The game originated as a modification, or “mod,” within the preexisting game of *Warcraft 3*, an enormously popular franchise in its own right. The original *DOTA*’s depth of gameplay and steep learning curve has ensured its lasting popularity with gamers, and the game’s player base has long since eclipsed its progenitor’s. A testament to the *DOTA* series’ enduring popularity is its core gameplay, which has remained relatively unchanged in nearly a decade; an extremely long

time in gaming terms. This consistency makes it useful to a researcher, since data from several years ago can maintain its relevance, and though the game is constantly being updated and tweaked, there are unlikely to be dramatic changes to the fundamental gameplay elements in the foreseeable future. (Valve 2011)

*Dota 2* is a video game in the multiplayer online battle arena genre, or MOBA for short. It is played in singular distinct matches, like chess, which involve two teams of five players. Each team begins in their own respective strongholds situated at opposite ends of the playing field. The object of the game is to destroy the opponent's primary building, known as an "Ancient", which is located at the heart of a team's heavily defended stronghold, or "base." Each individual player controls a powerful "Hero" character which is selected prior to the beginning of each match. Each Hero has a unique appearance and set of abilities. During the game, the players focus on three things:

- 1) Acquiring gold, which allows for the purchase of items which makes their Hero stronger;
- 2) Acquiring experience, which allows Heroes to "level up" and improve their abilities;
- 3) Fighting and overcoming the Heroes of the other team, which yield gold and experience.

Succeeding in all of these makes destroying the enemy Ancient easier, and is key to victory. (Valve 2011)

Since the original *DOTA* was a free addition to an easily accessible game which could be played even on older computers, it has become very popular worldwide, especially in lower income countries which may not necessarily have access to high performance PCs. The game is popular in a wide variety of countries and cultures, with teams from the Americas, Europe, Asia, and the South Pacific all gaining regular attention. (Gershgorn 2015)

*Dota 2* was selected over other potential titles for several reasons. It is a highly popular game and well-established as an e-sport. It boasts over 9 million unique players worldwide, and is popular in nearly every country that has an e-sports presence. The 2015 edition of The International, *Dota 2*'s largest tournament, had the largest prize pool of any video game tournament in history,

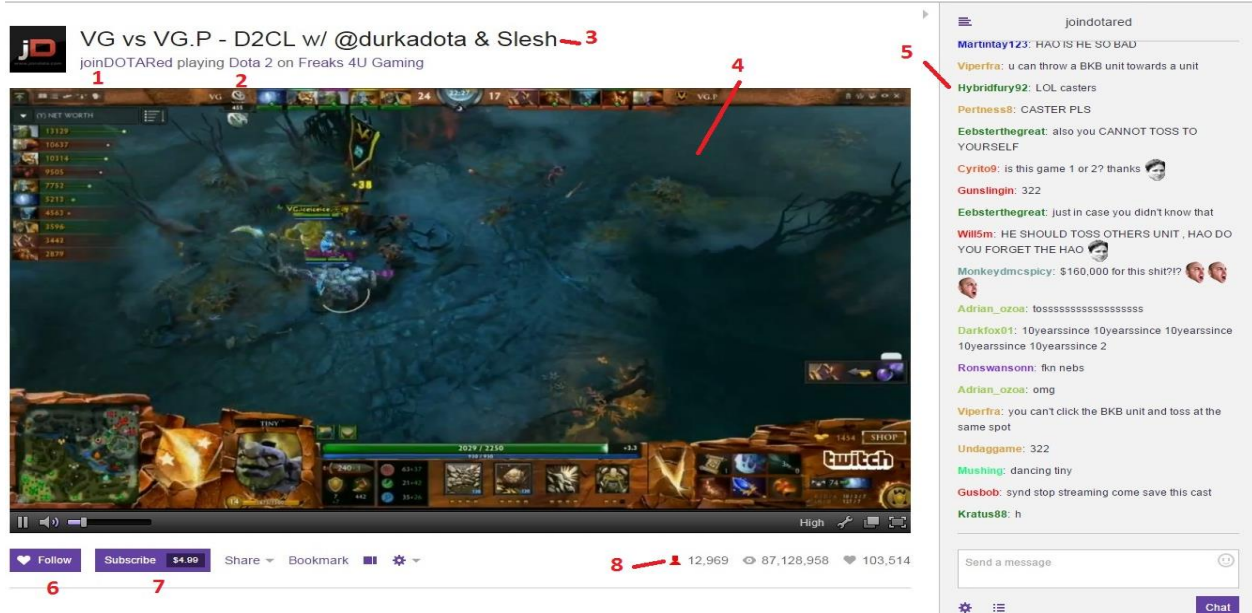


at \$18 million USD (Gershgorn 2015). Additionally, it has an active and well-established community of players dedicated to playing, discussing, and creating content related to the game.

Another reason for selection was due to the essential role that communication plays in the game. Matches are played in teams of 5, and victory is often reliant on how well teammates coordinate with one another. Because of the sheer amount of information that needs to be conveyed in a short amount of time, a unique and specified language has developed to denote in-game terms, and understanding this language becomes integral to playing online at any skill level. A single typed blurb such as “push mid am no bb” may appear unintelligible to a non-player; yet such a phrase transmits an enormous amount of information, and players are expected to understand and interpret such phrases constantly, often in the heat of battle with the opposing team. Because fully understanding the action in a *Dota 2* stream requires knowledge of such talk, this language carries over into Twitch chat, where the various abbreviations and terminology actually help foster near-instant communication in Twitch’s rapid pace. Any given *Dota 2* stream will display constant use of in-game language.

### 6.3 Twitch Chat

This study focuses on what is known as Twitch chat, which is a socialization tool found in nearly all Twitch streams. The chat function allows users to watch streams and interact with other viewers at the same time. An example of a Twitch stream can be seen in figure 1. At the top of the stream, the host name (1), game name (2), and stream title (3) are all prominently displayed. Next to the video portion of the stream (4) is the sidebar where messages appear, allowing the user to watch the stream and chat at the same time, as shown in Figure 1. Comments typed into the chat appear in realtime (5). When the sidebar fills up, it scrolls down to accommodate for new messages, identical to a conventional chat room. The chat can be disabled by the stream host, but this is all but unheard of – the vast majority of streams have the chat function enabled, and many streamers rely on chat interactions with their viewers for popularity and sponsorship. Viewers can track their favorite streams with the “follow” function (6), support with them a subscription (7), and see how many others are watching at the given moment (8).



**Figure 1** – A typical Twitch stream and chat

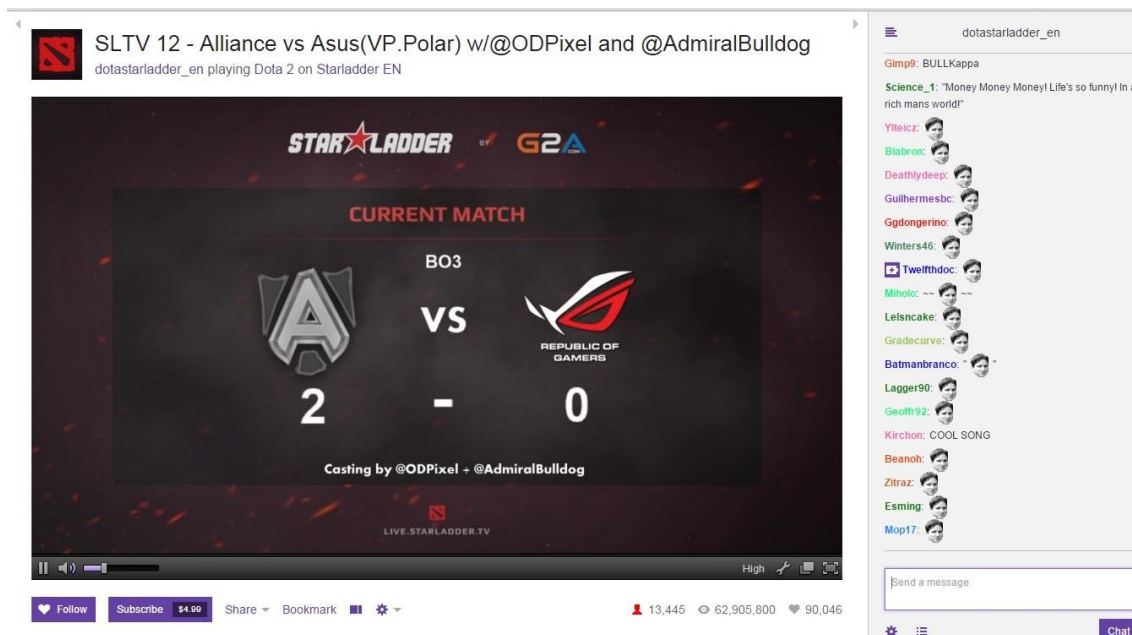
Users have many potential uses for the chat; they can cheer on their favorite team, boo their rival team, ask questions about game scheduling or gameplay mechanics, ask the streamer or caster (game host) a direct question, or simply try to incite the rest of the chat into a specific type of behavior, similar to a chant at real life gathering.

Anyone who is watching the stream and has the chat feature on will see exactly what the streamer sees. The chat is open for anyone with a Twitch account to participate in, and channels typically have minimalist moderation, allowing many types of comments through. In some streams, the chat is actually embedded into the video portion itself, and any comments typed into the chat bar show up in the actual stream, making them visible to all viewers. Anyone can interact with their favorite streamer, and anyone can make commentary on an ongoing game. Though some streams do have a subscriber-only chat where only subscribers are allowed to make comments, this is relatively uncommon, and almost always is a temporary state. (Hamilton, et al. 2014: 1323)

At any given time, a snippet of the chat may contain copy-and-pasted text macros, Internet memes, discussion on player decisions, complaints about game fairness (“balance”), questions about game schedules, arguments, or insults, all bolstered by the site’s set of unique emoticons

which have taken on a specific meaning in their use. Chatters of various linguistic backgrounds can be mutually understood by using in-chat and in-game slang. The relative anonymity, open nature, and speed of the chat results in an “anything goes” policy. Racist, sexist, homophobic, and any number of offensive, inflammatory, and derogatory comments occur with great frequency, as is the norm in most open discussion networks on the Internet (Hagman 2010: 6). In general, the tone of Twitch chat is one of constant mischief and playfulness, especially as a stream’s population increases.

If a stream reaches a sufficient amount of viewers, the chat will often engage in collective behavior, as shown in Figure 2. Similar to the collective behavior of real-life crowds, it can emerge spontaneously, without warning, and disregard social norms (Levy 1989: 73). Hundreds or even thousands of people will fixate on one thing momentarily, and begin repeatedly entering variations of the same comment into chat, creating an effect which is not unlike a chant at a sporting event. This behavior is known as “spamming,” and occurs frequently when chat is roused.



**Figure 2** – The chat collectively spamming a Twitch emote

## 7 STRUCTURE OF TWITCH CHAT

A stream generally begins whenever a streamer decides to begin broadcasting.. When a stream starts, Twitch lists it under its list of active streams, ranked by viewer count. Players who “follow” the stream with their accounts are notified that the stream has started. Thus a stream that is only moments old might have thousands of viewers already. Also, streams are semi-permanent, in that they are always available to congregate in even if there is no active broadcast. They do not ever “disappear”, so to speak, unless the host decides to stop streaming permanently; they merely become dormant until the streamer decides to broadcast again. Barring technical problems, the viewers cannot typically be dispersed unless the streamer themselves decides to stop. Due to these characteristics, a stream’s beginning and end are fairly irrelevant; as long as a popular stream is active, there will be some viewers. It is the amount of viewers which is far more indicative of a stream’s activity.

Because a crowd on Twitch can never be forced to disperse like a real crowd would, it is extremely easy for Twitch to gather and enter collective behavior states. Therefore, a new model is needed for examining activity on a stream channel. In order to categorize and interpret Twitch chat’s behavior, this study divided chat activity into 3 distinct “phases” – chat, crowd, and collective. These phases are generally divided by activity, not time. Though the exact number of viewers required to cause a phase shift can vary greatly, the larger a stream grows, the more likely it is that the participants will engage in collective behavior.

### 7.1 The Chat Phase

The chat phase, typically found in lower populated or new streams, is when Twitch chat activity most closely resembles that of a classical chat room. General conversations, commentary, and online social norms apply here. Individual comments have higher visibility and violating online social mores invites punishment such as bans or mutes. Collective behavior does not have sufficient momentum or numbers to gain a foothold. The chats found in smaller streams (less than 1,000 viewers) will usually remain in this phase. Because the majority of Twitch streams

are quite small, they will often stay in this phase indefinitely. An example of a stream in chat phase can be seen in figure 3, where the streamer provides verbal commentary while the chat responds in text.



**Figure 3.** A stream in chat phase

Here, participants casually discuss subject matter as they would in a conventional chat room. In this case, the topic of living standards in different countries can be seen. Conflict talk is kept to a relative minimum. Collective behavior and other characteristic Twitch traits, such as spamming, have yet to emerge. The language used can be understood by someone unfamiliar with Twitch.

