Behind the Voices: The Practice and Challenges of Esports Casters

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ABSTRACT

Casters commentate on a live, streamed video game for a large online audience. Drawing from 20 semi-structured interviews with amateur casters of either Dota 2 or Rocket League video games and over 20 hours of participant observations, we describe the distinctive practices of two types of casters, play-by-play and color commentary. Play-by-play casters are adept at improvising a rich narrative of hype on top of live games, whereas color commentators methodically prepare to fill in the gaps of live play with informative analysis. Casters often start out alone, relying upon reflective practice to hone their craft. Through examining challenges faced by amateur casters, we identified three design opportunities for game designers to support casters and would-be casters as first-class users. These opportunities include designs that offer social support for casting, improve in-game camerawork, and facilitate access of gaming data.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; • **Applied computing** → **Computer games**.

KEYWORDS

Esports; Casting; Commentary; Play by play; Color commentary; Video games; Live streaming

1 INTRODUCTION

Esports, also known as electronic sports, is a form of competitive video gaming [16, 19, 26]. Similar to traditional athletic sports, esports has gained popularity due to its competitive and high-skill nature [26]. Live media consumers have been moving away from traditional televised broadcasts and towards online streaming platforms [18, 33]. This viewership is fueled by the novelty, escapism, leisure, and learning opportunities proffered by esports [19, 35, 45]. With prize pools as high as $25 million for a single tournament [10] and esports expecting to value over $1 billion by 2019 [24], esports is a growth industry. This growth is not only a boon for professional players, but also the team managers, coaches, tournament organizers, and casters that make up esports [16].

Esports and online video game streaming—notably through Twitch.tv—are part of this growing movement. The 2018 International Dota 2 Championship had nearly a 30% increase in average viewership on Twitch compared to 2017, with a peak of over 1 million viewers during the stream [4]. In April of 2018, four of the top five Twitch channels were esports dedicated channels, consistently averaging 2.14 million views in a single week [43]. These esports-related channels follow a similar format—they involve broadcasting esports matches that are commentated by casters [43].

Casters, or commentators, comment on live esports games for the education and entertainment of the audience [5]. Research has shown players value not only the attributes of video games (e.g., play mechanics, aesthetics) but also the actors and institutions that build and support the gaming community [37, 38]. According to Cheung and Huang and Bryant et al., from the perspective of audience enjoyment and understanding of the game, casters arguably have the greatest impact in the production of esports events [2, 5]. However, despite the convergence of readily accessible technologies such as high quality webcams and microphones coupled with social video streaming services like Twitch making casting

a viable skill for any esports enthusiast, little work has focused exclusively on the practices of casters. We believe it is an opportune time to closely examine design opportunities fostering this unprecedented trend allowing gamers a path towards becoming active stakeholders in the esports community. Identifying these design opportunities for current and budding casters will bolster the broader sociotechnical ecosystem of esports and video game live streaming.

This paper examines amateur esports casting and commentary as a separate phenomenon from gameplay or game spectatorship [5, 39]. We detail an ethnographic study involving semi-structured interviews and over 20 hours of participant observation of casters over a five month period for two popular esports games: Rocket League and Dota 2 [8, 32]. These two games represent very different genres: sports and MOBA (Multiplayer Online Battle Arena). These two games were chosen due to their different natures; Rocket League is very similar to traditional sports in form while Dota 2 is different from any traditional sport. Together, they offer a more holistic perspective into esports casting. In addition to conducting semi-structured interviews, the first two authors joined a university esports initiative and engaged in over 20 hours of participant observation on casters.

With the continuing expansion of esports, more people will inevitably be exposed to casting as a profession, resulting in an increased need for more casters to support events. We argue that an understanding of how people become casters and how they achieve successful commentary is needed to support existing casters and others who are interested in casting. Thus, we make the following contributions in this paper:

- We describe the motivations and trajectory of esports casters, many of whom start as solo casters engaged in reflective practice to improve their casting skills.
- We detail how esports casting practices draws from and expands on two styles of commentary prevalent in traditional sports [1]: *play-by-play* (calling the actions of the game) and *color* commentary (explaining the *why* behind the actions of the game). We document the distinct practices, contributions, and challenges of these two styles in esports casting.
- We argue casters should be considered stakeholders at the same level as players or tournament organizers. As such, game developers should consider design elements to support esports casting.

2 RELATED LITERATURE

Esports and video gaming in general has recently been a large area of academic interest in CHI ranging from social dynamics to live streaming. Only a few studies mention esports casting in passing. Esports casting encapsulates many of these interest areas within gaming.

