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Appropriating Play: Examining Twitch.tv as a Commercial Platform

Charlotte Panneton, *The University of Western Ontario*

Supervisor: Hearn, Alison, *The University of Western Ontario*
A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Media Studies
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Recommended Citation

Appropriating Play: Examining Twitch.tv as a Commercial Platform

Charlotte Panneton

Master of Arts in Media Studies

Faculty of Information and Media Studies
University of Western Ontario

2019

Abstract

This thesis critically analyzes Twitch.tv, a gaming-oriented, online live-streaming site. Viewing the site as a 'lean platform' (Srnicek, 2017), it analyzes many aspects of Twitch's business operations, including ownership structure, video game industry affiliations, use of data, and the monetization of user activity. This analysis then identifies three major areas of concern arising from these operations: the tendency toward monopolization in the gaming industry and its peripheral activities; the intensification of audience commodification; and, the tendency to turn professional streamers into precarious creative labourers. All of these implications point to a growing need for concerted labour organization. The goal of this thesis is to address gaps in the existing literature about Twitch and to provide a foundation for future critical inquiries into the site.

Keywords

Twitch.tv, live-streaming, video game industry, platform capitalism, new media

Acknowledgments

I need to express my greatest thanks to my supervisor, Dr. Alison Hearn. I am grateful for you for your guidance and direction throughout this, at times, arduous thesis writing process, and for helping me grow as a student and aspiring academic. I would also like to extend my thanks to my examining committee – Drs. Annabel Quan-Haase, Edward Comor, Tracey Adams and Susan Knabe.

Je tiens à remercier ma famille pour leur encouragement et leur support continuel au long de ce projet – en effet, sans vous, je n'y serais pas arrivée. I'd also like to thank my Media Studies Master's cohort for being an amazing personal and academic support system (howdy, howdy, howdy), and my colleagues in FIMS, for the guidance provided over Grad Club beers. Finally, I'd like to thank my partner, Stephanie, for seeing me through the all the frustrations, uncertainties, thrills, and eventual successes that come from this type of undertaking – je t'aime.

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Chapter 1
Approaching Twitch.tv

Twitch.tv is a free, gaming-oriented social live-streaming website that enables users to broadcast/stream themselves playing video games and interact with viewers in real-time. Since its founding in 2011, Twitch.tv has also become an important avenue for the generation and maintenance of video game communities, with broadcasts and interactions centered around competitive play and e-Sports, casual play and variety streaming, and retro-gaming, among others. Twitch presents itself as a seemingly more democratic, accessible and interest-specific alternative to traditional forms of broadcast media, catering to niche audiences centered around video games and its communities of practice. With upwards of 15 million unique daily visitors and 2 million unique monthly broadcasts (Fragen, 2018), Twitch clearly warrants further inquiry. This thesis views Twitch.tv as paradigmatic of larger shifts in broadcasting and spectatorship practices emergent in the era of digital media.

A small but burgeoning body of literature has been dedicated to investigations of Twitch and its affordances. Existing academic studies generally approach Twitch from a socio-psychological or cultural studies perspective, detailing the site's functions and use, praising it for its user-centric orientation, capacity for participatory community-building, and fostering of video game subcultures. Other studies of Twitch are rooted in the computer sciences, evaluating the site's engineering and technological operation, or in feminist approaches to technology, commenting on the dynamics of gender that are manifest in streams and chats. Critical or Marxist-oriented approaches are virtually absent from academic inquiries into Twitch however, and, as of this writing, there is no work committed to a macro-level analysis of the site and critique of its larger economic, political, commercial and industrial implications. This thesis will attempt to fill this gap, examining issues of ownership, labour, commodification, and larger dynamics of capitalist appropriation not adequately encompassed by prior investigations into the site. The implications of Amazon's ownerships of the site, Twitch's affiliation with other entities in the video game industry, its accumulation of user data, appropriation of user labour and monetization practices merit extensive inquiry.

Using concepts drawn from political economic approaches to media, this thesis outlines and analyzes the political, technological and commercial dimensions of Twitch that have been overlooked in previous studies. By mapping out and assessing the site's ownership structure, monetization and data practices, and extraneous game industry affiliations, this thesis reveals processes of industry encroachment and audience commodification, and speculates about streamer motivations and practices. It is hoped that identifying these dynamics will contribute to much-needed critical discussion about the long-term impacts of sites like Twitch.

The thesis is divided into three chapters. The first chapter includes a detailed description and explanation of Twitch as a website and streaming platform, a review of the literature, research orientation and guiding questions, and a breakdown of the thesis' theoretical approach. The second chapter provides an analysis of the site through the lens of Nick Srnicek's concept of the lean digital platform (2017). It critically evaluates issues of ownership, video game industry affiliations, use of data, user activity and monetization practices. The third chapter assesses some of the broader implications of these findings, notably the possible appropriation of user labour, Twitch's encroachment upon the video game industry's traditional value chain, and the processes involved in the ongoing commodification of the site's audiences.

By addressing the dearth of critical analyses about the business practices of Twitch in the scholarly literature, it is hoped that this thesis can provide some building blocks for further inquiries into the social and economic ramifications of Twitch and other social gaming sites. Much like studies of privacy and data exploitation on Facebook, the nature of precarious labor on YouTube, or the encroachment of corporations on Instagram, this is an inquiry into the more insidious or obscured dimensions and implications of the websites we love to use.

1 Background and Theoretical Considerations

1.1 Brief Description of Twitch.tv

Twitch.tv is the domain name that houses the Twitch platform itself. Initially conceived in 2007 as Justin.tv, Twitch took its current form in 2011. With a pointed orientation towards video games, the site is primarily used for live video streaming; that is, users broadcast some form of video output in real-time through their individual webpage, or 'channel'. Typically, users broadcast themselves via a face-cam overlaid on top of captured gameplay footage (**see Fig. 1**). This lends itself to broadcasting competitive gaming and e-Sports, as well as casual play and game tutorials. Using streaming tools such as Open Broadcasting Software (OBS) or VMix, streamers can broadcast with set-ups ranging from the most basic computer hardware to fully equipped home studios; the experience of streaming on Twitch is meant to be accessible and customizable.
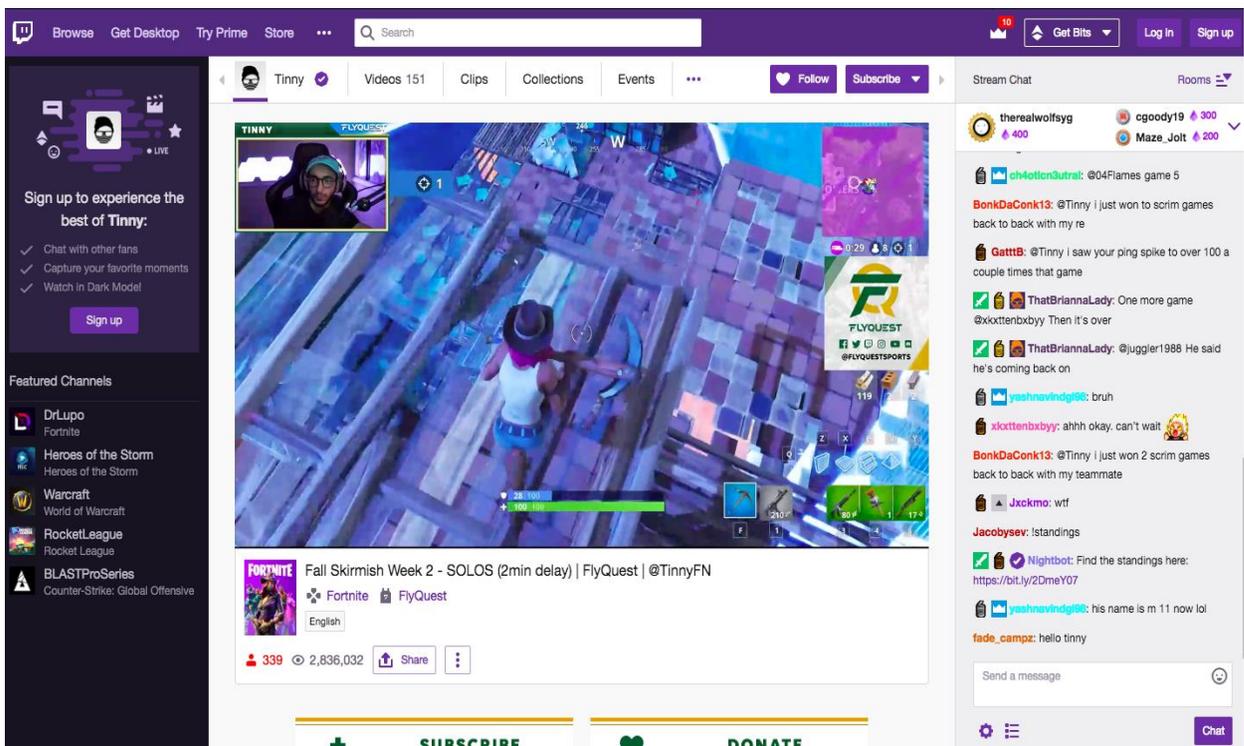
Fig. 1 – A screenshot of Twitch user Tinny's channel broadcasting live on Twitch.tv

The site also embeds an Internet Relay Chat (IRC) feature into every channel, allowing viewers to simultaneously communicate with the streamer and amongst themselves via written text. This chat feature acts as a chatroom complimentary to the channel stream. In synthesizing live video and chat interfacing, Hamilton et al. (2014) note that, "live-streaming combines high-fidelity computer graphics and video with low fidelity text-based communication to create a unique social medium" (p. 1315). Twitch indexes channels based on the featured game title, ascribed categories (previously 'community' and 'team' tags), as well as language; this practice effectively facilitates user searches based on preferences for game and stream types (*Fortnite, League of Legends, FIFA 19, Rocket League*, 'positivity', 'competitive play', 'speedrunning', 'retro', 'creative', etc.).

Further, viewers can follow certain channels or subscribe for a five-dollar fee to select 'partnered' or 'affiliate' streamers. In this way, streamers have the capacity to build a dedicated viewership. Additional features offered by Twitch include video-on-demand, wherein users can view a backlog of previous broadcasts in their entirety saved by the site to a streamer's channel page, as well as 'clips', short snippets of a stream captured by a viewer and saved via a link. These features work to mitigate the use of other online video sites more attuned with long-term video sharing, such as YouTube or Dailymotion. All these features, in conjunction with its focus on video gaming, makes Twitch a particularly appealing and novel social site for video gaming's numerous communities of practice.

1.2   Market Valuation and Position

At the time of this writing, there is no publically disclosed information pertaining to Twitch's financial situation. The absence of important financial data, such as revenue, gross profit, operating expenses, or assets and liabilities, makes it more difficult to accurately situate Twitch in larger market dynamics. However, financial news outlets have estimated Twitch's valuation at approximately $3.79 billion in 2018 (Fortney, 2018) and rough projections suggest that Twitch could grow to be worth between 5$ billion and 20$ billion by 2021 (Hsu, 2016). Twitch's revenue is primarily generated through channel subscriptions, advertising, sponsorship deals and various Amazon services integrated into the site (this will be discussed in Chapter 2). Based on concurrent viewership metrics, Twitch is currently the leading live-streaming service in terms of gaming-related content (Fig. 1b).

Concurrent Viewers by Platform

Average Concurrent Viewers by Platform
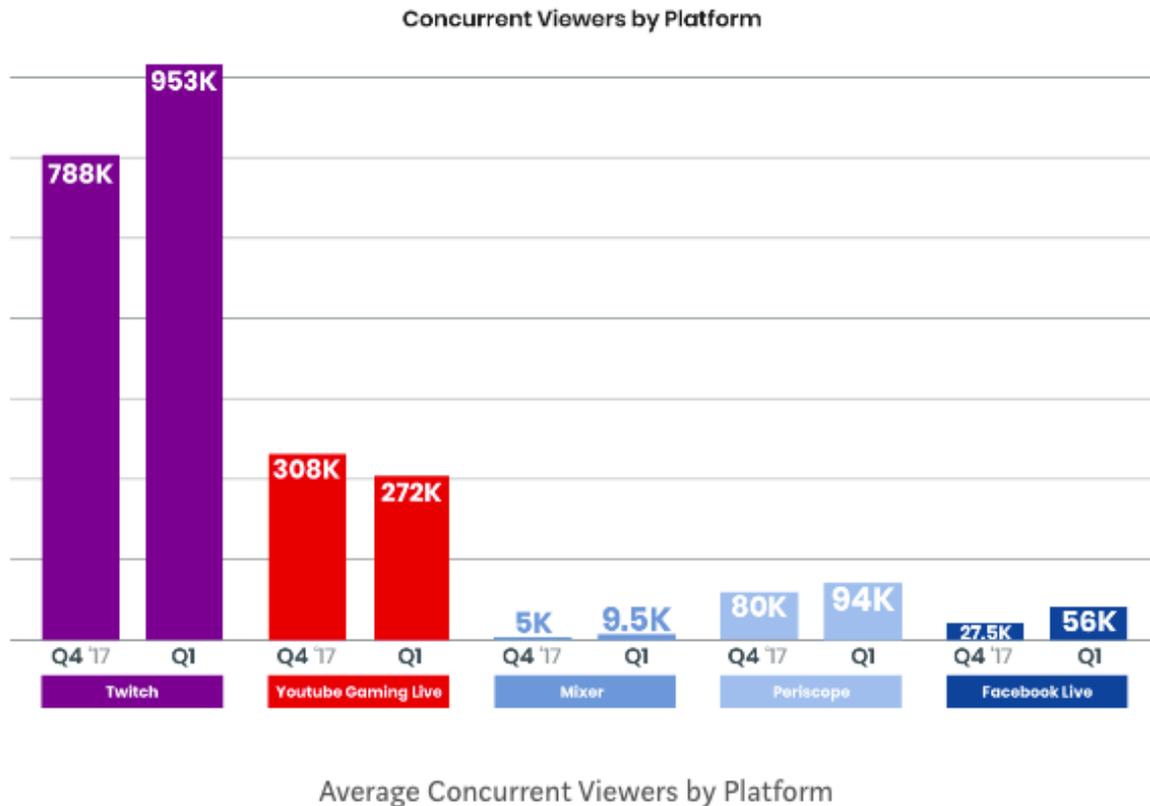
Fig. 1b – Average concurrent viewers by platform, Q4 2017 & Q1 2018 (Hicks, 2018)

1.3 Literature Review

The volume of research that addresses Twitch.tv and its affordances is growing, but remains limited as of this writing. The limited body of scholarly literature concerning Twitch can be attributed to numerous factors, but primarily to the fact that it is relatively new– Twitch.tv was launched in 2011 from its preceding form of Justin.tv, and only gained more significant attention after being sold to Amazon in 2014 (Taylor, 2018). Prior to this, scholarly focus had been on more popular streaming video platforms such as YouTube or Facebook Live (Postigo, 2016). Another reason scholarly attention has been scant is that the site's user base has a distinctly niche orientation – Twitch caters to e-Sports broadcasting and video game live streaming, encompassing more niche interests and communities of practice (Smith et al., 2013).

The first academic text on Twitch was produced in 2012. Entitled "Watch me Playing, I am a Professional: a First Study on Video Game Live Streaming", Mehdi Kaytoue et al.'s (2012) initial foray into Twitch describes the site as a specialized platform for e-Sports, professional gamers and growing video game communities. The authors attempt to characterize certain aspects of the site, notably the most popular games played on-stream, viewer counts, streams durations, the proportion of subscribed audiences and streamer location/language use. With this data, the authors conclude that the form of video game live streaming found on Twitch constitutes its own kind of entertainment, facilitates the discovery of new games, and can help introduce users to e-Sports and the growing professional gaming scene (p. 1181). While the site has grown significantly and popular game titles and practices have changed since the publication of this article, the broader conclusions drawn by Kaytoue et al. are still very much applicable today. Indeed, these initial conclusions are encapsulated by the first book written on Twitch, released six years later in late 2018. In a coincidental call-back to the title of Kaytoue et al.'s article, reputed gaming and e-sports scholar T.L. Taylor's 2018 book is entitled "Watch Me Play: Twitch and the Rise of Game Live Streaming". Taylor's new publication is a much more robust investigation into Twitch as a site that is now dominant for online gaming practices. Taylor seeks to understand both user motivations and practices within the larger context of production and consumption occurring on Twitch. The book asks "what happens when people begin to *transform private play into public entertainment* and an emerging media form of *networked broadcasting* arises", while articulating that "the threads of sharing play and spectatorship are at the roots of digital gaming, but live streaming weaves them into the flow of this particular moment of media and internet culture" (p. 22). As a far more grounded, focused and contextualized look at the site than any current article can provide, this first monograph on Twitch adds legitimacy to the study of Twitch as a unique digital platform and indicates that studies of Twitch are in the mainstream of digital media studies.

It is equally important to acknowledge other academic treatments of Twitch across various scholarly and theoretical fields, such as social psychology, the computer sciences, cultural studies, as well as gender, race and disability studies. These studies provide alternative insights that are all nonetheless fundamental to a complete understanding of Twitch, addressing phenomena related to user motivations, the site's technical operation, practices of meaning-

making and community building, and the implications of gender, race and disability in this unique digital space respectively.

Studies of Twitch in the computer sciences attempt to gain insight from the site's unique technical features. Churchill and Xu (2016) propose a way to map and visualize the site's architecture as it concerns user interaction at the intersection of game franchises and game-based communities, highlighting how certain user groups are attracted to and agglomerate according to these stream characteristics. Similarly, Zhang and Liu (2015) note that the site's technical architecture provides a unique model for crowdsourced and multi-sourced live-streaming, considering a myriad of Twitch's technical operations, including questions of latency, the operation of IRC protocols and adaptive streaming. Jia and al. (2016) describe Twitch as 'gamecast' site, acting as a repository for gaming-related video content and facilitating specific content search; their study suggests operational and infrastructure improvements that could be made to the site, including better resource allocation mechanisms so as to maintain the site's role as a repository. Thus, the technical aspects of Twitch constitute important findings in the field of computer sciences and computer-mediated communication.

Another prominent approach to the study of Twitch evokes the socio-psychological perspective of media studies. Sjöblom and Hamari (2017) approach the question of user engagement and participation on Twitch through a uses and gratification framework, arguing that Twitch's real-time streaming and interactive dimensions address socially integrative and affective motivations among users. Utilizing a similar approach, Hasan et al. (2018) argue that socially integrative and affective motivations, in conjunction with lack of self-control and information-seeking behaviors, can lead to excessive usage of Twitch. Wan et al. (2017) use attachment theory and Wulf et al. (2018) use the concept of 'relationship to streaming personae' to understand how certain users become emotionally attached to streamers. Twitch has also been explored in the field of educational psychology as well; Payne et al. (2017) employ cognitive-load theory and the worked-example effect to demonstrate how Twitch can enable effective computer-mediated instructive learning processes through informal and organically-formed discussions and interactions. These perspectives analyze the cognitive dimensions of Twitch, focusing on micro-level phenomena related to individual use of the site.

Twitch is also examined in feminist, race, and disability studies, which examine the ways performativity, identity, representation and visibility are active aspects of streaming activity on the site. Stavroula Dragonaki's (2018) inquiry into Twitch considers how the gendered character of gaming and the practices of hegemonic masculinity are reproduced in a video game streaming context. Using the work of Judith Butler, Dragonaki mobilizes the idea of gender performativity to describe the streaming behaviors of women on Twitch, arguing that female streamers must either emulate the characteristics of male streamers, "or legitimize [their] presence on Twitch.tv by putting [themselves] in a submissive position towards masculinity" (p. 107) in order to succeed on the platform. Similarly, Gray (2017) describes Twitch as a virtual space favoring white male streamers, where black streamers are regularly discredited, marginalized and subject to racist discourse by streamer viewers (p. 358). Johnson (2019) echoes this experience of marginalization in his exploration of disability and mental health on Twitch, as streamers with disabilities are subject to harassment and 'trolling' (p. 514). However, all three aforementioned studies point to the presence of female, black or disabled streamers, respectively, as a form of counter-hegemonic action that can challenge dominant attitudes exhibited by Twitch users.