In figure 4, a streamer, Wagamama, is hosting a channel and answering questions asked directly over chat. Chatters can see Wagamama and hear him talking to them and giving a running commentary. This particular stream is in the process of acting as an impromptu question and answer session. A comment in this phase has the best chance of being recognized, acknowledged, or responded to on its own. Chatters ask questions of the stream host which can range from technical (“what is the interaction between magnus aghs and TA psiblades”) to requests (“CAN U PLAY OD PLEASE MAN PLEASE”) to personal (“Are you going to ESL One Frankfurt this year?”) which Wagamama answers or ignores at his discretion. The gratifications sought here are more in accordance with general Internet use, such as interpersonal utility and information seeking. Note that even though Wagamama is actually not in the middle of a match, chat participants are tuned in and engaged to the stream, as evidenced by their

questions. Even though this would be “downtime” or a lull in stream action (similar to a commercial break in television), viewers are still engaged and receiving gratifications from it.

The screenshot displays a Twitch stream interface. At the top, the stream title is "Mid only! 7500~ MMR" by "WagamamaTV playing Dota 2". The main content is a Dota 2 match overview for a ranked match. The match was won by "The Radiant" against "The Dire". The overview table lists player statistics:

Team	Player	Level	Hero	K	D	A	Items	Gold	XP	CS	PM
The Radiant	Waga	23	Necrophos	15	3	11	[Icons]	7,974	312	12	636
	m.e.p	14	Mirana	1	5	11	[Icons]	1,430	35	2	240
	Calm Your Tits	10	Crystal Maiden	4	4	8	[Icons]	2,730	97	0	308
	Wishes need no armor	15	Silencer	0	0	9	[Icons]	2,544	74	2	252
	Gorge	23	Seem	8	5	10	[Icons]	3,307	374	16	622
The Dire	Poonghable	11	Dark Seer	0	9	6	[Icons]	561	167	1	117
	RuD	20	Invoker	3	7	5	[Icons]	314	263	5	499
	Electric	21	Spectre	1	3	4	[Icons]	2,849	316	19	477
	Kapran	14	Skywrath Mage	4	4	3	[Icons]	220	52	3	300
	discriminator4dota							853	74	7	246

The chat on the right shows various viewer interactions:

- Gstabus: @Wagamamatv what is the interaction between magnus aghs and TA psiblades?
- TheyCallMeTARD: @Wagamamatv CAN U PLAY OD PLEASE MAN PLEASE
- milkyguy: \$100.00
- Yamyamster: <message deleted>
- xarotcod: whats ur winrate ?
- Yamyamster has been timed out.
- 0trov: @wagamamatv Lycan could be buffed?
- xfinity3: Waga rate singsing ?
- arveecie: @Wagamamatv, Can you please go back analysing the game? Pleb.
- TaRaLX: MaffewFF, did you play in dirtmaul ?
- mike7is7bad: DOES STORM NEED A BUFF WAGA?
- marximumm: what item order did you go?
- BooGuhLoo: he knows exactly how long lol 9 months and how many days @Wagamamatv
- Chari\_srbija: as the temple requires,Waga
- titsorwedestroyjapan: luptime
- Yamyamster: nuuuuuu
- woofeliwow: Are you going to ESL one Frankfurt this year?

**Figure 4.** Streamer Wagamama answers questions from chat

Even in this relatively unremarkable state, Convergence theory has clear applications. Phrases such as “magnus aghs”, “TA psiblades”, “Lycan”, “buff”, “Storm” all have in-game meanings and are incomprehensible to those not familiar with *Dota 2*. Even the stream title, “Mid only! 7500~mmr” only makes sense to someone who plays the game. It is mutually understood by both host and chat participants that communication can utilize knowledge of *Dota 2* terminology without any problems being understood. It can be safe to suggest that if one is actively partaking in a *Dota 2* channel on Twitch, they have at least some interest in *Dota 2* or e-sports. Thus, chatters will always have *Dota 2* terminology and understanding as a common ground, and chat topics will naturally gravitate around *Dota 2* and related discussion. This remains true even if chat transitions to another phase.

Also note even though the stream has sufficient viewership to display collective behavior, in this situation chatters prioritize information seeking by asking questions over, say, spamming blocks of text. This suggests that chat will act in a manner which maximizes its gratifications achieved,



and will actually work in concert with other chatters to achieve this. After all, spam is only considered such if many people take part in it.

## 7.2 The Crowd Phase

When a stream reaches sufficient viewership, the crowd phase begins. The chat moves faster and becomes more difficult to follow, and comments begin to compete for visibility. Copied text and spammed memes begin to edge out more conventional statements and conversation. The revelry of Levy's "carnival state" carries over to Twitch populations, who at this point begin to resemble real-life crowds (Levy 1989: 73) Though members might have mixed interests and behavior, they are generally gathered by a common event – in this case, the stream.

This is the phase chat will most likely observe if one joins a popular channel. If something notable happens in a busy stream, it will inevitably have a mention in the chat. In this way, the chat acts as a sort of live commentary for the stream. A single occurrence can quickly become fixated on, whereupon variations of the same comment will be spammed in rapid succession, until the next notable occurrence takes over and the cycle begins anew. In a heavily populated stream, individual comments struggle for visibility; they are quickly lost in the stream when hundreds of other voices are "shouting" over them. Indeed, comments are often made seemingly without any sort of expectation of a serious response.

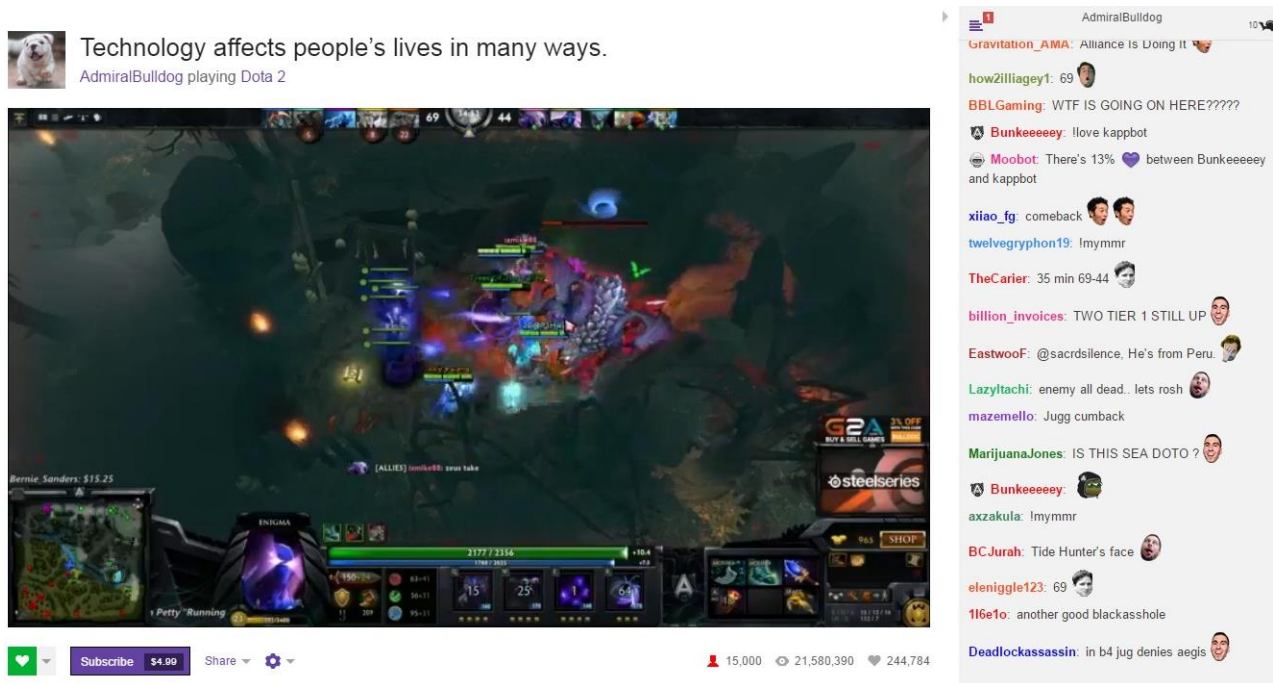
During these exchanges, individually-directed messages are rare, and few comments seem to even acknowledge if they have been insulted or addressed. Much like how opposing teams' fans at a sporting event might have different chants or readied epithets to hurl at their rivals, this exchange of hostilities seems to be part of the general revelry phase of chat, rather than actual offense. The pace and limited screen space of chat causes nuanced, overly complex, or difficult to understand messages to fall by the wayside. A message which can be communicated in a short period of time has a greater chance of "surviving" and possibly being replicated in chat. The easily copied and shareable nature of the messages reinforce this; the most visible messages in chat tend to transmit one or two ideas at most, and ideas are transmitted extremely quickly once a

user is familiar with the terminology. It is in this environment in which memes thrive, due to the instant package of shared knowledge and information they transmit. The proliferation of emoticon use also supports this, as users can attach seemingly arbitrary meanings to Twitch's plethora of unique, site-specific emotes. Once understood, the user can partake in the collective behavior as one amongst hundreds, if not thousands.

Entries in chat appear to become entertainment based, rather than discussion based. For example, a user might post a copy and pasted message which consists of nothing but a single emoticon repeated multiple times. One chief characteristic is nearly all comments made in such a phase are lighthearted, mischievous, or playfully antagonistic in nature; if not intentionally, they will usually be interpreted as such. Ostensibly serious comments are often copied, replicated, and mocked. Even legitimate complaints typically will have a humorous tone to them. Such behavior would almost certainly result in some sort of punishment or chastisement in a stream in the chat phase or another Internet community. However, once in the crowd phase, this behavior becomes the new norm. A participant's readjusted uses and gratifications are now reflected in the chat. Streams of around 2-8,000 viewers tend to stay in this phase, periodically slipping into the other two phases.

In figure 5, an example of the crowd phase can be seen. Like in figure 4, the channel is the personal stream of a professional player; however, this has a viewership of 15,000. The host, AdmiralBulldog, is in the middle of a match and has just gained an advantage at the brink of a crushing defeat.





**Figure 5.** A Twitch channel in a crowd phase

Users such as xiao\_fg express astonishment (feigned or otherwise) at this dramatic turn in events with the PogChamp emote, which is typically utilized by the chat to express amazement, shock, or surprise.

User MarijuanaJones asks “IS THIS SEA DOTO? [4Head]”, referring to Southeast Asian Dota which is perceived as entertaining but low in skill. Thus he is combining capitalization with an emote symbolizing laughter to not only make his message more visible, but establish a certain tone which is consistent with the current phase of chat. This can also be observed with user billion\_invoices’ comment of “TWO TIER 1 STILL UP [4Head]”, which comments on the impossibility of AdmiralBulldog’s situation. “Tier 1” refers to structures protecting the enemy team which normally would have long been destroyed in a more even match. The use of the 4Head emote signifies laughter at the fact that that even with AdmiralBulldog’s advantage, his loss is still inevitable. Other game commentary which includes the playful use of emotes can be seen in the comments by users such as Deadlockassassin, TheCarrier, and LazyItachi.

Remarks containing vulgarities or lewd references, such as sexual references to the score of “69” by how2illiagey1, eleniggle123, and 116e1o, demonstrate the relaxing of norms that a Twitch chat undergoes at heavier use. Such comments would surely attract some type of negative repercussion in many other arenas, both online and offline, but the sheer volume of messages leaves Twitch chat a relatively unpoliced space in which moderation of comments is not heavily enforced. Comments which would result in a ban or some kind of other negative feedback in other mediums pass freely. More “official” streams might filter certain comments, but in general there is little to stop chat from communicating itself when it wishes. The fact that such language passes without incident suggests that chat expects and is familiar with such language. Though potentially offensive, this openness carries a certain appeal, as chatters will often type clearly outlandish comments, sometimes in the hopes of soliciting a reaction, but more often simply to behave in a boisterous manner. Such gratifications are not available in more heavily scrutinized places.

Here, the applications of Convergence theory continue to develop, and Emergent-Norm theory also come into play. Chatters still utilize game-specific lingo, but now Twitch-specific terminology, especially emotes, become prevalent as well. Not only do they convey specific ideas quickly, they also help to establish a tone consistent with the current chat environment. As more viewers participate in chat and attempt to be seen, the makeup of messages changes noticeably. Comments become shorter but “louder”, eschewing overly complex or multifaceted meanings in favor of visibility. Norms which would have been upheld in conventional chat rooms or even slower streams are discarded in favor of new ones.

### 7.3 The Collective Phase

Riots and other violent, outburst-like behavior in crowd situations typically require a precipitating factor, or catalyst, to spur them into existence (Levy 1989: 75). Similarly, when an occurrence is strong enough to capture the attention of the chat as a whole, it will enter the collective phase. At this point, the chat’s behavior fully imitates that of a crowd. Rules and norms are discarded as far as technical limits will allow. Rational discussion becomes all but

impossible. Memes, outbursts, emotes, and text spam become the only readily visible comments. Permutations of the same comment type dominate the chat window. Hundreds, if not thousands of participants will take part, entering variations of the same message repeatedly, typically in response to some event on stream. It is not unusual to see the entire window filled with the same type of message.

When the chat has already entered into the crowd phase, the threshold for chat to begin engaging in collective behavior is very low. Nearly anything that can have attention drawn to it, from a cough to a one-sided victory to a microphone malfunction, can spur chat to enter this phase. The trigger for a collective phase is not necessarily a specific on-stream occurrence. As in *A Study of Sports Crowd Behavior*, it can be something as simple as crowd boredom or a shared joke (Levy 1989: 75). At this point, the collective phase will generally only last a bit longer than the precipitating factor, whereupon it will return to the crowd phase, or will be replaced by another trigger, where it remains in the collective phase but shifts focus to the new phenomenon.

