

Starcraft from the Stands: Understanding the Game Spectator

Gifford Cheung
Information School
University of Washington
giffordc@u.washington.edu

Jeff Huang
Information School
University of Washington
chi@jeffhuang.com

ABSTRACT

Video games are primarily designed for the players. However, video game spectating is also a popular activity, boosted by the rise of online video sites and major gaming tournaments. In this paper, we focus on the spectator, who is emerging as an important stakeholder in video games. Our study focuses on Starcraft, a popular real-time strategy game with millions of spectators and high level tournament play. We have collected over a hundred stories of the Starcraft spectator from online sources, aiming for as diverse a group as possible. We make three contributions using this data: i) we find nine personas in the data that tell us who the spectators are and why they spectate; ii) we strive to understand how different stakeholders, like commentators, players, crowds, and game designers, affect the spectator experience; and iii) we infer from the spectators' expressions what makes the game entertaining to watch, forming a theory of distinct types of information asymmetry that create suspense for the spectator. One design implication derived from these findings is that, rather than presenting as much information to the spectator as possible, it is more important for the stakeholders to be able to decide *how* and *when* they uncover that information.

Author Keywords

Spectators, Video Games, Starcraft.

ACM Classification Keywords

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

General Terms

Human Factors.

INTRODUCTION

Video games are primarily designed for the players. However, the players are not the only people engaged with the game. In this paper, we turn our attention to the spectators, those who watch but do not directly interact with the game.

Spectating has been common in physical sports as well as contests of mental wits: spectators gathering in the park to watch chess champion Garry Kasparov or audiences watching game shows on television. The presence of a large spectating audience can generate more attention to the game, drive sales of the game, increase advertising revenue, and even improve the experience for the players themselves. Additionally, spectators have been found to meet social needs for the community [6]. We want to know more about the context of their spectating so that game designers can better design video games as spectator activities. To achieve this, we ask three fundamental research questions about spectators.

RQ1 Who are the spectators and why do they spectate?

RQ2 How do different stakeholders affect the spectator experience?

RQ3 What makes spectating a game *enjoyable*?

We have selected Starcraft, a popular real-time strategy computer game, to study in depth. Originally released in the United States by Blizzard Entertainment, Starcraft became popular in Internet cafes throughout South Korea in 1998 [10]. The cafes fostered competition and spectatorship. As the phenomenon grew, competition became tournaments and leagues; spectators became fans and community. Dedicated television channels broadcast Starcraft matches in South Korea. This has fostered a complex supporting infrastructure of professional leagues, teams, and superstars. Furthermore, more than a decade after its release, Blizzard Entertainment has released a sequel (Starcraft 2) with intentions of furthering it as an electronic spectator sport [18]. We chose to focus on the Starcraft series because it is the most successful case of video game spectating, with large audiences and wide appeal. In Korea, Starcraft closely resembles spectator sports in its presentation and audience, a game played by many and watched by many.

First we define spectating and introduce Starcraft, the target of our empirical study. Next we describe the method and data gathered in the study. Then we analyze the data from the study and present theories addressing our research questions. We develop a framework of the spectator ecosystem, and explore information asymmetry as a source of spectator entertainment. The theories lead to implications for design and a better understanding of game spectators.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

CHI 2011, May 7–12, 2011, Vancouver, BC, Canada.

Copyright 2011 ACM 978-1-4503-0267-8/11/05...\$10.00.

How do we define spectating?

Spectators are people who follow the in-game experience, but are not direct participants in the game. This definition includes many contexts: the mother who watches Dad and the boys launch ‘threes’ in NBA 2K10 but refuses to play; a crowd in a conference ballroom cheering on Street Fighter 4 tournament contenders; or the kid looking over his brother's shoulder, advising him on how best to catch a rare Pokémon. Those scenarios, and more, are worth consideration from game designers.

RELATED WORK

Game Studies and Play Theory

Cultural anthropologist Johan Huizinga's study of the *play* element in culture [11] is a widely cited definition of play. In his work, we find ideas for defining the spectator. Huizinga's major conceptualization of players is that they hold a hedged existence ‘*outside* ordinary life’; this concept is referred to as the “magic circle” by Salen and Zimmerman [17]. Our challenge is to determine the proper position of the spectator with respect to the magic circle: *inside* or *outside*? The answer may be both.

On one hand, a spectator can be just as immersed in the reality of the game as players who have a direct hand in the final outcome of the game. Throughout Huizinga's book we find many descriptions of spectators as participants. The audience plays along with the emotional theatrics of a savage ritual (pp. 23–24). Onlookers share the tension of play, from games of chance to challenges of great difficulty (pp. 47–49). It should be noted that in-game tension is over stakes that, Huizinga reminds us, do not necessarily have any outside meaning; they are “unimportant and a matter of indifference” (pp. 49). These spectators have adopted the values of the game-world, a position squarely *inside* the magic circle. Also related to spectatorship, Huizinga defends the playful spirit of the whole Roman civilization despite the fact that ancient gladiatorial games were played only by a fraction of that society, its slaves. Huizinga describes this as a “shift” of the competitive impulse “from the protagonist to the spectator”, but not as a disappearance of play. Rather, he points out that the spectator adopts a “vicarious attitude” and the gladiators represent and fight on behalf of the spectators (pp. 74–75). This blurred line between spectator and player is also pointed out by Sutton-Smith [21]. He describes fantasy play that is ‘rooted in the mind’ as a kind of vicarious play, a parallel to ‘active’ play. In this respect, the act of spectating is an active form of playing-along. These examples from the games literature give us three themes: commitment to the in-game values, investment in the tension of play, and the vicarious relationship between players and spectators.