Gaming and Spectatorship

Esports can be viewed as a spectator sport [13]. The user experience of spectating esports has been compared and contrasted between different esport games—common spectating elements have been identified [3], and the importance and impact of spectators has been established by studies [5, 38, 39]. Most notably, Cheung and Huang's work on Starcraft, an online real-time strategy game, identified nine personas of spectators, examining the impact of different esports stakeholders on the spectator experience and how the spectating experience can be overall improved [5]. Excitement around a game, referred to as "hype", is interwoven in esports casting as well as being an integral part of esports gameplay and spectating [38]. Hype is also used by professional esports players as a strategy to gain confidence and acclaim [14]. Massive esports online chat activity has been examined for it's use of hype as means of emotive communication [31].

Research has also investigated the social dynamics among spectators of video gamers. Previous work explored the relationship between solo and collocated gameplay by examining interpersonal dynamics between players [44]; how online gaming communities build social support in highly competitive environments through informational and instrumental support [17]; and the dynamics between esports players and spectators as well as the spectators' significant influence on the gaming experience [39, 42]. Although this body of work related to spectatorship does not specifically examine esports casters, casting is inherently a social activity between the casters and, albeit indirectly, the spectators. Aspects of casting are also apparent when spectators take a more active role to speak about the games they watch [39].

Video live streaming, an integral component to casting, has been an area of active study [40]. Previous studies have examined mobile live streaming practices [35, 41], online live streamed learning environments [22], and novel chat practices in live streamed settings [30]. Live streams of video games, including esports casting, have also received attention. Twitch has been shown to act as a virtual third place for viewers [21]. Researchers have also investigated how users engage in "crowdspeak" to communicate despite information overload with regularly tens of thousands of concurrent viewers on Twitch [15]. A case study has been done on a dedicated third-party software for the popular esport game Hearthstone to enhance communication between Twitch streamers and viewers by means of adding interactive elements to the stream [27]. Our work on esports casters' online streaming practice extends ongoing examination of live streaming practices.

Traditional Sport Casting

While the scope of this paper limits a comprehensive review on traditional sports casting, esports casting technique, style, and practices trace its roots to traditional sports casting, namely football and baseball. In particular, the differentiation between play-by-play and color commentary in esports is derivative of traditional sports broadcasting. Play-by-play casting recounts action as it is happening to the point where audience members at events will listen to a broadcast to confirm what they are seeing live [6]. Color casting is also a means to increase the drama of the action [2] by weaving stories about the action happening on the field [1]. In esports, casters are both spectators and performers [5], much as traditional sports casters both watch the game and perform for their audience. Traditional sports commentators impact the audience's perception and enjoyment of the game [1], like in esports [5]. A previous study also established a number of motivations and marketing opportunities shared between esports and traditional sports, for example television broadcasting, spectatorship, and merchandise [26].

Despite this overlap in practices, esports is distinct from traditional sports. Esports is usually an online game; face-to-face interaction between competitors is uncommon. Online streaming of game play, usually on Twitch [18, 20], is a place where communities around esports games are built [21]. In comparison, traditional sports are often broadcast on radio or cable television. This distinction is significant as online video streaming is different from traditional cable television broadcasting in several ways: online streaming reaches a much larger audience and has a lower barrier to entry [34] and provides markedly different passive and active experiences [36]. While play-by-play and color commentary are firmly entrenched in traditional sports, our study is one of the first—to the best of our knowledge—to establish its influence on esports casting. We also describe how these styles are uniquely achieved in the context of esports casting and its tools.

3 BACKGROUND

To assist the reader, we provide below a brief background on the specific games examined in this paper and the tools most often mentioned by the casters we interviewed.

The Games

Dota 2 (Figure 1) is a five-versus-five team-based fantasy Multiplayer Online Battle Arena (MOBA) game. Players pick different characters, called heroes, to battle the opposing team while defending their *base*. Players can buy different *items* and level up to get stronger. The game ends when one team's base is destroyed.

Rocket League (Figure 1) is a two-on-two or three-on-three soccer-style game played on a field encased in a large dome. Players control rocket-equipped cars to knock a large ball into a goal to score points. To defend or attack a goal, players can climb the walls of the dome to gain height, consume rocket fuel to boost their cars to fly or run into an opponent to forcibly destroy them. The team with the highest score at the end of five minutes wins.

Overall, Rocket League is the simpler game because there are less players on each team and matches last only five minutes. In contrast, Dota 2 has more complexity due the large number of heroes (115 heroes to chose from, each with 4 unique abilities) and items (162 different items that have unique interactions with each hero). Dota 2 games also last considerably longer (20–60 minutes). Choosing games that contrast in length, complexity, number of players, and depth of strategy allows us to discuss a wide range of casting challenges shared by many other games in esports.