The bulk of the scholarly literature on Twitch comes from a cultural studies perspective. Most of these examine streamer presentation, performance and status, as well as the construction of audiences and online communities. Hamilton et al. (2014) are the most often-cited regarding Twitch; the authors describe the key operations of the site and characterize Twitch streams as "virtual third places" that both provide a sense of community and facilitate the creation of engaged, participatory communities around streaming personalities and gameplay (p. 1318). Obrist and Wright (2013) are cited for their characterization of streaming styles, including competitive play through e-sports or multiplayer games, speedrunning (completing a video game as fast as possible) and "Let's Plays", casual play accompanied by streamer commentary (p. 132). Alternatively, Gandolfi (2016) offers his own categorization of streaming styles, based on notions of challenge, exhibition, or exchange, arguing that they better encompass the kinds of self-positioning in streaming practices (p. 77). Pellicone and Ahn (2017) construe streaming as a deliberate performance of play (p. 4865) and contend that the success of a streamer is based on their ability to assemble streaming technology, build communities within their streams, and adopt unique and inviting gameplay attitudes (p. 4868). This view of performance of play and factors for success are actively recognized and born out by media professionals on Twitch, as

streamers earning income from their Twitch broadcasts depend on the maintenance of their viewership (Bingham, 2017; Johnson & Woodcock, 2019). By marrying the site's unique interactive affordances with notions of performance, professionalization, and community-building, these studies of Twitch engage with questions about larger cultural and meaning-making processes that characterize the platform as user-centric and conducive to self-actualization.

Critical analyses of Twitch's business operations are few in the larger body of published work about the site. While Nicholas Taylor (2016) provides a critical cultural studies approach to Twitch, focusing on the processes that strategically "construct" audiences through discourse and institutional contexts, the author actively acknowledges the commodification of audiences and calls for further inquiry into the formative role of digital spectatorship and its relation to media industries (p. 304). Austin Walker (2014) explicitly advocates for critical approaches to Twitch, describing the exploitative potential of live streaming in a late-capitalist context, where it constitutes socialized labor. Walker calls for more analysis of the institutions and dynamics that inform the actions of Twitch users and streams:

> Play [via live streaming] happens under techniques and technologies of control and surveillance... and opens up new modes of corporate action, all while mediating and directing user action. These techniques transform leisure activity into ludic labor, often without the explicit approval of players. Thus, no matter how enjoyable our play is, we have to question it… to identify what pressure these systems place on us. We have to ask how are our actions are pushed, pulled, restricted, encouraged and transformed. And to whose benefit? (p. 441).

Walker's critical insights about the impact of Twitch's corporate and business practices on users will be taken up in this thesis Addressing the gap in the literature and examining the capitalist structures underpinning Twitch can produce valuable insights and point to directions for future research.

There is a much more pronounced body of literature that applies critical perspectives to YouTube, arguably Twitch's most prominent competitor. Janet Wasko and Mary Erikson (2009), for example, have outlined the political economy of YouTube. In their article, aptly titled "The Political Economy of YouTube", the authors discuss the site's history and ownership structure, and describe how it monetizes its site features. Wasko and Erickson bring to the foreground the struggle between the democratic potential and user self-actualization offered by the site, and the

appropriation of user labour and profiteering it also enacts. This tension is echoed by Postigo (2016), who argues that, "the best way to illustrate the situated work of turning play into work is to show the extensiveness of digital labour infrastructures that are part of or transcend YouTube as a media distribution platform" (p. 340). While these studies examine the relationship between the YouTube's technological affordances and its revenue-generating potential, many other studies have addressed the impact of this dynamic on the site's content creators and users. For example, Bishop (2018) discusses the political economy of YouTube's algorithmic functions, wherein the site's algorithms generate a hierarchy of videos favoring commercial or advertiser interests, Soha et al. (2016) examine the monetization of user-generated content and the partial protections afforded by 'fair use' clauses in American copyright law, and Raun (2018) describes the tensions implied with the self-commodification of vloggers who have more marginalized self-identities. Inspired by the work of Wasko and Erickson on YouTube (2009), this thesis is an attempt to present an analysis of the economic operations of Twitch that elucidates the tensions between creativity, self-actualization, and profiteering.

1.4 Research Orientation

This research provides a counter to academic and popular discourse that figures Twitch as a user-centric and empowering space for video game communities and independent broadcasters. Engaging with Twitch as a business from a critical perspective necessitates a set of research questions that address the website's economic structure, context and impact. While broad and multidimensional, these questions are meant to provoke critical insights that might inspire and guide potential political mobilization and action in relation to the site's more troubling practices. The following questions have guided the composition of this thesis:

What insights can be drawn from understanding Twitch.tv as a lean platform?

How might Twitch.tv's business operations impact Twitch users?

What can a macroscopic approach to Twitch.tv's business practices reveal about its broader economic and social impacts?

How do these insights help us understand the broader political, economic, and social implications of commercial platforms in general?

1.5 Methodological Considerations

This critical exploration of the business operations of Twitch considers issues of labour, data, user collectivities and affiliated cultural industries in the site's operations, and attempts to draw out some broader implications of these elements for society at large. The research for this thesis involved engaging deeply with the platform through hands-on use, conducting a thorough literature review of Twitch, including academic sources, trade publications and grey literature (notably, consumer tech and gaming outlets), along with foundational texts about digital media and theoretical texts in the political economy of media. This literature was then used to identify central analytic categories that could be applied to Twitch's business operations. Categories identified include ownership structure, industry affiliations, use of data, monetization practices and user activity. The thesis draws on its critical analysis of Twitch's business operations to speculate about some of the political, economic and social implications of social gaming platforms more generally, including issues related to user commodification and the increased precarity of labour in a gig economy.

1.6 Theoretical Framework

Inspired by the tradition of critical theory, which requires researchers to observe, describe and interpret social phenomena and conditions in order to ameliorate or improve them, this thesis analyzes Twitch as a commercial digital platform and attempts to identify the potential challenges generated by its business operations and external market relations. The thesis does not focus on Twitch as an isolated entity, but, rather, focuses on the platform as it functions in relation to external entities and market dynamics; this includes its operations under its parent company, its strategic relationships with other technology companies, its infiltration into the larger video game industry, and its integration into larger cloud computing infrastructure. The thesis also examines the site's business model, revenue streams, monetization of user activity, and role in the establishment and growth of the game live-streaming industry.

In order to fully consider the implications of Twitch as a commercial/lean platform, this thesis uses concepts drawn from the critical political economy of media. Critical political economy is generally defined as "the study of the social relationships, particularly power relations, the

mutually constitute the production, distribution, and consumption of resources" (Mosco, 2009, p. 24). Rooted in Marxist theory, specifically practices of capital accumulation, productive forces, class relations, value, and labour, a critical political economy of media seeks to understand the circuits of production, distribution and consumption of media products, and the issues of control, ownership and concentration involved in these circuits. Political economy approaches also focus on media in a way that is holistic, historical and pursues action; they look at the succession of events that constitute the relationships between economic action and socio-political organizations, with the goal of contributing to social political and economic change (Wasko et al., 2011).

While inspired by many of the characteristics of critical political economy of communication research, this thesis does not claim to provide a strict political economy of media analysis. Rather, it uses concepts drawn from this theoretical tradition to guide its analysis of Twitch's commercial practices. To this end, the following section addresses debates and issues involving the concepts of the audience commodity, value, and labour in the media industries, taking care to identify how these concepts are used within the thesis.

1.6.1   The Audience Commodity

The concept of the audience commodity is attributed to Canadian scholar Dallas Smythe, whose seminal work 'Communications: Blindspot of Western Marxism' (1977) sought to identify the commodity form of mass-produced, advertiser-supported communications under monopoly capitalism. Smythe argued that the primary commodity produced by capitalist media industries were audiences. For Smythe, the first step in the process of commodification occurs as media outlets disseminate programs that appeal to particular kinds of media audiences: "this information, entertainment, and educational material transmitted to the audiences is an inducement to recruit potential members of the audience and to maintain their attention" (p. 5). Once enticed by the "free lunch" (p. 5), media outlets then package their audiences' viewing time to sell to advertisers; the nature of the program works to segment audiences into specific demographics, which makes them more readily saleable to advertisers looking to reach specific types of consumers. Under these conditions, audiences' time, attention and specific interests become the basis for commercial media companies' advertising rates. As Smythe puts it, "the work which audience members perform for the advertisers to whom they have been sold is to learn to buy particular 'brands' of consumer goods, and to spend their income accordingly... they

work to create the demand for advertised goods which is the purpose of the monopoly capitalist advertisers" (p. 6). As commercial media attempt to attract audiences via programming, they also create programming that make is easier for audiences to accept advertising and its ideological messages about consumer society in general.

Sut Jhally and Bill Livant (2006/2014) develop Smythe's conceptualization of audiences as commodities by arguing that what is really being sold by media companies to advertisers is the 'watching-time' of audiences. Here 'watching' is a general-purpose capacity that is capable of being modified and conditioned to generate surplus value for media entities (p. 93). Jhally and Livant's work emphasizes the role of media capitalists, as opposed to advertisers, in the extraction of surplus value or profit; as audiences watch enough ads to cover the cost of programming, the rest of their watching-time generates excess revenue for media companies. Jhally and Livant's identification of the triangulation of audiences, advertisers and media entities provides a key insight into the larger economic and social processes involved in commercial media.

Smythe's audience commodity thesis has come under critical scrutiny by other academics, however. Graham Murdoch (1978/2014) claims that Smythe underestimates the role of the state in contemporary capitalism, underplays the independent role of media companies as propagators of dominant capitalist ideologies, and oversimplifies the operations of mass media overall, construing them as 'smooth and unproblematic' (p. 64). Pointing to a lack of theoretical rigor and oversimplification, Murdock suggests that Smythe's thesis operates more effectively as an 'analytical sketch'. Edward Comor (2014) seems to agree with Murdoch, arguing that the application of Smythe's theory by other critics has tended to parallel the oversimplification found within the original work: "the thesis, when applied too mechanically or used in ways that overstep its analytical capabilities, has facilitated some rather "vulgar" or totalizing conceptualizations" (p. 246).

Smythe's concept of the audience commodity has received renewed attention in the digital era. William Melody (2014) and Mark Andrejevic (2014) contend that the concept remains a useful one because information and communication technology (ICTs) and information economies depend on developing new forms of audience differentiation, segmentation, and manipulation (heightening processes Jhally and Livant identified as narrowcasting and blurring). Melody

argues that processes of audience commodification are better facilitated through ICT tools, as they capture information and consumer preferences in a way that is conducive to more effective advertiser reach and appeal. Similarly, Andrejevic argues that interactive digital media "redouble" their audiences, also capitalizing on audience watching-time/attention and audiences as a "source of an increasing range of information commodities about audience preference and behavior" (2014, p. 194).

This thesis agrees with Melody and Andrejevic; it contends that the concept of the audience commodity is useful for a study of Twitch insofar as it highlights how the platform's users, as stream audiences, are a source of profit, both as recipients of advertiser messages and as generators of valuable data that can be used to manage and predict consumer behavior and preferences. This thesis understands audience commodification in the digital age as a process whereby viewers' attention, preferences, and promotional capacities are mobilized by the platform and turned into value, as their data traces and attention are captured, repackaged and sold to advertisers for a profit by corporate media entities.

1.6.2   Labour and Value

Critical political economy studies of media are grounded in the work of Karl Marx, who provides a foundational understanding of value and labour. In Marx's famous formulation in *Capital,* labour is the central source of economic value; "every act of labour whose product (which can also be a service) is exchanged produces value" (Heinrich, 2012, p. 48). Labour is also a commodity under capitalism; in order to make a profit, capitalists work to keep wages as low as they can. Profit is derived from the difference between what capitalist have paid to make their product via wages, and the amount they are able to sell it for on the marketplace. In a capitalist system characterized by commodity exchange then, the exchange value of a product or service is a representation of objectified human labour, and the magnitude of that value is determined by an abstraction –the social-necessary labour-time needed to produce it.

While Marx's work provides a basis for understanding how value is determined under commodity capitalism, the emergence of digital media has posed challenges to Marx's labour theory of value, as it has blurred the distinctions between concrete/abstract labour, time/piece wages, and traditional modes of capital accumulation. As such, much current scholarship in critical studies of digital media has tended to demonstrate conflicting understandings of labour

and value as they take place within digital contexts (Scholz, 2013; Fish & Srinivasan, 2012; Fuchs & Sevignani, 2013; Postigo, 2016).

Critics such as Mauricio Lazzarato (1996) have advanced the concept of immaterial labour to address changes in the production practices of capitalism in a digital and dematerialized age. As a result of changes in the labour process brought about by computerization, there is now a growing labour market for symbolic and knowledge work, including creating and maintaining cultural, creative or artistic standards and consumer norms via things like advertising and marketing. Lazzarato describes this emergent form, 'immaterial labour', defined as labour that "produces the cultural content of the commodity [and] involves a series of activities that are not normally recognized as "work" – in other words the kinds of activities involved in defining and fixing cultural and artistic standards, fashions, tastes, consumer norms, and…public opinion" (Lazzarato, 1996, pp. 133-134). This kind of labour requires that workers put their communicative and cognitive capacities to work. As a result, Lazzarato argues that immaterial labourers drive the production of subjectivities that are aligned with, and reproduce, capitalist relations in postmodern economies. Tiziana Terranova (2000) develops Lazzarato's work, using the Internet to characterize the changing dynamic of labour in the digital economy. She argues that the contributions of users online can be characterized as 'free labour': "Simultaneously voluntarily given and unwaged, enjoyed and exploited, free labor on the Net includes the activity of building Web sites, modifying software packets, reading and participating in mailing lists, and building virtual spaces on MUD and MOOs" (2000, p. 33).

Lazzarato and Terranova seek to conceptualize labour and value in the wake of substantial changes to capitalist production brought about by the rise of computerization and the 'knowledge economy'. The concepts they advance, such as 'immaterial labour' and 'free labour' however, have been challenged and criticized by other Marxist critics. For example, Paul Thompson (2005) argues that labour cannot be immaterial, as "it is not the content of labour but its commodity form that gives 'weight' to an object or idea in a market economy" (p. 84), while Diane van den Broek (2010) emphasizes that concepts of labour cannot be separated from employment relationships and distinct labour processes, because "given the mutual dependency between wage labour and capital, both concepts become meaningless without the other" (p. 124). Conceptions of labour and value in post-Fordist or digital contexts remain subject to much dispute and debate, and attempts to grapple with emerging forms of work, labour and value in the

digital age are on-going in the field of critical media studies (Scholz, 2013).

This thesis cannot settle the debates about digital or immaterial labour, or engage them in any great detail, but it can outline ways in which Twitch's business practices illuminate some of the more contentious aspects of these issues. For example, the activities performed by remunerated Twitch streamers do, to some extent, fit definitions of immaterial labour insofar as the streamers produce cultural content. Streamers also are involved in complicated employment relationships with the platform as non-waged workers whose remuneration is facilitated, but not provided, by the platform. Thus, in order to mitigate some of the complexities presented by the value/labour debate in digital contexts, this thesis only considers Twitch streamers who are actually making money via subscriptions on the platform to be 'labourers' strictly speaking. For these remunerated Twitch streamers, labour involves any work connected to the process of maintaining and growing their stream and subscriptions (that is, attracting and retaining viewers), including creative, emotional, and promotional kinds of work. This thesis sees 'value' as involving any work that produces a monetary return and contributes to the platform's profit margin.

Chapter 2

A Critical Analysis of Twitch.tv

2   Twitch as a Lean Platform

This analysis of Twitch is informed by Nick Srnicek's (2017) description and analysis of platform capitalism and borrows the author's characterization of digital platforms to discuss and assess the components involved in Twitch's commercial operation. Srnicek argues that platform capitalism is a form of 21st-century capitalism that emerged following the commercialization of the Internet and the movement of capitalist enterprises toward the use of flexible labour and lean business models. He outlines the rise of digital businesses that operate online platforms, generating revenue by facilitating user interactions and activities, while capitalizing on the extraction and packaging of user data. While Adobe, Google, Microsoft, Uber, Facebook and AirBNB are all explicitly considered platforms within Srnicek's framework, Twitch could easily rank among them, as the streaming site fits the criteria established by Srnicek.

Characteristically, digital platforms allow users to build their own products or provide their own services, while also allowing the company operating the platform to collect and profit from user data (Srnicek, 2017, p. 43). These platforms rely on "network effects" for growth, wherein the more time and efforts users expend on the site, the more valuable it becomes (p. 45). Further, these platforms generally operate by cross-subsidization, providing their primary services free or at a low cost, while monetizing other aspects of their platform in order to make up for the losses (p. 46). While many of these platforms are not immediately profitable, their profit potential is generated by their ability to facilitate and extract value in the form of data from user activity. As Srnicek argues, platforms are characterized by "providing the infrastructure to intermediate between different user groups, by displaying monopoly tendencies driven by network effects, by employing cross-subsidization to draw in different user groups, and by having a designated core architecture that governs the interaction possibilities" (Srnicek, 2017, p. 48).

Twitch fits these criteria. Indeed, the infrastructure of Twitch provides a space for streamers with a focus on video games to connect with users interested in viewing these types of streams. It also provides a space for viewing niche broadcasts such as eSports and to connect with communities of practice, such as speedrunning. As a platform, the site has seen continued growth in users and

revenue since its launch, becoming the most prominent video-game streaming service of its kind (Consalvo, 2017). The site also makes use of the cross-subsidization model, inciting viewers to watch broadcasts for free while it generates revenue from channel subscriptions, advertising, merchandise, and cross-promotional material in various video game titles.

More specifically, Twitch operates as a 'lean platform'. In contrast to advertising, cloud, industrial or product platforms, Srnicek's describes lean platforms as a specific type of platform that is necessarily 'asset-less', save for their software, servers, algorithms and data analytics; the site has to function by way of hyper-outsourcing, as it facilitates activity but does not own any fixed capital (2017, p. 76), except for overhead costs related to the operation of the platform. These platforms depend on the self-motivation or self-employment of users, where these users provide their own materials and seek out their own training independently. A lean platform promises a return on its users' invested efforts with high degrees of flexibility and autonomy, while providing the infrastructure and outlet needed to reach audiences. To this end, Twitch streamers, specifically those whose income is generated from their activity on the platform, can be seen as atypical outsourced workers. While the platform provides them with the opportunity to connect with *interested* viewers, streamers are responsible for creating and promoting their own content, and purchasing and setting up their own gaming and streaming hardware. They are also self-taught and must maintain their own communities and viewer base. Twitch simply acts as an intermediary. As an apparently 'bare bones' platform for content generated by others, it connects streamers and viewers, and provides the opportunity for streamers to make money from their monetized activity.

Srnicek's description of lean platforms is a helpful way to understand the business practices of Twitch, as it contextualizes the emergence of Twitch within broader changes in capitalism and allows us to understand how it generates revenue. While Srnicek lacks nuance in his characterization of platform participants (as users or 'labourers), his description of lean platforms provides a general analytical frame for this thesis. Accounting for Twitch's role as an intermediary for user activity, generating proprietary software, extracting and selling data, and being subject to network effects, cross-subsidization and outsourced forms of labour, this analysis of Twitch's operations as a commercial platform will be divided into sections focused on ownership, video game industry affiliation, use of data, user activity/labour, and monetization practices.