However, can spectators exist *outside* of the magic circle? From Huizinga's description of play, we find barriers between “ordinary life” and the play world. One is the barrier of understanding; the values of the play world do not make sense in the ordinary. The other is a barrier of adoption; the

values of the play world are not adopted by the outsiders. This is evident by Huizinga's descriptions of the outsider perspective. A game is “ridiculous” (pp. 198), effectively nonexistent (pp. 21), “unimportant” and unprofitable (pp. 49). Do spectators exhibit these views of the game they watch? Consider the person who registers the events of a game but does not understand the shared fiction of its players: a family member who happens upon a game in progress can see that there are pieces on a board, watch the pieces move, but due to a lack of understanding or interest may remain outside of the “magic circle”. Also consider the meta-gamer: a person who is playing a different game over the same in-game events. For example, griefers actively dismiss the values of the game their victims are playing. In Second Life, an online game world, the leader of a group of griefers expresses his motivation to annoy the Second Lifers “who take their ‘metaverse’ seriously” [8]. This outsider understands the values, but refuses to adopt them. Overall, we are guided by two themes of outsiders: misunderstanding and non-adoption. In summary, game literature challenges us to watch for both participatory and non-participatory aspects of spectating.

Game Design and HCI

Drucker et al. [5] recognize that the growing popularity of video and board games includes a widening audience of spectators. They contribute design ideas for making online games more engaging and entertaining for non-players watching the game. Drucker et al. reason that key pieces of this are cinematography, commentating, awareness of the size of the audience, rich spectator interaction (e.g. kibitzing¹), and support for promoting star players and fan-based activities. Design solutions explore the technical possibilities of animation, rendering, editing, replays, automatic cameras, commentator agents, and architectural solutions.

Game design has a close relationship with spectating. Ducheneaut et al. [6], in their analysis of the social dynamics of massively multiplayer online games, call for designers to consider the importance of designing for spectators. Su [20] describes a rich community of competitive Street Fighter IV players. He notes that one of the most commonly requested features is a spectator system to allow participants to view live matches.

Reeves et al. [16] broadens the attention to spectators in any human-computer interaction. They present a taxonomy of the spectator's view based on the visibility of manipulations and effects, which can be affected by performers and interface design. We build on this theory in our conceptualization of information asymmetry. Dalsgaard [3] carries Reeves et al.'s conversation further by thinking about the user as a simultaneous operator, performer, and spectator.

¹ According to Merriam-Webster, a kibitzer is a Yiddish term for “one who looks on and often offers unwanted advice or comment <a kibitzer at a card game>”.

Dalsgaard et al. draw on the arcade game, Dance Dance Revolution, as an example: *we may denote the proficient player's experience as one of immersion...: well-timed responses to the game, socioculturally recognizable gestures and utterances such as raising ones arms in celebration, nods and comments to friends, pleasure in displaying expertise in front of strangers in a public place, adrenaline rushing in the knowledge of the imminent risk of failing.* (pp. 23)

Overall, these articles exhibit technical creativity and rich design sense. Our empirical contribution can fill speculative gaps and contribute to this discussion by providing more data about the nature and diversity of spectating.

Sports Spectating

Some sports have similarities to video games in that they have competitive players as well as spectators. Numerous studies have identified who the spectators in sporting events are, why they spectate, and how sports commentary affects the spectator experience.

Trail et al. conducted a study of why spectators watched sporting events [23]. The Motivation Scale for Sport Consumption revealed factors of aesthetics, achievement (feeling good when the team did well), drama, escape (as an escape from life), knowledge (learning about the game), physical skills, social, and family. We found that spectators watched Starcraft for many of the same reasons. Melnick elaborates further on the social motivation behind American sports spectating [13]. He notes that sports spectating is one of the last few social outlets in urban environments. The publicness and playfulness of being a sports spectator can alleviate loneliness. An empirical study of race rally attendees [7] teaches that live spectators can be disoriented in a 'viewer's paradox': present for a close, live, rich experience, but obstructed from grasping the whole sporting event. Also, they find an active attitude in spectators as they seek out information and follow the sporting event closely.

Commentators have been a common presence in many spectator sports such as hockey, golf, and professional wrestling. Some studies have examined how they affect the spectator experience. Sports commentary has commonly been divided into two personas: color commentators and play-by-play analysts. Color commentators provide background information on the players and teams as well as light humor, while play-by-play analysts describe what is happening in the game. These two types of commentators often annotate a match together, the color commentator filling in when action is not occurring on the field [2]. Bryant et al. [1] found that subjects watching a tennis match found the experience more enjoyable, exciting, involving, and interesting when the commentary depicted the players as enemies, rather than friends or neutral parties. The projected animosity between the players because of the commentators created suspense throughout the game. Cominsky et al. [2] showed that even commentators that simply report what was occurring on the screen make watching the game more entertaining and enjoyable for subjects.

STARCRAFT: A CASE STUDY

What is Starcraft?

The Starcraft games are a popular "real-time strategy" (RTS) series. RTS games can be described as war games where each player commands an army and production buildings from a bird's eye (top-down) perspective. We focus on the two major games in the Starcraft franchise: Starcraft 1 (1998) and Starcraft 2 (2010). While each game has a single player campaign as well as a multi-player mode, our study is about the multi-player mode which is more popular and commonly spectated.

In Starcraft, each player competes on a map containing key locations where resources can be mined and spent on buildings and military units. The player's vision of the board or map is limited to his or her own units and buildings, a concept called "fog of war"; this prevents them from seeing their opponent unless they perform reconnaissance. Worker units collect resources and build specialized buildings that can create marines, fighters, tanks, air units, and more. These units have a more elaborate version of a "rock-paper-scissors" dynamic. Some units are also better suited to certain strategies such as an armored "Blitzkrieg" through the enemy base, wave after wave of cheap disposable units, or sneak attacks behind enemy lines. The first player to destroy all of the opponent's buildings is the winner.