Caster's Tools

The most frequently used software to stream on Twitch and organize casting is Open Broadcaster Software (OBS) and Discord, respectively. OBS allows streamers to capture video and audio from their computer and microphones, adjust volume levels, create and manage video layovers, and manage multiple scenes to transition between.

Discord is a free server-based text and voice chat service where anyone can create their own server and invite others to join. These servers can be based around real life communities, such as a university club, or around a shared community goal, such as helping new players learn Dota 2. Due to concerted efforts by Discord to orient itself towards the gaming community, it is now the dominant platform for esports casting organizations. In our experience it was the only platform that esports casting organizations utilized.

4 METHODS

This study employed ethnographic methods of inquiry—interviews and participant observations—into amateur esports casting of two esports games: Rocket League and Dota 2. These games were selected for their differences in complexity and length (cf. Section 3), thus allowing a more comprehensive perspective into esports casting. They were also selected because of their popularity; Rocket League was released in 2015 and now has an average daily player base of 32,000 [11], while Dota 2 was released in 2013 and now has an average daily player base of 483,000 [9]. Both games have strong esport communities supported by Discord servers and regularly have amateur, collegiate, and professional level tournaments.

Figure 1: Screenshots of Dota 2 (left) and Rocket League (right) gameplay.

Interviews

We conducted semi-structured interviews [29] with ten Rocket League and ten Dota 2 casters ($N = 20$) over Discord's voice chat service. Interviews averaged 54 minutes ($SD = 16.5$), with the shortest lasting 36 minutes and the longest lasting over 90 minutes. We did snowball sampling; over the course of the study, participants invited us to 18 different casting-related Discord servers for further recruitment. In each server, we posted a message asking if casters were willing to discuss their practices. Sometimes an informant would suggest specific people to contact or would personally make introductions.

In this paper, we refer to our participants as amateur casters—most of them did not make a living from their casting. More so, it should be noted that professional casting is not representative of most casters in the esports industry. Experience levels of our informants are in Table 1. All informants focused on one main game for casting, with only a couple mentioning attempts to cast another game. 18 participants presented or read as male and 2 explicitly identified as female. Only one caster made a full-time living on casting but left casting to return to college. Even this caster described their experience as being mostly amateur, with a small portion of their casting being for professional tournaments. Casters who chose to identify their age were between 18 and 30 years old. One caster had previously trained as a traditional sports broadcaster. All of the casters were avid players of the games that they cast.

Our semi-structured interview protocol began with a discussion of the participants' history with the game of interest and then delved into their casting experience. Questions covered their specific good and bad experiences with casting, how they got started casting, what made for good or

Game	Average	Min	Max	SD
Dota 2	46.4	6	108	33.2
Rocket League	16.8	9	24	5.5
All Casters	33.2	6	108	28.7

Table 1: Informants' casting experience (in months).

bad casting, technologies used, gaming communities they belonged to, their role or roles within the community, hot button issues in casting, and their aspirations in casting. We closed the interview by allowing participants to expound upon anything else related to casting that they did not feel was adequately covered.

Participant Observation

In addition to interviews, our data includes extensive diaries (personal reflections) and logs (chronological notes of activities) of participant observations [12]. By participating in casting, we gained legitimacy in casting communities, thereby facilitating our understanding of casters' language and access to informants [12]. The first two authors are both avid lifelong gamers but prior to this study had no experience casting esports. The first author casted both Rocket League and Dota 2, while the second author focused on Rocket League. Each casting session was video recorded (~20 hours total) and after each session reflective notes were taken for later analysis. Some casting of tournaments (~10 hours) by the authors was done by invitation from our participants after interviews. Collegiate league play casting was done through opportunities from our university's gaming initiative (~10 hours). The first author primarily did color commentating and cocasted with play-by-play commentators, while the second author mainly did play-by-play casting and managed broadcasts. As part of casting, the first two authors learned how to use OBS

and manage a Twitch channel. All of the casting that the authors participated in and that the informants discussed were virtually done; casters are in a different location than the teams playing, and the audience is watching remotely. The casters would use an in-game tool to spectate the game being played. Participant observation helped us unpack the coordination between using casting tools, organizing gaming events, and commentating—nuances of casting that interviews and pre-recorded casting streams could not provide. Design recommendations such as those around camera control were only possible by triangulating data from interviews and experiencing the same challenges ourselves.