3   Ownership

Many critical approaches to media industries are concerned with questions of ownership; they examine forms of corporate media concentration and their impact on broader social and economic relations. In the context of platform-based, digital, or interactive media, these impacts clearly extend to audiences and individual users. With the advent of new media, concerns about media ownership can be viewed through the concept of 'spatialization', defined as the "institutional extension of corporate power in the communications industry" (Mosco, 2009, p. 158). Viewing questions of ownership through the lens of spatialization accentuates concepts of growth and encroachment, highlighting how the accumulation of assets, new distribution possibilities and increased commodity production are made possible as a corporation maneuvers into new industrial spaces. Further, ownership viewed through the lens of spatialization allows for the analysis of processes of media concentration, or "the ways in which companies strengthen their organization to dominate markets" (p. 158), by way of integration; horizontal, vertical and diagonal integration allow corporations to secure control over production and distribution of media products, to command the use of hardware and software (p. 159), and to take advantage of flexible and cost-effective labour and acquired capital (p. 160). While processes of integration might bring about subtle and incremental changes to a media platform's operation, the shifting concentration of media has had much larger impacts on market dynamics in general, with potentially adverse effects on users posed by conglomerate ownership and the formation of monopolies (Doyle, 2013).

This section describes the launch and emergence of Twitch and charts the purchase of the site by Amazon, exploring the implications of the online retailer's expansion into online social live-streaming. Ultimately, the purpose of viewing Amazon's purchase of Twitch in the context of spatialization is to understand the intent behind the acquisition and analyze how it might impact larger economic ecosystems, notably in streaming, gaming and cloud computing industries. Understanding the relationship between Amazon and Twitch is also necessary because it informs larger discussions about industry infiltration and domination.

3.1   History of Ownership

Twitch did not emerge as a fully formed platform, but, rather, evolved organically from its precursor Justin.tv. Justin.tv was a website launched in March of 2007 by Internet entrepreneur

Justin Kan. The site's earliest iteration was wholly dedicated to the broadcasting Kan's life in real-time, twenty-four hours a day. While it was initially an experiment in 'lifecasting', the focus of the site soon turned away from Kan's own streaming content towards facilitating broadcasting, specifically live streaming, for other users (Cook, 2014). Thus, Justin.tv became a platform for early live-streaming that, coupled with increasingly accessible consumer electronics and cheaper bandwidth, saw a high volume of traffic and interest.

Streams on Justin.tv were divided into activity or interest-based categories, with the "gaming" section becoming the most prominent and frequently visited category. The popularity of the site's gaming section prompted Justin.tv executives to create a dedicated gaming-oriented website; in June of 2011, Justin.tv announced the launch of Twitch.tv **(see Fig. 2)** (Business Wire, 2011). Twitch.tv capitalized on the technical infrastructure, broadcasting model, webpage layout, and video codecs pioneered by Justin.tv, but shaped the site to cater to a very motivated and active subset of users, gamers.
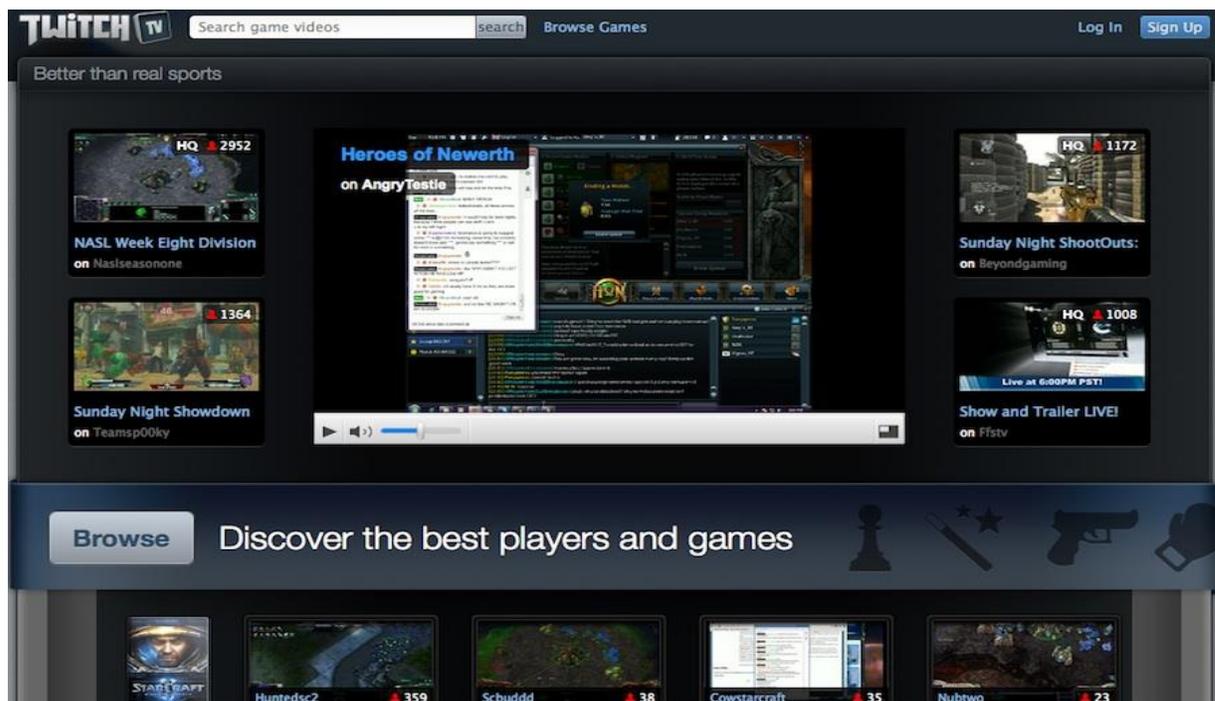
Fig. 2 – A screenshot of Twitch.tv as a branch of Justin.tv in 2010

By the end of its first year of operation, Twitch.tv had over 17 million unique monthly viewers (Ewalt, 2013). As a component of Justin.tv Inc., Twitch continued to grow in size and scope. In addition to the continuously increasing number of viewers and broadcasters, major game

companies integrated the platform into their next generation consoles (Microsoft's Xbox One and Sony's Playstation 4), major games media outlets extended their content to the streaming site, and Twitch became the most popular platform for viewing emergent eSports tournaments and industry trade shows such as E3 (Ewalt, 2013). By 2014, Twitch was reaching 45 million unique monthly viewers, and Justin.tv's corporate entities were combined and rebranded under Twitch Interactive Inc. (Twitch, 2014). Ultimately, the decision to rebrand Justin.tv reflected the company's desire to focus on Twitch, as it had become a more lucrative, active and prominent platform than its parent. While Justin.tv initial 'lifecasting' premise was novel, it was the interest-based live streaming, wholly encompassed by Twitch, that captured users and audiences. Indeed, Twitch's popularity, technical affordances and integration into the gaming and streaming industries certainly proved to be of great interest to other, larger tech companies.

In May of 2014, rumors emerged that Google was finalizing a deal to purchase Twitch for 1$ billion (Opam, 2014). The purchase was an attempt by the video streaming giant to claim their stake in video live-streaming, a feature that had yet to be fully integrated into their own platform. However, it was later reported that the deal between Google and Twitch Interactive Inc. was cancelled for reasons that were not fully disclosed. The cancellation of the sale has since largely been attributed to the antitrust issues that were posed by the acquisition of another large video streaming platform, as Google already owned YouTube, the largest streaming video site on the Internet. Owning Twitch would be problematic since "federal antitrust law often stops mergers that consolidate too much of one industry with a single company" (Shontell, 2014b). While major web services provider Yahoo had made their own bid for Twitch, it was soon announced that the live-streaming site would be sold to online retailer Amazon (Shontell, 2014a).

In August of 2014, it was officially announced that Amazon had acquired Twitch for 970$ million paid in cash, the largest acquisition in the company's 20-year history (Mac, 2014). *The Wall Street Journal* confirmed the deal would close in the latter part of 2014, confirming that Twitch would operate under Amazon as an independent subsidiary and maintain all its prior assets, employees and leadership (Macmillan & Bensinger, 2014). Following the sale, Twitch's CEO Emmett Shear published an open letter to Twitch users, expressing his optimism regarding the direction of the site with their new parent company:

> Today, I'm pleased to announce we've been acquired by Amazon. We chose Amazon because they believe in our community, they share our values and long-term vision, and they want to help us get there faster. We're keeping most everything the same: our office, our employees, our brand, and most importantly our independence. But with Amazon's support we'll have the resources to bring you an even better Twitch. (Twitch, 2014b).

Amazon founder and CEO Jeff Bezos also commented on the acquisition:

> Broadcasting and watching gameplay is a global phenomenon and Twitch has built a platform that brings together tens of millions of people who watch billions of minutes of games each month – from The International, to breaking the world record for Mario, to gaming conferences like E3. … Like Twitch, we obsess over customers and like to think differently, and we look forward to learning from them and helping them move even faster to build new services for the gaming community (Business Wire, 2014).

After the sale of the site, and with the primary focus now on Twitch and gaming related live-streaming, Twitch Interactive Inc., decided to shut down Justin.tv, its mobile application and its application program interface (Kumparak, 2014). Justin.tv users were encouraged to switch their accounts over to Twitch, where they could continue to live-stream on Twitch's newly supported but marginal 'Chat' and 'IRL' categories. Twitch, now owned by Amazon and the sole focus of Twitch Interactive Inc., has continued to flourish, with an ever-expanding user base and increasing revenue for the site and its streamers.

Amazon's purchase of Twitch was apparently motivated by a desire to compliment the online retailer's small gaming portfolio (by way of game sales and cloud computing software) and to expand into new and untapped markets (gaming-related live-streaming). And, with the promise to maintain Twitch as an independently operated platform separate from Amazon, the purchase appeared benign to users. Over the last four years of Amazon's ownership of Twitch however, the streaming site has been absorbed into Amazon's increasingly complex ecosystem of businesses and services through an intricate process of integration, convergence and market infiltration; aggressive cross-promotion of Amazon services is a major feature of Twitch in 2018.

3.2   Implications of Amazon's Ownership

At the level of operation, logistics and branding, Twitch is still independently owned and operated as a subsidiary of Amazon. However, closer scrutiny of the site demonstrates that Amazon is more finely integrated into the site than initially anticipated by industry publications. The intentions and driving motivation for Amazon's purchase and eventual integration of Twitch

can be better understood by applying certain principles of media economics within the new digital media landscape.

While the implications of vertical and horizontal integration have been discussed in past studies of television and film industries, diagonal expansion has become a phenomenon more characteristic of this era of digital media consolidation. Vertical integration refers to the "expansion of a business enterprise in gaining control of operations from the acquisition of fundamental raw materials through to the sale of final products" (Gomery, 1997, p. 48), while horizontal integration occurs when "two firms at the same stage in the supply chain or who are engaged in the same activity combine forces" (Doyle, 2013, p. 22). However, Amazon's purchase of Twitch represents an act of diagonal expansion, referring to the process wherein "firms diversify into new business areas "entirely, seeking complimentary areas of activity, or new growth opportunities" (Doyle, 2013, p. 37). By purchasing a dedicated video game live-streaming platform, Amazon proactively acquired a substantial piece of a burgeoning market, while defensively preventing other large companies, particularly Google and Yahoo, from capitalizing on the market themselves. Not only does entering the video game streaming market compliment Amazon's current game retailing activities (with the sale of gaming products through Amazon.com), it also provides an avenue for integrating and enhancing its other products (most specifically, Amazon Web Services).

The consequences of diagonal expansion, then, are of particular interest when observing digital platforms. Doyle (2013) points out that "the boundaries that used to surround and distinguish one specific market from another (eg. newspapers, television, telecommunications) are less clearly delineated now than in the past. At the root of this aspect of transformation in market structures and competition is digital convergence" (p. 25). Doyle characterizes convergence in the context of media economics as the coming together of sectors and product markets that were previously distinct and separate, something that can be seen as arising from the increasingly shared use of digital technologies (p. 25). Indeed, while convergence has affected the content, delivery and stylistic presentation of digital media, convergence has also characterized more important changes at the level of platform business operations and corporate strategies within media and technology companies.

While Twitch technically operates as an independent subsidiary of Amazon, the online retailer has a distinct presence on the streaming platform, with multiple services strategically embedded into the site and integrated into Twitch streamers' practices, the result of diagonal integration and convergence. Indeed, many of Amazon's services have been introduced to Twitch's operation, notably it's subscription service, cloud computing system, game development tools, retailing proxy programs and proprietary peripherals.

3.2.1   Amazon Integration

Following an announcement in late 2016, Twitch Prime was introduced, which allowed Twitch users to connect their accounts to Amazon's Prime subscription service. While Twitch previously offered a comparable benefits-based subscription called Twitch Turbo, its features were incorporated in Amazon's iteration of the service and Turbo was discontinued. With Twitch Prime, users receive numerous gaming and site-related benefits, including, but not limited to free PC games, in-game 'loot' and downloadable content (including additional characters, perks, skins, etc.), as well as expanded Twitch chat options, user badges, a free monthly channel subscription and, for a time, ad-free viewing (Twitch, 2018a). Twitch Prime users also get access to Amazon Prime features, including 2-day shipping, product discounts and Prime entertainment services (Prime Video, Amazon Music, Kindle books, etc).

Twitch has also integrated users into its Amazon Associates program, allowing affiliate and partnered Twitch streamers to earn commission revenue from Amazon-retailed items sold through their channel; streamers can earn up to 5% commission on various office, technology and computer products, and 10% on digital video game sales (Twitch, 2018b). Through Amazon Blacksmith, the in-stream component of the Associates program, streamers are provided with channel customization tools and overlays to facilitate product "recommendations" and incite their viewers to purchase through their channel **(Fig. 3).** While viewers are encouraged to purchase recommended items to help their favorite streamers financially, these streamers ultimately become another outlet of Amazon's online retailing enterprise.
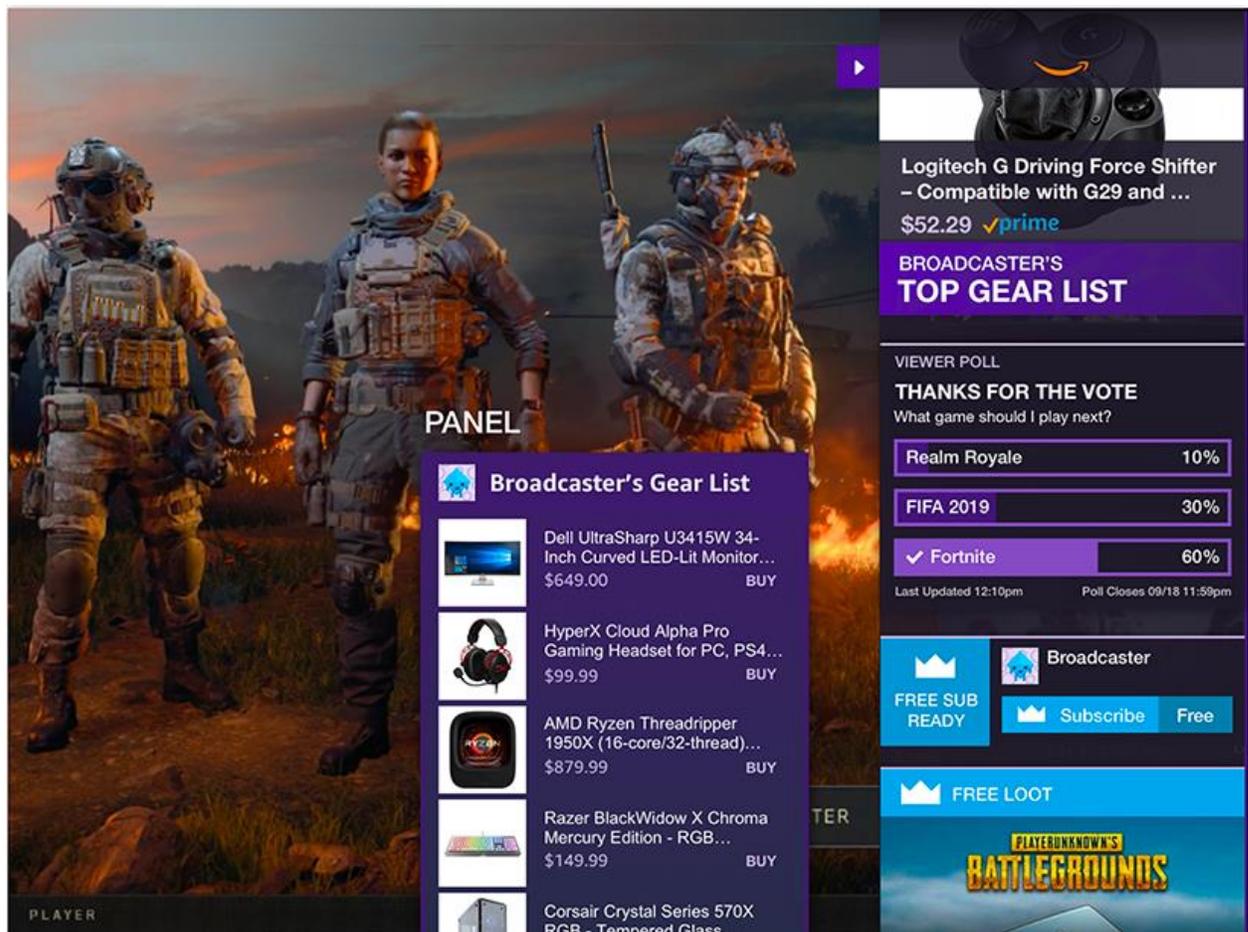
Fig. 3 – Amazon Blacksmith stream overlay options

Given Twitch's active and interest-specific user base, the integration of Amazon services is a strategic approach to capitalize on this unique group of streamers and viewers. Introducing Twitch Prime allows Amazon to attract more users into its larger Prime services, inciting them to explore its offerings (including Amazon Prime Video, Amazon Music and its 2-day free shipping on retail products). The Associates program further incentivizes users to make purchases through the online retailer while users are under the impression that they are providing financial and personal support to their favorite streamers. To this end, Twitch has become its own unique Amazon storefront, as the streaming site's affordances are effectively subsumed into larger, consumer-oriented processes definitive of Amazon.

Twitch is also integrated into Amazon's cloud computing ecosystem, with virtually every aspect of the site operating on Amazon Web Services' infrastructure and servers. Amazon Web Services (AWS) "provides a highly reliable, scalable, low-cost infrastructure platform in the

cloud that powers hundreds of thousands of businesses" and boasts competitively low costs, security, flexibility (Amazon, "About AWS"). According to Twitch CEO Emmett Shear, moving the site's technical operation to AWS was an advantageous move given their relationship with Amazon; the only part of the site that remains separate from Amazon's computing service is Twitch's custom built live-video system/client, retained from its pre-Amazon days (Vanian, 2018). Twitch relies on AWS for the service's application hosting, back-up and storage capacities, content delivery and databases underlining the bulk of its operation. Like many other lean platforms, the goal is to strategically mitigate and minimize the material and capital infrastructure costs associated with servers and platform maintenance.

At the intersection of AWS, Twitch and gaming is Amazon's emergent game development engine, Amazon Lumberyard. Lumberyard is described as a fully-featured and powerful game engine that is free to use, with no software purchases, royalties or licensing fees, customizable source code, with 3D environment and animation tools, all supported by Amazon Web Services (Amazon, "Amazon Lumberyard"). What makes Amazon's game engine so compelling is its Twitch integration, with the ability to incorporate various features from the streaming site into games built with the engine. Features available in Lumberyard include Twitch ChatPlay, allowing gameplay that is altered in real-time based on interaction with stream viewers, Twitch Metastream, enabling streamers to customize their broadcasts to feature simultaneous graphic overlays for minimaps, stats and objectives occurring in-game, and Twitch JoinIn, a feature that makes it possible for stream viewers to enter a streamer's session in-game (Amazon, "Amazon Lumberyard"). Indeed, Lumberyard's Twitch integration is made to appeal to game developers in the era of video game live-streaming.