Spectator Technologies in Starcraft

In addition to watching a player's computer screen over the shoulder, there are a number of software tools available for spectating and commentating Starcraft games. Each Starcraft game can be digitally captured and then shared and replayed by the players, allowing others watch the game after it has taken place. Alternatively, the games can be arranged with an in-game observer. This client is granted the ability to see everything, but does not participate in the game. Thus, a game can be observed and broadcast in real-time. Either of these viewings can be recorded using standard video capture software, and optionally, commentary can be overlaid over the video. From here, videos are often uploaded to video sharing sites like YouTube. The original Starcraft game had a number of community-developed tools that allowed the observer to monitor each player's resources and APM (actions per minute, a metric often used to judge a player's skill). Starcraft 2 built many of these metrics into the game's spectator interface.

Why study Starcraft?

Starcraft is popular and established as an e-sport. Online videos of pro-gaming Starcraft matches are uploaded regularly to the internet and watched by fans worldwide. In South Korea, StarCraft has an active professional competition circuit. The two major game channels in South Korea, Ongamenet and MBCGame, each run a Starleague (Ongamenet Starleague, MBCgame Starleague), viewed by millions on television. Starting in about 2002, pro-gamers started organizing into teams, sponsored by large South Korean companies like Samsung, SK Telecom and KTF.

StarCraft is also the most popular computer game competition at the annual World Cyber Games, one of the world's largest game competitions in terms of prize money, global coverage and participants. In other parts of the world, Starcraft is still quite popular and watching the games is rapidly gaining traction, such as online video websites or tournaments (Figure 1). One American commentator, HDStarcraft, noted that it took one year to reach 100,000 subscribers on his Youtube channel but this has tripled to over 300,000 subscribers within the last few months. Due to the game's popularity, there were many Starcraft online communities from which we could collect data.



Figure 1: Spectators watching a Starcraft 2 match at a tournament in Raleigh, United States on August 28, 2010. Permission granted for this image by Major League Gaming.

Method

This study was conducted from a Naturalistic perspective [12] and guided by Grounded Theory [19]. We collected material from public, online sources such as videos, blog articles, forum posts, and comments, using maximum variation sampling [15]. When we approached theoretical saturation in some areas, we actively sought greater variety in types of people or contexts. This allowed us to explore the many different types of Starcraft spectators and take a broader picture of the spectating.

For analysis, we endeavored to draw theory from the data rather than to impose personal assumptions or biases on the analysis. Data-centricity required familiarity with the area as well as caution against personal biases or imposed interpretations of the data. Familiarity with the area was important in our situation because, i) games defy understanding when the analysts have never played them or a similar game and, ii) the level of jargon in the competitive communities (phrases such as “2Fac”, “gg”, “Micro/Macro”, “APM”) can be nonsense to outsiders. Both authors drew on independent personal experiences as Starcraft players in single- and multi-player contexts and Starcraft spectators in online and live Starcraft tournaments.

We sought to protect against personal bias in how we approached the data. Grounded Theory cautions its researchers from imposing a prior theory over the existing data;

instead, as the name suggests, codes, categories, and theories are meant to arise from the ‘ground up’. This does not require analysts to attempt bring a ‘blank slate’ towards analysis by avoiding related literature, but to accord to that literature its proper place during analysis. We follow Strauss and Corbin [19] by regarding related work and personal spectating experiences as knowledge meant to aid our sensitivity. “Sensitivity” (pp. 46–48) is the analyst’s ability to seek association and meaning in the data.

For keeping the analysts unbiased, Grounded Theory relies on the open/axial/selective method of coding. Open coding is the process of discovering instances and initial categories; axial coding, the discovery of broader, aggregate categories; and selective coding, the completion of the larger categories through theoretical reasoning and the effort of explaining every instance in the data. The thick inter-relationship of data instances ensures that the data itself is the primary driver for interpretation rather than prior theory or biases. In addition, we used a paired approach to analysis. The coding phases were conducted by both authors of this paper. Rather than splitting up the analysis, both authors were present during all phases of analysis. During the initial coding period where instances were labeled with basic descriptive categories, each author would validate the other’s choices, deterring the use of pet theories or forced interpretations. If disagreements arose, the authors would return to the original sources for resolution.

Procedurally, the analysis took the following form. After data collection, the two authors together wrote annotations for each data instance. Example annotations were “follows tournaments and favorite players”, “watches and listens to commentary to improve their game”, and “never played but enjoys watching with friends”. These annotations acted as concise summaries of spectating instances.

The two authors together reviewed the data in the backdrop of the annotations to cluster them through the lens of the research questions. The first step was to look at who the spectators were and why they were spectating (RQ1). The authors clustered the data (usually anecdotes) into personas to identify commonalities between different types of spectators (Figure 2). Next, the authors clustered the annotations themselves to form spectating themes. We regard these steps as the open coding step: producing basic instances grouped into 9 personas and into themes of spectating.

The goal of the axial coding step which followed was to find larger patterns within the initial groupings. The authors used the research questions (RQ2 and RQ3) as lenses to identify two major themes: insights on the spectator environment and stakeholders, and what made spectating entertaining. As these major themes took shape, the selective coding steps took place. This involved reflection over the forming themes and categories to generate new questions for returning to the data. The resulting three conceptualizations are spectating personas, the ecology of spectatorship, and spectator enjoyment.