Analytic Approach

Interview transcriptions and reflective notes were analyzed with a grounded theory approach [7]. All authors iteratively engaged in open coding and axial coding to capture emergent themes in the data. Memoing was done throughout the process to reflect and develop meaning and interpretations of codes. A shared codebook was used to reflect a theory of how competent casting is accomplished. Codes we developed include: casting expectations (how casters are expected to comport themselves), casting knowledge (what knowledge is required to be an effective caster), technical aspects of casting (hardware and software requirements for casting), cocasting (relating to the advantages and challenges of casting with another caster), play-by-play versus color casting (the differences and synergies between different styles of casting), preparation (how casters get ready for casting), and multiple roles (how casters do more than just talk over a game). We privileged terms our informants used when describing esports casting, in particular the terms play-by-play and color to differentiate types of casting.

5 FINDINGS

From our fieldwork, we first provide details on the motivations of casters and their initial forays into casting. Most of our casters began their experience as solitary endeavors and adopted strategies to practice their craft. We then unpack two distinct though complementary practices of casting—play-by-play and color commentary style. While the division of labor into these two categories follow similar lines to traditional sports casting, our findings show that play-by-play and color casters take on roles that are unique to the esports arena. Play-by-play casters not only generate hype around the game they are casting but also have to contend with camera work and coordinate with their color commentator to cover lulls in gameplay. Color commentators fill in gaps left by the play-by-play caster in conjunction with preparing a great deal of pregame research to give accurate and engaging information.

Below, all participants have been anonymized with a unique ID. Team and player names have been redacted in all images. Because so few casters identify as female, we use gender neutral pronouns when referring to our informants in third person to protect their identity.

Casting Motivations

Why cast? Our informants reported a variety of motivations to try casting. Many informants described starting as avid players of the game they casted. Casting was a way to engage with the game at high professional levels beyond their own gameplay skill level. For instance, P3 said, *"They didn't believe I was so inexperienced and so unskilled because of my analysis, they just didn't believe I could play at that low of a level and analyze the game like I can."* Others were inspired by watching casters to try it out. A few were asked to cast a game due to their voice being particularly enjoyable to listen to. P8 reported, *"I'm doing casting on and off because I realized if I have a voice like this, I kind of have to use it, right?"* Despite the differences in motivations to start casting, all informants, including the first two authors' participant observations, share similar journeys in learning how to cast.

A Solitary Path to Become Caster

To address this desire to cast, most informants started casting with little ramp up or preparation—they simply started doing it. There are no prescribed guides on how cast properly. P6 describes their first casting experience:

> The very, very first cast I did was for YouTube, so I just recorded locally and then, I think I did one intro that was just total garbage, started again. Muscled my way through the whole cast, it wasn't good, but it was finished.

This was far from an atypical experience for casters. Several participants discussed what they called "the grind" and how they kept casting despite mistakes and failures to gain legitimacy within the community. P6 stated they once *"solo-casted 15 hours every night for 3 weeks"* to gain experience casting.

Casters did seek out ways to practice their craft on live games by themselves. Until a caster makes a name for themselves or gets the chance to cast on a popular channel, their cast is likely to be on their own with few audience members. Some spoke at length about the difficulties of finding games as a new caster. When asked about some games being easier to cast than other games, P4 informed us:

> I know that seems weird to say in 2017, but some [esports] games actually don't have a spectator client...Just being able to have an option where you could view your friend's game like in Dota 2 where you can watch [a] match if you right-click on your friend.

Thus informants desired games that allow one to spectate, and therefore cast the game. With games lacking this functionality, some informants suggested finding past games on YouTube or Twitch to practice casting with the sound muted.

Casters also reflected on their practice of grinding out repetitions. P3 described one way they tried to improve:

> Go back and rewatch the event from what the viewer got to see. So you are seeing just what the broadcaster saw and not what you got to see in the moment and just listen to the stuff that you said and try to think about if I was an ordinary viewer do I like what this commentator is doing? And take notes and then as you take those notes you can talk about it with each other, you know "hey maybe you can try doing this situation this other way" or "maybe just try to avoid this if you can" or "talk about this other thing."

This reflective practice is crucial for amateur casters as they might not have a group of fellow casters to provide feedback. Thus reviewing their own casts is the only source of critique they have aside from the infrequent viewers on their stream, if they choose to broadcast their cast at all. This lack of feedback and support was a challenge echoed by many informants to learn the craft of casting.

Some casters remain at the amateur level (e.g., only casting their friends' games) while other casters branch out and cast for multiple organizations. With experience and legitimacy, casters will be invited to casting organizations or approached by other casters to cocast, the preferred method of casting for both amateurs and professionals. Informants related a number of stories of an administrator from another casting organization noticing their casting and extending an invitation to cast for their organization. In some cases, informants submitted a "job application" to casting groups with a video of their cast. For instance, the first author had casted a Dota 2 match and one of the teams from that match asked him to cast for them again for another tournament.