In a large stream approaching 10,000 or more viewers, the chat will almost exclusively fluctuate between the crowd phase and the collective phase. This is where the characteristic “Twitch culture” emerges most clearly. In figure 6, AdmiralBulldog can be seen in an interview. The Twitch channel has entered the full collective phase and the chat is dominated by one type of comment. Non-related, straggling comments are extant but are quickly “drowned out” by the dominant comment type. In this case, even someone unfamiliar with Twitch can see a clear visual association between the spammed emote (“DansGame”) and the player on the stream.



norms, whereas others might simply be following the crowd out of excitement or fear. A viewer in chat might not have even seen the original precipitating factor which spurred collective behavior, but they certainly involve themselves in the chat's reaction to it.

Though all instances of collective behavior in chat do not necessarily have a clear precipitating factor, in virtually every busy stream there are multiple cases where the phenomenon can be observed. Precipitating factors may or may not be tied to social strain and generalized beliefs – they are not prerequisites for each other in this case. For example, chat spamming an emote when a player dies due to an unfair mechanic might be something that was partially established earlier due to strain, however chat collectively laughing at a joke or acknowledging the presence of a new personality in the stream would be independent of these. Players deciding to blame the publisher or developers for perceived imbalances might be part of generalized belief, but people chastising poor play in a typically skilled player might not. Precipitating factors can be a wide range of potential things. For example, a player dying in game, playing poorly, or playing exceptionally well all regularly elicit reactions from the stream, very similar to reactions to play at sporting events. A figure on stream acting in a strange, characteristic, or noteworthy fashion can cause a response. Even the vaguest similarity to a pre-established Internet meme can be applied. In a collective phase, the chat seems to seek out behaviors which would serve as an excuse to take part in collective behavior.

Note that it is not a community leader that garners the attention of the chat and directs their comments, like in a typical Internet group. The chatters are commenting on a prominent *Dota 2* figure, but he is not directly involved in the chat in any way here. There is no real power structure in the example above; all comments are virtually equal in visibility. Even with the previous example in figure 4 where chatters are directly interacting with the stream host, he does not guide discussion; he responds to the questions from chat, but he does not interject topics of conversation in the way a conventional web community leader would.

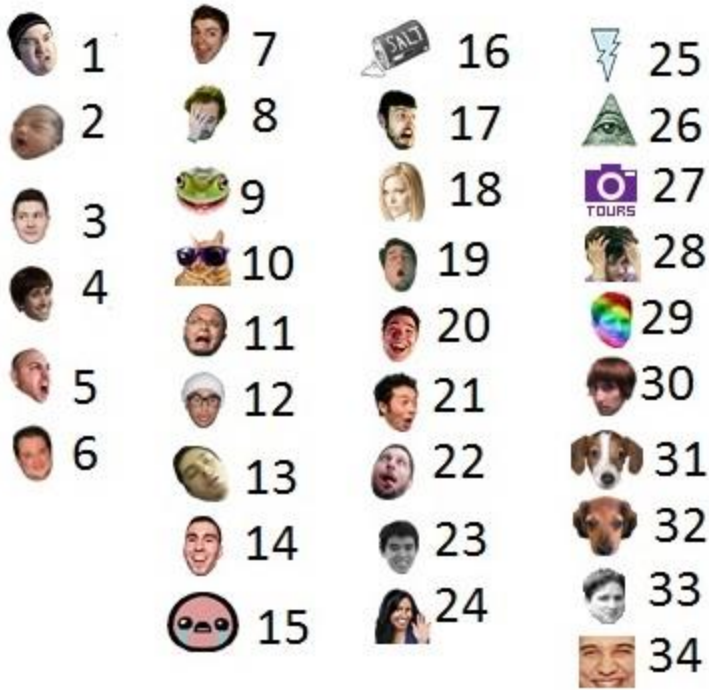
With low consequence and relatively high visibility, a typical Twitch chatter is able to discard most norms found in conventional online societies, resulting in behavior which resembles that of a typical crowd. The crowd's extremely low behavioral threshold, general lack of regulation, and

eagerness to take part in a crowd action establish the social conduciveness necessary to facilitate collective behavior. The lowered inhibitions, frenzied energy, and chaos of the chat are in fact attractive elements to users, who are allowed to engage in a sort of public revelry with relatively little consequence. Twitch is a hub for a consumer to take part in an experience which lies outside of what typical web communities provide, forming a crowd culture.

#### 7.4 Twitch Emotes

One of the most iconic features of Twitch chat and Twitch culture, the emote is an extremely common, near-constant occurrence in the chat. Though nearly all forms of casual online text-based communication use emoticons, emojis, smileys, ASCII, or some other type of text-based “picture”, Twitch emotes are unique to the site and serve specialized purposes for the users (Jibril & Abdullah 2013: 201). Each Twitch emote is a small pictograph which displays when the prompt is typed and entered into the chat as a comment. Most emotes are simply pictures of peoples’ heads, often of a Twitch employee or affiliated person. However, they can be cartoon characters, comic book sound effects, pop culture symbols, or any number of visual cues or images. These pictures often have no readily apparent or intrinsic meaning unto themselves, and are often selected by the chat because of some arbitrary feature which serves a contextual purpose at the time. Additionally, the text prompts which cause emotes to appear in chat are usually nonsensical or have no meaning without context, with names like OpieOP, 4Head, PogChamp, and EleGiggle. The chat is capable of displaying emotes based on more conventional symbols such as “:)” or “:(“, but their use is rare and often overridden by their Twitch-specific counterparts. Some channels have emotes specific to that channel, or subscribers only, but in general, the most popular and widely used emotes are site-wide, free to use by anyone who participates in chat.

Twitch emotes serve a variety of purposes. Though their use often overlaps with universal emoticons found in text communication elsewhere, Twitch chat will almost always opt for the Twitch version if at all possible. An assortment of frequently used emotes can be seen in figure 7.



**Figure 7.** 34 commonly used emotes in *Dota 2* Twitch streams

1. “DansGame” – Used to denote the popular streamer and player AdmiralBulldog due to their resemblance. The emote is so ubiquitous that it shows up even without direct reference of his name; even the appearance of heroes he is famous for playing is enough to illicit a reaction. Alternatively, it can also be used as an expression of disgust or discontentment.
2. “BabyRage” – Used to denote the popular streamer and player Arteezy. The player’s youth and irascibility has caused the emote to become associated with him. Can also be used to depict “whining” or complaining in general.
3. “PuppeyFace” – Used to denote the popular streamer and player Puppey. This was a Dota 2 specific emote that received sitewide implementation after gaining popularity. The emote also appears whenever behavior typical of his playstyle is seen.

4. “DendiFace” – Used to denote the popular streamer and player Dendi. This was also a Dota 2 specific emote which received site-wide implementation. It also appears when Heroes associated with him are selected.
5. “SwiftRage” – Site-wide emote used to denote general anger or dissatisfaction.
6. “OpieOP” – Used to denote the popular player XBOCT due to their resemblance. Often accompanied with the text “4”, another meme associated with the player. Often spammed when a player dies repeatedly, something the player is known for.
7. “SoBayed” – Site-wide emote used to mock general poor play, or fans of an opposing team, or to say something is “so bad.”
8. “FailFish” – Emote used to show derision towards player mistakes and perceived stupidity.
9. “OSfrog” – Used to refer to game elements which are considered unfair, or “OP”, meaning overpowered. Refers to *Dota 2*’s lead game designer, Icefrog. This emote is often accompanied by text facetiously describing the offending game element.
10. “CoolCat” – Used to express confidence in a chosen team, typically when victory is imminent. Also appears when someone is wearing sunglasses.
11. “WutFace” – Used to express disgust or confusion. Often used in place of the common Internet acronym “WTF” to express a strong negative bewildered reaction.
12. “ANELE” – Used to refer to the in-game Hero known as Techies. Also used in a racist manner to refer to players of Middle Eastern or South Asian descent.
13. “ResidentSleeper” – Used to express boredom. Often spammed in games which are considered to be lacking in action.



14. “4Head” – Used to represent laughter; either in a similar manner to common acronyms such as “LOL”, or to refer to a humorous moment during a broadcast. Contrast with #20, “EleGiggle”, which also represents laughter but in a different manner.
15. “BibleThump” – Used to represent sadness, sympathy, or other moving emotions. Can be used ironically. Appears in both serious moments (such as in a personal story in an interview), and in comedic moments (collectively mourning the “death” of a computer-controlled creature in-game).
16. “PJSalt” – Used when excessive anger, irritation, or unsportsmanlike behavior is displayed on stream. Derived from the slang term “salty”, to refer to visible agitation. Also commonly refers to the popular player and streamer PPD, who is known for his “salty” demeanor.
17. “RuleFive” - Used to denote popular player and streamer FearDarkness.
18. “PMSTwin” – Used to refer to popular player and streamer Zai. Also used when a female appears unexpectedly onscreen. Often accompanied by the word “GRILL”, an intentional misspelling of the word “girl”.
19. “Kreygasm” – Used to express excitement or thrilling moments.
20. “EleGiggle” – Used to express laughter, often in a more derisive or mocking manner than its counterpart, “4Head.”
21. “PogChamp” – Used to express astonishment or amazement, especially towards impressive plays. Also used to refer to popular player and streamer Merlini.
22. “BrokeBack” – Used to refer to stupidity or incomprehensibility.
23. “OneHand” – Another emote used to refer to the player and streamer Merlini.

24. “HeyGuys” – Used when someone directly greets the stream. Also used as an alternate to “PMSTwin” when a female is seen on stream.
25. “shazamicon” – Used to refer to the Hero known as Zeus.
26. “deIlluminati” – Used to react to inexplicable or mysterious events, often implying a conspiracy.
27. “TTours” – Used in response to poor camera work, i.e. when notable events occur in-game but are missed by the broadcasters.
28. “NotLikeThis” – Used to indicate despair or disappointment, typically if a team is losing badly.
29. “KappaPride” – A variation of the popular Kappa emote, this emote is used in a tongue-in-cheek manner to indicate moments with perceived homosexual overtones.
30. “WinWaker” – Alternate face used to refer to popular player and streamer Dendi.
31. “FrankerZ” – Used to refer to popular player and streamer Puppey; differs from PuppeyFace in that it is used when a pause occurs in-game, something the player was known for doing.
32. “RalpherZ” – Alternative to FrankerZ.
33. “Kappa” – The most famous and widely used emote on Twitch. Used to imply trolling, sarcasm, jokes, and general mischief. Often spammed for “no reason”, or for seemingly trivial or vague reasons. It is not uncommon to have Kappa accompany general game commentary during a crowd phase, indicating a lighthearted and irreverent tone to chat.
34. “rtzW” – Alternate to “BabyRage”, denotes the player and streamer Arteezy. (Reddit 2015)

The importance and influence of emotes on Twitch chat can be seen with the site’s use of Kappa, which is by far the site’s most popular and iconic emote. It is the grayscale face of a former Twitch employee, named after his online moniker. There is no readily discernible meaning in the expression; however, Kappa has taken a life of its own. As an emote, Kappa is often put after a sarcastic or antagonistic (i.e. trolling) comment to show that the chatter is joking or facetious, or to imply general mischief. The irreverent nature of the chat ensures that Kappa is in near-constant use. The emote’s popularity has caused it to evolve further in its uses, and chatters will very often type Kappa on its own, even if there is no text to accompany it. This can imply some kind of humorous moment, sometimes on the stream or even in the chat itself. Kappa can even work as a punchline in itself. Even something with a superficial resemblance to the emote (for example, a caster saying the word “capitalize”) will cause the chat to flood the window with Kappa messages. This collective input seems to be for humorous effect, which in turn causes more repeated entry, or spamming, of the emote. The Kappa emote is so iconic and popular that it is sometimes synonymous or representative of Twitch chat itself, and can be seen as summation of its general philosophy of irreverence and humor. An example of the emote’s popularity can be seen in figure 8, which is a collage of fan art dedicated to the singular emote alone.



**Figure 8.** Fan art of Twitch’s most famous emote (Goldenberg 2015)

The meanings of the emotes are fairly well-defined by users, but their uses can be expanded to suit the situation, typically in a practical way. Twitch chat is extremely receptive to clear audio-visual cues and will typically use emotes in response. During *The International 5*, an emote was used in a joking manner to point out the resemblance of several commentators sitting together. This can be seen in figure 9, where the phrase “WTF 3 MERLINIS” was spammed in succession with the emote PogChamp. “WTF” is the common Internet acronym standing for “what the fuck?” Merlini is the commentator wearing a blue shirt. By placing the PogChamp emotes next to each other, the chat highlights the perceived visual similarities of the 3 panelists sitting on the couch. In this way, emotes may have new meanings ascribed to them; if an emote can be used to address occurrences on stream, then they will be.



**Figure 9.** The “WTF 3 MERLINIS” meme in action

Emotes are not only used alone; they often serve to punctuate or color a participant’s messages. A fan cheering a team on that is behind in score might type a message like “TAKE MY ENERGY [BibleThump]”, causing the emote to appear after their message. The emote OSfrog is often accompanied by some sort of text explaining which game elements the chatter considers unfair or “unbalanced”.