Installing Twitch within the AWS infrastructure might be a strategic cost-cutting measure for the streaming site, but it also affords Amazon an additional amount of control beyond the contractual ownership of Twitch; through AWS, Amazon also holds technical and operational jurisdiction over the site. Twitch becomes AWS' paradigmatic customer, as the size and complexity of video game live-streaming systems certainly bolster the computer service's competitive portfolio. Additionally, initiatives such as Amazon Lumberyard attempt to recruit emergent game companies into its gaming ecosystem, simultaneously selling their web services and advocating for interactive, streamer-based, viewer-oriented games exclusive to Twitch-integrated gaming

through Lumberyard. AWS and Lumberyard are representative of prototypical corporate synergies when it comes to expanding Amazon's gaming and technology ventures.

Amazon's ownership of and integration into Twitch demonstrate the strategic implications of diagonal expansion and its resulting synergies. The purchase of Twitch also raises concerns, however, over the ways user activity and data extracted from the site might be sold and appropriated. Doyle warns that while digital convergence has been hailed as beneficial to users given the ways it incites innovation and allows for flexibility, "the fact that online services such as Google or YouTube, who may not have borne any of the investment costs involved in making content, will nonetheless find themselves well-placed to siphon off audiences and revenues… poses an obvious threat to broadcasters and other professional content creators and suppliers of media content worldwide" (p. 28). Twitch represents Amazon's most strategic foray into the video game industry as it gains control of its live-streaming niche, but, clearly, the potential for monopolization is present. Some of these will be discussed in Chapter 3.

4 Video Game Industry Affiliations

As Twitch's operations focus primarily on video gaming, the site has not just become closely associated with user gaming-related practices but also with the practices and interests of other entities within the video game industry. While Amazon's integration of Twitch into its ecosystem represents a more generalized and one-sided form of diagonal expansion and corporate integration, the presence of Twitch within the rest of the video game industry is more complex, with multiple avenues of expansion and processes of convergence that can create their own synergies. Indeed, Twitch and its live-streaming practices have been integrated into video gaming hardware and software, are considered in the development and publication of game titles, have come to the forefront of games promotion, and have facilitated the emergence of new media industries such as eSports. This kind of platform integration across a wide variety of sites, games and practices cannot be adequately encompassed by a single paradigm of vertical, horizontal, diagonal or cross-integration. Instead, they should be viewed as differentiated forms of integration (technological, content, cross-promotional, or multimedia) that are themselves enabled by strategic partnerships. These multiple strategic partnerships are secured because video game live-streaming, especially on Twitch, is becoming an increasingly prominent aspect of modern gaming. Developing partnerships with Twitch (and by proxy, Amazon) allows other

companies and entities within the video game industry to utilize the streaming site's promotional potential and amassed communities of practice to reach new consumers.

These forms of integration work to further establish the presence of live-streaming in modern gaming. As live-streaming and interactive spectatorship become integral aspects of video gaming, by way of console integration, gameplay development, games promotion and eSports broadcasting, Twitch has positioned itself at the forefront of the industry. To this end, the entrenchment of Twitch into the larger video game industry dually enhances certain practices (eSports) and creates new ones (variety and promotion game streaming), further transforming video games into a more dynamic and multi-faceted medium.

4.1   Console Integration

Twitch's integration into the video game industry capitalizes on the importance of one of video gaming's central physical commodities; the console. Consoles produced as part of the Xbox, PlayStation or Nintendo line have been integral to the growth and maintenance of the modern gaming market, and the consoles themselves are central to the gaming experience as they enable the playing of games software. While primarily used for playing games, modern consoles have also been conceived as centralized home entertainment hubs, with affordances allowing for video and internet-based media. Indeed, Twitch has similarly capitalized on video gaming's rich tradition of technological convergence by way of integration into gaming hardware. From the introduction of the PlayStation 2's DVD functionality and the Xbox's online functionality in the early 2000's to the development of modern consoles such as the Xbox One, PlayStation 4 and the Nintendo Switch, the console market has consistently been oriented towards multimedia compatibility, with integrated features incentivizing users to centralize their gaming and media experiences. Song et al. (2017) argue that "differentiated complementary software can be an important factor in affecting consumers' adoption decision" (p. 109) and that, in the context of two-sided gaming markets, multimedia integration can be very strategic for both parties involved in the hardware and software end of things.

In 2013, Twitch announced that a Twitch streaming application would be made available for Microsoft's Xbox 360 and Xbox One consoles, with a similar streaming app for Sony's PlayStation 3 and PlayStation 4 announced later in 2015 (Twitch, 2013). On older consoles, namely the Xbox 360 and the PlayStation 3, this application allows users to stream Twitch

channels directly to their console, providing a 'direct streaming' experience akin to other console-integrated applications including Netflix and YouTube.

Given their ameliorated hardware capacities, Microsoft and Sony's more modern console iterations, the Xbox One and the PlayStation 4 respectively, enable a more robust form of Twitch integration, which permits both Twitch streaming and broadcasting directly from the console. By pressing the 'share' or 'view' button on the controller, users can immediately start broadcasting their gameplay, complete with a user-side interface showing viewership and channel chat **(Fig. 4).** Acknowledging that PC-based live-streaming is more rich in features (specialized chat commands, face-cam, multiple windows, etc.), console-based broadcasting applications provide an easy-to-use and full-functioning live-streaming experience that encompasses the core experience of Twitch as a site: dynamic gameplay live-streaming with simultaneous written chat.
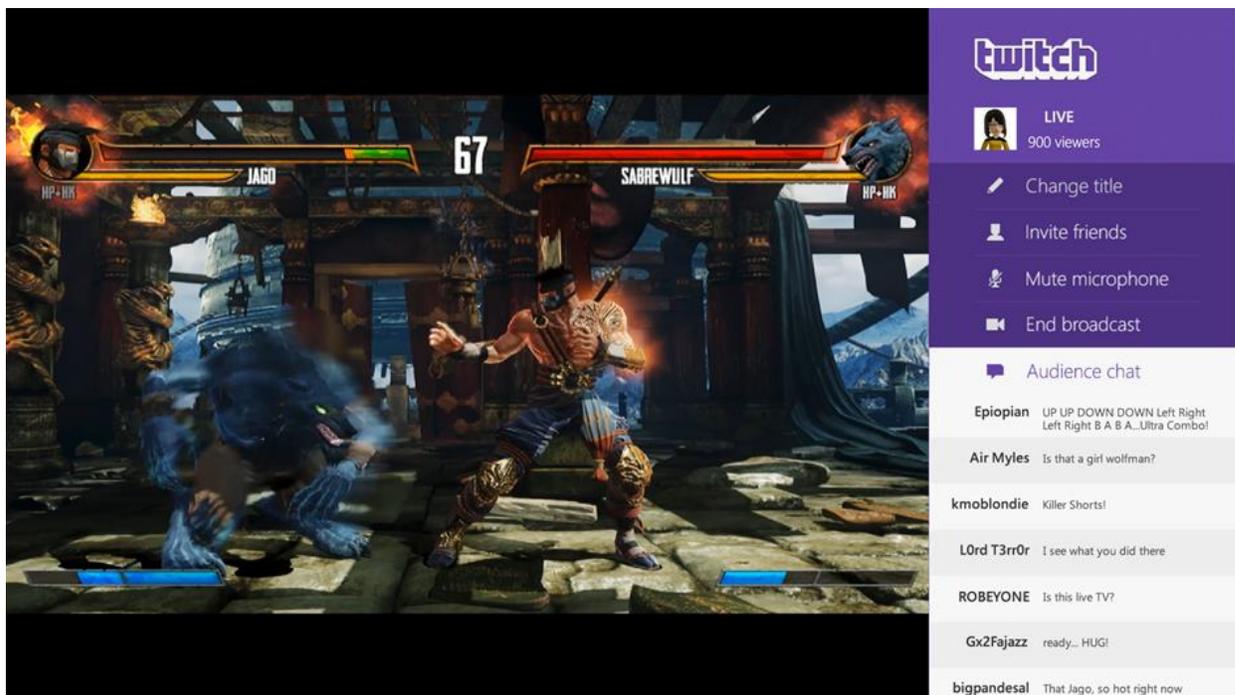
Fig. 4 – Streamer-side layout of Twitch's broadcasting app on Xbox One

The integration of Twitch into Microsoft's Xbox and Sony's PlayStation systems underlines a strategic partnership leading to a mutually advantageous form of technological convergence. Indeed, while Microsoft and Sony can market their consoles with this built-in, gaming-oriented streaming service, Twitch gains on two fronts. First, while lacking console support on modern Nintendo systems, Twitch has managed to colonize two of three major gaming consoles that

essentially represent a monopoly in the modern gaming industry (outside of smaller handheld and PC gaming markets). Having Twitch integration on Sony's and Microsoft's flagship consoles represents the creation and maintenance of larger corporate relationships and may translate into other strategic partnerships related to hardware and software promotion.

Second, hardware integration of Twitch on these consoles adds an element of accessibility; while streaming to Twitch from a PC might require a robust and expensive computer set-up, and streaming from older consoles requires capture cards and converters, streaming to Twitch from Xbox One or PlayStation 4 is as easy as pressing the 'share' button on the console controller. Given this ease of use, Twitch effectively incites more users to participate in streaming practices, regardless of their monetary means or technical aptitude. Twitch CEO Emmett Shear has reaffirmed this goal of accessibility; in an interview question regarding the future of live-streaming vis-à-vis Xbox One integration, Shear responded:

> This is our chance to break into the console space in a big way. To date, PC games have been the biggest things on Twitch, mostly because it's incredibly difficult to broadcast console games today. The Xbox One integration means that Twitch users are going to be able to broadcast their console experiences even more easily than they can broadcast from PC. Live broadcasting your game is going to be for everyone in the future, not just people who can afford a capture card (Xbox Wire, 2013).

This kind of hardware integration is a deliberate attempt by Twitch to penetrate and shape the console market by making streaming as a practice more common and accessible, thereby expanding Twitch's user base.

4.2   Advertising and Promotional Initiatives

As we have seen, Twitch has cultivated numerous strategic partnerships with key video game industry entities, namely game publishers, game developers and studios, as well as game peripheral and computer manufacturers. These ties also include various forms of promotional marketing initiatives facilitated by the streaming site. The incentive of using online media platforms to promote products is to build a "synergistic display of online multimedia, [which] brings about higher brand credibility, more positive thoughts about the brand and more positive attitude toward the brand, which, in turn, influence purchase intention" (Dong et al., 2018; 957). By way of traditional advertising or unique forms of content convergence, game industry entities have effectively utilized Twitch to market and promote their products to a highly targeted

consumer market, using Twitch to sell gaming-related products to the site's avid gaming user base. Game and tech-related companies build integrated media campaigns on Twitch because "marketers seek to maximize the effectiveness of their budgets by exploiting the unique strengths of each medium" (Voorveld et al., 2011, p. 69), in the case of Twitch, this includes its interactive live-streaming video capabilities. Game developers, publishers and distributors have capitalized on the site's characteristic gaming orientation, as well as its broadcast affordances to create compelling promotional approaches, be it traditional forms of web or video advertising, sponsored content, early release/launch streams or even offering exclusive in-game content through Twitch Prime subscriptions. It is worth investigating how these forms of marketing and content convergence are manifest on the site and to what effect.

The most obvious avenue of marketing on Twitch is the use of traditional video and display advertising. Indeed, Twitch runs many advertisements and integrated campaigns in the same way other streaming video sites do, before and during video streams, on their front page, and hosting visual display ads all over the site. These advertising opportunities are offered via Twitch's own advertising service, with demographic data and commissioned market studies available to potential interested advertisers (Twitch, "Advertising"). Twitch acknowledges its specific core demographic; advertising efforts are best suited to gamers **(Fig. 5).** Following the practices of targeted advertising so prevalent online (Kox et al., 2017), most of the advertising on the site is conducted by companies in the video game industry to promote gaming products (Games, consoles, gaming peripherals, computer and office equipment, services, etc.). Additional advertising campaigns are run on the site to promote various television shows and movies, food products, or services available with Amazon Prime.

Fig. 5 – Screenshot from Twitch Advertising's 'Audiences' page, found at https://twitchadvertising.tv/audience/

Fig. 6 – A 'homepage takeover' display advertisement for Sony's PlayStation 4 in late 2018
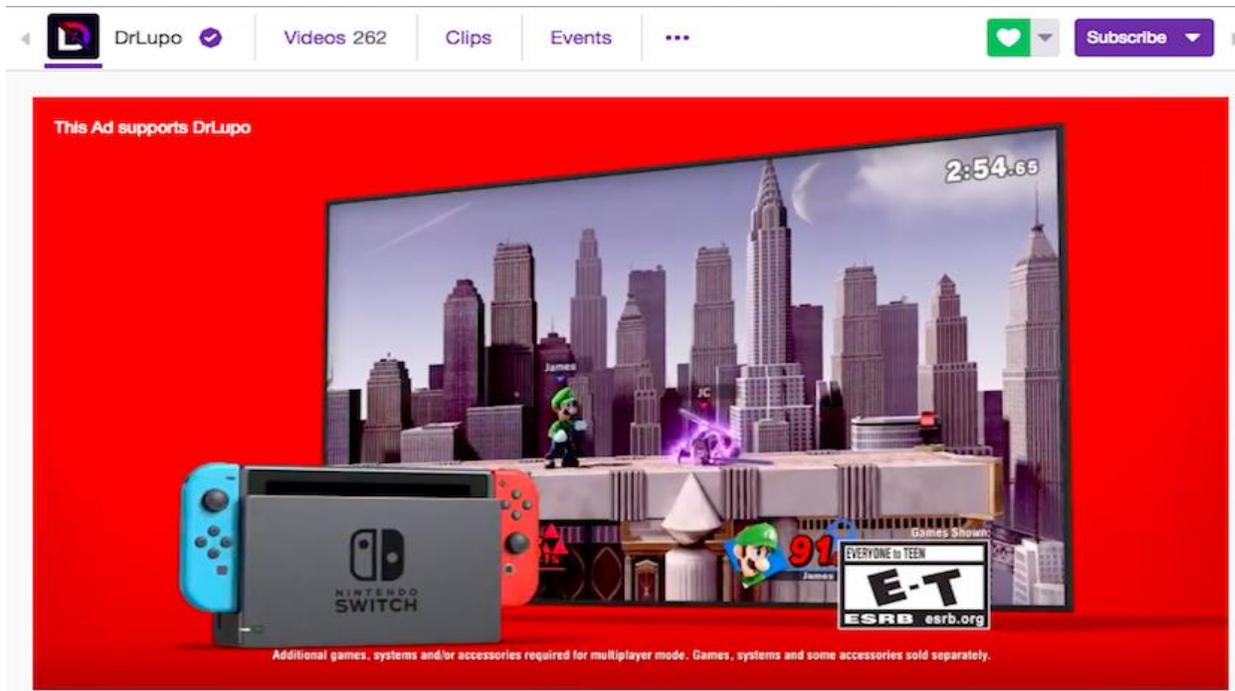
**Fig. 7 – A video advertisement for the Nintendo Switch and *Super Smash Bros. Ultimate*
running on Twitch user DrLupo's channel**

Figure 6 demonstrates a 'homepage takeover', promoting Sony's PlayStation 4 console and its
reduced pricing. By clicking on any surface of the banner, users are taken to a dedicated
PlayStation website encouraging users to purchase the console. Figure 7 shows a video
advertisement for Nintendo's Switch console and their bundled software *Super Smash Bros.
Ultimate.* This ad runs for 15 seconds before the viewer can access the stream and cannot be
skipped or block with traditional browser-based ad-blocking software. The top-left corner of the
ad notes, "This Ad supports DrLupo"; the inclusion of this statement is an attempt at
transparency by the site (streamers do receive a small part of the advertising revenue for the ads
played on their channel) framed as a financial benefit to a favorite streamer. In this way, these
ads align themselves with individual subscribers and work to cultivate a sympathetic attitude
from viewers toward to the companies themselves.

While Twitch capitalizes on *traditional* forms of online video advertising in a way that is similar
to video streaming sites such as YouTube and Dailymotion, its unique affordances facilitate
another form of advertising: promotional and sponsored broadcasts. Sponsored broadcasts
involve the "intentional incorporation of brands, products, or persuasive messages into
traditionally non-commercial or editorial content" (Müller & Christiandl, 2019, p. 47, citing

Boerman et al, 2014). On Twitch, sponsored broadcasts are initiated by certain companies and involve partnering with a streamer to promote their product. Streamers are incentivized to participate by the offer of advanced copies of games and monetary compensation. The most prominent and effective form of sponsored advertising on Twitch is sponsored gameplay where users play the promoted game on-stream as they would any other game.

To such ends, Twitch also facilitates this form of sponsored advertising through a repository of sponsorship opportunities made available to Twitch's "Partnered" and verified users. This service is called the 'Bounty Board', and is described by Twitch as "a way for creators to browse and accept paid sponsorship opportunities (AKA bounties) directly from their Twitch dashboard. With Bounty Board, Twitch handles the relationship with the brand and finds sponsorship opportunities for you. Twitch will also handle your payments, so you can concentrate on streaming and growing your community" (Twitch, 2018). Twitch also works on the
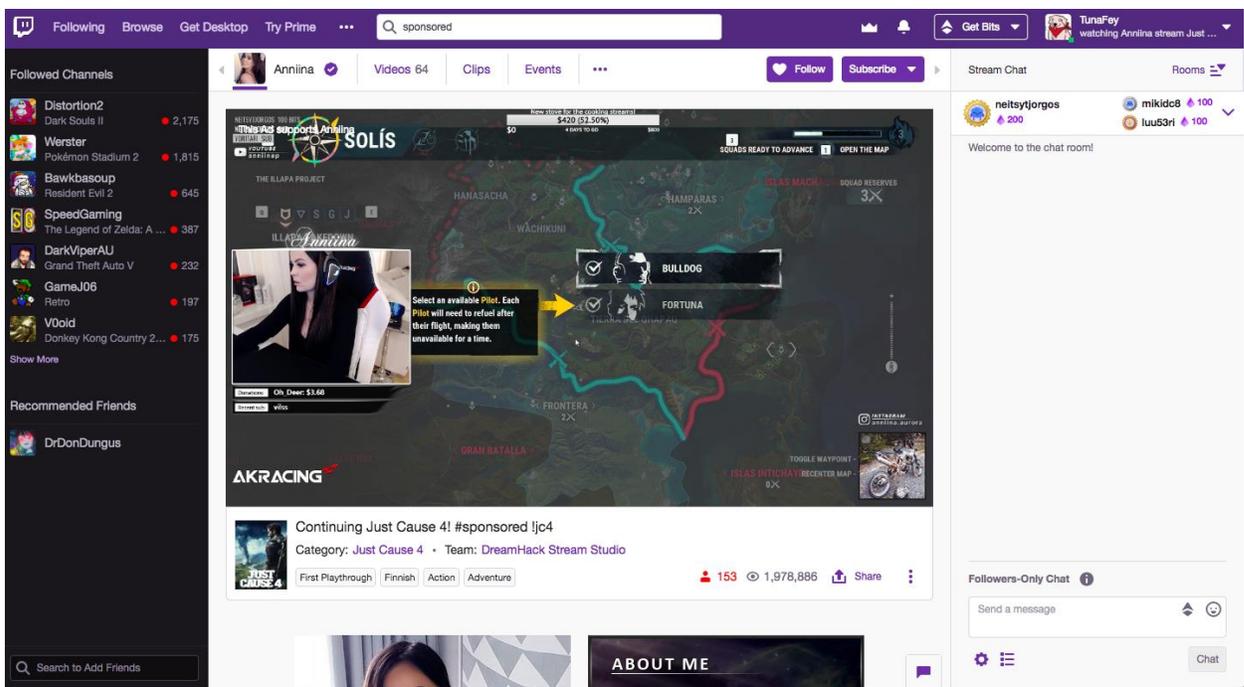
Fig. 8 – Twitch user Anniina's Twitch channel streaming *Just Cause 4*

recruitment end of this program, reaching out to game developers with the opportunity to market their upcoming or recent releases by way of sponsored broadcasts. These sponsorships represent the continued convergence between game companies and Twitch as a platform, as the line between gameplay and promotion becomes increasingly blurred.