Eventually, this networking may result in an offer to cast for a professional or semi-professional game. Several informants recounted how they had gotten an offer to cast for a game that paid for their time, or that they described as higher prestige, from this networking. P10 recounts the organizations they worked for in their casting career:

> I started off with the Noobs of the Ancient Tournament [an amateur Dota 2 tournament]... which progressed into LD2SL [Learn Dota 2 Spring League] Tournament, which progressed into Requiem Autumn and to Echo League now. Then since then I have been picked up and done things at the tier one and tier two level as well, where I started doing things for Open Qualifier, small

> CIS [former Soviet States] tournaments, which was a very big step forward, and of course I did some casting on The International Closed Qualifier ticket too.

It should be noted, however, that despite the extensive experience of many of our casters, only one made a full-time living casting, while another has recently been picked up by a professional studio. All other informants reported making little to no money doing casting. Surprisingly, some casters admitted drawing from their own personal funds to contribute to weekly tournament prize pools for their organization.

Having described the trajectory informants took toward becoming casters, we now turn to describing the practice of casting itself. Our informants spoke in detail about the distinction between *play-by-play* and *color* commentary. This was reflected in our participant observations with the first author adopting a more analytical style of commentary while the second author used a faster paced action-oriented commentary style.

Play-by-play: Crafting Hype on Camera

At first glance, play-by-play commentary is simply about calling the action in the game as it is happening. P2 describes play-by-play commentary thusly:

> It's just kind of the high level overview at a quick pace with good hype and good pace. You want to be continuously providing the very simple aspect of what is going on. This doesn't require a lot of game knowledge. It requires a good voice and the stamina in talking for a minute at a time. And that is the play-by-play side of things.

Such casters describe the details of the game as it unfolds as accurately as possible. However, play-by-play is more nuanced than simply describing details. Play-by-play casters craft *hype* by carefully choosing what actions in the game are most important and directing the audience's attention by means of camerawork.

Generating Hype. Hype is an indefinite term to describe importance, excitement, and drama in a game for the audience [14, 31, 38]. Hype is significant for competitors and spectators [14], gaming-related online chat rooms [31], as well as among our esports casters for building excitement and anticipation.

In esports casting, hype partially comes from entertaining gameplay, but hype is mostly created by the play-by-play caster's commentary. Play-by-play casters generate hype by reacting to unexpected occurrences, anticipating upcoming high-tension moments, or commentating high-action sequences of gameplay. Hype aids the audience to focus on important moments and builds excitement; without it, narratives fall flat and the audience becomes disengaged. In

Figure 2: Screenshot of a Rocket League detonation, a hype moment.

Rocket League, hype often focuses around shots on goal, saves, and detonations; these are moments of high tension when the game could shift like at a tie-breaking goal near the end of a game. In the following vignette, we describe the second author's play-by-play cast of a tense moment in Rocket League:

> **[1:00] Orange Team blocks a goal**
> Looks like a straight goal from [Orange Team] but blocked by [Blue Team]! That was a straight trajectory but [Orange Team] getting in there just in time.
>
> **[1:06] Orange team attempts a goal**
> Looks like [Orange Team]... MISSING THAT HIT THERE!
>
> **[1:10] Blue Team gets the ball and attacks**
> Looks like [Orange Team] is going to get back (to defend)... AND A DETONATION, ANOTHER DETONATION BY [Blue Team] ON [Orange Team], ONE DEFENDER DOWN!

This excerpt demonstrates the need for casters to deftly react to unexpected events to capitalize on hype. Above, the second author is able to build hype by focusing on the intensity of an unexpected detonation after a sequence of tense events. The Orange Team blocks a goal, missed a goal attempt, and one Orange Player gets unexpectedly detonated (Figure 2) and temporarily removed from the game as they try to get back to defend, all within the span of 10 seconds. The second author had to react when the detonation happened by raising the volume and pitch of his voice to express the hype of the moment. He was able to successfully convey hype while

clearly announcing each player's name and accurately describing the fast-paced action—details needed to understand why the moment needed to be bracketed out.

Play-by-play commentary alone is insufficient to generate hype; the action of the hype moment must be captured on camera and broadcasted for the audience to see. Camera-work is instrumental in the narrative presentation of video games [25]. Our play-by-play informants were frequently responsible for managing the in-game camerawork of the stream to follow the action of the game. For instance, in Rocket League the camera should be focused on two players contesting for the ball (right-hand side of Figure 1) or a detonation (Figure 2) rather than on a player nowhere near the ball. Following the most relevant action with the camera ensures the play-by-play caster will unlikely miss a crucial action sequence of significant hype and maintain audience engagement.