The emotes typically have such well-defined uses and roles that a strange or uncommon one can cause it to make an appearance simply by virtue of its rarity, such as in figure 10.



**Figure 10.** Chatter spamming simply for novelty

The above poster claims to have no idea of the purpose or meaning of the emote, but decides to copy it anyway. The actual stream content is irrelevant in this case, and new emotes are occasionally added to the site, whereupon they will not have a fixed meaning until a specific use for them becomes popular.

Emotes add nuance, expression, and life to potentially flat communication. This is true of emoticons all over the Internet; however, Twitch's special, site specific emotes increase a feeling of inclusiveness and belonging, and allow extremely specific ideas to be communicated in short windows of time, therefore they occupy a unique gratification-granting role on the site.

### 7.5 Comment Categories

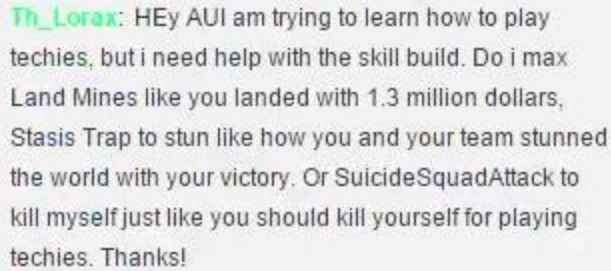
Part of Twitch's viewership appeal appears to lie in being able to react to nearly anything, including itself. The threshold for engaging in collective behavior is low because participants lose virtually nothing from commenting. Given the lack of context in isolating Internet text, it would normally be dangerous to infer behavior or motives from comments alone, but because the behavior is voluntary with little external pressure to take part, and because there are practically

no lasting negative repercussion for the participant, comments can be examined for their meaning to the participant in the context of the chat environment.

Often a comment that stands out will spur hundreds of imitators or mockeries, or provoke a response that ends up flooding the entire window. This would be akin to behaviors displayed in a physical crowd situation. Because a chatter can enter numerous comments over the course of a stream, and individual identity is typically overlooked, this study does not classify chat based on spectator categories, but instead the comments themselves. Comments can be classified into several non-mutually exclusive categories based on the uses and gratifications they provide to the participant. These categories are generally those that form the idea of Twitch culture; emotes, for example, can be found in textual communication all over the Internet, but they have a unique use and role in Twitch streams (Jibril & Abdullah 2013: 201). Generic comments like salutations were disregarded. Like Cheung & Huang's spectator types, comment types can and do blend into each other freely (Cheung & Huang 2011: 769).

The first category is the *copy-paste*. Closely related to the behavior of spamming, a copy-pasted comment refers to memetic content that is copied from another source and repeatedly entered into chat using a computer's copy-paste function. The phrase is so commonly referenced that it has several permutations; for instance, it is not unusual to see chatters calling it a "copy pasta" or simply "pasta" in the chat, which means the same thing. A copy-paste can be a series of emotes, ASCII pictures, or a block of text, often containing humorous or entertaining messages. When a copy-paste becomes popular, it gets spammed in the chat. Copy-pastes are less often direct responses to immediate precipitating factors, because they take a relatively long amount of time to create and spread. Often, their use is to serve as reflections of popular viewer opinions on current figures or events in the e-sports world, such as in figure 11, which addresses the player *au\_i\_2000*'s victory after *The International 5*:





Th\_Lorax: HEy AUI am trying to learn how to play techies, but i need help with the skill build. Do i max Land Mines like you landed with 1.3 million dollars, Stasis Trap to stun like how you and your team stunned the world with your victory. Or SuicideSquadAttack to kill myself just like you should kill yourself for playing techies. Thanks!

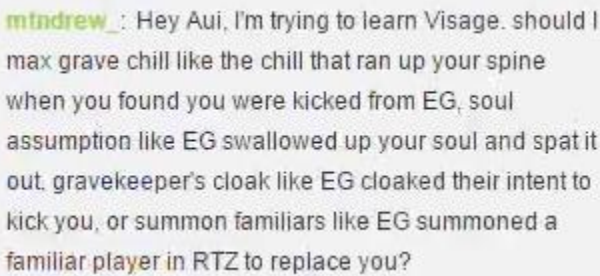
**Figure 11.** A copy-paste referencing the player known as aui\_2000

At first glance, the comment is designed to look like a player asking for game advice. “Techies” refers to a Hero in the game. “Land Mines”, “Stasis Trap”, and “SuicideSquadAttack” are all skills that Hero can use. Upon reading the comment, one realizes that it is not an actual request for game advice; the text is humorously making light of the fact that aui\_2000 used a widely disliked Hero in one of the climactic matches of the tournament.

Again, the message is not a response to realtime events in stream, and requires knowledge of *Dota 2* gameplay to understand. Despite this “barrier to entry”, the text is clearly meant to be replicated and spread. Such a block of text, disguised as a legitimate request, will show up during the Crowd or Collective phases of a stream. The text is immediately jarring and seems out of place because it does not follow the emergent norms of those phases, such as capitalization and use of emotes. The comment takes a relatively long time to understand and would therefore ordinarily be washed away in the mass of text being generated at that moment. However, because it looks so unusual during such a period, viewer attention is immediately drawn to it. It may take several moments to read and comprehend the entire message, but simply seeing such text during a Crowd phase can identify it as a joke. It is the same principle as a person sipping a cup of coffee on the sidewalk; such behavior would not be unusual in normal circumstances, but during a riot it would seem out of place. By forcing attention to it, viewers stop to read it, and, finding the joke entertaining, proceed to replicate the text. In this way, the comment simultaneously serves as commentary for current e-sports events as well as entertainment.

The copy-paste can be adjusted and reused as situations change. For example, figure 12 shows another message addressing the same player from figure 11. The format is clearly retained, but with a different Hero and skills to create a new joke. In this example it references the fact that he

was kicked from his team, Evil Geniuses (EG), immediately after winning *The International 5*, and subsequently replaced by another player, Arteezy (RTZ). When the community discovered this news, the text was altered in order to incorporate these developments into the copy-paste. In this way, a copy-paste can have nearly endless permutations, and perpetuate itself as time passes.



mtndrew\_ : Hey Aui, I'm trying to learn Visage. should I  
 max grave chill like the chill that ran up your spine  
 when you found you were kicked from EG, soul  
 assumption like EG swallowed up your soul and spat it  
 out, gravekeeper's cloak like EG cloaked their intent to  
 kick you, or summon familiars like EG summoned a  
 familiar player in RTZ to replace you?

**Figure 12.** A later variation of the same copy-paste

Other copy-pastes are much shorter, and are simply a way to express an opinion, or even to present a novel image made from text or emotes. The pasting of one of these messages may be quickly overlooked in a busy stream, but persistent chatters often enter them many times in succession, increasing the chances of them being picked up by others and flooding the chat with similar messages. For example, in figure 13, the copy-paste has caught on and many chatters take part spamming the same message. In this context, they were demanding a male player kiss a female host who was interviewing him. These shorter comments can also serve as commentary, but can also serve gratifications of belonging to an in-group, or simply entertainment.





**Figure 13.** Commentators collectively repeating a shorter copy-pasted message

The next is the *narrator* type comment. A narrator comment simply provides commentary on events as they unfold on stream. This is similar to Cheung & Huang’s Commentator spectator type; however, it is usually much shorter and more casual; often narrator comments simply serve to point out the obvious, but in a manner much more relaxed than an official caster would express (Cheung & Huang 2011: 169). It can even be something a caster has already commented on, but restated using the Twitch lexicon. In Figure 14, Sylas26 comments on the poor performance by the player controlling the Hero “Silencer”.

**Sylas26:** This silencer getting wrecked so hard.

**Figure 14.** A narrator type comment

Figure 15 shows an example of a *troll*-type comment. Similar to its definition on general web communities, the troll is simply there to cause confusion, grief, or anger in other viewers. (Buckels, E. E., et al. 2014: 97). A troll comment is typically a provocative, insulting, or inflammatory message, often about controversial issues and regardless of factual accuracy. The

troll in figure 9 can be seen asserting that “League” (referring to *League of Legends*, another popular title) is a superior game to *Dota 2*. Since this comment appeared in a *Dota 2* channel, the comment is clearly designed to cause some level of anger or distress in viewers. In keeping with the general irreverent and playful theme of Twitch chat, it is not uncommon to see every single comment in the chat window have at least some element of trolling to it. Troll comments are often accompanied by emotes, adding a playful, or ironic accent to the messages.

Since such troll-comments appear even stronger in crowd and collective phases (i.e when comments are unlikely to receive responses) and chatters will mark their own messages as trolls with emotes, it appears that the act of trolling in itself provides gratifications for the chatter. The relaxed norms of the crowd and collective phases can provide a sense of freedom for the chatter, instigating such behavior. Thus, simply being able to engage in general mischief provides enough gratifications of its own without necessarily seeking any real harm to potential recipients.

A screenshot of a Twitch chat message. The text reads: "liekmetops: WATCH LEAGUE WORLDS GUYS DOTA IS \*\*\* BORING". The text is white on a dark background, with the user name and the message content separated by a colon.

**Figure 15.** A troll type comment

The next comment type is the *meme*. Another term borrowed from wider Internet use, a meme in the chat context is a comment that is based on a predetermined meaning and shared *en masse*. A meme can be a copy-paste, a catchphrase, a quotation, an emote, a combination of all of these or none of them. If a team is ahead and suddenly begins to lose, or “throw” a game, responses of “322” will begin to dominate the channel. The meme emerged when a professional *Dota 2* player was caught losing games intentionally for money; specifically three hundred and twenty-two US dollars. Thus 322 became a joke referring to teams that had a lead and began to lose, or “throw” games (Join Dota 2014). Memes, like copy-pastes, can have meanings established ahead of time, but can be spread quickly and without the need to copy and paste. New memes are created constantly, often within the very streams themselves. It is not uncommon for a particularly notable or dramatic play in a *Dota 2* match to become a meme in itself. In figure 16, three users take part in the “322” meme, with user “Exooodus” subverting it with a Kappa emote, signifying trolling.

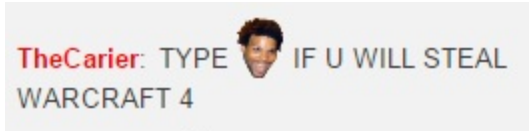


**Figure 16.** A “322” meme in play

The *instigator* comment is a comment which attempts to elicit a specific response from chat. Often, its only goal is to attempt to spur the chat into a collective phase, or to seek validation in an answer. An instigator usually comments in something that stands out from the rest of chat – often manifesting in message such as “Press 1 if you think NA Dota is best”. Subsequent chatters will then reply with messages of “1”, or some repliers may type 2 or some other contrarian variations on the phrase. If the comment is humorous or entertaining enough, this could cause the members in the chat to spam 1, partially or wholly putting the chat in a collective phase.

Another example would be attempting to goad the chat into a certain phase or behavior. For example, if a prominent e-sports figure is known for making an embarrassing Tweet or taking a questionable picture, a participant in chat may remind everyone by posting a link or reference to it. This in turn causes the chat to fixate on the behavior, subsequently causing a cascade of mockery to follow. Despite their appearance, instigator comments do not always expect a widespread response. An attempt at this can be seen in figure 17. Since “Warcraft 4” is not a real game, it is unlikely that user TheCarrier expected people to respond in earnest. It was more likely a play on the emote, TriHard, and racial stereotypes about black people. Of course, a chatter could play along with the comment and respond, furthering the entertainment the participants receive from the message.

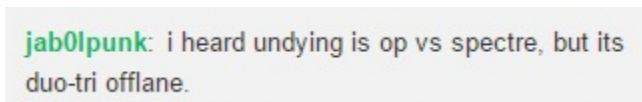
Instigator comments offer a chance of solidarity with peers and increased feelings of belonging with in-groups via agreeing opinions, but can also provide solidarity when other chatters are “in on the joke.” This can occur even when chatters subvert an instigator comment; for example, typing 2 when 1 was requested.



**Figure 17.** An “instigator” type comment

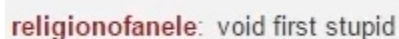
Figure 18 shows an *analyst* comment. The analyst is a comment that focuses primarily on the gameplay itself. The analyst will discuss plays, comment on player decision making, and attempt to explain in-game occurrences as they come, such as a team winning an engagement. In the example, user jab0lpunk talks about the effectiveness of the Heroes “Undying” and “Spectre,” as well as strategies employed with them. The analyst is generally more interested in the game, and uses the chat as a medium to explicate the events that transpire on the stream.

Analyst comments serve a straightforward purpose in their information seeking and information sharing. They also display interpersonal utility in that Twitch chat is a space for fans of competitive *Dota 2* can discuss the game with other fans.



**Figure 18.** An “analyst” commentator discussing game strategy

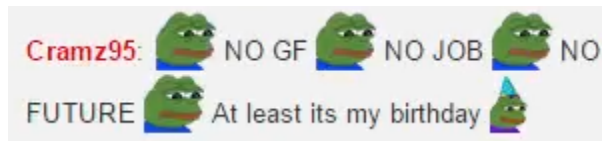
Figure 19 depicts an *armchair* comment. Taken from the sports idiom “armchair player”, armchair commentary consists of remarks made by participants who considers themselves more skilled at the game than the streamer. Any aspect of a player’s decision making are called into question by the armchair player, often with dismissal or derision. Armchair commentary can be motivated from a desire to feel superior, display game knowledge to peers, or vent about the results of a match.