Figure 8, a screenshot of Twitch user Anniina's channel, shows the streamer playing Avalanche Studio's *Just Cause 4* via a disclosed sponsorship with the company's publishers (this is denoted by the '#sponsored' tag in the stream's title). As such, sponsored broadcasts are an embedded form of advertising, since the promotional aspects do not resemble that of an advertisement. However, following criticism from users and gaming outlets about a lack of transparency pertaining to sponsored broadcasts, Twitch has had to improve its disclosure practices, including explicitly labeling sponsored streams and tagging users with promotional involvements (Phillips, 2014). A release by Twitch states:

> While we have always encouraged our broadcasters to acknowledge if they are playing games as part of a promotional campaign, we are now establishing a much more transparent approach to all paid programs on our platform and hope that it sets a precedent for the broader industry (Twitch, 2014c).

However, it is important to note that there are no obligations or guidelines imposed for streamers who have made alternative sponsorship deals with third-parties (that is, not sponsored through Twitch), as the platform "does not enforce individuals to declare external sponsorships" (Phillips, 2014). Thus, while Twitch promotes and facilitates transparency practices, it can be difficult to differentiate sponsored, commercially-supported streaming content from original, authentic content on the site.

While companies tend to utilize direct advertising (via video and display ads) or partnerships with streamers in order to promote their products, some companies have strategically adopted the Twitch platform and begun to stream on their own company channels. These promotional broadcasts are hosted on channels specific to a company, franchise or game. They attract viewers by offering stream launch or reveal trailers, early gameplay footage, special interviews, competitive events or press conferences from industry trade shows. The goal is for these companies to create their own personalized presence on Twitch not tied to sponsored streamers or to their larger advertising campaigns. By making use of the interaction and engagement affordances of Twitch, these channels can become an important outlet for the dissemination of news and the generation of interest in the company's product.

These processes of content convergence by way of integrative marketing illustrate the intensification of both formal and informal strategic relationships between Twitch and other entities within the video game industry. While video game companies have identified the

advantages of running their video or display ads on a platform with such a specific demographic and interest group, marketers have maximized their promotional efforts by integrating their games into streams or creating their own distinct brand presence on the site.

4.3   eSports

Twitch also has a symbiotic relationship with the emergent eSports industry. eSports, short for 'electronic sport', refers to competitive video gaming "that is often coordinated by different leagues, ladders and tournaments, and where players customarily belong to teams or other "sporting" organizations which are sponsored by various business organizations" (Hamari & Sjoblom, 2016, p. 211). eSports are a new form of entertainment akin to that of traditional sports, and are becoming increasingly prominent in the realm of video gaming. All indications are that eSports will continue to increase in popularity and profit over the next several years. Figure 9 demonstrates the growth of eSports as an industry by the measure of market revenue; revenue from eSports rose from $655 million in 2017 to $906 million in 2018 and is projected to more than double into 2021.

eSports market revenue worldwide from 2012 to 2021 (in million U.S. dollars)

Fig. 9 – eSports market revenue worldwide from 2012 to 2021 -
https://www.statista.com/statistics/490522/global-esports-market-revenue/
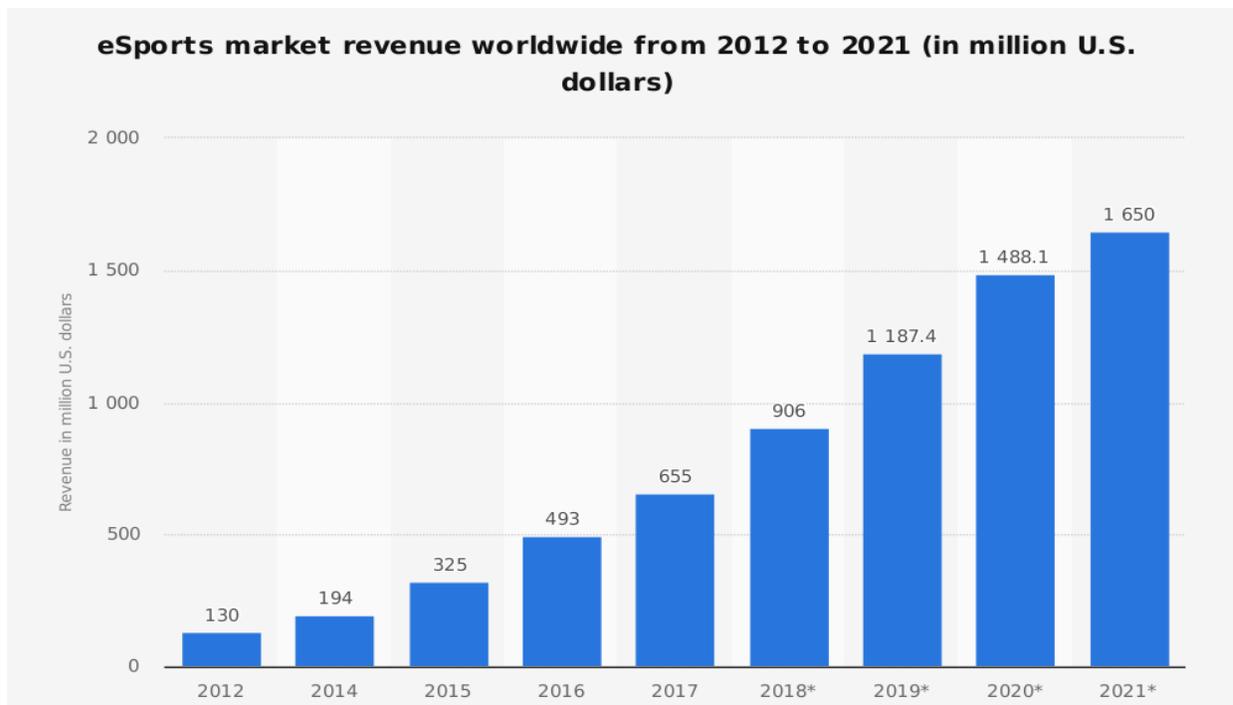
Twitch has effectively capitalized on the growth of eSports by acknowledging the importance of spectatorship. T.L. Taylor (2016) highlights how eSports necessarily relies on spectatorship to maintain itself as an industry, noting that "as the industry's primary resource, the e-sports spectator is becoming an increasingly lucrative resource given the proliferation of content producers, and the ongoing issue of e-sports appeal beyond committed players… e-sports is working towards the commodification of gaming spectatorship" (p. 294). As a gaming-oriented, free-to-use and real-time streaming platform, Twitch is strategically positioned to cultivate the eSports viewership. In the first quarter of 2018, Twitch accounted for 228 million hours of viewed eSports content, over seven times more hours than their closest competing platform YouTube Gaming (see Fig. 10). Twitch is currently the primary site for eSports viewership, solidifying this status by signing exclusive streaming rights with Activision-Blizzard's Overwatch League, the NBA and Take-Two Interactive's NBA 2K League, and various Dreamhack events, among others (Brathwaite, 2018). Further, Twitch has a host of partnerships established with leading eSports teams and organizations including G2 eSports, Liquid Gaming, OpTic Gaming and North, with exclusive streaming rights for the team's players and matches (Ashton, 2018).

YouTube GAMING
32M
Total Esports Hours
(Q1 2018)

twitch
228M
Total Esports Hours
(Q1 2018)

TOP FIVE ESPORTS BROADCASTERS | YOUTUBE GAMING & TWITCH

TOP ESPORTS BROADCASTERS	VIEWERSHIP HOURS
RIOT	22.1M
VIETNAM ESPORTS TV	3.2M
LIGAGAME ESPORTS	1.5M
ESL	1.0M
GARENA	0.9M

TOP ESPORTS BROADCASTERS	VIEWERSHIP HOURS
RIOT	42.4M
TURNER	38.9M
STARLADDER	27.0M
RUHUB	17.5M
ESL	17.4M
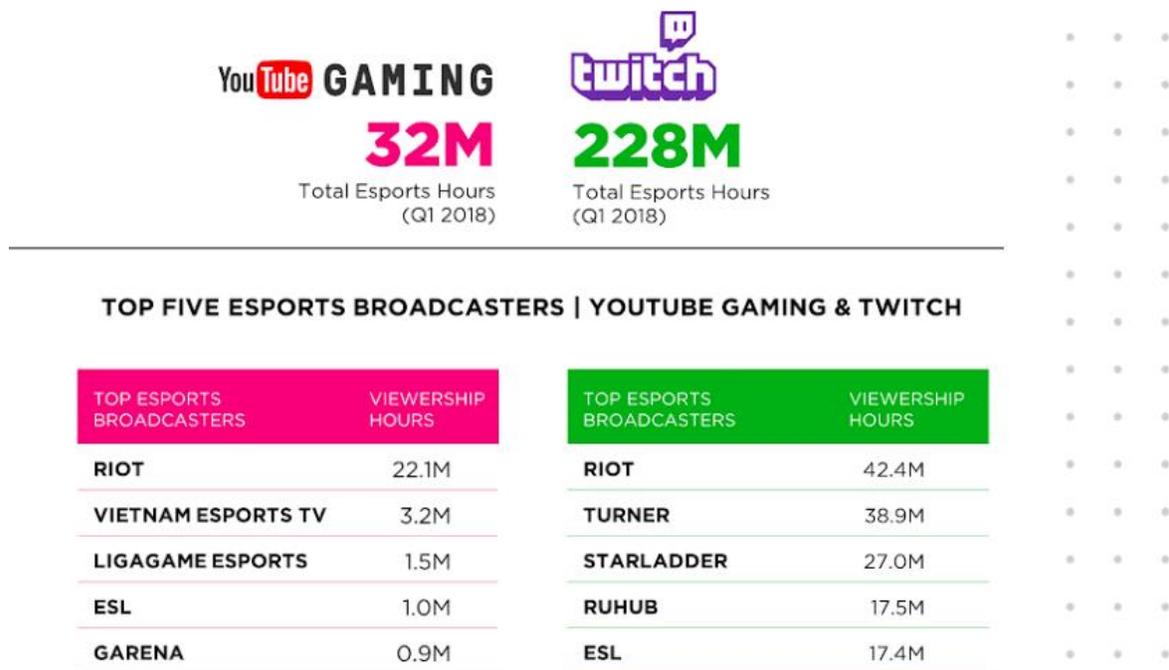
Fig. 10 – Comparison of eSports hours watched on YouTube Gaming and Twitch in First Quarter of 2018 - https://newzoo.com/insights/articles/five-key-insights-into-twitch-and-youtube-gaming/

While Twitch has come to be paradigmatic of the spectatorship aspect of the eSports market, the streaming platform also provides an important source of financial and professional support to current to aspiring eSports cyberathletes. Streaming on Twitch opens up an alternative avenue for monetary support, increased visibility and sustainable engagement with a game or league's fans and community. Like any partnered or affiliate-status streamer on Twitch, cyberathletes can monetize their gaming activity through channel subscriptions, 'bit' cheers, donations, advertising revenue, sponsorships and participation in the Blacksmith program; the idea is to attract viewers by taking advantage of their talent and status as a cyberathlete. Likewise, cyberathletes can also use their stream to promote themselves and to engage with fans during practices, coaching, skirmishes or even in occasional casual play.

Thus, viewership enables a unique form of media convergence between Twitch and eSports, as the affordances of the platform are intrinsically compatible with the commodification of eSports spectators and the alternative subsidizing of eSports competitors. The growth of the eSports, the market share cultivated by Twitch in terms of viewership hours and partnerships, as well as the extraneous activity of cyberathletes on the site suggests that Twitch has successfully tapped into and will continue to profit from eSports in the next few years. Capitalizing on eSports has amplified Twitch's prominence in the modern video game industry, forcing video game developers and publishers to acknowledge the popularity and profitability of electronic sport.

Considering the integration of Twitch into major consoles, the opportunities for video marketing and advertising to a dedicated gaming demographic, and its firm hold on eSports broadcasting and its fans, it is clear that Twitch has positioned itself as central to the larger video game industry. Indeed, while these partnerships result in mutually beneficial synergies for the parties involved, Twitch is now entangled within the game industry's increasingly complex and multifaceted market dynamics, occupying many of the spaces in the periphery of gaming's main activities. While game development/publishing and console manufacturing characterize the industry, live-streaming, advertising and eSports are increasingly important to its continued growth. As a result of these many processes of integration and convergence, Twitch has become a major industry player; it is as synonymous with gaming as HBO is to cable television or ESPN is to traditional sports. What are the implications of the continued integration and normalization of Twitch vis-à-vis its encroachment and domination of the games industry? This will be further explored in Chapter 3.

5   Use of Data

While traditional media produces both consumable media products (books, television shows, movies, newspapers, etc.) and audiences to be 'sold' to advertisers (as described by Dallas Smythe's concept of the audience commodity)*,* the era of new media has generated an increasingly valuable commodity: data. This section explores how Twitch makes use of big data extraction and personally identifiable user information to supplement its operation and how this process is obscured from streamers and viewers.

As Nick Srnicek (2017) argues the role of data is central to the operation of online platforms such as Twitch. He notes that 'in the twenty-first century, advanced capitalism came to be centered upon extracting and using a particular kind of raw material: data" (2017, p. 39), wherein "the activities of users [are] the natural source of these raw materials (2017, p. 40). Srnicek further elaborates that in the past two decades with the rise of web 2.0, "massive new expanses of potential data (have) opened up, and new industries (have arisen) to extract these data and to use them so as to optimize production processes, give insight into consumer preferences, control workers, provide the foundation for new products and services, and sell to advertisers" (2017, p. 41). The ability to capitalize on data, whether through processes of collection, extraction, analytics, packaging or sales, plays an essential role in maximizing a platform's profitability. Twitch (and by proxy, Amazon) has undoubtedly utilized data extraction and analytic processes to more optimally coordinate the activities of streamers (and therefore their revenue), to tailor their site based on user preferences, and to build very specific profiles for third-party targeted advertising.

Srnicek's focus on the centrality of data to new forms of capitalist accumulation informs this thesis, which views Twitch as a lean platform whose most important asset is its ownership of software and its capacity for data extraction and analytics (2017, p. 76). The goal here is to observe how data ('big data' and accumulated personal information) are utilized by Twitch to advance its profits, while focusing on the impact these practices have on users, both streamers and viewers alike.

5.1 'Big Data' and Personally-Identifiable Information

In its Privacy Policy, Twitch discloses that it collects three types of data from users: "user-provided information", such as name, email address, credit card information and geographic location, "automatically collected information", such as browser cookies, IP addresses, exit page addresses and system information, and "information from other sources", described as information from third-parties and connected social media accounts (Twitch, 2018c). These data, the most commonly collected types of data from online platforms, feed into processes that utilize both big data and personally-identifiable information (PPI).

The term 'big data' can be ambiguous and varied in its use, but this thesis employs the definition provided by Gandomi and Haider (2015): large bodies of structured or unstructured information with important degrees of volume, variety, and velocity (p. 138). Volume refers to the sheer magnitude of the data available, variety refers to the structural heterogeneity of the dataset and velocity refers to "the rate at which data are generated and the speed at which it should be analyzed and acted upon" (p. 138). This last characteristic should be emphasized because it encompasses data analytics, refinement and application. Thus, appended to this definition of 'big data' is the requirement for specialized data management or analytical tools to make sense of the collected information. Gandomi and Haider further emphasize that the implementation of big data technologies in online contexts is a strategic choice, allowing for the acquisition of "real-time intelligence from high volumes of perishable data" (2015, p. 138) generated by the platform in question. So, while the day-to-day use of Twitch by an individual viewer or streamer seems inconsequential, platforms rely on the back-end aggregation of all of this individual activity. The information generated is then refined and analyzed into meaningful patterns and behaviors. In the case of Twitch, large amounts of data about users, including number of page views, hours of a stream watched, number of times they've accessed the help page, number of times engaging in chat, browser 'cookies' and IP addresses, can be used to optimize the site or any other of Amazon's services, and also packaged and sold to third parties.

Platforms like Twitch also collect more detailed information pertaining to individual users, labeled 'personally identifiable information' (PII). PII refers to an enhanced form of personal data collection, wherein "information which can be used to distinguish an individual's identity either alone or when combined with other information that is linkable to a specific individual"

(Riederer et al, 2011, p. 1). Unlike the use of 'big data', which captures and analyzes large anonymized data sets, PII includes various kinds of personally volunteered data (declared information such as name, geographic region, shared interests, photos and video, etc.), observed data (data captured and owned by the organization, often unbeknownst to the individual user) and inferred data, which involves synthesizing information from volunteered and observed data (Manzerolle, 2014, p. 225). Jointly, the collection and analysis of both 'big data' and personally-identifiable information is valuable for Twitch, as it can be used to optimize the operation of the streaming site, enhance affiliated second-party services offered by Amazon), or facilitate targeted advertising by third-parties. No doubt, the user data generated from Twitch's users and their activity is a source of revenue for the platform and its owner, Amazon.

It is also worth reiterating that the technical infrastructure of Twitch is integrated into Amazon's Web Services (AWS), a notably robust cloud computing system that is that largest of its kind (Radford, 2014). AWS has computing solutions and services entirely dedicated to the processing and analysis of big data; for example, their Amazon EMR service allows users to "securely and reliably handle a broad set of big data use cases, including log analysis, web indexing, data transformations, machine learning, financial analysis, scientific simulation, and bioinformatics" ("Amazon EMR - Amazon Web Services," n.d.). It is likely that Twitch uses and relies on Amazon's in-house big data analytics services.

There is very little information about Twitch's data practices however, especially as it concerns recording, processing and analyzing data. Huge questions remain as to what specifically is mined, what information is utilized and to what ends, how much of the site's volunteered data and observed data are collated into inferred data, for example. Indeed, most technology companies and online platforms withhold this information in order to stay competitive in terms of data sales and analytics. This thesis uses Twitch's Privacy Policy as a way to understand its potential use of data, and infers from there how its practices might affect Twitch's users. Steinfeld (2016) describes a site's privacy policy as "a document regulating the relationship between the users and the site… most websites use a terms and conditions document to address [principles regarding the collection, use and dissemination of personal information]" (p. 992). While drafted to minimize a company's legal liability, these documents comprise the most accessible and transparent way to understand how data is used by online entities.

5.2   Twitch's Privacy Policy

A close assessment of Twitch's Privacy Policy document, (published and accessible via
https://www.twitch.tv/p/legal/privacy-policy/), reveals a lot about the platform's prospective use
of data and its relationship with third parties. As previously mentioned, Twitch discloses that it
collects forms of user-generated information, automatically collected information, and
information from other sources, such as third parties or social media networks. The Privacy
Policy then details how this personal data is used by the site:

> Twitch uses such information to operate, maintain, enhance, provide, create, and develop
> all of the features, functionality, and services (new or existing) found on the Twitch
> Services; provide security for our websites, products, software, or applications; manage
> relationships with Twitch account holders (e.g., Partners, Affiliates), including making or
> receiving payment; improve your experience with the Twitch Services by providing
> content recommendations and by delivering content that we hope you will find *relevant*
> *and interesting*, including advertising and marketing messages; allow you to comment on
> content, and participate in online games, contests, or rewards programs; prevent fraud
> and abuse; and understand the usage trends of our users.

It is worth emphasizing that Twitch frames the use of collected data as a service for the
'enhancement' of user experience and content delivery, even in relation to marketing and
advertising. The notion of 'relevant and interesting' content implies the use of information to
refine the site's advertising activities including, but perhaps not limited to, the creation of
specific demographic profiles or segmented audiences to facilitate targeted advertising
campaigns. To this end, the goal of data use is, explicitly, to optimize the site, whether it serves
the technical and operational aspects of the platform, or to capitalize on opportunities for
'effective' marketing that caters to specific advertisers.

The document also details the circumstances in which Twitch *discloses* personal information to
designated parties. While information is necessarily disclosed to Twitch service providers
involved with site hosting, maintenance and security services, Twitch also indicates that
information can be made available to certain corporate affiliates or second-parties:

> Twitch may make information available to our affiliates (meaning entities controlled by,
> controlling, or under common control with Twitch), including Amazon.com Inc. and its
> subsidiaries that are either subject to this Privacy Policy or follow practices at least as
> protective as those described in this Privacy Policy.