Following Hype. Despite its importance, many informants discussed difficulties working with spectating cameras. With its simple game mechanics, Rocket League has a decent working auto-cam to let the game autonomously follow the action. However, in Dota 2 the game is more complex and the action is spread around the map. P4 describes a problem with the auto-cam feature of MOBA games such as Dota 2:

> It does a decent job at catching certain things, but if there's a couple fights going on at the same time, the [camera] has like a panic attack trying to follow all the action going on. Usually it rips to one side and just completely ignores a couple of other things that are going on across the map.

In more complex games, auto-cams are unable to properly follow the relevant action for the play-by-play caster to commentate, forcing casters to manually control the camera. The first author attempted to use the auto-cam feature in Dota 2 and lasted less than 5 minutes—the auto-cam did not focus on the players, missed the first kill of the game, and kept moving in a jerky way that made him nauseous.

To work around this issue, play-by-play casters often manually control the camera. However, manually controlling the camera brings its own set of challenges. P8 and P12 both echoed the first author's experience of overly-sensitive camera controls, making them dizzy and nauseous when watching, and P9 noted that camera controls differed between games even within the same genre (e.g., Dota 2 and League of Legends are both MOBAs but have drastically different controls). Inaccurate camera control distracts the play-by-play caster from crafting a coherent narrative of hype for the audience.

Throughout a game, high-action hype sequences ebb and flow with low-action sequences. During lulls of gameplay or when the play-by-play caster is recovering from a hype

moment, the commentary is handed-off to the color commentator. The color commentator is well-suited to provide a detailed analysis on the action that just ensued for greater entertainment and insight for the audience.

Coloring in the Gaps

Color commentary fills in the gaps left by the play-by-play commentator. Below, P3 describes color commentary:

> As the color commentator you try to explain why that player did what they did. What was the outcome that they were looking for, what reasoning are they trying to achieve that outcome, and then what do you anticipate them following it up with.

In contrast to play-by-play commentary which focuses on in-the-moment activities and hype, color commentary is more analytical and brings in external data to provide a deeper understanding of in-game events. Color commentary coordinates with the play-by-play caster: the play-by-play caster sets the tempo and the tone of the game, while the color commentator assists by providing details and analysis. Color commentators help the play-by-play caster by improving the overall quality of the cast, but ultimately they are in a supporting role. Color commentary is what is cut if there is only one caster available—a solo caster may sprinkle some color commentary into the cast, but their main focus will be play-by-play casting.

The coordination between the play-by-play and color commentators is integral to a successful, informative, and entertaining cast. Play-by-play casters follow the action, build and cultivate hype, then hand the commentary to the color commentator, who then analyzes the action just covered using the plethora of statistical and historical data they prepared in advance or during the game. After their analysis, the color commentator allows the play-by-play caster to resume their coverage. This cycling between the play-by-play and color commentator and smooth meshing between the two is what all our informants described a successful cast to be and is reflected in our own participant observations.

Providing Color. The gaps that color commentators filled in our fieldwork were either planned gaps in the action, such as during the start up time of the game; during the churn time, such as time between a goal, a kickoff, or between game one and game two of a series; or during unexpected lulls in the game where the play-by-play caster hands off the cast. The color commentator fills these gaps with information about the teams, specific players, detailed game mechanics, or drew from their own history casting games played with the same teams.

Color commentators, by filling in gaps, play a vital role in keeping the cast entertaining. It is the color commentator's job to explain how or why a certain play resulted in the outcome that happened or the consequences of certain player actions. Below, we detail an example of color commentary by the first author following a large team fight when casting a game of Dota 2. The following is an excerpt of the commentary:

> [Death Prophet] has 6500 gold right now, that's absurd and I think he is going to just straight up buy the Octarine Core. I am honestly not sure if I have seen someone go from winning a teamfight to buying an Octarine Core with no buildup, no nothing. Just a casual nine kills in a teamfight and now I have got an Octarine.

This analysis was done during a lull in gameplay after an engagement where the play-by-play caster was constantly calling the action. Here, the color commentary highlights the significance of what has just transpired—two very rare events have happened one after another. First, a large dramatic battle between two teams ensued and the defending team lost. The losing team spent a large amount of money via the "buyback" system to be given a second chance and brought back to life, only to lose again, handing the winning team's hero (Death Prophet) an exorbitant sum of money. The first author recognized this double defeat coupled with all of the reward money going to a single hero to be a rare event in Dota 2 when he announced, *"I am honestly not sure if I have seen someone go from winning a teamfight to buying an Octarine Core."*

Second, with the spoils of war, Death Prophet then proceeded to buy an Octarine Core—an expensive item typically built late in the game (~35–45 minutes into the game) from multiple components bought independently. Thus, the second rare event was buying the item outright early in the game without building its individual components over the course of the game. A few minutes later as the action has still not picked up and with little commentary from the play-by-play caster, the first author offered further commentary to examine the consequences of the battle:

> That fight was so incredibly costly for [the losing team]. They bought back—I am not sure if it was four heroes or five—they bought back so many heroes. It did so much economic damage to that team.