Sample Characteristics

We collected a total of 127 comments and videos from the web, from users sharing their story of spectating Starcraft. These spectator stories came from a diverse set of sources: commentary on popular Starcraft matches, opinion pieces from veteran players, initial reactions from a first-time Starcraft spectator, etc.. Common sources were social news sites like Reddit, Metafilter, and Slashdot; Blizzard Forums, Starcraft player sites, and commentary community forums (especially the Introduce Yourself sections) provided perspectives from active spectators and commentators. We organized these data in a large spreadsheet. There were 5 articles, 10 article comments, 8 blog posts, 36 comments, 39 forum posts, 19 videos, and 9 video comments.



Figure 2: Spectator stories printed from online sources being annotated and clustered on a table.

PERSONAS

We identified nine personas from the data to understand each spectator as a person. These personas are not mutually exclusive; a person may be a mix of multiple personas.

The Bystander – “i remember watching AoE at the austrian WCG finals (never played it tho) it looked so boring, and when one of the 2 players left, i didnt even know why :D” The Bystander is the least engaged of the spectators. He or she is exemplified by an outsider’s perspective. We distinguish between two different groups of Bystanders.

The first is the bystander who has little to no understanding of the mechanics of the game. This is the *uninformed bystander*. He or she lacks knowledge for explaining the meaning of the in-game actions. For example, a person may visit her boyfriend and see that he is playing Starcraft; or, as in the quote above, a conference attendee may come across a tournament for a game he has never played. In addition to the serendipitous encounter with the game, the uninformed bystander finds much of the game incomprehensible.

The second is the bystander who is not originally invested in the game—ignorant of the players, what the techniques are, what the plays are, or who the winner will be. This is the *uninvested bystander*. In their introductory posts, many Starcraft forum members talked about how they “stumbled” onto a Youtube video and eventually became engaged in the

professional-gaming scene. A common element in their story is that they played Starcraft many years ago, but had stopped playing the game long before this recent re-discovery. We interpret the proper description of them at the moment of stumbling as “uninvested”. Their outsider status is not “uninformed” because they have a basic understanding of Starcraft; but, they are outsiders because there is no investment in the game.

The Curious – “Once I ... learn all of this for myself, it will become far less fascinating, but right now it's all new and exciting.” “Before i thought SC was slow, ugly, and ponderous like a drunken elephant, but as i watched pro gamers go at it, i realized that SC was fast, harsh, and hardcore. I started watching more and more commentary's[sic], learning more about SC then i had ever thought possible.” The Curious spectator focuses his or her attention on knowledge-gaps about the game. As long as there is something that is incomprehensible and that can be discovered by spectating, the experience remains engrossing. In the data, spectators report fascination with understanding the basics of the game, depth of the game (comparing it to Chess), the nature of the game (“fast, harsh, and hardcore”), idiosyncrasies of the game engine, new strategies, and different players. The Curious has the following criteria: engagement only as long as there is more to learn.

The Inspired – “Starcraft 2 played by experts is absolutely great to watch. I could definitely get behind some of the players out there. It actually makes me want to fire the game up and try the same shit.” “Watching all the talent and hearing all of these in-depth analyses of advanced strategy has inspired me to go buy the game myself and start playing playerVsplayer online for the first time.” After spectating, the Inspired is eager to play the game himself/herself. Sometimes it is to try the same strategies that they witnessed; sometimes the enthusiasm is more broadly directed at the game itself. The experience of watching is, for the Inspired, a catalyst for putting themselves in front of a computer and playing for themselves. The purpose is to evoke the same thrill that they experienced as a spectator.

The Pupil – “At the same time I learned the benefits of watching replays of matches where I'd gotten panned, because I'd always come away with some trick or idea (hard not to when SC2 lets you watch how your opponent moved his camera and cursor)” Much like the Curious, the Pupil wants to understand the game and the techniques of the players. However, what distinguishes the Pupil is the emphasis on translating knowledge to practice. The Pupil’s question is not merely “How did he do that?” it is also, “How does this information change how I play?” This emphasis reframes what medium of watching is favored by the Pupil. As a result, compared to others, the Pupil is more interested in spectating content with high amounts of detailed information: videos that show the screen of the player (“first-person video on demand” or FPVOD) and replays.

The Unsatisfied – “I started playing the single player game with my son and he is constantly bugging me to play so it is

likely I will only get to watch him play and see the story” The Unsatisfied sees the act of spectating as a weaker substitute for the activity he or she would rather do. Overall, the spectating experience is inadequate because, for example, the Unsatisfied would rather be playing the game. What is particular about this category for Starcraft (and we believe for gaming in general) is the close connection between watching a game and playing it. For example, as a spectator grows more inspired by watching a game, the desire to play begins to compete with the desire to watch the game.

The Entertained – “On the other hand, I have never really played SC but I enjoy watching it greatly. My girlfriend has never played games at all and she loves watching SC. Not WC3. Why would that be?” On the opposite end of the spectrum of Playing vs. Watching are those who find satisfaction in watching, which many prefer over playing. For these, watching affords the experience of playing without the stress. The Entertained watches for entertainment, much like a person watches a television show or movie. Watching solely for entertainment was a very common story from our dataset. From fandom to the spectacle and more, the reasons for enjoying the game were so diverse that we will elaborate further in the section titled ‘Entertaining the Spectator’.