This disclosure implies that the information gathered from Twitch is actively utilized by its parent corporation Amazon.com, and thus could be used in conjunction with the online retailing giant's other media-oriented subsidiaries, including Goodreads, IMDb, Comixology and Audible.com. For example, it is possible to infer that obtaining metadata and stream metrics from Twitch can advance/bolster Amazon's retailing interests with regards to video-game product sales, including consoles, game titles, peripherals and other franchise-specific merchandise. In any case, Amazon's purchase of Twitch is clearly a strategic acquisition, as it aggregates important consumer insights and increases their overall competitive advantage.

Twitch also addresses how information is shared with third party services or websites. It pre-emptively states:

> The Twitch Services may link to third-party websites or services. The privacy practices of those third parties are not governed by this Privacy Policy. We encourage you to review the privacy policies of these third-party websites and services to understand their practices.

While Twitch makes it clear that it can share information with connected third parties, the fact that these connected entities are not overseen by Twitch's own privacy policy implies that the streaming site does not take responsibility for how user data is used elsewhere. Further, there is some ambiguity regarding user consent. It appears that users relinquish important personal data when they voluntarily connect their own third-party accounts to Twitch (Facebook, Twitter, Discord, YouTube, etc.), but it is not clear how the data from these accounts is used. It is also unclear what or how data is used for other, non-elective third-party connections, specifically related to advertisers. The section on third-parties concludes that:

> We may also send information about the content you watch or your activities on the Twitch Services to such third parties. For example, we may make information available to app developers, game developers, and game publishers to facilitate purchases and awards of digital goods, such as games and in-game items.

This section of the document also emphasizes how Twitch prioritizes its relationships within the video game industry. Given the usefulness of metrics related to game streaming (popularity of titles, opinions expressed in stream chats, number of viewers during peak hours, language of streams, etc.), game companies are especially tempted to connect their own platforms and

services to Twitch, so as to inform and optimize their own offerings. Echoing the previous section on video game industry affiliations, this clause of the Privacy Policy indicates that Twitch actively fosters strategic relationships within the video game industry, in this case, through the sharing of data.

Finally, Twitch's Privacy Policy outlines how it manages web analytics and tracking, specifically in relation to large-scale services such as Google Analytics and commonly-used advertiser tracking features:

> Twitch may allow advertisers, third-party advertising networks and third-party advertising serving companies to serve advertisements directly to you within the Twitch Services and other Twitch sites, services and software. By serving these advertisements directly to you, these companies can set their own cookies on your computer and trigger their own Web beacons and other tracking technologies to measure the effectiveness of their advertisements, and to collect and track information such as demographic information, inferred interests, aggregated information, and activity to assist them in personalizing the advertising content delivered to you
>
> …
>
> This Privacy Policy does not apply to, and we cannot control the tracking technologies and activities of, other advertisers, third-party advertising networks, or third-party advertising servers.
>
> …
>
> We are committed to providing you with meaningful choices about the information collected on our website for third-party purposes, and that is why we provide the Network Advertising Initiative, Your Online Choices and the Digital Advertising Alliance opt-out links above. However, Twitch does not recognize or respond to browser-initiated DNT ['Do Not Track'] signals.

While this part of the document reiterates the nature of the agreements made between Twitch and third-party entities and advertisers, it also demonstrates how the streaming site essentially enables potentially invasive data practices from other sites by way of cookies, beacons and tracking technologies deceptively integrated into delivered advertisements by third-parties. With only a limited selection of options that allow users to explicitly opt-out of advertiser data

collection, it is implied that Twitch favors its relationship with advertisers and its monetization potential over safeguarding user-related data and information, including browsing privacy.

Thus, while its data practices are not fully explained, Twitch's Privacy Policy indicates that the platform does extract and make use of data in order to optimize its services, including advertising and user profiling. It also privileges its relationship with its affiliates over the data privacy of users by enabling their data extraction practices. By using data to maximize its affordances and profits, Twitch is clearly paradigmatic of Srnicek's idea of platform capitalism: the extraction of user data on Twitch is a key part of its business model, but the details of how and in what way it does so is generally hidden from users. This very general understanding of data use on Twitch will inform discussions about user commodification pursued in the third chapter of this thesis.

6 User Activity and Monetization

This section observes the dynamic between Twitch as a platform and its users, arguably the platform's most important asset. This section will describe the primary forms of user activity on Twitch, that of viewing and streaming respectively. Then, by revisiting Srnicek's formulation of 'work' as facilitated by platforms, and by introducing Hesmondhalgh and Baker's (2011) understanding of work in creative cultural industries, this section demonstrates how certain Twitch streamers can be construed as 'outsourced' creative and emotional labourers, subject to high degrees of precariousness and with a propensity for self-exploitation. The goal of this section is to more fully understand the nature of user activity on Twitch. This will also inform discussions of processes of user commodification and 'labour' undertaken in Chapter 3 of this thesis.

6.1 Viewers

 'Viewers' are users whose primary activity on Twitch is simply watching different streams. As they do, and upon making an account on the platform, they can also interact and participate in a channel's chat. Dedicated viewers can freely 'follow' a channel to get notifications when the streamer goes live. Viewers are also encouraged to financially support their favorite streamers, either by way of subscribing to streams for a monthly fee, by donating to the user via Twitch's 'bits' system, or by donating externally via a system like PayPal or through cryptocurrencies. Many viewers are incentivized to support streamers for special privileges, such as channel-

specific emotes (little images that can be used in channel chat), access to external chat channels (usually Discord), viewing the stream ad-free, or just gaining the streamer's favour and attention.

There are many reasons for viewers to watch Twitch streams, but most of them can be attributed to the platform's very specific orientation towards video games and the ability to interact with the streamers and other viewers in chat during a real-time broadcast. Hamari and Sjöblom (2017) identify more specific motivations for stream viewership and engagement: while viewers choose to watch streams out of interest for the broadcast material and the streamer themselves, viewers become invested in and frequently return to certain streams because they provide a sense of community, escapism and tension release. This is echoed by Hamilton et al. (2014), whom similarly describe streams as digital 'third places', where conversations center around the stream's broadcast activity and a regular viewership that provides a specific mood or tone in chat for all other viewers. Additionally, both studies highlight that the appeal of streams stem from the creation of an imagined affective bond between the streamer and individual users, as a viewer might feel a sense of kinship or friendship with a streamer, even if the level of reciprocation is not always mutual.

It is important to acknowledge the role of Twitch's viewership or audience in the overall operation of the platform, as they form the basic premise of the streaming site: streamers need an audience and Twitch necessarily facilitates the process of connecting viewers to streamers. While viewers are attracted to the site for different reasons, their continued spectatorship is vital to Twitch's maintenance and profitability. Speaking to the reality of e-Sports and live-streaming on Twitch, Nicholas Taylor (2016) notes that viewers "and the audience power they embody [citing Smythe, 2006] is becoming an increasingly lucrative resource given the proliferation of content producers" and their connection to these content producers (p. 294). Indeed, Taylor emphasizes how this aggregation of viewers, and their collective spectatorship, is fundamental to the maintenance of live-streaming as an activity. In order to legitimize their practice, streamers need audiences.

6.2   Streamers

Streamers are Twitch users who initiate and conduct broadcasts on their own channels and are actively involved in showcasing gameplay or other on-stream activities. The majority also present themselves via face-cam and commentate while they stream, creating an intimate and

unique experience for viewers. Pellicone and Ahn (2017) frame streaming as a form of performance play, wherein streamers conceive their performance across three principle domains: "assembling technology to produce a professional looking media artifact, acting as a builder and moderator of an online community of regular viewers, and… developing a specific attitude towards gameplay that marks them as a unique and entertaining streamer" (p. 4864). This framework of streaming as performance emphasizes streaming as an activity that marries technical skill, content and personality, whereby the appeal is not the streamed gameplay alone, but rather how the gameplay is presented and accompanied by commentary, jokes, insight, advice, etc.

Streaming on Twitch is an accessible activity that, at its most basic level, requires only a regular computer and some maneuvering of free broadcasting software. However, some streamers have much more robust and high-end set-ups to more easily manage gameplay, broadcasting software, graphics and channel overlays, sound mixing, channel chat and other channel features; these can involve multiple screens, screen capturing devices, professional-grade microphones, soundboards, and very powerful, expensive computers. These technically powerful set-ups are adopted by streamers under the assumption that a higher-quality stream will appeal to and attract more viewers.

Many users streaming on Twitch pursue it as a casual activity or treat it as a hobby; for the most part, these streamers have very few viewers and a minimal hardware set-up. These casual streamers do not earn any money from their activity, however. It is only as individual streamers develop a dedicated viewership and demonstrate consistent, 'high-quality activity', that they pursue different avenues of monetization. Twitch presents streamers with two distinct options for monetization through their Affiliate program and their Partner program.

6.2.1   Twitch Affiliates

Twitch's Affiliate program allows users to earn income from their streaming activity by enabling a number of monetization options on their channel. Streamers must meet certain criteria in order to be eligible for this program, as consideration for Affiliate status is given to users who have at least 500 total minutes broadcast in the last 30 days, 7 unique broadcast days in the last 30 days, an average of 3 concurrent viewers or more over the last 30 days, and 50 Followers (Twitch "Affiliate program" page).

Upon receiving their Affiliate status, streamers can start earning revenue via 'bits', a platform-based currency that users can give to eligible streamers, with one bit equivalent to one cent, subscriptions, generally, a 5$ monthly fee paid by viewers as a form of monetary support and to gain access to certain exclusive features in chat, and commission from game sales made through the channel via Amazon Blacksmith.

Out of 2.2 million unique monthly streamers on Twitch, 150,000 have been conferred the Affiliate status (Fragen, 2018); this means that approximately 7% of Twitch streamers have been able to monetize their broadcasts to some degree. Indeed, while the Affiliate program essentially legitimizes the activities of streamers through methods of compensation, the onus is still placed on the streamer to develop their viewer base and maximize their monetization ability. Affiliate streamers are not paid by Twitch, but rather receive their money from the viewers; the process of compensation is simply facilitated by the platform. Nonetheless, the Affiliate program is an important 'intermediary' point between casual streaming and full-time streaming. As a user develops a larger viewership and a more distinguished presence on the platform, they can be given Partner status.

6.2.2   Twitch Partners

Streamers whom have garnered a significantly large viewership can be promoted from Twitch Affiliate to Twitch 'partner'. The Partner program enables streamers to better monetize their streams with several technical, promotional and service-based options made available to them exclusively. Partnered streamers are heavily supported by Twitch because of the volume of viewers they attract to the site, and because of their higher-quality streams. Partners essentially help to form the platform's brand identity. Twitch describes them this way:

> Partners are the best broadcasters that the Twitch community has to offer. We are looking for broadcasters that have large viewership and have built up a strong sub-community of their own. Our ideal Partner candidates engage their audience, produce amazing content, and find ways to stand out from the crowd. In addition, they are people that we want to represent our brand and are active, participating members of the community.

Consideration for Partner status is based on attaining certain channel metrics. Streamers must have streamed for 25 hours in the last 30 days, streamed for 12 unique days in the last 30 days, and reached an average of 75 concurrent viewers in the last 30 days.

Fulfilling these criteria, a streamer can then <u>apply</u> to be a Twitch partner. The submitted application, as well as the streamer's channel and stream history, are reviewed by Twitch staff, and the partnership status is conferred to the streamer if they meet the platform's standards. With only 27,000 partners out of 2.2 million monthly broadcasters (Fragen, 2018), partners make up a little over 1% of all streamers on Twitch, a prototypical, characteristically elite '1%' of streaming. The process of review for Partner status underlines Twitch's selectivity with regards to its 'showcased' users. As partnered streamers largely constitute Twitch's brand identity and take up more of the site's resources, Twitch's staff must make decisions that reflect the priorities of the platform.

Partnered Twitch streamers have the same base monetization options as Affiliates (subscriptions, 'bits', sales commissions through product sales with Amazon Blacksmith, etc.), but can also earn a share of the revenue from advertisements run on their channel. Further, Partnered streamers are given access to several features that can be used to increase and maintain their viewership, and thus maximize their monetization options. These features include channel customization tools (channel-specific emoticons, chat and 'bit' badges, automated chatbots, and designated chat moderators, among others), expanded video-on-demand capacities, broadcast delay, priority access to higher video-quality options, as well as access to promotional opportunities and a dedicated support team ("Partner Program", Twitch). Thus, Twitch's Partnership program can be considered a benchmark for aspiring streamers, an incentive for emergent streamers, and an advantage for established streamers. Twitch Partners are meant to encompass the aesthetic of the quintessential 'game' streamer, reinforcing Twitch's brand and position as the leading game-streaming platform.

Having demonstrated how Twitch provides monetization options to its streamers, it is also important to understand how Twitch itself makes money from streamers. Twitch enables viewers to subscribe to Affiliate and Partnered streamers on a monthly basis along different tiers, for 4.99$, 9.99$ and 24.99$ respectively; for each subscription, Twitch splits the revenue 50/50 with the streamer. For example, if a viewer subscribes to a channel with the 4.99$ tier, the streamers makes 2.50$, and Twitch recuperates the remaining 2.49$ (Alexander, 2018). This applies to all subscription tiers and to all sub-enabled streamers, with the exception of select high-volume streamers who, in the past, have negotiated 60/40 splits with Twitch (Alexander, 2018). However, this revenue split is not explicitly shared with paying viewers. Twitch's payment

interface implies that the amount paid is used to 'directly support the streamer' and to gain access to in-channel perks (see Fig. 11).

Fig. 11 - Subscription payment page for a $4.99 tier 1 subscription to Twitch user DrLupo

Thus, while the platform's Partner and Affiliate programs provide an opportunity for streamers to monetize their activity, Twitch also benefits from its revenue-earning streamers. By providing a slew of options and features to this sub-set of streamers, Twitch derives its own share of subscription and advertisement income, builds its brand identity on its most popular channels, and relies on these streamers in order to maintain a constant volume of traffic from returning viewers.

6.2.3   Professionalization of Game Streaming

The movement from casual to affiliate to partnered streamer, and the 'opening up' of monetization options, points to the ongoing professionalization of game streaming on Twitch. Indeed, a small group of streamers (from the 1% that are Partnered streamers) have demonstrated that they have enough of an audience to fully monetize their activity and subsist on that income.

With streaming as their primary source of income, Twitch has enabled the emergence of a full-time, 'professional' class of streamers. The 'professionalization' of Twitch streaming is not a unique phenomenon, but rather, follows a trend that is occurring across different social media platforms, notably on YouTube and Instagram, where users have become skilled at attracting audiences and are remunerated by the sites or sponsored directly by brands. Full-time content creators on YouTube and social media 'influencers' on Instagram represent a subset of users whom have managed to capitalize on the affordances of a given platform to monetize their personal activity, and have made that activity their full-time occupation (Postigo, 2016; Abidin, 2016; Hearn & Schoenhoff, 2016).

Christopher Brigham (2017) has studied this phenomenon in relation Twitch professional streamers, arguing that "Twitch broadcasters are professionals, not only because they earn a living income from their broadcasts but also (and importantly) because they actively negotiate a shared normative theory about how Twitch broadcasting should function as a career" (p. 2). Under that shared normative theory, professional streamers interviewed by Brigham identify common issues related to their status as full-time streamers on Twitch. The first issue concerns the precariousness resulting from their relationship with the platform itself, as they are not Twitch employees but rather high-level users that utilize the platform to facilitate their activity and thus sustain their livelihood (the implications of this are discussed in Chapter 3). Another issue is that professional streaming also requires the development of certain skills in production technology, with knowledge of computing hardware and broadcasting software needed to meet a given standard of streaming quality. Streamers also note the back-end or extraneous work put into their streams that is not always visible to their viewers. In order to be economically viable (that is, to maximize Twitch's monetization options), streamers often have to put in 40-50 hours a week on-stream, with extra hours dedicated to, for example, community maintenance, social networking, graphic and overlay design, networking with other media and games industry professionals, etc. Finally, streamers express the importance of maintaining a viewer-streamer relationship. As Brigham puts it, "the ways that professional streamers talk about the importance of community and its development highlight and further support the assertion that the community, much more so than the video, is the marketable commodity for a Twitch channel" (9). As the professionalization of streaming grows more common, the work it requires merits further investigation.

6.3   Streaming as Outsourced Creative, Emotional and Entrepreneurial Labour

If the work of game streaming constitutes valuable content creation and delivery, then remunerated streamers can be seen as creative laborers. According to David Hesmondhalgh and Sarah Baker (2010), creative labor refers to labor where the "primary aim of the business is to make profit from such [creative] activity" (9). This notion of creative labour does not encompass 'artistic' industries supported by patronage, but, rather, focuses on cultural or creative industries where "workers are involved in the creation and dissemination of very particular kinds of products, ones that are mainly symbolic, aesthetic, expressive and/or informational" (60). Aligned with this description, the work of remunerated game streamers necessarily involves marrying gameplay, commentary, technological skill, personality and creativity in order to produce a broadcast.

As mentioned above, the work of Twitch streamers has many parallels to the practices of social media influencers or YouTubers, involving forms of work that can be characterized as emotional labour, self-branding and promotional labour, and entrepreneurial labour. James Diefendorff and Robin Gosserand (2003), citing Arlie Hochschild (1983) define emotional labour as 'the management of feeling to create a publically observable facial and bodily display' for [compensation]" (945). That is, emotional labor encompasses the extra work involved in "using emotional regulation strategies so that work goals can be achieved" (p. 945); in the case of streamers, this entails emotional displays and expressions that appeal to their audiences, as well as the constant affective effort put into maintaining a positive streamer/viewer relationship. The work of Twitch streamers also involves the creation and maintenance of an appealing "socially-mediated persona" or a certain stream identity, consciously balancing authentic expression with calculated self-construction, curation and presentation, so as to attract and appeal to a specific sort of audience (Duffy & Wissinger, 2017, p. 4655). Additionally, the creation of successful, subscriber-attracting channels on Twitch involves forms of what Gina Neff has termed 'entrepreneurial labour' - work that involves the projection of 'coolness', creativity, autonomy, flexibility and self-investment, all while navigating the risks of competitive and volatile new media industries (Neff et al., 2005).

Further, streamers working on Twitch and receiving pay are characteristically 'outsourced' labour. According to Srnicek (2017), lean platforms "operate through a hyper-outsourced model,

whereby workers are outsourced, fixed capital is outsourced, maintenance costs are outsourced, and training is outsourced" (76). In relation to Twitch, paid streamers, or 'workers', are not employees, but rather independent contractors or freelancers utilizing the platform and Twitch simply offers these streamers an acceptable cut of revenue from subscriptions, advertisements and 'bits'. Following the lean platform model, Twitch also mitigates costs associated with hardware, as the onus is placed on streamers to purchase and set-up their own hardware for streaming. While Twitch's hardware entry point is relatively low (a user can start streaming with a basic computer set-up), the onus is on streamers to upgrade their computers, microphones, capture cards, soundboards, etc. in order to provide the best quality stream and appeal to viewers. Further, Twitch provides no formal training provided to streamers, and virtually all streamers are self-taught or have independently developed their skills (Johnson & Woodcock, 2017). Finally, while Twitch necessarily facilitates the connection between streamers and viewers, the platform ultimately places the burden of viewer recruitment and maintenance to streamers, as a streamer's visibility and monetization opportunities are contingent on appealing to and sustaining their audiences. Thus, Twitch operates as a lean platform that relies almost exclusively on the emotional and creative labour of independent, 'outsourced' users (namely, streamers). To sustain this model, Twitch accentuates its position as a 'neutral' intermediary, with the software, infrastructure and brand to attract and connect game-oriented viewers and streamers, even as it collects and monetizes all user data.