With luxury of time, the color commentators are able to reflect back on what transpired, informing audience members the sheer magnitude of the event and the significance of the deaths and the speedy purchase of a particular item. The color commentator is able to successfully share their deep and intricate knowledge of the game.
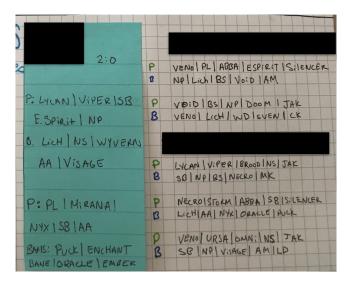
Figure 3: P10's notes about one team and what heroes they picked in the past.

Prepping for Color. To fill such gaps competently, casters we interviewed did various types of preparation ranging from pre-game research to accessing third-party websites mid-game featuring statistics (e.g. opendota.com), history (e.g., rltracker.pro), or detailed game mechanics (e.g. liquipedia.net).

Coupled with this research, color commentators spoke of the importance of recording this research and making it readily accessible mid-cast. These preparations often took the form of handwritten notes which were better suited for the dynamic nature of video games. For example, the notes depicted in Figure 3 were prepared by P10 in anticipation of casting a match. They were about the drafting phase of Dota 2 where the team captains pick or ban heroes to support their team's strategy. The notes document previous matches each team has played and notes what heroes they picked (P) and banned (B). The numbers 2:0 refer to the win-loss ratio of the match. These help the casters predict what heroes or strategies a team may pick.

The affordances of handwritten notes made them easier to remember and access in the moment of casting. P9 talks about their notepad: *"So it's just a notepad that I keep, and I have a couple of them… like a big A4 notepad[s] for, you get a two page spread, each team."* P6 similarly described how paper notes allowed them to jot down notes on paper without taking their eyes off the game, thus allowing them to take notes to refer to in the future, but while also keeping their focus on the game. Similar scholarship speak of paper's effectiveness in fast-paced, dynamic workplaces requiring coordination activities [23, 28].

As casters move up the career ladder towards professionalism, they focus solely on commentary and the concerns

necessitated by paper above are better addressed. This is exemplified by an on-site observation of a professional play-by-play caster at The International 2018 Dota 2 Tournament. This caster logged into the game on his provided computer so that the game client would show he was in-game and then physically moved his chair to center himself on the middle screen shared with his cocaster. For the remainder of the cast he only did play-by-play casting based on action in the middle screen controlled by a dedicated camera controller. At this highest level of casting, roles are delegated to individuals— a dedicated camera person, stream manager, and statistics provider—that support the casters. However, such luxuries are reserved for the highest echelons of gaming tournaments; most casters must deal with the aforementioned challenges.

6 DISCUSSION: SUPPORTING (POTENTIAL) CASTERS

Our findings show that casters fall into two main categories: Play-by-play casters engaging with calling the action of the game and directing the audience's attention to important actions as they happen and color commentators filling in gaps of knowledge and gaps of time with data and analysis. Building upon styles of casting in traditional sports, esports casters deftly adopt a host of tools and roles. For instance, we showed how play-by-play casters take on camera work and color commentators synthesize data from third party websites. Budding casters utilize digital tools in their solitary quest toward casting prowess.

Despite these innovations, casters still face challenges— difficulty finding games to cast, imprecise or lack of camera control, and complications when accessing third-party data sources. As established before, casting is paramount to the esports experience, and thus we suggest esports developers consider in-game design opportunities to help facilitate aspiring, novice, and experienced casters. To address the aforementioned difficulties, we suggest and discuss design opportunities introducing a casting matchmaking queue, augmenting spectator modes, and integrating external data sources into the game. These opportunities are not meant to be exhaustive, and we envision that others may find inspiration from our findings to develop their own design investigations.

Bootstraping Newbies: Casting Queues

To alleviate the solitary nature of beginning casters, we suggest that esports titles should add a matchmaking queue that pairs casters together into live games to cast. Currently, all major multiplayer esport games, including both Rocket League and Dota 2, have a matchmaking queue to group players with teammates and opponents of similar skill levels.