The Assistant – “When Starcraft came out my brother always played it (since we had only 1 computer) and I would always sit next to him and helping him like telling him he is under attack in that section, your research is complete (I know the computer gives you this messages but you can't handle everything at once), it was like I was playing the in-game assistant.” Spectators often have the opportunity to impact the game in-progress. Two examples of this are to act as an advisor to the player and to help the player focus on the game. The advisor acts as a second pair of eyes, giving the player reminders about what to do and alerts about key events that may have gone unnoticed. The other example is generally external to the game where the assistance is meant to make it easier for the player to focus on the game. Feeding snacks to the gamer is an example of this: *“[My ex] gets stressed out playing herself, but she found watching just as fun. She would goad me into playing long into the night, getting me sandwiches and beers.”*

The Commentator – “I really appreciate the insight [commentators] give on players, about their past accomplishments and how they've been doing recently, coming into a match. It's much more enjoyable when you know the players and the stakes.” The Commentator or “shoutcaster” is both spectator and a performer. He shapes the viewing experience of other spectators by providing a running commentary of the game. Amateur commentators on Youtube are sometimes dependent on the ‘camera’ operator, known as the ‘observer’ (hereafter, “observer-cameraman”), who controls the game UI to show the audience what is happening, while the commentator provides the voiceover. For example, an American caster named Moletrap casting a pre-recorded professional Korean match could not control when the video revealed game information relevant to his com-

mentary. Unable to order the observer-cameraman to focus on a unit to show its upgrade level, he (helplessly) mutters, “click on a muta, click on a muta.” In other cases, the observer-cameraman and the commentator are the same person, juggling both responsibilities.

A commentator is capable of conveying excitement and emotion that draws the crowd in to similar emotional reactions to the game. *“[Korean commentators] go crazy. Hell, I loved watching [videos on demand] from the time when Heman and Madfrog were in Korea, back in the glory days. The REACTIONS are what make watching these things fun.”* Conversations drawn from the data were filled with meta-commentary about casting styles and favorite commentators. This parallels the previously described studies in sports commentary that make the game more enjoyable to the spectators [6]. Paired commentary is not uncommon, with spectators noting that one commentator is more technical while the other does more lightweight banter, like in many sportscasts [2]. Technically, commentators are valued for their ability to expose the depth of the game. Our analysis suggests that, as information gatekeepers, the commentator (along with the observer-cameraman) is the person who has the most influence on the audience. Our ‘Information Asymmetry’ section covers this later.

The Crowd – “I know if something insane happens, there's going to be an insane reaction. From the crowd, from the commentators, from the players and coaches even! The fact that there's a scene makes a huge difference.” There is a strong communal aspect to spectating and a pleasure in watching a game as a group that matches behavior for traditional sporting events. We uncovered insights on group watching that we elaborate on in the following section.

THE SPECTATOR ECOSYSTEM

Spectating involves a communal aspect where fans derive a common social experience [1,2,3,6]. Here we present some key themes that we observed.

The Spectator Ecosystem— We use the term *ecosystem* to convey a sense of the inter-related aspect of game spectatorship. What is relevant about this characterization are the interrelated ties—ties that also include the players. Information dependencies arise as Pupils look towards the Commentators. Emotional experiences are shared. Social norms are established: players promise not to disappoint their fans and spectators judge players according to an understanding of sportsmanship and “bad-mannered” play.

Circles of watching— Although the game sits in the center-stage, it does not mean that the only performers are the players. The work of the broadcasters (observer-cameramen and Commentators) is another level of performance. Beyond that, the Crowd engages in little performances, trying to out-commentate the official commentators with their own analysis and prediction, or stirring up the emotions of their peers, and other reactionary performances. Dalsgaard et al. [3] describe a similar pattern for a performance at a public arcade: *This assembly of game, player, and immediate spec-*

tators can be said to exist as one situation of interaction, circumscribed by another one, namely that of spectators in the games arcade observing the friends playing. To spectators outside of the group of friends, the group of people taking turns playing make up a performative spectacle in its own right. The attention of the player and the bystanding friends are somewhat more unfocused when it comes to this second layer of performance. However, the group of alternating players is in no way oblivious to the fact that they may be the center of attention for passers-by.

Co-laboring in Spectatorship— Spectators work together to produce an enjoyable spectating experience. Most obviously, the commentators and observer-cameramen labor to shape the experience for their consumers. Venues provide food and refreshments for tournament spectators. Members of the crowd find narratives to latch onto. Informal information sharing is at work throughout. Even individuals preparing themselves to enjoy the game will actively avoid spoiling the game’s outcome beforehand.

ENTERTAINING THE SPECTATOR

We now explore the anticipated question, what makes spectating a game enjoyable? Why are people entertained by an activity they have no control over? What is it about Starcraft that gives it multiple dedicated television channels in South Korea? The community crowns players as dominant stars. Fans avidly track careers as they rise, peak, and slump. How can a single game serve as a vessel for excitement, despair, and triumph?

As we combed through the stories and revelations in our data, we focused on the entertaining points that spectators mentioned when referring to Starcraft. As expected, spectators appreciated aspects of the game such as the spectacle of battles and graphics, user interface features and a game designed to enable spectators perceive the action, tactics and units in competitive play, and the emotions evoked during competition. Spectators commented on the excitement of watching a professional player’s plans unfold. They noted that the graphics allowed them to understand who had the advantage, what the units were doing, and detect tense moments in the game. These were things Starcraft did especially well. However, we also began to find something that was intrinsic to Starcraft but less common in other games

that was a source of entertainment. We now introduce a concept that we call *information asymmetry*, sensitized by Reeves et al.’s manipulations and effects [16] described by an article (from the data) by a documentary producer who is also a Starcraft spectator [22] and supported by diverse comments from the data.