**Figure 19.** An armchair comment

Sometimes, especially in the Crowd and Collective Phases, there will be a comment that appears to be unrelated to the chat at all. These *off-topic* comments can range from outlandish statements made ostensibly for shock value, to declarations of need, such as hunger or loneliness. Some even display a degree of emotional duress, such as in figure 20. The emotes utilized by Cramz95 suggest at least some legitimate melancholy, as a trolling or ironic sadness would, for instance, use the BibleThump emote. Also, since the comment utilizes memetic emotes but does not use them in an immediately entertaining fashion, it is likely the user is venting personal feelings.

This suggests that Twitch is, to some degree, used by certain participants primarily as a socialization tool, not a media platform. It is possible that the stream's content does not matter at all, and the chat is merely a medium for the user to reach many people at once. Perhaps the user is a *Dota 2* fan and utilizes the chat to reach out to a group of like-minded peers in a format that will be mutually understood.



**Figure 20.** An off-topic comment

The *malcontent* is when a member of Twitch chat voices dissatisfaction. This can be for a plethora of reasons; practically anything that a viewer could have a complaint about can be voiced in the chat. This most strongly manifests when there are technical issues in the stream; for example, muted audio or visual problems that interfere with normal viewing. A very obvious problem can cause viewers to spam a cascade of similar comments pointing out the problem, “flooding” the chat and effectively pushing out other comments until the issue is resolved.

Other complaints are more localized and occur more sporadically, covering virtually any aspect of the stream from poor in-game play, lack of excitement in a match, to complaints about the quality of chat comments themselves. Notably, a comment on the chat itself, often condemning or chastising it for immaturity or foolishness, will often be turned into a copy-paste in its own right, and end up being spammed in the channel by others, as shown in figure 21.



simply for the purpose of having their comment prominently displayed and acknowledged on the stream. This is a sort of “super-comment” in which a spectator is forced to view the comment – the chat function can be turned off, a commenter can be blocked, but even if an audience member is ignoring the chat, this comment will still be displayed. Large sums of money will be donated to the streamer for seemingly frivolous reasons, such as facetiously insulting the streamer, or writing a message which will instigate increased activity in the chat. Indeed, an anonymous chatter might donate real money in order to simply get the chat to spam an emote for a few moments.

The use and nature of the comment itself can vary greatly – sometimes it is congratulations or encouragement for the streamer, sometimes asks for advice, sometimes it is a simple joke, or sometimes something intentionally outlandish, designed to provoke a response to chat, as shown in figure 23. The sponsored comment appears on the left side of the stream and reads, “Hello bulldog what do you think of Phoenix this patch? I think he’s back to dumpster for now. Also hello twitch chat my first day on internet her [sic] can I have some LUL in here LUL”.

The comment begins with a straightforward greeting of the stream host, AdmiralBulldog, then proceeds to ask his opinion of the Hero, Phoenix, after some game changes were implemented. However, the comment then directly addresses Twitch chat itself, giving an obviously outlandish claim and asking for the chat to spam LUL, which is an emote. In figure 23, the majority of chat complies readily, putting the chat into the collective phase.



**Figure 23.** Chatters respond to a sponsored comment

Even though Twitch is a free service, the fact that participants are willing to pay money to see their message displayed for a few brief moments suggests that the rapport between streamer and viewer is an important one, and further reinforces the idea that participating in chat is not simply a passive, lazy experience, but one with at least some degree of personal and even economic investment. It is this investment, personality, and perhaps even “loyalty”, that makes Twitch unique and is partially the reason why competitors have so far been unable to touch Twitch’s dominance in the IPTV market.



## 8 ANALYSES OF TWITCH CHAT INTERACTIONS DURING *DOTA 2* STREAMS

The following is an analysis of two Twitch channels – the first is an excerpt from the ESL One New York competitive game tournament at Madison Square Garden, and the second is taken from approximately 15 minutes of a busy Twitch channel hosted by the professional *Dota 2* player “AdmiralBulldog.” The streams in question are representative of the typical chat experience, with many chat elements discussed making an appearance. The excerpts are intended to give a sense of how Twitch chat operates, identify instances of collective behavior, and record the crests and troughs of activity as it progresses.

### 8.1 ESL One New York

In the following excerpt, a match has just begun between the teams Fnatic and Secret during the ESL One tournament. This example was picked for several reasons. First, it was a major professionally broadcast tournament with many viewers. Second, many well-known teams were invited to the tournament, which meant there would be many instances of prior community knowledge displayed in chat. Third, the event in question was beset by many technical issues, which demonstrates how chat reacts to events not within the game or community itself, but to unexpected or unfamiliar events in general. Commentating on the match are two professional “casters”, figures who narrate the action occurring in-game. At any given moment in a *Dota 2* match, there will be audio commentary on the situation, much like a sports broadcast. It is the caster’s duty to inform and entertain the audience at all times during a match, and therefore Twitch chat’s attentions will often focus on the casting as well.



The chat is in a clear Crowd phase in this state. Although there are some displays of collective behavior with the Resident Sleeper emote, conversation topics are still scattered and discordant as characteristic of the phase.



**Figure 25.** A subversion of the “Kappa” emote, “Klappa” at 0:41

The game resumes, and the live audience can be heard cheering and clapping in the background. The chat immediately acknowledges this in figure 25 and responds by “clapping” using the Kappa emote accompanied with two forward slashes “//”. Such a phenomenon is indicative of the familiarity Twitch chat displays with its emotes, and a demonstration of how they constantly

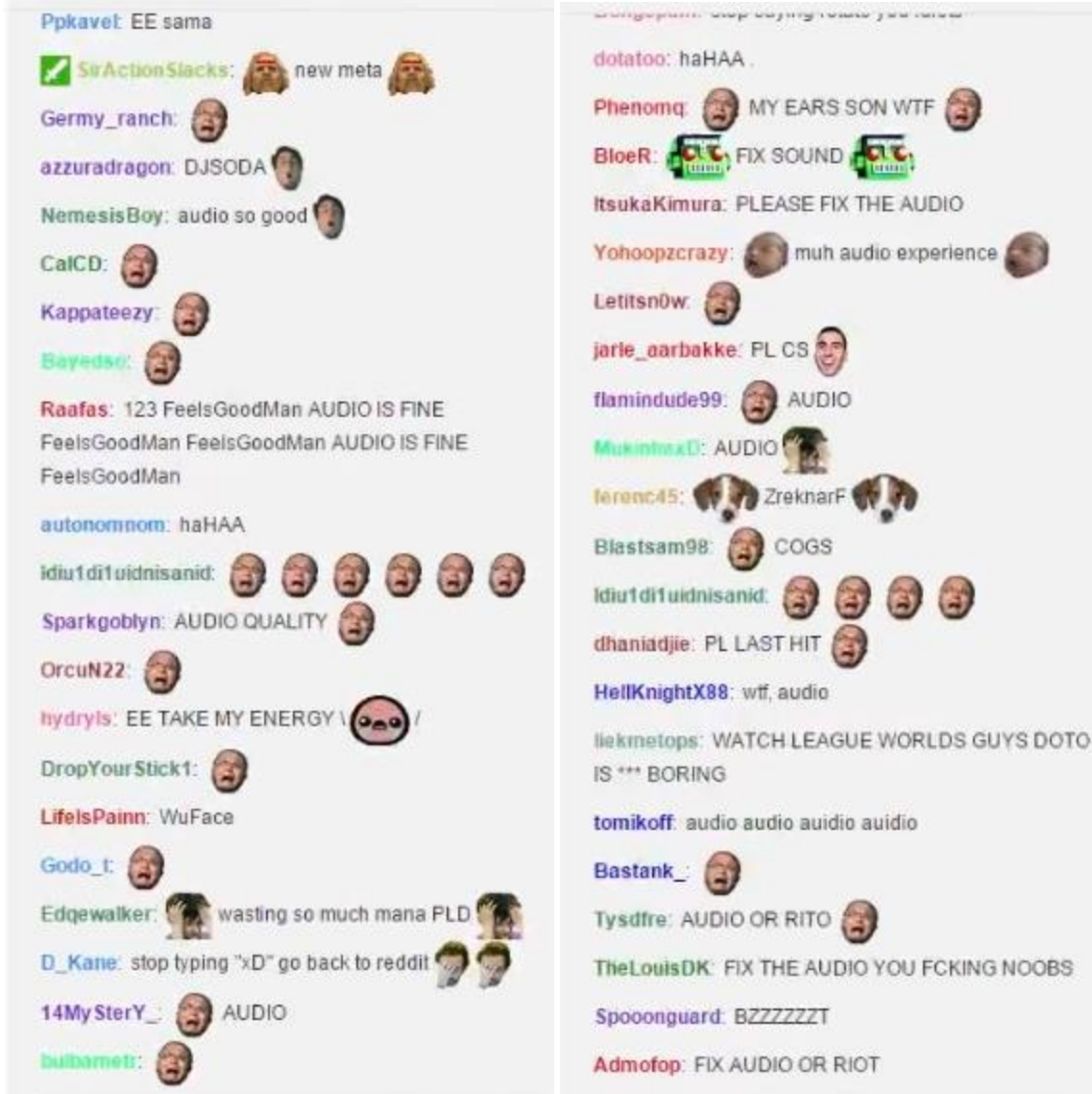
explore their use. The meaning of Kappa does not need to be explained for the audience to build upon its meaning.

There are other reactions from the chat, but clearly the “Klappa” event was enough to provoke enough of the audience into collective behavior. Users Trollma980 and RTJDota can still be seen expressing sarcasm using all caps. The first conveys mock enthusiasm from winning e-sports bets in a completely unrelated game, and the second expressing boredom at the gameplay.

The ResidentSleeper emote which previously dominated the window is now almost completely gone; in less than 12 seconds, the chat had shifted its focus entirely and responded accordingly. This continues until 1:01, where audio problems begin to emerge in the stream and chat shifts its attentions again.

In figure 26, complaints about the poor audio quality comprise most of the comments. This situation does not have a clearly defined emote to it, so some users have varied responses. However the WutFace emote is the most common, as it is typically used to denote strange or disturbing situations. From 1:13 to 1:39 the audio problems persist, so chat’s focus on the problem intensifies.

SirActionSlacks, a well-known *Dota 2* personality, can be seen commenting about the *meta*, or advanced game strategy, but his comment goes completely unheeded by the rest of chat. This demonstrates the lack of power structure or influence of social capital that define typical Internet communities. The chat, when it enters into a crowd phase, is primarily subject to the action on stream, and cares little for the prominence of its members. A prominent figure in the *Dota 2* community might stir discussion or be commented on, but there is practically no figure that became famous solely in chat itself.



**Figure 26.** Chat reacts to technical issues on stream from 1:13 to 1:39

A few users, such as Ppkavel and hydryls, can be seen cheering one of the players, EternalEnvy, or “EE”, on. “EE sama” is a common nickname for him, taken from a Japanese honorific, referencing the player’s well-known affinity for anime. Hydryls’ comment is a play on emotes similar to the “Klappa” comments above; by placing a backslash and a forward slash around the BibleThump emote, it creates the impression of raising one’s arms for EE’s sake. Liekmetops can be seen attempting to troll the audience by telling them to watch *League of Legends* instead.

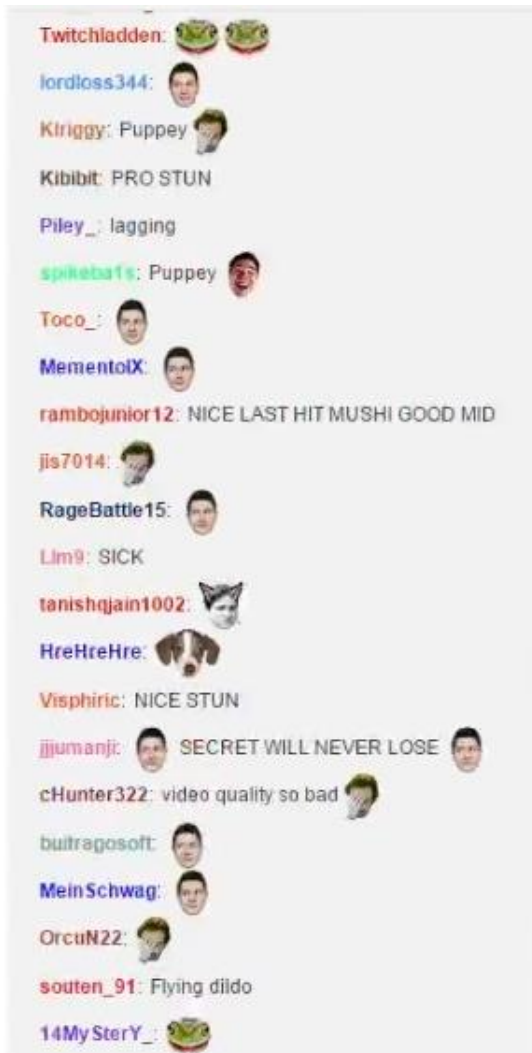
D\_Kane can be seen admonishing chatters who use “xD”, telling them to go back to Reddit, suggesting a feeling of community within Twitch chat and hostility, or at least exclusiveness towards outsiders. This also serves as an indicator that Twitch users are frequently users of other social media networks, especially ones affiliated with the *Dota 2* community. Even in such a chaotic state, the user is concerned with maintaining the “sovereignty” of the chat.