The casting queue should also allow casters to specify roles, such as play-by-play and color commentary, and match

casters to allow them to experience cocasting. Such designs would provide an antidote to the current solitary nature of beginning casting and provide a pathway for casters to connect with others and develop a preferred casting style. In addition, the queue could optionally match more experienced casters with newer casters, providing new casters with mentorship from an established caster. This could give casters daunted by a solo start a better supported pathway into casting.

At the same time, games should provide a system to watch these casted games live. If a game has casters, it should be clearly marked so spectators can opt-in to listen. Dota 2 has a well-supported live game spectating feature while Rocket League only supports spectating in private game lobbies. Both games lack the option of providing spectators with live commentary. A casting queue will provide a second avenue of exposure for casters to gain acclaim in their craft in addition to Twitch broadcasting.

In addition to providing a means of live commentary through a casting queue, casters should also be given the option of archiving their casted games for reflective practice and share their commentary with fellow casters—both of which were strategies our participants discussed to improve their casting.

Supporting Play-by-Play Casting: Augmented Spectator Modes

To help play-by-play casters observe the match and generate hype, we suggest every esports game include a spectator mode with robust controls which allows anyone who owns the game to watch games that are currently being played. As shown in Section 5, informants voiced the importance of precise camera controls and concerns regarding missing important action sequences for play-by-play casters.

The spectator mode must have robust camera controls. This allows play-by-play casters to focus on the most important actions or seamlessly jump between simultaneous action events. As discussed by our informants, poor, sluggish, or over-sensitive camera controls can cause confusion for the casters and spectators. Providing settings for casters to fine-tune mouse panning sensitivity, camera movement sensitivity, key-bindings, and other spectating control options allows casters to more precisely control the spectating camera to best follow the action of the game.

Additionally, we also suggest spectator modes add multi-camera features that are currently only available to high production tournaments such as an instant replay, split-screen, auto-cams, and "b-roll" cameras (alternative cameras following other moments of action in the game). Instant replays of hype moments of gameplay help cover the lulls in action and allow adequate time for color commentators to report their analysis, and split-screens would help the both casters and

spectators see action in more than one location. Auto-cams are available in some games currently but run the gamut from very useful (Rocket League) to nearly useless (Dota 2), while b-roll cameras planted at certain key positions can make following the action easier. These features should be standard for all spectating modes for any caster to familiarize and utilize them to augment their practice.

Supporting Color Commentary: Interfaces for External Game Data

Color casters spoke of their use of third party websites for statistics and other data. We suggest that games should mimic the ease of use and breadth of data these websites provide. Color casters use this data to craft stories about the game and craft detailed analysis. Some of this data might be available in-game though a player profile, but the analytics that third-parties currently provide are far more comprehensive and informative. Integrating these third-party data providers directly into the game client will help minimize complications of juggling game-clients and third-party websites, as well as offering some of the stability and ease of access that paper notes afford.

We also suggest game designers further mimic the ability of paper note-taking by providing a means for casters to take notes on players within the game. This can be done through a note-taking mechanic in the spectating client or a separate tablet app synced with the game. Supporting in-game notes provides casters centralized access to all casting-related notes. In-game notes will also provide a means to share notes with cocasters, an affordance not readily available with handwritten notes.

7 LIMITATIONS AND FUTURE WORK

Our work has several limitations. Though we believe the two games we focused on illustrate a wide range of casting challenges shared by many other games in esports (e.g., lack of in-game live spectating options to practice casting in other popular esports games like in Fortnight, Hearthstone, and Madden), this focus may nevertheless limit the generalizability of our findings. Future work may compare and contrast casting practices in other gaming genres such as fighting games and online card games. In addition, most informants reported ignoring online chat messages when casting, but future work might examine this parasocial relationship between commentators and online viewers.

8 CONCLUSION

Like traditional sports, esports thrives on its casters. Casters entertain and educate the viewers, conveying to their audience aspects of gameplay and its surrounding strategy. We believe the role of casting will become ever more vital to maintaining esports' continued growth. While game design

has begun to incorporate features to support esports, for the most part, they are designed with players in mind. Promising design opportunities exist to support casters and would-be casters as first-class users of video games.

Through participant observations and semi-structured interviews with amateur casters, we have provided an account for the motivations, trajectories, and complementary styles of casters. Intertwined with this account are the technologies and challenges they face and workaround. Casters have difficulty finding games to cast to build experience and legitimacy, controlling the spectating camera to build hype, and appropriating external data for color commentary. Based on these results, we proposed design opportunities to support casting and lower the barriers for potential casters. Shedding light on what casters do can move us forward to a nuanced perspective on how design can serve the work that makes esports work.

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