Information Asymmetry

The spectator and players each have different slices of game information. Starcraft information includes strategic plans in the players’ minds, the unit locations on the map, or the outcome of a sneak attack. Information asymmetry is the imbalance of information between the player and spectator, where due to the game design, one party is privy to some information and the other is not. We have collected evidence that information asymmetry is a fundamental source of entertainment in video games, with examples from Starcraft and other media. We list the different forms of information asymmetry and explain how they drive enjoyment in watching the game. Table 1 summarizes several examples that we elaborate on next.

One form of information asymmetry is information that is known to the player(s) but not the spectator. For example, each player knows their game plan and capabilities. They may have a well-practiced strategy or battle tactic that delights the spectator when it is executed flawlessly. Reeves et al. [16] give players credit for enhancing the spectators’ experience through deliberately hiding or showing manipulations or effects. Spectators observing the manipulations can marvel at the skill of the player, while hidden manipulations creates a gap in information between the player and spectator. The spectator cannot see what the player is doing that affects the game later. In American football, elaborate plays are developed by the coaches before the players jog on to the field, and the spectator watches them unfold. Thus the spectator enjoys the show of skill, but “*You can only marvel at a brilliant move... after it happens*” [22].

The spectator does not know what will happen and this builds tension. The spectator wonders, “will they go for a field goal or touchdown?” or “will they make a running or passing play?” They are pleasantly surprised and cheer when a play is well executed. Starcraft has many of these scenarios; one is the building build order and army compo-

Table 1: Examples of information asymmetry in Starcraft. In the first two cases, information is unknown to both the spectator and player. In the next four cases, information is known only to either the spectator or the player.

Information		Example
Spectator	Player	
Unknown	Unknown	Outcome of a close battle (often dependent on “micro”, careful skilled control of each unit by the player)
Unknown	Unknown	Unpredictable attacks: Reaver Scarabs may fizzle or decimate an army, Banelings roll over grouped marines but only if they can get close enough, Hunter Seeker Missiles track and home in on enemies
Known	Unknown	The positions and compositions of opposing players’ units; enemy armies may unintentionally collide
Known	Unknown	Traps laid by one player for another, causing catastrophic damage at inopportune times
Unknown	Known	Planned build order during the opening, especially “cheese” (unorthodox trick opening play)
Unknown	Known	Attack strategy, e.g. a multi-pronged invasion, distracting the front while dropping in behind defenses

sition, which skilled players practice before the match. These often creative permutations determine the style of play for much of the game. The excitement of watching the players play out their strategies is a learning experience for some spectators such as the Pupil and the Curious, and an enjoyable surprise to others. This is especially true in games involving “cheese”, where a player performs a risky unorthodox play at the start of the game to catch their opponent off-guard. For example, a player might construct buildings inside the enemy base without their knowing. If left undiscovered by the opponent, the player can overwhelm his opponent with an unexpected attack behind enemy lines. At first, the spectator may be confused by the player’s actions, but then delights in seeing such a rare scenario once they understand the strategy.

A second form of information asymmetry occurs in nearly all games, when information is unknown to both the player and the spectator. The unknown information may be due to chance or skill and is a source of excitement for the players and spectators. In poker games, the players and spectators stand up in anticipation of the crucial upcoming card which decides who will win the pot of money in the center of the table. This causes a build-up of excitement that spectators enjoy. In Starcraft 2, one player may control a group of Banelings, rolling bombs that decimate enemy marines but only if they can get up close, surviving enemy fire en route. Micro-managed furiously by opposing players, the banelings and marines perform a dance, appearing as though they are about to engage but then pulling back at the last moment, each trying to gain a positional advantage. In Starcraft games, this form of missing information sometimes follows from the previous type. The player will begin with an information advantage over the spectator, but eventually the spectator catches up as the player executes their actions. At some point, the player and spectator have the same known and unknown information, and the excitement steers towards revealing the unknown.

The third form of information asymmetry is when the spectator has information about the game that the player(s) do not. In games like Street Fighter, Counterstrike, chess, or sports like tennis and soccer, spectators do not have any information advantage over the player. However, in Texas Hold’em poker, which gained popularity through televised tournaments, spectators could see the two cards held by each player (hole cards), but the players could only see their own cards. Spectators would know when a player was bluffing, eliciting empathetic emotions from the spectator as the uninformed player agonized over tough decisions. Starcraft and many other RTS games have a similar concept called “fog of war”, where a player can only see the area near their units. Neither player can see the other player’s buildings or armies, but, in broadcasted games or replays, the spectator can see both. The spectator has greater knowledge of both players’ army and economy. This develops into dramatic scenarios: watching a transport vessel slowly scoot behind defensive lines for a tank drop which

may devastate a player’s economy, a player warping their main fighting force into an undetected minefield, or an invisible Dark Templar lying in wait for their opponent’s vulnerable workers to come by. The Storyteller adds, “*Or, later in the game, the hold lurker strategy, the goliaths hanging around the spot that the dropships are passing by, the DT chillin’ out at the expo, waiting to strike...*” [22]. These situations cause the spectator to wonder, “Will the player find out before it’s too late?”

Commentators can also take advantage of information asymmetry. Suspense is sometimes orchestrated by the observer-cameraman, “*Korean obs are much better at making the spectating of SC2 more exciting. That was a great choice to NOT show TLO’s tanks at the back door, and finally show it right as the roaches get in range. ... I’ve seen a lot of this stuff in Korean matches where someone is setting up an ambush or building lots of a surprise unit, and the obs focuses on other [parts of the map] and shows the stuff at the last moment.*”

This effected emotion matches one author’s experience at a Starcraft 2 tournament, where he witnessed the crowd going wild when the observer-cameraman ‘discovered’ a hidden group of tanks in the corner of the map. There was excited cheering, laughter, and clapping from the audience.