Given the value-generating role of viewers and streamers on Twitch (that is, viewers and streamers are sources of revenue and profit for Twitch), it is clear that there are many implications to consider vis-à-vis their commodification as 'audiences'. Twitch also raises many questions about the implications of the precarious outsourced work undertaken by paid streamers on the platform. These implications will be discussed in the following chapter.

Chapter 3

Market Infiltration, User Commodification and Precariousness

Following the description and analysis of Twitch's overall structure and business model completed in the previous chapter, this chapter discusses the larger implications of the platform's operations. It explores three areas of concern. First, it explores how Twitch is currently encroaching upon the value chain of video game production and distribution, becoming a vehicle for Amazon's continued infiltration into the video game industry. Second, it explores the ways Twitch generates value via a two-fold process of audience commodification and the appropriation of user data. Finally, it explores how Twitch constitutes a precarious and potentially exploitative environment for many paid streamers and proposes avenues for user protections and practices that might be adopted to promote a more equitable relationship between Twitch and its users.

7   Video Game Industry Infiltration

The previous chapter aimed to reveal the dynamics of ownership and market affiliation at play between Twitch and the larger video game industry. By characterizing Amazon's purchase of the platform as a form diagonal expansion and corporate convergence, and by viewing the strategic partnerships cultivated by Twitch with other entities in the video game industry, we can identify what Doyle (2007) calls "economic gains and synergies [from convergence and integration]" (p. 37). These gains and synergies are not limited to Amazon's principle online retailing business or to Twitch's own streaming activities. They are also generated from Twitch's (and by proxy, Amazon's) entry and encroachment into the larger video game industry. As noted earlier, Twitch's financial status is not made publically available, and, as a subsidiary of Amazon, its market valuation is not clear, but we can observe the site's market-related activities and dynamic in relation to the other components of the game industry.

To begin, Twitch is beginning to dominate the video game industry by capitalizing on activities that are adjacent to the industry's traditional value chain. The structure of the video game industry resembles that of other media industries, with components that encompass processes of production, distribution and consumption of media products respectively. Figure 12 demonstrates the traditional value chain of the video game industry, as outlined by Zackariasson and Wilson

(2012). This value chain describes the relationships that are responsible for the generation of value from the development and sale of video game products. Developers are responsible for the creation of video games, with studios coordinating and facilitating the work of programmers, designers and artists to produce unique gaming experiences for consumers. Publishers are largely focused on the market end of things, funding, packaging and promoting game titles to attract consumers and generate sales. Online distributors and physical retailers enable game products to reach consumers. Monetary returns from game sales are then split across all participants in the value chain.
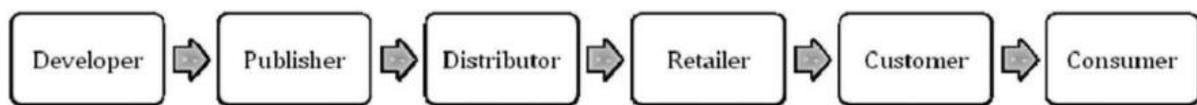
Fig. 12 – Traditional value chain of the video game industry (Zackariasson & Wilson, 2012)

While Twitch operates as a stand-alone live-streaming service with an orientation towards video games, its affordances and user base has enabled the platform to cultivate strategic partnerships within the video game industry. This, in turn, has allowed Twitch to penetrate the value chain at various points of its operation. As will be described in the following pages, game-streaming and eSports on Twitch have changed the way individuals consume games, as the onus is not simply on 'playing', but also on watching and interacting. Further, the platform enhances promotional initiatives for publishers and retailers, creating novel and even more effective ways of marketing game titles. Finally, Twitch's accumulation of data provides informational advantages to various parties along the value chain. Altogether, Twitch, as an extension of Amazon, enables the online retailing giant to enter the video game industry via non-traditional avenues.

7.1   Game Streaming and eSports

Twitch's live-video and synchronous chat affordances have contributed to the creation of unique communities of practice within gaming. From this, Twitch has opened up new avenues in the consumption process of the video game industry's value chain, wherein game products can be actively consumed through 'watching', as opposed to 'playing'. Consuming video games via Twitch is rooted in secondhand experiences of gaming through another individual (the streamer), enhanced by performance, personality, skill, commentary and a sense of community. Game

streaming and eSports, as facilitated by Twitch, are essentially new contexts for the consumption of video games that diversify the medium.

Game live-streaming, as its own activity, frames video games within unique practices that are more passive in nature, but necessarily accentuate personality and performance. This new approach to gaming is described by Gandolfi (2013): "Twitch.tv appears as a significant and coherent articulation of the current game culture… In essence, the portal attracts engaged audiences with a strong connection to digital entertainment staging a new setting in which one may experience the medium. This assertion is partially intuitive when looking at the games performed, which often address a hardcore audience" (p. 77). Despite being a new way to experience games, live-streaming still relies on game products to generate value; the difference is that revenue is not generated from individual game purchases, but rather through the monetization of stream activity (as described in Chapter 2) and the commodification of stream audiences (described later in this chapter). Game streaming works in tandem with the traditional mode of game consumption by maximizing the experience of a gaming product.

Similarly, eSports also re-contextualize the consumption of games, namely through competition and the institutionalization of play. Recognizing the expansion of gaming through spectatorship, "eSports has been working towards the commodification of gaming spectatorship for almost two decades now, banking on a vision of games as 'the' 21st century spectator sport" (Taylor, 2016, p. 294). Indeed, Twitch's early adoption of eSports broadcasting, as well as the establishment of the platform as a popular interactive, game-oriented streaming, has allowed it to capture a significant amount of eSports' growing viewership (see Chapter 2). Given that eSports' are operationally and financially dependent on spectatorship, Twitch has been able to capitalize on its role as a primary broadcaster. Thus, Twitch is strategically positioned, as a promotional media channel, within the commercial dynamics of the larger video game industry, eSports organizations, and their audiences.

7.2   Video Game Promotion

Twitch has also infiltrated the video game industry by way of advertising. As Nicholas Taylor (2016) expresses, "though deeply innovative, all this creative activity [on Twitch] is not taking place entirely outside existing media industries. Game companies, suddenly attuned to the potential of broadcasting to get their products in front of gamers and build interest in their

brands, are experimenting with live-streaming as a form of marketing and promotion" (p. 9). Indeed, Twitch works within the value chain of the video game industry by mediating the promotional initiatives of publishers and distributors. Twitch offers services that either bolster traditional advertising campaigns or present opportunities for more novel ways of promoting game titles. As in the case of eSports, Twitch functions as a kind of 'over the top' channel for live streamed gaming that can use its streams as a means to sell viewer attention to advertisers.

Using Twitch to promote video games is particularly advantageous because of the platform's ability to connect video game communities and facilitate interactions within them. These active audiences become indispensable in the promotion of games because they are both consumers and opinion leaders amongst other gamers. As game publishers have noted:

> Depending on the type of game and asset availability, we are going to use the press one year before release dates, sometimes two years before. That is the only way you can create 'buzz'. We also go online to give viewers assets with which to create buzz in their communities. Communities, the fans, are also really important in marketing. (Zackariasson & Wilson, 2012, p. 66).

Twitch is an ideal platform for the pre-release promotion of games, especially by way of sponsored gameplay or developer showcase streams. Once released, these titles continue to promote themselves as they are played by various streamers across Twitch – as the premise of most Twitch broadcasts is the demonstration of gameplay, it simultaneously works to promote the games as well. Paired with the demographic represented by its audiences and the gameplay-based streaming activities of its users, as Twitch continues to grow, its promotional capacity to aggregate audience attention and sell it to advertisers will too.

7.3   Data and Preferences

As we have seen, Twitch derives value from its ability to capture and extract data from its users' activity. Given its orientation towards video games, the data extracted by Twitch will obviously shed important light on the demographics and behaviors of gamers. If the aphorism "knowledge is power" applies to the market dynamics of the video game industry, then Twitch can use this data as market leverage. For example, if Twitch has access to data regarding user preferences (commonly streamed games titles, activity tags applied to certain titles, eSports or event viewership numbers, etc.), then it becomes advantageous for game companies to form a relationship with Twitch. As Twitch's Privacy Policy states:

> We may also send information about the content you watch or your activities on the Twitch Services to such third parties. For example, we may make information available to app developers, game developers, and game publishers to facilitate purchases and awards of digital goods, such as games and in-game items.

With data relevant to their respective activities now easily available within the value chain, game developers, publishers, distributors and retailers can adapt and/or optimize their services and products to suit ever-changing consumer desires and trends.

7.4   Amazon Lumberyard and Web Services

Amazon Lumberyard and Amazon Web Services, jointly, appeal to game developers and publishers by using Twitch as an incentive. Amazon Lumberyard provides a (technically) free, fully-fledged game engine/development suite for both commercial and independent game developers; the only associated costs for Lumberyard are for the use of Amazon Web Services, which is built into Lumberyard itself. Amazon's game engine is a competitive and compelling option for developers because it offers exclusive Twitch integration features. Capitalizing on the popularity of *Twitch Plays Pokémon,* Lumberyard's 'Twitch ChatPlay' feature allows developers to create novel experiences that make use of Twitch's live-streaming and interactive chat affordances (Good, 2016). Thus, Lumberyard and Amazon Web Services, together, represent two key points of entry into the development and publishing processes of the game industry's value chain.

Amazon's acquisition of Twitch made major headlines in games journalism when it was first announced in 2014. Games journalist Ben Popper (2014) described how Amazon's purchase of Twitch was intended to supplement its earlier forays in the gaming industry, notably its online
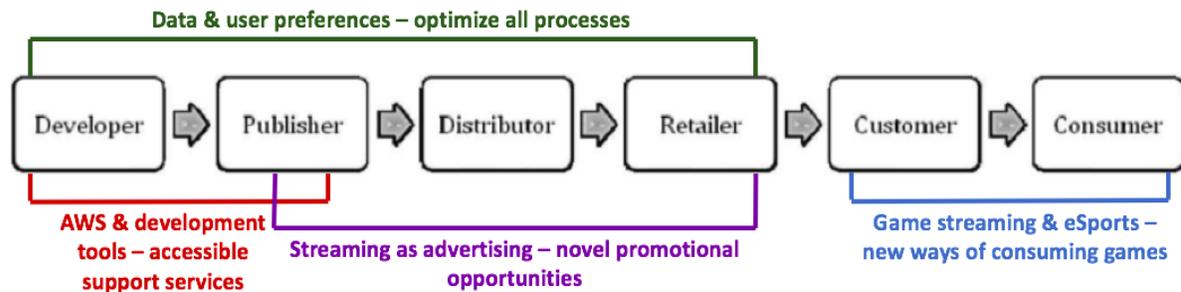
game retailing, its acquisition of Double Helix Studios, and the introduction of gaming on its Amazon Fire multimedia dongle, among others. Further, Popper identifies the mutually beneficial nature of the purchase: "Jeff Bezos [CEO and President of Amazon] wanted to get into gaming and can offer Twitch the infrastructure and licensing it needs to grow globally" (2014). However, in the five years since Popper's writing, it has become abundantly clear that Twitch was a beachhead for Amazon's gradual infiltration into the game industry at large. As demonstrated in Fig. 13, through Twitch, Amazon has begun to encroach on many aspects of the game industry's traditional value chain. Through Twitch, Amazon has managed to circumvent the more direct, competitive, and traditional points of entry into the industry, maximizing the

Fig. 13 – Revised value chain of the video game industry (Adapted from Zackariasson & Wilson, 2012)

affordances of the streaming site. Rather than developing, publishing and distributing game titles, or creating dedicated gaming consoles, Twitch capitalizes on its accumulated user data, enables more effective forms of advertising, transforms the way games can be consumed, and provides novel game development opportunities.

The continued growth and encroachment of Twitch, and thus Amazon, into the video game industry should be of concern because of Amazon's stature as one of the 'Big Four' technology companies alongside Google, Facebook and Apple (Galloway, 2017). By purchasing Twitch, Amazon has already captured the majority of the game-streaming market, with very little competition from alternatives such as Mixer, YouTube Gaming or Facebook Live (as shown in

Chapter 1, Figure 1b). The game-streaming market also provides Amazon with an important foothold for continued growth in the larger video game industry.

8 Audience Commodification

As argued in Chapter 1, audience commodification involves a process whereby viewers' attention is captured via programming or streaming, packaged and sold to advertisers for a profit by a corporate media entity. In the era of digital media, processes of audience commodification have intensified. As Vincent Mosco notes:

> the recursive nature of digital systems expands the commodification of the entire communication process. Digital systems, which measure and monitor precisely each information transaction are now used to refine the process of delivering audiences of viewers, listeners, readers, movie fans and computer users, to advertisers. In essence, companies can package and repackage customers in forms that specifically reflect both their actual purchases and their demographic characteristics (Mosco, 2011: 137).

This perspective encourages us to move beyond claims about the cultural or symbolic benefits attributed to the act of watching media texts, and, instead, to examine these texts' role in advancing capitalist interests. Focusing on processes of audience commodification on Twitch challenges the 'user-centric' rhetoric often found in descriptions of the site. As we have seen, like other commercial media entities such as broadcasters or over-the-top streaming services like Netflix, Twitch appropriates users' attention for its own monetary gain and that of its industry affiliates. Unlike the age of broadcasting, however, user attention is a doubly rich source of income, as it is used to sell advertising and to produce valuable data.

8.1 Audience Commodification on Twitch

While a media platform such as Twitch provides a novel form of entertainment, its audiences are nonetheless subjected to processes of commodification. The notion that Twitch is somehow 'free' is challenged by the clear corporate profit derived from viewing audiences and the data they generate. This thesis argues that Twitch engages in a two-fold process of audience commodification; while Twitch offers or facilitates streamer activity as their primary service/product to viewers, as Smythe described in his original essay, it subsequently sells viewers' attention to outside advertisers. As it does so, Twitch also extracts user data from the

attention of viewers and practices of streamers, and uses that data to enhance its own services and those of Amazon, who may also sell it to third parties.

Insofar as it positions itself as a necessary platform for game-oriented streaming, Twitch tends to present the work of streamers as their own service/product, with hosted streams then servicing Twitch's brand and appeal. Streamers on Twitch essentially generate the 'programs' that attract the attention and dedication of viewers. Indeed, Twitch does not have to pay for the creation or production of any content. Thus, by virtue of owning the platform/means of circulation, Twitch can capitalize on both the user generated content and the users or audiences themselves, creating opportunities for potential advertisers and processes of data extraction in turn. In this way, Twitch acts as the intermediary between streamers and advertisers, enabling the commodification and 'sale' of the site's accumulated viewership and the data it generates.

While the platform is naturally conducive to the commodification of audiences (via stream viewership), Twitch's affordances also work to maximize the value generated from these audiences. Twitch's streaming model allows for effective video and display advertising opportunities for potential advertisers, and its use and generation of data (both demographic and technical) provides additional incentives for potential marketers to pay for access to audiences.

Twitch has valuable insights about its own demographics, which it presents quantitatively and qualitatively to potential advertisers on their site: 88% of Twitch users are males with 55% between the ages of 18-34, and the principle orientation of this demographic is gaming, wherein "gamers are more social, family-oriented, educated, optimistic, successful, and socially conscious than non-gamers… they actively use the latest tech to consume content and connect to their peers" ("Advertising", Twitch). Twitch thus frames their audiences as both receptive to certain messages and products while highlighting their tendency to reproduce these messages to others (particularly, within Twitch's own communities). As such, Twitch's recruitment of advertisers explicitly recognizes the logic of the audience commodity, wherein viewers are primed to receive, internalize, and become advocates for particular brands and products that fit their key demographic and gaming orientation.

Additionally, Twitch maximizes the potential value of their audiences by allowing advertisers to mine their own demographic data from served ads. According to Twitch's Privacy Policy:

"Twitch may allow advertisers, third-party advertising networks and third-party advertising serving companies to serve advertisements directly to you within the Twitch Services and other Twitch sites, services and software." However, it also asserts that:

> Twitch does not provide information that is intended to identify you personally to these third-party ad servers or ad networks without your consent. However, if you respond to an advertisement that targets a certain audience (for example, males age 20 to 25 who have participated in certain promotions), the advertiser or ad-server may conclude that you fit the description of the audience that they were trying to reach.

Twitch actively acknowledges that it facilitates the servicing of advertisements to key demographics, and that it allows its audiences to be further segmented by select third parties. To this end, Twitch users are not one coherent mass, but are instead construed as a collection of demographically-specific viewers who are especially valued for their continued reception and reproduction of targeted advertiser messages.

While Twitch's operations differ from traditional commercial broadcasting (which produces its own programmes and is explicitly advertiser-supported), the streaming platform still integrates mechanisms of audience commodification into its services. Twitch appropriates and utilizes streamer activity to attract advertisers to the platform, profiting from ad sales. Even if a portion of ad revenue is given to streamers as compensation for running the ads on their channel, the primary beneficiary of these marketing practices is Twitch itself. Thus, while Twitch is often hailed as a user-centric space for building game-oriented communities, with viewer- and community-supported streams and prosumer activity, the site enables the appropriation of user activity and the attention of stream audiences in the service of Twitch's own capitalist interests and keeps these processes well hidden from users.

9   Sources of Harm and Potential Protections

The following section argues that Twitch's practices can be seen as exploitative, where exploitation is understood to mean the harmful treatment of individuals and/or unfair appropriation of their work or effort. David Hesmondhalgh (2016) contends that exploitation can be differentiated by the degree of suffering and/or personal flourishing in a given work arrangement, the degree of force or compulsion involved, and the legitimacy of this compulsion vis-à-vis processes of democratic and legal accountability. As Nicole Cohen argues,

"exploitation remains the key process driving transformations in the cultural industries and (accounting) for the ways cultural workers' relative autonomy is being undermined" (Cohen, 2012, p. 142). So, while creative or symbolic workers might experience conditions that are relatively less exploitative than manual labourers involved in the media value chain (mining, fabrication, assembly), they are still subject to certain characteristically exploitative conditions. According to Hesmondhalgh, these characteristics include "overwork and associated emotions of anxiety and powerlessness, and high levels of risk and uncertainty summarized as precariousness" (2016, p. 35). With specific attention given to paid streamers whose work on the platform represents their primary income and livelihood, the following section argues that Twitch can be seen as being an exploitative workplace insofar as it engenders sustained precariousness and overwork among its remunerated streamers. From this observation, this thesis proposes avenues for pursuing protections against potentially exploitative practices.

9.1   Precariousness and Self-Exploitation

Precariousness refers to a labour condition that "involves instability, lack of protection, insecurity and social or economic vulnerability … It is some combination of these factors which identifies precarious jobs" (Rodgers, 1989: 5). Nick Srnicek (2017) speaks to precariousness as a defining characteristic of lean platforms; in their operations, lean platforms "legally understand their workers as '[self-employed] independent contractors' rather than 'employees'" (p. 76). These platforms avoid providing many of the benefits of employment, and instead, platform workers "must furnish and use their own equipment, cover operating costs, handle their own accounting and taxes, and provide their own insurance… gone are sick days, worker compensation, minimum wage coverage, eligibility for Social Security or unemployment insurance" (Vallas, 2019, p. 49). While this form of outsourcing enables companies to save labour costs and maximize the profitability of their platform's activities, it ultimately produces intensified precariousness for its workers. Platforms like Twitch necessarily rely on the work of streamers, but these streamers are not employed or given regular wages. As we have seen, Twitch intermittently compensates streamers based on their ability to attract and maintain a viewing audience (with returns based on subscriptions, bits, advertisements and sponsored streams). While some may value self-employment for its flexibility and entrepreneurial nature (Breman & van der Linden, 2014), insecurity and vulnerability are recurring themes expressed

by streamers who monetize their activity on Twitch (Woodcock and Johnson, 2017; Bingham, 2017; Taylor, 2016).