**Figure 27.** The technical issues become a source of amusement at 1:43

At 1:43, player PieLieDie dies in-game, reflected by the mocking epithet “DIEDIEDIE” from a few viewers, as seen in figure 27. However, most of the chat’s attention is taken by the fact that

the sound has not cleared up, and viewers begin to humorously approximate the audio issues in chat. At this point, most of the commentary is about the audio. Also note this small occurrence has already undergone a few phases in itself: initially, there was surprise and annoyance, indicated by the WutFace emote, which was followed by legitimate complaints and demands to fix the audio. Yet in figure 27 the chat's reaction has gone from annoyance to amusement; the crowd is still commenting on the audio, but they are no longer demanding it is fixed; instead, they begin approximating the noise by typing onomatopoeic messages such as "ooooooo." The noise is suddenly a source of entertainment, and they begin making textual approximations of the sound in chat. This quickly gains traction and other users join in, mere moments after its inception.



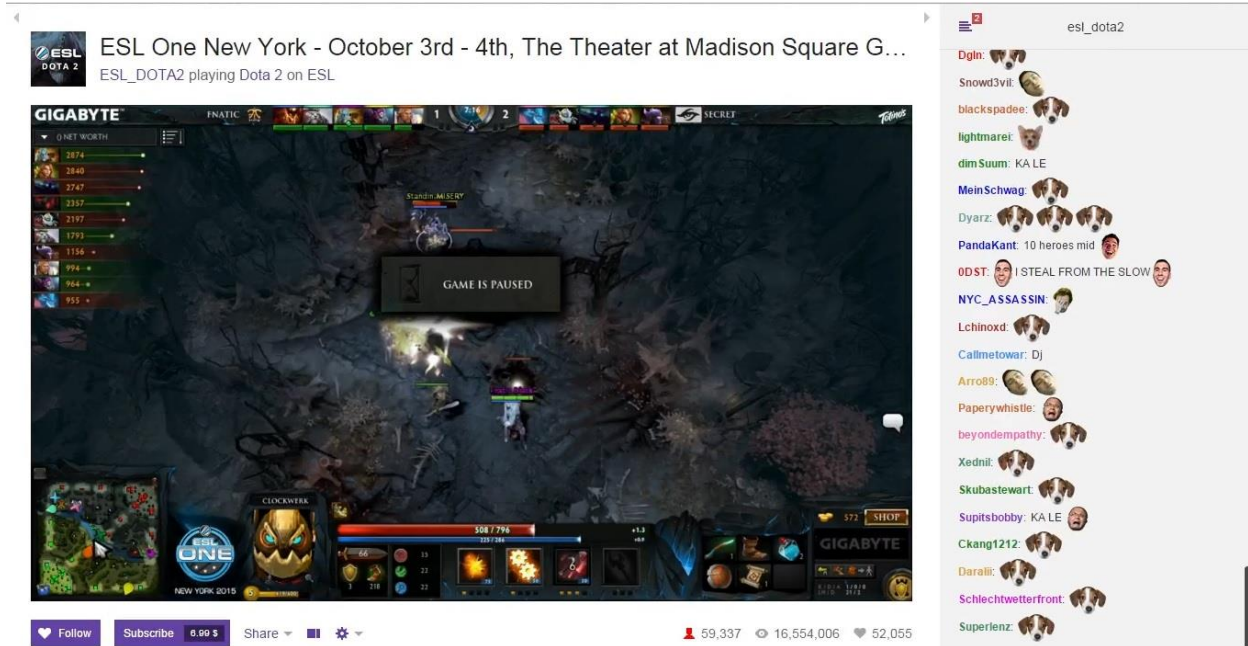
**Figure 28.** Chat acknowledges Puppey's plight at 3:05



At 3:05 Puppey is pursued by two opposing players. Attention in the broadcast focuses on this chase, and thusly the chat's attention is as well. During the 10-second chase, viewers such as Toco\_ acknowledge Puppey's predicament by spamming the emote of his face, as shown in figure 28. Some players comment directly on the actual gameplay, such as Visphiric and Kibibit sarcastically remarking on a failed "stun", a type of ability. Comments like "NICE LAST HIT MUSHI GOOD MID", are similarly facetious, serving as a combination of flame, game analysis, and narration. In this case, Mushi is the "mid" (a position on the team) for Fnatic, and "last hitting" is a basic technique. Here, user rambojunior12 flames Mushi for poor play. Some players, such as Twitchladden and 14MySterY, use the OSfrog emote to express perceived lack of game fairness.

This illustrates that the threshold for collective behavior in chat is extremely low; far lower than that of a real crowd. A participant in a busy stream has virtually nothing to lose by typing such a comment, no matter how unpalatable it may be. By the time a potential reprimand could have been received, the comment is typically swept away in the flood of texts that have already displaced it. Therefore, in a space where every comment receives equal visibility with relative autonomy, participants can simulate the carnival atmosphere of a real crowd, complete with revelry and relaxed social norms, with little risk to themselves.





**Figure 29.** 7:16. A different emote for the same player in action

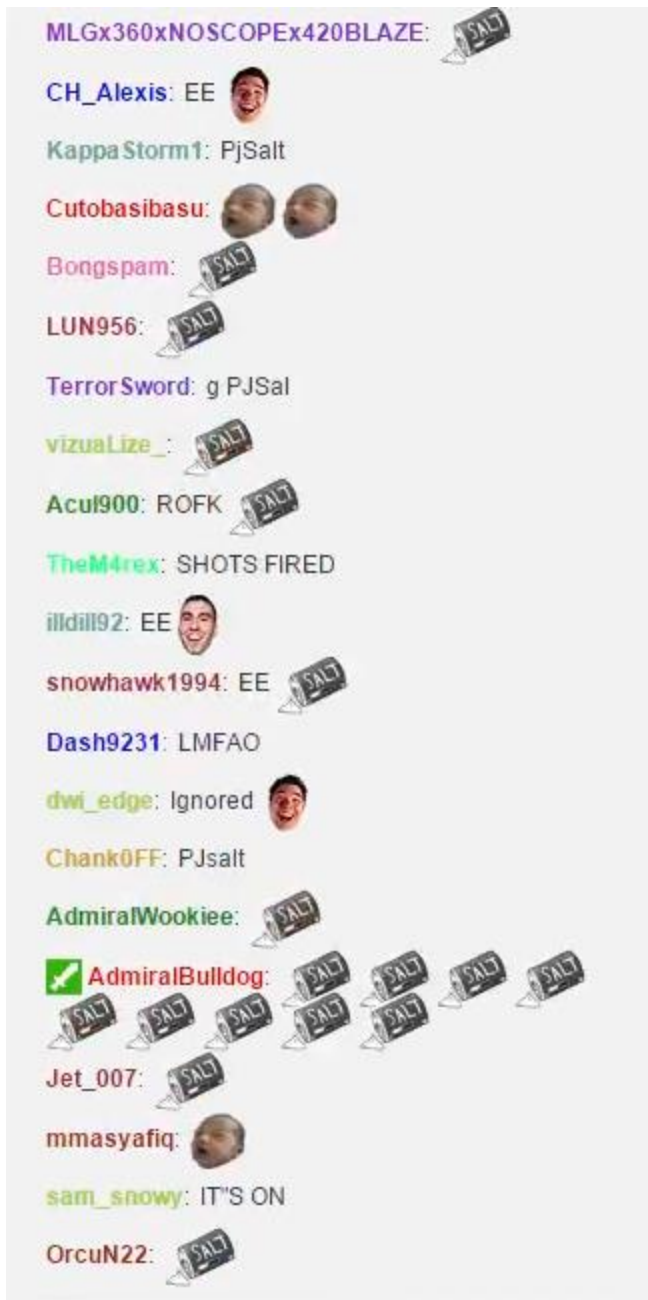
The next notable event happens four minutes later. At 7:16, the match is paused again, and the chat is again unified enough in its attention to move into a singular dominating action. Though the in-game pause is the same type of occurrence as what happened at 0:19, the chat noticeably has a different reaction this time. In figure 29, the FrankerZ (the dog) emote begins to fill the screen, again as a reference to the player Puppey (a play on “puppy/Puppey” and paws/Pause). Even though he had nothing to do with the pause in question, his actions in previous games have caused him to become associated with “tactical pauses” – that is, pausing in the middle of a match to allow a team time to work out an advantage. Even though there is an emote that represents Puppey, the chat opts to use the older FrankerZ because of its previously established connotations to this situation. Here the reaction from chat becomes part game commentary and part joke; players are playfully accusing one side of exploiting the pause function to their advantage while acknowledging an in-game player who is known for this behavior. In this case, even though it is a more accurate representation of the player, PuppeyFace is not used because it is a newer emote with fewer previous meanings associated with it. With the use of FrankerZ, the amusement potential is maximized, achieving more gratifications: humor, commentary, and solidarity with peers present in chat.

Other users, such as dimSumm and Supitsbobby react with a different meme, KA LE, to the same situation. KA LE is a Mandarin expression for “stuck” or “frozen” and frequently appears when similar pauses arise in matches with Chinese teams. However, because there existed more precipitating factors for the FrankerZ emote (i.e. Puppey’s presence in the game), the FrankerZ spam proves more popular.



**Figure 30.** A disagreement occurs in the game at 7:17

At 7:17 the game is unpaused, and the use of FrankerZ drops off accordingly. Immediately, player EternalEnvy on Team Secret types “don't resume till we say [go] please”, to which an opposing player says “don't ignore us please” in response to their previous silence. The chat is quick to jump on this occurrence, as shown in figure 30. Again, they turn a brief dispute between players into a joke. Initially, there are general laughter comments using variations of “LOL” or mocking the in-game chat by parroting their speech (blue circles), but as the exchange continues with perceptible elements of hostility on both sides (red circles), an emote takes over to convey a more specialized reaction (green circles). PJSalt emerges to express the perceived anger and unsporting comments from both sides, and quickly takes over the chat window in figure 31.



**Figure 31.** The chat reacts with a specialized emote at 7:48

Here, we see that humor is one of the most common triggers for reaction from chat. Funny moments on Twitch can be accompanied by their own emotes (4Head, EleGiggle), but are just as often expressed with universal acronyms for laughter such as “LOL” and “ROFL”, as shown in figure 30. Chat is indiscriminate on the source of laughs; viewers will just as quickly laugh at a streamer’s joke as they will with a joke at the streamer’s expense. Here, they laugh at EternalEnvy’s annoyance at the opposing team unpauseing the game too quickly. The revelry that

streams are constantly engaged in lead to a culture wherein very few things are taken seriously, including prominent players and figures. Anything and everything can be grounds for a joke, and chat comments will color themselves to reflect this. In this case, even a minor argument was a source of great amusement for the chat.

Accordingly, the chat reacts with glee to EE's response with the 4Head and EleGiggle emotes in figure 31, while simultaneously calling him "salty" with the PJSalt emote, signifying irritation or unsportsmanlike anger. Even the professional player AdmiralBulldog makes an appearance in chat to take part and spam PJSalt, though he is unaffiliated with the tournament. Note that again, the chat ignores his presence; they are too busy with commenting on the current situation to acknowledge him.

After returning to Crowd Phase for around two minutes, the previously derided audio issues have not fully resolved, and thus the chat's attentions are again diverted towards technical problems. At this point, the issue has been pervasive enough to spam its own, unique copy-paste comment, shown in figure 32.



**Figure 32.** Chat’s reaction to the technical problems grows more complex around the 9:40 mark

At 9:40, less than 10 minutes into the stream, the crowd has created a “new” meme from a preexisting template, in the form of a copy-paste. In this case, it was “birthed” and sees widespread use within the very stream it came from. The technical issues contribute to the structural strain of the chat, leading to the proliferation of this new comment and a move into collective behavior.

The phrases “TRASH AUDIO/ TRASH CROWD/ TRASH TEAMS / MUST BE ESL”, punctuated by check marks, coupled with the SeemsGood, SoBayed, 4Head, and EleGiggle

emotes convey dissatisfaction with the overall quality of the tournament; yet, similar to the “ooooo” remarks from earlier, become a source of amusement within itself. The SeemsGood emote is a picture of a man holding the “thumbs up” sign; here, it is used sarcastically as there are clear issues in the stream. The SoBayed emote also serves as an indicator of quality, in that the stream is “so bad”. And again, EleGiggle and 4Head serve to punctuate the copy-paste with a mocking laughter. Its use is obvious: chatters are highlighting the various issues with the stream and using it to assign blame on the tournament host, ESL.

The copied phrase requires understanding of previous emotes, references, and awareness of the current situation in chat. Despite these prerequisites, the phrase catches on, and use of the copy-paste dominates the chat. Thus even when the stream is considered to be deficient or unsatisfactory, the chat is still able to derive gratifications from the experience as a whole. The new spam proves to be strong, maintaining the chat in a Collective Phase for several minutes. Within minutes of its creation, it is picked up and utilized by nearly everyone participating in chat. Though ostensibly one of annoyance, the copy-paste serves to pass the time in chat as the issues resolve themselves, or more events spur the chat’s attention.