Leading to Suspense

All information asymmetry is reduced and eliminated as the game progresses. But as the information is revealed, the spectator is entertained in the process. The revelation of this information, slowly teased out, creates suspense for spectators and players. In an article of “why Starcraft attracts crowds so often” listing 14 examples of exciting spectacles [4], the majority were cases of information asymmetry leading to suspense. The examples were: crazy unexpected strategies (player has information advantage), air chases, mine drags, storm blankets, reavers, and the clash (outcomes are highly variable and thus unknown), lurker hold position trick, arbiter recall on mines, and nukes (the spectator has an information advantage over the victim player). For example, as flying transportation vessels float over enemy frontlines, spectators watch in anticipation, wondering if they will be shot down by the opponent’s turrets or if they will make it to the mining workers, devastating the opponent’s economy. Starcraft’s strength in attracting spectators lies in its many situations of long teasing information asymmetries of all three types. These drawn out unknowns build suspense for the spectators and their release is a source of entertainment.

Suspense is also a product of other events in the game. Comebacks, where players are nearly beaten but return to parity after spectacular play provides suspense. Epic games, long matches which go back and forth a lot, are another source of suspense, where the spectator feels that so much has already been invested into the game that when one player loses, it will be all for naught. Situations that result in suspense in Starcraft are frequent, increasing the overall spectator enjoyment of the game.

DISCUSSION

Spectatorship and the Magic Circle

We return to a question raised in our literature review: where the Spectator fits in the Magic Circle. From the readings, our criteria for inclusion are understanding and adoption. From our analysis, we find that this is the fence on which the Bystander sits. The examples of information and investment and the personas match thematically with the exception of the “griefer” persona which paints a picture of an outside player whose actions interfere with the game experience of the game players. This exception can be explained by architectural differences: a Starcraft match cannot be as easily interrupted in the same manner as a World of Warcraft raid. This leaves room for inquiry about the relationship between game design and spectator-as-griefer. That aside; we can safely state that spectators are typically informed and invested, and that the spectator’s relationship to the Magic Circle can be mapped inside or outside according to these two variables.

Furthermore, we have seen that Starcraft is a game where information is always in demand and that information and investment exist at *different levels*. The Pupil persona and the investment levels seen in Information Asymmetry confirm this. When there is more to understand about the game, there is greater involvement in the play. The picture of the Magic Circle for spectators changes thus: there are *many* circles. They are circumscribed according to varying levels of knowledge and investment.

Something more can be said about the nature of such depth. Our analysis suggests that both informational and investment depth come to an inevitable end (at least for Starcraft). Knowledge about a game comes to a plateau. Emotional investments in the outcome of a game are closed when the outcome is decided. This anticipated finish for spectating can be seen in traditional baseball when crowds begin to empty a stadium in the 7th or 8th inning.

Finally, we believe that our data helps untangle the “vicarious attitude” of spectatorship. In our data, we noted two distinct attitudes towards playing vs. watching. For some, playing is the preferred activity. For others, such as the Unsatisfied and Inspired, spectating fuels a desire to play. Our interpretation is that vicariousness in spectatorship should be divided into two: the satisfying and the unsatisfying. This sentiment extends the conversation on spectatorship in ways that may lead researchers to ask why, in the aftermath of a worldwide Starcraft tournament, the servers are flooded with like-minded gamers; and why some people can identify deeply with the game, follow favorite players, attend matches, and yet never play themselves.

The idea of *circles of watching* in the spectator ecology inspires reference to Goffman’s dramaturgical lens [9]. Certainly, within the “Crowd” we can say that a group identity is being acted out. There is concern, for example, over how gamers are seen by society: violent and time-wasting instead of people healthily engaged in community events.

Delving into the ‘backstage’ of one of these communities, we found a debate over the use of offensive words like ‘rape’ in the gamer community²; one issue was how such language impacted outsider perception. Another example is the concerted effort by the performers, the gamers (and, in part, the commentators) in representing themselves as athletes engaged in a match of wits and skill. Many online posters constantly compared Starcraft to other sports—chess in particular—appealing to the case that Starcraft holds equal ground in balance, depth and respectability. These portrayals impact playing style. Further investigations could examine how players balance their goal of winning the game alongside their self-portrayal as athletes, as gamers, or as celebrities.

Implications for Design

Among the possibilities of design (taking an ecological approach to spectating communities, applying personas to design, engaging the Entertained, etc...) the primacy of information leads us to share the following insight.

One naïve perspective may be that games should be designed to give as much information to the spectator as possible. In some cases, this makes sense: spectators will better understand the status of the game from seeing the banked resources each player has or the unit counts on the field, or in fighting games, statistics about the attacks or players’ match history. Games need to reveal enough information for the spectator to know what is going on, who is winning, etc. Otherwise, they are hard to watch and understand. Esbjörnsson et al. [7] recognize that race rally attendees can miss out on the whole picture of a race when they watch one corner of a race from the sidelines. However, we found that spectators enjoy situations that start with information asymmetry—that the suspense is in the revelation.