The feelings of uncertainty and insecurity felt by professional Twitch streamers largely stem from the fact that Twitch is a streaming platform without precedent. As a result, it has no established wages, no promised outcomes, and no fail-safes (Bingham, 2017). Streamers are given conditional access to monetization tools for their streams but, beyond that, are not guaranteed any other security or resources. Twitch streamers are subject to any and all changes, without warning, to Twitch's Terms of Service, Privacy Policy, Community Guidelines, Affiliate or Partnership agreements, or any other decisions made by Twitch staff ("Terms of Service", Twitch); ultimately, these changes will themselves invariably affect a streamer's activity and subsequent income. According to Bingham (2017), Twitch streamers have also expressed concern about the possibility that their streaming channels could be shut down because they might accidently do or say something that runs afoul of the platform. This could take the form of either a temporary ban (affecting regular streaming activity and risking the loss of viewers and income) or a permanent ban (cutting off their streaming activity altogether). The decision to ban a streamer is externally influenced by viewer 'reports' and made at the discretion of the site's staff. Further, streamers are subject to any technical changes (algorithms, discoverability hierarchies, bandwidth allocation) that can ultimately challenge their ability to attract and maintain audiences.

There is also precariousness inherent in the future and direction of Twitch as a whole, as it grows, expands and transforms. Streamers have acknowledged that they are working on Twitch without necessarily knowing the long-term viability of streaming as a primary occupation, and streamers interviewed by Johnson and Woodcock (2017) all explicitly express having 'back-up' plans in case their streaming careers are brought to an abrupt end. Regardless of the success they have found streaming on Twitch, "the most astute streamers are, therefore, already trying to position themselves for an escape from such a precarious career, whilst also trying to make the most of this career opportunity whilst it lasts" (p. 346). While these tensions clearly occupy the thoughts of Twitch's 'professional' class of streamers, it has not deterred them from continuing their work on the platform and capitalizing on the increasing popularity of live-streaming.

Finally, precariousness for streamers often stems from factors outside of Twitch, and involve the ability to attract and maintain a large, dedicated audience, and adapt to changes in gaming and viewer preferences. This includes changes in Twitch's most popular streamed games (for example, from 2017 to 2019 in the Battle Royale genre alone, the popularity of Playerunknown's Battlegrounds was eclipsed by Fortnite, and subsequently Fortnite's popularity was partially eclipsed by Apex Legends), new stream-integrated technologies (multi-camera set-ups, eye trackers, more complex graphic overlays), changes in services (dissolved eSports leagues, discontinued game servers, new consoles) and access to games (early access or open-beta invitations given to select streamers).

While precariousness involves insecurity and vulnerability, as with so many other short-term digital jobs these days, it is instrumentalized by Twitch as a sort of 'driving principle' for a successful streaming career; to mitigate insecurity, you simply need to develop a 'work ethic'. Woodcock and Johnson (2017) highlight the notion of 'work ethic' as a common theme among streamers discussing their continued success on Twitch. Likewise, Bingham (2017), drawing on the work of Storey, Salaman and Platman (2005), notes that, to streamers, "success is seen as the 'result of accomplished self-regulation', while failure is a 'symptom and consequence of a failure of self and self-regulation – the failure of insufficient enterprise'" (p. 345). Thus, given their precarious working conditions, many aspiring, emergent and professional streamers are driven to self-exploitation. That is, measures of success on Twitch induce streamers to perform more arduous, intensive and exhaustive work than may be warranted.

In order to alleviate feelings of uncertainty, many streamers will fixate on data points, such as viewership and follower and subscriber counts, in order to assess their progress. Woodcock and Johnson (2017) describe this fixation on metrics, paired with Twitch's technical and algorithmic operation, as reflecting:

> …an internalization of the metricization of success according to… 'popularity'… a feature of online platforms of this sort whose algorithmic structures emphasize hierarchy and competition, with those at the top attaining a disproportionately high volume of attention and interest compared to those at the bottom. Understanding that rewards are distributed in an extremely top-heavy fashion, streamers were both aspiring to reach those heights and reflecting back with varying degrees of criticality upon what they thought it would take in order to obtain those goals (p. 344).

This tendency towards self-exploitation is not just the result of the long and strenuous hours put into an individual's stream, but also encompasses 'unrecognized' and external work such as stream preparation, managing chat moderators, community maintenance, and self-promotion/branding on social networks, etc. Indeed, these additional activities are foundational to the success of a stream, as Twitch has no integrated/native promotional tools on its site. Further, "in the landscape of the new creative economies, online social networking and self-promotional presence labor are not luxuries of the precariat but necessities of survival in working environments structured according to the logic of contractual insecurity" (Gurevitch, 2016, p. 194).

Finally, it is important to note that while precariousness and self-exploitation are pervasive aspects of occupational streaming, this reality is not readily obvious to viewers. Indeed, streamers are placed in a particularly difficult position when it comes to being recognized as precarious and potentially disenfranchised 'workers'. Streamers, like many artists and creative labourers, are cultural labourers that "find themselves in the contradictory position of working at what they profess to be their 'dream job' while simultaneously experiencing working conditions and/or a general climate of anxiety, frustration, and the dis-empowerment of individual, privatized self-exploitation" (Gurevitch, 2016, p. 194). Streamers are thus placed in a contradictory position, hindering their ability to make their self-exploitation legitimate and visible, let alone remediate it.

This sort of contradictory position is not limited to Twitch, but applies to many other individuals who work on and for other commercial lean platforms, like TaskRabbit, Uber, Mechanical Turk and AirBnb (Srnicek, 2017). Drivers for Uber, a peer-to-peer ride sharing service that operates through a mobile application, face many of the same challenges described by streamers. Uber and Twitch both deploy celebratory discourses that frame them as an ideal supplement or alternative to traditional kinds of work, all while obscuring the fact that the work itself is precarious and unpredictable. Uber drivers interviewed by Brenton Malin and Curry Chandler (2017) for example, claim that working for Uber provides them with a sense of fun, sociality, autonomy and flexibility, (p. 391), but, also describe increased levels of risk and uncertainty in their working lives.

Like Twitch streamers, Uber drivers are not employees, but are treated as independent contractors whose work is simply facilitated by the platform. This allows Uber to avoid the responsibility of having employees, including "providing medical or retirement benefits, paying workers compensation, or maintaining driver's vehicles – all of [this] falls on drivers themselves" (Malin & Chandler, 2017, p. 386). Much like a streamer's hardware and technical set-up, Uber drivers are responsible for their vehicle and telecommunications set-up (car, GPS, mobile data to keep the app active, etc.), relieving Uber from these overhead costs. Further, Uber drivers experience a precariousness simply interacting with the algorithmic dynamics of the app, including surge pricing and canceled trips, as well as material risks including road accidents, difficult passengers and bad ride ratings. Finally, given their classification as nonemployees, Uber does not have to provide accessible avenues for seeking legal protections and recourse in the case of harassment or discrimination to their drivers (Chandler & Malin, 2017, p. 396).

Regardless of the types of services they facilitate or provide therefore, work on lean platforms like Twitch and Uber is characteristically precarious and unstable. The promise of flexible and self-actualizing entrepreneurial work touted by the emergent 'gig' or 'sharing' economy is undermined by a lack of financial, material or legal security and support. Nonetheless, Twitch streamers and Uber drivers alike continue to tolerate these conditions for a myriad of reasons, including the lack of better work alternatives. In the face of this new reality then, an assessment of how these precarious conditions might be ameliorated is in order. The following section discusses potential avenues for worker protections advanced by members of the gaming media and other academic studies of platform-based work.

9.2   Avenues for User Protections

Given the precariousness, self-exploitation, and potential for harm described in the previous section, robust protections for streamers might best be brought about by collective organization and action on the part of streamers themselves. Greig de Peuter (2011) describes the potential for organization among cultural workers:

> Over the past decade, nonstandard workers and their allies have begun to launch – from the margins of the union movement – new collective organizations contesting precarity at diverse points on the creative economy's circuit of value production… Although significantly varied in scale, style, and relationship to established unions, what these organizations minimally share in common is their experimentation with structures,

objectives, and strategies adequate to mobile immaterial workforces whose conditions cannot be addressed by a labor politic whose horizon is the rehabilitation of standard employment (422).

While traditional forms of organization and collective action for workers have been facilitated by unions, the economic dynamics of cultural and platform workers warrant more novel approaches. This is especially the case as streamers are not employees of Twitch, but rather 'outsourced', independent, contract workers whose labour is tethered to the platform.

Games journalist Cecilia D'Anastasio (2017), writing for Kotaku, calls for collective action and protections among YouTube content creators and Twitch streamers, citing the work of the Internet Creators Guild as a potential blueprint or prototypical collective for a Twitch-oriented organization. The Internet Creator's Guild (ICG) is a non-profit organization that supports online content creators on whose livelihoods are contingent on the platforms they use (although the ICG is mostly oriented towards YouTube-based content creators). The ICG states that their mission is to:

> 1. Support creators with educational resources and events that increase transparency, and establish norms so they can make a stable living. 2. Represent creators who want strength in numbers and a seat at the table so they have more influence on the industry and control over their destiny. 3. Connect professional creators across the world who want to share with peers their experiences, accomplishments, and challenges" ("Who We Are", Internet Creators Guild).

The Guild provides dues-paying members with resources such as annotated contracts to better understand legal terms, collected evaluations of potential sponsors and brand deals, and documents describing the best way to maximize YouTube's monetization processes, among others ("What We Do", Internet Creators Guild). While they may not be able to provide the same financial protections and benefits as unions, organizations such as the ICG, reminiscent of historic trade guilds, certainly help YouTube content creators aggregate their knowledge, and provides an institutionalized sense of solidarity as leverage vis-à-vis YouTube's continued operation.

Similarly, D'Anastasio (2017) outlines how Twitch streamers could create their own professional organization. The process would involve getting popular streamers to initiate the creation of the guild and form a steering committee. With enough streamers on board, the organization could be founded as a non-profit trade association (incorporated or not). This collective body would

enable streamers to network and communicate through private channels, and identify and express common issues related to Twitch. Should Twitch not address streamers' concerns, the organization could utilize their collective work (or collective disruption of work) as leverage in the decision-making processes of the platform. Twitch, as an emergent platform, is particularly vulnerable to this form of disruption since their revenue streams and brand identity are heavily reliant on the work of professional streamers. Perhaps D'Anastasio overly simplifies the process of labour-based organization – aggregating independent workers can be difficult, and trade organizations such as the ICG do not guarantee financial security or collective bargaining. However, the overall leverage cultivated by these bodies could significantly advance streamers' professional interests.

Indeed, labour organization of this kind has been undertaken by other platform workers. Uber and Lyft drivers have organized under Rideshare Drivers United, an independent association of rideshare drivers in the United States. Their collective demands include limits on the commission given to the platform from passenger fares, a surcharge adjusted for the price of gas, a more transparent and effective de-activation appeal process, and respect for the drivers' right to organize ("Drivers Bill of Rights", Rideshare Drivers United). In early 2019, Rideshare Drivers United coordinated several general strikes ahead of Uber and Lyft's initial public offerings, which proved successful in inciting renewed discussions about legislation around the employment classification of platforms workers, much to Uber and Lyft's dismay (Glaser, 2019).

Considering the potentially influential capacity of professional organization, Twitch streamers could advocate for other changes to the platform, so as to mitigate some of the precariousness experienced by streamers. This includes demanding Twitch review and adjust its discoverability features, algorithms, and hierarchies to be more equitable to both smaller affiliates and major streamers, negotiating better monetization ratios and compensation for Partnered streamers, and challenging changes in the site's operation or Terms of Service should it have a detrimental impact on streamers. In any case, the organization of streamers lends itself to a powerful sort of leverage that could ultimately influence the continued professionalization of game live-streaming.

Alternatively, federal intervention and collective mobilization provide their own solutions. Returning to the case of Uber, Malin and Chandler (2017) advocate for policymaking that

recognizes Uber drivers as employees, enabling platform workers to access federal protections otherwise unavailable to them as 'freelance' or independent contractors, forcing Uber to provide a minimum wage, overtime pay, unemployment and disability insurance, benefits and paid leave. Alternatively, Trebor Scholz describes the prospect of worker-run platform cooperatives, where the operation of these platform applications or services return to the hands of its users and workers:

> Let us apply the power of our technological imagination to practice forms of cooperation and collaboration. Worker–owned cooperatives could design their own apps-based platforms, fostering truly peer-to-peer ways of providing services and things, and speak truth to the new platform capitalists (Scholz, 2014).

10   Conclusion

In 2014, gaming critic Austin Walker implored us to question and challenge the assumptions we have about live-streaming, play and leisure in the context of digital platforms: "We have to ask how are our actions—how is our play—pushed, pulled, restricted, encouraged, and transformed. And to whose benefit?" (p. 441). This thesis has attempted to provide some answers to Walker's question by demonstrating how 'play' on Twitch is ultimately pushed, pulled, restricted, and transformed by its business structure and capitalist interests.

The thesis has worked to challenge academic and popular discourses that characterize Twitch as a user-centric and empowering space of video game communities and independent broadcasters, arguing that there has been a serious gap in the literature analyzing Twitch's business operations, industry orientation and labour practices. Informed by Nick Srnicek's (2017) concept of lean platforms, this thesis has tried to fill that gap by examining: Amazon's ownership of Twitch and the implications of Twitch's integration into Amazon's larger ecosystem; Twitch's strategically cultivated relationships with various entities within the video game industry, and its encroachment into gaming's periphery activity (notably, eSports and marketing); the site's use of data to the ends of platform optimization; the commodification of user activity. The thesis has also identified several important implications of these business operations, including: market infiltration as Twitch encroaches upon various aspects of the video game industry's value chain; intensified audience commodification through which Twitch capitalizes on the value-generating potential of both viewers and streamers; and, the growing precariousness underlying the work of professional streamers, resulting in the tendency towards self-exploitation and financial

insecurity. Ultimately, this thesis emphasizes the need for concerted labor organization among streamers and the continued critical monitoring of Twitch's commercial expansion.
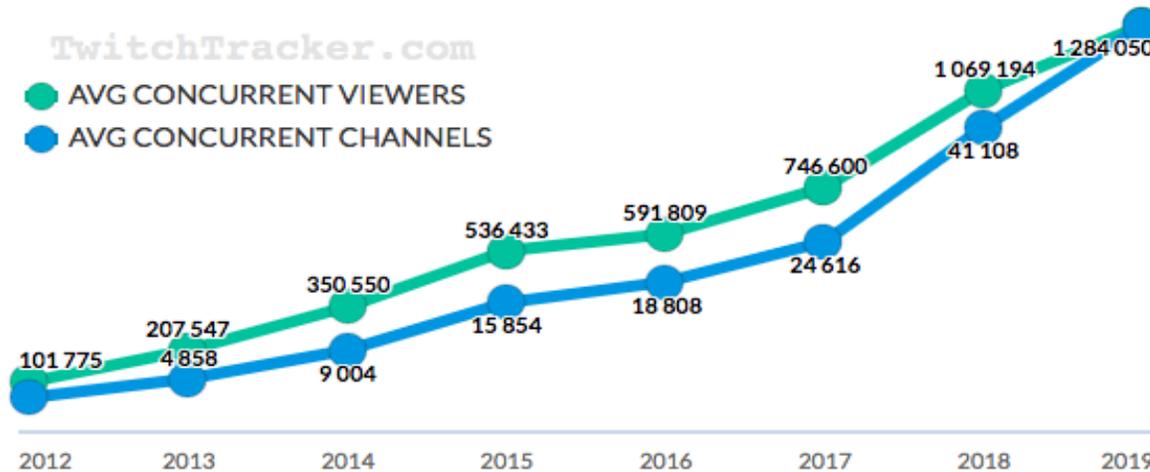
Austin Walker foretold the emergence of streaming services like Twitch, and highlighted the need for more rigorous and critical inquiry into their implications: "Critical research in the field of live streaming will become increasingly important as new streaming systems are put into place which control user activity to make it more cleanly fit corporate interest" (p. 439). Indeed, since 2014, Twitch has been acquired by Amazon, experienced rapid growth (see Fig. 15), had its services integrated into robust cloud computing services, become deeply intertwined in the game industry's value chain, and intensified forms of viewer commodification and freelance, precarious labour. This thesis has shown that, as it operates by the logics of big data and platform capitalism, the study of Twitch can provide relevant and important insights about the more general proliferation of interest-specific online streaming platforms today.

Fig. 14 – Twitch growth from 2012-2019 by concurrent viewership and concurrent streaming channels - http://www.businessofapps.com/data/twitch-statistics/

10.1 Suggestions for Further Research

While this thesis represents a preliminary attempt to analyze Twitch from a business-oriented, critical perspective, there are many other avenues that could be pursued for further research into game-streaming platforms. Further studies of Twitch's continued commercial expansion,

situating streamers in the larger debates around digital labour, and more rigorously investigating Amazon's use of its subsidiaries as part of its data practices are needed.

Commercially, the continued growth and success of Twitch has allowed the platform to expand beyond gaming. In September of 2018, Twitch announced that it would be debuting Thursday Night Football, broadcasting regular-season NFL games for free on its 'PrimeVideo' channel; the decision to stream NFL games on Twitch is part of Amazon's 130$ million licensing and broadcasting deal with the professional sports league (Wolf, 2018). Streaming NFL games on Twitch takes advantage of the live-streaming and chat affordances of the platform, encouraging interaction and discussion amongst fans. However, more importantly, streaming NFL games on Twitch also capitalizes on the popularity and established viewership of certain streamers, who are specially selected by Twitch to co-stream these NFL games with their own commentary and personal touch (Wolf, 2018). The success of this initiative has yet to be determined, but the reasoning behind it is clear – the NFL sees Twitch as a way to attract a different sort of audience:

> While the NFL's relationship with Twitch through Amazon is still young, incorporating more high-profile endemic personalities could serve as a way for the influencer-driven platform to differentiate itself from traditional NFL broadcasts. But that's easier said than done. The NFL is highly strategic in who it associates with. With no highly-publicized route for streamers to earn rights for NFL games, co-streaming TNF has been limited to very few streamers who work directly with the league. (Miceli, 2018).

Further research could be focused on the direction of Twitch's commercial growth, as this deal with the NFL suggests the creation of new strategic relationships with cultural entities situated outside of the video game industry.

Another direction for further research could involve extended inquiries into precariousness among professional Twitch streamers. While partially addressed by studies of professional streaming (Bingham, 2017; Woodcock & Johnson; 2019), further research into how Twitch's operations create specific forms of precariousness and how streamers experience and navigate this precariousness would be useful; exploration of the ways the site's discovery algorithm and index hierarchies might favor already established streamers, or the difficulties banned streamers might have seeking recourse or a fair hearing from the platform, or the potential limits to proper compensation posed by the use of platform-based currency (bits) would all be fruitful areas for further research. This kind of research could also contribute to the larger discussion of

precariousness among creative and cultural labourers in online contexts, with novel insights stemming from Twitch streamers as 'live' and/or gaming-oriented content creators.

Finally, any critical discussion of Twitch would certainly benefit from more rigorous research into the site's data practices. Given the overall secrecy behind Amazon's business practices, this thesis' approach to Twitch's use of data was limited to inferences drawn from the site's Privacy Policy and Twitch's integration into AWS infrastructure. A dedicated study utilizing big data research methods would provide answers to the many questions surrounding Twitch's and Amazon's use of data, and how data advances the interests of the platform internally and externally.

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Video - NOSSDAV '15, 55–60.

Curriculum Vitae

Name: Charlotte Panneton

Post-secondary   CÉGEP Champlain-St. Lawrence
Education and   Québec City, Québec, Canada
Degrees: 2012-2014 Diplôme d'études collégiales

University of Ottawa
Ottawa, Ontario, Canada
2014-2017 B.Soc.Sc.

University of Western Ontario
London, Ontario, Canada
2017-2019 M.A.

Honours and   Excellence Scholarship
Awards: University of Ottawa
2014, 2015, 2016

Ontario Graduate Scholarship
University of Western Ontario
2019

Related Work   Undergraduate Research Assistant
Experience   University of Ottawa
2016-2017

Graduate Teaching Assistant
University of Western Ontario
2017-2019

Graduate Research Assistant
2018-2019