Note that even though the chat is engaging in collectively spamming this new emote, a lack of precipitating factors (i.e. actual action in the match) has caused the pace to slow enough to where some chatters directly acknowledge the presence of Dendi, another famous player in the chat, with the DendiFace and WinWaker emotes.





**Figure 33.** Chat mocks the player “EE” by typing variants of “fEEd” at 13:40

This collective chant continues unbroken until 13:40, where the player EternalEnvy is killed in-game. Upon his death, the chat is spurred into pre-established mocking epithets, evidenced by the use of “fEEd” in figure 33 – “feed” being a game term used when a player dies repeatedly to the enemy team.

Again, SirActionSlacks makes a comment, but it goes unacknowledged unlike Dendi’s comments because now the chat is busy engaging in collective behavior. Less than a minute later, however, the chat reverts to its previous spam about the quality of ESL.



**Figure 34.** The ESL spam sees a permutation at 16:02

At this point the phrase has been repeated frequently enough that the chat is wholly familiar with it. Its presence and volume is not appreciated by everyone, however, and users begin altering this new catchphrase to suit the situation. In this case, the phrase is altered so that it becomes a criticism of Twitch chat itself, shown by arkenthera in figure 34. Utilizing the same format and emotes, it now reads “DANK MEMES / 2K MMR PPL / RETARDED SPAM/ MUST BE TWITCH CHAT”. “Dank memes” is a common phrase on Internet circles meaning a meme that has seen much use, typically in an ironic manner. “2K MMR PPL” refers to players who are at a skill level considered to be “low” in *Dota 2* competitive play. Thus certain portions of chat





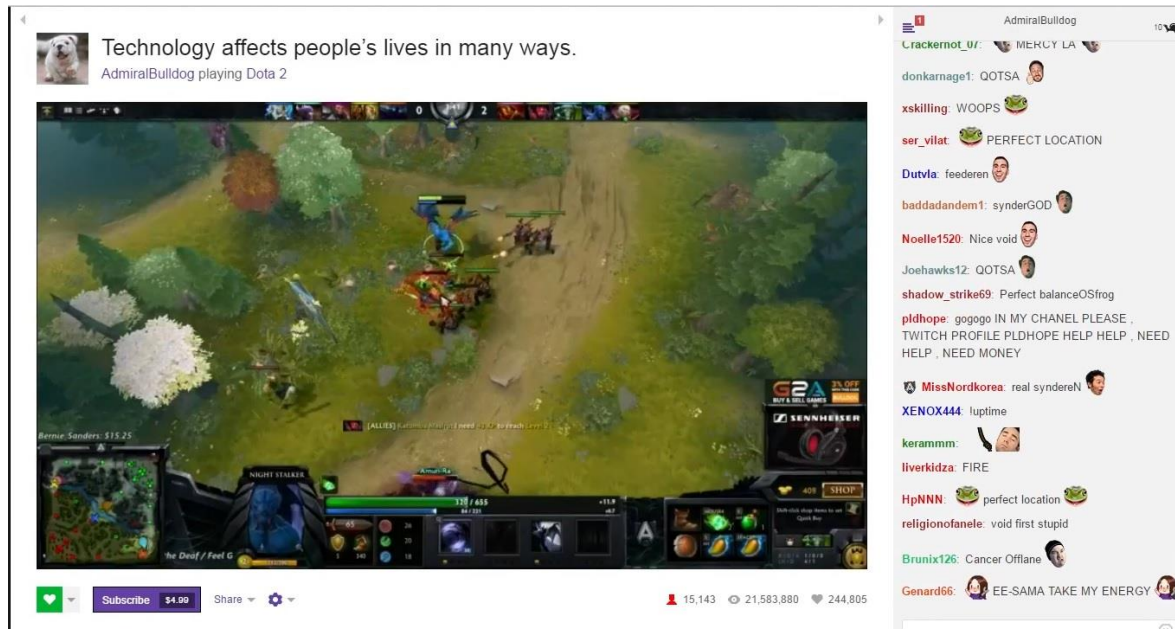
to whatever they want to comment on at the time. Some, such as Exotic22 and Springof11fe's, are localized, serving as flames to Team Secret's perceived poor play. Others, such as Lcane's, insult the game structure itself, bring light to the unsatisfactory implementation of recent features. TheLegendAK subverts the formula by turning it into a criticism of the US itself, where the tournament is hosted. Still others, like autonomnom and Bongspam, play with the formula even more and highlight the absurdity such a format by referencing *Warcraft*, a completely separate game series. User Bongspam takes it even one step further, typing the comment in the game's fictional language!

This snippet was chosen because it is representative of the chat experience during a typical match. In it, all manner of complex socializations can be seen occurring, and is a clear demonstration of the manner in which participants in Twitch chat use the medium to achieve their gratifications and enhance the experience. It also serves to highlight the difference between Twitch chat and other, more conventional social media. The constant revelry and collective actions of crowd participation are a stark contrast to other programs such as Facebook, Twitter, or even traditional chat rooms. Collectively responding to entertaining moments on stream carries with it a level of appeal in itself, as the crowd's reaction becomes an integral part of the spectator experience. Thus chat participants contribute to their own entertainment as they coordinate their behavior with others on the stream, forming a feedback loop of gratifications. Entertainment seems paramount to the cost of everything else, even a chatter's ability to participate.

## 8.2 AdmiralBulldog's Stream

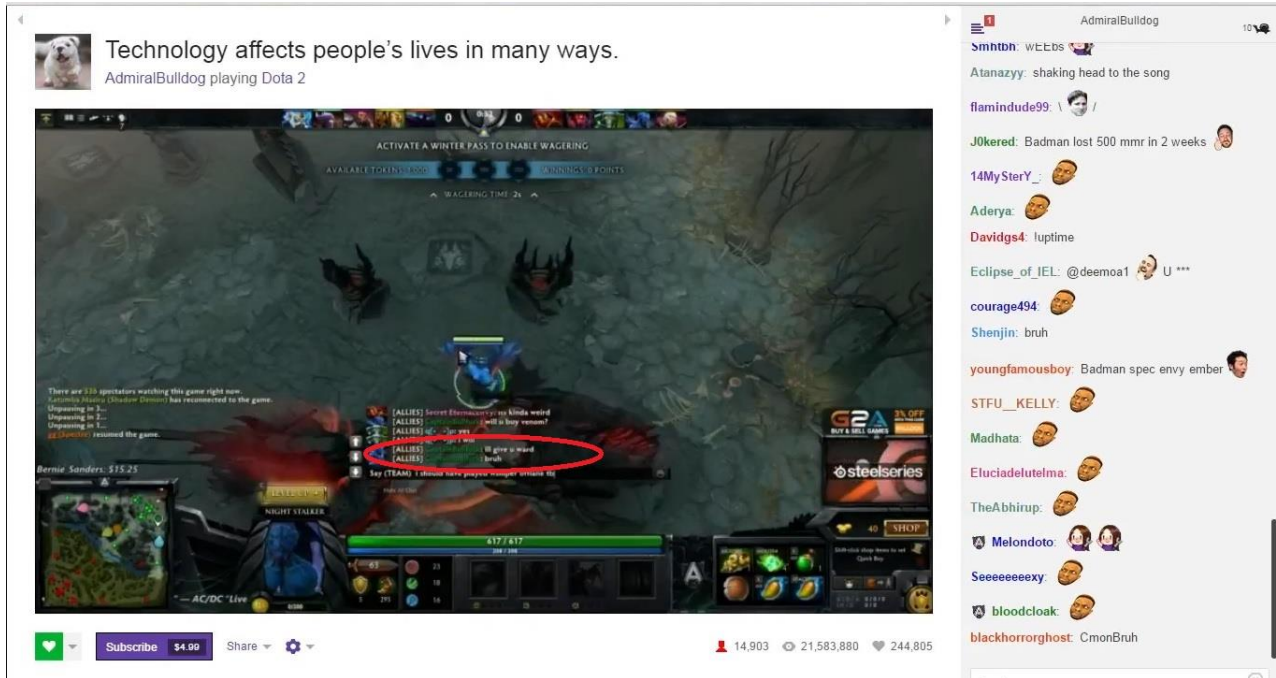
The next sample comes from the professional *Dota 2* player and streamer AdmiralBulldog's personal channel. The following data was taken from a typical daily stream on March 18, 2016. Instead of professional competitive matches like in tournaments, single streamers typically stream themselves playing public matches ("pubs") with randomized teammates and opponents. Instead of a professional caster narrating the action, the affair is much more casual, with the host reacting to the game or the viewers as he wishes, typically responding vocally to text in chat. The

streamer will often commentate on events in the game out loud, explaining his actions to the audience and justifying the decisions he makes. An average snippet of a stream can be seen in figure 36.



**Figure 36.** AdmiralBulldog stream in session with chat in crowd phase

At the beginning of the stream, AdmiralBulldog (or just “Bulldog”) bargains with a player in-game for an item, punctuating his sentence with the word “bruh” as shown in the red circle in figure 37. Chatters such as Aderya immediately respond with the emote “cmonBruh”, spammed for no reason other than the inclusion of the word. The emote is rarely used in *Dota 2* streams otherwise.



**Figure 37.** Chat spams the cmonBruh emote

This continues for a few seconds until one of his teammates speaks over the in-game microphone, revealing himself to be the professional player EternalEnvy, the same EternalEnvy from the ESL One example. In figure 38, the chat reacts with surprise and acknowledges his presence, diverting attention from the cmonBruh emote. This causes a shift in subject matter in chat. The reaction to this discovery is mixed, and there is a variety of emotes and pre-established catchphrases used to express either dismay or joy at his presence. Generally, stating the subject (in this case, “EE”) and including an emote is sufficient to communicate an opinion on the matter. Note that even though the reaction is mixed, they still express their dismay or excitement using Twitch conventions like emotes.

For instance, the comments with the Kreygasm emote, such from user Doubtgin, convey a sense of exaggerated, pleasant surprise. Since Kreygasm has a degree of sexual connotation to it, the comedic effect is enhanced. However, these comments are not sarcastic, even if they may be hyperbolic. Users such as Doubtgin are generally interpreting the discovery of EE in the stream as positive. The same applies to those using the PogChamp emote, such as Brunix126. PogChamp is also a similar emote to express astonishment or amazement.



**Figure 38.** A mixed reaction to EternalEnvy’s presence

In contrast, comments such as “wEEbs” or “rEEtard” are insulting to various degrees. “wEEbs” is a play on weeb, Internet slang for a person who is infatuated with Japanese culture, which EternalEnvy considers himself. “rEEtard” is more straightforward as a portmanteau of “EE” and “retard”. User kinetomo simply screams “NOOOOOOOOO NOT EE,” expressing their disdain for the player.

Note that a short exchange between users flamindude99 and 14MySterY\_ actually occurs here, with both participants communicating primarily through emote. User flamindude99 sends 14MySterY a Kappa, likely as a knowing acknowledgement to a previous comment, to which 14MySterY points out the current situation in chat by typing the 4Head emote, followed by “EE”. It is unknown what the shared joke between the two was, but it is worth noting that besides the

name EE, the two were able to communicate entirely through meanings inferred from Twitch emotes.

Soon after, AdmiralBulldog aggressively attacks two enemy players from an unfavorable position and gains an advantage over them, ensuring his team's lead, wherein chat expresses astonishment with the PogChamp emote, shown in figure 39. Xyrter and xL\_Elfx1 use the Kreygasm emote to convey the same message, much in the same manner Kreygasm was used by some users in figure 38. Verloren916 and Hidespb use PogChamp as well, but also state what part of the play it was that impressed them, with "mango" and "salve" being in-game items used to achieve victory. Groblje even goes as far to say "GG", an abbreviation for "good game", which implies that the match is already won.