Consider game “spoilers”. Taken in light of Information Asymmetry, we can define a spoiler as information that prematurely collapses the desired game suspense for a spectator. Even information about the length of the game shown on the video playback can spoil the game for the spectator. One spectator describes a make-shift solution (and his frustrations) as he actively hides such spoilers from himself: “*if I watch [videos] on youtube i use paper+ducttape to cover the scores at the top of the screen and the "time-tracker" or how you wanna call it at the bottom, so I don't know the scores and the length of the match... BUT: I have to switch to fullscreen - so I have to close my eyes so that I can barely see anything and quickly switch to fullscreen without seeing the score or the length of the [video].*”

Stakeholders in the spectator ecosystem take opportunities to intentionally create information asymmetry. The example of a commentator purposely ignoring attack preparation only to show them at an opportune time demonstrates this. In fact, players might benefit from the ability to hide certain

² http://www.teamliquid.net/forum/viewmessage.php?topic_id=143803

information from the spectator, such as a crucial tank factory in Starcraft. Several professional Starcraft players already attempt to play in a style that is more fun to watch. HDStarcraft during a Google Tech Talk suggested, “the spectators love watching interesting and creative play; and for those of you guys that don't know, if play terran, you can go for nukes, nuclear missiles, which are very hard to use, but they're always a crowd pleaser. and tlo, the little one, uses nukes so effectively and that's one of the reasons why he's become so successful.” Information hiding would be a natural next step. Perhaps the proper question for designers to ask is not “how do we give more information to spectators?”, but rather, as spectators participate in and co-construct their own experience as a body of viewers, “where should we place control over the game information?”

CONCLUSIONS

In this paper we have defined the video game spectator: a person whose intentions range from watching the game casually to being a fan at competitive gaming tournaments. We collected over a hundred stories of the Starcraft spectator from online sources, aiming for as diverse a group as possible. Using a grounded theory approach, we then analyzed the data, annotated instances, and clustered them in different facets. These facets corresponded to the lens of our research questions, asking i) who are the spectators and why do they spectate, ii) how different stakeholders affect the spectator's experience, and iii) what a spectator finds entertaining. We drew upon the data to construct different spectator personas evident in the stories. From this, we built theoretical frameworks of the spectator ecosystem and information asymmetry. These led to design implications for improving the game watching experience for spectators.

Spectating games is a growing activity. Starcraft popularity, previously confined to Korea, has been spreading to the rest of the world thanks to the rise of video sharing sites and the release of Starcraft 2. An era when game designers and even players attend to the spectator does not seem too distant. Our paper presents a better understanding of the spectator that may support these stakeholders. These are the lessons we have learned from spectating the spectator.

REFERENCES

1. Bryant, J., Brown, D., Comisky, P.W., and Zillmann, D. 1982. Sports and Spectators: Commentary and Appreciation. *Journal of Communication*, 32(1), 109–119.
2. Cominsky, P., Bryant, J., and Zillmann, D. 1977. Commentary as a substitute for action. *Journal of Communication*, 27(3), 150–153.
3. Dalsgaard, P. and Hansen, L.K. 2008. Performing perception—staging aesthetics of interaction. *ACM Transactions of Computer-Human Interaction*, 15(3), 1–33.
4. Ddengster. 2010. Spectator moments in Starcraft. Team Liquid Forums. Retrieved September 14, 2010 from http://www.teamliquid.net/forum/viewmessage.php?topic_id=145848
5. Drucker, S., He, L., Cohen, M., Wong, C., and Gupta, A. 2002. Spectator games: A new entertainment modality of networked multiplayer games. Technical report, Microsoft Research.
6. Ducheneaut, N., Yee, N., Nickell, E., and Moore, R. J. 2006. "Alone together?": exploring the social dynamics of massively multiplayer online games. In *Proceedings of CHI '06*, 407–416.
7. Esbjörnsson, M., Brown, B., Juhlin, O., Normark, D., Östergren, M., and Laurier, E. 2006. Watching the cars go round and round: designing for active spectating. In *Proceedings of CHI '06*, 1221–1224.
8. Giles, J. 2007. Virtual entrepreneurs and 'griefers' spoil the fantasy of online worlds. *New Scientist*, September 2007, 28–29.
9. Goffman, E. 1959. *The Presentation of Self in Everyday Life*. Anchor Books, Doubleday.
10. Huhh, J. 2008. Culture and Business of PC Bangs in Korea. *Games and Culture*, 3(1), 26–37.
11. Huizinga, J. 1938. *Homo Ludens*. Beacon Press.
12. Lincoln, Y. S. and Guba, E. G. 1985. *Naturalistic Inquiry*. Sage, Newbury Park, CA.
13. Melnick, M. 1993. Searching for Sociability in the Stands: A Theory of Sports Spectating. *Journal of Sports Management*, 7(1), 44–60.
14. Nardi, B. 2010. *My Life as a Night Elf Priest: An Anthropological Account of World of Warcraft*. University of Michigan Press.
15. Patton, M.Q. 2001. *Qualitative Research and Evaluation Methods*, 234–235.
16. Reeves, S., Benford, S., O'Malley, C., and Fraser, M. 2005. Designing the spectator experience. In *Proceedings of CHI '05*, 741–750.
17. Salen, K and Zimmerman, E. 2003. *Rules of Play: Game Design Fundamentals*. The MIT Press.
18. Shea, C. 2008. Blizzard Entertainment's Frank Pearce: AU Interview. Australia, August 3, 2008. Retrieved September 23, 2010 from <http://pc.ign.com/articles/896/896078p1.html>
19. Strauss, A. and Corbin, J. 1990. *Basics of Qualitative Research*. Sage, Newbury Park, CA.
20. Su, N. 2010. Street Fighter IV: Braggadocio Off and On-Line. In *Proceedings of CSCW '10*, 361–370.
21. Sutton-Smith, B. 2001. *The Ambiguity of Play*. Harvard University Press.
22. The Storyteller. 2009. Tension in SC. Team Liquid Forums. Retrieved July 25, 2010 from http://www.teamliquid.net/forum/viewmessage.php?topic_id=87117
23. Trail, G.T., Fink, J.S., and Anderson, D.F. 2003. Sport spectator consumption behavior. *Sport Marketing Quarterly*, 12(1), 8–17.