**Figure 39.** Viewers express their astonishment with the PogChamp emote



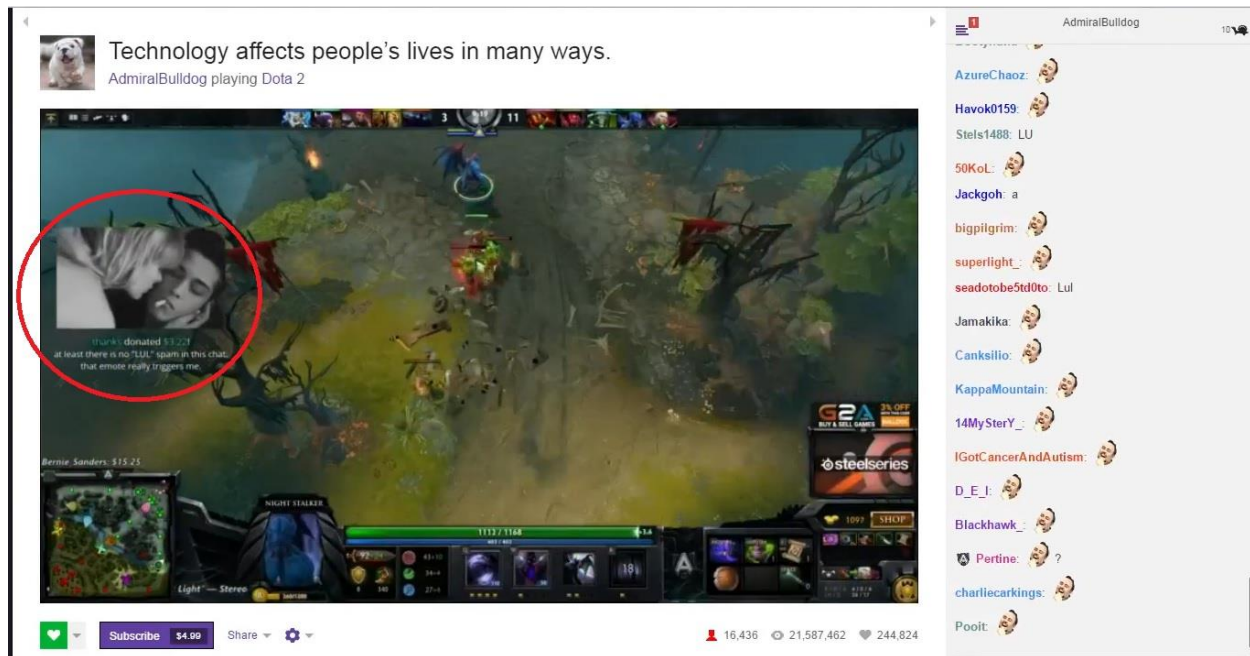


**Figure 40.** Chat responds to in-game communication

In figure 40, a teammate on AdmiralBulldog’s team types “forehead” into the in-game chat function as a reaction to an in-game event (red circle). The word has no in-game meaning and is clearly a reference to the chat emote 4Head, which the chat characteristically responds to by spamming the emote in question. In this case, a *Dota 2* player unaffiliated with the stream is aware of his teammates’ popularity and the likelihood that he is being watched through AdmiralBulldog’s stream. Thus he acknowledges the chat audience by typing a Twitch emote into the in-game client. Though the in-game player has no way of seeing the stream unless he has the stream open himself, he acknowledges the audience watching him with their own “language”. This knowledge of Twitch culture outside of its own environment is an indicator of Twitch’s popularity and ubiquity in the gaming world.

In figure 41, AdmiralBulldog receives a sponsored comment from a viewer. The donation is displayed prominently on the left hand side of the screen. The donor’s name, donation amount, as well as a donation message are visible. The donation message is read aloud by voice-to-text software so that everyone in the stream can see and hear it. Additionally, an image and brief sound byte (both predetermined by the streamer) play when a donation is received. In this case, the donor identified themselves as “thanks” with a donation message which states “at least there is no ‘LUL’ spam in chat. that emote really triggers me.” The chat then proceeds to spam the “LUL” emote immediately, shown in figure 41. LUL is an intentional misspelling of LOL, used

to indicate funny moments; however, it is often used in a gratuitous, intentionally obnoxious manner. It is often spammed in chat, to which others respond in mock annoyance or anger, causing the chat to spam even more. Here, the author of the sponsored comment is aware of this, intentionally referencing the emote in order to set up the joke.



**Figure 41.** A sponsored comment emerges and chat reacts accordingly

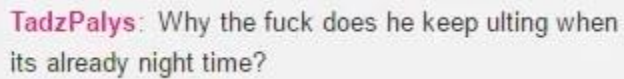
There are several notable interactions at play in this moment. The donor writes a message in the form of a sponsored comment (red circle) knowing that Twitch chat will see it. Their message includes a reference to an emote and disdains its use. Chat then spams said emote in a playfully antagonistic manner. It is clear that the donor is familiar with the stream culture and thus constructs a message which maximizes the response as well as entertainment factor. The seemingly arbitrary donation amount of \$3.22 reinforces this notion, as the number 322 is a well-established reference to throwing matches in the *Dota 2* community. Thus the donor's true intention was not to express an opinion, but to provoke a collective response from chat.

The chat takes no issue with this and obliges with neither question nor hesitation. In this way, chat does not mind "playing along" as long as their own gratifications are met; namely, "trolling" a user by doing the exact opposite of their stated wish. Even though the setup is obvious, the act



is entertaining enough in itself for chat to enter a collective phase. Notably, the donor does not address AdmiralBulldog at all and instead directly comments on the status of the chat. In this case, the donation was simply a medium with which to increase the entertainment value of the stream.

In figure 42, a viewer in chat asks about the use of certain abilities in the game, showing elements of analysis and armchair commentary with his abrasive manner.

A screenshot of a chat message from a user named TadzPalys. The message is displayed in a light gray box with a pinkish-purple header for the user's name. The text of the message is: "Why the fuck does he keep ulting when its already night time?"

**TadzPalys:** Why the fuck does he keep ulting when its already night time?

**Figure 42.** A viewer poses a question to chat

Despite the distraction of the match and the flood of other comments, AdmiralBulldog answers this on his stream by speaking directly to the player as he continues his match:

“Why do I keep ulting when it’s night time? Well, you see bro, this ult has an effect that when you use it, vision becomes 675. Now the normal night vision is 800. So they have less vision when I use it. And it also goes for wards. Using it during night is pretty good.”



**Figure 43.** Chat reacts to Bulldog’s advice

Upon explaining this game mechanic and rationale for his actions, the chat commends him on his advice with the SeemsGood emote, demonstrated by users like Selarenus in figure 43. The chat expresses a (likely feigned) sense of gratitude in a manner which conforms to Twitch norms. User Cinderwind’s variation of “THX PURGE”, which references the community figure Purge, who specializes in helping new players, reinforces the sarcastic tone of the responses. Facetious or otherwise, AdmiralBulldog’s interaction in chat is acknowledged but does not break Twitch’s characteristic lighthearted demeanor.

It should be noted that through the entire stream, AdmiralBulldog is constantly narrating, interacting with, and responding to his audience verbally during the entire stream. Often, he will play up or exaggerate his reaction to situations in order to elicit a stronger reaction from chat. He is aware of the potentially intimate connection between the streamer and his audience, and works

constantly to strengthen such bonds. Thus regular viewers who enter an AdmiralBulldog stream have some idea of what to expect; in this way, he builds rapport with the viewers, and increases the popularity of his stream as a result.

### 8.3 Discussion

These samples can be taken as representative of typical *Dota 2* Twitch streams. In both, there is constant interaction in the form of memes, in-jokes, emotes, and any other variety of commentary, highlighting the importance of community on Twitch. The popularity and success of Twitch streaming lies in this community aspect, which differs from traditional media in several ways.

The strength and appeal of the Twitch format is how it facilitates the option of selective participation; that is to say, users can set the pace with which they choose to use media. As with traditional media, Twitch users ebb and flow in terms of how engaged they are with the subject at hand (Ruggiero 2000: 11). However, Twitch is a format which does not require a user's constant attention in order to receive gratifications. Traditional media such as television or film requires the viewer's attention for fairly large amounts of time, and the user's experience is significantly diminished if this attention is interrupted or incomplete. A movie that is interrupted halfway through, for example, would no doubt provide fewer gratifications than one watched to completion. In contrast, a viewer who watches a stream for 10 minutes, leaves for 10 minutes, then returns for 10 minutes can potentially receive the same gratifications as one who watches for 30 minutes continuously. That is because the chat is constantly generating opportunities for gratifications within itself in the form of in-jokes, memes, and references which any passerby can engage in. Conversely, there is no particular incentive for a viewer to watch a stream from its very beginning to its very end. Indeed, given the fact that individual stream times are, at best, only loosely bound to schedule, there are always streams available, and streams can be extremely long (8 or more hours), it is impractical for a user to consume it the same way as they do television. This constant availability without the need for commitment is appealing in a world where attention is a precious commodity.

Furthermore, traditional media offers no venue for instant feedback by the community. A complaint voiced to a television program is limited to those within earshot; a complaint in the Twitch channel can potentially be seen by everyone viewing, including those involved in the production. With Twitch chat, viewers can join their voices with each other, and collectively voice their opinion. They have more power to tailor their experience to their preferences, leading to a deeper and more versatile set of uses and gratifications.

## 9 CONCLUSION

This study was an initial foray into the newly budding field of social interaction in the context of live streaming and e-sports. As the subject is both new and enormous, the scope was narrowed to a single game's community, *Dota 2*. To the uninitiated, the interactions occurring on the Twitch website can be an intimidating and impenetrable fog. This study aimed to decipher and explore the use of communicative methods on Twitch.tv.

The first research goal was understanding the structure of Twitch chat. In essence, the chat is a highly responsive, fast-paced communicative medium which serves as a collective voice for the audience watching. As comments appear in real time alongside the action, it is possible to get an idea of notable events in the stream based on comments from the chat alone. Since having a sustained conversation is nearly impossible in a busy stream, chat participants have developed methods of expressing themselves with limited input from other chatters. This is not to say people do not respond to each other in chat at all; this simply means that chat language evolves in such a way that takes advantage of the continuous, frenetic nature of the medium. By exploiting emotes, memes, and a shared knowledge base, audience members have found a way to make themselves heard by fashioning messages which are attention-grabbing and easy to comprehend. To a limited extent, viewers in are able to guide their own uses and gratifications based on the momentum of the chat.

The second research goal was identifying motivators of behavior in the chat. The addition of a chat feature to the stream format opens up a whole new array of communicative options, leading to a plethora of potential uses and gratifications unavailable in more static media such as television, radio, film, or even other online communities. With the option to collectively voice feedback instantly, users can tailor their experience to an extent unknown to other mediums. Chatters can express anger, frustration, shock, excitement, laughter, and any number of other emotions in unison with their peers. They can voice their complaints in a volume that carries real gravitas in affecting the stream. Furthermore, the simultaneous interactions of thousands of viewers foster a sense of community and solidarity amongst like-minded individuals. Users can share jokes, references, and ideas with each other, reaching an "emotional consensus" in

response to onscreen stimuli. Chat's behavior highlights the importance and potential of a communicative or feedback option in new media. In today's increasingly connected world, being able to instantly share and process information as a group is quickly becoming a requirement.

The third research goal was distinguishing Twitch chat from other online communities. In the duration of the study, Twitch chat's behavioral models were found to greatly resemble that of a crowd's, rather than those of a traditional online community. Subsequently, the patterns of chat's behavior are affected as a result. Chat passes through "phases" in which user activity varies depending on which phase it is currently in. The phase of chat is a telling indicator of how users would behave to events on stream. In the chat phase, user activity resembles that of a conventional chat room. However, as a channel approaches the crowd phase, it takes on increasingly distinct characteristics which are now considered hallmarks of Twitch chat. Upon reaching the collective phase, chat displays astounding synchronicity in its actions. Despite the seemingly disorganized nature and rapid pace of chat, relatively predictable patterns of behavior could be observed with the chat aligning its output to the action on stream. Multitudes of specific emotes, turns of phrase, and memes are utilized with great speed in a highly situational fashion. Chat was found to be able to adapt to new or unfamiliar situations extremely quickly, formulating new jokes and references and spreading their use within minutes or even seconds of their inception.

The study had a few notable limitations. Most prominently, the sheer youth of the field meant being limited to preliminary research on Twitch and livestreaming. Few studies of this length and depth on the subject were available, and there was very little about the subject of Twitch chat itself.

The massive amount of streams available on Twitch meant restricting data only to *Dota 2* streams. Since there are other titles just as, if not more popular than *Dota 2*, they also have subcultures and followings worthy of study, complete with their own memes, jokes, and references. Some gamer niches could have wildly different uses for certain emotes, for example, though the structure of chat likely remains the same.

Another limitation is the inherent speed at which Twitch and online culture evolves. From the beginning of the study to the end, several features were added to Twitch which could possibly affect the way users experience the site in the future. Furthermore, by the end of the study, a whole new set of memes, in-jokes, and uses for emotes had emerged.

Perhaps most vitally, this study only examined uses, gratifications, and chat behaviors in the context in which they were created. There was no data gathered on how Twitch participants used Twitch on an individual basis, meaning no insight on how Twitch affects users privately or mentally was gained. Comments were essentially taken at face value in regards to their relationship with other chatters. What external pressures were influencing individual comments, if any, are unknown.

Future studies have much to explore in the field. Most immediate is the subcultures of other games, and how their userbases manipulate the chat environment to serve their purposes. Other aspects of gaming, such as speedrunning or Let's Play videos, are communities with large followings, and were untouched. Later research could also more accurately track and gauge collective behavior in chat; how many of a certain emote were used in a single time frame, for example. As of now, only general characteristics were described. Later models could potentially predict behavior in chat outright. More uses and gratifications will surely emerge as more features and viewers are added. As Twitch inevitably continues to evolve, so too will the methods necessary to study it.

Twitch and livestreaming has the potential to reshape how people utilize modern media. As a new generation of consumers is raised on IPTV, they will be able to exert stronger control and selection based on their interests. Often, the audience becomes a self-propagating form of entertainment; to many, the chat in Twitch is an integral part of the experience. The ability to collectively express ideas in an instant grants an important measure of control to the viewer. Ultimately, as technology continues to progress, viewers will demand more out of their media in an increasingly connected world. Twitch chat is the lifeline between performer and audience, and provides a human element to a potentially lonely user experience. The inclusion of a communication tool adds an entirely new dimension of possibilities for the viewer.

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